Dossier Technique

Fiches Techniques

Disjoncteurs

Catalogue technique

Tmax. Génération T

Disjoncteurs en boîtier moulé
de basse tension jusqu'à 1600 A

Caractéristiques de construction

Caractéristiques distinctives de la série

Double isolement

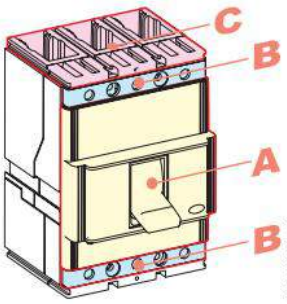
La technique du double isolement consiste en la séparation totale entre les parties actives du circuit de puissance (prises de raccordements exclues) et les circuits des auxiliaires. Le logement de chaque accessoire électrique est complètement isolé du circuit de puissance, évitant ainsi tout risque de contact avec les parties actives; notamment le groupe de commande est complètement isolé des circuits sous tension.
De plus, le disjoncteur possède un isolement renforcé, à la fois entre les parties actives internes et dans la zone des prises de raccordements.
Les distances, en effet, sont supérieures à celles exigées par les Normes IEC et conformes à ce qui est prévu par la pratique américaine (norme UL 489).

Coupure apparente

Le levier de manœuvre indique toujours la position exacte des contacts mobiles du disjoncteur, ce qui garantit des signalisations sûres et fiables, conformément à ce qui est prescrit par les normes IEC 60073 et 60417-2 (I = Fermé; O = Ouvert; ligne jaune-verte = position déclenchée). Le mécanisme de commande du disjoncteur est indépendant de la pression sur le levier et de la vitesse de l'opération. Le fonctionnement des déclencheurs ouvre automatiquement les contacts mobiles. Pour les refermer, on doit réarmer la commande en poussant le levier de manœuvre de la position intermédiaire dans la position d'ouverture.

Aptitude au sectionnement

En position ouvert, le disjoncteur garantit le sectionnement du circuit conformément à la Norme IEC 60947-2. Les distances d'isolement garantissent l'absence de courants de fuite et la tenue diélectrique à d'éventuelles surtensions entre entrée et sortie.



Degrés de protection

Le tableau indique les degrés de protection garantis par les disjoncteurs Tmax conformément aux prescriptions de la norme IEC 60529:

	Avec face avant	Sans face avant [2]	Sans cache-bornes	Avec cache-bornes hauts	Avec cache-bornes bas	Avec kit protection IP40 sur le devant
A	IP 40[3]	IP 20	-	-	-	-
B[4]	IP 20	IP 20	IP 20	IP 40	IP 40	IP 40
C	-	-	-	IP 40[1]	IP 30[1]	-

[1] Après installation correcte
[2] Pendant l'installation des accessoires électriques
[3] Également avec face avant pour verrouillages et poignée rotative directe
[4] Uniquement pour T1...T6

Les parties fixes sont toujours prévues avec un degré de protection IP20. On peut atteindre le degré de protection IP54 avec un disjoncteur installé dans un tableau équipé d'une commande par poignée rotative renvoyée sur la porte et associé au kit spécifique (RHE – IP54).

Température de fonctionnement

Les disjoncteurs Tmax peuvent être utilisés dans des conditions de température ambiante comprise entre les valeurs de -25 °C et +70 °C et peuvent être entreposés dans des environnements où la température est comprise entre -40 °C et +70 °C. Les disjoncteurs équipés d'un déclencheur magnétothermique ont l'élément thermique réglé pour une température de référence de +40 °C.
Pour des températures différentes de +40 °C, à réglage équivalent, on a une variation du seuil de déclenchement thermique comme indiqué dans les tableaux p. 4/50 et suivantes. Les déclencheurs à maximum de courant électroniques ne subissent pas de variations de performances lorsque la température varie, mais, en cas de températures supérieures à +40 °C, on doit réduire le réglage maximal pour la protection contre les surcharges L, comme indiqué sur le graphique de déclassement p. 4/37 et suivantes, afin de tenir compte des phénomènes d'échauffement qui se produisent dans les parties en cuivre du disjoncteur traversées par le courant de phase.
Pour des températures supérieures à +70 °C, le maintien des performances du disjoncteur n'est pas garanti.
Pour assurer la continuité de fonctionnement des installations, il faut étudier avec attention comment maintenir la température à des niveaux acceptables pour le fonctionnement des divers dispositifs et pas seulement des disjoncteurs; on pourra par exemple avoir recours à la ventilation forcée dans les tableaux et dans le local où ces derniers sont installés.

Altitude

Jusqu'à 2000 m d'altitude, les disjoncteurs Tmax ne subissent aucune altération des performances assignées.
Lorsque l'altitude augmente, les propriétés de l'atmosphère se modifient en termes de composition, de rigidité diélectrique, de pouvoir réfrigérant et de pression. Les performances des disjoncteurs subissent par conséquent un déclassement, qui peut être mesuré essentiellement par le biais de la variation de paramètres significatifs tels que la tension assignée maximale de fonctionnement et le courant assigné ininterrompu.

Altitude	**[m]**	**2000**	**3000**	**4000**	**5000**
Tension assignée de service, Ue	[V~]	690	600	500	440
Courant ininterrompu assigné	%	100	98	93	90

Caractéristiques de construction

Caractéristiques distinctives de la série

1SDC210023F0001

Compatibilité électromagnétique

Grâce à l'emploi des déclencheurs électroniques et des blocs différentiels, le fonctionnement des protections est garanti en présence de perturbations provoquées par des appareils électroniques ou des décharges de nature électrique ou encore en présence de perturbations atmosphériques. Vice versa, aucune perturbation n'est engendrée pour les autres appareils électroniques se trouvant à proximité du lieu d'installation. Cela conformément aux normes IEC 60947-2 Annexe B + Annexe F et à la Directive Européenne N° 89/336, relatives à la compatibilité électromagnétique CEM.

1SDC210025F0001

Tropicalisation

Disjoncteurs et accessoires de la série Tmax ont été testés conformément à la norme IEC 60068-2-30, en effectuant 2 cycles à 55°C en modalité "variante 1" (clause 6.3.3). L'aptitude à l'emploi de la série Tmax est donc assurée dans les conditions ambiantes les plus difficiles en climat chaud-humide, définies par le climatogramme 8 des Normes IEC 60721-2-1 grâce à:

- des boîtiers isolants en résines synthétiques renforcées par fibres de verre;
- un traitement anti-corrosion sur les principales parties métalliques;
- un zincage Fe/Zn (UNI ISO 2081), protège par une couche de conversion sans chrome hexavalent (en conformité avec la Norme ROHS) avec la même résistance corrosive garantie par la Norme ISO 4520 classe 2c;
- l'application d'une protection anti-condensation pour les déclencheurs à maximum de courant électroniques et leurs accessoires.

Résistance aux chocs et aux vibrations

Les disjoncteurs sont insensibles aux vibrations générées mécaniquement et par effet électromagnétique, conformément aux Normes IEC 60068-2-6 et aux règlements des organismes de classification les plus importants[1]:

– RINA
– Det Norske Veritas
– Bureau Veritas
– Lloyd's register of shipping
– Germanischer Lloyd
– ABS
– Russian Maritime Register of Shipping.

Les disjoncteurs Tmax T1-T5 ont été de plus testés selon la Norme IEC 60068-2-27 afin de résister à des chocs jusqu'à 12 g pendant 11 ms.
Pour des performances supérieures en termes de résistance aux chocs, demander à ABB.

[1] Demander à ABB pour les certifications relatives à Tmax T7.

Versions et réalisations

Tous les disjoncteurs de la série Tmax sont disponibles en version fixe; les modèles T2, T3, T4 et T5 le sont dans la version débrochable sur socle et T4, T5, T6(1) et T7 dans la version débrochable sur chariot aussi.
Tous les disjoncteurs peuvent être manœuvrés soit manuellement, à l'aide du levier de commande ou de la poignée rotative (directe ou renvoyée), soit électriquement. Différentes solutions sont disponibles:

- Commande électrique pour T1, T2 et T3
- Commande par moteur à accumulation d'énergie pour T4, T5 et T6
- T7 avec commande à accumulation d'énergie, commande électrique pour le réarmement automatique des ressorts de fermeture et bobines d'ouverture et de fermeture à émission.

Installation

Les disjoncteurs Tmax peuvent être installés dans les tableaux, directement montés sur une plaque de fond ou sur des profilés, dans n'importe quelle position (horizontale, verticale ou sur le côté) sans subir aucun déclassement de leurs caractéristiques assignées. Les disjoncteurs Tmax peuvent être facilement installés dans tous les types de tableaux électriques grâce, surtout, à leur possibilité d'être alimentés indifféremment par les prises amonts ou avals, sans que cela nuise au fonctionnement de l'appareil(2).
Outre la fixation sur une plaque de fond, les T1, T2 et T3 peuvent aussi être installés sur rail DIN50022 grâce aux platines de fixation prévues à cet effet. De plus la profondeur de 70 mm place le Tmax T3 sur le même standard que les deux premiers modèles, ce qui simplifie le montage des disjoncteurs jusqu'à 250 A dans des tableaux standard. Il est en effet possible de préparer des supports standardisées, qui facilitent la phase de conception et de réalisation des tableaux de distribution.

(1) Non disponible sur la version en 1000 A.
(2) Pour emplois à la tension de 1000 V, les T4V250 et T5V400 en version fixe et les T4L250 et T5L400 en version débrochable doivent être alimentés par le haut.

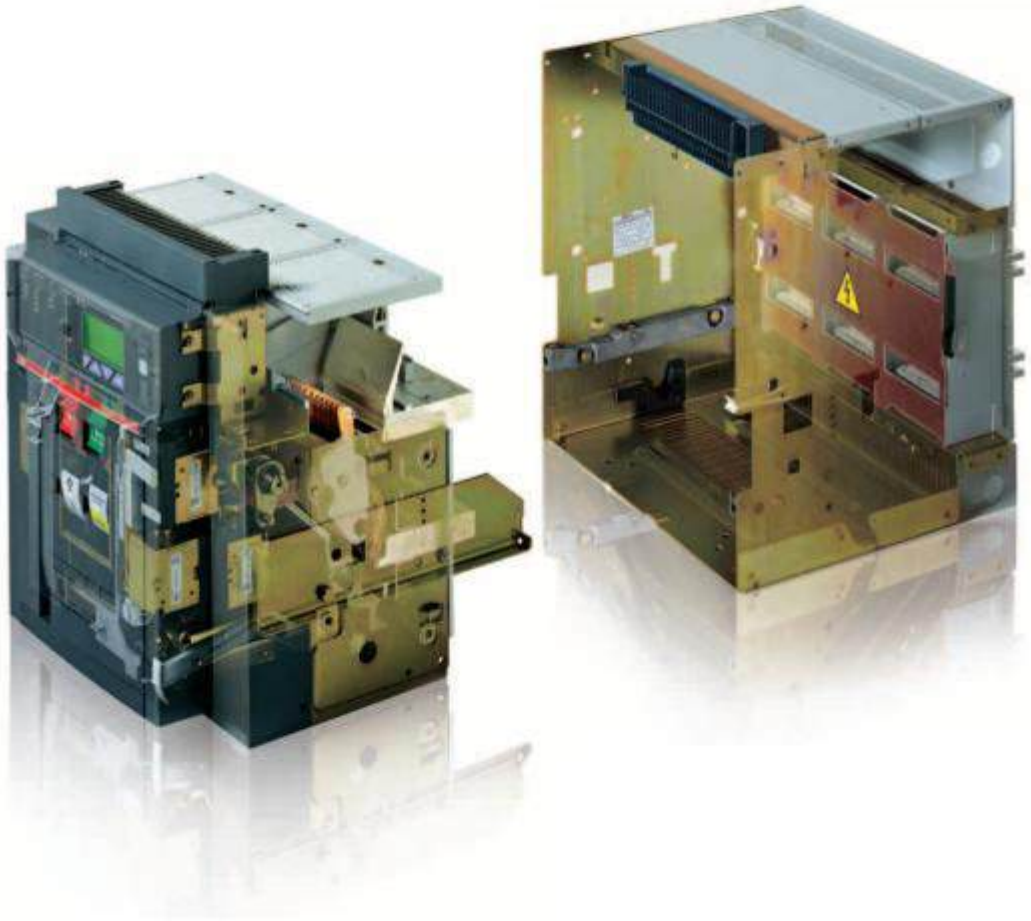
This is an incredibly innovative high quality circuit-breakers range, designed to satisfy all application requirements. The innovation of the new Emax is really outstanding from all points of view: completely re-engineered releases fitted with latest generation electronics, improved performances with the same dimensions and new applications to fulfil the latest market needs. The new electronics open a window on a world of extraordinary solutions, with connectivity options never before seen in the market. Discover the great advantages of ABB SACE's new Emax. The evolution has been going on since 1942.

New Emax
Lively performances

Continuing the tradition of ABB SACE, the new Emax range offers performances at the top of its category. The Emax range offers you a great advantage: with the increased performances, you can use the smaller circuit-breaker frames, obtaining considerable savings both in economic terms and in physical space within the switchgear.

Emax E1 now offers current ratings up to 1600A, whilst Emax E3 is enhanced by version V with top of the range performances. Always aware of the rapid changes in the market, ABB SACE has made some specific versions to cover new applications and simplify retrofitting operations.

With the new standardised system of accessories studied and made for the new Emax, work becomes easier, convenient, safe and rapid. Furthermore, ABB SACE puts a highly specialised and rapid customer assistance service at your disposal.
The new Emax give you that pleasant feeling of security which only such a reliable product is able to do.



FORMULA UL Molded Case Circuit Breakers
A1 & A2 Frames

A1 Frames

General

ABB's FORMULA molded case circuit breaker line offers simplicity and quality in some of the smallest dimensions available. The FORMULA A1 breaker frame size ranges in amperes from 15 through 100 with protection trip units that have fixed thermal and magnetic threshold values. The frame is available in a fixed version with front terminals.

Standards
UL 489 & IEC 60947-2
Dimensions (w x d x h):
1 pole: 1.00" x 2.36" x 5.12"
2 pole: 2.00" x 2.36" x 5.12"
3 pole: 3.00" x 2.36" x 5.12"
Weight:
1 pole: 0.54 lbs
2 pole: 1.04 lbs
3 pole: 1.54 lbs
Available Accessories:
Shunt opening release (2p & 3p)
Undervoltage release (2p & 3p)
Auxiliary contacts (2p & 3p)
Termination kits (1p, 2p & 3p)
Padlocks (1p, 2p & 3p)
Direct and extended rotary handles (3p)

A1 100A - Fixed (F) 1 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (18kA)
15	400	A1A015TW-1	A1N015TW-1
20	400	A1A020TW-1	A1N020TW-1
25	400	A1A025TW-1	A1N025TW-1
30	400	A1A030TW-1	A1N030TW-1
40	400	A1A040TW-1	A1N040TW-1
50	500	A1A050TW-1	A1N050TW-1
60	600	A1A060TW-1	A1N060TW-1
70	700	A1A070TW-1	A1N070TW-1
80	800	A1A080TW-1	A1N080TW-1
90	900	A1A090TW-1	A1N090TW-1
100	1000	A1A100TW-1	A1N100TW-1

A1 100A - Fixed (F) 2 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (25kA)
15	400	A1A015TW-2	A1N015TW-2
20	400	A1A020TW-2	A1N020TW-2
25	400	A1A025TW-2	A1N025TW-2
30	400	A1A030TW-2	A1N030TW-2
40	400	A1A040TW-2	A1N040TW-2
50	500	A1A050TW-2	A1N050TW-2
60	600	A1A060TW-2	A1N060TW-2
70	700	A1A070TW-2	A1N070TW-2
80	800	A1A080TW-2	A1N080TW-2
90	900	A1A090TW-2	A1N090TW-2
100	1000	A1A100TW-2	A1N100TW-2

A1 100A - Fixed (F) 3 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (25kA)
15	300	A1A015TW	A1N015TW
20	300	A1A020TW	A1N020TW
25	300	A1A025TW	A1N025TW
30	300	A1A030TW	A1N030TW
40	400	A1A040TW	A1N040TW
50	500	A1A050TW	A1N050TW
60	600	A1A060TW	A1N060TW
70	700	A1A070TW	A1N070TW
80	800	A1A080TW	A1N080TW
90	900	A1A090TW	A1N090TW
100	1000	A1A100TW	A1N100TW

Power and productivity for a better world™

A2 Frames

General

ABB's FORMULA molded case circuit breaker line offers simplicity and quality in some of the smallest dimensions available. The FORMULA A2 breaker frame size ranges in amperes from 125 through 250 with protection trip units that have fixed thermal and magnetic threshold values. The frame is available in a fixed version with front terminals.

Standards
UL 489 & IEC 60947-2
Dimensions (w x d x h):
1 pole: 1.38" x 2.36" x 5.91"
2 pole: 2.76" x 2.36" x 5.91"
3 pole: 4.13" x 2.36" x 5.91"
Weight:
1 pole: 0.82 lbs
2 pole: 1.61 lbs
3 pole: 2.43 lbs
Available Accessories:
Shunt opening release (2p & 3p)
Undervoltage release (2p & 3p)
Auxiliary contacts (2p & 3p)
Termination kits (1p, 2p & 3p)
Padlocks (1p, 2p & 3p)
Direct and extended rotary handles (3p)

A2 250A - Fixed (F) 1 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (14kA)
125	1250	A2A125TW-1	A2N125TW-1
150	1500	A2A150TW-1	A2N150TW-1
175	1750	A2A175TW-1	A2N175TW-1
200	2000	A2A200TW-1	A2N200TW-1
225	2250	A2A225TW-1	A2N225TW-1
250	2500	A2A250TW-1	A2N250TW-1

A2 250A - Fixed (F) 2 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (25kA)
125	1250	A2A125TW-2	A2N125TW-2
150	1500	A2A150TW-2	A2N150TW-2
175	1750	A2A175TW-2	A2N175TW-2
200	2000	A2A200TW-2	A2N200TW-2
225	2250	A2A225TW-2	A2N225TW-2
250	2500	A2A250TW-2	A2N250TW-2

A2 250A - Fixed (F) 3 pole - Front terminals (F)
Thermomagnetic trip unit - TMF Icu (240 V)

Rating A	Magnetic trip A	Catalog number A (10kA)	Catalog number N (25kA)
125	1250	A2A125TW	A2N125TW
150	1500	A2A150TW	A2N150TW
175	1750	A2A175TW	A2N175TW
200	2000	A2A200TW	A2N200TW
225	2250	A2A225TW	A2N225TW
250	2500	A2A250TW	A2N250TW

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MCB S 200 MT, S 200 MT UC and S 200 P. The details make the difference

A range designed for rolling stock equipments

Twin terminal for separate feeding of busbar and conductor.

IP20 - finger safety.

Easy product name, easy identification, easy life.

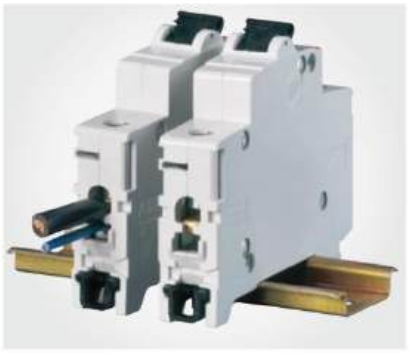
Captive screws: don't loose what's important for you.

Wide range of accessories are available for rolling stock and rail infrastructure applications

Dedicated materials for rolling stock
In the S200 range of MCBs for traction, specific materials are used that are classified with an hazard level R26/HL3 according to EN 45545-2.

Shock and vibration resistance
Additionally to the high quality standards and the flammability requirements, rail applications have specific demands that have to be to fulfilled like resistance to shocks and vibrations. The resistance to vibrations and shocks of MCBs S 200 has been positively tested according to:
IEC 61373 Rolling stock equipment – Shock and vibration tests considering Category 1, Class A and Class B.

Open to all sides
All devices can be supplied from top or bottom either with cables or busbars. Can be mounted flexibly in all positions.



High-quality terminal system
The integrated captive terminals and cable connection screws facilitate every electrician's life. ABB guarantees highest safety standards. The certification according to EN 41140 stands for protection against electric shock. And the certification according to the DIN EN 50 274 stands for terminals that are safe from touch by the back of the hand and the finger (IPXXB or IP20). The high safety standards become clear through the integrated and failsafe cable connecting terminals.

Contact position indication
All System pro *M* compact® MCBs are suited with a contact position indication (CPI) on the toggle. You can easily identify if the MCB is in the ON or the OFF position – easy and safe maintenance work is possible.

Advanced features
Auxiliary switches S2C-H10 (1 NO) and S2C-H01 (1 NC) and all S2C accessories can be retrofitted. They can be mounted individually and without modification of the existing busbar. At the same time, the supply of the MCB remains unaffected.

MCBs

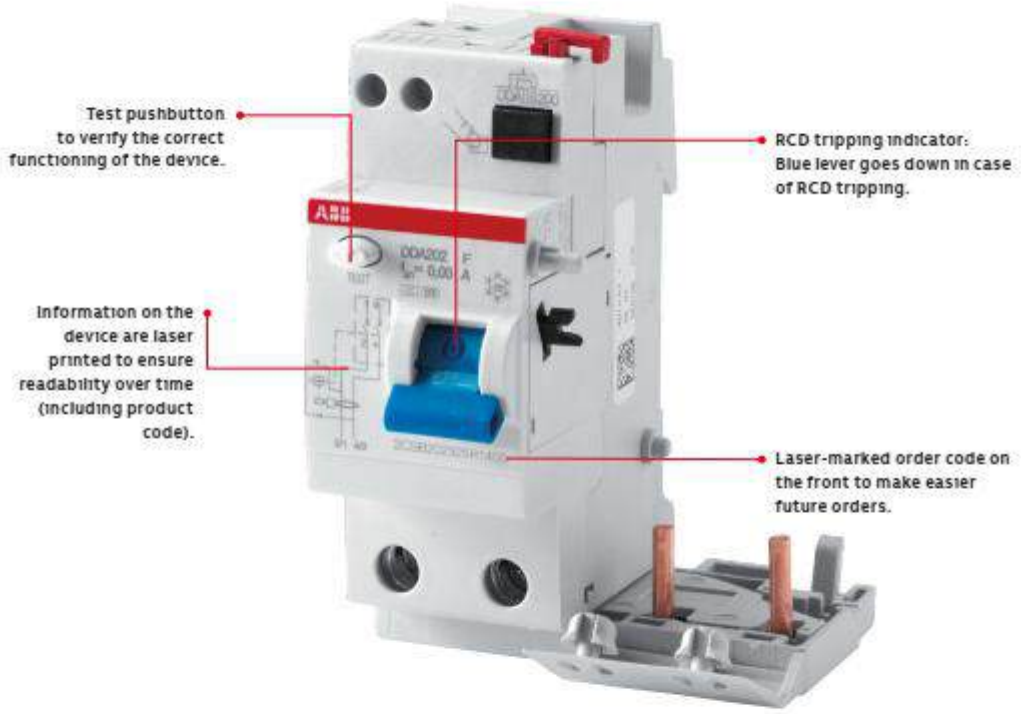
S 200 MT series technical features

S 201 MT

			S200 MT
Standards	Product Standard		IEC/EN 60898-1, IEC/EN 60947-2
	Hazard level acc. to EN 45545-2		R26/HL3
	Resistance to shocks and vibrations acc. to IEC 61373		Category 1 - Class A/B - body mounted
	GOST 9219-88 approval		Yes
General data	Poles		1P, 2P, 3P, 4P, 1P+N, 3P+N
	Tripping characteristics		B, C, D, K, Z
	Rated current In	A	0.5...63 A
	Rated frequency f	Hz	50/60 Hz
	Rated insulation voltage Ui acc. to IEC/EN 60664-1	V	250 V AC (phase to ground), 440 V AC (phase to phase)
	Overvoltage category		III
	Pollution degree		3
Data acc. to IEC/EN 60898-1	Rated operational voltage Un	V	1P: 230/400 V AC; 1P+N: 230 V AC; 2...4P: 400 V AC; 3P+N: 400 V AC
	Max. power frequency recovery voltage (Umax)	V	1P: 253 V AC; 1P+N: 253 V AC; 2...4P: 440 V AC; 3P+N: 440 V AC
			1P: 66 V DC; 2P: 125 V DC
	Min. operating voltage	V	12 V AC - 12 V DC
	Rated short-circuit capacity Icn	kA	10 kA
	Energy limiting class (B, C up to 40 A)		3
	Rated impulse withstand voltage Uimp. (1.2/50µs)	kV	4 kV (test voltage 6,2 kV at sea level; 5 kV at 2.000 m)
	Dielectric test voltage	kV	2 kV (50/60 Hz, 1 min)
	Reference temperature for tripping characteristics	°C	B, C, D: 30 °C
	Electrical endurance	ops.	In < 32A: 20.000 ops (AC); In ≥ 32A: 10.000 ops. (AC); 1.000 ops (DC)
			1 cycle (2s - ON, 13s - OFF, In ≤ 32A), 1 cycle (2s - ON, 28s - OFF, In ≥ 32A)
Data acc. to IEC/EN 60947-2	Rated operational voltage Ue	V	1P: 230 V AC; 1P+N: 230 V AC; 2...4P: 400 V AC; 3P+N: 400 V AC
	Max. power frequency recovery voltage (Umax)	V	1P: 253 V AC; 1P+N: 253 V AC; 2...4P: 440 V AC; 3P+N: 440 V AC
			1P: 66 V DC; 2P: 125 V DC
	Min. operating voltage	V	12 V AC - 12 V DC
	Rated ultimate short-circuit breaking capacity Icu	kA	≤ 40 A: 15 kA; 50,63 A: 10 kA
	Rated service short-circuit breaking capacity Ics	kA	≤ 40 A: 11.2 kA; 50,63 A: 7.5 kA
	Rated impulse withstand voltage Uimp. (1.2/50µs)	kV	4 kV (test voltage 6.2 kV at sea level; 5 kV at 2,000 m)
	Dielectric test voltage	kV	2 kV (50/60 Hz, 1 min)
	Reference temperature for tripping characteristics	°C	B, C, D: 55 °C; K, Z: 20 °C
	Electrical endurance	ops.	In < 32A: 20.000 ops (AC); In ≥ 32A: 10.000 ops. (AC); 1.000 ops (DC)
			1 cycle (2s - ON, 13s - OFF, In ≤ 32A), 1 cycle (2s - ON, 28s - OFF, In ≥ 32A)

			S200 MT
Mechanical data	Housing		Insulation group I, RAL 7035
	Toggle		Insulation group II, black, sealable
	Contact position indicator		Marking on toggle (I ON/ 0 OFF)
	Protection degree acc. to EN 60529		IP20 (also fulfilling the req. acc. to the protection degree IPXXB); IP40 in enclosure with cover
	Mechanical endurance	ops.	20,000 ops
	Shock resistance acc. to IEC/EN 60068-2-27		30g - 3 shocks - 11ms
	Vibration resistance acc. to IEC/EN 60068-2-6		5g - 20 cycles at 5...150...5 Hz with load 0,8 In
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	28 cycles with 55°C/90-96% and 25°C/ 95-100%
	Ambient temperature (with daily average ≤ +35 °C)	°C	-25 ... +55°C
	Storage temperature	°C	-40 ... +70°C
Installation	Terminal type		failsafe bi-directional cylinder-lift terminal
	Cross-section of conductors (top/ bottom)	mm^2	25 mm^2/25 mm^2
	Cross-section of busbars	mm^2	10 mm^2/10 mm^2
	Tightening torque	Nm	2.8 Nm
	Screwdriver		No. 2 Pozidriv
	Mounting		On DIN-Rail 35mm acc. to EN 60715 by fast clip
	Mounting position		any
	Supply		optional
Dimensions and weight	Mounting dimensions acc. to DIN 43880		Mounting dimension 1
	Pole dimensions (H x D x W)	mm	88 x 69 x 17.5 mm
	Pole weight	g	approx. 125 g
Combina-tion with auxiliary elements	See table page4/4		

DDA 200
The details make the difference
A range designed to ensure efficiency and protection



DDA200 RCD block mounted with S200 MCB.

DDA200 RCD block | S200 MCB | RCBO

Flexibility
DDA200 is suitable for mounting with S200 extensive range of MCBs, covering applications up to 63A with breaking capacity up to 25kA.

RCD block DDA200 can be used in ambient conditions where the temperature of the surrounding atmosphere has values between -25 °C (snowflake laser printed on the front of the device) and +55 °C.

Possibility to connect a remote test button for 63A versions.

No misuse
Mistakes in assembling the MCB on the DDA200 are avoided thanks to a mechanical key that avoids mounting an MCB with higher rated current than the RCD block.

RCD-blocks

DDA 200 technical features

DDA 200

Standards		
Type (wave form of the earth leakage sensed)		
Rated current I_n		[A]
Number of poles		
Rated operational voltage U_e	2P	[V]
	3P	
	4P	
Rated insulation voltage U_i acc. to IEC/EN 60664-1		[V]
Pollution degree		
Operating voltage of circuit test U_c	2P	[V]
	3P	
	4P	
Rated frequency f		[Hz]
Rated breaking capacity according to	IEC EN 61009	[A]
Rated breaking capacity according to	IEC EN 60947-2	[A]
Rated residual breaking capacity I_{cu}		[kA]
Rated impulse withstand voltage U_{imp} (1.2/50µs)		[kV]
Dielectric test voltage at ind. freq. for 1 min.		[kV]
Surge current resistance (wave 8/20)		[A]
Rated sensitivity $I_{\Delta n}$		[A]
Housing Type		
Toggle Type		
Electrical endurance	cycles (OFF-ON-OFF)	
Mechanical endurance	cycles (OFF-ON-OFF)	
Protection degree	housing	
	terminals	
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		[°C/RH]
Resistance to Shock acc. to IEC 60068-2-27		
Resistance to Vibrations acc. to IEC 60068-2-6		
Ambient temperature (with daily average ≤ +35 °C)		[°C]
Storage temperature		[°C]
Terminal type	2P	
	3P/4P I_n=25 and 40 A	
	3P/4P I_n=63 A	
Cross-section of conductors	2P	[mm²]
	3P/4P I_n=25 and 40 A	[mm²]
	3P/4P I_n=63 A	[mm²]
Tightening torque	2P	[Nm]
	3P/4P I_n=25 and 40 A	[Nm]
	3P/4P I_n=63 A	[Nm]
Wire Stripping Length		
Mounting Type		
Mounting position		
Dimensions	2P	[mm]
H x P x L	3P/4P I_n=25 and 40 A	[mm]
	3P/4P I_n=63 A	[mm]
Weight	2P	[g]
	3P/4P I_n=25 and 40 A	[g]
	3P/4P I_n=63 A	[g]
Combinable with	S 200 L	
	S 200	
	S 200 M	
	S 200 P	

① All RCD-blocks DDA 200 with rated current 63 A are provided with two additional terminals for remote tripping.

② DDA200 A AE is provided with two additional terminals for remote release in positive safety.

A remote control circuit should be connected to those terminals where circuit breakers or push buttons with normally closed contacts should be inserted.

③ DDA 200 dimensions has been established without considering the bottom cover. For further details please refer to dimensions shown on chapter 28.

RCD-blocks
DDA 200 technical features

DDA 200 AC	DDA 200 A	DDA 200 A AP-R	DDA 200 A AE	DDA 200 A S	DDA 200 F	DDA 200 B
IEC/EN 61009-1 Ann. G; IEC/EN 61009-2-1					IEC/EN 61009 App.G, IEC/EN 62423 2nd ed	IEC/EN 61009-1 Ann. G; IEC/EN 61009-2-1, IEC EN 62423
AC	A	A	A	A	F	B
25, 40, 63 ①		25, 40, 63 ①	63 ②	63 ①	40, 63 A1 (to mount with MCB with In = 0,5...63A)	25-40-63
2P, 3P, 4P					2P	2P, 3P, 4P
230 (400 for special execution @400 V)			230	230	230	230
230/400			400	400	-	400
230/400			230/400	230/400	-	230/400
500						
2						
110-254 for special execution @110V; 195-254 (170-254 for 30 mA; 400 for special execution @400 V)			184-264	195-254 (170-254 for 30 mA)	254/170	195-254 (170-254 for 30 mA)
195-440 (300-440 for 30 mA; 110-254 for special execution @110 V)			310-440	195-440 (300-440 for 30 mA)	-	310-440 (300-440 for 30 mA)
195-440 (300-440 for 30 mA; 110-254 for special execution @110 V)			184-264	195-440 (300-440 for 30 mA)	-	195-254 (300-440 for 30 mA)
50/60						
same of the coupled MCB						
same of the coupled MCB						
same of the coupled MCB						
4						
2,5						
NA		3000	NA	5000	3000	3000 (5000 for selective types)
0.01-0.03-0.1-0.3-0.5-1		0.03	0.03-0.3-0.5-1	0.1-0.3-0.5-1	-	0.03 - 0.3 - 0.5
RAL 7035						
RAL 7035						
10000						
20000						
IP40						
IP20						
28 cycles with 55°C/90-96% and 25°C/95-100%						
25g - 2 shocks - 13ms						
0.1 mm or 1 g - 20 cycles at 5...150...5 Hz						
-25...+55						
-40...+70						
bi-directional cylinder-lift					Top: failsafe bi-directional cylinder-lift terminal (shock protected) Bottom: failsafe cylinder-lift terminal (shock protected)	bi-directional cylinder-lift
cage type					-	-
bi-directional cylinder-lift					-	bi-directional cylinder-lift
(rigid or flexible) up to 25						
(rigid or flexible) up to 16					-	-
(rigid or flexible) up to 25					-	(rigid or flexible) up to 25
2.8						
1.2					-	-
2.8					-	2.8
12,5 mm (10,2 mm for the additional terminals for remote tripping, only for In=63A)						
on DIN rail EN 60715 (35mm) by means of fast clip device						
Any						
85 x 69 x 35					85 x 69 x 70	85 x 69 x 70
85 x 69 x 35					-	85 x 69 x 70
85 x 69 x 70					-	85 x 69 x 70
175					180	350
175					-	375
325					-	395
yes					-	yes
yes					-	yes
yes					-	yes
yes					-	yes

RCBO DS201

Compact solutions for a complete protection

Easy to install
Bi-directional cylindrical terminal ensure higher safety of connecting operations, making them easier.

Test pushbutton
Test pushbutton to verify the correct functioning of the device.

Earth fault indicator
Blue flag on the toggle to identify earth fault trips. I ON – 0 OFF indication molded on the toggle.

Contact position indicator (CPI)
To indicate the status of the contacts independently from the toggle position: green (open), red (closed).

Anti counterfeiting
DS201 is equipped with a tag RFid in order to authenticate the product.

Laser printed information
Information on the device are laser printed to ensure readability over time.

Combination with accessories
Improved combination with System pro M compact® accessories, including also the auxiliary contact for bottom fitting and motor operating device.

Dedicated space for label
Dedicated space to insert labels in order to clearly identify the protected lines.

Easy installation
The terminals available on DS201 make easier the supply operation in parallel with cables and busbars as they are composed by two different seats: a front seat for 25 mm² cables and a back seat for 10 mm² busbars. Supply is possible either from top or bottom side.

Mounting clip
Stable fixing on DIN rail, easy and fast mounting and dismounting operations thanks to the standard mounting clip.

Display the operational status
Easy troubleshooting and reduced downtime for maintenance operations thanks to both the blue indicator, that signals the differential tripping to immediately identify any earth fault (it cannot be activated in case of manual operation on the toggle) and the contact position indicator (CPI) that helps to always know the status of the contacts (red: closed contacts; green: open contacts).

Reliable in extreme conditions
RCBO DS201 can be used in ambient conditions where the temperature of the surrounding atmosphere has values between -25 °C (snowflake laser printed on the front of the device) and +55°C.

Additional laser printing
Additional information are laser printed on the lateral side of the device, including also the wiring diagram and the EAN code respectively for an easier installation and for an easier stock management.

RCBOs

DS201 technical features


				DS201 L	DS201
	Standards			IEC/EN 61009-1; IEC/EN 61009-2-1	IEC/EN 61009-1; IEC/EN 61009-2-1
Electrical features	Type (wave form of the earth leakage sensed)			A - AC - APR	A - AC - APR
	Number of poles			1P + N	1P + N
	Rated current In		A	6 ≤ In ≤ 32	1 ≤ In ≤ 40
	Rated sensitivity IΔn		A	0.01 - 0.03 - 0.3	0.01 - 0.03 - 0.1 - 0.3
	Rated operational voltage Ue		V	230-240	230-240
	Rated insulation voltage Ui acc. to IEC/EN 60664-1		V	500 V AC	500 V AC
	Overvoltage category			III	III
	Pollution degree			2	2
	Operating voltage of circuit test Ut		V	110 (170 for 30mA) - 264	110 (170 for 30mA) - 264
	Rated frequency f		Hz	50/60	50/60
	Rated short circuit breaking capacity acc. to IEC/EN 61009-1	Icn	A	4500	6000
	Grid distance		mm	35	35
	Rated short circuit breking capacity acc. to IEC/EN 60947-2 (only referring to internal short circuit test)	ultimate Icu	kA	6	10
		service Ics	kA	4.5	7.5
	Rated residual breaking capacity IΔm according to EN 61009-1	IΔm	A	4500	6000
	Rated residual breaking capacity IΔm according to IEC 61009-1	IΔm	A	4500	6000 up to 25 A; 4500 for 32A and 40A
	Rated impulse withstand voltage Uimp. (1.2/50µs)		kV	4 kV	4 kV
	Dielectric test voltage at ind. freq. for 1 min.		kV	2.5 kV (50 / 60Hz, 1 min.)	2.5 kV (50 / 60Hz, 1 min.)
	Tripping characteristic	B: 3 In ≤ In ≤ 5 In			■
		C: 5 In ≤ In ≤ 10 In		■	■
		K: 10 In ≤ In ≤ 14 In			■
	Energy limiting class acc. to EN 61009-1			3	3
	Surge current resistance (wave 8/20)		A	NA for A, AC versions; 3000 for APR version	NA for A, AC versions; 3000 for APR version
Mechanical features	Housing Type			Insulation group I - II, RAL 7035	Insulation group I - II, RAL 7035
	Toggle Type			Insulation group II, Black RAL 9005, sealable in ON-OFF positions	Insulation group II, Black RAL 9005, sealable in ON-OFF positions
	Contact position indication			Green/Red Window	Green/Red Window
	Earth fault trip indication			Blue flag on toggle	Blue flag on toggle
	Electrical Endurance	cycles (OFF-ON-OFF)		10000	10000
	Mechanical Endurance	cycles (OFF-ON-OFF)		20000	20000
	Protection degree acc. to EN 60529	housing		IP40	IP40
		terminals		IP20	IP20
	Resistance to Shock acc. to IEC 60068-2-27			25g - 2 shocks - 13ms	25g - 2 shocks - 13ms
	Resistance to Vibrations acc. to IEC 60068-2-6			0.1 mm or 1 g - 20 cycles at 5...150...5 Hz	0.1 mm or 1 g - 20 cycles at 5...150...5 Hz
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		°C/RH	28 cycles with 55°C/90-96% and 25°C/95-100%	28 cycles with 55°C/90-96% and 25°C/95-100%
	Reference temperature for tripping characteristics		°C	30	30 (20 for K tripping char)
	Ambient temperature (with daily average ≤ +35 °C)		°C	-25...+55	-25...+55
	Storage temperature		°C	-40...+70	-40...+70

RCBOs

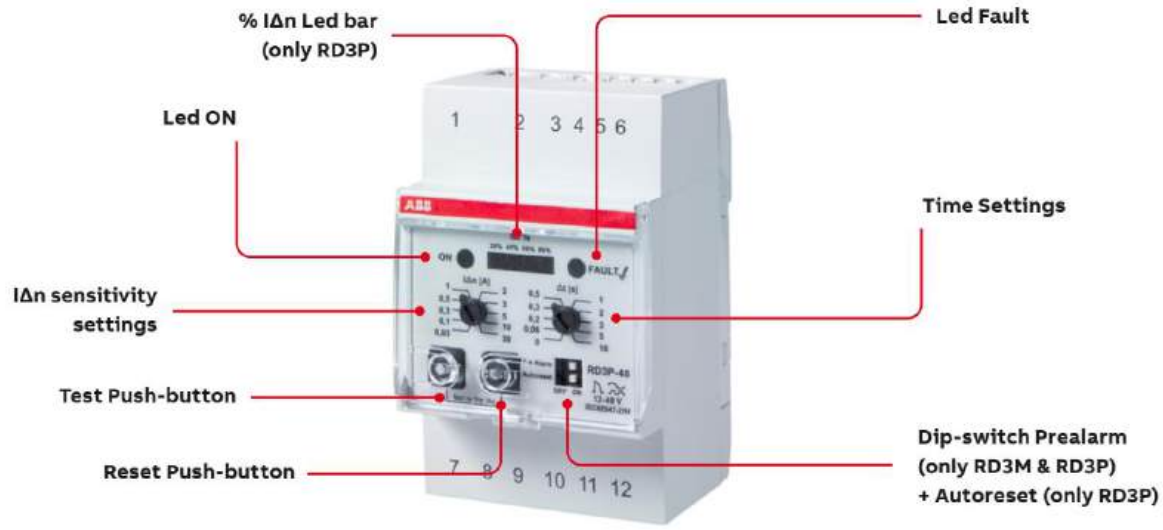
DS201 technical features

		
DS201 M	**DS201 M 110V**	**DS201 T**
IEC/EN 61009-1; IEC/EN 61009-2-1	IEC 61009-1; IEC 61009-2-1	IEC/EN 61009-1; IEC/EN 61009-2-1
A - AC - APR - F	A	A - APR
1P + N	1P + N	1P + N
4 ≤ In ≤ 40	6 ≤ In ≤ 40	6 ≤ In ≤ 40
0.01 - 0.03 - 0.1 - 0.3	0.03	0.03
230-240	230-240	230-240
500 V AC	500 V AC	500 V AC
III	III	III
2	2	2
110 (170 for 30mA) - 264	110 - 264	170 - 264
50/60	50/60	50/60
10000	10000	6000
35	35	35
15	15	10
11.2	11.2	7.5
6000	6000	6000
6000 up to 25 A; 4500 for 32A and 40A	6000 up to 25 A; 4500 for 32A and 40A	6000 up to 25 A; 4500 for 32A and 40A
4 kV	4 kV	4 kV
2.5 kV (50 / 60Hz, 1 min.)	2.5 kV (50 / 60Hz, 1 min.)	2.5 kV (50 / 60Hz, 1 min.)
■	■	
■	■	■
■		
3	NA	3
NA for A, AC versions; 3000 for APR and F version	NA	NA for A; 3000 for APR version
Insulation group I - II, RAL 7035	Insulation group I - II, RAL 7035	Insulation group I - II, RAL 7035
Insulation group II, Black RAL 9005, sealable in ON-OFF positions	Insulation group II, Black RAL 9005, sealable in ON-OFF positions	Insulation group II, Black RAL 9005, sealable in ON-OFF positions
Green/Red Window	Green/Red Window	Green/Red Window
Blue flag on toggle	Blue flag on toggle	Blue flag on toggle
10000	10000	10000
20000	20000	20000
IP40	IP40	IP40
IP20	IP20	IP20
25g - 2 shocks - 13ms	25g - 2 shocks - 13ms	25g - 2 shocks - 13ms
0.1 mm or 1 g - 20 cycles at 5...150...5 Hz	0.1 mm or 1 g - 20 cycles at 5...150...5 Hz	0.1 mm or 1 g - 20 cycles at 5...150...5 Hz
28 cycles with 55°C/90-96% and 25°C/95-100%	28 cycles with 55°C/90-96% and 25°C/95-100%	28 cycles with 55°C/90-96% and 25°C/95-100%
30 (20 for K tripping char)	30	30
-25...+55	-25...+55	-25...+55
-40...+70	-40...+70	-40...+70

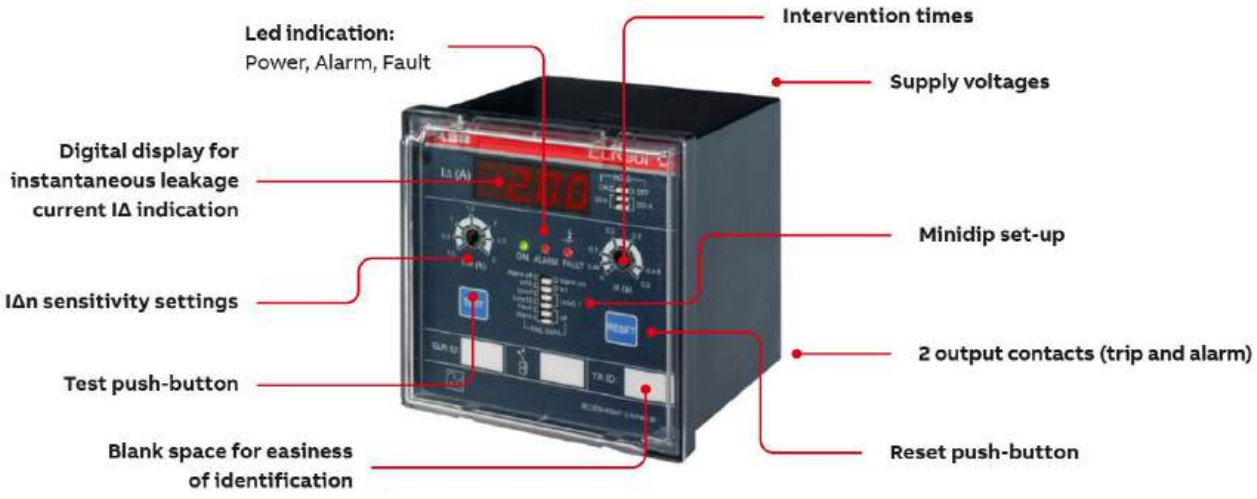
Residual Current Relays

Monitoring and protection of the low voltage distribution network

RD Series



ELR Series



Toroidal Transformers

A wide range of toroids to be used in combination with ELR/RD series.

Residual current relays

RD3

RD3

RD3M

RD3P

Technical features	RD3/RD3-48	RD3M/RD3M-48	RD3P/RD3P-48
Operating voltage	RD3: 230-400 Vac +10% / -15%	RD3M: 230-400 Vac +10% / -15%	RD3P: 230-400 Vac +10% / -15%
	RD3-48: 12-48 Vac/ Vdc +10% / -15%	RD3M-48: 12-48 Vac/ Vdc +10% / -15%	RD3P-48: 12-48 Vac/ Vdc +10% / -15%
Auxiliary supply frequency	50-60 Hz		
Frequency filter	-	Yes	Yes
Type	A (up to IΔn=5 A) AC (for higher current)		
Operating temperature	-25....+70 °C		
Power consumption	<3.6 W (RD3, RD3M, RD3P), <600 mW RD3-48, RD3M-48, RD3P-48)		
Sensitivity settings IΔn	0.03-0.1-0.3-0.5-1-2-3-5-10-30 A		
Tripping time settings Δt	0-0.06-0.2-0.3-0.5-1-2-3-5-10 s		
Pre-alarm threshold	-	60%	60%
Max. resistance connection between toroidal transformer and relay	3 Ω		
Max. length connection of remote reset button	15 m		
Output Contact capacity (7-8-9); (10-11-12)	8 A, 250 V a.c.		
Led bar indicator	-	-	Yes
Max. cable terminals section	2.5 mm²		
Modules	3		
Dimensions	52.8 × 85 × 64.7 mm		
Protection degree	IP20		
Standards	IEC/EN 60947-2 annex. M		

RD3 residual current relays

The RD3 family of electronic residual current relays provides residual current protection and monitoring functions according to IEC/EN 60947-2:2006 annex M when used in conjunction with external toroids belonging to TR family, all S 200 miniature circuit breakers and Tmax/XT range moulded case devices up to T5/XT4, for industrial installations. The RD3 residual current relays can provide status indications through two output contacts.

Operating voltage	Bbn 8012542	Order details		Price 1 piece	Weight 1 piece	Pack unit
[V]	EAN	Type code	Order code		[kg]	pc.
12-48 a.c./d.c.	748236	RD3-48	2CSJ201001R0001		0.13	1
230-400 a.c.	734833	RD3	2CSJ201001R0002		0.25	1
12-48 a.c./d.c.	733935	RD3M-48	2CSJ202001R0001		0.13	1
230-400 a.c.	747031	RD3M	2CSJ202001R0002		0.25	1
12-48 a.c./d.c.	734734	RD3P-48	2CSJ203001R0001		0.13	1
230-400 a.c.	733836	RD3P	2CSJ203001R0002		0.25	1

Toroidal transformers

TR

TR

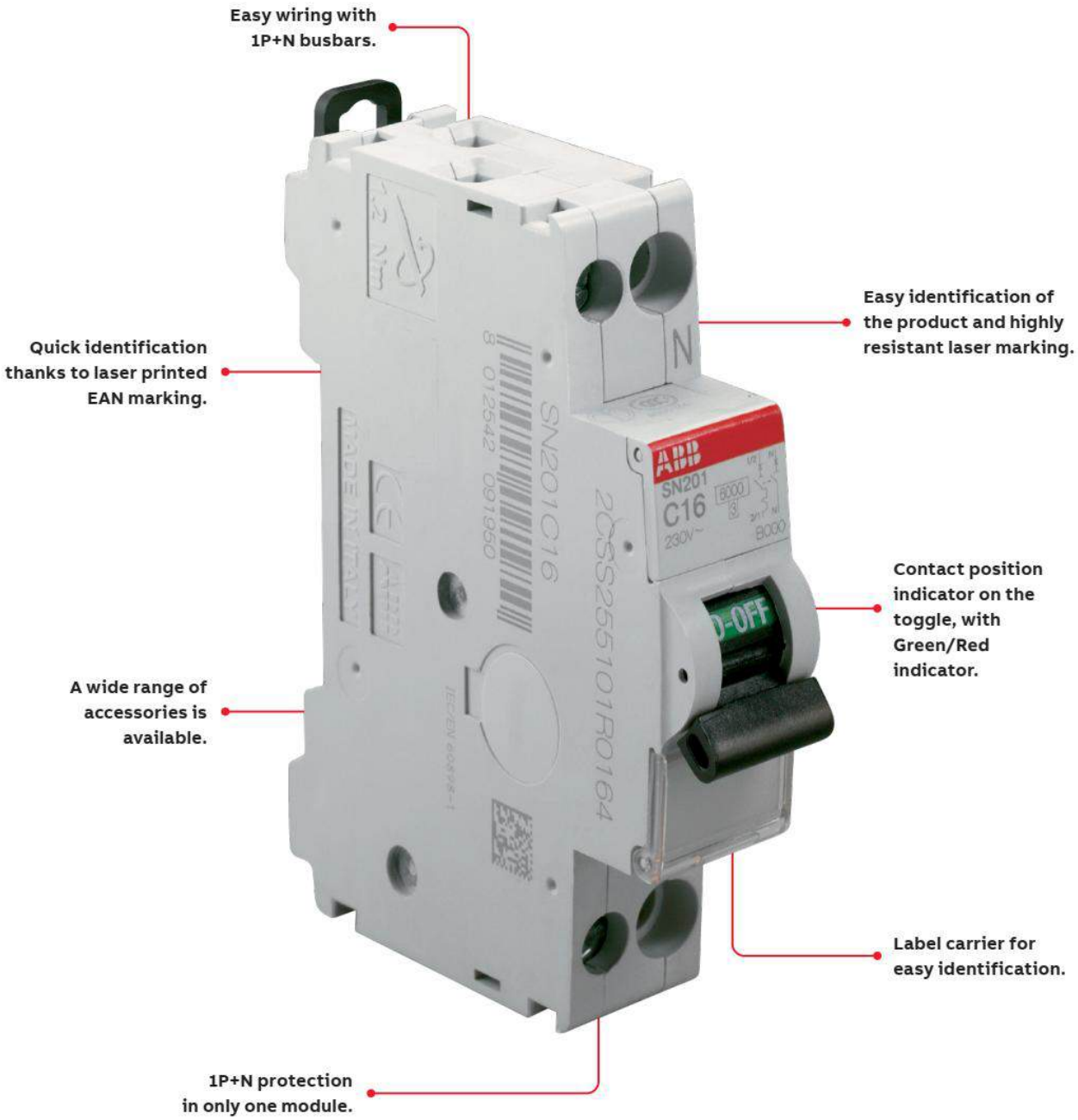
Toroidal transformers

Technical features		TRM	TR1	TR2	TR3	TR4	TR4A	TR160	TR160A	TR5	TR5A	TR6	TR6A
Core		closed	closed	closed	closed	closed	open	closed	open	closed	open	closed	open
Available internal diameter	[mm]	29	35	60	80	110	110	160	160	210	210	300	300
Weight	[kg]	0.17	0.22	0.28	0.45	0.52	0.6	1.35	1.6	1.45	1.85	2.1	2.3
Minimum measurable current	[mA]	30	30	30	100	100	300	300	500	300	500	500	1000
Installation position		Any											
Operating temperature	[°C]	-10...+70											
Storage temperature	[°C]	-20...+80											
Transformation ratio		500/1											
Dielectric test voltage at industrial freq. for 1 min.	[kV]	2.5											
Max. insulating voltage	[V a.c.]	1000											
Max. thermal overload	[kA]	40/1 sec.											
Connections		Screw terminal boards, max. section 2.5 mm²											
Protection degree		IP20											

Dimension Ø	Bbn 8012542	Order details		Price 1 piece	Weight 1 piece	Pack unit
[mm]	EAN	Type code	Order code		[kg]	pc.
29 (modular version)	020707	TRM	2CSM029000R1211		0.170	1
35	020301	TR1	2CSG035100R1211		0.212	1
60	020400	TR2	2CSG060100R1211		0.274	1
80	020509	TR3	2CSG080100R1211		0.454	1
110	020608	TR4	2CSG110100R1211		0.530	1
110 (openable version)	743408	TR4/A	2CSG110200R1211		0.600	1
160	743507	TR160	2CSG160100R1211		1.350	1
160 (openable version)	743606	TR160A	2CSG160200R1211		1.600	1
210	024804	TR5	2CSG210100R1211		1.534	1
210 (openable version)	065708	TR5/A	2CSG210200R1211		1.856	1
300	185413	TR6	2CSG300100R1211		2.100	1
300 (openable version)	180715	TR6/A	2CSG300200R1211		2.300	1

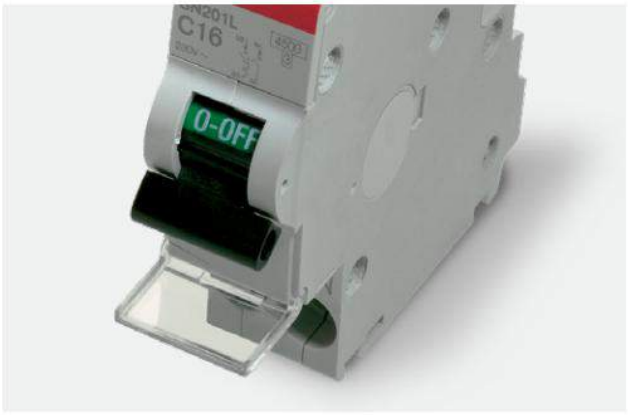
MCB SN 201. The details make the difference

A range designed to ensure efficiency and protection



Space for insulated screwdrivers: the larger neutral hole allows the use of an insulated screwdriver to tighten the screws of both wire terminals, ensuring maximum safety of the operation.

Two bistable fixing devices for maximum ease of use: due to larger size of the DIN rail fixing system, made with 2 bistable fixing devices, the same screwdriver used for tightening the terminals can also be used for assembling and disassembling the device.



With the practical label carrier fitted in the SN201 circuit-breakers you can give maximum visibility to the information relating to the protected loads.

The SN201 fully integrates with the range of System pro M compact® miniature circuit-breakers, sharing the wide selection of accessories available through a dedicated interface (half module), which also can be used as auxiliary contact.

Miniature circuit-breakers

SN 201 series - 1P+N in one module housing

SN 201

General Data	Standards	
	Number of poles	
	Tripping characteristics	
	Rated current I_n	A
	Rated frequency f	Hz
	Rated insulation voltage U_i acc. to IEC/EN 60664-1	V
	Overvoltage category	
	Pollution degree	
Data acc. to IEC/EN 60898-1	Rated operational voltage U_e	V
	Max. power frequency recovery voltage (U_{max})	V
	Min. operating voltage	V
	Rated short-circuit capacity I_{cn}	kA
	Rated making and breaking capacity of one individual pole I_{cn1}	kA
	Energy limiting class (B, C characteritics)	
	Grid distance	mm
	Rated impulse withstand voltage $U_{imp.}$ (1.2/50µs)	kV
	Dielectric test voltage (at ind. freq. for 1 min.)	kV
	Reference temperature for tripping characteristics	°C
	Electrical endurance	cycles (OFF-ON-OFF)
Data acc. to IEC/EN 60947-2 (Only referring to internal short circuit test)	Rated ultimate short-circuit breaking capacity I_{cu}	kA
	Rated service short-circuit breaking capacity I_{cs}	kA
Mechanical Data	Housing type	
	Toggle type	
	Contact position indication	
	Protection degree acc. to EN 60529	
	Mechanical endurance	cycles (OFF-ON-OFF)
	Resistance to Shock acc. to IEC 60068-2-27	
	Resistance to Vibrations acc. to IEC 60068-2-6	
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH
	Ambient temperature (with daily average ≤ +35°C)	°C
	Storage temperature	°C
Installation	Terminal type (top/bottom)	
	Cross-section of conductors (top/bottom) Stranded / Solid	mm^2
	Cross-section of conductors (top/bottom) Flexible	mm^2
	Wire Stripping Length	mm
	Tightening torque	Nm
	Screwdriver	
	Mounting type	
	Mounting Position	
	Supply from	
Dimensions and weight	Pole dimensions (H x D x W)	mm
	Pole weight	g
Combination with aux. elements	Auxiliary contact	
	Auxiliary/Signal contact	
	Shunt trip	
	Undervoltage release	

*1 SN201 and SN201M series in B and D characteristic are available for rated current In ≥ 6 A

Miniature circuit-breakers

SN 201 series - 1P+N in one module housing

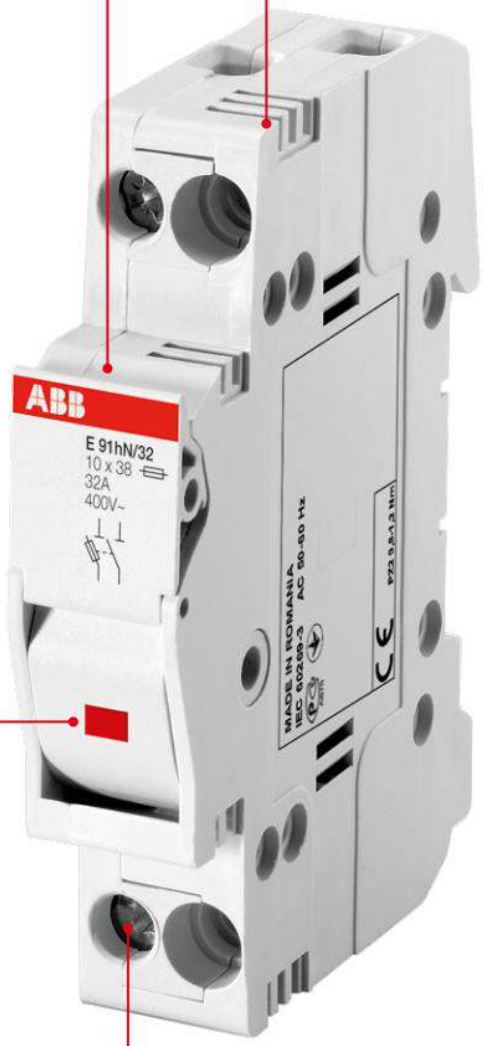
SN 201 L	SN 201	SN 201 M
IEC/EN 60898-1		
1P + N		
B, C	B, C, D	B, C
2...40 A *1		
50 / 60 Hz		
500 V AC		
III		
2		
230 V AC		
254 V AC		
12 V AC		
4.5 kA	6 kA	10 kA
4.5 kA	6 kA	6 kA
3		
35		
4 kV (test voltage 6,2kV at sea level, 5kV at 2000m)		
2 kV (50 / 60Hz)		
30°C		
10.000		
6 kA	10 kA	10 kA
4.5 kA	6 kA	7.5 kA
Insulation group II, RAL 7035		
Insulation group IIIA, black, sealable in ON/OFF positions		
Marking on toggle (I ON / 0 OFF)		
Housing: IP4X; Terminals: IP2X		
20000		
30 g - 2 shocks - 13 ms		
0.35mm or 5g - 20 cycles at 5...150...5 Hz without load		
28 cycles with 55°C/90-96% and 25°C/95-100%		
-25 ... +55°C		
-40 ... +70°C		
Fail-safe cage terminal		
16 mm^2 / 16 mm^2		
10 mm^2 / 10 mm^2		
11 mm		
1.2 Nm		
No. 2 Pozidrive		
On DIN rail 35 mm acc. to EN 60715 by fast clip		
any		
Top/Bottom terminals		
85 x 68.9 x 17.6 mm		
115		
Yes		
Yes		
Yes (with coupling interface)		
Yes (with coupling interface)		

E 90. Uncompromising performance

A safe and smart range designed for quick, flexible and error-proof installation

Compactness
The compact dimensions enable to close the switchboard door even when the fuse holder is open, thus ensuring total safety during maintenance.

Reliability
Venting grooves and cooling chambers improve heat dissipation even in multiple-pole configurations.



Completeness
The fuse tripping can be easily displayed, thanks to the special blown fuse indicator light.

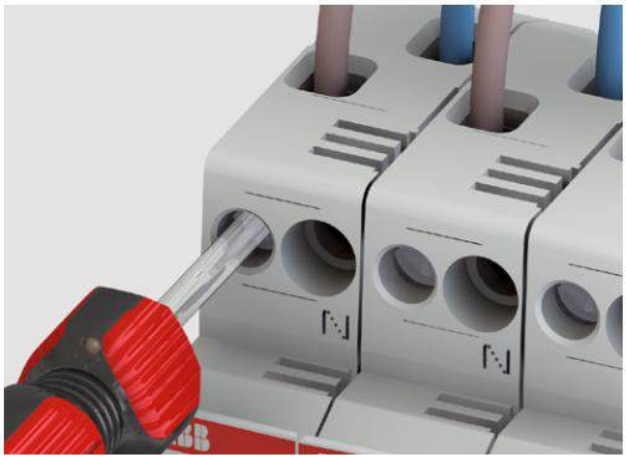
Universal use
Screw holes have increased diameter to accomodate insulated screwdrivers and electric screwdrivers.

E 90. Uncompromising performance

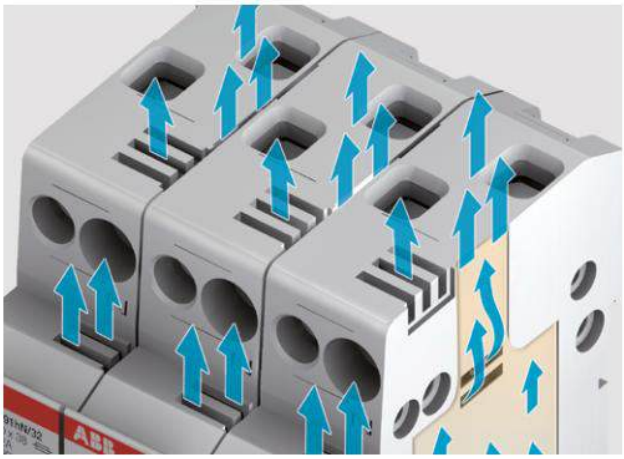
A safe and smart range designed for quick, flexible and error-proof installation

Fuseholder profile has been designed for maximum ease of use: the 90° flip hinge with ergonomic knob, makes the replacement of fuses easier even in small spaces or when wearing protective gloves.

The compact dimensions enable to close the switchboard door even when the fuseholder is open, thus ensuring total safety during maintenance.



With the Prozidriv PZ2 screws tightening can be performed by exerting less torque than conventional screws, and the same electric screwdriver can be used for all terminals. Moreover, the PS connection busbars facilitate the connecting operations, making the wiring both simple and safe and providing complete integration with S 200 and SN 201 System pro M compact® circuit-breakers.



Venting grooves and cooling chambers improve heat dissipation even in multiple-pole configurations.
The reduced operating temperature inside fuseholders ensures durability and reliability of the devices over time.

Protection and safety

E 90 fuse switch disconnectors

E 90

Technical features

Type			E 90/20	E 90/32
Reference Standard			IEC 60947-3	IEC 60947-3 ; UL 4248-1
Type of current (acc. to IEC)			AC	AC
Type of current (acc. to UL)			-	AC/DC
Rated current		A	20	32
Fuse		[mm]	8.5 x 31.5	10.3 x 38
Max power dissipation accepted		[W]	2.5	
Rated frequency		[Hz]	50-60	
Tightening torque		[Nm]	PZ2 2-2.5*	
Wire strip length		[mm]	12	
Protection degree			IP20	
Rated insulation voltage		[kV]	1	
Short circuit current rating (SCCR)		[kA]	20	
Terminals cross-section		[mm²]	25	
Cross-section rigid copper conductors	1 wire		1.5-25 mm² (16-3 AWG)	
	2 wires		-	5 mm² (10 AWG)
Cross-section stranded copper conductors	1 wire		1.5-25 mm² (16-3 AWG)	
	2 wires		-	2-5 mm² (14-10 AWG)
Operating temperature		[°C]	-5/+40 (1)	
Storage temperature		[°C]	-25/+70 (2)	
Altitude		[m]	2000	
Degree of relative humidity at temperature °C			max. 90% with temp. +20 °C 50% with max. temp. +40 °C	
Voltage range for LED indicator light			24-1000 AC/DC (only s version)	
Padlockable (when open)				
Sealable (when closed)			■	■
IEC 60947-3				
Utilization category			AC-22B	AC-22B
Markings		[V]	400	400

(1) for lower temperature verify fuse technical characteristics, for higher temperature refer to derating table in Chapter 5 of Electrical installation solutions for buildings - Technical details
(2) for more than 24h max temperature is +55 °C
** PZ2 2.8 Nm in case of rigid copper conductors, 2 wires

Shock and vibration

Vibration withstand on the 3 main axis:

- Sinusoidal vibration testing according to IEC 60068-2-6: 2 to 13 Hz x = 1 mm peak; 13 to 100 Hz y = 0.7 g peak
- Random vibration testing according to IEC 61373: Category 1 Class B

Shock withstand

- Shock testing according to IEC 60068-2-27 : 15 g/11 ms/18 shocks
- Shock testing according to IEC 61373: Category 1 Class B

Materials

Plastic parts	**Case:**	**Material PA 6 +30% glass fibre**
		Self extinguishing class: V2 (UL94)
		Temperature resistance: 130 °C
	Opening handle	**Material PA 66 +25% glass fibre**
		Self-extinguishing class V0 (UL94)
		Temperature resistance: 140 °C
Metal parts	**Clips**	**Silver plated copper**
	Clip spring	**Stainless steel**
	Terminals	**Galvanized steel**

The E 90 series is environmental friendly and protects the health of people: all used materials are conform to the RoHS and REACH directives and they completely exclude hazardous substances and halogen.

Contacteurs

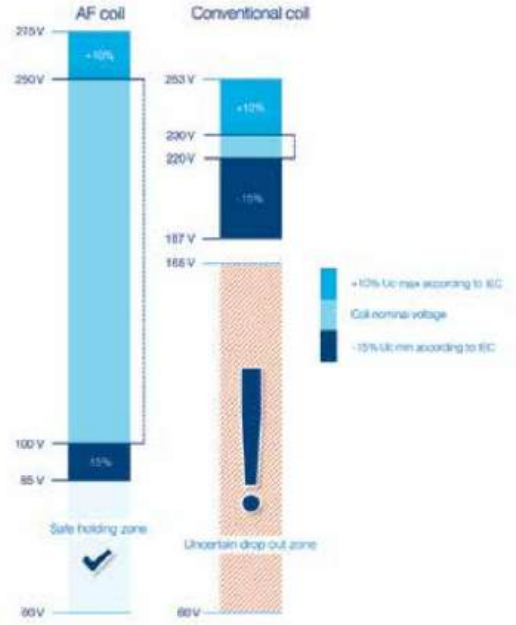
AF technology
Benefits

Reliable in all networks

The electronic system within the AF contactor rectifies the AC or DC control circuit voltage to a DC control voltage that is applied on the coil. The contactor is safely operated in an always optimized condition making it virtually noise free.

Four coils for the entire voltage range

The AF contactor features both AC and DC support. With the complete AF contactor range, functionality is improved. Still, the total number of product variants compared to a conventional range is reduced by 90%. Only four coils are required to cover 24 V AC, 20 V DC - 500 V AC/DC.



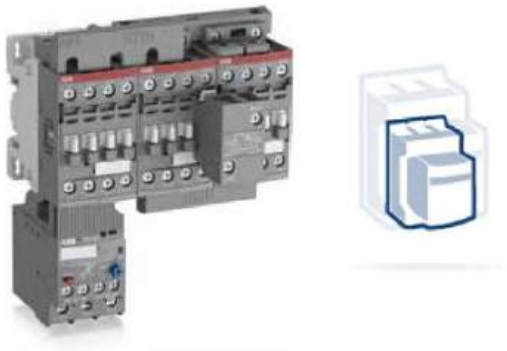
Wide control voltage range

With conventional contactor technology, different contactors were needed for different network voltages. Thanks to the wide operating range of the AF contactor it can operate just as well in Europe as in Asia or North America. The core coil of the AF contactor range covers 100-250 V AC/DC 50/60 Hz.

Built-in surge suppression

With conventional contactor technology it is recommended to use an external surge suppressor, an accessory that could cost as much as half the contactor itself. With the AF technology the surges are handled by the contactor itself and the surge never reaches the control circuit. Neither the surge suppressor nor the actual surge has to be considered anymore. One less product and one less complication to worry about.

Contactors and motor protection
Advanced but simple



The AF contactor is compact

The AF contactor is compact in size and has had its width reduced by up to 30% thanks to an 80% reduction of the coil's energy consumption.

The AF contactor is flexible

AF09...AF370 is perfect for motor starting applications and for solutions where space is limited. Interlocked reversing pairs require no spacing between contactors meaning you can fit more functionality into cabinets or other small enclosures.

Coil terminal access in the front

The AF contactor has its coil terminals accessible from the front. The cables or bars do not have to be disconnected in order to perform voltage measurement or servicing work.

More functionality without adding width

The AF116 ... AF2650 can take up to 2 side mounted auxiliary contact blocks without adding to its width and are delivered with 1 N.O. + 1 N.C. as standard.

Contactors and motor protection
Mechanical features

Front-mounted

Top-mounted

Bottom-mounted

Additional LDC4 coil terminal block

Easy-to-use accessories

Contactors up to 96 A offer free choice of coil terminal access and can take side and front mounted auxiliary contact blocks. All the accessories: Coil connection terminals, mechanical and electrical interlocks and electronic timers are easily connected through the snap-to-connect function.

Safe control circuit with:

- Mirror contact according to IEC 60947-4-1
- Mechanically linked contacts according to IEC 60947-5-1
- Sealable and transparent protective covers on AF09...AF96 and overload relays TF/EF
- Third party certification:
  - AF09...AF96, NF
  - AF400...AF2050

Panorama_Protection_et_commande_de_moteur




IEC (1)	**Puissance assignée AC-3**	θ ≤ 60 °C (2), 400 V	**kW**	**37**	**45**	**55**	**75**	**75**	**90**	**110**	**132**	**160**	**200**
UL/CSA	**Puissance "3-phase motor rating"**	480 V	**hp**	**60**	**60**	**75**	**100**	**100**	**125**	**150**	**200**	**250**	**300**
Circuit de commande AC / DC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
Circuit de commande AC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
Circuit de commande DC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
IEC	**Courant assigné AC-3**	θ ≤ 60 °C (2), 400 V	**A**	**80**	**96**	**116**	**140**	**146**	**190**	**205**	**265**	**305**	**370**
	Courant assigné AC-1	θ ≤ 40 °C, 690 V	**A**	**125**	**130**	**160**	**200**	**225**	**275**	**350**	**400**	**500**	**600**
UL/CSA	**Courant "General Use Rating"**	600 V	**A**	**105**	**115**	**160**	**200**	**200**	**250**	**300**	**350**	**400**	**520**
NEMA	**Taille NEMA**			**3**	–	–	**4**	–	–	–	**5**	–	–

(1) valeurs en 1000 V IEC disponible pour les contacteurs AF146 ... AF2650
(2) θ ≤ 55 °C pour les mini-contacteurs et les contacteurs AF400 ... AF2650.

Accessoires

Blocs de contacts auxiliaires	Montage frontal				
	Montage latéral	**CAL19-11** (1 x NO + 1 x NF)			
Temporisation	Électroniques				
Verrouilages (4)	Mécaniques	**VM19** (entre 2 contacteurs de même taille)			
	Mécaniques et électriques				
Jeux de connexions	Pour contacteurs inverseurs	**BER96-4**	**BER140-4**	**BER205-4**	**BER370-4**
Limiteurs de surtension	Varistance (AC / DC)				
	Type RC (AC)				
	Diode transil (DC)				




IEC (1)	**Puissance assignée AC-3**	θ ≤ 60 °C (2), 400 V	**kW**	**37**	**45**	**55**	**75**	**75**	**90**	**110**	**132**	**160**	**200**
UL/CSA	**Puissance "3-phase motor rating"**	480 V	**hp**	**60**	**60**	**75**	**100**	**100**	**125**	**150**	**200**	**250**	**300**
Circuit de commande AC / DC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
Circuit de commande AC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
Circuit de commande DC			Type	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
IEC	**Courant assigné AC-3**	θ ≤ 60 °C (2), 400 V	**A**	**80**	**96**	**116**	**140**	**146**	**190**	**205**	**265**	**305**	**370**
	Courant assigné AC-1	θ ≤ 40 °C, 690 V	**A**	**125**	**130**	**160**	**200**	**225**	**275**	**350**	**400**	**500**	**600**
UL/CSA	**Courant "General Use Rating"**	600 V	**A**	**105**	**115**	**160**	**200**	**200**	**250**	**300**	**350**	**400**	**520**
NEMA	**Taille NEMA**			**3**	–	–	**4**	–	–	–	**5**	–	–

(1) valeurs en 1000 V IEC disponible pour les contacteurs AF146 ... AF2650
(2) θ ≤ 55 °C pour les mini-contacteurs et les contacteurs AF400 ... AF2650.

Accessoires

Blocs de contacts auxiliaires	Montage frontal				
	Montage latéral	**CAL19-11** (1 x NO + 1 x NF)			
Temporisation	Électroniques				
Verrouilages (4)	Mécaniques	**VM19** (entre 2 contacteurs de même taille)			
	Mécaniques et électriques				
Jeux de connexions	Pour contacteurs inverseurs	**BER96-4**	**BER140-4**	**BER205-4**	**BER370-4**
Limiteurs de surtension	Varistance (AC / DC)				
	Type RC (AC)				
	Diode transil (DC)				



IEC (1)	Puissance assignée AC-3	θ ≤ 60 °C (2), 400 V	kW	200	250	315	400	–	475	560	–	–
UL/CSA	Puissance "3-phase motor rating"	480 V	hp	350	400	500	600	–	800	900	–	–
Circuit de commande AC / DC			Type	AF400	AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
Circuit de commande AC			Type	AF400	AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
Circuit de commande DC			Type	AF400	AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
IEC	Courant assigné AC-3	θ ≤ 60 °C (2), 400 V	A	400	460	580	750	–	860	1050	–	–
	Courant assigné AC-1	θ ≤ 40 °C, 690 V	A	600	700	800	1050	1260	1350	1650	2050	2650
UL/CSA	Courant "General Use Rating"	600 V	A	550	650	750	900	1210	1350	1650	2100	2700
NEMA	Taille NEMA			–	6	–	7	–	–	8	–	–

(1) valeurs en 1000 V IEC disponible pour les contacteurs AF146 ... AF265(
(2) θ ≤ 55 °C pour les mini-contacteurs et les contacteurs AF400 ... AF265(

Accessoires

Blocs de contacts auxiliaires	Montage frontal				
	Montage latéral	**CAL18-11** (1 x NO + 1 x NF)			
Temporisation	Électroniques				
Verrouillages (4)	Mécaniques	**VM750H** **VM750V**			**VM1650H**
	Mécaniques et électriques				
Jeux de connexions	Pour contacteurs inverseurs	**BEM460-30**	**BEM750-30**		
Limiteurs de surtension	Varistance (AC / DC)				
	Type RC (AC)				
	Diode transil (DC)				

Protection Moteur

MS and MO manual motor starters

A complete motor protection concept

Fuseless protection saves costs, space and ensures a quick reaction under overload and short-circuit condition by switching off the motor within milliseconds. The full range of motor starters offers protection from 0.1 A to up to 100 A. The new family range has a harmonized range of accessories and offers the same features up to 80 A.

Protection and control

Protect equipment and installations

ABB offers a broad range of manual motor starters, for protection and control in almost every situation including hazardous areas, protecting installations from short-circuits, overloads and phase failures while also controlling the current flow through a simple ON/OFF switch.

Continuous operation

Secure uptime

Fuseless motor protection reduces maintenance costs and downtimes by avoiding fuse replacement after faults. Furthermore, MS132 and MS165 feature a magnetic trip indicator making troubleshooting easier.

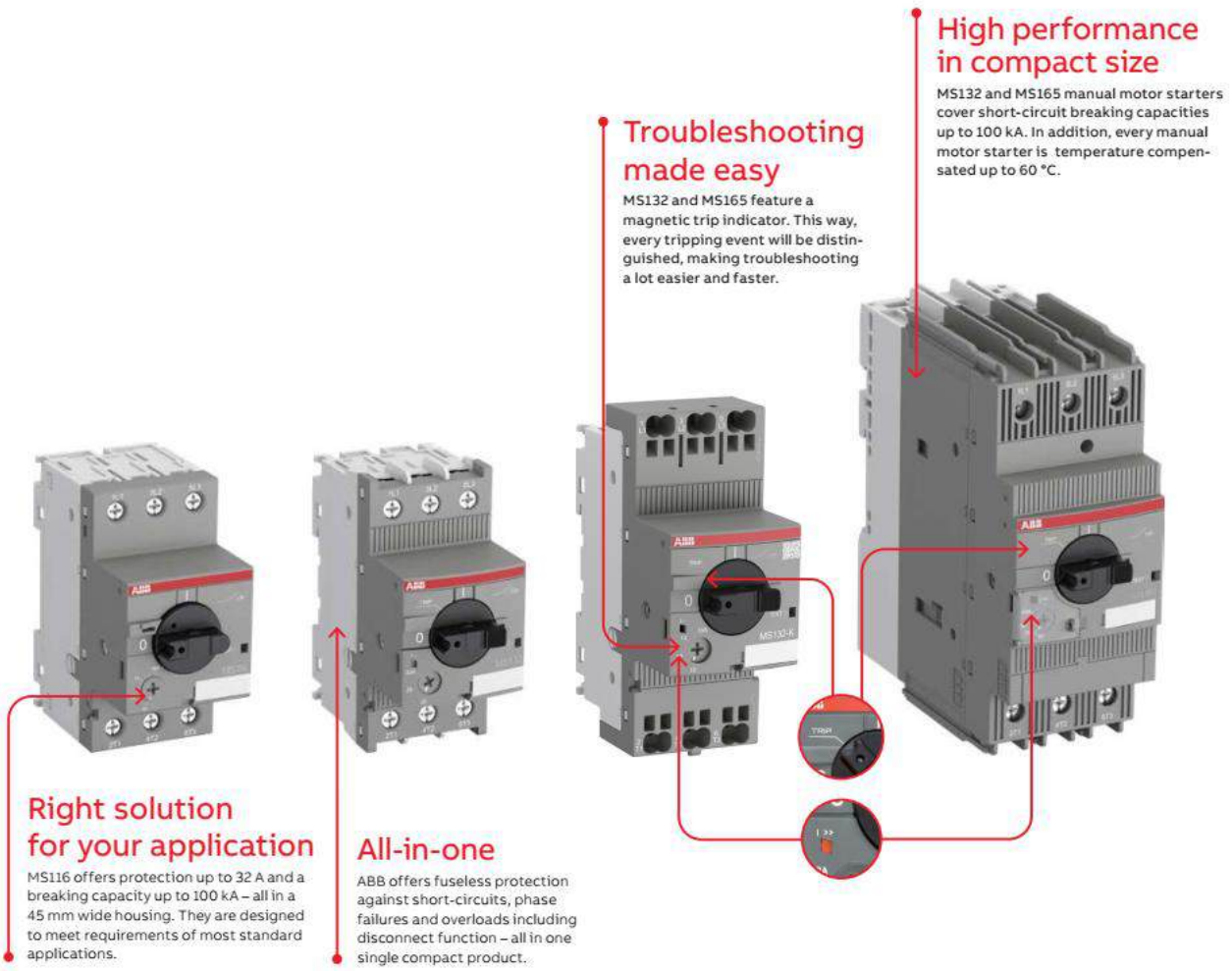
Speed up your projects

Simplified design

Manual motor starters can be connected easily with ABB contactors or soft starters using the respective accessory. Additionally, the main range of accessories is shared across multiple starters (both with screw and Push-in Spring terminals available), making logistics and planning simpler.

MS and MO manual motor starters

A complete motor protection concept



High performance in compact size

MS132 and MS165 manual motor starters cover short-circuit breaking capacities up to 100 kA. In addition, every manual motor starter is temperature compensated up to 60 °C.

Troubleshooting made easy

MS132 and MS165 feature a magnetic trip indicator. This way, every tripping event will be distinguished, making troubleshooting a lot easier and faster.

Right solution for your application

MS116 offers protection up to 32 A and a breaking capacity up to 100 kA – all in a 45 mm wide housing. They are designed to meet requirements of most standard applications.

All-in-one

ABB offers fuseless protection against short-circuits, phase failures and overloads including disconnect function – all in one single compact product.

Protection wherever you are

Manual motor starters are suitable for worldwide use. The wide range of certifications covers standards like IEC (CB), cULus, CCC, EAC and various ship approvals. MS132 and MS165 also apply to ATEX standards for hazardous areas.

BV France · DNV · LR Gr. Britain · RINa Italy · ABS USA

Ready for IE3 and IE4 motors

MS116/MS132/MO132/MS165/MO165 comply with the latest IE3 and IE4 N/H and NE/HE motors. NE/HE requires utilization category AC-3e.

Just push it

With the new Push-in Spring terminals, one push is all you need for a faster than ever installation, an easier than ever wiring and a reliable as ever connection which eliminates routine re-tightening.

Manual motor starters

Overview

Type	MS116	MS132	MS165
Thermal and electromagnetic protection	Yes	Yes	Yes
Electromagnetic protection	-	-	-
Phase loss sensitivity	Yes	Yes	Yes
Switch position	ON/OFF	ON/OFF/TRIP	ON/OFF/TRIP
Magnetic trip indication	-	Yes	Yes
Lockable handle without accessories	-	Yes	Yes
Disconnecting feature	Yes	Yes	Yes
Width	45 mm	45 mm	55 mm
Rated operational current Ie	0.10 ... 32 A	0.10 ... 32 A	10 ... 80 A
Setting range	0.10 ... 32 A	0.10 ... 32 A	10 ... 80 A
Ambient air temperature	-25 ... +55 °C (1)	-25 ... +60 °C (1)	-25 ... +60 °C (1)

(1) Compensated

Accessories

Auxiliary contact		HKF1, HK1 (2)	
Signaling contact	for tripped alarm	SK1 (2)	
	for short-circuit alarm	-	CK1
Shunt trip		AA1	
Undervoltage release		UA1	

Table for short-circuit ratings for 400 V AC

	Standard range MS116			Performance range MS132, MS165		
Selection parameters						
Rated operational power	**Setting range for thermal release**	**Type**	**Short-circuit breaking capacity**		**Type**	**Short-circuit breaking capacity**	
			Icu	Ics		Icu	Ics
0.03 kW (1)	0.1 ... 0.16 A	MS116-0.16	100 kA	50 kA	MS132-0.16 (2)	100 kA	100 kA
0.06 kW	0.16 ... 0.25 A	MS116-0.25	100 kA	50 kA	MS132-0.25 (2)	100 kA	100 kA
0.09 kW	0.25 ... 0.4 A	MS116-0.4	100 kA	50 kA	MS132-0.4 (2)	100 kA	100 kA
0.18 kW	0.4 ... 0.63 A	MS116-0.63	100 kA	50 kA	MS132-0.63 (2)	100 kA	100 kA
0.25 kW	0.63 ... 1.0 A	MS116-1.0	100 kA	50 kA	MS132-1.0 (2)	100 kA	100 kA
0.55 kW	1.0...1.6 A	MS116-1.6	100 kA	50 kA	MS132-1.6 (2)	100 kA	100 kA
0.75 kW	1.6...2.5 A	MS116-2.5	75 kA	50 kA	MS132-2.5 (2)	100 kA	100 kA
1.5 kW	2.5...4.0 A	MS116-4.0	75 kA	50 kA	MS132-4.0 (2)	100 kA	100 kA
2.2 kW	4.0...6.3 A	MS116-6.3	75 kA	50 kA	MS132-6.3 (2)	100 kA	100 kA
4.0 kW	6.3...10 A	MS116-10	75 kA	50 kA	MS132-10 (2)	100 kA	100 kA
5.5 kW	8...12 A	MS116-12	50 kA	25 kA	MS132-12	100 kA	100 kA
7.5 kW	10...16 A	MS116-16	16 kA	16 kA	MS132-16 (2) / MS165-16	100 kA	100 kA
7.5 kW	14 ... 20 A				MS165-20	100 kA	100 kA
7.5 kW	16...20 A	MS116-20	16 kA	10 kA	MS132-20 (2)	100 kA	100 kA
11 kW	18 ... 25 A				MS165-25	100 kA	100 kA
11 kW	20...25 A	MS116-25	16 kA	10 kA	MS132-25 (2)	50 kA	50 kA
15 kW	25...32 A	MS116-32	16 kA	10 kA	MS132-32 (2)	50 kA	30 kA
15 kW	23 ... 32 A				MS165-32	100 kA	100 kA
22 kW	30 ... 42 A				MS165-42	50 kA	50 kA
22 kW	40 ... 54 A				MS165-54	50 kA	30 kA
30 kW	52 ... 65 A				MS165-65	50 kA	30 kA
37 kW	62 ... 73 A				MS165-73	30 kA	30 kA
45 kW	70 ... 80 A				MS165-80	30 kA	30 kA

(1) 690 V AC
(2) Available with Push-in Spring terminals.

Overload relays

Protection concepts for your individual needs

Thermal and electronic overload relays provide, in combination with contactors, reliable protection against overloads and phase failures for motors. They allow to set up customized motor starting solutions according to individual needs

Easy application and storage

Cut your costs

Overload relays are a perfect fit to ABB's contactors (e.g. AF, mini contactors) and can be directly mounted and connected without further wiring. By combining wide current setting ranges with three trip classes, electronic overload relays allow to reduce the number of variants in stock.

Continuous operation

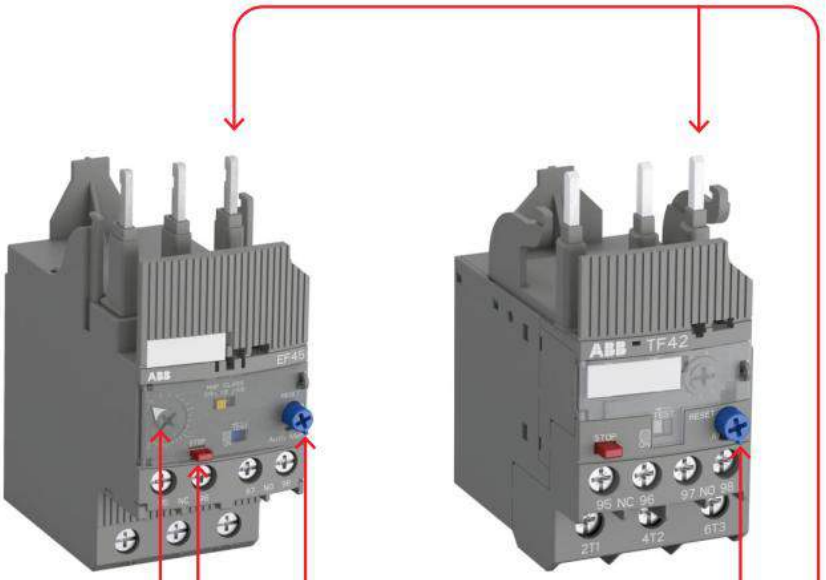
Secure uptime

The selectable automatic reset mode allows to reduce downtimes and travelling costs for installation in dispersed locations. The manual reset mode can be complemented by the DRS-F reset coil that allows a remote control over large distances.

Optimized design

Efficient operation

Electronic overload relays combine a high accuracy with an energy efficient design that does not need extra external supply. Thanks to its overlapping current setting ranges, the usage at the limits of the setting range can be avoided which reduces power heat loss.



Wide current setting range
Electronic overload relays come with an optimized current setting range, that allows to reduce stock keeping.

Trip Class Selection
Electronic overload relays allow to choose between Trip Class 10, 20 or 30.

Manual or automatic reset modes
Selection between both reset modes. Accessories also allow the remote control of the manual mode.

Compatible with ABB Contactors
Easy and faultless combination without further wiring.

Protection wherever you are
Overload relays are suitable for worldwide use. The wide range of certifications covers standards like IEC (CB), cULus, CCC, EAC and various ship approvals. Furthermore they also apply to ATEX standards for hazardous areas.

Wide portfolio
Thermal overload relays cover a current range from 0.1 A to 200 A while electronic overload relays cover an even larger current range from 0.1 A to 1250 A.

Thermal and electronic overload relays

Thermal overload relays



IEC: rated operational power AC-3	400 V	0.06 ... 7.5 kW		0.06 ... 18.5 kW	11 ... 37 kW
UL/CSA: 3-phase hp-ratings	480 V	1/2 ... 10 hp		1/2 ... 25 hp	15 ... 50 hp
Fitting to contactors		B6, B7, MC1, MC2		AF09 ... AF38	AF40, AF52, AF65
Type		**T16**		**TF42**	**TF65**
Current range		0.10 ... 16 A		0.10 ... 38 A	22 ... 67 A
Trip class		10		10	10
Suitable for 1-phase		yes		yes	yes
Single mounting kit		DB16		DB42	DB65

Electronic overload relays
with integrated CT




IEC: rated operational power AC-3	400 V	0.06 ... 7.5 kW	0.06 ... 7.5 kW	4 ... 22 kW	7.5 ... 37 kW
UL/CSA: 3-phase hp-ratings	480 V	1/2 ... 10 hp	1/2 ... 10 hp	5 ... 30 hp	15 ... 50 hp
Fitting to contactors		B6, B7, BC6, BC7, VB6, VB7, VBC6, VBC7	AF09 ... AF38	AF26 ... AF38	AF40, AF52, AF65
Type		**E16DU**	**EF19**	**EF45**	**EF65**
Current range		0.10 ... 18.9 A	0.10 ... 18.9 A	9 ... 45 A	20 ... 70 A
Trip class		10E, 20E, 30E selectable			
Suitable for 1-phase		no	no	no	no
Single mounting kit		DB16E	DB19EF	DB45EF	-

Electronic overload relays
with external separate CT

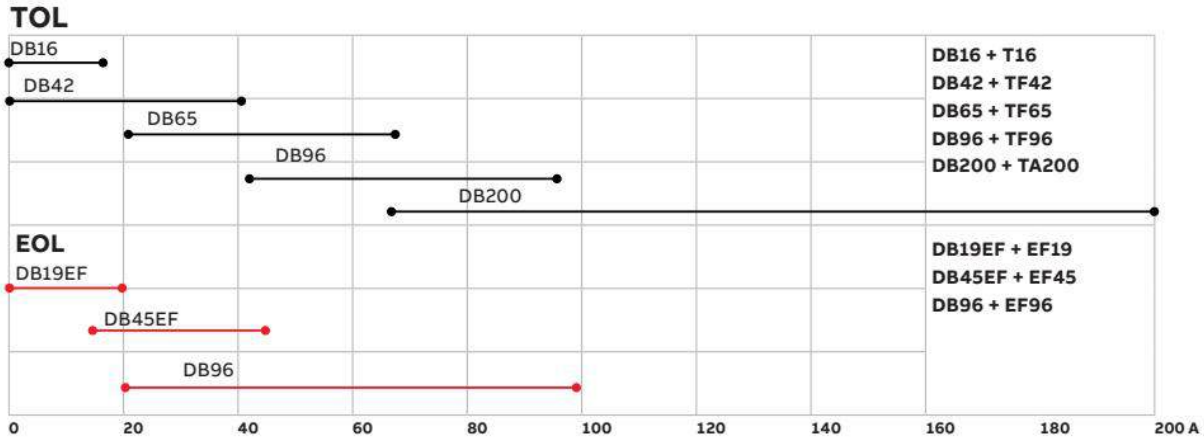


IEC: rated operational power AC-3	400 V	75 ... 250 kW	132 ... 400 kW	250 ... 710 kW
UL/CSA: 3-phase hp-ratings	480 V	100 ... 400 hp	200 ... 500 hp	600 ... 900 hp
Fitting to contactors		AF400, AF460	AF580, AF750, AF1250	AF1350, AF1650, AF2050
Type		**EF460**	**EF750**	**EF1250DU**
Current range		150 ... 500 A	250 ... 800 A	375 ... 1250 A
Trip class		10E, 20E, 30E selectable		

	18.5 ... 45 kW	37 ... 75 kW	37 ... 110 kW
	30 ... 75 hp	50 ... 100 hp	50 ... 150 hp
	AF80, AF96	AF116, AF140, AF146	AF190, AF205
	TF96	**TF140DU**	**TA200DU**
	40 ... 96 A	66 ... 142 A	66 ... 200 A
	10	10A	10A
	yes	yes	yes
	DB96	-	DB200

	22 ... 55 kW	30 ... 75 kW	37 ... 110 kW	75 ... 200 kW
	30 ... 75 hp	50 ... 100 hp	50 ... 150 hp	100 ... 300 hp
	AF80, AF96	AF116, AF140, AF146	AF190, AF205	AF265, AF305, AF370
	EF96	**EF146**	**EF205**	**EF370**
	20 ... 100 A	54 ... 150 A	63 ... 210 A	115 ... 380 A
	10E, 20E, 30E selectable			
	no	no	no	no
	DB96	-	-	-

Single mounting kit overview



Divers

PRODUCT-DETAILS

SQZ3

SQZ3 Phase and sequence relay

Informations générales

Extension du type de produit	SQZ3
Code de produit	2CSM111310R1331
EAN	8012542372004
Description courte	SQZ3 Phase and sequence relay
Description longue	The SQZ3 relay performs the following monitoring functions in three-phase networks at 400 V AC for phase sequence, phase failure and minimum voltage (adjustable, max. 70% of Vn). If one of the three faults is detected, the output relay (safety switching contact) intervenes with one of contact) intervenes with a delay adjustable from 2 to 20 s only at minimum voltage and controls the following controls the following: Audible alarms, motor control contactors, circuit breakers with coils

Technique

Tension nominale (U_r)	400 V AC
Fréquence (f)	50...60 Hz
Fréquence assignée (f)	50-60 Hz
Power Loss	at Rated Operating Conditions per Pole 1.5 W
Number of Modular Spacings per DIN Rail	3
Délai (T)	min. volt. only 2...20 second [unit of time]
Contact Type	Change-Over (CO)

Type d'affichage	LED

Material Compliance

Informations RoHS	9AKK106713A5636
Statut RoHS	Following EU Directive 2011/65/EU
Date RoHS	03/04/2006 0.00.00
REACH Declaration	9AKK108467A9482
Conflict Minerals Reporting Template (CMRT)	9AKK108468A3363

Environnement

Température de l'air ambiant	Operation -10…+55 °C
Indice de protection	IP20
Informations environnementales	See RoHS Information

Dimensions

Produit Largeur Net	0.065 m
Produit Hauteur Net	0.080 m
Produit Longueur Net	0.100 m
Poids net	0.250 kg

Commande

Emballage Niveau 1 Unités	box 1 pièce
Emballage Niveau 1 Poids	0.3 kg

Certificats et Déclarations (Numéro de document)

Déclaration de Conformité - CE	9AKK106713A5636

Installation

Instructions et manuels	No document needed

Downloads Préférés

Fiche produit, informations techniques	9AKK106930A8017

Classifications

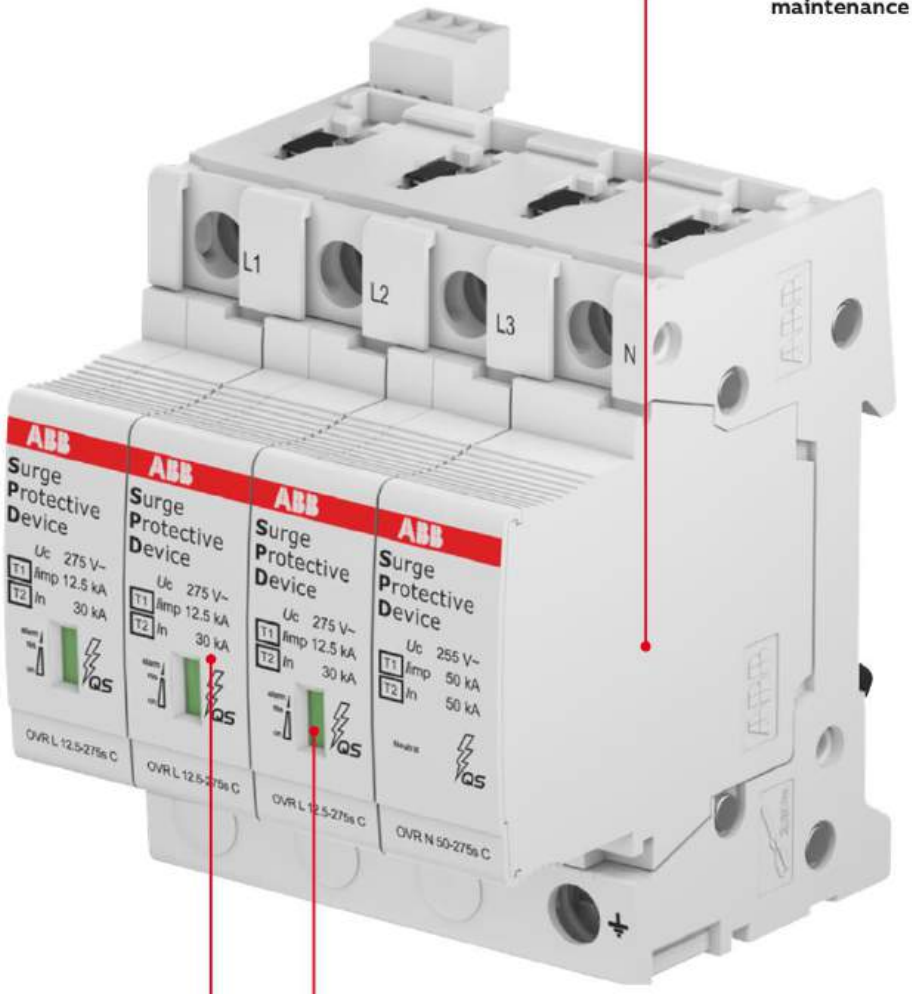
ETIM 8	EC001189 - Phase sequence indicator
ETIM 9	EC001189 - Phase sequence indicator
Catégorie DEEE	5. Small Equipment (No External Dimension More Than 50 cm)
WEEE B2C / B2B	Business To Consumer
CN8	90303100
eClass	V11.0 : 27200310
Code de classification d'objet	K

Catégories

Produits basse tension → Appareillage modulaire et parafoudres → Protection and Safety Devices → Protection Relays

OVR T1-T2, T2 and T2-T3 ranges.
The details make the difference

A complete range for your surge protection



Pluggable cartridge for easy replacement during maintenance operations.

Clear information on the front of the product indicating the technical characteristics of the OVR.

Safety Reserve system with two varistors per line to extend protection lifetime.

OVR T1-T2 12.5, T2 and T2-T3 ranges are using same terminal as Pro M compact devices to guarantee a complete coordination and time saving in wiring operation.

The pluggable feature of ABB **OVR T1-T2, T2 and T2-T3** surge protective devices (SPDs) facilitates maintenance. Should one or more worn cartridges need to be replaced, the wires do not have to be removed.

The end-of-life indicator of the SPD signals the status of the device. A mechanical indicator turns from green to red when the SPD reaches the end of its life, when the end-of-life indicator is fitted.

A safety reserve system for an extended protection. T1-T2s and T2s. These Surge Protective Devices are equipped with two varistors per pole. If one varistor is damaged, the SPD gives advanced warning that it is approaching the end of its life while the other varistor continues to protect the equipment, allowing to perform Preventive Maintenance.

QuickSafe MOV technology, brings seft-protected feature (no back-up needed) up to 125A for OVR T2 and OVR T2-T3, and 160A for OVR T1-T2 12.5 and T2s.

PRODUCT-DETAILS

M1174

M1174 Socket outlet

Informations générales

Extension du type de produit	M1174
Code de produit	2CSM110000R0711
EAN	8012542006602
Description courte	M1174 Socket outlet
Description longue	This modular socket allows the connection of devices, tools or electrical and electronic non modular equipments in civil and industrial electrical switchboards.

Technique

Normes et standards	French Standard
Tension nominale (U_r)	250 V AC
Courant nominal (I_n)	16 A
Fréquence assignée (f)	50/60 Hz
Power Loss	at Rated Operating Conditions per Pole 0.6 W
Model Number	Other
Number of Active Pin Terminals	2

Couple de serrage	1.2 N·m
Options Provided	Safety shutters included
Couleur	Grey
Section de câble	Minimum 2.5 mm² Maximum 16 mm²

Material Compliance

Informations RoHS	9AKK107492A6968
Statut RoHS	Following EU Directive 2011/65/EU
Date RoHS	20170426
REACH Declaration	9AKK108467A9482
Conflict Minerals Reporting Template (CMRT)	9AKK108468A3363

Environnement

Température de l'air ambiant	Operation -25…+35 °C Storage -40…+70 °C
Indice de protection	IP20
Informations environnementales	See RoHS Information

Dimensions

Width in Number of Modular Spacings	2.5
Produit Largeur Net	0.045 m
Produit Hauteur Net	0.085 m
Produit Longueur Net	0.070 m
Poids net	0.120 kg
Profondeur d'encastrement (t_2)	60 mm

Commande

Emballage Niveau 1 Unités	box 1 pièce
Emballage Niveau 1 Poids	0.54 kg
E-Number (Finland)	2519724
E-Number (Sweden)	2100358

Certificats et Déclarations (Numéro de document)

CEBEC Certificate	9AKK108467A1243
Agence de certification	CEBEC

	LCIE
Déclaration de Conformité - CE	9AKK107492A6968

Installation

Instructions et manuels	No document needed

Downloads Préférés

Fiche produit, informations techniques	2CSC400002D0209

Classifications

ETIM 8	EC001663 - Socket outlet for distribution board
ETIM 9	EC001663 - Socket outlet for distribution board
Catégorie DEEE	5. Small Equipment (No External Dimension More Than 50 cm)
WEEE B2C / B2B	Business To Consumer
CN8	85369010
eClass	V11.0 : 27142305
Code de classification d'objet	X

Catégories

Produits basse tension → Appareillage modulaire et parafoudres → Command and Signalling Devices → Prises




PRODUCT-DETAILS

CR-M024AC4

CR-M024AC4 Pluggable interface relay 4c/o, A1 -A2=24VAC, 250V/6A

Informations générales

Extension du type de produit	CR-M024AC4
Code de produit	1SVR405613R0000
EAN	4013614497698
Description courte	CR-M024AC4 Pluggable interface relay 4c/o, A1-A2=24VAC, 250V/6A
Description longue	The CR-M024AC4 pluggable interface relay is from the CR-M (miniature) relay range. This relay operates with a 24 V AC rated control supply voltage and has a 4 c/o (SPDT) output with contacts rated at 250 V / 6 A. The relay has an integrated orange test button for manual actuation and locking of the output contacts. Standard sockets, logic sockets, pluggable function modules, holder and marker are available as accessories.

Commande

Quantité minimum	10 pièce
Code douanier	85364900

Downloads Préférés

Fiche produit, informations techniques	2CDC110004C0210_05
Instructions et manuels	1SVC405600M9000

Dimensions

Produit Largeur Net	21.2 mm
Produit Hauteur Net	35.6 mm
Produit Longueur Net	27.5 mm
Poids net	0.033 kg

Technique

Fonction	Pluggable miniature interface relay CR-M
Sub-Function	Relay w/o built in LED
Output	4 c/o (SPDT) contacts
Output Signal	250 V / 6 A
Rated Control Supply Voltage (U_s)	24 V AC

Environnement

RoHS Status	Following EU Directive 2011/65/EU

Certificats et Déclarations (Numéro de document)

CCC Certificate	CCC_2014010303720193
CQC Certificate	CQC2014010303720193
CSA Certificate	CSA_2735700
cUR Certificate	cUR_E244330
Declaration of Conformity - CCC	2020980303000200
Déclaration de Conformité - CE	1SVD982021-0003
EAC Certificate	EAC_RU_C-DE.ME77.B.00446-19
Environmental Information	1SAA981009-2401
Instructions et manuels	1SVC405600M9000
LR Certificate	LR_05_20002_E5
RMRS Certificate	RMRS_1740019250
RoHS Information	1SVD982021-0003
UR Certificate	UR_E244330
VDE Certificate	VDE_40040327

Emballage

Emballage Niveau 1 Unités	box 10 pièce
Emballage Niveau 1 Largeur	114 mm
Emballage Niveau 1 Hauteur	61 mm
Emballage Niveau 1 Longueur	50 mm

Emballage Niveau 1 Poids	0.35 kg
Emballage Niveau 1 EAN	4013614373497

Classifications

Object Classification Code	K
ETIM 4	EC001437 - Switching relay
ETIM 5	EC001437 - Switching relay
ETIM 6	EC001437 - relais de commutation
ETIM 7	EC001437 - Switching relay
eClass	V11.0 : 27371601
UNSPSC	39122331
E-Number (Finland)	2712653
E-Number (Sweden)	4005350

Catégories

Produits basse tension → Produits de Contrôle, Protection et sécurité machines → Relais électroniques → Relais et optocoupleurs d'interface

PRODUCT-DETAILS

CR-M4SS

CR-M4SS Standard socket for 2c/o or 4c/o CR-M relay

Informations générales

Extension du type de produit	CR-M4SS
Code de produit	1SVR405651R3000
EAN	4013614528675
Description courte	CR-M4SS Standard socket for 2c/o or 4c/o CR-M relay
Description longue	The CR-M4SS socket is from the CR-M (miniature) relay range. The standard socket is suitable for CR-M relays with 2 and 4 c/o (SPDT) output contacts. The socket has screw connection terminals. Pluggable function modules, holder and marker are available as accessories.

Commande

Quantité minimum	10 pièce
Code douanier	85366990

Downloads Préférés

Fiche produit, informations techniques	2CDC110004C0210_05
Instructions et manuels	1SVC405650M9000

Dimensions

Produit Largeur Net	27 mm
Produit Hauteur Net	42.5 mm
Produit Longueur Net	82 mm
Poids net	0.07 kg

Technique

Fonction	Accessory for interface relays CR-M
Sub-Function	Socket for miniature relays
Sub-Function 2	Standard socket for miniature relay 2 c/o or 4 c/o
Output	none
Terminal Type	Screw Terminals

Environnement

RoHS Status	Following EU Directive 2011/65/EU

Certificats et Déclarations (Numéro de document)

CSA Certificate	CSA_262671_2785566
cURus Certificate	cURus508_E244328
Déclaration de Conformité - CE	1SVD982020-0001
EAC Certificate	EAC_RU_C-DE.ME77.B.00446-19
Environmental Information	1SAA981009-2401 1SAC200048H0009
Instructions et manuels	1SVC405650M9000
RoHS Information	1SVD982020-0001

Emballage

Emballage Niveau 1 Unités	box 10 pièce
Emballage Niveau 1 Largeur	141 mm
Emballage Niveau 1 Hauteur	95 mm
Emballage Niveau 1 Longueur	78 mm
Emballage Niveau 1 Poids	0.702 kg
Emballage Niveau 1 EAN	4013614373800

Classifications

Object Classification Code	K
ETIM 4	EC001456 - Relay socket
ETIM 5	EC001456 - Relay socket

ETIM 6	EC001456 - socle de relais
ETIM 7	EC001456 - Relay socket
eClass	V11.0 : 27371603
UNSPSC	39122335
E-Number (Finland)	2712717
E-Number (Sweden)	4005374

Catégories

Produits basse tension → Produits de Contrôle, Protection et sécurité machines → Relais électroniques → Relais et optocoupleurs d'interface

CT PRO XT, CT MAX
Performance and flexibility.

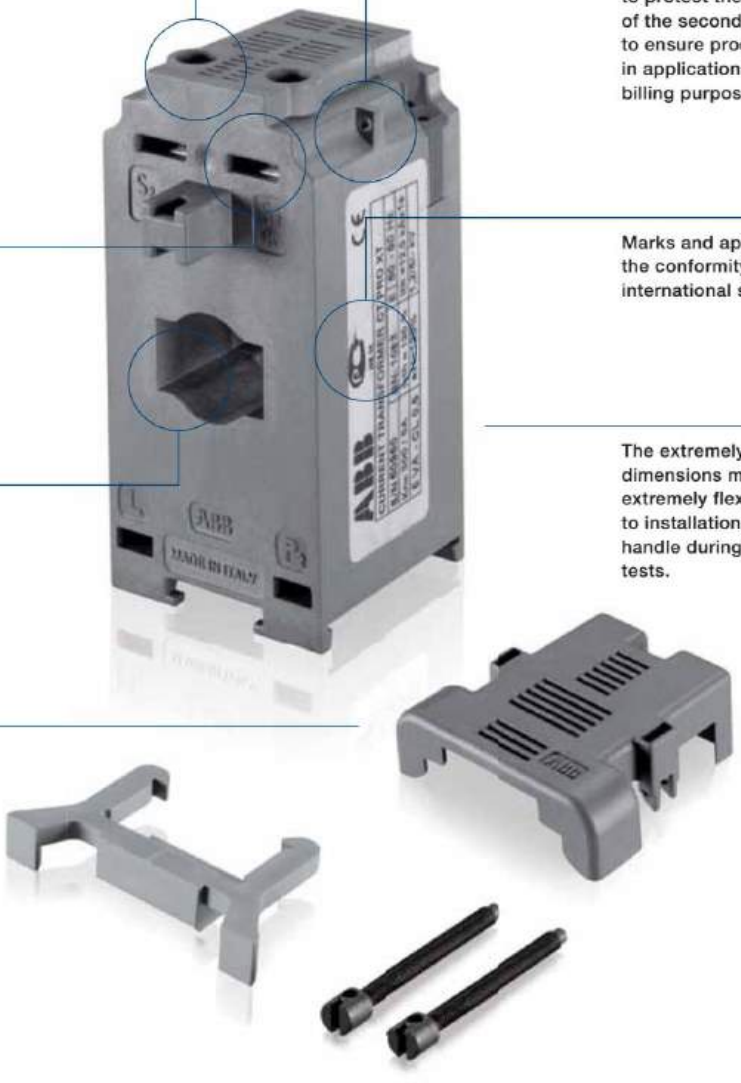
The new CT PRO XT and CT MAX range of current transformers has been specially designed for easy and safe switchboard installation, testing and maintenance operations thanks to the compact size of the products and their flexible assembly system. Moreover, the integrated electronic protection circuit in the CT PRO XT SELV and CT MAX SELV versions guarantees protection against risks deriving from no-load operation of the secondary.

Double method for connecting the secondary winding, thanks to introduction of screwless terminals, an application standard more and more widespread, that facilitates and speeds up the installation and maintenance operations.

Screw terminals for secondary winding usable with forked cable terminals and stripped cables. The assembly instructions are directly indicated on the product.

Through primary dimensions designed to optimize the product installation (considering rated current values and primary conductor dimensions) and to suit any standard applications requirements.

The accessories provided along with the product include a sealable cover for billing applications, and assembly supports allowing the product to be installed in all the more common mounting systems (primary cable, primary busbar, DIN rail and wall-mounting installations).



Sealing points for the cover to protect the terminal board of the secondary circuit and to ensure product compliance in applications for fiscal and billing purposes.

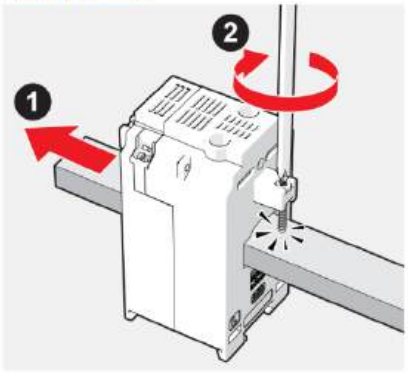
Marks and approvals attesting the conformity to the principal international standards.

The extremely compact dimensions make the product extremely flexible when it comes to installation, and easy to handle during maintenance and tests.

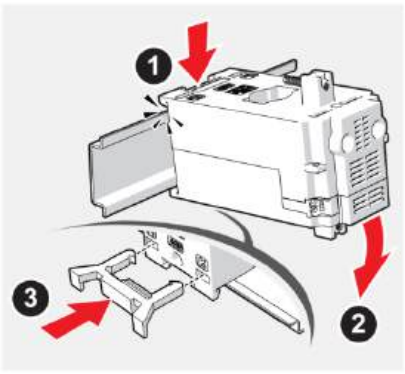
CT PRO XT, CT MAX
Installation sequences.

The accessories supplied with the new CT PRO XT and CT MAX current transformers offer maximum flexibility when it comes to installation and integration in in every type of applications. They make the most out of the available space and guarantee maximum integration within the switchboard.

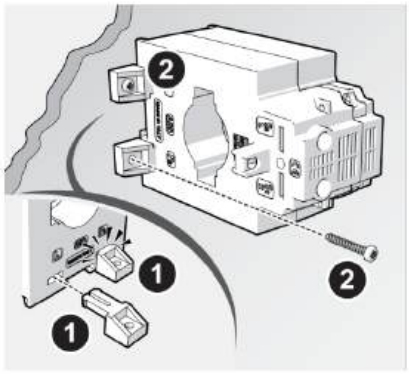
Fixing systems



Installation on cable or primary busbar

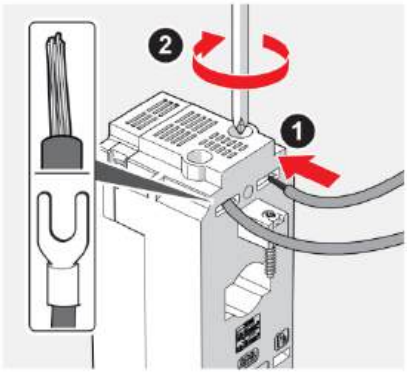


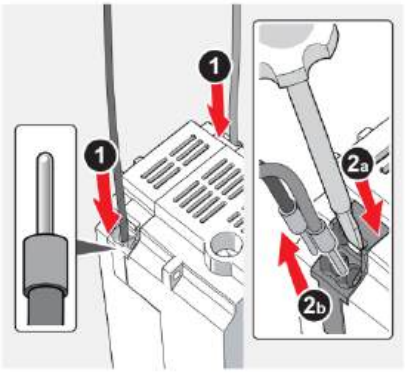
DIN rail installation

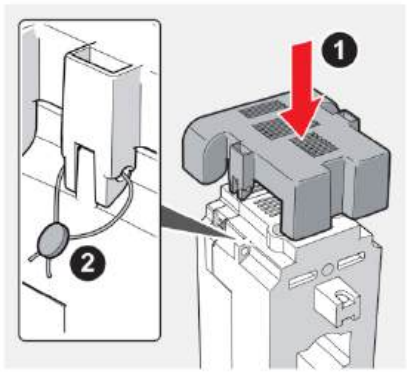


Wall-mounting installation

Wiring method







If the screw secondary terminals of the current transformer are used, the connections must be made using cables with forked cable terminals or stripped cables, in accordance with the instructions directly indicated on the product.

Wiring with screwless terminals requires cables with pin terminals, without the need of any mounting tools.
Once the transformer has been installed, the sealable cover can be fixed with sealing wire.

Assembly TIPS

1) Make sure that the incoming (P1-K) and outgoing (P2-L) directions of the primary cable are correct when installing the transformer.
2) Take care to prevent the primary and secondary connections from being inverted in current transformers where both primary and secondary are on the terminals.
3) Short-circuit the secondary transformer terminals if the measuring instruments detach from the transformer (in standard versions without automatic electronic secondary protection circuit) when the installation is connected.
4) It is suggested to earth the transformers.

CT Current transformers
Technical features

		CT...	CTO	TRFM
Standard secondary current	A	5 A		
Max. voltage for operation [1]	kV	1.2		
Test voltage [2]	kV	3 at 50 Hz/1min		
Residual current voltage at secondary terminals when security circuit intervenes (only SELV versions)		< 25 V rms		
Short circuit rated thermal current [3]	IpN	40 for 1 sec.	60 for 1 sec.	40 for 1 sec.
Short circuit rated dynamic current [4]	Ith	2.5 for 1 sec.		
Permanent overload	IpN	1.2		
Safety factor [5]	Sf	from ≤ 2 to ≤ 10 depending on the type and capacity		
Frequency	Hz	50-60		
Air insulation E class		Class E	Class B	Class E
Terminals [6]		primary = P1, P2 (K-L) secondary = s1, s2 (k-l) P1 (K) = primary winding input P2 (L) = primary winding output s1 (k) = secondary winding input s2 (l) = secondary winding output		
Housing		Self-extinguishing thermoplastic resin V0		
Protection degree		IP30	IP20	IP20
Operating temperature	°C	-5...+50	-5...+50	-25...+50
Max. temperature on bars	°C	70°C		
Storage temperature	°C	-20...+80	-20...+80	-40...+80
Relative humidity		80%		
Reference standard		IEC EN 60044-1, IEC EN 61010-1		
Secondary protection circuit reference standards (only SELV versions)		IEC 60364; IEC 473.1.4; IEC 556.3; CEI 64-8-4; CEI 411.1.4.3; CEI 411.5.2 - CEI 411.2 - CEI 473.1.4 - CEI 473.2.3		

[1] Max. voltage (effective value) that the transformer can withstand.
[2] Industrial frequency voltage that, for the purposes of insulation, the transformer can withstand for 1 min between the primary and secondary.
[3] Max. primary current (effective value) that the transformer can withstand for 1 sec. with the secondary short-circuited without overload-induced damages.
[4] Max. primary current (effective value) that the transformer can withstand for 1 sec. with the secondary short-circuited without damages caused by electromagnetic stress.
[5] Ratio between primary current causing nucleus saturation and the rated primary current value: the lower the Sf the higher the protection level on the transformer.
[6] Brass terminals CuZn37, M4x6 screws with torsion value 1.9 Nm, tensile value 440 N/mm² and elasticity limit 340 N/mm².

Measurement

Explore the new multi-function meters range for basic monitoring applications inside both small commercial buildings and small industries.

M1M 10 and M1M 12 offer exactly what is basically needed to monitor in an electrical system. Thanks to True RMS measurement of the main parameters, both average and per phase measurement suitable for Star, Delta or 1-phase systems can be easily measured. M1M allow quick stand-alone metering of the 3 different phases, as well as statistical metering of active energy consumptions.

M1M 10
M1M 10 is a VAF meter for basic electrical system monitoring, providing the measurement of Voltage, Current, Frequency and On Hours.

M1M 12
M1M 12 is a multi-function meter for complete electrical system monitoring, providing the measurement of: Active Energy, Active Power, Power Factor, Voltage, Current, Frequency, On Hours and Load Hours

Made simple

Easily replace the different analogue meters in sub-distribution switchboards using a single M1M; making stand-alone metering simple.

Simple to use
- Intuitive visualization of the 3 phase parameters on the bright LED display
- Enhanced clarity in data reading and device configuration

Easy choice
- Only 3 product codes to cover the main measurement requirements
- Maximum 2 steps to select the correct product for your application

Easy to install and stock
- Compact product design and optimized volumetric weight of packaging
- No tools required for product mounting thanks to mounting clips

System integration
- Remote monitoring in any Modbus RTU supervision system thanks to the optional RS485 port for M1M 12
- Quick system integration thanks to basic communication protocol map

Your benefits

For distributors
- Save space needed for internal stock
- Fast selection of the correct product for your orders
- Handle a minimum set of order codes

For panel builders
- Reduce the time needed for meter installation on the panel
- Fast selection of the correct product for your application
- Increase the number of projects covered with the same product

M1M 10 and M1M 12
Product overview

Intuitive visualization
Clear and simple reading of the measurement data for all 3 phases on the wide LED displays.

Compact design
Only 52mm inside the switchboard to ensure optimized logistics and reduced footprint in the panel

Electrical system monitoring
Complete electrical parameters measurement, from simple VAF (voltage, current, frequency) to power and energy monitoring

Easy to use
Simple front keypad to navigate in setup and menus.

Remote measurement
Availability of RS485 interface with the support of communication protocol Modbus RTU facilitating the communication and connection of the device with remote locations.

M1M 10 and M1M 12
Technical features

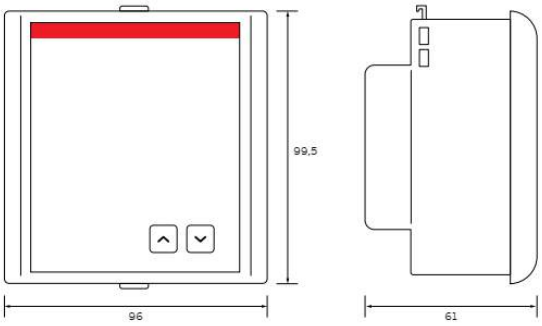
			M1M 10 M1M 12
Auxiliary power supply	Auxiliary Power Supply range		80V to 300 V AC or DC
	Frequency	Hz	50 - 60
	Burden		5VA Max
	Installation category		CAT III
	Protection fuse		200mA
Measurement accuracy	Voltage		±1,0%
	Current		±1,0%
	Active Power (M1M 12)		±1,0%
	Active Energy (M1M 12)		±1,0%
Voltage measurement inputs	Measurement range	[V]	40-300V AC (p-n)
	Measurement category		CAT III
	Rated frequency	[Hz]	50 - 60Hz
	Max. VT Primary	[V]	999 Kv
	Burden	[VA]	0.2VA Max. per phase
Current measurement inputs	CT secondary		1A or 5A
	Measurement range		50mA - 6A[1]
	Max. CT Primary	[A]	99 kA.
	Burden	[VA]	0.2VA Max. per phase
User Interface	Access to device		2 pushbuttons
	Display type		LED display
	LED Digit height	[mm]	10
Communication protocol (M1M 12 Modbus)	RS-485		
	Protocol		Modbus RTU
	Communication interface		RS485 with optical isolation
	Baud rate		2400 bps to 19200 bps
	Parity number		Odd, Even, None
	Stop bit		1,2
	Address		1-247
Mechanical characteristics	Overall dimensions	[mm]	96 x 96 x 58 (52mm depth inside the switchboard)
	IP degree of protection (IEC 60529)		IP51
	Weight	[kg]	0,300
Climatic conditions	Operating temperature		-10°C to +60°C[2]
	Storage temperature		-25°C to +70°C
	Relative humidity		5% to 95% non condensing
	Pollution degree		2
	Altitude		Below 2000ms
Standards	Electrical safety		IEC 61010-1
	EMC		IEC 61000 4-2,4-3,4-6,4-8,4-4,4-11; CISPR-22

[1] Below 250mA, additional error of 0.1% of full scale.
[2] Below 10°C, mean temperature coefficient is 0.15%/K

M1M 10 and M1M 12
Technical features


		M1M 10	M1M 12
Measured parameter	TRMS Voltage	■	■
	TRMS Current	■	■
	Frequency	■	■
	Power Factor		■
	Active Power		■
	Active Energy		■
	On Hours	■	■
	Load Hours		■
Communication interface	Serial port		**RS-485**
	Protocol		Modbus RTU

Overall dimensions
All measurements in mm



M1M 10 and M1M 12
Ordering codes

M1M 10

M1M 10

M1M 10 is a VAF meter for basic electrical system monitoring, providing the measurement of the main single-phase and three-phase electrical parameters and allowing easy replacement of different analogue meters.

Communication protocol and interface	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
-	350811	M1M 10	1SYG235081R4051	0,3	1

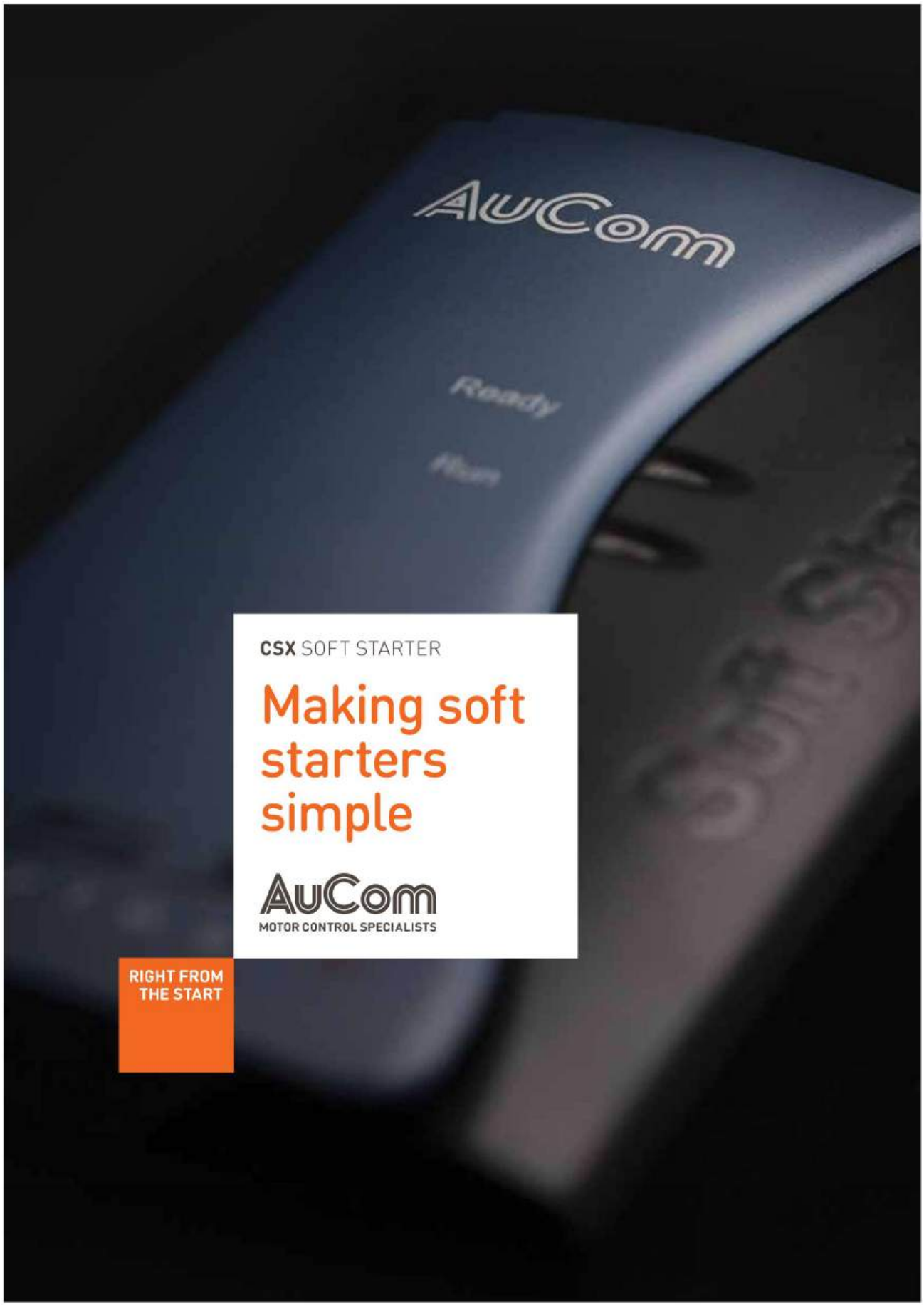
M1M 12

M1M 12

M1M 12 is a multi-function meter, providing what is needed to monitor the electrical system and allowing statistical metering of active energy consumption.
M1M 12 product range includes option with built-in communication protocol (Modbus RTU) through RS485 communication port, allowing easy integration with Modbus supervision systems.

Communication protocol and interface	Bbn 8012542	Order details		Weight 1 piece	Pack unit
	EAN	Type code	Order code	kg	pc.
-	075912	M1M 12	1SYG207591R4051	0,3	1
Modbus RTU RS485	075813	M1M 12 Modbus	1SYG207581R4051	0,3	1

Démarreur Progressif BT


AuCom
Ready
CSX SOFT STARTER
Making soft starters simple
AuCom
MOTOR CONTROL SPECIALISTS
RIGHT FROM THE START

Making soft starters simple

Our CSX Series soft starters allow you greater control over the starting and stopping of three phase motors. The CSX is ideal as a simple soft start control device, whilst the CSXi provides an advanced soft start system complete with motor protection.

CSX

The CSX soft starter employs a timed voltage ramp system, which provides you with greater control over soft start and soft stop performance, reducing energy costs and enhancing the efficiency of your motor.

Simple operation features and the built-in bypass function are housed in a compact package, giving a cost-effective solution for stopping and starting control.

CSXi

The CSXi soft starter is a constant current system, complete with current measurement and control.

In addition to soft start and soft stop, the CSXi provides a range of motor protection functions, including motor overload, phase loss and excess start time.

The CSXi also features a programmable relay.

COMPACT DESIGN

The CSX soft starter is a compact unit suitable for mounting in a switchboard or motor control centre without the need for an external bypass contactor. At only 165 mm deep it is easy to mount in shallow switchboards.

For motors up to 60 A the soft starter can be mounted on a DIN-rail, or the CSX may be mounted in a bank horizontally to use less space, often critical in certain switchboards.

ENERGY SAVINGS

We have made energy savings simple. CSX soft starters are equipped with an internal bypass function to reduce operating costs. CSX starters are 99.5% efficient during run, produce no harmonics and are the most energy efficient solution for fixed speed applications with variable load.

SIMPLE TO INTEGRATE

With features such as dedicated output relays to control the upstream main contactor and power factor correction capacitors, CSX soft starters are easy to integrate into complete motor control solutions.

PROTECTION

The CSXi has built-in thermal model motor overload protection. The motor current is continuously monitored and the expected temperature is calculated based on this monitored current.

The user sets the Motor Trip Class, and the CSXi will trip when the calculated motor temperature reaches 105%.

An external motor protection device is not required when using a CSXi soft starter.

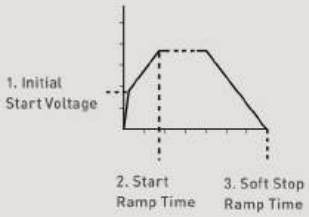
Control made easier

CSX SERIES

Three adjustments can be made on the CSX soft starter:

- Initial start voltage
- Start ramp time
- Soft stop ramp time

CSX CONTROL PANEL



TRIP MESSAGES

The CSX Series allows for fast diagnosis of a trip via two LEDs on the front of the unit. LEDs will flash to indicate the trip. (Note: some trip messages available only on the CSXi or with an optional accessory).

Indicator	Description	CSX	CSXi
○	No control power	•	•
●	Ready	•	•
✳	Tripped	•	•
Flash Code	**Description**		
✳ x 1	Power circuit	•	•
✳ x 2	Excess start time		•
✳ x 3	Motor overload		•
✳ x 4	Motor thermistor		•
✳ x 5	Current imbalance		•
✳ x 6	Supply frequency	•	•
✳ x 7	Phase rotation		•
✳ x 8	Network communication failure	Opt	Opt
✳ x 9	Starter communication failure	Opt	Opt
✳ x 10	Bypass overload		•

*Protection feature standard

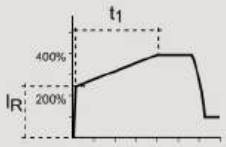
CSXi SERIES

The CSXi has several adjustments for more control:

- Current ramp
- Motor FLC
- Current limit
- Stop ramp time
- Motor trip class
- Auxiliary relay
- Phase sequence
- Excess start time

CSXi CONTROL PANEL

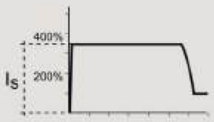
1. Current Ramp



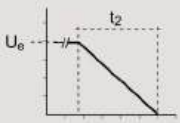
CSXi CONTROL PANEL

2. Motor FLC
CSXi FLC

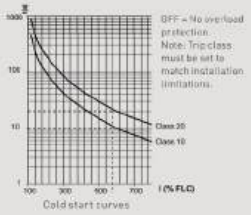
3. Current Limit



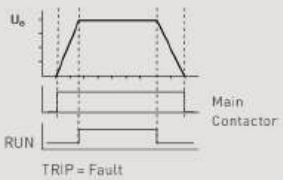
4. Stop Ramp Time



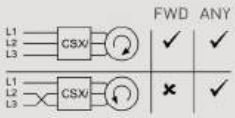
5. Motor Trip Class



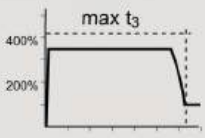
6. Aux Relay Function



7. Phase Sequence



8. Excess Start time



CSX Series features & options

Feature Sets	CSX	CSXi
STARTING FUNCTIONS		
Timed voltage ramp	•	
Constant current		•
Current ramp		•
STOPPING		
Coast to stop	•	•
Soft stop	•	•
PROTECTION		
Motor overload		•
Phase loss		•
Excess start time		•
Phase sequence		•
Current imbalance		•
Motor thermistor		•
Power circuit fault	•	•
Supply frequency	•	•
Instantaneous overcurrent		•
Bypass overload		•
Communications failure	•	•
INTERFACE		
Fixed relay output (main contractor relay)	•	•
Programmable relay (trip or run)		•
Run relay output	•	•
ACCESSORIES (OPTIONAL)		
Remote operator	•	•
Modbus	•	•
Profibus	•	•
DeviceNet	•	•
PC software	•	•
Ethernet/IP	•	•
Modbus TCP	•	•
Profinet	•	•

Efficient motor control

GET IT RIGHT FROM THE START

Design of energy efficient systems requires consideration of the system as a whole. Using energy efficient components is important but selection of the correct motor control mode (fixed or variable speed) is also critical. Approximately 80% of motor applications are most efficiently operated at a fixed speed. Using a variable speed drive (VSD) with such a system is hugely inefficient, regardless of the efficiency of the motor you are running.

CSX – THE MOST ENERGY EFFICIENT OUTCOME FOR FIXED SPEED APPLICATIONS

99.5%
Efficiency

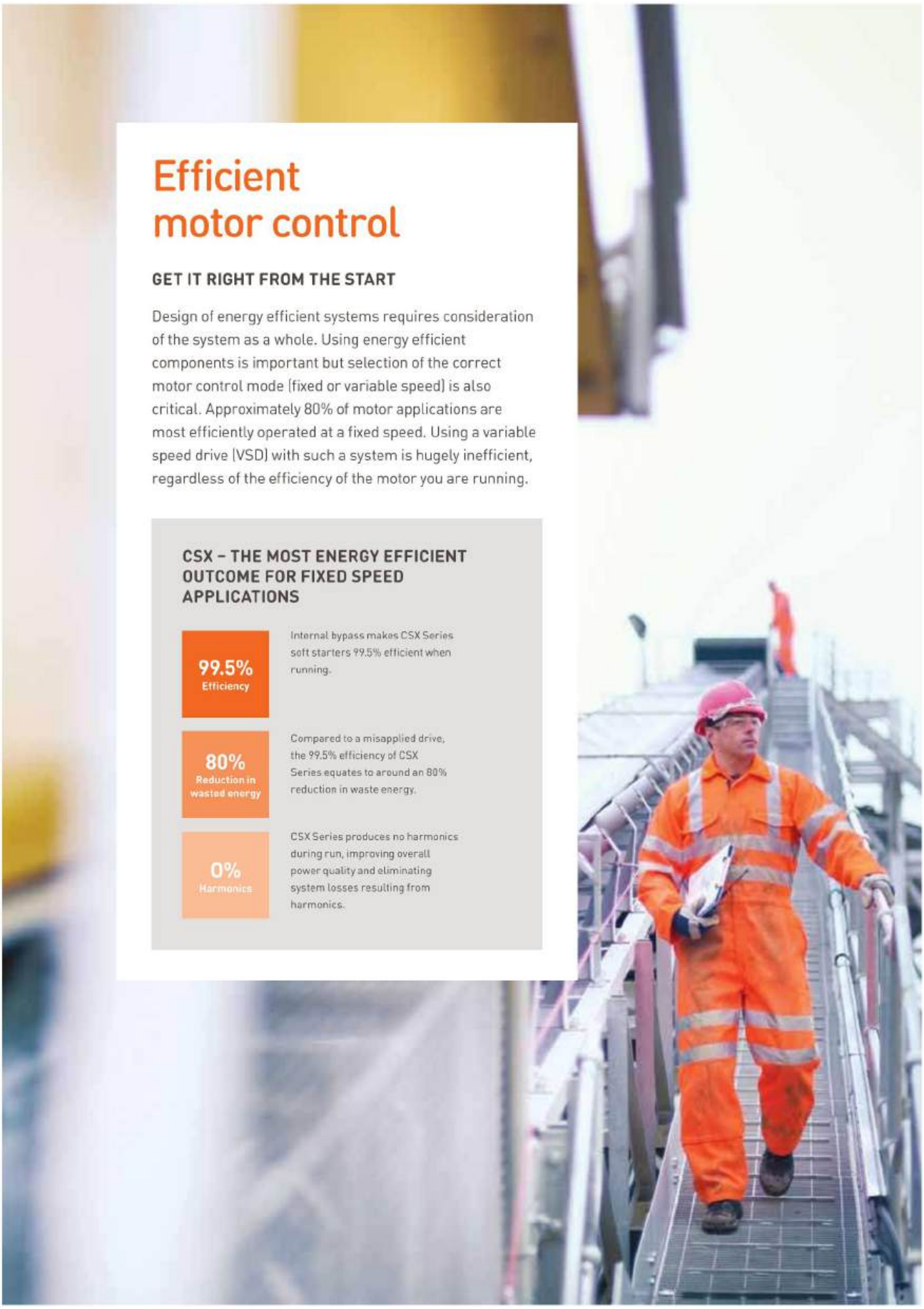
Internal bypass makes CSX Series soft starters 99.5% efficient when running.

80%
Reduction in wasted energy

Compared to a misapplied drive, the 99.5% efficiency of CSX Series equates to around an 80% reduction in waste energy.

0%
Harmonics

CSX Series produces no harmonics during run, improving overall power quality and eliminating system losses resulting from harmonics.



The future starts with AuCom

We develop motor control products for industrial applications across the world. Our focus on research and development, as well as manufacturing, supply and support, ensures that when you choose to work with AuCom, you're working with a global leader. Almost 40 years of experience added to our expertise and ability means you can rely on us to get it right from the start.

OUR APPROACH

We start with a challenge or application, working with you to define and develop a solution that's not only fit for purpose today, but fully supported into tomorrow.

OUR PEOPLE

The power behind our success doesn't rely on our innovative products alone. Our people play a pivotal role. That's why, with AuCom, it's always personal. Combining dedication and experience with ability and passion, we don't just listen more closely, we draw on the breadth of our expertise to better understand your unique requirements and offer real solutions and ongoing support.

OUR PARTNERS

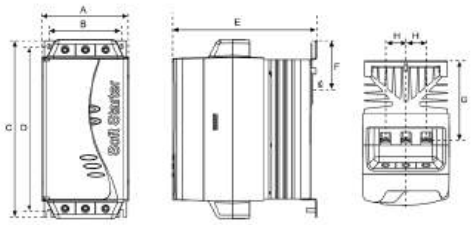
We choose partners that are experts, not only in soft start and motor control, but in understanding the needs of their industry. We work closely with our partners to ensure customers receive only the best support and advice.

We have high standards

AuCom is accredited to ISO9001:2000, with all products designed and tested to international standards such as IEC 60947-4-2, UL 508, CCC and CISPR-11. All of our products are thoroughly tested in certified facilities and in the field before release, and every soft starter is tested before dispatch.

CSX Series specifications

DIMENSIONS AND WEIGHTS



	A	B	C	D	E	F	G	H	Weight kg (lbs)	
	mm (inches)								CSX	CSXi
CSX-007										
CSX-015										
CSX-018	89 (3.86)	82 (3.23)	203 (7.99)	188 (7.40)	165 (6.50)	55 (2.17)	90.5 (3.56)	23 (0.9)	2.5 (4.85)	2.4 (5.29)
CSX-022										
CSX-030										
CSX-037										
CSX-045	145 (5.71)	124 (4.88)	215 (8.46)	196 (7.71)	193 (7.60)	-	110.5 (4.35)	37 (1.46)	4.0 (8.82)	4.3 (9.48)
CSX-055										
CSX-075										
CSX-090	202 (7.95)	160 (6.30)	240 (9.45)	204 (8.03)	214 (8.43)	-	114.5 (4.50)	51 (2.0)	6.1 (13.45)	6.8 (14.99)
CSX-110										

CURRENT RATINGS

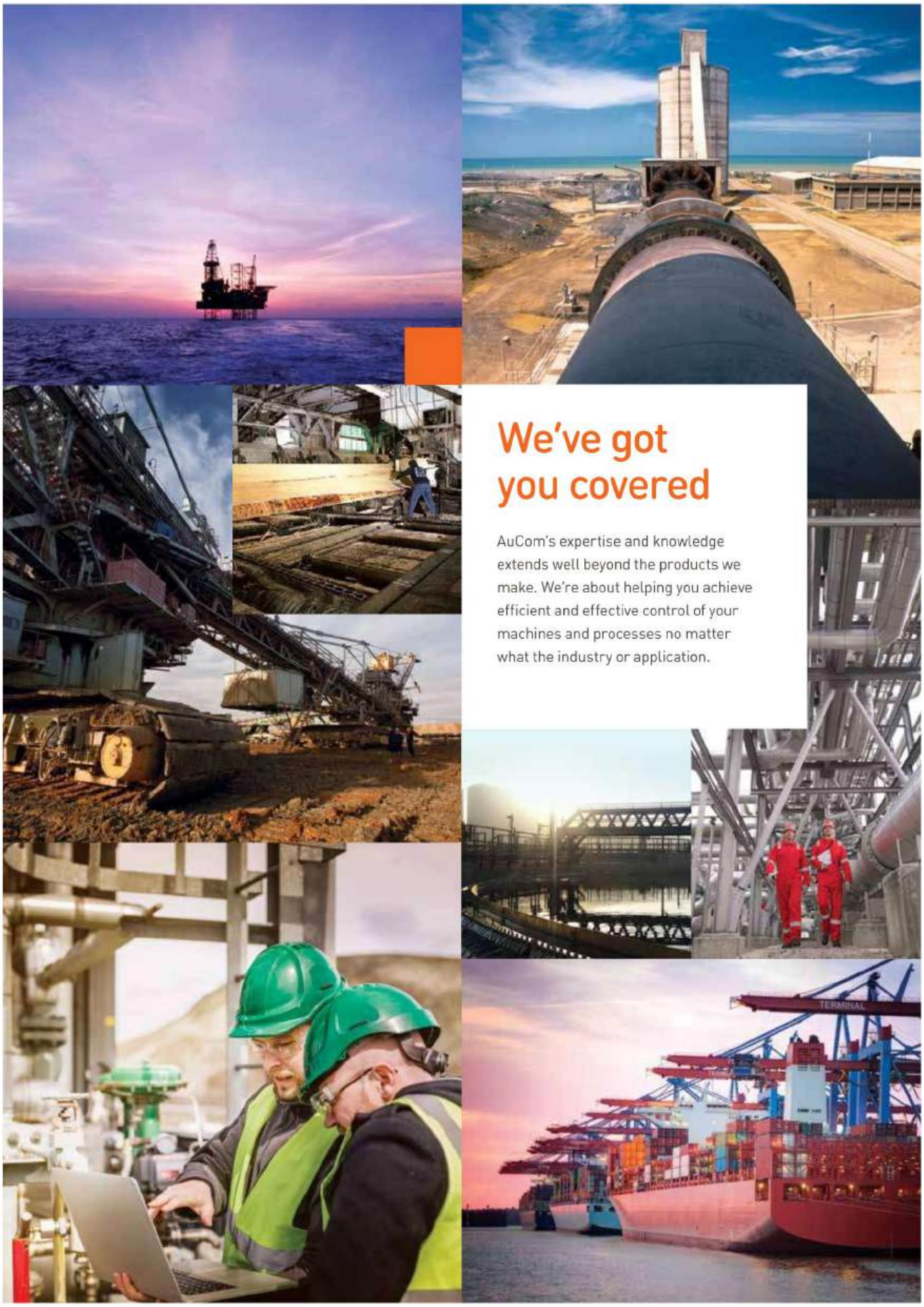
	AC53b 4-6:354 < 1000 m		AC53b 4-20:348 < 1000 m	
	40°C	50°C	40°C	50°C
CSX-007	18 A	17 A	17 A	15 A
CSX-015	34 A	32 A	30 A	28 A
CSX-018	42 A	40 A	36 A	33 A
CSX-022	48 A	44 A	40 A	36 A
CSX-030	60 A	55 A	49 A	45 A
	AC53b 4-6:594 < 1000 m		AC53b 4-20:580 < 1000 m	
	40°C	50°C	40°C	50°C
CSX-037	75 A	68 A	65 A	59 A
CSX-045	85 A	78 A	73 A	67 A
CSX-055	100 A	100 A	96 A	87 A
CSX-075	140 A	133 A	120 A	100 A
CSX-090	170 A	157 A	142 A	130 A
CSX-110	200 A	186 A	165 A	152 A

Other solutions

AuCom offers a complete range of soft starters. Whether you need a simple product for starting only, or a comprehensive motor control panel you can trust AuCom to offer a product to match.

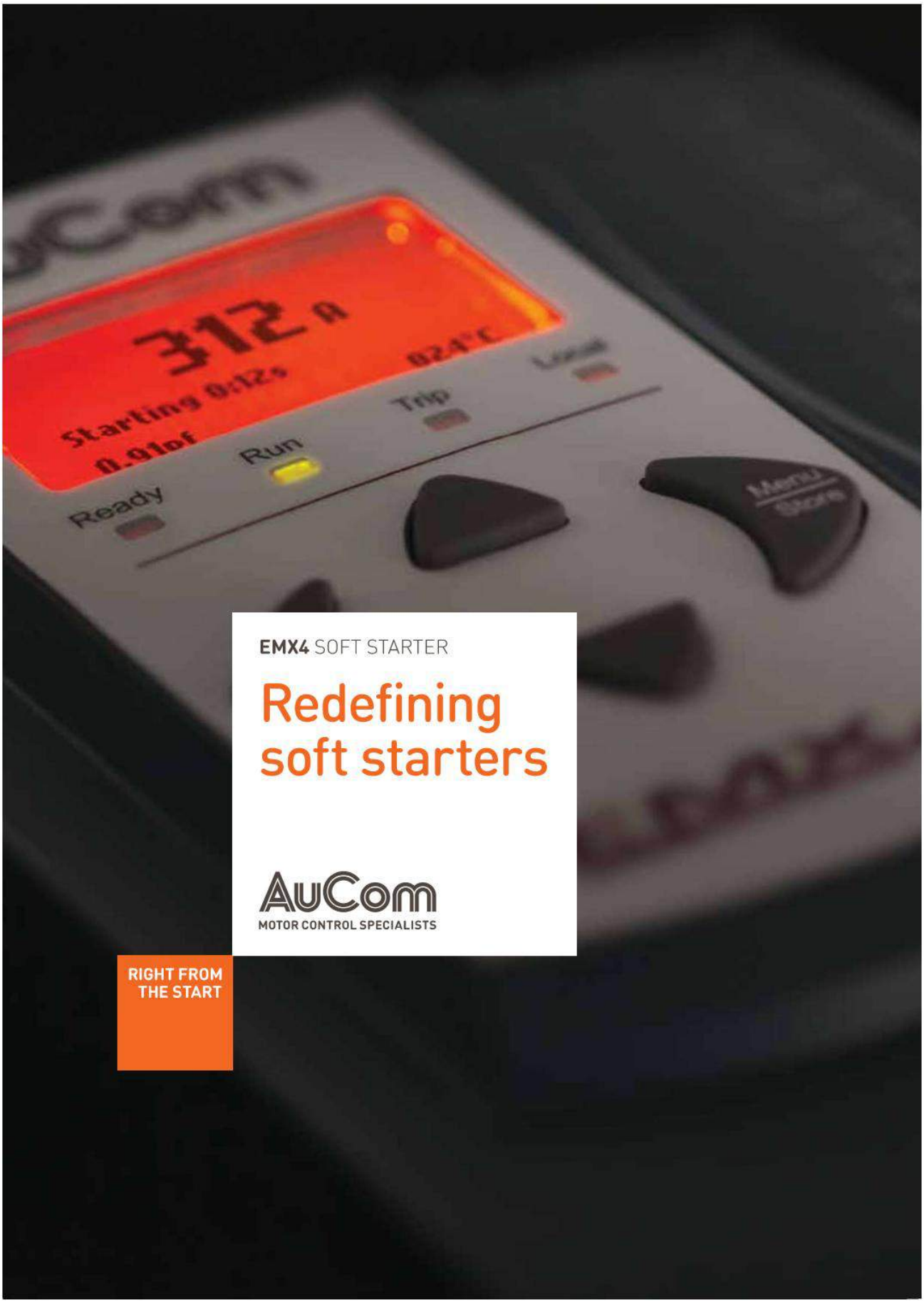
	Soft Start	Motor Protection	Advanced Interface	Internal Bypass	Current Range	Voltage Range
CSX	•			•	≤ 200 A	≤ 575 VAC
CSXi	•	•		•	≤ 200 A	≤ 575 VAC
EMX4	•	•	•	•	≤ 870 A	≤ 690 VAC
MV Series	•	•	•	•	≤ 800 A *	≤ 15 kV

*Up to 10 kA available on request.



We've got you covered

AuCom's expertise and knowledge extends well beyond the products we make. We're about helping you achieve efficient and effective control of your machines and processes no matter what the industry or application.



EMX4 SOFT STARTER

Redefining soft starters

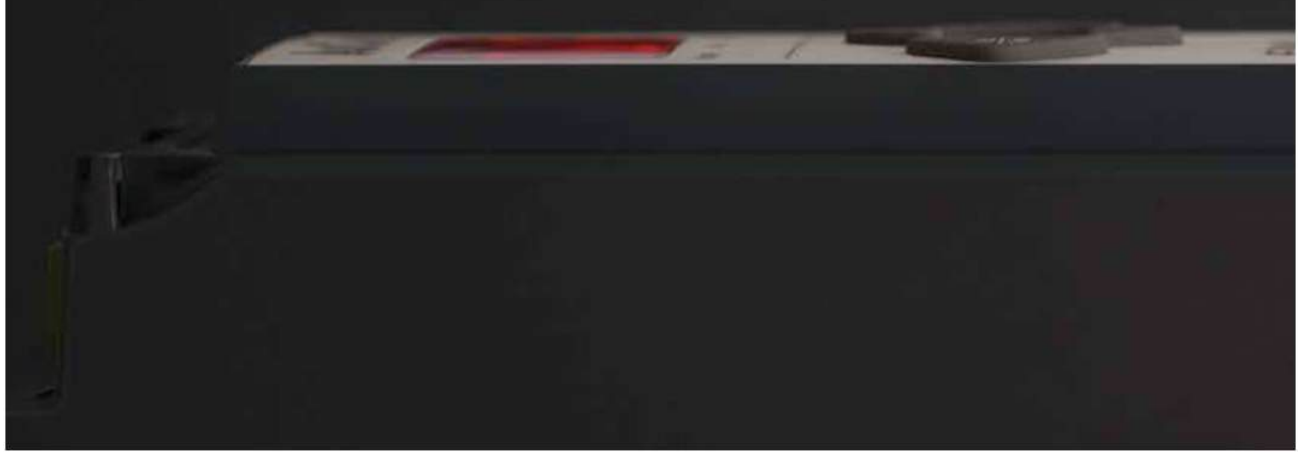
AuCom
MOTOR CONTROL SPECIALISTS

RIGHT FROM THE START

Our innovation is driven by your ongoing challenges.
The relentless demand for productivity in every aspect
of your operation has impelled us to develop a soft starter
that delivers unsurpassed efficiency, right from the start.

The new EMX4 soft starter helps ensure enhanced productivity
of your operation. The EMX4 doesn't just start and stop your
machinery with precision and efficiency, it also helps you
minimise energy costs and improve operational effectiveness
through the delivery of meaningful data to both operators
and plant automation systems.

AuCom develops motor control solutions for a range of
industrial applications across the world. Our specialised focus
on the research, development and engineering of innovative
customised solutions ensures that when you choose to work
with AuCom, you're working with a global leader.



Like its predecessor, the EMX4 soft starter sets new standards for soft start technology.

EMX4 is not only smaller, more powerful and packed with new control and protection features, it also introduces the game-changing Smart Card capability. Fitting a Smart Card to the EMX4 transforms it from super smart motor controller to complete system controller.

This is truly a starter for the future.

Why not make life easier?

Smart does not have to mean complex. While the EMX4 offers more functionality than ever before, it has been designed to make your life easier. By enhancing the display and connectivity functions, and making them intuitive, it is easier to access the right information when you need it, enhancing your overall efficiency.

We have designed the user experience to include a comprehensive graphical display, quick setup menus and multiple languages.

It is also easier to connect with other devices and support services. Connectivity has been enhanced with a suite of communication cards to enable network connections and increase accessibility.

The new USB port allows straightforward upload, download and storage of starter performance information, increasing your ability to manage the system effectively.

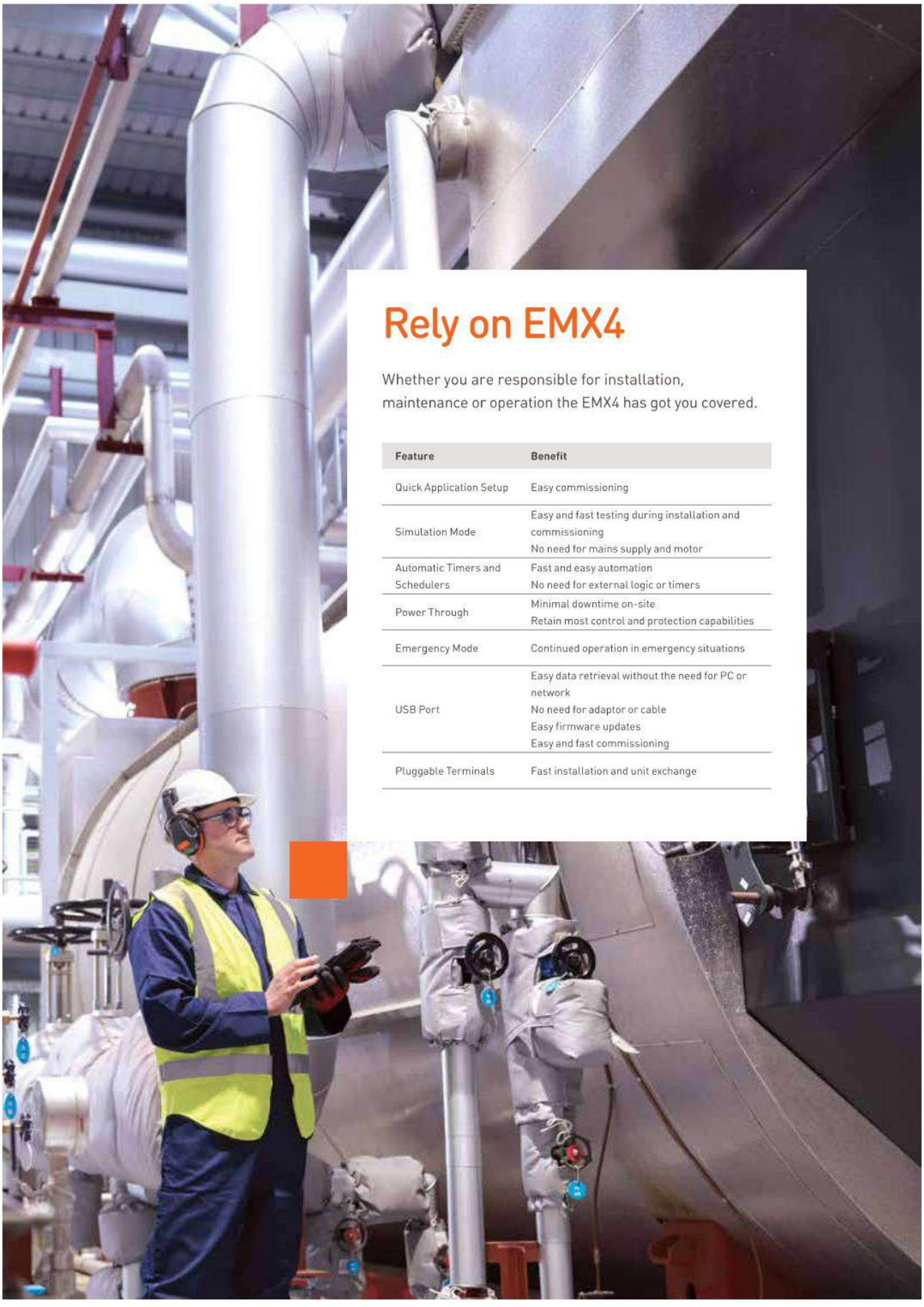
Scheduling and automation features enable you to tailor operations to meet your site requirements, minimising manual intervention and ensuring continued operation.

The EMX4 includes starter, motor and system protection functions, complete with alarms to alert you to any potential issues. In the event that the worst does happen, Power Through and Emergency Run functions give you the power to choose to keep running.

Troubleshooting starting and stopping issues is now easier than ever with the AuCom Pocket Technician app. Easily retrieve useful data from any EMX4 soft starter, including starter model, status, and details of the last three trip events. View the data on-site and diagnose issues in the field, or share it with your local support team for further assistance - all at the push of a button.

Useful operational and event logs

Try it yourself! Download the app on iOS or Android and scan the QR code above.



Rely on EMX4

Whether you are responsible for installation, maintenance or operation the EMX4 has got you covered.

Feature	Benefit
Quick Application Setup	Easy commissioning
Simulation Mode	Easy and fast testing during installation and commissioning No need for mains supply and motor
Automatic Timers and Schedulers	Fast and easy automation No need for external logic or timers
Power Through	Minimal downtime on-site Retain most control and protection capabilities
Emergency Mode	Continued operation in emergency situations
USB Port	Easy data retrieval without the need for PC or network No need for adaptor or cable Easy firmware updates Easy and fast commissioning
Pluggable Terminals	Fast installation and unit exchange

Now you can start smart

The EMX4 Smart Card redefines the role of a soft starter. With the appropriate Smart Card installed the EMX4 is able to operate as an entire system controller.

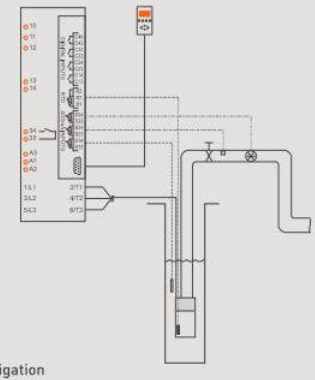
Smart Cards deliver industry or application specific functionality and are easily inserted into the EMX4, simplifying system design, installation and set-up.

By transforming your EMX4 with an industry specific Smart Card, your system can be purpose-built around one central point of intelligent control and communications.

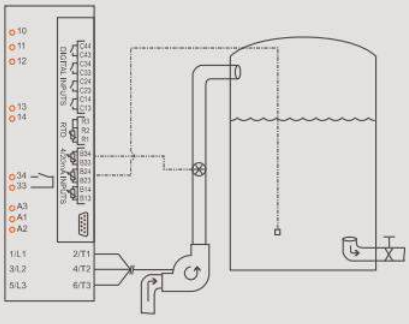
Utilising this technology will improve overall efficiency of your system, and put you firmly in control.

START PUMPING SMART

Installing the Pumping Smart Card allows applicable sensors to be directly connected to the EMX4. This removes the need for extra components normally required to provide this level of specific information and control for your system.



Irrigation



Water Utility Application

The EMX4 Smart Card release program is ongoing. Go to www.aucom.com for available Smart Cards and the opportunity to suggest a development for application or industry.

Spray irrigation

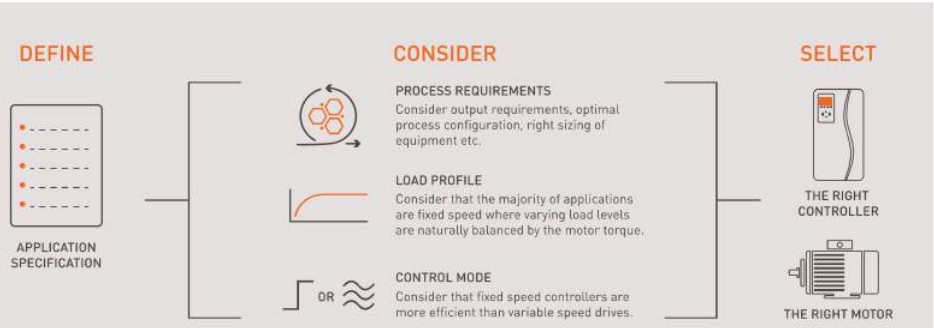
EMX4 starters fitted with Pumping Smart Cards are providing farmers with improved control of their spray irrigation.

- Built in timers and scheduling functions enable operation to be tailored to match water restrictions and optimal electrical tariffs.
- Travel to the pump shed is reduced by the Sleep Mode and Automatic Restart functions. These automatically restart operation after irrigators are shifted or temporary electrical disturbances interrupt irrigation.
- All this and more without the cost and complexity of separate control logic and wiring.

Efficiency starts with us

GET IT RIGHT FROM THE START

Design of energy efficient systems requires consideration of the system as a whole. Using energy efficient components is important but selection of the correct motor control mode (fixed or variable speed) is also critical. Approximately 80% of motor applications are most efficiently operated at a fixed speed. Using a variable speed drive (VSD) with such a system is hugely inefficient, regardless of the efficiency of the motor you are running.



The EMX4 soft starter is optimised for use with IE3 motors and is the most efficient control for a fixed speed system with variable load.

EMX4 – THE MOST ENERGY EFFICIENT OUTCOME FOR FIXED SPEED APPLICATIONS

99.5% Efficiency

Internal bypass makes EMX4 Soft Starters 99.5% efficient when running.

80% Reduction in wasted energy

Compared to a misapplied drive the 99.5% efficiency of EMX4 equates to around an 80% reduction in waste energy.

0% Harmonics

EMX4 produces no harmonics during run, improving overall power quality and eliminating system losses resulting from harmonics.

IE3 CAPABLE

The use of IE3 motors offers the opportunity to maximise efficiency and save on operating costs, however there can be issues associated with starting these type of motors, including:

- Higher inrush and starting currents that stress electrical supply circuits.
- 'Spiky' pullout torque curves can make smooth control more difficult.

We have developed the EMX4 soft starter to be an ideal partner for running IE3 motors.

Our innovative XLR-8 adaptive acceleration technology auto-tunes for the connected motor (IE2 or IE3) and gives you precise control over the acceleration and deceleration of your motor without any of the downsides.

Conveyor control

An energy audit of a quarry identified a VSD controlled 132 kW conveyor that always operated at full speed. An EMX4 soft starter offered this fixed speed application savings of > €1,750 p.a. as well as a reduction in site harmonics.

Correctly identifying this conveyor as a fixed speed application at installation would have substantially reduced the capital costs. Using an EMX4 with a fixed speed application delivers superior acceleration and deceleration performance, advanced motor protection and communications functions.

Features and options

Feature Sets	EMX4e	EMX4i
MOTOR CONTROL		
Motor sets	1	2
Constant current and current ramp start	•	•
Adaptive control starting/stopping	•	•
Kickstart		•
Coast to stop and TVR stop	•	•
DC brake		•
Soft brake		•
Jog (forward and reverse)		•
Inside delta (6 wire) control		•
Soft trip	•	•
Pump clean		•
Reversing contactor control		•
MOTOR PROTECTION		
Motor thermistor	•	•
Current imbalance	•	•
Under/Overcurrent	•	•
Under/Overvoltage		•
Under/Overpower (dry pump protection)		•
Phase sequence (forward/reverse/any)	•	•
Phase loss	•	•
Power loss	•	•
Starts per hour limiting	•	•
Restart delay (pump back spin delay)	•	•
INTEGRATION AND MANAGEMENT		
Multi-language graphical display	•	•
Configurable display screen	•	•
I/O and network expansion options	•	•
USB port and data logging	•	•
Analog output	•	•
Emergency run	•	•
Voltage measurement		•
SCR fail PowerThrough operation		•
Daily on/off scheduling		•
Run timer mode (on/off cycle timer)		•
Run simulation	•	•

XLR-8 ACCELERATION CONTROL

Torque or current control start modes influence acceleration but only XLR-8 puts you in direct control of ramp profiles and start times.

Select a ramp profile and time then let the EMX4 do the rest. XLR-8 technology auto-tunes for the connected motor and load conditions to deliver the specified performance.

Feature Sets	EMX4e	EMX4i
COMMUNICATIONS OPTIONS		
Modbus RTU	•	•
Profibus	•	•
DeviceNet	•	•
Modbus TCP	•	•
Profinet	•	•
Ethernet/IP	•	•
SMART CARD OPTIONS		
Pumping Smart Card	•	•
ACCESSORIES		
Remote Keypad	•	•

Banishing water hammer

There are multiple causes of water hammer and each pump system has unique characteristics. For these reasons, ensuring a pump system is free of water hammer can be a complicated task.

Pumping engineers around the world are relying on AuCom's unique XLR-8 technology to help tune pump starting and stopping for optimal results. XLR-8 provides a choice of ramp profiles to deal with the different causes of water hammer. So whether you are trying to prevent rapid changes in flow rate, flow direction, or water column separation and closure, XLR-8 puts the right start and stop profile at your fingertips.

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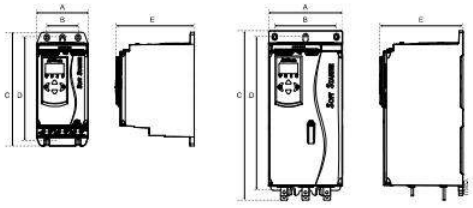
EMX4 specifications

DIMENSIONS AND WEIGHTS



	Width mm (inch)		Height mm (inch)		Depth mm (inch)	Weight kg
	A	B	C	D	E	(lb)
EMX4-0024B						4.8 (10.7)
EMX4-0042B						
EMX4-0052B						4.9 (10.9)
EMX4-0064B	152 (6.0)	92 (3.6)	336 (13.2)	307 (12.1)	231 (9.1)	
EMX4-0069B						
EMX4-0105B						5.5 (12.1)
EMX4-0115B						
EMX4-0135B						
EMX4-0184B						
EMX4-0200B			495 (19.5)			12.7 (28.0)
EMX4-0229B						
EMX4-0250B						
EMX4-0352B	216 (8.5)	180 (7.1)		450 (17.7)	243 (9.6)	
EMX4-0397B						15.5 (34.2)
EMX4-0410B			523 (20.6)			
EMX4-0550B						19.0 (41.9)
EMX4-0580B						

CURRENT RATINGS

	AC53b 3.0 - 10:350 40°C < 1000m	AC53b 3.5 - 15:345 40°C < 1000m	AC53b 4.0 - 10:350 40°C < 1000m	AC53b 4.0 - 20:340 40°C < 1000m
EMX4-0024B	24	20	19	16
EMX4-0042B	42	34	34	27
EMX4-0052B	52	42	39	35

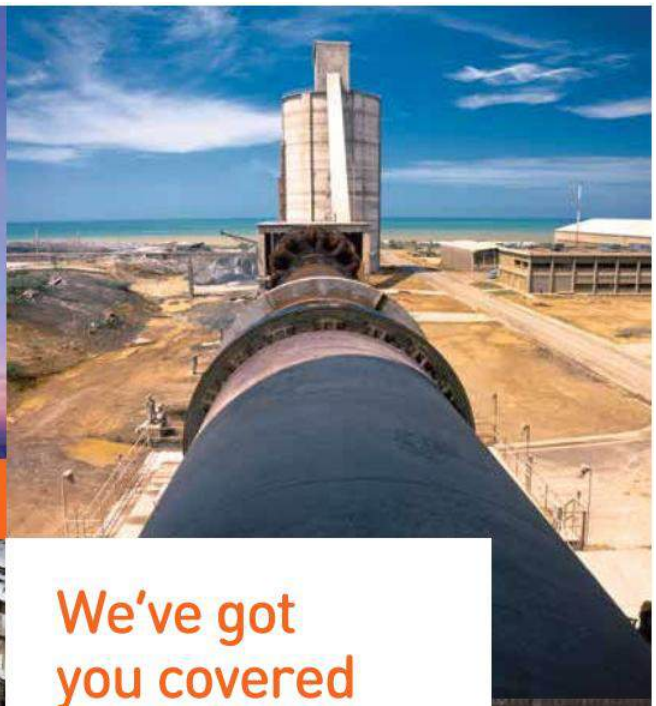
	AC53b 3.0 - 10:590 40°C < 1000m	AC53b 3.5 - 15:585 40°C < 1000m	AC53b 4.0 - 10:590 40°C < 1000m	AC53b 4.0 - 20:580 40°C < 1000m
EMX4-0064B	64	63	60	51
EMX4-0069B	69	69	69	62
EMX4-0105B	105	86	84	69
EMX4-0115B	115	108	105	86
EMX4-0135B	135	129	126	103
EMX4-0184B	184	144	139	116
EMX4-0200B	200	171	165	138
EMX4-0229B	229	194	187	157
EMX4-0250B	250	244	230	200
EMX4-0352B	352	287	277	234
EMX4-0397B	397	323	311	263
EMX4-0410B	410	410	410	380
EMX4-0550B	550	527	506	427
EMX4-0580B	580	579	555	470

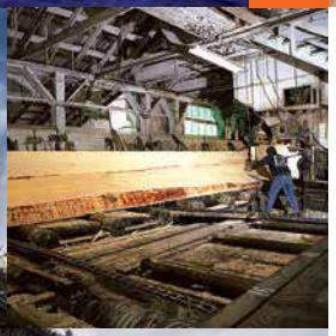
Other solutions

AuCom offers a complete range of soft starters. Whether you need a simple product for starting only, or a comprehensive motor control panel you can trust AuCom to offer a product to match.

	Soft Start	Motor Protection	Advanced Interface	Internal Bypass	Current Range	Voltage Range
CSX	•			•	≤ 200 A	≤ 575 VAC
CSXi	•	•		•	≤ 200 A	≤ 575 VAC
EMX3	•	•	•	•	≤ 2400 A	≤ 690 VAC
MV Series	•	•	•	•	≤ 800 A *	≤ 15 kV

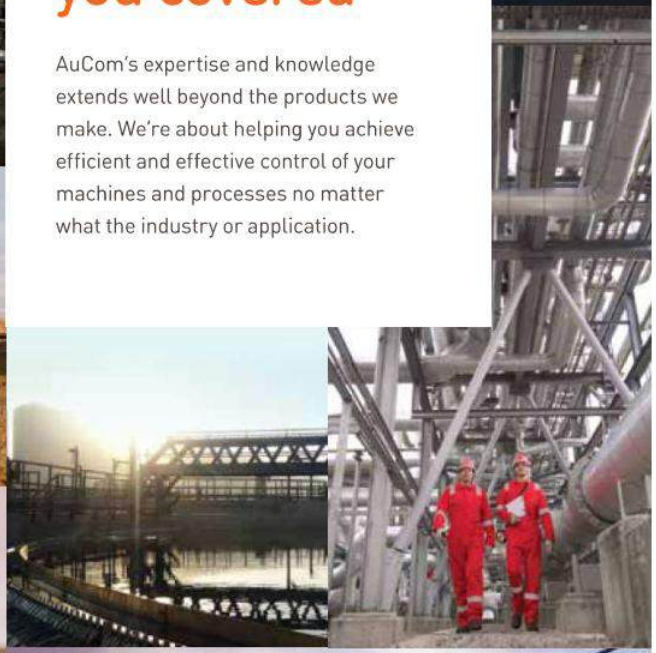
*Up to 10 kA available on request.





We've got you covered

AuCom's expertise and knowledge extends well beyond the products we make. We're about helping you achieve efficient and effective control of your machines and processes no matter what the industry or application.



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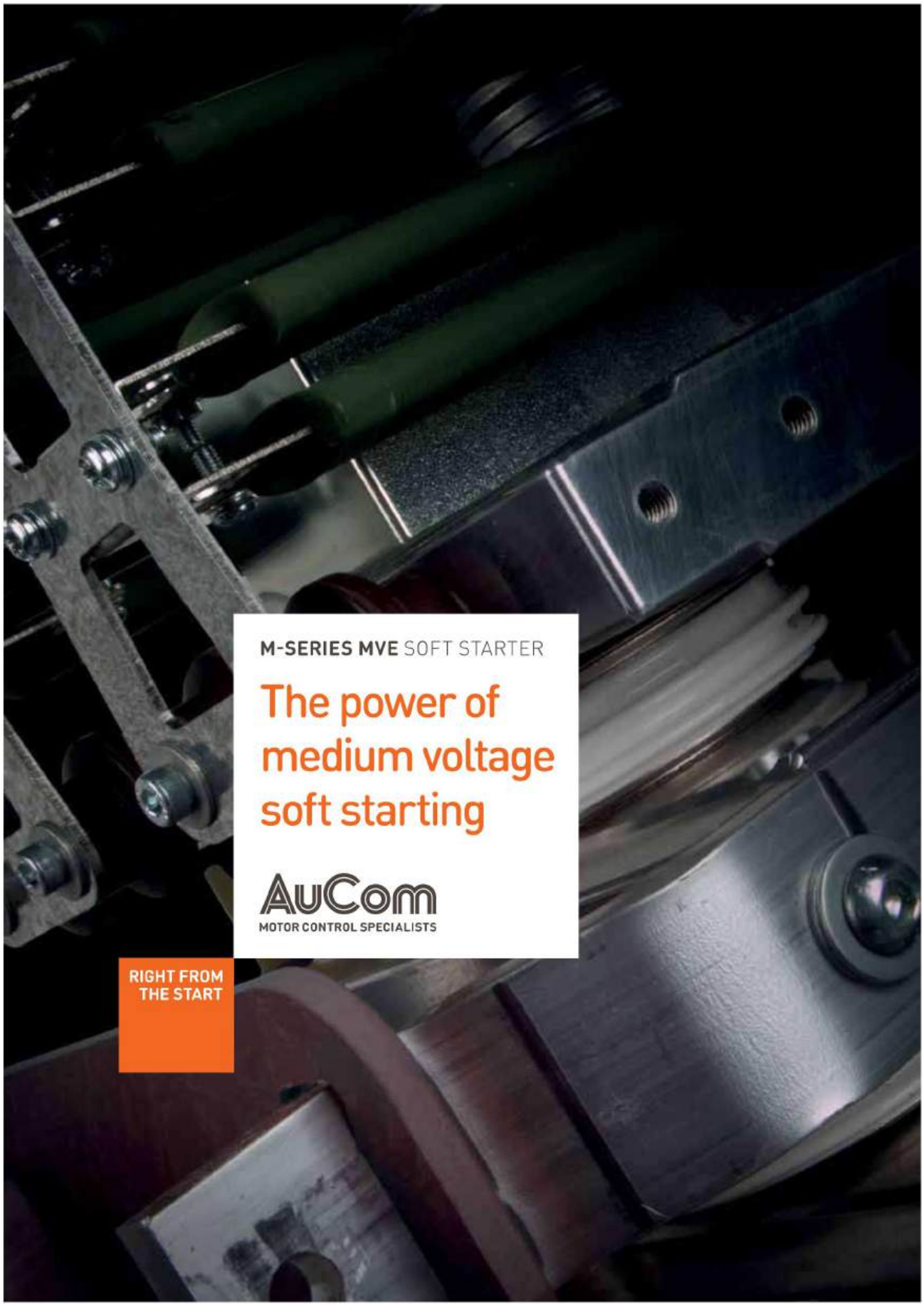
AuCom
MOTOR CONTROL SPECIALISTS

RIGHT FROM THE START

710-17887-00E

Démarreur Progressif MT


M-SERIES MVE SOFT STARTER
The power of medium voltage soft starting
AuCom
MOTOR CONTROL SPECIALISTS
RIGHT FROM THE START

M-Series MVE

IEC STYLE SOFT STARTER PANELS

AuCom's M-Series MVE medium voltage soft starters are an integrated solution for motor control and protection. MVE starters combine advanced soft start and soft stop functionality with extensive motor and system protection, plus a user-friendly interface and complete commissioning diagnostics.

M-SERIES PANEL SPECIFICATIONS

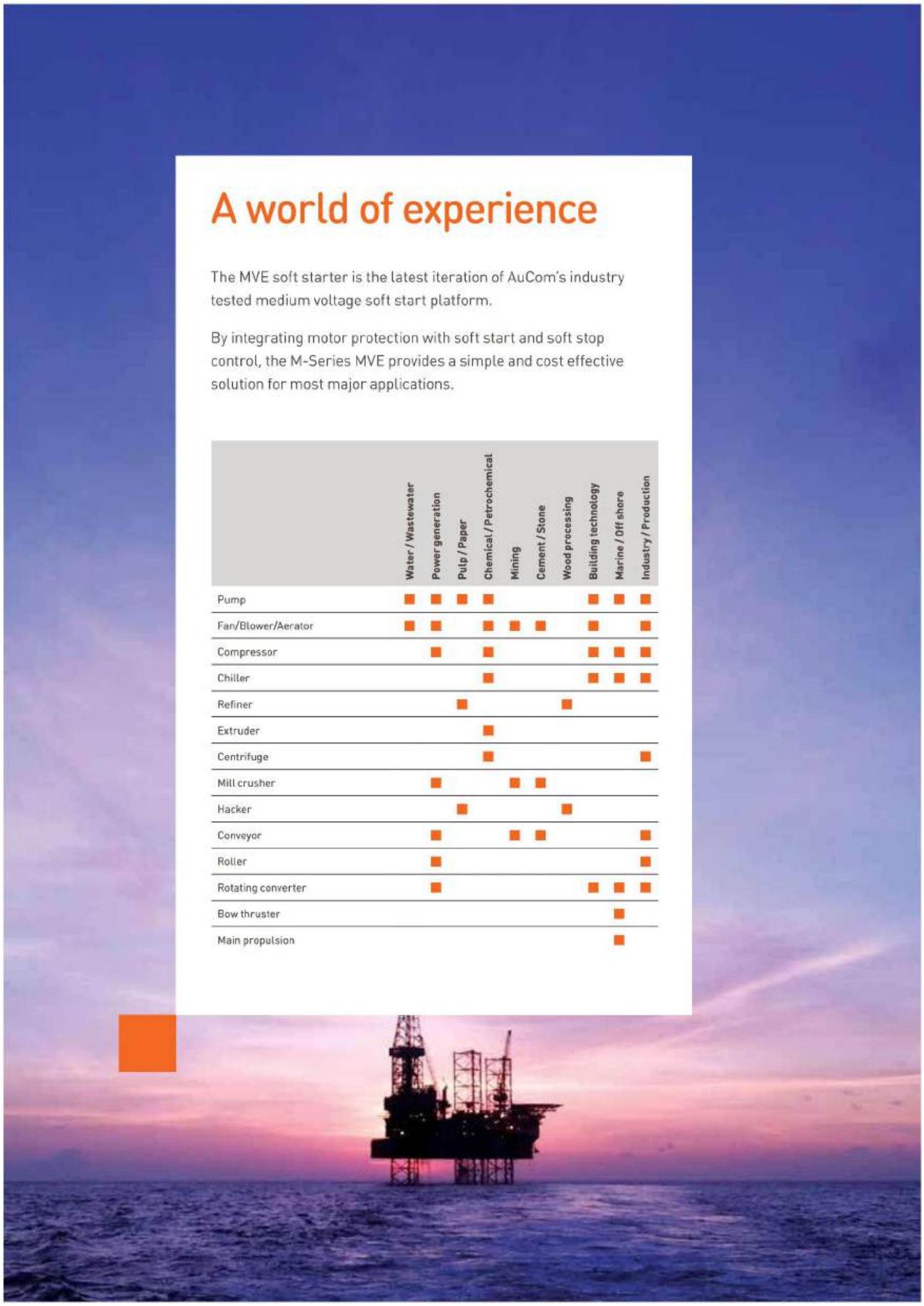
- Rated voltage: 3.6 kV - 12 kV
- Rated busbar current: up to 630 A
- Rated short time withstand current / peak: up to 31.5 kA for 1 seconds / up to 82 kA
- Partition classification: PI
- Loss of service continuity: LSC1 / LSC2
- IP4X protection rating (IP54 optional)
- Altitude : < 1000 m (higher with derating)
- Ambient temperature: -10 °C to 60 °C (above 50 °C with derating)
- Colour painting: RAL7032 (other colours optional)

A world of experience

The MVE soft starter is the latest iteration of AuCom's industry tested medium voltage soft start platform.

By integrating motor protection with soft start and soft stop control, the M-Series MVE provides a simple and cost effective solution for most major applications.

	Water / Wastewater	Power generation	Pulp / Paper	Chemical / Petrochemical	Mining	Cement / Stone	Wood processing	Building technology	Marine / Off shore	Industry / Production
Pump	■	■	■	■				■	■	■
Fan/Blower/Aerator	■	■		■	■	■		■		■
Compressor		■		■				■	■	■
Chiller				■				■	■	■
Refiner			■				■			
Extruder				■						
Centrifuge				■						■
Mill crusher		■			■	■				
Hacker			■				■			
Conveyor		■			■	■				■
Roller		■								■
Rotating converter		■						■	■	■
Bow thruster									■	
Main propulsion									■	

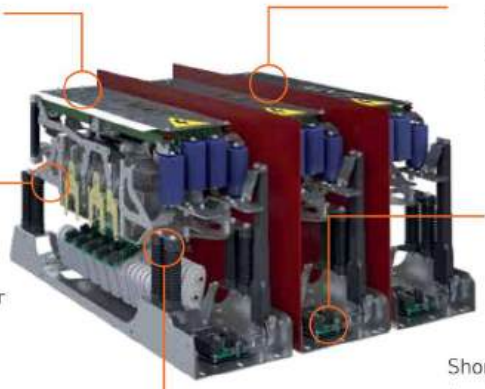


Powerful and reliable

Every application is different, and selecting the right starter for the job can sometimes seem like a daunting task. Variables such as altitude, ambient temperature, load and starts per hour all affect selection of the ideal motor starting solution. At AuCom, we employ sophisticated engineering tools to help you select the right MVE starter for your site conditions. No matter the application, you can trust our team of experienced motor control professionals to get your motor running smoothly.

A design based on standard components reduces the need for spare parts and simplifies support

Individually removable phase arm design allows for simple installation, service or replacement



Conformal coating on PCBs for protection in environments up to pollution degree 3

Ultra-compact form factor supports vertical or horizontal integration of power electronics, saving valuable space

Shorter lead times owing to a design that lends itself to more automated manufacturing processes

TECHNICAL DATA

Motor voltage:	2.3 - 13.8 kV (maximum 11 kV in M-Series panel)
Control voltages:	85 - 264 VAC or 90 - 350 VDC
Frequency:	45/66 Hz (autotrigger)
Starter current:	70 A - 1700 A (maximum 540 A in M-Series Panel)
Starting time (max):	1 second – 30 seconds (180 seconds)
Ambient temp. (max):	-10 °C to 60 °C (above 50 °C with derating)
Maximum altitude:	1000 m (higher with derating)
IP rating (power assembly):	IP00
IP rating (controller):	IP54 / NEMA12
CT type:	Standard MV CTs (adjustable ratio)
VT type:	EPT type
MV/LV isolation:	100% fibre optic connection
Digital input:	3 fixed (start, stop, reset), 2 programmable (A, B)
Relay output:	4 fixed, 3 programmable (A, B, C)
Analog output:	1 analog output
Communications I/O:	Modbus RTU, Modbus TCP, Profibus, Profinet, DeviceNet , Ethernet/IP, USB

Rely on MVE

Feature	Benefit
Quick Application Setup	Easy commissioning
Multi-language Graphical Display	Ease of use and communication
Dual Motor Set	Allows for two different starting and stopping motor data sets
Starting and Stopping Options	A range of starting methods including current based torque control make the MVE soft starter suitable for all applications
Simulation Mode	Fast and easy testing during installation and commissioning without the need for a mains supply or motor
Real-time Performance Graph	Real-time graphs of motor performance and current quickly and clearly illustrate how your motor is performing
Diagnostic Tool	Recorded waveforms can help diagnose conditions interfering with operation
LV/MV Isolation via IBT Technology	AuCom IBT Interface Board Technology isolates the core starter control system and HMI from the MV power section, creating a safer work environment
LV Motor Test	Conduct factory testing without the need for a medium voltage motor or supply
Secondary Injection Testing	Allows full testing of motor protections via an external system such as Omicron
Complete Motor Protection	A wide range of protection features including ground fault protection ensure that your equipment can operate safely even in the most demanding environments
DOL+ Mode	Protects your motor even while operating in bypass mode
Advanced Thermal Modelling	Intelligent thermal modelling allows the soft starter to dynamically calculate motor temperature and determine whether the motor can start successfully

Take control from the start

Medium voltage installations are complex enough without making the starter hard to use as well. MVE is packed with features designed to make your life easier, including real-language feedback messages, so you don't have to look up codes to know what's happening.

Built-in monitoring and indicators, and extensive on-board input and output functionality reduce the need for space and avoid the cost of auxiliary equipment, while simplifying installation. Real-time graphs of motor operating performance and current quickly and clearly illustrate exactly how your motor is performing. No fuss, no trouble - a smoother start in every sense.

The MVE controller features simple, plain language feedback on the soft starter's operation and events — no need for trip code look-ups.

METERING FUNCTIONALITY:

- Motor current
- Motor voltage
- Mains frequency
- Motor pf
- Motor kW
- Motor HP
- Motor temperature
- kWh
- Hours run
- Real-time graphs

Clear, easy to read, programmable screen

Start, stop, reset, local/remote push buttons

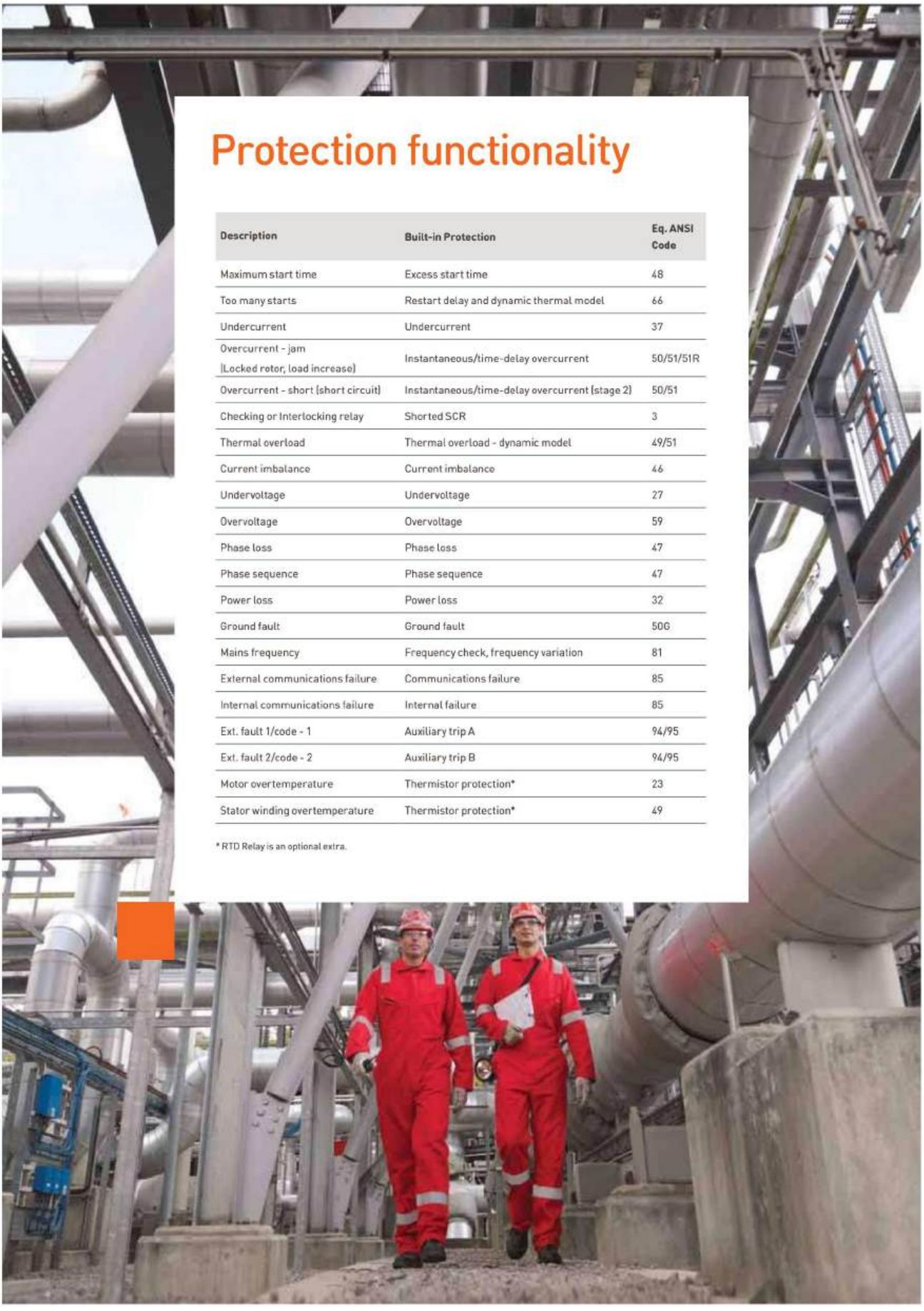
Shortcut buttons for quick access to common tasks

Multilingual controller with a choice of eight languages

Status LEDs for immediate feedback

Intuitive interface and menu structure for easy setup, with multi-level password protection

IP54 keypad mounted on cabinet exterior



Protection functionality

Description	Built-in Protection	Eq. ANSI Code
Maximum start time	Excess start time	48
Too many starts	Restart delay and dynamic thermal model	66
Undercurrent	Undercurrent	37
Overcurrent - jam (Locked rotor, load increase)	Instantaneous/time-delay overcurrent	50/51/51R
Overcurrent - short (short circuit)	Instantaneous/time-delay overcurrent (stage 2)	50/51
Checking or Interlocking relay	Shorted SCR	3
Thermal overload	Thermal overload - dynamic model	49/51
Current imbalance	Current imbalance	46
Undervoltage	Undervoltage	27
Overvoltage	Overvoltage	59
Phase loss	Phase loss	47
Phase sequence	Phase sequence	47
Power loss	Power loss	32
Ground fault	Ground fault	50G
Mains frequency	Frequency check, frequency variation	81
External communications failure	Communications failure	85
Internal communications failure	Internal failure	85
Ext. fault 1/code - 1	Auxiliary trip A	94/95
Ext. fault 2/code - 2	Auxiliary trip B	94/95
Motor overtemperature	Thermistor protection*	23
Stator winding overtemperature	Thermistor protection*	49

* RTD Relay is an optional extra.

Knowledge is power

We don't just get you started – we're committed to keeping you running smoothly too. Our dedicated diagnostic tools simplify support and maintenance.

DIAGNOSTICS

The MV Diagnostic Board is a data acquisition and recording board that is provided as standard with all AuCom MV products.

The MV Diagnostic Board records waveforms that can help diagnose problems with the starter's installation or operation, including:

- Excessive supply impedance (voltage sag and SCR conduction angle)
- Generator set frequency stability at on/off load transitions
- Disconnection of non-conduction fibre optic connections
- A shorted SCR or welded bypass (can be isolated to individual phases)
- Presence or absence of an MV supply
- Supply quality issues (harmonics)
- Gate drive failures

DETAILED EVENT LOG

The 99-place event log records time-stamped details of operation and performance, making it easier than ever to track how your motor is performing.

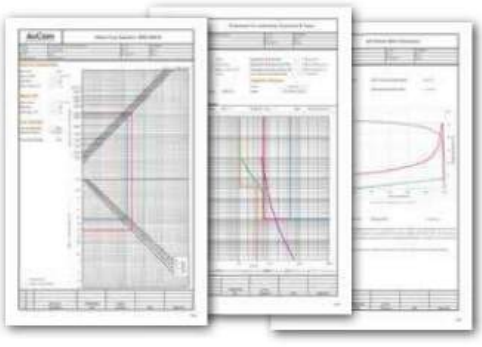
An eight position trip log records trip states and operating conditions at the time of trip, including:

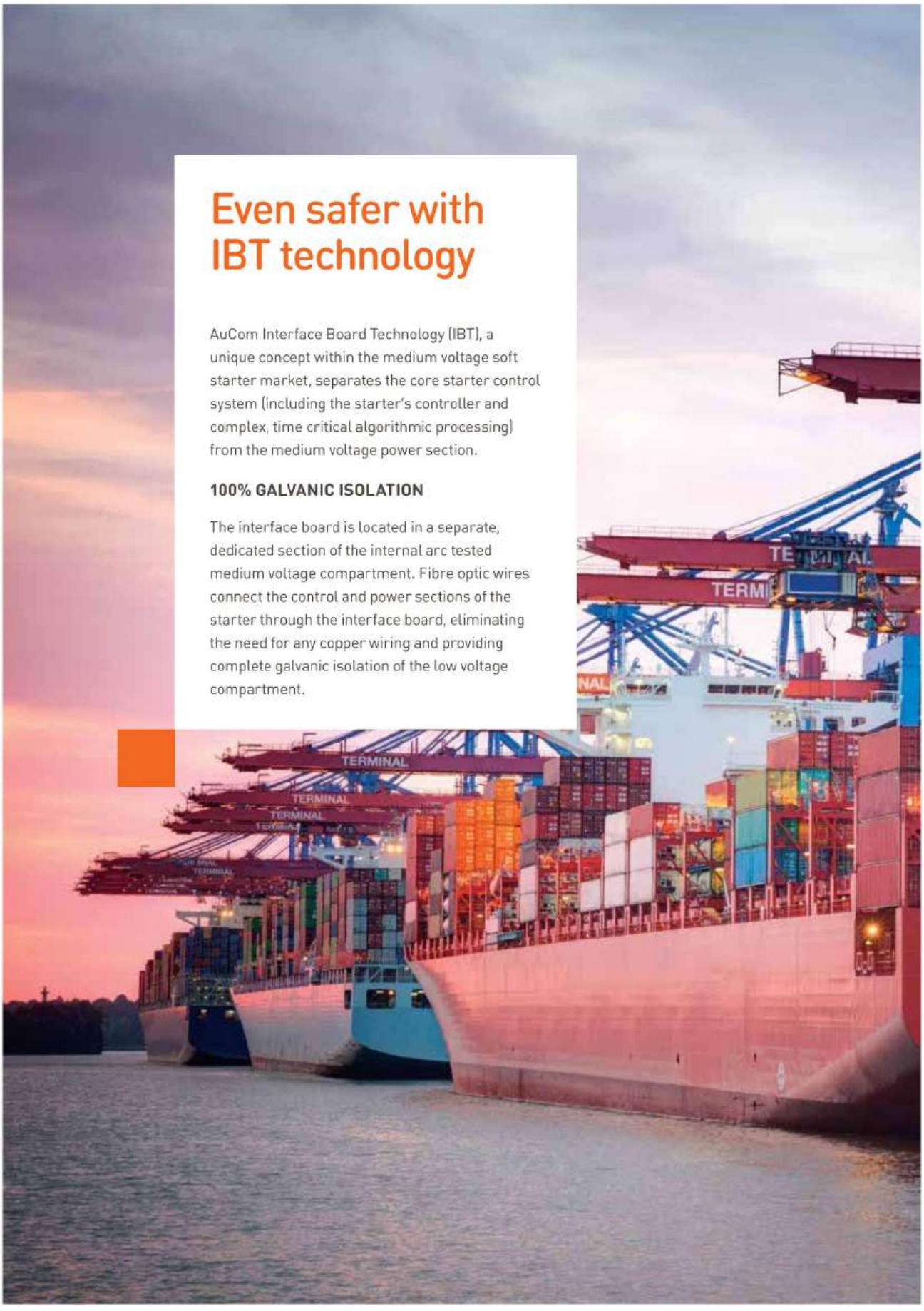
- Phase currents and voltages
- Mains frequency
- Starter state
- Time & date

AUCOM TECHNICAL DATASHEET

Our medium voltage soft start specialists use advanced proprietary tools to specify the ideal AuCom medium voltage solution for your application. We provide a detailed technical datasheet including calculations for motor starting, heat dissipation, supply capacity, transformer & cable voltage drops, and selection of fuses and power factor correction.

MV Diagnostic Board





Even safer with IBT technology

AuCom Interface Board Technology (IBT), a unique concept within the medium voltage soft starter market, separates the core starter control system (including the starter's controller and complex, time critical algorithmic processing) from the medium voltage power section.

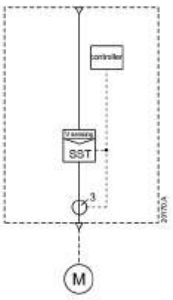
100% GALVANIC ISOLATION

The interface board is located in a separate, dedicated section of the internal arc tested medium voltage compartment. Fibre optic wires connect the control and power sections of the starter through the interface board, eliminating the need for any copper wiring and providing complete galvanic isolation of the low voltage compartment.

Panel configurations and dimensions

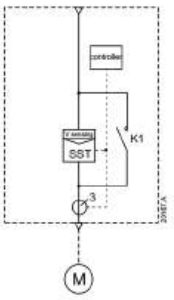
E0

Soft starter only

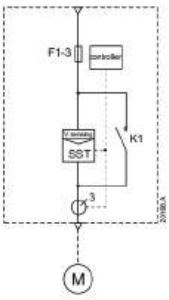


E1

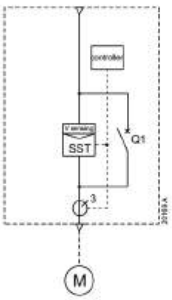
SST + VC



SST + VC + Fuse

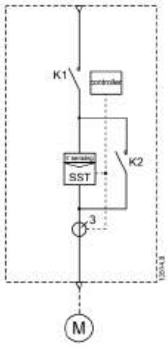


SST + VCB

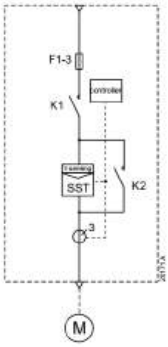


E2

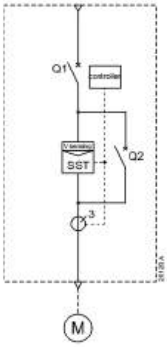
SST + VC



SST + VC + Fuse

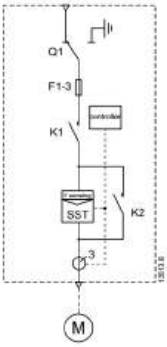


SST + VCB

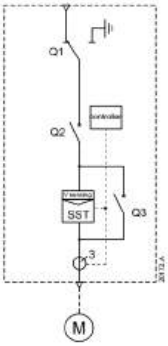


E3

SST + DS + VC + Fuse



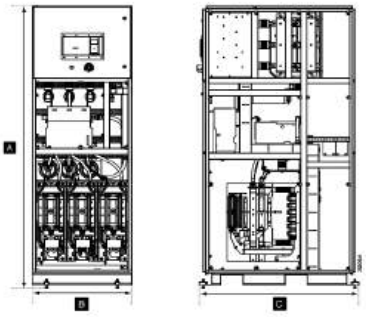
SST + DS + VCB



LEGEND

Controller	controller	Controller
F		MV Fuses
MVE	V sensing SST	MVE soft starter with voltage sensing
K		Vacuum contactor
Q		Vacuum circuit breaker
Q		Disconnecting switch
	3	3 current transformer
L	L	Inrush current limiter
C		Capacitors

DIMENSIONS



Model	Height (A) (mm)	Width (B) (mm)	Depth (C) (mm) E1/E2	Depth (C) (mm) E3
M-MVE-[70-540]-[V02-V06]	2320	840	1240	1240
M-MVE-[70-180]-V10				N/A
M-MVE-[200-540]-V10	2275	1190	1452	N/A

A solution for any application

*** Marked options not applicable in M-Series panel type. Refer to L-Series or P-Series.**

M - MVE - X X X X - V X X - SC X X - E X - F X - L X - B X - PF X

PANEL TYPE

L = L-Series IEC standard
M = M-Series IEC standard
P = P-Series NEMA standard

CURRENT RATING

@ AC53b 4-30 : 1770

0070 = 70 A
0110 = 110 A
0180 = 180 A
0200 = 200 A
0220 = 220 A
0250 = 250 A
0300 = 300 A
0400 = 400 A
0450 = 450 A
0500 = 500 A
0540 = 540 A
0600 = 600 A*
0700 = 700 A*
0800 = 800 A*
0900 = 900 A*
1000 = 1000 A*
1100 = 1100 A*
1200 = 1200 A*
1300 = 1300 A*
1400 = 1400 A*
1500 = 1500 A*
1600 = 1600 A*
1700 = 1700 A*

SUPPLY VOLTAGE

V02 = 2300 VAC 50/60 Hz
V03 = 3300 VAC 50/60 Hz
V04 = 4160 VAC 50/60 Hz
V06 = 6600 VAC 50/60 Hz
V10 = 10000VAC 50/60Hz
V11 = 11000 VAC 50/60 Hz
V13 = 13800 VAC 50/60 Hz*

SHORT CIRCUIT LEVEL

SC07 = 7 kA
SC16 = 16 kA
SC20 = 20 kA
SC25 = 25 kA
SC31 = 31.5 kA
SC40 = 40 kA*
SC50 = 50 kA*

ENCLOSURE CONFIGURATION

E0 = soft starter in panel only
E1 = soft starter + bypass device
E2 = soft starter + line device + bypass device
E3 = soft starter + disconnector switch + line device + bypass device

FUSE

F0 = Without fuse
F1 = With fuse

LINE SWITCHING DEVICE

L0 = Without line switching device
L1 = Fixed line vacuum contactor
L2 = Withdrawable line vacuum contactor*
L3 = Fixed line vacuum circuit breaker
L4 = Withdrawable line vacuum circuit breaker*

BYPASS SWITCHING DEVICE

B0 = Without bypass switching device
B1 = Fixed bypass vacuum contactor
B2 = Withdrawable bypass vacuum contactor*
B3 = Fixed bypass vacuum circuit breaker
B4 = Withdrawable bypass vacuum circuit breaker*

INTERNAL PFC

PF0 = Without PFC
PF1 = With PFC*

Other solutions

AuCom offers a complete range of soft starters. Whether you need a simple product for starting only, or a comprehensive motor control package, you can trust AuCom to offer a product to match.

	Soft Start	Motor Protection	Current Range	Voltage Range
CSXi	•	•	≤ 200 A	≤ 575 VAC
EMX3	•	•	≤ 2400 A	≤ 690 VAC
EMX4	•	•	≤ 870 A	≤ 690 VAC
MVX	•	•	≤ 450 A	≤ 12 kV

The soft start specialists

At AuCom our focus is exclusively on soft starters. We provide a range of industry leading products utilising the latest technology.

A dedicated medium voltage laboratory with full manufacturing and on-site testing facility provides selectable voltage sources from 2.3 kV to 13.8 kV, pump load, electronically controlled test load and synchronous motor testing capabilities.

TESTING AND VERIFICATION

Our comprehensive MV testing routine is designed to guarantee that our products are safe and reliable. This process involves:

- Functional testing of each individual phase arm
- Functional testing of each 3 phase arm block
- Dielectric testing to ensure safety
- Full testing of all logic controls
- A full operational test

We also offer factory acceptance testing (FAT) and third party test audits on request.

THE PROOF IS IN THE POWER UP

All AuCom MV starters run a motor at rated voltage before they leave the factory so we're sure that you're getting the performance we promised.

FULL TRACEABILITY

Automated testing routines verify operational performance and record results so that all necessary information is readily available in the rare event that things don't go as planned.

THIRD PARTY CALIBRATION

Third party calibration professionals carry out regular calibration of all our equipment including test and measurement fixtures.

We have high standards

AuCom is accredited to ISO9001:2000, with all products designed and tested to international standards. All of our products are thoroughly tested in certified facilities and in the field before release, and every soft starter is tested before leaving the factory.

The AuCom MVE soft starter is designed and manufactured to the following standards:

EN 50178:1998	Electronic equipment for use in power installation
GB3906	AC metal enclosed switchgear (China)
IEC 60071-1	Insulation coordination - Part 1: Definitions, principles and rules
IEC 60071-2	Insulation coordination - Part 2: Application guide
IEC 60270	High voltage test techniques - Partial discharge measurements
IEC 60282-1	High voltage fuses - Part 1: Current-limiting fuses
IEC 60529	Degrees of protection provided by enclosures (IP Rating and Tests)
IEC 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Emission standard for industrial environments
IEC 62271-1	High-voltage switchgear and control gear - Part 1: Common specifications
IEC 62271-100	High-voltage switchgear and control gear - Part 100: High-voltage alternating-current circuit breakers
IEC 62271-102	High-voltage switchgear and control gear - Part 102: Alternating current disconnectors and earthing switches
IEC 62271-105	High-voltage switchgear and control gear - Part 105: Alternating current switch-fuse combinations
IEC 62271-106	Alternating current contactors, contactor-based controllers and motor-starters
IEC 62271-200	High-voltage switchgear and control gear - Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1kV and up to and including 52 kV

The future starts with AuCom

We develop motor control products for industrial applications across the world. Our focus on research and development, as well as manufacturing, supply and support, ensures that when you choose to work with AuCom, you're working with a global leader. Almost 40 years of experience added to our expertise and ability means you can rely on us to get it right from the start.

OUR APPROACH

We start with a challenge or application, working with you to define and develop a solution that's not only fit for purpose today, but fully supported into tomorrow.

OUR PARTNERS

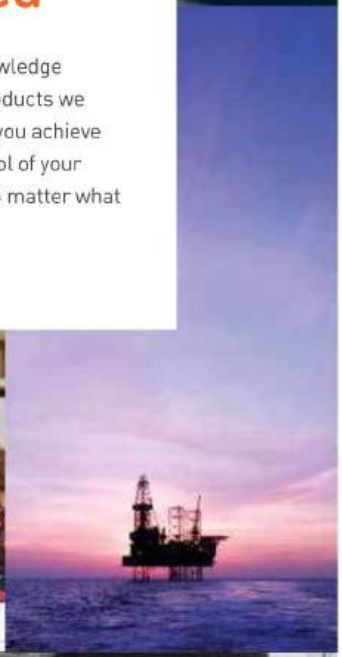
We choose partners that are experts, not only in soft start and motor control, but in understanding the needs of their industry. We work closely with our partners to ensure customers receive only the best support and advice.

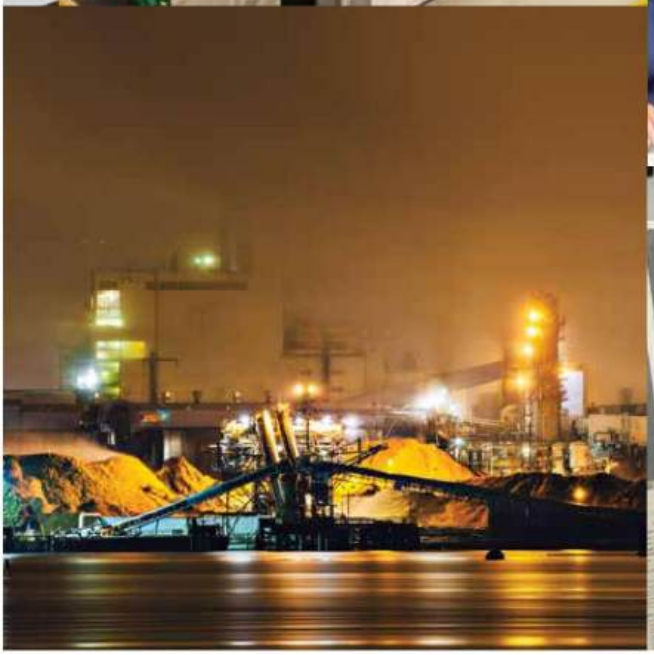
OUR PEOPLE

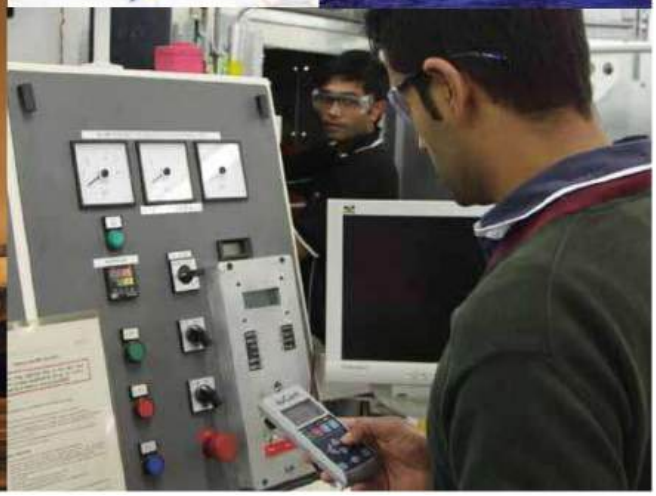
The power behind our success doesn't rely on our innovative products alone. Our people play a pivotal role. That's why, with AuCom, it's always personal. Combining dedication and experience with ability and passion, we don't just listen more closely, we draw on the breadth of our expertise to better understand your unique requirements and offer real solutions and ongoing support.

We've got you covered

AuCom's expertise and knowledge extends well beyond the products we make. We're about helping you achieve efficient and effective control of your machines and processes no matter what the industry or application.







Variateur de vitesse BT

VARIATEURS AC BASSE TENSION

Variateurs general purpose ABB

ACS580, 0.75 à 500 kW

ACS580 100 % compatible
L'automation des process sans effort

Le variateur general purpose ACS580 d'ABB 100 % compatible existe en coffret, en module et en armoire. Il simplifie de manière productive et efficace le contrôle de vos process.

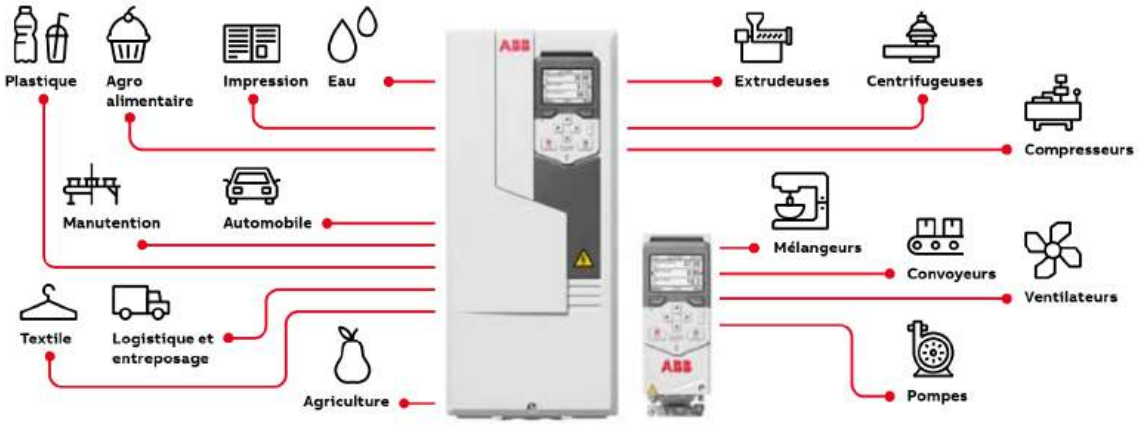
Un produit, plusieurs applications
Les variateurs ACS580 incluent toutes les fonctions essentielles pour les applications basiques de l'industrie légère, avec une plage de puissance allant de 0,75 à 500 kW. Le variateur est livré prêt à contrôler des compresseurs, des convoyeurs, des mélangeurs, des pompes et des ventilateurs et bien d'autres applications à couple variable et constant. Grâce à la famille de variateurs 100 % compatibles, vous trouverez toujours le variateur le mieux adapté à vos besoins. Ces variateurs partagent une interface utilisateur et des outils PC similaires, ce qui rend leur apprentissage et leur utilisation rapides et simples.

Le variateur peut contrôler une large gamme d'applications dans différentes industries tout en conservant une procédure de configuration et de mise en service extrêmement simple.

Fiabilité et grande qualité
Les variateurs ACS580 sont conçus pour les clients qui misent sur la qualité et la solidité. Équipés de fonctions, telles que des cartes vernies et un boîtier compact IP55, les variateurs ACS580 sont parfaitement adaptés aux conditions difficiles. De plus, tous les variateurs ACS580 sont testés à température maximale et à charge nominale. Ces tests couvrent les performances ainsi que toutes les fonctions de protection.

Plus simple que jamais
Les variateurs ACS580 intègrent toutes les fonctionnalités essentielles permettant de réduire le temps de mise en service et de configuration. La microconsole intelligente avec plusieurs choix de langue est installée en standard sur les variateurs ACS580. Les utilisateurs peuvent également migrer vers la microconsole Bluetooth optionnelle pour une mise en service et une surveillance à distance. Les paramètres de base et les macros de contrôle des applications garantissent une configuration rapide.

Disponibilité immédiate
L'ACS580 est disponible depuis le stock central partout dans le monde pour livraison immédiate jusqu'à 500 kW. Le produit est également disponible chez nos distributeurs.



Prenez facilement le contrôle total de vos process pour gérer l'ensemble de votre installation

Le variateur ACS580 est équipé de fonctions intégrées qui simplifient son approvisionnement et sa livraison et réduisent les coûts de mise en service. Tout est prévu dans un seul ensemble compact et prêt à l'emploi pour que vous puissiez prendre le contrôle total de vos process.

Outils de mise en service et de maintenance
L'outil PC Drive Composer d'aide à la mise en route, à la configuration, à la surveillance et au réglage des applications est raccordé à la microconsole du variateur via un câble USB.

Simple à sélectionner, installer et utiliser
Des fonctionnalités intégrées comme un filtre RFI, une self, une interface bus de terrain Modbus RTU et une fonction STO (Safe Torque Off) simplifient la sélection, l'installation et l'utilisation du variateur.

La simplicité à portée de mains
Le menu principal de réglage de la microconsole est extrêmement simple et vous permet de configurer le variateur rapidement et efficacement.

Performances évolutives
L'ACS580 n'est pas seulement un bon choix pour améliorer le rendement énergétique de vos applications, mais également pour les applications sophistiquées nécessitant un contrôle du couple et de la vitesse.

Une automation et une productivité sans effort

Communication avec tous les principaux réseaux d'automation
Des adaptateurs de bus de terrain optionnels permettent de raccorder les variateurs à la plupart des grands réseaux industriels d'automation.

Sécurité intégrée et fiable
Le module de protection à thermistances certifié ATEX, Ex II (2) GD, CPTC-02, accroît la sécurité de vos process et simplifie l'installation.

Programmation adaptative
La programmation adaptative est idéale pour créer des programmes simples pour diverses applications afin d'optimiser davantage le contrôle des process. Elle ne nécessite aucune expertise dans la programmation.

Conçu pour une fiabilité maximale
Les caractéristiques de conception telles que les cartes vernies, le débit d'air minimisé à travers la carte de commande et la protection contre les défauts de terre font de l'ACS580 un choix sûr pour de multiples applications.

Surveillance à distance
Un serveur web intégré et un module NETA-21 autonome d'enregistrement des données disponible partout dans le monde sécurise l'accès au variateur.

Industries et applications

Les variateurs ACS580 améliorent les performances des process, augmentent la productivité, réduisent les composants externes et assurent la sécurité des machines et du personnel

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01 Agroalimentaire

02 Manutention

03 Impression

04 Caoutchouc et plastiques

05 Textile

06 Scierie

07 Traitement de l'eau

08 Agriculture

09 Automobile

Rationalisez vos processus pour une croissance rentable

Industrie	Application	Avantages pour le client
Agro alimentaire 	Soufflantes, centrifugeuses, compresseurs, convoyeurs, ventilateurs, broyeurs, pompes, séparateurs, mélangeurs, séchoirs, granulateurs	• Contrôle précis du process augmentant la vitesse de production alimentaire tout en économisant de l'énergie et en améliorant la sécurité du travail. Contrôle précis de la vitesse et du couple améliorant les temps de production même avec une charge variable. • Couple de démarrage augmenté avec la fonction de boost permettant à la même série de variateurs d'être utilisée sur différentes applications dans l'usine de fabrication. • Fonction STO (SIL 3) garantissant la sécurité des machines et du personnel. • Microconsole simple à utiliser dans plusieurs langues et au design robuste réduisant les temps de maintenance. • Module de protection à thermistances certifié ATEX, Ex II (2) GD, répondant aux exigences de sécurité même dans les environnements poussiéreux.
Manutention 	Convoyeurs	• Contrôle précis de la vitesse et du couple améliorant les temps de production même avec une charge variable. • Fonction STO (SIL 3) garantissant la sécurité des machines et du personnel. • Réduction des temps d'arrêt grâce à la conception robuste et fiable. • Technologie de self oscillatrice pour atténuer les harmoniques. • Alimentation externe +24 V pour maintenir la communication lorsque l'alimentation secteur est coupée.
Impression 	Compresseurs, presses, enrouleurs	• Accélération progressive empêchant la rupture du papier. • Conception robuste du variateur réduisant les contraintes mécaniques de l'équipement de la ligne de process et diminuant les coûts de maintenance et d'investissement. • Contrôle précis de la vitesse et du couple des applications augmentant la disponibilité du process en optimisant le contrôle du moteur.
Caoutchouc et plastiques 	Extrudeuses, machines de moulage par injection, pompes	• Accélération progressive empêchant la rupture de la bande du film plastique. • Plateforme évolutive 100 % compatible permettant d'optimiser facilement les process et les composants avec différents types de variateurs partageant la même interface utilisateur et les mêmes outils. • Vaste gamme de protocoles de bus de terrain pris en charge pour une intégration facile des API.
Textile 	Laveuses, compresseurs, convoyeurs, tambours laveurs, extrudeuses, ventilateurs, machines de teinture à jet, pompes, rameuses, tendeurs, enrouleurs	• Contrôle précis de la vitesse ou du couple pour un allongement de grande précision et une qualité optimale du produit fini. • Limite de couple réglable pour éviter d'endommager l'équipement mécanique. • Rampes d'accélération/décélération réglables pour une meilleure régulation des pompes. • Horloge en temps réel et fonctions temporisées pour l'optimisation des process. • Meilleure productivité et délais de rentabilité plus rapides grâce aux multiples configurations, permettant la production de deux produits différents. • Compteurs intégrés pour des économies supplémentaires d'énergie et une maintenance préventive.
Scierie 	Ébarbeurs, convoyeurs, distributeurs, sécheurs, trieurs, séchoirs	• IP55/UL type 12 disponible jusqu'à 250 kW pour les environnements difficiles. • Variateur en armoire IP54 jusqu'à 500 kW. • Fonction STO (SIL 3) garantissant la sécurité des machines et du personnel. • Alimentation externe +24 V pour maintenir les communications lorsque l'alimentation secteur est coupée. • Module de protection à thermistances certifié ATEX, Ex II (2) GD.
Traitement de l'eau 	Compresseurs, stations de pompage	• Économies supplémentaires d'énergie grâce à la fonction d'optimisation de l'énergie. • Rampes d'accélération/décélération réglables pour une meilleure régulation des pompes. • Réduction des temps d'arrêt grâce à la conception robuste et fiable. • Offre étendue de produits et services ABB pour l'optimisation complète des process.
Agriculture 	Ventilateurs, irrigateurs, pompes, trieuses	• IP55/UL 12 disponible jusqu'à 250 kW pour les environnements difficiles. • En coffret pour montage mural avec une plage de puissance jusqu'à 250 kW. • Modules variateurs et variateurs en armoire jusqu'à 500 kW.
Automobile 	Convoyeurs, ventilateurs, pompes	• Module de protection à thermistances certifié ATEX, Ex II (2) GD. • Meilleure productivité et délais de rentabilité plus rapides grâce aux multiples configurations. • Qualité améliorée des produits finis avec un contrôle continu du moteur et du process. • Fonction STO (SIL 3) garantissant la sécurité des machines et du personnel. • Vaste gamme de réseaux de bus de terrain pris en charge, dont PROFIBUS et PROFINET IO. • IP55/UL type 12 disponible jusqu'à 250 kW 400 V et classe de protection élevé pour les environnements difficiles. • Conception robuste du variateur réduisant les contraintes mécaniques de l'équipement de la ligne de process, diminuant les coûts de maintenance et assurant une qualité supérieure de production.

Fonctionnalités communes à l'ensemble de la famille de variateurs ACS580

Fonctionnalités standard de l'ACS580

Self et RFI
- Technologie de self oscillatrice pour atténuer les harmoniques
- Conforme à la norme EN61000-3-12
- Filtre RFI C2 pour R1-R9 pour une installation sûre dans le premier environnement
- Filtre RFI C3 et filtre en mode commun pour R10 et R11 pour une installation sûre dans le second environnement
- Filtre RFI C1 en option pour R1-R5 garantissant les meilleures performances électromagnétiques pour le premier environnement. Disponibles pour les options +E223 et +F316.

Contrôle de process scalaire et vectoriel
- Contrôle scalaire pour un contrôle de process sans effort
- Contrôle vectoriel pour un contrôle précis de la vitesse et du couple dans les applications exigeantes
- Prise en charge des moteurs à induction, à aimants permanents et à réluctance synchrone (SynRM)

Connexions E/S étendues
- L'ACS580 est équipé de connexions E/S étendues pour une configuration flexible dans différentes applications
- Bornes de couleur et plus grandes pour une mise en service et un diagnostic simplifiés

Microconsole et principaux réglages
- La microconsole intelligente ACS-AP-S parle votre langue
- Interface USB pour la connexion du PC et des outils
- Bouton d'aide pour la résolution des problèmes et les diagnostics immédiats

Fonction STO (Safe torque-off) intégrée
- Fonction STO pour la sécurité des machines
- SIL 3, PL e

Hacheur de freinage
- Le hacheur de freinage est intégré en standard dans l'ACS580 jusqu'à la taille R3. La fonction de freinage est intégrée dans l'ACS580.
- Possibilité d'ajouter en option un hacheur de freinage externe pour les tailles R4-R9.

Performance
L'ACS580 est adapté à divers types d'applications, notamment les applications à couple constant, linéaire et variable.

Fonctionnalités partagées par tous les variateurs de la gamme 100 % compatible

Même interface utilisateur
Les variateurs suivent la même logique de fonctionnement et il existe un variateur optimal pour chaque application : de la petite pompe à eau à l'énorme four à ciment. Une fois que vous avez appris à utiliser un variateur, vous saurez utiliser les autres variateurs du portefeuille.

Mêmes outils PC
Drive Composer gratuit sur le site www abb.com.

Le même structure de paramètres simplifie l'utilisation de la plateforme 100 % compatible.

Connectivité simple
- L'ACS580 prend en charge les adaptateurs de bus de terrain de la série F utilisés sur la plateforme 100 % compatible d'ABB.
- Connectivité à la téléphonie mobile via la microconsole optionnelle Bluetooth.
- Les réglages de bus de terrain sont simplifiés grâce au menu simple repensé.

Caractéristiques techniques

Raccordement réseau	
Plage de tension d'entrée et de puissance de sortie	triphasée, U_N 200 à 240 V, +10 %/-15 % ACS580-01 : entre 0,75 et 75 kW triphasée, U_N 380 à 480 V, +10 %/-15 % ACS580-01 : entre 0,75 et 250 kW ACS580-04 : entre 250 et 500 kW ACS580-07 : entre 75 et 500 kW Auto-identification de l'alimentation électrique
Fréquence	entre 47 et 63 Hz
Facteur de puissance	$\cos\varphi$ = 0,98
Rendement (à puissance nominale)	98 %
Raccordement moteur	
Tension	triphasée, de 0 à la tension d'alimentation
Fréquence	0 à 500 Hz
Mode de contrôle du moteur	Contrôle scalaire et vectoriel
Régulation de couple	Temps de montée sur échelon de couple : < 10 ms à couple nominal Non-linéarité : ± 5 % à couple nominal
Régulation de vitesse	Précision statique : 20 % du glissement nominal du moteur Précision dynamique : 1 % s sur échelon de couple de 100 %
Longueur de câble moteur maximale recommandée	R1 : 100 m R2 : 200 m R3-R11 : 300 m

Conformité du produit

CE
Directive basse tension 2014/34/EU, EN 61800-5-1: 2007
Directive sur les machines 2006/42/EC, EN 61800-5-2: 2007
Directive CEM 2014/30/EU, EN 61800-3: 2004 + A1: 2012
Directive RoHS 2011/65/EU
Système d'assurance qualité ISO 9001 et système environnemental ISO 14001
Directive sur les déchets des équipements électriques et électroniques (DEEE) 2002/96/EC
Directive RoHS 2011/65/EU
UL, EAC, RCM, UL, cUL
TÜV Nord (fonctions de sécurité)

Conformité des harmoniques

La self DC optimisée intégrée en standard dans l'AC580-01 répond aux exigences de la norme IEC 61000-3-12:2011.

CEM suivant EN 61800-3:2004 + A1:2012

Tailles R1 à R9 avec filtre intégré de catégorie C2 en standard
Tailles R10 et R11 avec option de filtre de catégorie C3 intégré préconfiguré

Entrées et sorties (configuration standard)	
2 entrées analogiques	Sélection du mode d'entrée de courant/tension programmable par l'utilisateur.
Signal de tension	0 (2) à 10 V, R in >200 k Ω
Signal de courant	0 (4) à 20 mA, R in = 100 Ω
Référence potentiomètre	10 V ±1 % max. 20 mA
2 sorties analogiques	AO1 est programmable par l'utilisateur pour le courant ou la tension. Courant AO2
Signal de tension	0 à 10 V, Rcharge : >100 kΩ
Signal de courant	0 à 20 mA, Rcharge : <500 Ω
Tension auxiliaire interne	24 V DC ±10 %, max. 250 mA
6 entrées numériques	12 à 24 V DC, 24 V DC, connectivité des capteurs PTC prise en charge par une seule entrée numérique. Connexion PNP ou NPN (5 DI avec connexion NPN).
3 sorties relais	Tension de commutation maximale 250 V AC/30 V DC Courant continu maximal 2 A eff
Thermistances prises en charge	N'importe laquelle des entrées analogiques, ou l'entrée numérique 6, sont configurables pour PTC avec jusqu'à 6 capteurs. Les deux sorties analogiques peuvent être utilisées pour alimenter les capteurs PT100, PT1000, KTY83, KTY84 ou Ni1000 Pour des informations plus détaillées, consulter le manuel de l'ACS580.

Contraintes d'environnement		
Température ambiante		
Transport Stockage	-40 à +70 °C -40 à +70 °C	
Fonctionnement	ACS580-01 : -15 à +50 °C, sans givre R1 à R9 de +40 à +50 °C avec déclassement ACS580-04 : -15 à +55 °C, sans givre R10 à R11 de +40 à +55 °C avec déclassement ACS580-07 : 0 à +40 °C, sans givre R6 à R11 de +40 à +50 °C avec déclassement	
Mode de refroidissement Par air	Air sec et propre	
Altitude	0 à 1 000 m	Sans déclassement
	1 000 à 4 000 m	Avec déclassement de 1 %/100 m
	Pour des informations plus détaillées, consulter le manuel de l'ACS580	
Humidité relative	5 à 95 %, sans condensation	
Degré de protection	ACS580-01 : IP21 en standard. IP55 en option (tailles R1 à R9) ACS580-04 : IP00 en standard. IP20 en option (tailles R10 à R11) ACS580-07 : armoires R6 à R11 : IP21 en standard. IP42 et IP54 en option	
Sécurité fonctionnelle	Safe Torque-Off suivant EN 61800-5-2 IEC 61508 ed2 : SIL 3. IEC 61511 : SIL 3. IEC 62061 : SIL CL 3. EN ISO 13849-1 : PL e	
Niveaux de contamination	Poussières conductrices interdites	
Stockage	IEC 60721-3-1. Classe 1C2 (gaz chimiques). Classe 1S2 (particules solides)*)	
Fonctionnement	IEC 60721-3-3. Classe 3C2 (gaz chimiques). Classe 3S2 (particules solides)*)	
Transport	IEC 60721-3-2. Classe 2C2 (gaz chimiques) Classe 2S2 (particules solides)*)	

Alimentation électrique externe	
Standard : ACS580-01 tailles R6-R9, ACS580-04 toutes les tailles et ACS580-07 toutes les tailles	1.5 A à 24 V AC/DC ±10 %
Avec option : ACS580-01 tailles R1-R5	1.04 A à 24 V AC/DC ±10 %

Communication

Protocole standard (EIA-485) : Modbus RTU. Protocoles disponibles en option : EtherNet/IP, EtherNet POWERLINK, Modbus/TCP, EtherCAT, PROFINET IO, PROFISafe (pour les fonctions STO et SS1-t), CANopen, ControlNet, DeviceNet et Profibus DP.

Fonctions de protection

Contrôleur de surtension
Contrôleur de sous-tension
Surveillance du courant de fuite à la terre du moteur et des câbles du moteur
Protection contre les courts-circuits du moteur et des câbles du moteur
Protection contre la surchauffe du moteur
Supervision de l'interrupteur d'entrée/sortie
Protection contre la surcharge du moteur
Détection de perte de phase (moteur et alimentation)
Supervision de sous-charge (détection de perte de courroie)
Supervision de la surcharge
Protection rotor bloqué
Perte de référence de contrôle

*) C = substances actives chimiquement
S = substances actives mécaniquement

CATALOGUE

Variateurs ABB pour les applications de traitement de l'eau et des eaux usées

ACQ580, 0.75 à 500 kW

Le variateur à haut rendement énergétique pour le pompage de l'eau et des eaux usées

Quels que soient vos besoins, redondance dans les applications multi-pompes ou fonctions intégrées pour applications de pompage dans l'industrie de l'eau et des eaux usées, l'ACQ580 répond à vos attentes.

La simplicité à portée de main
Le menu principal de réglage de la microconsole est extrêmement simple et vous permet de configurer le variateur rapidement et efficacement.

Une terminologie spécifique
Le variateur est doté de programmes intégrés de commande de pompes garantissant un fonctionnement optimal des pompes pour eaux et eaux usées.

Rendement énergétique accru
L'optimisateur d'énergie optimise vos rendements énergétiques et vous permet de surveiller et d'économiser l'énergie consommée dans votre process.

Sécurité intégrée et fiable
Module en option de protection thermistance certifié ATEX CPTC-02 offre une sécurité de processus améliorée et une installation simplifiée et simple.

Solutions de télésurveillance
La surveillance à distance via les navigateurs Web standard permet de réduire les coûts en diminuant le nombre de visites de chantier.

Les variateurs pour les applications de traitement de l'eau et des eaux usées ACQ580 font partie de la gamme ABB « 100 % compatible ». L'écoulement de l'eau et eaux usées dans le système de pompage est garanti sur toute sa durée de vie. Le variateur ACQ580 est simple à mettre en service et utiliser. Les fonctions de pompage intégrées sont le gage d'un fonctionnement optimal et d'une diminution de la facture énergétique. Le variateur est utilisé dans les installations de traitement d'eau et des eaux usées, les stations de pompage, les usines de dessalement, les installations industrielles de traitement des eaux usées et les environnements d'irrigation. Il est associé à des pompes à débit entrant, pompes de transfert, pompes doseuses, pompes à boue, pompes de surpression, pompes immergées et des compresseurs, soufflantes, décanteurs, centrifuges, mélangeurs et ventilateurs.

Adapté à la majorité des moteurs
Le variateur peut contrôler quasiment tous les moteurs, des moteurs à induction et aimants permanents aux moteurs à reluctance.

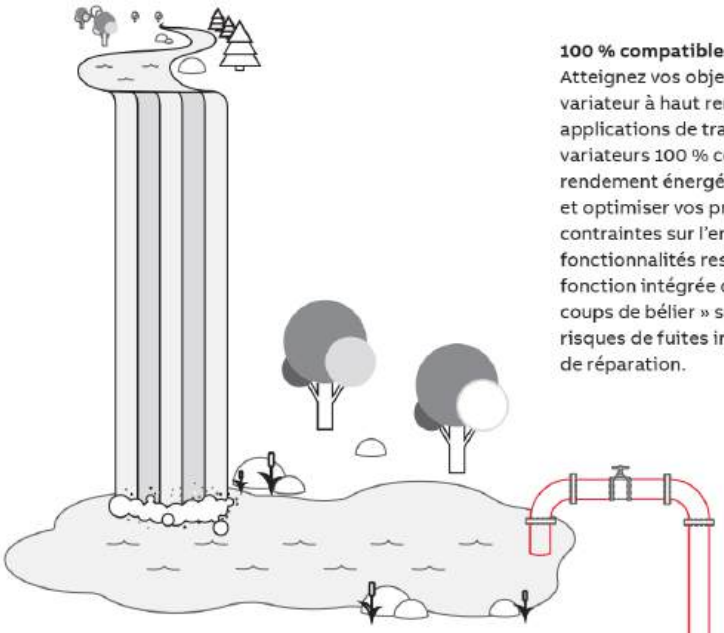
Outil de démarrage et de maintenance
L'outil PC Drive Composer d'aide à la mise en route, à la configuration, à la surveillance et au réglage des applications est raccordé à la microconsole du variateur via un câble USB.

Robuste avec des fonctions intégrées
Une solution robuste, simple à sélectionner, à installer et à utiliser. Des fonctionnalités intégrées comme un filtre RFI, une self, une interface bus de terrain Modbus RTU et une entrée de sécurité STO (Safe Torque Off) simplifient la sélection, l'installation et l'utilisation du variateur.

Communication fiable
De nombreux modules coupleurs optionnels permettront de raccorder le variateur à tous les grands réseaux d'automatismes et systèmes de contrôle-commande.

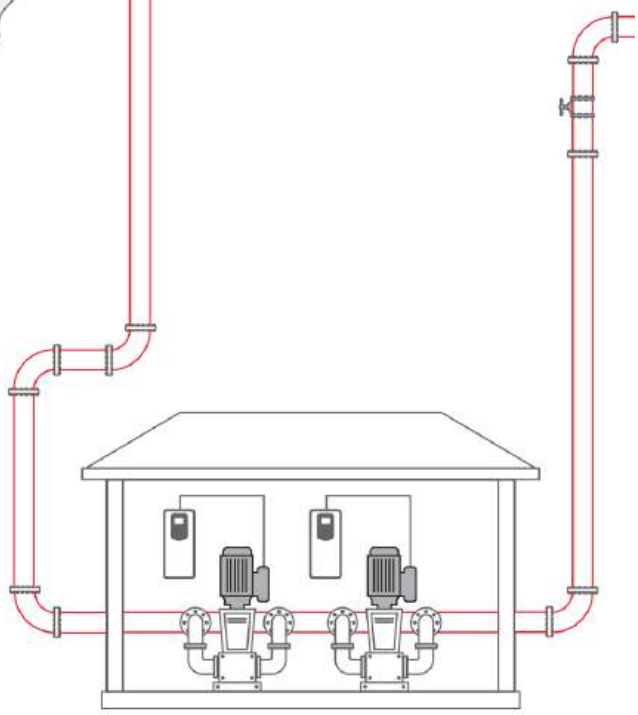
Extension d'entrées/sorties
Outre les interfaces standard, le variateur comporte un emplacement permettant de recevoir des modules d'extension d'E/S.

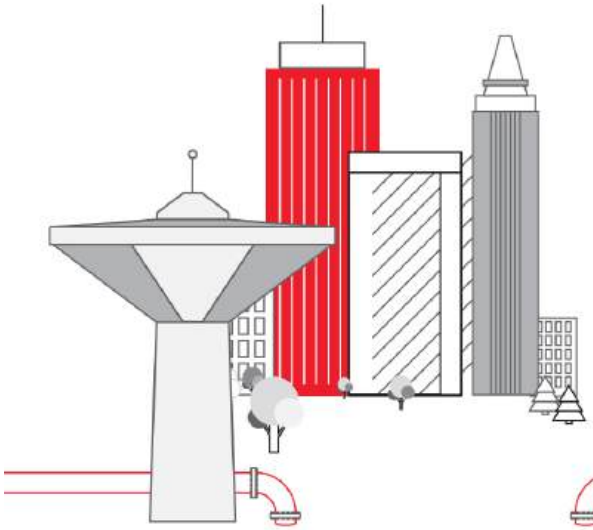
Solutions 100 % compatibles pour les applications de traitement de l'eau et des eaux usées



100 % compatibles avec l'environnement
Atteignez vos objectifs environnementaux grâce à notre variateur à haut rendement énergétique pour les applications de traitement de l'eau et des eaux usées. Les variateurs 100 % compatibles sont dotés de calculateurs de rendement énergétique intégrés qui vous aident à analyser et optimiser vos procédés de pompage afin de réduire les contraintes sur l'environnement. Parmi les autres fonctionnalités respectueuses de l'environnement : la fonction intégrée de remplissage de conduite qui réduit les « coups de bélier » sur les conduites d'eau, évitant ainsi les risques de fuites indésirables, les arrêts imprévus et les frais de réparation.

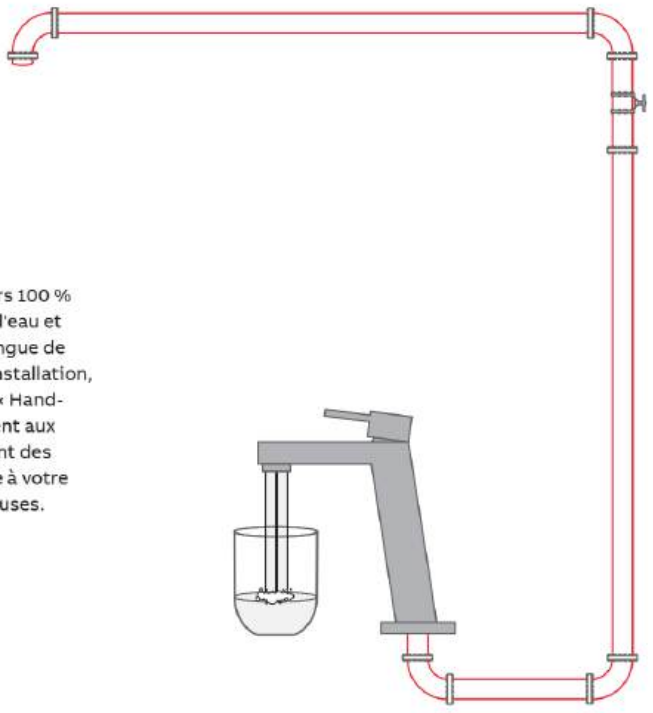
100 % compatibles avec vos procédés
Les procédés de traitement de l'eau et des eaux usées comprennent de nombreuses phases exigeant des performances optimales de votre solution de pompage, du début à la fin. Nos variateurs robustes sont livrés avec des classes de protection jusqu'à IP55. Ils contrôlent quasiment tous les types de moteurs, des moteurs à induction et aimants permanents aux moteurs à reluctance synchrone jusqu'à 250 kW. Ils sont également compatibles avec de nombreux protocoles de bus de terrain, garantissant ainsi une communication fiable avec le système d'automatisme.





100 % compatibles avec votre stratégie
En tant que partenaire mondial fiable, nous proposons des solutions pour procédé de traitement des eaux sans impact sur les coûts de cycle de vie de votre solution de pompage. Par ailleurs, nous vous aidons à maintenir la productivité et la cohérence de votre procédé de traitement des eaux de manière écoénergétique. Notre vaste gamme de produits et solutions pour l'industrie de l'eau offre un débit d'eau optimal à tout moment de la journée. La consommation énergétique s'en trouve réduite, et la productivité, la flexibilité et la facilité d'utilisation améliorées. Dans plus de 90 pays, notre réseau de partenaires techniques est à votre disposition pour vous apporter assistance technique et support local.

100 % compatibles avec vous
Vous pouvez utiliser en toute confiance nos variateurs 100 % compatibles pour vos applications de traitement de l'eau et des eaux usées. Le variateur parle parfaitement la langue de votre application de pompage, ce qui simplifie son installation, sa configuration et son utilisation. La microconsole « Hand-Off-Auto » intuitive vous permet d'accéder rapidement aux informations essentielles. Nous proposons également des solutions de télésurveillance pour accéder à distance à votre variateur et recevoir des données analytiques précieuses.



Optimiser le débit d'eau et d'eaux usées dans vos solutions de pompage

Le variateur ACQ580 pour applications de traitement de l'eau et des eaux usées a été conçu pour aider les utilisateurs, concepteurs, OEM, intégrateurs de système et EPC à sécuriser le pompage des eaux dans les services publics, les stations de pompage, les installations de traitement des eaux usées, les usines de dessalement et les environnements d'irrigation. Nous proposons des variateurs techniquement compatibles à long terme soutenues par une offre complète de services.

Remplissage de conduite
Augmentez la durée de vie de votre système de tuyauterie et de pompage en évitant les pics de pression.

Rampes rapides
Prolongez le cycle de vie d'une pompe immergée en réduisant l'usure des pièces mécaniques en utilisant les rampes d'accélération ou de décélération de la pompe.

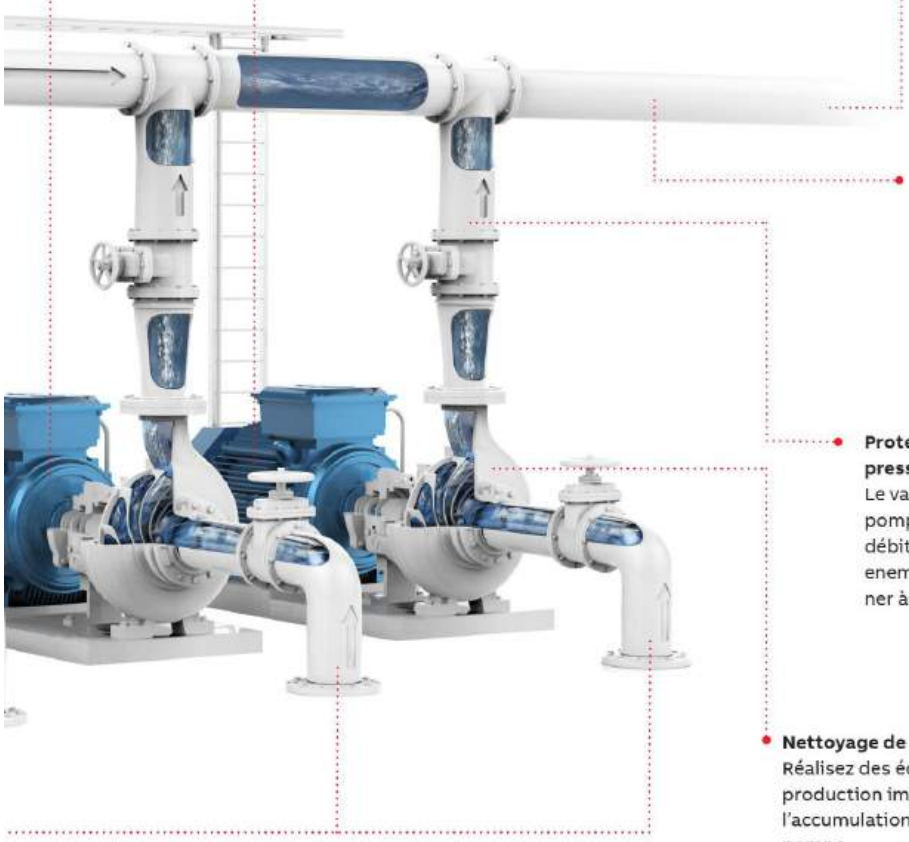
Priorité de pompe
Économisez de l'énergie grâce à l'alternance de pompe optimale qui lance la pompe de capacité plus élevée lorsque la consommation est plus importante.

Commande multi-pompes
Garantissez une production stable et ininterrompue avec des commandes multi-pompes en optimisant la vitesse et le nombre de pompes en fonctionnement.

Sleep boost
Économisez de l'énergie tout en prolongeant la durée de vie de la pompe et du moteur en réduisant les cycles marche/arrêt à tout moment de la journée.

Changement automatique
Augmentez le temps moyen entre réparations et réduisez les coûts de fonctionnement en équilibrant le temps de fonctionnement à long terme de toutes les pompes dans un système de pompage parallèle.

Niveau de contrôle
Assure une efficacité optimale lors du remplissage et de la vidange du réservoir.



Calcul du débit sans capteur
Réduisez les coûts en éliminant les composants externes ou en renforçant les débitmètres pour éviter les interruptions du procédé.

Protection contre le débit et la pression
Le variateur protège le système de pompage contre une pression et un débit trop faibles ou trop élevés, tout enempêchant la pompe de fonctionner àsec.

Nettoyage de pompe
Réalisez des économies en évitant les arrêts de production imprévus grâce à l'élimination de l'accumulation des obstructions de la roue de la pompe.

Sécuriser le débit d'eau et d'eaux usées dans le système pompage

Nous voulons vous aider à assurer le fonctionnement de vos installations d'eau et d'eaux usées et de votre système de distribution. Nous voulons vous aider à éviter les interruptions de fonctionnement de vos pompes. Nous voulons également nous assurer que l'eau s'écoule simplement avec le meilleur rendement énergétique possible conformément aux normes et réglementations applicables.

Offre complète de produits et de services pour l'industrie de l'eau
En tant que partenaire mondial, nous pouvons gérer vos installations d'eau et vous procurer de réels avantages du point de vue du coût total de possession. Pour cela, nous réduisons les coûts sur tout le cycle de vie de votre solution de pompage. Notre portefeuille compte des variateurs, des moteurs, des API et des capteurs. Nous proposons également des solutions de télésurveillance pour accéder aux informations d'une pompe fonctionnant à distance, gagner du temps et réduire les coûts. Nos produits ont été conçus pour être compatibles les uns avec les autres, afin d'assurer une communication et des fonctionnalités fiables.

Maintenance proactive pour minimiser les arrêts de votre système de pompage et de distribution d'eau
L'industrie de l'eau et eaux usées comptent de nombreuses applications motorisées. Leur fiabilité est cruciale en fonctionnement, car leurs missions sont souvent critiques. Une éventuelle défaillance d'un dispositif du système de distribution d'eau et d'eaux usées peut entraîner une perte de production et introduire des conséquences pour l'environnement et la sécurité. Afin de réduire le risque de défaillance, chaque élément de la solution de pompage (variateur, moteur, palier, accouplement ou engrenages) doit être correctement entretenu aux bons moments de son cycle de vie. Depuis la première prise de contact jusqu'à l'élimination et au recyclage de chaque composant, les services proposés par ABB couvrent la totalité du cycle de vie de votre pompe. Sur toute la chaîne de valeur, ABB propose une gamme complète de prestations - formation, support technique et contrats « à la carte ».

Caractéristiques techniques

Raccordement réseau	
Plage de tension et de puissance	triphasée, U_n 380 à 480 V, +10%/-15% 0.75 à 250 kW (-01) 250 à 500 kW (-04) 75 à 250 kW (-07)
Fréquence	50/60 Hz ±5%
Facteur de puissance	$\cos\varphi$ = 0.98
Rendement (à puissance nominale)	98%
Raccordement moteur	
Tension	0 à U_n, triphasée
Fréquence	0 à 500 Hz
Mode de contrôle du moteur	Contrôle scalaire et vectoriel
Régulation de couple	Temps de montée sur échelon de couple : < 10 ms à couple nominal Non-linéarité : ± 5 % à couple nominal
Régulation de vitesse	Précision statique : 20 % du glissement nominal du moteur Précision dynamique : 1 % s sur échelon de couple de 100 %

Conformité

CE
- Directive basse tension 2006/95/CE EN 61800-5-1 : 2007
- Directive sur les machines 2006/42/CE EN 61800-5-2 : 2007
- Directive CEM 2004/108/CE EN 61800-5-3 : 2004 + A1: 2012
- Directive RoHS 2011/65/UE

Système d'assurance qualité ISO 9001 et système environnemental
RCM
ISO 14001
EAC
UL, cUL
TÜV Nord (safety functions)

CEM suivant EN 61800-3 : 2004 + A1 : 2012

ACQ580-01, variateur en coffret avec filtre intégré de catégorie C2 en standard (tailles R0 à R9)
ACQ580-04 variateur en module avec filtre intégré de catégorie C3 en standard (tailles R10 à R11)
ACQ580-07, variateur en armoire avec filtre intégré de catégorie C2 en standard (tailles R0 à R9)

Contraintes d'environnement	
Température ambiante	
Transport Stockage	-40 à +70 °C -40 à +70 °C
Fonctionnement	ACQ580-01 Tailles R0 à R3 : -15 à +50 °C. Sans déclassement, sans givre. Tailles R4 à R9 : -15 à +40 °C sans déclassement, sans givre, +40 à +50 °C avec déclassement ACQ580-04 Tailles R10 à R11 -15 à +55 °C. sans givre. TaillesR10 à R11 de +40 à +55 °C avec déclassement 1% par 1 °C ACQ580-07 Tailles R6 à R9 : 0 à +40 °C. Sans déclassement, sans givre. +40 à +50 °C avec déclassement Voir le manuel d'installation pour plus d'informations.
Mode de refroidissement Par air	Air sec et propre
Altitude 0 à 1 000 m 1 000 à 4 000 m	 Sans déclassement Avec déclassement de 1 %/100 m
Humidité relative	5 à 95 %, sans condensation
Degré de protection	ACQ580-01: IP21 en standard, IP55 en option ACQ580-04: IP00 en standard, IP20 en option ACQ580-07: IP21 en standard IP42 et IP54 en option
Sécurité fonctionnelle	Safe torque off (STO suivant EN 61800-5-2) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
Niveaux de contamination	Poussières conductrices interdites
Stockage	CEI 60721-3-1, Classe 1C2 (gaz chimiques), Classe 1S2 (particules solides)*
Exploitation	CEI 60721-3-3, Classe 3C2 (gaz chimiques), Classe 3S2 (particules solides)
Transport	CEI 60721-3-2, Classe 2C2 (gaz chimiques), Classe 2S2 (particules solides)*

* C = substances actives chimiquement
S = substances actives mécaniquement

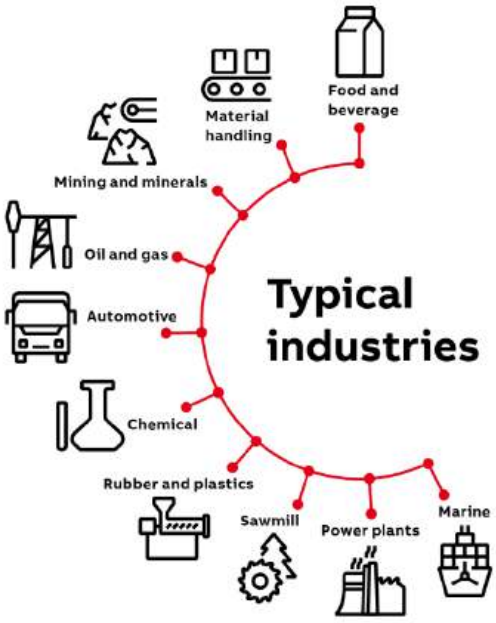
LOW VOLTAGE AC DRIVES

ABB industrial drives

ACS880, drive modules
0.75 to 3500 HP (0.55 to 3200 kW)

The all-compatible ACS880 series
Reliability and flexibility

The AC880 is an all-compatible ABB industrial drive, offered in a range of wall-mounted drives, drive modules and cabinet-built drives.



ABB's all-compatible drives are designed to provide customers across industries and applications with unprecedented levels of compatibility and flexibility. The ACS880 drive modules are optimized for panel building. They are customized to meet the particular needs of specific industries, such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, sawmills, marine, water and wastewater, food and beverage, and automotive. They can control a wide range of applications, including cranes, extruders, winches, winders, conveyors, mixers, compressors, centrifuges, test benches, elevators, extruders, pumps and fans.

High quality

Reliability and consistent high quality
The ACS880 drives are designed for customers who value high quality and robustness in their applications. They have coated boards as standard, making the ACS880 suitable for harsh conditions. Additionally, every ACS880 drive is factory-tested at full load to ensure maximum reliability. The tests include performance and all protective functions.

High performance, safety and configurability
The ACS880 offers the highest level of performance. The drives are equipped with ABB's signature Direct Torque Control (DTC), which provides precise speed and torque control for all applications and supports virtually any type of motor.

The extensive ACS880 offering includes wall-mounted drives, drive modules and cabinet-built drives, as well as low harmonic and regenerative variants.

The ACS880 has all the essential features built-in reducing the time required for engineering, installation and commissioning. A wide range of options are also available to optimize the drive for different requirements, including certified, integrated safety features.

Simplify your world without limiting your possibilities

The ACS880 industrial drive modules are designed for cabinet installation, with optimized location of the power terminals and wheels for easy maneuvering. A wide selection of module variants and options, including extensive programming and connectivity, make the ACS880 suitable for various different requirements and applications.

Optimized for cabinet assembly
- Flexible mounting directions and product configurations
- Side-by-side mounting
- Power terminal locations designed for optimal and compact cabinet layout
- High power modules with wheels for easy maneuvering
- Possibility for flange (push through) mounting
- Mechanical kits for easy cabinet assembly

See page 08

Ease of engineering and use
- All-compatible ACS880 drives share the same easy-to-use user interface
- Multilingual control panel with clear display
- Graphical PC tools for engineering, commissioning and maintenance
- Minimized engineering and installation effort with integrated features and components
- Extensive selection of support material and tools for engineering
- Virtual commissioning

See page 09 – 10

Smarter solutions with drive-based functional safety
- Safe Torque Off built-in as standard
- Optional safety modules for extended safety functions
- Encoderless safe speed detection
- Highest level of machinery safety, SIL 3 / PL e
- TÜV certified

See page 11

Comprehensive connectivity
- Communication with all major automation networks
- Remote monitoring
- Mobile connectivity
- Integration tools for various PLCs

See page 12

Nine-year maintenance interval

Minimized downtime
- Robust, long lifetime design for maximum reliability
- Coated circuit boards for harsh conditions
- Removable memory unit for fast drive replacement
- Each drive factory tested at full load
- Nine-year maintenance interval
- Worldwide service and support
- Advanced features for analyzing and resolving issues

See page 13

Global compatibility with various demands
- Global product approvals, e.g. CE, UL, cUL, CSA, marine certifications, ATEX
- Support for various motor types
- Low harmonic content
- Capable of power regeneration

See page 14

Premium control and programmability
- Direct Torque Control (DTC) for precise control
- Speed, torque and position control as well as synchronizing
- Extensive parameter-based programming
- Adaptive programming as standard
- Drive-based PLC programmability (IEC 61131-3) for fully customized solutions

See page 15

Application and industry specific solutions
- Ready-made optimized solutions for various applications and industries

See page 16 – 17

Optimized for cabinet assembly

Optimized mechanical design for cabinet assembly
ACS880 drive modules have been optimized for assembly into the customer's own cabinets to ensure high quality and compact installation at minimal cost. High power modules have wheels for easy maneuvering, and the power terminal locations have been designed for optimal and compact cabinet layout. Side-by-side mounting reduces the required cabinet space.

For harsh environments, flange mounting (push through) with UL (NEMA) Type 12 / IP55 back side protection is offered for complete drive modules. In flange mounting, the control electronics are separated from the cooling airflow for better thermal management and higher reliability.

Flexible mounting and cabling directions enable adaptation to various cabinet enclosures. All the complete ACS880 drive modules have UL (NEMA) Type Open / IP20 enclosure class to minimize engineering and assembly effort, as well as to reduce the total cost and ensure a safe ready-made cabinet.

Support for cabinet assembly
A large variety of support material is available for making cabinet assembly, planning, and implementation as straightforward and rapid as possible. Cabinet assembly accessories help shorten engineering and assembly time, and help to reduce the risk of errors.

A wide selection of both mechanical and electrical installation accessories are offered for high power modules. These accessories are available allowing full design to install the modules into customer enclosures. Additionally, ABB authorized and registered system integrators and panel builders can offer their assistance.

Global compatibility with various demands

Global product approvals
The ACS880 is a global product and has all the major global approvals, including CE, UL, cUL, EAC, RCM and TÜV. Marine approval, ATEX and SEMI F47 are available either as standard or as an option.

Support for different motor types
The ACS880 provides reliable control for squirrel cage, high-torque or servo-type permanent magnet, synchronous reluctance (SynRM), submersible and high-speed motors. Most encoder types are supported.

Regardless of the motor type, drive commissioning is easy, with no need for laborious manual tuning.

Low harmonic content
All ACS880 drives have an internal choke for harmonic reduction. If lower harmonic content is needed, an ultra-low harmonic variant is available. The drive will produce exceptionally low harmonic content and meet the requirements IEEE519, IEC61000-3-12 and G5/4.

Regeneration of energy
The ACS880 offers a number of solutions for applications where electrical braking is needed. As standard, ACS880 drives have a flux braking feature that provides greater deceleration by increasing the motor flux. If this is not sufficient, the internal brake chopper can be used together with a brake resistor.

The most advanced solution is the ACS880 regenerative drive, which allows full, continuous braking and can produce remarkable energy savings.

ACS880 also supports common DC bus configurations, where the braking energy from one load can be utilized by other loads.

Premium control and programmability

Direct Torque Control (DTC)
ABB's state of the art motor control technology provides precise speed and torque control, with or without an encoder, even close to zero speed. DTC provides reliable starts and rapid reactions to load or line changes, and ensures smooth and continuous operation. DTC provides optimal control, even with sine filters.

The energy optimizer feature maximizes motor efficiency by ensuring maximum torque per ampere, reducing the power drawn from the supply.

Position control and synchronizing
Position control allows to meet motion systems demands without the need of an external position controller. The ready-made motion functions can be easily configured by parameters.

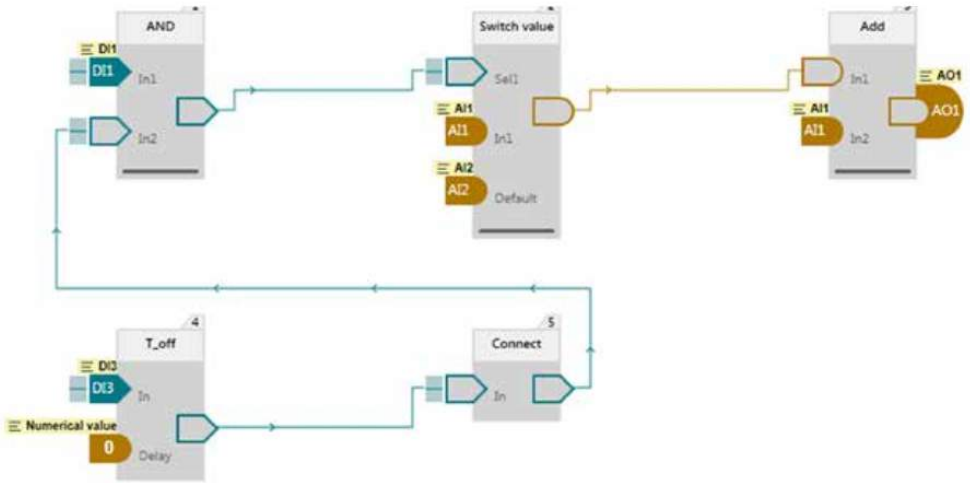
Additional features, such as built-in synchronized drive to drive link and possibility for encoderless positioning, make ACS880 position control ideal for any axis.

Drive programming
To meet your specific application needs, you can customize your ACS880 with an extensive range of user-definable software settings (parameters) and adaptive programming.

This makes fine-tuning the ready-made application control program easy. For further customization, drive application programming based on IEC 61131 standard is available for full PLC programmability. IEC programming uses the same programming environment as ABB PLCs. It is also easy to integrate the ACS880 with PLCs and HMIs.

Adaptive programming is an easy to use dynamic programming which allows flexible adjustments to the ACS880 software.

IEC programming
based on IEC 61131 standard for full scale PLC programmability is available as an option.



Technical data

Mains connection	
Voltage and power range	3-phase, U_{N2} 208 to 240 V, +10%/-15% (-01) 3-phase, U_{N5} 380 to 500 V, +10%/-15% (-01, -04, -04F, -11, -31, -14, -34) 3-phase, U_{N7} 525 to 690 V, +10%/-15% (-01, -04, -04F, -14, -34) 3-phase, U_{N5} 380 to 500 V, ±10% (-x04, -x4 [3]) 3-phase, U_{N7} 525 to 690 V, ±10% (-x04, -x04LC, -x4 [3]) ACS880-01, -04, -04F, -11, -31, -14, -34, -x4 3), -104, -104LC: 0.75 to 3500 HP (0.55 to 3200 kW) Diode supply unit (DSU) 55 to 5445 kVA IGBT supply unit (ISU) 5.5 to 3679 kVA Regenerative rectifier unit (RRU) 400 to 4135 kVA
Frequency	50/60 Hz ±5%
Power factor ACS880-01, -04, -04F	cosϕ = 0.98 cosϕ total = 0.93 to 0.95
ACS880-11, -31, -14, -34	cosϕ = 1
IGBT supply unit (ISU)	cosϕ = 1 cosϕ total = 0.99
Diode supply unit (DSU) and Regenerative rectifier unit (RRU)	cosϕ = 0.98 cosϕ total = 0.93 to 0.95
Efficiency (at nominal power)	ACS880-01, -04, -04F, -104, DSU, RRU: 98%. ACS880-11, -31, -14, -34, ISU: 97%

Motor connection	
Voltage	3-phase output voltage 0 to U_{N2} /U_{N5} /U_{N7}
Frequency	0 to ±598 Hz [1]
Motor control	Direct torque control (DTC)
Torque control Open loop Closed loop	Torque step rise time: <5 ms with nominal torque <5 ms with nominal torque
Open loop Closed loop	Non-linearity: ± 4% with nominal torque ± 3% with nominal torque
Speed control Open loop Closed loop	Static accuracy: 10% of motor nominal slip 0.01% of nominal speed
Open loop Closed loop	Dynamic accuracy: 0.3 to 0.4% seconds with 100% torque step 0.1 to 0.2% seconds with 100% torque step

Product compliance

CE
Low Voltage Directive 2014/35/EU according to EN 61800-5-1:2007
Machinery Directive 2006/42/EC
EMC Directive 2014/30/EU
ATEX Directive 2014/34/EU, EN 50495
Quality assurance system ISO 9001 and Environmental system ISO 14001
RoHS 2011/65/EU and Delegated Directive (EU) 2015/836
cULus listed according to UL508C or UL 61800-5-1 and CSA C22.2 No. 274, CSA Certified according to CSA C22.2 No. 274
RCM, EAC [4]
TÜV Nord certification for functional safety [5]
ATEX-certified safe disconnection function and thermistor protection function, Ex II (2) GD [7]
Marine type approvals for -01: ABS, Bureau veritas, CCS, DNV GL, KR, Lloyd's, NK, RINA, RMRS. For other modules, see **http://new.abb.com/drives/segments/marine/marine-type-approvals.**

EMC according to EN 61800-3: 2004 + A1: 2012. See page 69.

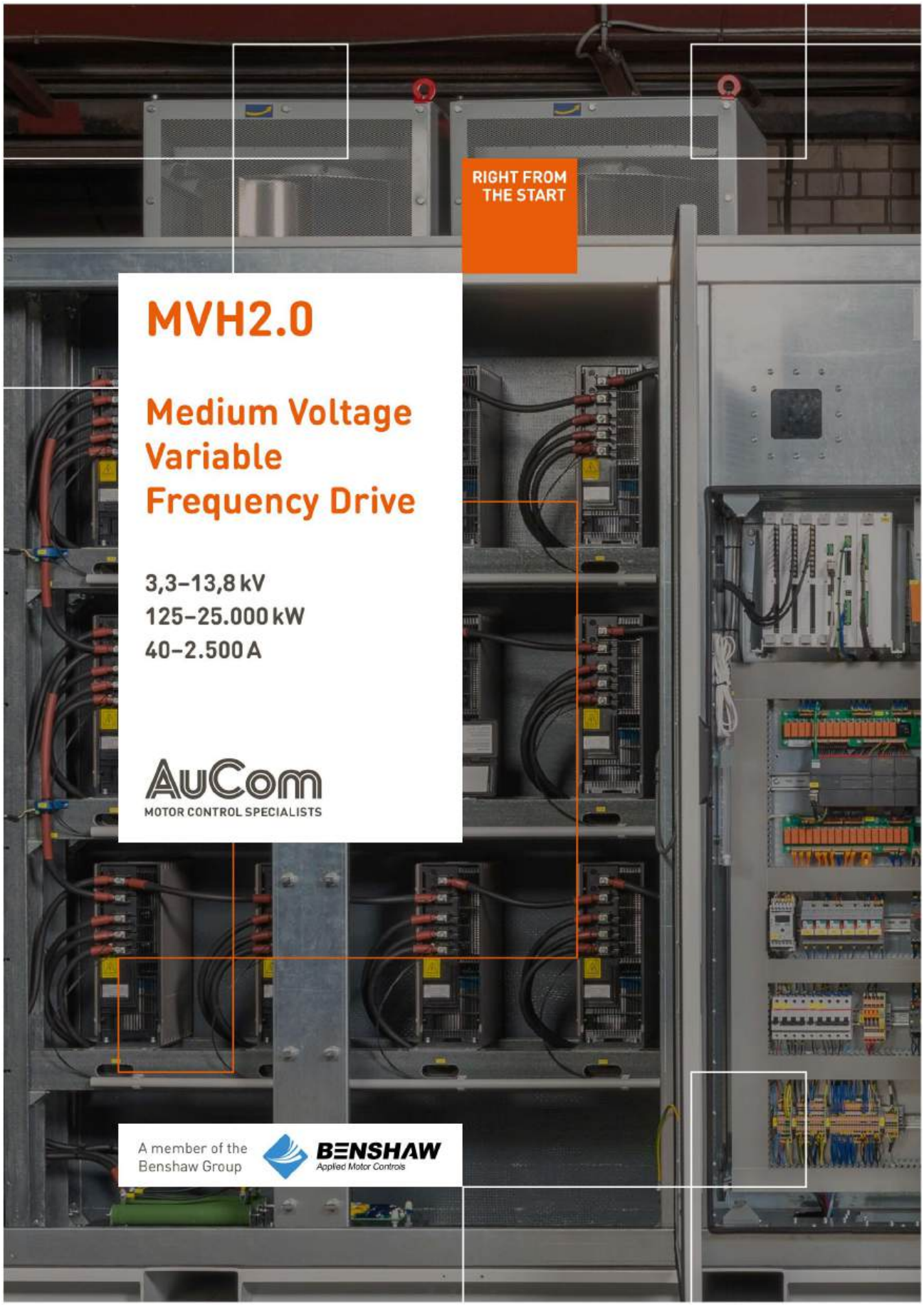
1st environment category C2 included as option (-01, -04, -04F, -x4 [3]), -11 [9], -31 [9], -14, -34, -x04).
2nd environment category C3 included as standard (-x04, -x04LC, -x4 [3])
2nd environment category C3 included as option (-01, -04, -04F, -11, -31, -x4 [2] [3], -14, -34)
2nd environment category C4 included as standard

Environmental limits	
Ambient temperature	
Transport	-40 to +70 °C
Storage	-40 to +70 °C
Operation area (air-cooled)	-15 to +40 °C as standard (-01, -04, -04F, -11, -31, -14, -34) 0 to +40 °C as standard (-x04, -x4 [3]) +40 to +55 °C with derating of 1%/1 °C (-01,-04, -04F, -11, -31, -14, -34) +40 to +50 °C with derating of 1%/1 °C (-x04, -x4 [3])
(liquid-cooled)	0 to +45 °C as standard (-x04LC) +45 to +55 °C with derating of 0,5%/1 °C (-x04LC)
Cooling method	
Air-cooled	Dry clean air
Liquid-cooled	Direct liquid cooling, Antifrogen® L Incoming coolant temperature to module (x04LC): 0 to +40 °C as standard +40 to +45 °C with derating of 2%/1 °C +45 to +50 °C with derating of 2%/1 °C or 6%/1 °C [8] Incoming coolant temperature to optional liquid-cooling unit (-1007LC) (fresh water or sea water): 0 to +36 °C as standard +36 to +46 °C with derating of 2%/1 °C
Altitude 0 to 3,280 ft (1,000 m) 3,280 to 13,120 ft (1,000 to 4,000 m)	 Without derating With derating of 1%/328 ft (100 m) [6]
Relative humidity	5 to 95%, no condensation allowed
Degree of protection UL (NEMA) Type Open / IP00 UL (NEMA) Type Open / IP20	 -x4 [3], -x04, -x04LC -01, -04, -04F, -11, -31, -14, -34
Paint color	RAL 9017/9002
Pollution degree	PD 2
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1:1997, Class 1C2 (chemical gases), Class 1S2 (solid particles) [*]
Operation	IEC 60721-3-3:2002, Class 3C2 (chemical gases), Class 3S2 (solid particles) [*]
Transportation	IEC 60721-3-2:1997, Class 2C2 or 3C2 (chemical gases), Class 2S2 (solid particles without air inlet filters) [*]

Built-in functional safety. See pages 67 - 68.

For safe torque off (STO) and safety functions module	EN/IEC 61800-5-2, IEC 61508: SIL 3, IEC 61511: SIL 3,EN/IEC 62061: SIL CL 3, EN ISO 13849-1: PL e - TÜV Nord certified [5]
Safety over fieldbus	PROFIsafe over PROFINET, certified.

[*] C = Chemically active substances, [*] S = Mechanically active substances
[1] For higher operational output frequencies please contact your local ABB office.
Operation above 120 Hz might require type specific derating, please contact your local ABB office.
Output filters may limit the output frequency. See product specific hardware manual for details.
[2] Please check availably per drive type
[3] Single drive module packages ACS880-04, -14 and -34 which consist of several modules
[4] EAC directives: TR CU 020/2011 (EMC directive); TR CU 004/2011 (low voltage directive) EAC has replaced GOST R
[5] For available certificates, see http://new.abb.com/drives/functional-safety
[6] Derating reduced by lower than 40 °C ambient temperature
[7] Safe disconnection function (+Q971), thermistor protection function (+L537)
[8] See product specific hardware manual for detailed derating rules.
[9] Please check availability for -11 and -31 frame size R8.



MVH2.0

Medium Voltage Variable Frequency Drive

3,3–13,8 kV
125–25.000 kW
40–2.500 A

AuCom
MOTOR CONTROL SPECIALISTS

A member of the Benshaw Group

BENSHAW
Applied Motor Controls

RIGHT FROM THE START

Table of contents

AuCom
MOTOR CONTROL SPECIALISTS

AuCom
MOTOR CONTROL SPECIALISTS

Company Profile

AUCOM – RIGHT FROM THE START

AuCom is a Kiwi success story. From humble beginnings in a Christchurch garage in 1978, AuCom has grown to become a global business in a highly competitive market. While we look to the future and to new ways that we can provide value for our customers, it is equally important that we remember our past.

AuCom began as the brainchild of two close friends with a passion for high quality audio amplifiers. Ray Archer and Mark Empson were amateur radio enthusiasts, and Mark possessed an innovative electronic design streak. With an eye for exciting new technologies, in 1981 the pair licensed a share of the rights to a power saving technology developed by NASA. Ray and Mark saw potential in this new technology to provide benefits in electronic motor control and became pioneers of that industry. As AuCom's activities and product range expanded the garage was quickly outgrown and after three factories, we moved to our present location on Wrights Road in 1993. We developed a global AuCom sales network, and also began to supply re-branded motor control products to a number of well-known global companies to complement their existing product line.

This multi-channel approach increased our share of the global market and established AuCom as the place to go for low and medium voltage motor control systems. Our distribution partners thrived, and AuCom quickly became an industry leader behind the scenes.

Product Structure

AIR COOLED			WATER COOLED
FRONT & REAR ACCESS		FRONT ACCESS	FRONT ACCESS
COMPACT CABINET	STANDARD CABINET	STANDARD CABINET	WATER COOLED CABINET

AuCom
MOTOR CONTROL SPECIALISTS

Compact Cabinet

3.3 kV	150–590 kW
4.16 kV	180–750 kW
6 kV	315–500 kW
10 kV	400–800 kW

POWER CELL CABINET (TOP) TRANSFORMER CABINET (BOTTOM)

Power cells

CONTROL CABINET

Standard Cabinet

DOUBLE-SIDE SERVICE ZONE

3.3 kV	1.250–2.750 kW
4.16 kV	1.600–4.600 kW
6 kV	630–5.000 kW
6.6 kV	2.500–5.500 kW
10 kV	400–10.000 kW
11 kV	470–11.000 kW

TRANSFORMER CABINET

Multipulse phase shift transfromer; Unique aircooling duct design; High efficiency of cooling

POWER CELL CABINET

Power cell casacaded toplogy; 6 kV: 6 cells per phase; 10 kV: 9 cells per phase

CONTROL CABINET

AuCom
MOTOR CONTROL SPECIALISTS

Multi Drive System Standard Cabinets

FRONT-SIDE SERVICE ZONE ONLY

TRANSFORMER CABINET

POWER CELL CABINET

CONTROL CABINET

BYPASS CABINET

COMPACT CABINET
DOUBLE-SIDE-SERVICE ZONE

Designed to combine the smallest footprint layout with the full performance of a standard drive without any compromises on power or quality. Ideal solution for retrofit projects or any installation with space constraints.

STANDARD CABINET
DOUBLE-SIDE-SERVICE ZONE

Classic Line up version with design optimization for an overall reduced switch gear width. Power cell cabinet with cell installations from the front and the backside of the cabinet. This switch-gear version is a perfect fit for applications with multiple drive installations.

Water cooled Cabinet

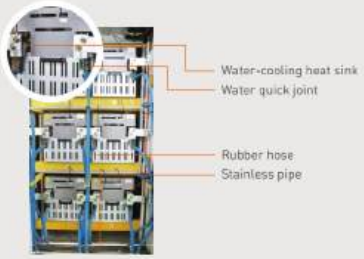
3.3 kV	3.000–5.700 kW
4.16 kV	5.500–7.200 kW
6 kV	2.250–12.500 kW
6.6 kV	2.500 – 13.000 kW
10 kV	12.500 – 23.000 kW
11 kV	12.500 – 25.000 kW

POWER CELL Heat sink use vacuum welding, pressure up to 12 bar. Laminated design, less inductance, compact dimension Inlet and outlet use double closure quick joint to avoid leakage.

FULLY ENCLOSED AIR-WATER HEAT EXCHANGE DRY TYPE TRANSFORMER

Protection level IP42;
No maintenance;
Fully enclosed air-water heat exchange type, protected against outside temperature and dust.

POWER CELL CABINET



Water cooling provides a uniformly heat distribution which guarantees lower component temperatures and longer service life; Cooling tap use double closure quick joint, no drainage or linkage during power cell replacement.

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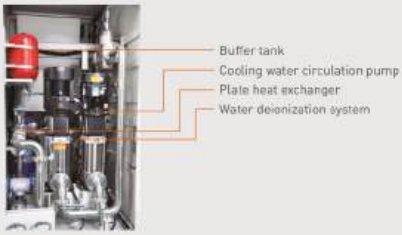
CONTROL SYSTEM

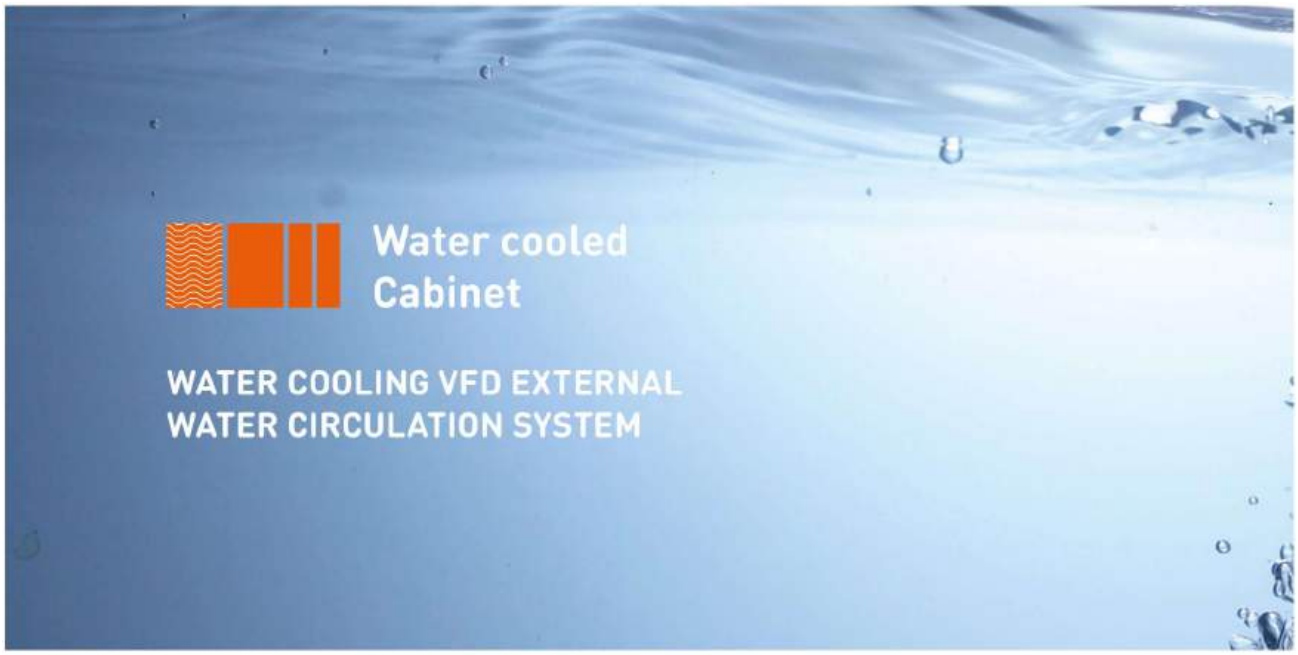
Central-station control for easy and quick entrance to:

- Customer I/O
- Parameter setting
- Transformer temperature
- Water exchanger protection
- VFD control

WATER COOLING EXCHANGE SYSTEM



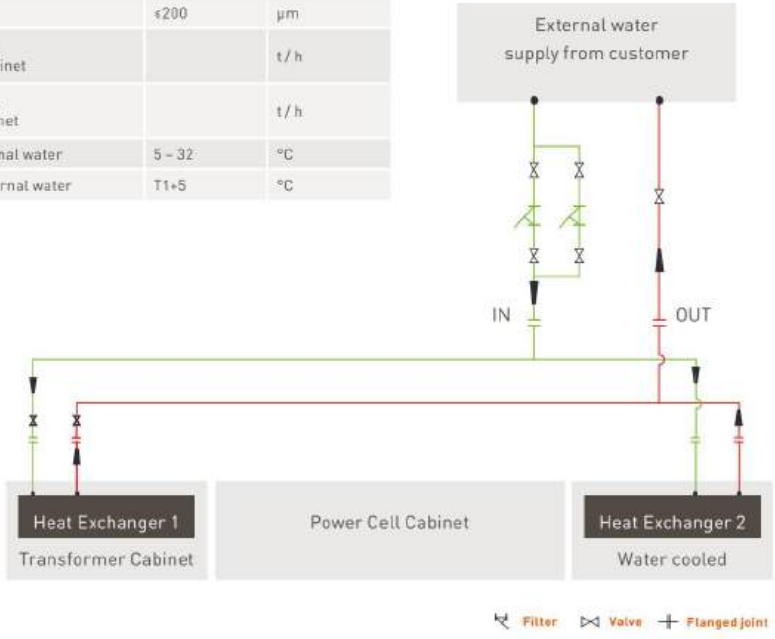
Stainless for all circulation pipe; Independent deionized water device; Secondary water cooling with high efficiency; Independent PLC monitor system.

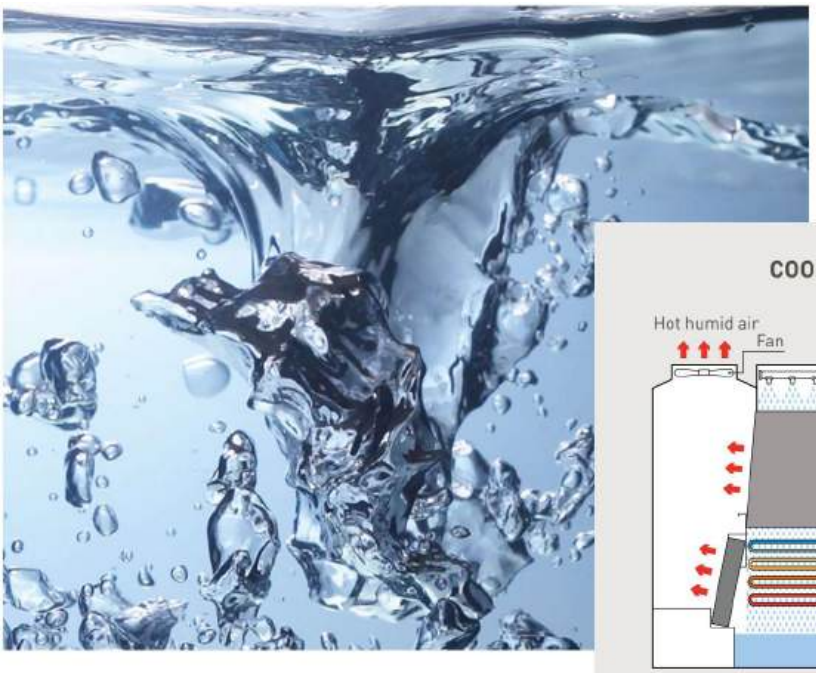


SCHEME 1 // EXTERNAL WATER SUPPLY
SPECIFICATION AND REQUIREMENTS

The external water quality and temperature requirements:

NAME	PARAMETER	UNIT
TDS (total dissolved solids)	≤1.000	mg / L
PH value	6.5 – 8.5	
Hardness (caco3)	≤450	mg / L
Chloride	≤250	mg / L
Sulfate	≤250	mg / L
Suspended Material	≤30	mg / L
Water Pressure	2.50 – 6	Bar
Solid particles size	≤200	µm
Water freezers of external water of water cooling cabinet		t / h
Water freezers of external water of transformer cabinet		t / h
inlet temperature of external water	5 – 32	°C
outlet temperature of external water	T1+5	°C





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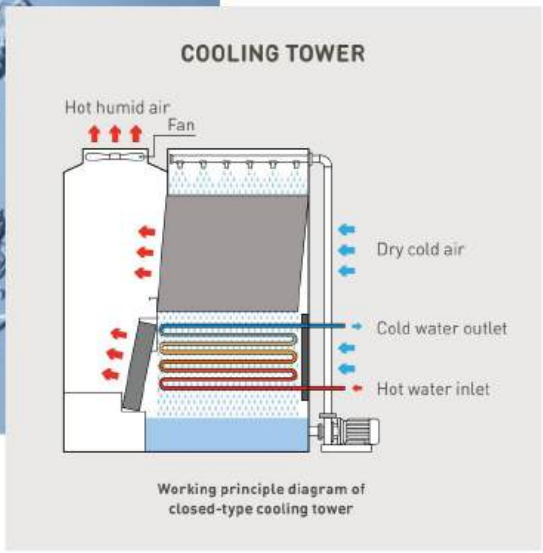

Working principle diagram of closed-type cooling tower

SCHEME 2 // COOLING TOWER
DESCRIPTION

Closed Circuit Cooling Tower / Closed Loop Cooling Tower operates during a manner the same as standard cooling towers, except that the smart heat to be rejected is transferred from the method fluid to water and close air directly through a heat exchange coil. The coil serves to isolate the method fluid from outside atmosphere, keeping it clean and contamination free during a control system, so making two separate circuits.

- Primary / Internal circuit in which the process fluid circulates inside the coil
- Secondary / External circuit sprays circulating water from the basin over the coil which evaporates to reject heat to the environment.

SCHEME 3 // COOLING CHILLER
WORKING PRINCIPLE

The cooling water removes heat from the MVH2.0 VFD and returns warm water back to the chiller. The chiller cooling process contains a refrigerant which work on the basic principle of compression and phase-change of the refrigerant from a liquid to a gas and back to a liquid. This refrigeration principle provides two separate liquid systems. While the Chiller take the heat out of the cooling water of the VFD and transfers this heat to the second cooling system within the chiller.

The cooling cycle not only separates the two liquid systems, it also provides two independent temperature level in the VFD cooling cycle (Low temperature) and the Chiller cooling cycle (high temperature).

While the low temperature in the VFD cycle guarantees a perfect cooling performance of the power electronics inside the MVH2.0, the relatively high temperature in the Chiller cooling system enable a better heat exchange through the internal heat exchanger with the ambient air because of the higher temperature difference.

Product Features

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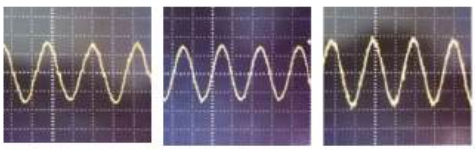
Full range of product categories

With the 4 th generation of the MVH2.0 MV-Frequency Drive, AuCom provides a solution for all kind of applications in nearly every industrial sector.

- Classified by Power: 315 kW–25.000 kW
- Classified by Cabinet: compact cabinet, separate cabinet, water cooled cabinet, outdoors cabinet, flameproof cabinet
- Classified by voltage: 3.3 kV, 4.16 kV, 6 kV, 6.6 kV, 10 kV, 11 kV (2.3 kV,13.8 kV on customers request)
- Classified by cooling mode: air forced cooling, water cooling
- Classified by Motor: synchronous motor, asynchronous motor, permanent magnet motor
- Classified by Performance: standard MV Drive, AFE MV Drive, Drive Start

Main controller DSP

The main controller chip uses TI's TMS320 F28335 digital signal processor, the device has 150 MHz high-speed processing capability, 32-bit floating-point processing unit, 6 DMA channels, support ADC, McBSP and EMIF. With up to 18 PWM outputs, six of them are TI's more accurate PWM outputs (HRPWM) and 12-bit 16-channel ADCs. Thanks to its floating-point calculation unit, users can quickly write control algorithms without having to spend too much time and effort on decimal operations, with an average performance improvement of 50% over the previous generation DSPs. At the same time, the application of better control algorithm, so that the waveform of the inverter running at low-frequency current and output harmonics have a significant increase.



Current waveform at 2 Hz | Current waveform at 5 Hz | Current waveform at 10 Hz

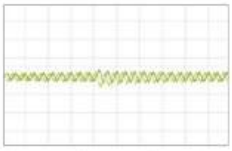
Monitoring HMI

- 10 inch touch screen
- Supporting multi languages
- Control system status and monitoring
- Powerful data control (data logging, diagnostics, and information)
- User-centric convenience (HD display, high data throughput, user-friendly interface)

Advanced functions

SYNCHRONOUS TRANSFER FUNCTION:

Using phase lock loop technology to adjust the output of the drive, make the frequency, phase position and amplitude match those of the network. Achieve switching motor power from medium voltage drive to the network power (bypass mode) or vice versa (drive mode).



Current valid value 15 A, switch peak 31 A before sync transfer

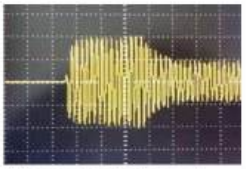
The motor current waveform during sync transfer

Multi-motor synchronous transfer function allows users to start multiple (up to 4) MV motors sequentially in drive mode and control the last motor speed.

FLYING START:

Also called "speed start", when the motor is still rotating, the drive will automatically estimate the motor speed, and output the same voltage waveform with the motor frequency. When start, current is limited within the rated current, this will not cause over current problem.

Used when the drive automatically restarts after power loss, or Motor switch from network running to drive mode running.



Flying start motor / network waveform

INSTANT POWER LOSS:

When grid voltage drop or power off for less than 1.000 ms, VFD can run without stop to support process at site.

TORQUE BOOST:

Increasing the output voltage at low frequency, to boost the motor torque when running with low speed. The torque boost function supports high breakaway torque applications and guarantees a smooth start of the load.

MASTER-SLAVE CONTROL:

Supporting multiple VFD system, with several motors running on the same load such a mills or conveyor belts. The VFD analyzes torque and load to balance motors speed and torque.

DOUBLE WINDING MOTOR CONTROL:

Double winding motor has higher PF and efficiency, smaller loop circuit increase system capacity. VFD driving the double winding motor can realize full speed with half load, half speed with full load, improve system stability.

POWER CELL BRAKING FUNCTION:

This function enables high braking torque at low speed and guarantees a quick stop time if required.

NEUTRAL POINT SHIFT:

In case one power cell is internally bypassed because of a fault, the other power cells can adjust the output voltage to keep a balanced output voltage, by change phase position to maintain continuous running.

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Cloud monitoring

MV drive connected to the server monitoring platform by wireless or wired network, sending real time data to server. Other mobile devices can receive internal data of the server at the same time to monitor real time running condition of the MV drive. By using monitoring the platform or mobile devices, users can analyze parameters, identify problems and diagnose the products fault from remote. At the same time, by using the panoramic camera and voice system, users can instruct technicians from remote to operate on site.

Interface board

The core of the new interface board is S7.200 SMART CPU, the module comes standard with Ethernet interface, support Siemens S7 protocol, TCP / IP protocol, effectively supporting a variety of terminal connections. In addition, the CPU module is integrated with one RS485 interface, able to communicate with the third-party equipment such as the MV drive and touch screen. At the same time, it is equipped with expansion CM01 signal board to realize RS232 / RS485 free communication and support profibus and Ethernet TCP / IP communication protocol.

Interface logic controller

Interface logic controller uses a standard Siemens S7200 smart PLC as the core component, and this PLC is equipped with Siemens dedicated high-speed processor chip – its basic instruction execution time can be up to 0.15 μs. 24 DI, 16 DO, 4 AI, 4 AO have been selected for use according to the MV drive requirements, so it can guarantee adequate interface and ensure fast processing.

Parameters down- and uploading

System and motor parameters can be easily downloaded and uploaded with a windows based software tool. The software provides an advanced service functionality and guarantees the correct parameter settings after the replacement of components.

CLOUD MONITORING

Cloud monitoring platform

Management system structure

Work order management model

Digital analysis model

Product Specification

SPECIFICATION	GENERAL PURPOSE MV DRIVES
VFD rated power	210 – 28.000 kVA *
For motor power	150 – 25.000 kW *
Rated voltage	2,3 – 13,8kV (-15% - +10%) *
Rated frequency	50 Hz / 60 Hz (-10% – +10%) *
Modulation technique	SVPWM
Control power	400 V, ≤30 kVA(depend on power level)
Input power factor	>0.96
Efficiency	>96% (>98% for Power Electronic Part)
Output frequency range	0 Hz – 80 Hz *
Frequency resolution	0.01 Hz / 0.002 Hz
Instantaneous over-current protection	150% protect immediately (customized)
Overload capability	120% ,125 s
Current limited protection	10%-150% (1.000 ms – 3 s inverse time protection)
Analog input	3 × AI with 4 – 20mA / 2 – 10V
Analog output	4 × AO with 4 – 20mA
Host communication	Isolated RS485 interface, ModBus RTU, Profibus DP(optional), Industry Ethernet Protocol (optional)
Acceleration and deceleration time	5 s – 1.600 s(related to load)
DI / DO	14 inputs / 22 outputs
Environment temperature	-5 – +45°C *
Storage / transportation temperature	-40 – +70°C *
Cooling	forced air cooling / water cooling
Humidity	<95%, no condensation *
Altitude	<1.500m (1% derating each 100 meter above 1000 meter)
Dust	Non-conductive, no causticity, <6.5 mg / dm3 *
Protection level	IP30 *
Cabinet colors	RAL 7.035 (other on request)

* Please consult with AuCom for the information beyond the below table.
* The dimensions are subject to change without notice, take the technique protocol for correct dimensions.

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Application Industries and Fields

PETROCHEMICAL

- Booster fan
- Induced draft fan
- Pipeline transportation pump
- Water injection pump
- Feed water pump
- Submerged pump
- Oil transfer pump
- Brine pump
- Circulating water pump Compressor

ELECTRICITY

- Powder exhaust fan
- Booster fan
- Force draft fan
- Induced draft fan
- Condensation pump
- Slurry pump
- Water pumping energy storage pump
- Circulating water pump
- Boiler (feed) pump
- Compressor

MUNICIPAL PROJECTS

- Aeration fan
- Induced draft fan
- Force draft fan
- Submersible pump
- Fresh water pump
- Sewage pump
- Hot water circulating pump
- Lifting pump
- Water booster pump
- Water injection pump

CEMENT

- Kiln draft fan
- Kiln gas blower
- Separator fan
- Kiln drive
- High temperature fan
- Cement mill (Ball mill)
- Dust removal fan
- Circulating fan
- Grate cooler
- Raw material mill fan
- Raw material mill (Vertical mill)
- Coal mill
- Rotating kiln transmission
- Compressive force draft fan

COAL MINES & MINERALS

- BFDS
- De-dusting fan
- Main fan
- Axial flow fan
- De-scaling pump
- Mud pump
- Slurry pump
- Water pump
- Feeding pump
- Stirring pump
- Agitating pump
- Drainage pump
- Process pump
- Belt conveyor
- Kiln drive

METALLURGY

- Induced draft fan
- Force draft fan
- Secondary de-dusting fan
- Compressing blower
- Blast furnace blower
- Blast de-dusting fan
- Hydraulic pump
- Electric furnace cooling fan
- Sulfur dioxide blower
- Slag-flushing pump
- Feeding pump
- Water-delivery pump
- Phosphorus removal pump
- Mud pump
- De-scaling pump
- Kneading machine
- Oxygen compressor
- Gas compression pump

LIGHT INDUSTRY

- Gas blower
- Force pump
- Cleaning pump
- Axial flow pump
- Fresh water pump
- Cooling pump
- Compressor
- Beating engine
- Shredding machine

OTHERS

- Pump test stand
- Inverter power supply test stand
- Motor test stand
- Wind tunnel test

Quality & Service

ISO 9001 QUALITY CONTROLLED PRODUCTION PROCESS

COMPREHENSIVE IN LINE POWER CELL QUALITY SYSTEM

Components inspection → **Aging test for PCB**

The first and the most important step of production inspection AuCom equip with professional tools,such as electrical capacitor tester, leakage tester, to test 100% of IGBT, capacitor. With strict test, AuCom is trying to prevent quality problem.

PCB aging test is classified to be high-low temperature aging test and simulation systemaging test. High-low temperature aging test: PCB will be place in the environment with temperature difference from -20 degree to 80 degree for 73 hours. Simulation system aging test: PCB will be connected as system power on for functional test.

Batterie de compensation

B35

Batteries de Condensateurs Automatiques

CARACTÉRISTIQUES

Tension nominal Un	**415 Vac** (autres sur demande)
Fréquence nominale	**50 Hz** (sur demande60 Hz)
Tension d'isolement Ui	690 Vac
Circuits auxiliaires	400 Vac per G3E, G4E, G4RM[1] 230 Vac per G4RM[2] , G6E, G8E
Surcharge en tension	1,1 Un (tension nominal)
Température de fonctionnement	-5 / +40 °C
Tenue aux chocs en tension 50Hz/1 ms	6 kV (G3E, G4E); 8 kV (G4RM, G6E, G8E)

Les batteries de condensateurs de la série B35 conviennent aux réseaux triphasés avec une tension de fonctionnement de 400 Vac (+/- 10%) avec une moyenne-faible distorsion harmonique en courant. Ces équipements garantissent une compensation précise, grâce à une logique multi-étapes qui fractionne efficacement la puissance. Par ailleurs sur les armoires typeG6E e G8E, tous les composants des gradins sont montés sur des tiroirs, facilement extractible de l'avant de l'armoire, pour une gestion et une maintenance simples.

[1]jusqu'à 200 kvar. [2]de 225 kvar. Les circuits auxiliaires sont alimentés par un transf.teur approprié

POLLUTION HARMONIQUE (en l'absence de résonance)

THD(I)max. = 25%	sur réseau
THD(Ic)max. = 70%	sur les condensateurs

FICHE TECHNIQUE

Armoire	En tôle d'acier, protégée contre la corrosion par phosphatation et traitement époxy en poudre. Couleur RAL 7032 (autres sur demande). Degré de protection: externe IP 31, sauf les armoires typesG3E e G4E con IP30 (autres sur demande); interne IP 20 à l'entrée des câbles de raccordement(IP 20 à portes ouvertes sur demande).
Installation	Installation intérieur, dans une position qui favorise la ventilation et sans irradiation solaire.
Ventilation	Naturel pour puissances jusqu'à 200 kvar; Forcé pour puissances au-delà 200 kvar.
Sectionneur	Triphasé en charge avec blocage de port.
Câblage	Les câbles de connexion internes sont de typeFS17-450/750V ne propagent pas la flamme et avec très faible émission de fumées (autres types de câbles sur demande). Sur les bornes non pré-isolées, le point de connexion est recouvert d'une gaine thermorétractable type longue durée. Les circuits auxiliaires sont identifiés de manière appropriée conformément à la réglementation en vigueur.
Contacteurs	Chaque gradin est branché / débranché par un contacteur trois pôles (classe AC6-b) capable d'offrir une grande fiabilité. La limitation des pics de courant à l'insertion du gradin est garantie par des résistances de précharge.
Fusibles	Les batteries de condensateurs sont protégées par fusibles. Pour la protection du circuit de puissance (fusibles NH-00 courbe gG) et des circuits auxiliaires (porte-fusible ouvrable et fusibles 10,3x38), il faut envisager l'utilisation de fusibles à haute capacité de rupture (100kA).
Condensateurs	Condensateurs monophasées de type auto cicatrisant, réalisé en film de polypropylène métallisé (MKP), équipé d'un système anti-éclatement à suppression et de résistance de décharge (approuvé IMQ). Imprégnés d'houle végétal biodégradable et ne contenants pas PCB. Couplage à triangle. Type de service continu. • tension nominal: 440 Vac (tension maximale 500 Vac) • sur tension: 1,1 x Un (8h / 24h) • surintensité: 1,3 x In • tolérance sur la capacité: -5% / +10% • pertes par dissipation: ≤0,4 W/kvar • classe de température: -25 / D
Régulateur	• Type de mesure var métrique. • Signal ampérométrique: utilisant un transformateur ampérométrique avec secondaire5A, classe 1 - 5VA (à la charge du client) • Sensibilité du Signal ampérométrique: 2,5% pour série BMR, 0,3% pour série HPR • Temps d'insertion/ coupure standard des condensateurs: 25" ÷ 30" (autres sur demande)

QUALITE ET ESSAI

Normes	Condensateurs: IEC/EN 60831-1 / 2 approuvé IMQ (V1927); équipements: IEC/EN 61439-1 / 2, IEC/EN 61921.
Directives européennes	Basse Tension: 2014/35/CE; Compatibilité électromagnétique: 2014/30/CE.
Essai	Le 100% des équipements automatiques sont soumis à une inspection visuelle, test d'isolation: phase-phase et phase-terre, efficacité des gradins et contrôle des circuits de ventilation: le rapport essai est inclus dans la documentation. Les condensateurs sont testés à trois moments consécutifs du processus de production: après le bobinage, régénération et avant étiquetage.

SOLUTIONS STANDARD

Note

•Pour déterminer les dimensions, veuillez-vous reporter aux dessins des armoires, en référence à la colonne "Type"..
•La légende de l'entrée des câbles de raccordement est la suivante: ↑ par le bas, ↙ côté en haut, ↓ par le haut.
•La puissance nominal est rapporté à 415 V – 50 Hz.
Le choix des câbles de raccordement de l'appareil dépend des conditions d'installation, par leur longueur et la température ambiante. Pour un dimensionnement correct, reportez-vous aux normes IEC 60364-5, CEI 64-8 et au tableau UNEL 35024/01.

Cloud Control System (CCS)
Le symbole 🛜 indique que l'appareil est équipé du système de surveillance à distance CCS pour visualiser des données en temps réel, Il est pré-installé sur la batterie de condensateurs en question.
Pour toute information, et découvrir les avantages du service Cloud Control System,se référer à la brochure disponible sur le site Internet www.comarcond.com ou directement sur demande.

Tableau

THD(I)max. = 25% THD(Ic)max. = 70%

Code	Type	Qn	Entrée des câbles	In	Puissance par gradin								Gradins	Sectionneur	Régulateur	CCS	Poids
		(kvar)		(A)	(kvar)								(n)	(A)	(tipo)		(kg)
8671412102340	G3E	10,2	↙	14	3,4	3,4	3,4						3	40	BMR4		14
8671412159340	G3E	15,9	↙	22	3,4	6,25	6,25						5	40	BMR4		15
8671412221340	G3E	22,15	↙	31	3,4	6,25	12,5						7	80	BMR4		16
8671412310340	G3E	31,25	↙	43	6,25	12,5	12,5						5	80	BMR4		18
8671412435340	G3E	43,75	↙	61	6,25	12,5	25						7	125	BMR4		22
8671412500340	G3E	50	↙	70	12,5	12,5	25						4	125	BMR4		23
8671412625340	G3E	62,5	↙	87	12,5	25	25						5	125	BMR4		26
8671412750340	G4E	75	↙	104	12,5	12,5	25	25					6	160	BMR4		38
8671413100340	G4E	100	↙	139	12,5	12,5	25	50					8	200	BMR4		43
8671413125345	G4RM	125	↙	174	25	50	50						5	250	BMR4		80
8671413150345	G4RM	150	↙	209	25	25	50	50					6	315	BMR4		85
8671413175345	G4RM	175	↙	243	25	50	50	50					7	400	BMR4		87
8671413200345	G4RM	200	↙	278	25	25	50	100					8	400	BMR4		89
8671413225345	G4RM	225	↙	313	25	50	50	100					9	500	BMR4		95
8671413250345	G4RM	250	↙	348	25	50	75	100					10	500	BMR4		102
8671413300355	G6E	300	↓	417	25	50	75	75	75				12	630	HPR6	🛜	175
8671413350355	G6E	350	↓	487	50	75	75	75	75				9	800	HPR6	🛜	192
8671413400355	G6E	400	↓	556	50	50	75	75	75	75			14	800	HPR6	🛜	207
8671413450355	G6E	450	↓	626	50	50	50	75	75	150			16	1000	HPR6	🛜	240
8671413500355	G6E	500	↓	696	50	75	75	75	75	150			13	1000	HPR6	🛜	255
8671413525440	G8E	525	↑	731	75	75	75	75	75	75	75		7	1250	HPR12	🛜	315
8671413600440	G8E	600	↑	836	75	75	75	75	75	75	75	75	8	1250	HPR12	🛜	330
8671413675440	G8E	675	↑	940	75	75	75	75	75	75	75	150	9	1250	HPR12	🛜	350
8671413750440	G8E	750	↑	1045	75	75	75	75	75	75	150	150	10	1600	HPR12	🛜	380
8671413825440	G8E (II)	825	↑	1149	75	75	75	75	75	150	150	150	11	800+1000	HPR12	🛜	510
8671413900440	G8E (II)	900	↑	1254	75	75	75	75	150	150	150	150	12	1000+1000	HPR12	🛜	530
8671413975440	G8E (II)	975	↑	1358	75	75	75	150	150	150	150	150	13	1000+1000	HPR12	🛜	550
8671414105440	G8E (II)	1050	↑	1462	75	75	150	150	150	150	150	150	14	1000+1000	HPR12	🛜	650
8671414120440	G8E (II)	1200	↑	1671	75	75	150	150	150	150	150	300	16	1250+1250	HPR12	🛜	690
8671414135440	G8E (II)	1350	↑	1880	75	75	150	150	150	150	300	300	18	1250+1250	HPR12	🛜	730

Autres solutions sur demande.

B50

Batteries de Condensateurs Automatiques

CARACTÉRISTIQUES

Tension nominal Un	**415 Vac** (autres sur demande)
Fréquence nominale	**50 Hz** (sur demande60 Hz)
Tension d'isolement Ui	690 Vac
Circuits auxiliaires	400 Vac per G3E, G4E, G4RM[1] 230 Vac per G4RM[2] , G6E, G8E
Surcharge en tension	1,1 Un (tension nominal)
Température de fonctionnement	-5 / +40 °C
Tenue aux chocs en tension 50Hz/1 ms	6 kV (G3E, G4E); 8 kV (G4RM, G6E, G8E)

Les batteries de condensateurs de la série B50 conviennent aux réseaux triphasés avec une tension de fonctionnement de 400 Vac (+/- 10%) avec une moyenne distorsion harmonique en courant. Ces équipements garantissent une compensation précise, grâce à une logique multi-étapes qui fractionne efficacement la puissance. Par ailleurs sur les armoires typeG6E e G8E, tous les composants des gradins sont montés sur des tiroirs, facilement extractible de l'avant de l'armoire, pour une gestion et une maintenance simples.

[1]jusqu'à 200 kvar. [2]de 225 kvar. Les circuits auxiliaires sont alimentés par un transf.teur approprié

POLLUTION HARMONIQUE (en l'absence de résonance)

THD(I)max. = 35%	sur réseau
THD(Ic)max. = 80%	sur les condensateurs

FICHE TECHNIQUE

Armoire	En tôle d'acier, protégée contre la corrosion par phosphatation et traitement époxy en poudre. Couleur RAL 7032 (autres sur demande). Degré de protection: externe IP, sauf les armoires typesG3E e G4E con IP30 (autres sur demande); interne IP 20 à l'entrée des câbles de raccordement(IP 20 à portes ouvertes sur demande).
Installation	Installation intérieur, dans une position qui favorise la ventilation et sans irradiation solaire.
Ventilation	Naturel pour puissances jusqu'à 200 kvar; Forcé pour puissances au-delà 200 kvar.
Sectionneur	Triphasé en charge avec blocage de port.
Câblage	Les câbles de connexion internes sont de typeFS17-450/750V ne propagent pas la flamme et avec très faible émission de fumées (autres types de câbles sur demande). Sur les bornes non pré-isolées, le point de connexion est recouvert d'une gaine thermorétractable type longue durée. Les circuits auxiliaires sont identifiés de manière appropriée conformément à la réglementation en vigueur.
Contacteurs	Chaque gradin est branché / débranché par un contacteur trois pôles (classe AC6-b) capable d'offrir une grande fiabilité. La limitation des pics de courant à l'insertion du gradin est garantie par des résistances de précharge.
Fusibles	Les batteries de condensateurs sont protégées par fusibles. La protection sois du circuit de puissance(fusibles NH-00 courbe gG) et des circuits auxiliaires (porte-fusible ouvrable et fusibles 10.3x38) il envisage l'utilisation de fusibles à haute capacité de rupture (100kA).
Condensateurs	Condensateurs monophasées de type auto cicatrisant, réalisé en film de polypropylène métallisé (MKP), équipé d'un système anti-éclatement à suppression et de résistance de décharge (approuvé IMQ). Imprégnés par houle végétal biodégradable et ne contenants pas PCB. Couplage à triangle. Type de service continu. • tension nominal: 500 Vac (tension maximale 550 Vac) • sur tension: 1,1 x Un (8h / 24h) • surintensité: 1,3 x In • tolérance sur la capacité: -5% / +10% • pertes par dissipation: ≤0,4 W/kvar • classe de température: -25 / D
Régulateur	• Type de mesure var métrique. • Signal ampérométrique: utilisant un transformateur ampérométrique avec secondaire5A, classe 1 - 5VA (á la charge du client) • Sensibilité du Signal ampérométrique: 2,5% pour série BMR, 0,3% pour série HPR • Temps d'insertion/ coupure standard des condensateurs: 25" ÷ 30" (autres sur demande)

QUALITE ET ESSAI

Normes	Condensateurs: IEC/EN 60831-1 / 2 approuvé IMQ (V1927); équipements: IEC/EN 61439-1 / 2, IEC/EN 61921.
Directives européennes	Basse Tension: 2014/35/CE; Compatibilité électromagnétique: 2014/30/CE.
Essai	Le 100% des équipements automatiques sont soumis à une inspection visuelle, test d'isolation: phase-phase et phase-terre, efficacité des gradins et contrôle des circuits de ventilation; le rapport essai est inclus dans la documentation. Les condensateurs sont testés à trois moments consécutifs du processus de production: après le bobinage, régénération et avant étiquetage.

SOLUTIONS STANDARD

Note

•Pour déterminer les dimensions, veuillez-vous reporter aux dessins des armoires, en référence à la colonne "Type"..
•La légende de l'entrée des câbles de raccordement est la suivante: ↑ par le bas, ↙ côté en haut, ↓ par le haut.
•La puissance nominal est rapporté à 415 V – 50 Hz.
Le choix des câbles de raccordement de l'appareil dépend des conditions d'installation, par leur longueur et la température ambiante. Pour un dimensionnement correct, reportez-vous aux normes IEC 60364-5, CEI 64-8 et au tableau UNEL 35024/01.

Cloud Control System (CCS)
Le symbole indique que l'appareil est équipé du système de surveillance à distance CCS pour visualiser des do
Il est pré-installé sur la batterie de condensateurs en question.
Pour toute information, et découvrir les avantages du service Cloud Control System,se référer à la brochure disponible sur le site Internet www.comarcond.com ou directement sur demande.

Tableau

THD(I)max. = 35% THD(Ic)max. = 80%

Code	Type	Qn	Entrée des câbles	In	Puissance par gradin								Gradins	Sectionneur	Régulateur	CCS	Poids
		(kvar)		(A)	(kvar)								(n)	(A)	(tipo)		(kg)
8681412102350	G3E	10,2	↙	14	3,4	3,4	3,4						3	40	BMR4		14
8681412159350	G3E	15,9	↙	22	3,4	6,25	6,25						5	40	BMR4		15
8681412221350	G3E	22,15	↙	31	3,4	6,25	12,5						7	80	BMR4		16
8681412310350	G3E	31,25	↙	43	6,25	12,5	12,5						5	80	BMR4		18
8681412435350	G3E	43,75	↙	61	6,25	12,5	25						7	125	BMR4		22
8681412500350	G3E	50	↙	70	12,5	12,5	25						4	125	BMR4		23
8681412625350	G3E	62,5	↙	87	12,5	25	25						5	125	BMR4		26
8681412750350	G4E	75	↙	104	12,5	12,5	25	25					6	160	BMR4		38
8681413100350	G4E	100	↙	139	12,5	12,5	25	50					8	200	BMR4		45
8681413125355	G4RM	125	↙	174	25	50	50						5	250	BMR4		80
8681413150355	G4RM	150	↙	209	25	25	50	50					6	315	BMR4		85
8681413175355	G4RM	175	↙	243	25	50	50	50					7	400	BMR4		87
8681413200355	G4RM	200	↙	278	25	25	50	100					8	400	BMR4		89
8681413225355	G4RM	225	↙	313	25	50	50	100					9	500	BMR4		95
8681413250355	G4RM	250	↙	348	25	50	75	100					10	500	BMR4		102
8681413300345	G6E	300	↓	417	25	50	75	75	75				12	630	HPR6	((•))	175
8681413350345	G6E	350	↓	487	50	75	75	75	75				9	800	HPR6	((•))	192
8681413400345	G6E	400	↓	556	50	50	75	75	75	75			14	800	HPR6	((•))	207
8681413450345	G6E	450	↓	626	50	50	50	75	75	150			16	1000	HPR6	((•))	240
8681413500345	G6E	500	↓	696	50	75	75	75	75	150			13	1000	HPR6	((•))	255
8681413525450	G8E	525	↑	731	75	75	75	75	75	75	75		7	1250	HPR12	((•))	315
8681413600450	G8E	600	↑	836	75	75	75	75	75	75	75	75	8	1250	HPR12	((•))	330
8681413675450	G8E	675	↑	940	75	75	75	75	75	75	75	150	9	1250	HPR12	((•))	350
8681413750450	G8E	750	↑	1045	75	75	75	75	75	75	150	150	10	1600	HPR12	((•))	380
8681413825450	G8E (II)	825	↑	1149	75	75	75	75	75	150	150	150	11	800+1000	HPR12	((•))	510
8681413900450	G8E (II)	900	↑	1254	75	75	75	75	150	150	150	150	12	1000+1000	HPR12	((•))	530
8681413975450	G8E (II)	975	↑	1358	75	75	75	150	150	150	150	150	13	1000+1000	HPR12	((•))	550
8681414105450	G8E (II)	1050	↑	1462	75	75	150	150	150	150	150	150	14	1000+1000	HPR12	((•))	650
8681414120450	G8E (II)	1200	↑	1671	75	75	150	150	150	150	150	300	16	1250+1250	HPR12	((•))	690
8681414135450	G8E (II)	1350	↑	1880	75	75	150	150	150	150	300	300	18	1250+1250	HPR12	((•))	730

Autres solutions sur demande.

Certificats de conformité

Telarc.
The Mark of Success

This is to certify that

AuCom Electronics Limited

123 Wrights Road Addington Christchurch New Zealand

having been assessed by Telarc Limited and having been found to operate a quality management system conforming to

ISO 9001:2015

is hereby designated

Telarc Registered No. 3048

for the following goods and services

The design, manufacture and supply of electric motor soft starter systems

Certificate Issued:	21 December 2020	Original Registration:	1 October 2015
Current Registration:	21 December 2020	Expiry Date:	20 December 2023

Chairperson
David Bone

Chief Executive
Philip Cryer

Telarc. Registered Quality ISO 9001

JAS-ANZ

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Telarc.
The Mark of Success

SCHEDULE TO CERTIFICATE OF REGISTRATION

Registration Number: 3048 *Certificate Issued: 21 December 2020*

AuCom Electronics Limited

Site Details:

Organisation	*Address*	*Suburb*	*City*	
AuCom Electronics Limited - (7135)				
AuCom Electronics Limited	*123 Wrights Road*	*Addington*	*Christchurch*	*NZ*

Scope of certification:

The design, manufacture and supply of electric motor soft starter systems

CERTIFICATE

ISO 9001:2015

DEKRA Certification GmbH hereby certifies that the organization

ABB AG

Scope of certification:

Development, marketing, sales, consulting, project development, conception, planning, manufacturing, installation, commissioning and services, as well as control and monitoring of the management system of the German ABB country organization, by hosting the central management and support processes.

Certified location:

Kallstadter Straße 1, 68309 Mannheim, Germany
(further locations see annex)

has established and maintains a quality management system according to the above mentioned standard. The conformity was adduced with audit report no. A12111642-4 / 2021.

Certificate registration no.:	51210777/4	Certificate valid from:	2022-01-13
Validity of previous certificate:	2022-01-12	Certificate valid to:	2025-01-12
		Most recent update:	2022-04-27

Language translation

DAkkS Deutsche Akkreditierungsstelle D-ZM-16029-01-01

Dr. Gerhard Nagel
DEKRA Certification GmbH, Stuttgart, 2022-04-27

Annex to the Certificate No. 51210777/4

valid from 2022-01-13 to 2025-01-12

The following locations / companies belong to the certificate above:

	Headquarter	Certified location	Scope of certification
	ABB AG	Kallstadter Straße 1 68309 Mannheim Germany	See page 1
	at the following locations / at the companies at the following locations		**Scope of certification**
1.	ABB AG	Kallstadter Straße 1 68309 Mannheim Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business units: - Electrification - Process Automation - Non Core Business
2.	ABB AG	Schillerstraße 72 32425 Minden Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business units: - Process Automation - Motion
3.	ABB AG	Oberhausener Straße 33 40472 Ratingen Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business units: - Electrification - Process Automation - Motion
4.	ABB AG	Hänchener Straße 14 03050 Cottbus Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business unit: - Process Automation
5.	ABB AG	Stierstädter Straße 5 60488 Frankfurt am Main Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business unit: - Process Automation

Annex to the Certificate No. 51210777/4

valid from 2022-01-13 to 2025-01-12

The following locations / companies belong to the certificate above:

	Headquarter	Certified location	Scope of certification
	ABB AG	Kallstadter Straße 1 68309 Mannheim Germany	See page 1
	at the following locations / at the companies at the following locations		**Scope of certification**
6.	ABB AG	Grüner Weg 3 61169 Friedberg Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business unit: - Robotics & Discrete Automation
7.	ABB AG	Dornierstraße 21 82205 Gilching Germany	Development, marketing, sales, consulting, project development, conceptual design and planning for the business unit: - Robotics & Discrete Automation
8.	ABB AG	Anna-Vandenhoeck-Ring 5 37081 Göttingen Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business unit: - Process Automation
9.	ABB AG	Am Neuländer Gewerbepark 3+8 21079 Hamburg Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business units: - Process Automation - Motion
10.	ABB AG	Eppelheimer Straße 82 69123 Heidelberg, Neckar Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business unit: - Motion

Annex to the Certificate No. 51210777/4

valid from 2022-01-13 to 2025-01-12

The following locations / companies belong to the certificate above:

	Headquarter	Certified location	Scope of certification
	ABB AG	Kallstadter Straße 1 68309 Mannheim Germany	See page 1
	at the following locations / at the companies at the following locations		**Scope of certification**
11.	ABB AG	Wallstadter Straße 59 68526 Ladenburg Germany	Development, marketing, sales, consulting, project development, conceptual design, planning, manufacturing, installation, commissioning and services for the business units: - Electrification - Process Automation - Motion
12.	ABB Bulgaria EOOD	Nedyalka Shileva Str. 16 4023 Plovdiv Bulgaria	Production planning and manufacturing of products for the business unit: - Process Automation

Dr. Gerhard Nagel
DEKRA Certification GmbH, Stuttgart, 2022-04-27

Bureau Veritas Certification

ABB AS

Aruküla tee 83, 75301 Jüri, Harjumaa, Estonia

This is a multi-site certificate, additional site(s) are listed on the next page(s)

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018

Scope of certification

MARKETING, SALES, DEVELOPMENT, PROJECT MANAGEMENT, TRAINING ENGINEERING, EQUIPMENT/SYSTEM MANUFACTURING, MAINTENANCE, REPAIR, SERVICE, MODERNIZATION AND OPERATION IN THE FOLLOWING BUSINESSES: ELECTRIFICATION, MOTION, ROBOTICS AND DISCRETE AUTOMATION, INDUSTRIAL AUTOMATION.

Original cycle start date:	**15 December 2021**
Expiry date of previous cycle:	**14 December 2021**
Certification / Recertification Audit date:	**26 November 2021**
Certification / Recertification cycle start date:	**15 December 2021**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **14 December 2024**

Certificate No. CH12390767 *Version:* ***No.2*** *Issue date:* ***15 December 2021***

Certification body address: 5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom
Local office: Grossächerstrasse 25, 8104 Weiningen/ZH, Switzerland

UKAS MANAGEMENT SYSTEMS
0008

Further clarifications regarding the scope and validity of this certificate and the applicability of the management system requirements, please call: *+41 44 752 11 55*

Bureau Veritas Certification

ABB AS

Aruküla tee 83, 75301 Jüri, Harjumaa, Estonia

ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018

Scope of certification

Site Name/Location	Site Address	Site Scope
ABB AS	Aruküla tee 83, 75301 Jüri, Harjumaa, Estonia	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation.
ABB AS	Rakvere tn 19, 41533 Jõhvi, Estonia	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation.
ABB AS	Aruküla tee 57a, 75301 Jüri, Harjumaa, Estonia	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation.
ABB AS, Motors& Generators	Aruküla tee 59, 75301 Jüri, Harjumaa, Estonia	Sales, support, project management, engineering, manufacturing, after sales, repair, modernization.
ABB AS, Drives	Aruküla tee 59, 75301 Jüri, Harjumaa, Estonia	Engineering, Manufacturing, testing, Delivery and After Sales Service of Variable Speed Low Voltage AC Drives, Wind Converters, Related Service and Software.

Certificate No. CH12390767 *Version:* ***No.2*** *Issue date:* ***15 December 2021***

Certification body address: 5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom
Local office: Grossächerstrasse 25, 8104 Weiningen/ZH, Switzerland

UKAS MANAGEMENT SYSTEMS
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Bureau Veritas Certification

ABB AS

Aruküla tee 83, 75301 Jüri, Harjumaa, Estonia

ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018

Site Name/Location	Site Address	Site Scope
ABB AS	Võru tee 47E, 50111 Tartu, Estonia	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation.
ABB SIA	Mukusalas iela 42C, Riga, LV-1004, Latvia	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation
ABB UAB	Parko g. 37, Avizieniai, LT-14198 Vilniaus r. Lithuania	Marketing, sales, development, project management, training, engineering, equipment/system manufacturing, maintenance, repair, service, modernization and operation in the following businesses: Electrification, Motion, Robotics and Discrete Automation, Industrial Automation.

Certificate No. CH12390767 *Version:* ***No.2*** *Issue date:* ***14 December 2021***

Certification body address: 5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom
Local office: Grossächerstrasse 25, 8104 Weiningen/ZH, Switzerland

UKAS MANAGEMENT SYSTEMS
0008

Further clarifications regarding the scope and validity of this certificate and the applicability of the management system requirements, please call: *+41 44 752 11 55*

EU Declaration of Conformity

ATEX Directive 2014/34/EU and Machinery Directive 2006/42/EC

We
Manufacturer: ABB Oy
Address: Hiomotie 13, 00380 Helsinki, Finland.
Phone: +358 10 22 11
declare under our sole responsibility that the following products:

Frequency converters and **frequency converter components**

ACS880-01, -11, -31

ACS880-04, -04XT, -04F, -04FXT, -M04, -14, -34, -104, -104LC

ACS880-07, -17, -37, -107, -07CLC, -07LC, -17LC, -37LC, -107LC

identified with serial numbers beginning with 1 or 8

with **FPTC-02** module

with regard to the safety function

ATEX certified thermistor protection (Safe Motor Temperature) (option code +L537 +Q971)

are in conformity with all the relevant requirements for

protective system of EU Directive for Equipment for Explosive atmospheres **2014/34/EU**, and

safety component of the EU Machinery Directive **2006/42/EC**, when the listed safety function is used for safety component functionality

Directive 2014/34/EU

Specific marking of explosion protection

Ex II (2) GD

The following harmonized standard has been applied:

EN 50495:2010	Safety devices required for the safe functioning of equipment with respect to explosion risks

Notified Body: Eurofins Electric & Electronics Finland Oy, Notified Body number: 0537, Address: Kivimiehentie 4, 02150 Espoo, Finland

has assessed the conformity of the "ATEX certified thermistor protection" function and has issued the certificate EESF 20 ATEX 050.

Directive 2006/42/EC

The following harmonized standards have been applied:

EN 61800-5-2:2007	Adjustable speed electrical power drive systems – Part 5-2: Safety requirements - Functional
EN 62061:2021	Safety of machinery – Functional safety of safety-related control systems
EN ISO 13849-1:2015	Safety of machinery – Safety-related parts of control systems. Part 1: General principles for design
EN ISO 13849-2:2012	Safety of machinery – Safety-related parts of the control systems. Part 2: Validation
EN 60204-1:2018	Safety of machinery – Electrical equipment of machines – Part 1: General requirements

The following other standards have been applied:

IEC 61800-5-2:2016	Adjustable speed electrical power drive systems – Part 5-2: Safety requirements - Functional
IEC 61508:2010, parts 1-2	Functional safety of electrical / electronic / programmable electronic safety-related systems

The products referred in this Declaration of conformity fulfil the relevant provisions of other European Union Directives which are notified in Single EU Declarations of conformity 3AXD10000497305 and 3AXD10000497831.

Authorized to compile the technical file: ABB Oy, Hiomotie 13, 00380 Helsinki, Finland

Helsinki, 19 Jun 2023

Signed for and on behalf of:

Peter Lindgren
Vice President, ABB Oy

Tomi Väisälä
Product Unit Manager, ABB Oy

Declaration of Conformity

We
Manufacturer: ABB Oy
Address: Hiomotie 13, 00380 Helsinki, Finland.
Phone: +358 10 22 11
declare under our sole responsibility that the following products:

Frequency converter components

- **FBIP-21**
- **FCAN-01**
- **FCNA-01**
- **FDNA-01**
- **FECA-01**
- **FEIP-21**
- **FENA-21**
- **FEPL-02**
- **FLON-01**
- **FMBT-21**
- **FPBA-01**
- **FPNO-21**
- **FSCA-01**

are in conformity with the relevant requirements of UK legislation, which have been notified in this single declaration, provided that the equipment is selected, installed and used according to given instructions.

The designated standards and other standards, which have been applied:

UK legislation		
Electromagnetic Compatibility Regulations	2016	UK EMC
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	2012	UK RoHS

The following harmonized standards have been applied:

EN 61800-3:2004 + A1:2012	Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods
EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Helsinki, April 24, 2023

Signed for and on behalf of:

Mika Vartiainen
Local Division Manager, ABB Oy

Mikko Korpinen
Local Unit Manager, ABB Oy

9AKK108467A3297 Rev. **B**

UK Declaration of Conformity

We
Manufacturer: ABB Oy
Address: Hiomotie 13, 00380 Helsinki, Finland.
Phone: +358 10 22 11
declare under our sole responsibility that the following frequency converters:

Models ACS580, ACH580 and ACQ580 followed by -01, -04, -07, -31 or -34, followed by -02A1, -02A7, -03A0, -03A4, -03A9, -04A1, -04A6, -04A7, -04A8, -05A7, -06A0, -06A1, -06A6, -06A7, -07A3, -07A5, -07A6, -09A0, -09A5, -10A6, -011A, -012A, -12A7, -014A, -017A, -018A, -019A, -022A, -023A, -024A, -025A, -026A, -027A, -031A, -032A, -033A, -034A, -039A, -041A, -044A, -046A, -047A, -052A, -059A, -060A, -062A, -065A, -073A, -075A, -077A, -078A, -088A, -089A, -096A, -099A, -106A, -114A, -115A, -124A, -125A, -143A, -144A, -145A, -156A, -169A, -171A, -180A, -192A, -206A, -211A, -213A, -240A, -242A, -246A, -260A, -271A, -273A, -276A, -293A, -302A, -343A, -361A, -363A, -365A, -396A, -414A, -430A, -442A, -477A, -505A, -585A, -650A, -725A, -820A, -880A, -0124A, -0145A, -0156A, -0169A, -0180A, -0206A, -0240A, -0246A, -0260A, -0293A, -0361A, -0363A, -0414A, -0430A, -0505A, -0585A, -0650A, -0725A, -0820A or -0880A, followed by -2, -4, or -6, may be followed by any combination of +Bxxx, +Cxxx, +Dxxx, +Exxx, +Fxxx, +Gxxx, +0Hxxx, +Hxxx, +0Jxxx, +Jxxx, +Kxxx, +Lxxx, +Mxxx, +Nxxxx, +0Pxxx, +Pxxx, +Qxxx, +Rxxx, where x can be any number 0-9.

are in conformity with the relevant requirements of Electrical Equipment (Safety) Regulations, Electromagnetic Compatibility Regulations, The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations and The Ecodesign for Energy-Related Products and Energy Information Regulations provided that the equipment is selected, installed and used according to given instructions.

The following designated standards have been applied:

Electrical Equipment (Safety) Regulations 2016

EN 61800-5-1:2007+A1:2017+A11:2021	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy

Electromagnetic Compatibility Regulations 2016

EN 61800-3:2004+A1:2012	Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The Ecodesign for Energy-Related Products and Energy Information (Amendment) (EU Exit) Regulation 2019

EN 61800-9-2:2017	Adjustable speed electrical power drive systems - Part 9-2: Ecodesign for power drive systems, motor starters, power electronics and their driven applications - Energy efficiency indicators for power drive systems and motor starters

Individual Supply of Machinery (Safety) Regulations Declaration of Conformity for Safety Functions:

Product	UK Machinery	Product	UK Machinery	Product	UK Machinery
ACS580-01	3AXD10001329534	ACH580-01	3AXD10001329521	ACQ580-01	3AXD10001329525
ACS580-04	3AXD10001329535	ACH580-04	3AXD10001329522	ACQ580-04	3AXD10001329526
ACS580-07	3AXD10001329536	ACH580-07	3AXD10001329523	ACQ580-07	3AXD10001329527
		ACH580-31	3AXD10001329521	ACQ580-31	3AXD10001329525
		ACH580-34	3AXD10001329522	ACQ580-34	3AXD10001329526

Helsinki, 13 Jun 2023

Signed for and on behalf of:

Mika Vartiainen
Local Division Manager, ABB Oy

Mikko Korpinen
Engineering Manager, ABB Oy

3AXD10001919078 Rev. A

www.imq.it

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CERTIFICATO N. / *CERTIFICATE N.* **9170.COMA**

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITA' DI
WE HEREBY CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OPERATED BY

COMAR CONDENSATORI SPA

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

UNITA' OPERATIVE / *OPERATIVE UNITS*

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

E' CONFORME ALLA NORMA / *IS IN COMPLIANCE WITH THE STANDARD*

ISO 9001:2015

PER LE SEGUENTI ATTIVITA' / *FOR THE FOLLOWING ACTIVITIES*

Progettazione e produzione di condensatori elettrici per avviamento e marcia motore, rifasamento lampade, elettronica di potenza, condensatori monofase e trifase per rifasamento bassa tensione BT. Progettazione e assemblaggio di quadri automatici di rifasamento, filtri passivi in bassa tensione BT e quadri elettrici di rifasamento in alta tensione AT

Design and production of motors starting and motor running capacitors, lighting capacitors, low voltage power factor correction capacitors, power electronic capacitors and low voltage power factor correction capacitors, single and three phases capacitors, for LV power factor applications and passive filter systems. Design and assembling of automatic cabinet for power factor correction and filters LV and power factor corrections HV

Ulteriori informazioni riguardanti l'applicabilità dei requisiti ISO 9001:2015 possono essere ottenute consultando l'organizzazione
Further clarifications regarding the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL
REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE

THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR CERTIFICATION OF MANAGEMENT SYSTEMS

DATE:	PRIMA CERTIFICAZIONE *FIRST CERTIFICATION*	EMISSIONE CORRENTE *CURRENT ISSUE*	SCADENZA *EXPIRY*
	1996-11-15	2020-04-20	2023-05-05

IMQ S.p.A.- VIA QUINTILIANO, 43 - 20138 MILANO ITALY
Management Systems Division - Flavio Ornago

ACCREDIA

IAF: 19

SGQ N° 005 A

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

La validità del certificato è subordinata a sorveglianza annuale e riesame completo del Sistema di Gestione con periodicità triennale
The validity of the certificate is submitted to annual audit and a reassessment of the entire Management System within three years

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CISQ is the Italian Federation of management system Certification Bodies.

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

CISQ/IMQ *has issued an IQNet recognized certificate that the organization:*

COMAR CONDENSATORI SPA

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

has implemented and maintains a

Quality Management System

for the following scope:

Design and production of motors starting and motor running capacitors, lighting capacitors, low voltage power factor correction capacitors, power electronic capacitors and low voltage power factor correction capacitors, single and three phases capacitors, for LV power factor applications and passive filter systems. Design and assembling of automatic cabinet for power factor correction and filters LV and power factor corrections HV

Further clarifications regarding the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization

which fulfills the requirements of the following standard:

ISO 9001:2015

Issued on: **2020 - 04 - 20**
Expires on: **2023 - 05 - 05**

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number: IT - 12974

Alex Stoichitoiu
President of IQNET

Ing. Mario Romersi
President of CISQ

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SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* TSE *Turkey* YUQS *Serbia*

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CERTIFICATO N.
CERTIFICATE N. **9191.CMC1**

SI CERTIFICA CHE IL SISTEMA DI GESTIONE AMBIENTALE DI
WE HEREBY CERTIFY THAT THE ENVIRONMENTAL MANAGEMENT SYSTEM OPERATED BY

COMAR CONDENSATORI SPA

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

SITI / *SITES*

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

E' CONFORME ALLA NORMA / *IS IN COMPLIANCE WITH THE STANDARD*

ISO 14001:2015

PER LE SEGUENTI ATTIVITA' / *FOR THE FOLLOWING ACTIVITIES*

Progettazione e produzione di condensatori elettrici per avviamento e marcia motore, rifasamento lampade, elettronica di potenza, condensatori monofase e trifase per rifasamento bassa tensione (BT). Progettazione e assemblaggio di quadri automatici di rifasamento, filtri passivi in bassa tensione (BT) e quadri elettrici di rifasamento in alta tensione (AT), mediante processi di avvolgitura, metallizzazione, riempimento e assemblaggio finale

Design and production of motors starting and motor running capacitors, lighting capacitors, low voltage power factor correction capacitors, power electronic capacitors and low voltage power factor correction capacitors, single and three phases capacitors, for LV power factor applications and passive filter systems. Design and assembling of automatic cabinet for power factor correction and filters LV and power factor corrections HV, by winding process, metal spraying, final filling and assembling

Certificazione rilasciata in conformità al Regolamento Tecnico ACCREDIA RT-09

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL
REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE

THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR CERTIFICATION OF MANAGEMENT SYSTEMS

DATE:	PRIMA CERTIFICAZIONE *FIRST CERTIFICATION*	EMISSIONE CORRENTE *CURRENT ISSUE*	SCADENZA *EXPIRY*
	2003-12-18	2020-04-20	2023-05-09

IMQ S.p.A.- VIA QUINTILIANO, 43 - 20138 MILANO ITALY
Management Systems Division - Flavio Ornago

ACCREDIA

SGA N° 006 D

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

IAF: 19

La validità del certificato è subordinata a sorveglianza annuale e riesame completo del Sistema di Gestione con periodicità triennale
The validity of the certificate is submitted to annual audit and a reassessment of the entire Management System within three years

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CISQ is the Italian Federation of management system Certification Bodies.

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

CISQ/IMQ *has issued an IQNet recognized certificate that the organization:*

COMAR CONDENSATORI SPA

VIA DEL LAVORO 80 - LOC. CRESPELLANO - 40053 VALSAMOGGIA (BO)

has implemented and maintains a

Environmental Management System

for the following scope:

Design and production of motors starting and motor running capacitors, lighting capacitors, low voltage power factor correction capacitors, power electronic capacitors and low voltage power factor correction capacitors, single and three phases capacitors, for LV power factor applications and passive filter systems. Design and assembling of automatic cabinet for power factor correction and filters LV and power factor corrections HV, by winding process, metal spraying, final filling and assembling

which fulfills the requirements of the following standard:

ISO 14001:2015

Issued on: **2020 - 04 - 20**
Expires on: **2023 - 05 - 09**

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number: IT - 35241

Alex Stoichitoiu
President of IQNET

Ing. Mario Romersi
President of CISQ

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