

CATALOGUE

ELECTRIFICATION SOLUTIONS FOR INDUSTRIES

UK Edition

ENGINEERED
TO OUTFIT



**ENGINEERED
TO OUTRUN**

TABLE OF CONTENTS

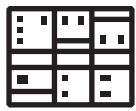
004	Introduction
005	Digital services
008–031	Energy distribution
032–037	Energy metering and management
038–051	Enclosures
052–071	Automatic circuit breakers
072–091	Switches and fusegear
092–117	Control & protection
118–127	Electronic relays and controls
128–139	Safety products

ELECTRIFICATION SOLUTIONS FOR INDUSTRIES

Helping industries outrun – leaner and cleaner



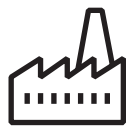
Buildings



Data Centres



EV Charging



Manufacturing



Food & Beverage



Oil & Gas



Rail



Renewables

From data centers to shipping and ports, from railways to buildings, and from manufacturing to renewables - ABB help industries run leaner and cleaner. Because in a world where simply running isn't enough, we help industries outrun.



DIGITAL SERVICES

Simplified business solutions

By digitalising our services, we are easing the transformation for our customers from traditional office based operations, towards a digitalised future, enabling a more efficient pro-active work environment.



e-Configure

With e-Configure, customers can completely integrate the ordering process, selecting, configuring and ordering their products more quickly and simply.



Find out more.



ABB Connect Partner Hub

Join our dynamic, online platform that connects customers directly with key professionals, such as system integrators, and ABB Ability™ digital solutions and services.



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Building Information Modeling

ABB BIM objects are just one click away. Find them stored along with supporting documentation in our download centre or via selected third party repositories.



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ABB eFinder

ABB eFinder is a quick & easy way of sourcing and buying ABB Electrification components online. Just type in your product ID or product code, and eFinder will show you the list of distributor web shops and the approved distributors in your area.



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ABB EasyOrder

Exclusively available for ABB Electrification customers and partners, ABB EasyOrder is loaded with useful features including real-time information on pricing, stock and delivery, smart suggestions for accessories and instant access to technical data



Find out more.

01



ENERGY DISTRIBUTION

008–011	Miniature circuit breakers (MCBs)
012–015	Residual current devices (RCDs)
016–017	Auxiliary elements
018–021	Fuse holders
022–023	Surge protection devices (SPDs)
024–027	Command & signalling / Control & automation
028–031	Smisline TP plug-in system

ENERGY METERING AND MANAGEMENT

032–033	Energy meters
034–035	M4M network analyzers
036–037	InSite energy management system

ENCLOSURES

038–040	Junction boxes
041–043	Modular boxes
044–045	GRP enclosures
046–047	Steel enclosures
048	Enclosures for automation
049–051	General purpose enclosures

AUTOMATIC CIRCUIT BREAKERS

052–057	SACE Tmax XT
058–059	Ekip Touch/Hi-Touch
060–061	Communication
062–063	Auxiliary contacts
064–070	SACE Emax 3
071	Monitoring/Ekip Connect 3

SWITCHES AND FUSEGEAR

072–076	Switch-disconnectors
077	DC switches
078–080	Manual and motorised transfer/ Change-over switches
081	Compact ATS
082–083	TruONE™ ATS
084–086	Switch fuses
087–088	SlimLine XRG
089	800V AC fusegear
090–091	Enclosed switch-disconnectors

MINIATURE CIRCUIT BREAKERS (MCBs)

Standards and definitions for Miniature Circuit Breakers

Miniature Circuit Breakers (MCBs) are used for protection against overload and short-circuit of wiring installations. In electrical circuits, protection against electric shock by automatic disconnection is provided. Protective devices must not be used for operational switching of circuits.

IEC/EN 60898-1

MCBs are intended for the protection against overcurrents of wiring installations of buildings and similar applications. They are designed for use by uninstructed people and for not being maintained. This part of the standard applies for AC air-break circuit breakers for operation at 50 or 60Hz, having a rated Voltage not exceeding 440V (between phases), a rated Current not exceeding 125A and a rated short-circuit capacity not exceeding 25kA. As far as possible, it is in line with the requirements contained in IEC/EN 60947-2.

IEC/EN 60947-2

This part of the standard applies to circuit breakers, the main contacts of which are intended to be connected to circuits with a rated Voltage of which does not exceed 1000V AC or 1500V DC. It applies whatever the rated Current, construction or proposed application and are designed for use by instructed people.

UL 1077

These requirements apply to Supplementary Protectors where Branch Circuit Protection is already provided or is not required. Compliance with this standard is acceptable for use as a component of a final circuit.

UL 489

These circuit breakers are specifically intended to provide service entrance, feeder and Branch Circuit Protection in accordance with the National Installation Codes in Annex B, Ref. No.1.

Rated short-circuit capacity (Icn)

The rated short-circuit capacity of a circuit-breaker is the value assigned to that circuit-breaker by the manufacturer. The circuit-breaker remains undamaged and is capable of further switching operations.

Rated ultimate short-circuit breaking capacity (Icu)

The value of ultimate short-circuit breaking capacity assigned to that circuit breaker by the manufacturer for the corresponding rated operational Voltage. It is expressed as the value of the prospective breaking Current, in kA (rms value of the AC component in the case of AC Current).

Rated service short-circuit breaking capacity (Ics)

The value of service short-circuit breaking capacity assigned to that circuit breaker by the manufacturer for the corresponding rated operational Voltage. It is expressed as a value of prospective breaking current, in kA, corresponding to one of the specified percentages of the rated ultimate short-circuit breaking capacity and rounded up to the nearest whole number. It may be expressed as a % of Icu (for example Ics = 25% Icu).

Technical details

Tripping characteristics

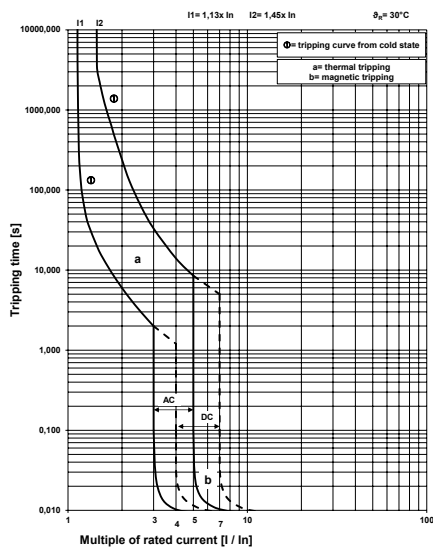
Tripping characteristics S200 / S200M

Characteristic B (6A up to 63A)

IEC-EN60898

3-5 x I_n (AC)

Lighting & Domestic*

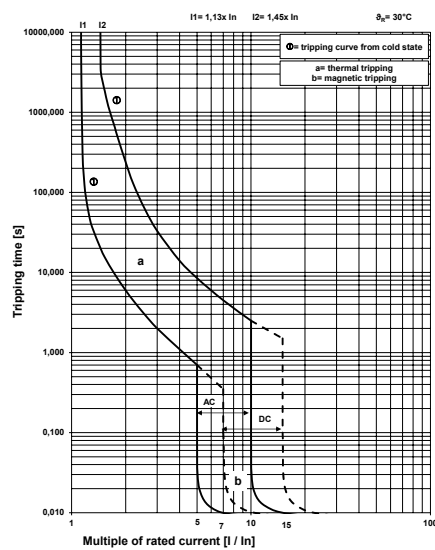


Characteristic C (6A up to 63A)

IEC-EN60898

5-10 x I_n (AC)

Inductive & Fluorescent*

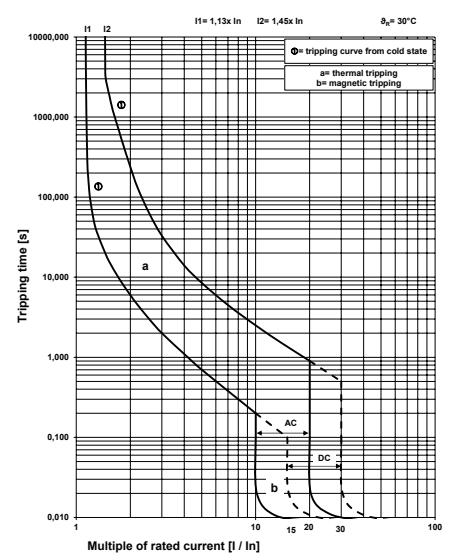


Characteristic D (6A up to 63A)

IEC-EN60898

10-20 x I_n (AC)

Motors*

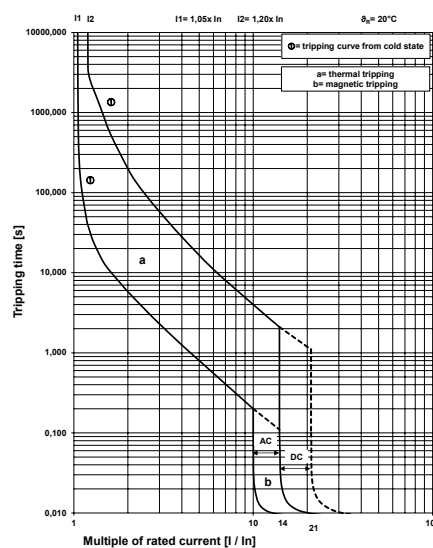


Characteristic K

IEC-EN60947-2

10-14 x I_n (AC)

Transformers & Motors*

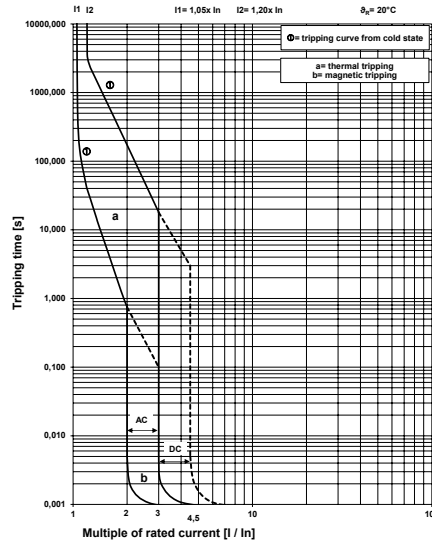


Characteristic Z

IEC-EN60947-2

2-3 x I_n (AC)

Semiconductors*



*Typical Applications

Note: Characteristic K & Z recognised by IEC/EN 60947-2 only.

SOLUTIONS OVERVIEW

Designed to ensure efficiency and protection



MINIATURE CIRCUIT BREAKERS

	S200	S200M	S200 80-100A	S300P
Product Type	MCB	MCB	MCB	MCB
Applications	General / Industrial	General / Industrial	General / Industrial	Industrial / Rail
Standards & Breaking Capacity I_{cu} (230/400V AC)	IEC/EN 60898-1 6kA IEC/EN 60947-2 10kA UL1077	IEC/EN 60898-1 10kA IEC/EN 60947-2 15kA UL 1077 CSA 22.2 No. 235	IEC/EN 60898-1 6kA IEC/EN 60947-2 6kA	IEC/EN 60898-1 25kA IEC/EN 60947-2 25kA UL 1077 CSA 22.2 No. 235
Poles	1P, 2P, 3P, 4P, 1P+N, 3P+N	1P, 2P, 3P, 4P, 1P+N, 3P+N	1P, 2P, 3P, 4P, 1P+N, 3P+N	1P, 2P, 3P, 4P, 1P+N, 3P+N
Tripping Characteristics	B, C, D, K, Z	B, C, D, K, Z	B, C	B, C, D, K, Z
Rated Current I_n	0.5...63A	0.5...63 A	80, 100A	0.2...63A



MINIATURE CIRCUIT BREAKERS

	S200M-UC	S200MT	S200MT-UC	S200MTR
Product Type	MCB	MCB	MCB	MCB
Applications	Universal current	Rail Applications	Rail / Universal Current	Rail / Ring Terminals
Standards & Breaking Capacity I_{cu} (230/400V AC)	IEC/EN 60898-1 10kA IEC/EN 60947-2 10/6kA UL 1077 CSA 22.2 No. 235	IEC/EN 60898-1 10kA IEC/EN 60947-2 15kA UL 1077 CSA 22.2 No. 235 GB/T 14048.2 GB/T 10963.1	IEC/EN 60947-2 10/6kA Hazard level R26/HL3 according to EN 45545	IEC/EN 60947-2 25/15kA
Poles	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P, 1P+N, 3P+N	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P
Tripping Characteristics	B, C, K, Z	B, C, D, K, Z	B, C, K, Z	B, C, K, Z
Rated Current I_n	0.2...63A	0.2...63A	0.2...63A	0.5...63A



Find out more.



Find out more.



SH200 SH200M	SN201 SN201M	S200C S200CM	SU200M	SU200MR	SU200DC
MCB	MCB	MCB	MCB	MCB	MCB
Residential / General	Compact 1P+N in 1 Module	Compact and Space Saving	UL/CSA (UL489)	UL/CSA/Ring Terminals	UL/CSA DC Applications
IEC/EN 60898-1 6kA (SH200) 10kA (SH200M)	IEC/EN 60898-1 6kA (SN201) 10kA (SN201M)	IEC/EN 60898-1 6kA (S200C) 10kA (S200CM)	IEC/EN 60947-2 15kA UL489 CSA 22.2 No. 5	IEC/EN 60947-2 15kA UL489 CSA 22.2 No. 5	UL 489 CSA 22.2 No. 5
1P, 2P, 3P, 4P, 1P+N, 3P+N	1P+N	1P+1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P
B, C, D	B, C, (D)	B, C	C, K, Z	K	K, Z
(0.5-4) 6...63 A	2...40A	2...32A (40A)	0.2...63A	0.2...63A	(0.2) 1...63A



S200MTR-DC	S800	S800P	S800U	S800S-UCB S800S-UCK	S800HV
MCB	HPMCB	HPMCB	HPMCB	HPMCB	HPMCB
Rail / Ring Terminals / DC	Commercial / Industrial	Commercial / Industrial	UL/CSA Applications	1000V DC Applications	1000V AC Applications
IEC/EN 60947-2 10kA (DC)	IEC/EN 60898-1 25kA (S800S) 20kA (S800N) 16kA (S800C) IEC/EN 60947-2 50kA (S800S) 36kA (S800N) 25kA (S800C) UL 1077	IEC/EN 60947-2 50kA UL1077	UL 489	IEC/EN 60947-2	IEC/EN 60947-2 UL 1077
1P, 2P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P
B, C, K, Z	B, C, D, (K)	B, C, D, K	K, Z	B, K	C, K
0.5...63A	(0.5)...63A	80, 100, 125A	10...100A	0.5...125A	0.5...125A

RESIDUAL CURRENT DEVICES (RCDs)

Functions and classification criteria for Residual Current Devices

A residual current operated circuit-breaker is an amperometric protection device which is tripped when the system leaks a significant current to earth. This device continuously calculates the vector sum of the single-phase or three-phase system line currents, and while the sum is equal to zero allows electricity to be supplied. This supply is rapidly interrupted if the sum exceeds a value preset according to the sensitivity of the device.

Residual current operated circuit-breakers can be classed according to four parameters:

- type of construction
- detectable wave form
- tripping sensitivity
- tripping time

Depending on the type of construction, RCDs may be classed as:

- RCBOs (magnetothermal with overcurrent protection)
- RCCBs (without overcurrent protection release incorporated)
- RCD blocks

RCBOs combine, in a single device, the residual current function and the overcurrent protection function typical of MCBs. RCBOs are tripped by both current leakage to earth and overloads and short-circuits and they are self protecting up to a maximum short-circuit current value indicated on the label.

RCCBs are only sensitive to Current leakage to earth. They must be used in series with an MCB or Fuse which protects them from the potentially damaging thermal and dynamic stresses of any overcurrent's.

IEC/EN 61008 (all parts)

Applies to residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs).

IEC/EN 61009 (all parts)

This standard applies to Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs).

Overview of the RCCB types

The variety of residual current protective devices (RCDs) has increased continuously over the last few decades following technological development and the massive introduction of electronics in all areas of application. In accordance with the possibility of recognising the most varied forms of residual current and the relatively demanding device testing, the spectrum of RCD types today ranges from protecting pure AC consumers to high-frequency consumers.

Technical details

Functions and classification criteria for RCDs

Type F



Full Type A AP-R functionality
+ Pulsating current with direct current components
max. 10 mA
+ Detection of mixed frequency current up to 1 kHz.

Type B



Full Type F functionality
+ detection of smooth direct
currents, high-frequency currents
up to 2 kHz, high system availability.

Type A AP-R



Full Type A
functionality
+ high sensitivity
against unwanted
tripping (short
time delay).

Type B+



Full Type B functionality
+ detection of high-
frequency currents up
to 20 kHz, including
superior, preventive
fire protection.

Type A



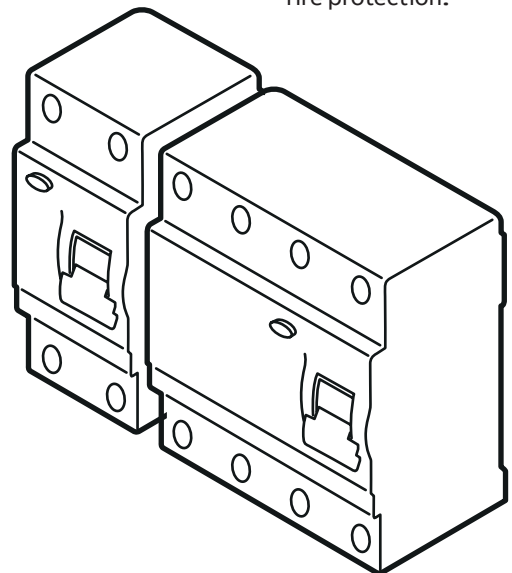
Full Type AC functionality
+ pulse current detection with direct
current components of max. 6 mA.

AC
A
A AP-R
F
B
B+

Type AC



AC current only.



SOLUTIONS OVERVIEW

Compact solutions for complete protection



RESIDUAL CURRENT DEVICES

	F200	F200B	FH200	F-AT1 F-ARI
Product Type	RCCB	RCCB	RCCB	RCCB
Applications	Ground Fault	Ground Fault Special Application	Ground Fault Residential	Automatic Test Feature
Standards	IEC/EN 61008-1 IEC/EN 61008-2-1 UL 1053 (up to 63A)	IEC/EN 61008-1 IEC/EN 61008-2-1 EN 62423	IEC/EN 61008	EN61008-1 CPT054 EN50557
Sensitivity	10, 30, 100, 300, 500mA	30, 300, 500mA	30, 100, 300mA	30, 300mA
Poles	2P, 4P	2P, 4P	2P, 4P	2P,4P
Type	AC, A, (F)	B	AC	A
Rated Current I_n	16, 25, 40, 63, 80, 100, 125A	16, 25, 40, 63A	25, 40, 63A	25, 40, 63A
Trip Mechanism	Voltage Independent	Voltage Independent	Voltage Independent	Voltage Independent



RESIDUAL CURRENT DEVICES

	DS201 DS201M	DSH201	DS202CR DS202CRM	DS301C
Product Type	RCBO	RCBO	RCBO	RCBO
Applications	Complete Protection 1P+N in 2 Module	Complete Protection 1P+N in 2 Module	Complete Protection 2P in 2 Module	Complete Protection 1P+N in 1 Module
Standards & Breaking Capacity I_{cu}	IEC/EN 60947-2 10kA (DS201) 15kA (DS201M) IEC/EN 61009-1 6kA (DS201) 10kA (DS201M) IEC/EN 61009-2-1	IEC/EN 60947-2 10kA IEC/EN 61009-1 6kA IEC/EN 61009-2-1	IEC/EN 60947-2 10kA (DS202CR) (DS202CRM) IEC/EN 61009-1 6kA (DS202CR) 10kA (DS202CRM) IEC/EN 61009-2-1	IEC/EN 60947-2 6kA IEC/EN 61009-1 6kA IEC/EN 61009-2-1
Sensitivity	10, 30, 100, 300mA	30mA	10, 30, 300mA	30mA
Poles	1P+N	1P+N	2P	1P+N
Type	AC, A, APR	AC, A	A, APR	AC, A
Rated Current I_n	6...40A	6...40A	6...40A	6...20A
Trip Mechanism	Voltage Independent	Voltage Independent	Voltage Independent	Voltage Independent



Find out more.



DDA200	DDA200B	DDA800	RD2/RD3	ELR	TR
RCD Block	RCD Block	RCD Block	RCD	RCD	–
Ground Fault	Ground Fault Special Application	Ground Fault HP Range	Din-rail Mounting	Front Panel Installation	Toroidal Transformers
IEC/EN 61009-1 Ann. G IEC/EN 61009-2-1	IEC/EN 61009-1 Ann. G IEC/EN 61009-2-1, IEC EN 62423	IEC/EN 60947-2 Ann. B	IEC/EN 62020	IEC EN 60947-2 Annex M	–
10, 30, 100, 300, 500, 1000mA	30, 300, 500mA	10, 30, 100, 300, 500, 1000mA	0.03, 0.1, 0.3, 0.5, 1, 2, (3, 5, 10, 30)A	0.03, 0.1, 0.3, 0.5, 1, 2, 3, 5, 10, 30A	Min. Current depends on size
2P, 3P, 4P	2P, 3P, 4P	2P, 3P, 4P	All via Toroid	All via Toroid	All required
AC, A, (F)	B	AC, A	AC, A	A	As RD* & ELR
25, 40, 63A	25, 40, 63A	63, 100A	All via Toroid	All via Toroid	Size dependant
Voltage Independent	Voltage Independent	Voltage Independent	Voltage Dependent	Voltage Dependent	As RD* & ELR



DSN201E DSN201EM	DSE201 DSE201M	DSE203NM	DS203NC	DS200 DS200M	DS800P
RCBO	RCBO	RCBO	RCBO	RCBO	RCBO
Complete Protection 1P+N in 1 Module	Distribution Solution 1P+N in 1 Module	Distribution Solution 3P+N in 3 Module	Complete Protection 3P+N in 4 Module	MCB / RCD Combination	Ground Fault HP Range
IEC/EN 60947-2 6kA (DSN201E) 10kA (DSN201EM) IEC 61009-1 6kA (DSN201E) 10kA (DSN201EM) IEC 61009-2-2 AS/NZS 61009.1	IEC/EN 60947-2 15/10kA (DSE201M) IEC 61009-1 6kA (DSE201) 10kA (DSE201M) IEC 61009-2-2 AS/NZS 61009.1	IEC 61009-1 10kA IEC 61009-2-2 AS/NZS 61009.1	IEC/EN 60947-2 10kA IEC/EN 61009-1 6kA IEC/EN 61009-2-1	IEC/EN 60947-2 10kA (DS200) 15kA (DS200M) IEC/EN 61009-1 6kA (DS200) 10kA (DS200M) IEC/EN 61009-2-1 IEC/EN 60947-2	IEC/EN 60947-2 50kA
10, 30mA	30mA	10, 30, 100, 300mA	30, 100, 300mA	30mA	30, 300, 1000mA
1P+N	1P+N	3P+N	3P+N	2P, 3P, 4P	2P, 3P, 4P
AC, A	AC, A	A	AC, A, APR, S	AC, A	A, APR, S
6...20(32)A	6...50A	6...63A	6...32A	6...63A	125A
Voltage Dependent	Voltage Dependent	Voltage Dependent	Voltage Independent	Voltage Independent	Voltage Independent

AUXILIARY ELEMENTS

Selection tables



AUXILIARY ELEMENTS

Product Type	Auxiliary interface and signal contact	Auxiliary contact	Auxiliary contact (ringtongue)	Auxiliary contact	Auxiliary contact and signal or auxiliary contact	Auxiliary contact (bottom)
	SCC-IH6R	S2C-H6-11R	S2C-H02 T	S2C-H6R	S3C-H-S/H6R	S2C-H01
	SCC-S6R	S2C-H6-20R	S2C-H11 T	S2C-S/H6R		S2C-H10
	DSCC-IH6R	S2C-H6-02R	S2C-H020 T			
	DSCC-S6R	S2C-H11L				
		S2C-H20L				
		S2C-H02L				
Standards						
EN45545-2 (V0)	-	■	-	■	■	■
IEC / EN 61373	-	■	-	■	■	■
MCBs						
S200 Range	-	■	-	■	■	■
SN201	■	-	-	●	●	-
S200C	■	-	-	●	●	-
S200MUC	-	■	-	■	■	■
S300P (M300P)	-	■	-	■	■	■
SU200 Range	-	-	-	S2C-H6RU S2C-S6RU	-	-
MCBs Traction						
S200MT	-	■	-	■	■	■
S200MTUC	-	■	-	■	■	■
S200CT	■	●	-	●	●	●
S200 MTR (DC)	-	-	■	-	-	■
ST200MTR (DC)	-	-	■	-	-	-
RCDs						
F200	-	■	-	■	■	-
RCCBs						
DS201	-	■	-	■	■	■
DS301C	■	●	-	●	●	-
DS202CR	DSCC	-	-	●	●	-
DS203NC	■	●	-	●	●	-
RCCBs Traction						
DS201T	-	■	-	■	■	■
DS301CT	■	●	-	●	●	●
AFDDs						
S-ARC1	-	■	-	■	■	-
DS-ARC1	-	■	-	■	■	■
Switch Disconnectors						
SD200	-	■	-	■	■	■

■ = compatible / ● = compatible with interface / ** F200 up to 100 A or F200B up to 63 A.



ACCESSORIES

Accessory	Auxiliary	Auxiliary/Signal	Shunt	Motor	Motor	Short current limiter
	S800-AUX	S800-AUX/ALT	S800-SOR	S800W-RSU	S800W-RSU-H	S800-SCL-SR
Standards						
EN45545-2	R26/HL3	R26/HL3	R26/HL3	-	-	-
IEC 61373	Category 1 - Class A/B	Category 1 - Class A/B	Category 1 - Class A/B	-	Category 1 - Class B	Category 1 - Class A/B
Compatible with:						
S800P	■	■	■	■	■	■
S800S / S800S-UC	■	■	■	■	■	■
S800N	■	■	■	■	■	■
S800C	■	■	■	■	■	■
S800HV	■	■	■	■	■	-
S800PV	■	■	■	■	■	-
S800U	■	■	■	■	-	-



Shunt trip	Shunt trip	Shunt trip (ringtongue)	Under voltage release	Over voltage release	Motor operating device	Auto-reclosing device	Motor operating device
S2C-A1	S3C-A1	S3C-A1T	S3C-UA12	S2C-OVP1	SC3-MOD24	F3C-AR24	SRC-RM1 DC
S2C-A2	S3C-A2	S3C-A2T	S3C-UA24	S2C-OVP2	S3C-MOD230	F3C-AR230	SRC-RM2/3 DC
S2C-A1L	S3C-A1L	S3C-A1TL	S3C-UA48			F3C-AR230C 2/30	SRC-RM4 DC
S2C-A2L	S3C-A2L	S3C-A2TL	S3C-UA110			F3C-AR230C 2/300	
		S2C-A1TU	S3C-UA230			F3C-AR230C 4/30	
		S2C-A2TU	S3C-UA230 D			F3C-AR230C 4/300	
■	■	■	-	-	-	-	■
■	■	■	-	-	-	-	■
■	■	-	■	■	■	-	-
-	●	-	●	●	-	-	-
-	●	-	●	●	-	-	-
■	■	-	■	■	■	-	-
■	■	-	■	■	■	-	-
S2C-H6RU S2C-S6RU	-	-	-	-	-	-	-
■	■	-	-	-	■	-	■
■	■	-	-	-	■	-	■
-	●	-	-	-	-	-	●
-	-	■	-	-	■	-	■
-	-	■	-	-	■	-	■
-	■	-	■	■	■	■**	-
-	■	-	■	■	■	-	-
-	●	-	●	●	-	-	-
-	●	-	●	●	-	-	-
-	●	-	●	●	-	-	-
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-	●	-	-	-	-	-	●
-	■	-	-	■	-	-	-
-	■	-	-	■	-	-	-
-	■	-	■	■	■	-	-



Undervoltage release		DDA 800
S800HV-SCL-HR	S800-UVR	DDA 800
-	-	-
- Category 1 - CClass A/B	-	-
-	■	■
-	■	■
-	■	■
-	■	■
■	■	-
-	■	-
-	■	-

Find out more.



FUSE HOLDERS

Standards and definitions for fuse holders

Fuse holders and fuse switch disconnectors provide protection against short-circuits and overloads.

Standards and definitions for fuse holders

Fuse holders meet the requirements of devices for connect/disconnect and switching operations defined in International & European product standard:

- IEC/EN 60947-3: Switches, disconnectors, switch-disconnectors and fuse combination units

Disconnector

The disconnector is a mechanical device that, in the open position, meets the requirements specified for the disconnect function by the international IEC 60947-3 standard. The opening of a disconnector guarantees that the downstream circuit is electrically isolated from the upstream circuit. This is a required condition before personnel can access the equipment on the network, for example to perform maintenance. The IEC 60364 standard prohibits carrying out maintenance on the installation if the circuits have not been disconnected.

Fuse disconnector

This is the definition of a fuse carrier that performs a disconnect function. Not all fuse carriers are disconnectors, and to be classified as such they must meet the requirements and pass the tests prescribed by the IEC 60947-3 standard.

Fuse switch-disconnector

This is the designation given by the IEC 60947-3 standard to a fuse disconnector that permits switching under load. Not all fuse disconnectors allow this type of operation, and to be classified as a fuse switch-disconnector, a device must have utilisation category AC-21B or higher.

Utilisation categories

Not all connect/disconnect devices have the same performance specifications and the permitted operations depend on a parameter which defines the specific conditions of use, called the utilisation category.

It specifies:

- The type of network (AC/DC)
- The permitted type of operation (under no load, for resistive loads, for highly inductive loads, etc.)
- The frequency of use



Fuse indicator LED

Type of current	Utilisation category		Typical applications
	A	B	
Alternating current	AC-20A	AC-20B	Connecting and disconnecting under no load
	AC-21A	AC-21B	Switching of resistive loads, including moderate overloads
	AC-22A	AC-22B	Switching of mixed, resistive and inductive loads, including moderate overloads
	AC-23A	AC-23B	Switching of motors or other highly inductive loads
Direct current	DC-20A	DC-20B	Connecting and disconnecting under no load
	DC-21A	DC-21B	Switching of resistive loads including moderate overloads
	DC-22A	DC-22B	Switching of mixed, resistive and inductive loads, including moderate overloads (e.g. shunt motors)
	DC-23A	DC-23B	Switching of highly inductive loads (e.g. series connected motors)
Meaning			
	Suffix A		Frequent use
	Suffix B		Infrequent use

Technical details

Fuse holders and fuse switch disconnectors

Compactness

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

Reliability

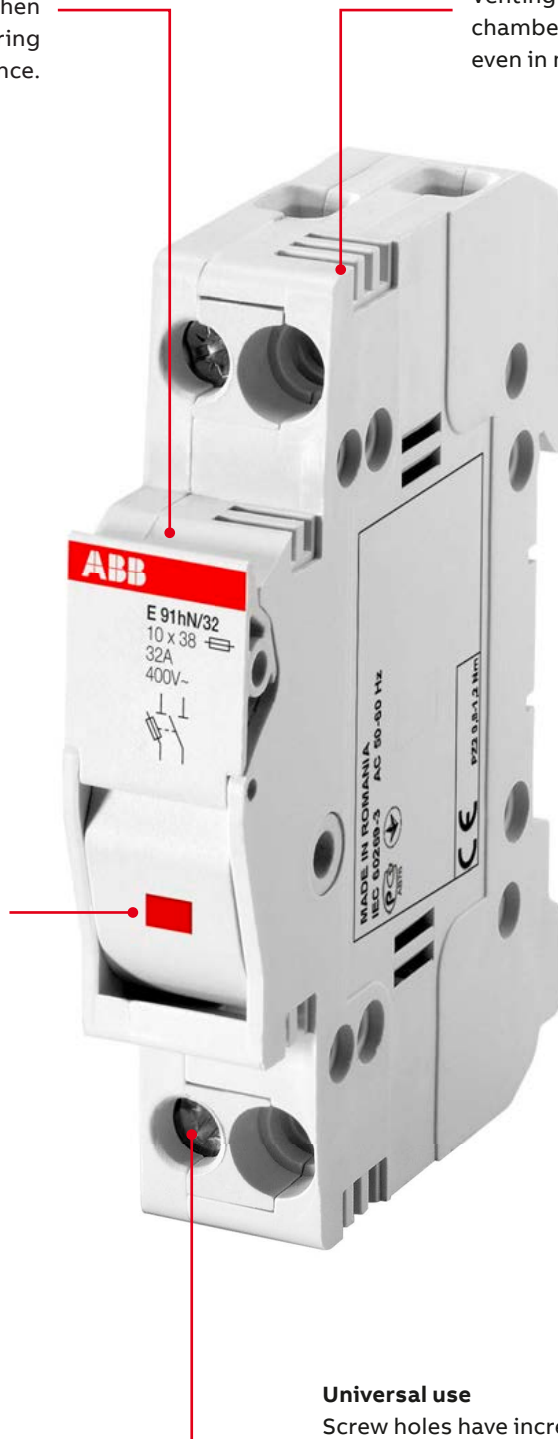
Venting grooves and cooling chambers improve heat dissipation even in multiple-pole configurations.

Completeness

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

Universal use

Screw holes have increased diameter to accommodate insulated screwdrivers and electric screwdrivers.



SOLUTIONS OVERVIEW

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



FUSE HOLDERS

	E90/20 E90/20s	E90/32 E90/32s	E90/50 E90/50s	E90/125 E90/125s
Product Type	Fuse Switch-Disconnecter	Fuse Switch-Disconnecter	Fuse Disconnecter	Fuse Disconnecter
Applications	Designed for load switching	Designed for load switching	Industrial circuit protection	Industrial circuit protection
Standards	IEC 60947-3	IEC 60947-3	IEC 60947-3	IEC 60947-3
Poles	1P, 2P, 3P	1P, 2P, 3P, 4P 1P+N, 3P+N	1P, 2P, 3P 1P+N, 3P+N	1P, 2P, 3P 1P+N, 3P+N
Rated Voltage	400V AC-22B	400V AC-22B	690V AC-20B	690V AC-20B
Rated Current I_n	20A	32A	50A	125A
Fuse Size / Type	8.5 x 31.5mm	10.3 x 38mm	14 x 51mm	22 x 58mm



FUSES

	E9F 8	E9F 10	E9F 14	E9F 22
Product Type	Fuse gG/aM	Fuse gG/aM	Fuse gG/aM	Fuse gG/aM
Standards	IEC 60269-2	IEC 60269-2	IEC 60269-2	IEC 60269-2
Breaking Capacity	20kA	120kA	120kA	120kA
Rated Voltage	400V AC	400/500V AC	500/690V AC	500/690V AC
Rated Current I_n	1...20A	0.5...32A	2...50A	4...100 (125)A
Fuse Size / Type	8.5 x 31.5mm	10.3 x 38mm	14 x 51mm	22 x 58mm



Find out more.



E90/32 PV E90/32s PV	ILTS-E	E90hN/20 E90hN/20s	E90hN/32 E90hN/32s	E90 CC	E90 J
Fuse Disconnecter	Fuse Switch-disconnector	Fuse Holder	Fuse Holder	Fuse Holder	Fuse Holder
1000VDC Photovoltaic application	High Utilisation Category	Protection of overloads and short circuits	Protection of overloads and short circuits	Designed for UL application	Designed for UL application
IEC 60947-3	EN 60947-1 EN 60947-3 VDE	IEC 60269-3	IEC 60269-3	UL 4248-1 UL 4248-4	UL 4248-1 UL 4248-4
1P, 2P	1P, 2P, 3P 3P+N	1P+N 3P+N	1P+N 3P+N	1P, 2P, 3P, 4P 1P+N, 3P+N	1P, 2P, 3P
1000V DC	400V AC-22B	400V AC	400V AC	600V AC	600V AC
30A / 32A	63A	20A	32A	30A	30A / 60A
10.3 x 38mm	D01 / D02	8.5 x 31.5mm	10.3 x 38mm	Class CC	Class J



E9F PV	D01/E14 D02/E18
Fuse PV	Fuse gG
IEC 60269-6	IEC/EN 60269-3
10kA	50kA
1000V DC	400V AC
1...30A	2...16A 20...63A
10.3 x 38mm	D01/D02 Bottle

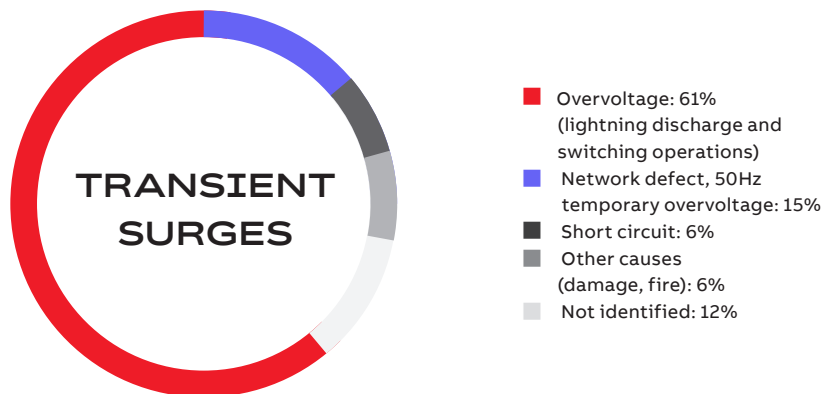
SURGE PROTECTION DEVICES (SPDs)

General information

Surge Protective Devices (SPDs) are designed to protect against transient surge conditions. Lightning and utility power anomalies only account for 20% of transient surges, while 80% are produced internally in a facility.

Damage to electronic equipment

Analysis conducted in France for residential segment by AVIVA, one of the largest insurance companies (www.aviva.com).



At a time when electronic equipment has become more and more sensitive, residential, commercial and industrial sectors have become more reliant on their computers and telecommunications equipment. Downtime in one of these computer systems, due to transient surges, can have catastrophic consequences. Loss of operations, loss of service, loss of data and productivity involved. In most cases, there are huge consequences whose cost greatly exceed that of the equipment being protected.

Transient Surges represent the main cause of electrical devices failure and loss of productivity, but what is a transient surge? Transient overvoltage is a short duration, high magnitude Voltage peak with fast rising edges, commonly referred to as surges. Often described as a “spike”, transient Voltages can reach up to 6000V on a low-voltage consumer network, with no more than a millisecond duration.

Technical reference

ABB SPDs meet the performance parameters defined in International & European SPD product standards:

- IEC/EN 61643-11 Surge protective devices connected to low-voltage power systems - requirements and tests.
- IEC/EN 61643-21 Surge protective devices connected to telecommunications and signalling networks - performance requirements and testing methods.

These parts of IEC/EN 61643 apply for all SPDs providing protection against lightning (direct and indirect) and transient overvoltages. They both cover system Voltages rated up to 1000V AC (RMS) and 1500V DC.

Within these parts of the standard the following are defined:

- The electrical requirements for SPDs, including Voltage protection and Current limiting levels, status indication and minimum test performance.
- The mechanical requirements for SPDs, to ensure an appropriate quality of connection, and mechanical stability when mounted.
- The safety performance of the SPD, including its mechanical strength and its ability to withstand heat, overstress and insulation resistance.

The standard establishes the importance of testing SPDs to determine their electrical, mechanical and safety performance. The electrical tests include impulse durability, Current limiting, and transmission tests. Mechanical and safety tests establish levels of protection against direct contact, water, impact, the SPD installed environment etc.

For Voltage and Current limiting performance, an SPD is tested according to its Type (or Class to IEC), which defines the level of lightning current or transient overvoltage it is expected to limit/divert away from sensitive equipment. Tests include Class I impulse current (10/350 waveform), Class I & II nominal discharge current (8/20 waveform), Class I & II Voltage impulse and Class III combination wave tests for SPDs installed on power lines.

Solutions overview

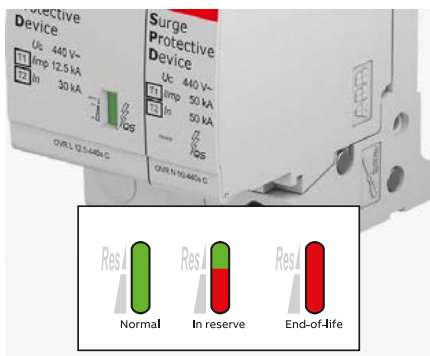
A complete range for your surge protection

SPDs

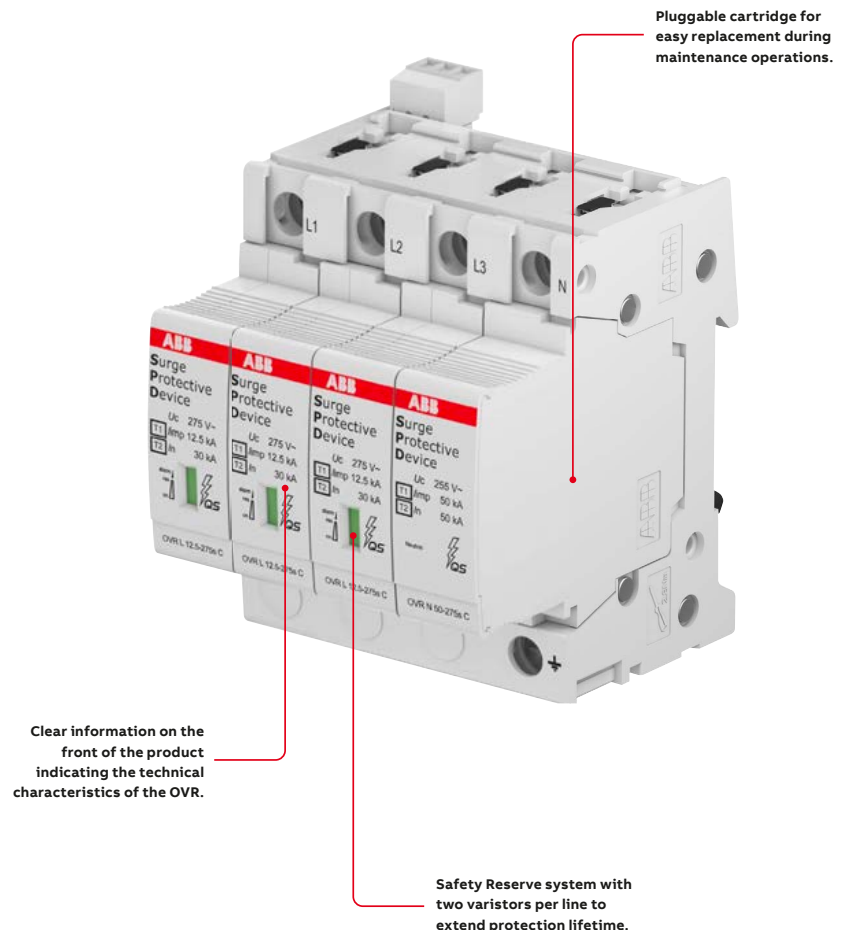


	OVR T1-T2 25/100kA	OVR T1-T2 12.5kA	OVR T2 20kA	OVR T2-T3 20kA	eOVR 20kA
Product Type	SPD	SPD	SPD	SPD	Digital SPD
Applications	Main Distribution	Main Distribution	Sub Distribution	Sub Distribution / Final Circuit	Network Connection
Standards	IEC/EN 61643-11 UL 1449, 5th Edition	IEC 61643-11 EN 61643-11: 2012 / A11: 2018	IEC/EN 61643-11	IEC 61643-11 EN 61643-11: 2012 / A11: 2018	EN 61000-6-2 EN 61000-6-3
Type / Test Class	T1-T2 / I - II	T1-T2 / I - II	T2 / II	T2-T3 / II-III	T1-T2 / I - II
Poles	1, 1+1, 3, 3+1, 4	1, 1+1, 3, 3+1, 4	1, 1+1, 3, 3+1, 4	1, 1+1, 3, 3+1	1+1, 3, 3+1, 4
System Network	TNC TNS TT	TT (L-N) TNS TNC	TT (L-N) TNS	TNC TT(L-N) TNS	TT TNS TNC
Impulse Current I_{max}	25kA Per Pole	12.5kA Per Pole	20kA Per Pole	20kA Per Pole	20/40/80kA Per Pole
Nominal Voltage U_n	230/400V AC	230/400V AC	230/400V AC	230/400V AC	230/400V AC

Additional ratings and specifications available.



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.



COMMAND & SIGNALLING

SD200/E200 switch disconnectors

SD200 and E200 switch disconnectors provide state-of-the-art safety and comfort. Both are available with 1 to 4 poles with rated currents from 16 to 125A and provide disconnection properties according to IEC/EN 60947-3.

E210 switches, pushbuttons and indicator lights

These devices are specifically made for commanding loads and signaling electrical conditions. They are available in half module or 1 module width, depending on the contact layout.

ESB/EN installation contactors

ABB's hum-free installation contactors offer a wide range of ratings from 16 to 100A. Widely used in buildings for switching and controlling lighting, heating, ventilation, EV charging stations, motors and pumps.

E260 electronic latching relay

The E260 series is designed for direct installation in sub-distribution systems. Particularly suitable for households, hotels and workplaces.

E290 mechanical latching relay

These devices are activated by means of control pulses. As a rule, installations with latching relays are used where the lighting control system can be operated from at least three points in different locations.

E297 installation relay

The E297 installation relay is an electromechanical switching device controlled by means of a continuous pulse. The coils have a low level of switching noise and are optimised for low power loss.

TS-C safety isolating transformers for general use

These transformers are short circuit proof and are equipped with a thermal protective device which automatically restores the power when the transformer is sufficiently cooled down.

TM/TS bell transformers

These transformers, with safety extremely-low voltage secondary (SELV), are suitable for loads that require a discontinuous supply, and in particular doorbells and chimes.

TM-C/TM-S/TM-I control transformers

Transformers for supplying control circuits, extra low voltage circuits (<50V on no load).

Bells and buzzers

The range includes modular versions with 12V or 230V ratings for acoustic signalling in residential and commercial sectors as well as industry application such as alarm notification, supervision and intensive use.

Modular sockets

Allows the connection of devices, tools or equipment in civil and industrial electrical switchboards.

CONTROL & AUTOMATION

DBT timer digital time switches

The unique design, with white backlight LCD display, and extreme ease of use with only four buttons, make DBT timers ideal to automate the installation functions.

E232 staircase lighting time-delay switches

These are usually operated by pushbuttons, often fitted with a glow lamp. Switches are designed for a glow lamp current of up to 150mA and are for use in installations in multi-storey buildings.

TL line modular twilight switches

The TL1 twilight switch allows to switch ON and switch OFF lighting devices according to a scheduled level of the ambient light. It is used in combination with an external sensor.

E450 priority switches

The priority switch is used in wiring systems where the simultaneous operation of two powerful loads (e.g. storage heating and flow-type heating) is not possible.

LCR load management relay

Installed downstream of the main circuit-breaker, it compares the actual power consumption of the system to a preset maximum permitted value.



SOLUTIONS OVERVIEW

Electrical installation solutions for buildings



COMMAND DEVICES

	SD200	E200	E210	E210
Product Type	Switch Disconnector	Switch Disconnector	Switches	Pushbuttons
Applications	Electrical isolation (AC-23A)	Electrical isolation (AC-22A)	Space saving & modular	Space saving & modular
Standards	IEC/EN 60947-3	IEC/EN 60947-3	DIN EN 60669-1 VDE 0632-1 UL 508	DIN EN 60669-1 VDE 0632-1 UL 508
Poles	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1...4 N/O 1...2 C/O	1 N/O + 1 N/C 1 N/O, 1 N/C
Rated Voltage	253/440V AC	240/415V AC	250/400V AC	Various
Rated Current I_n	16...63A	80...125A	16A / 32A	16A



COMMAND DEVICES CONTROL & AUTOMATION DEVICES

	TS-C	TM TS	TM-C/ -S/-I	RI/BR/ TSM/TSR
Product Type	Safety Isolating Transformers	Bell Transformers	Control and Isolating Transformers	Bells & Buzzers
Applications	Continuous use	Dis-continuous use	Control circuits	Acoustic signalling
Standards	IEC/EN 61558-2-6	IEC/EN 61558-2-8	IEC/EN 61558-2-2 IEC/EN 61558-2-4 IEC/EN 61558-2-6	EN 62080
Rated Power	10...100VA	10...40VA 8...24VA	50...2500VA	–
Poles	–	–	–	–
Rated Voltage	Pri 230V Sec 12-24V	Pri 230V Sec 4...24V	Pri 230/400V Sec 12...230V	12...230V AC
Rated Current I_n	As tapping	As tapping	As tapping	–



Find out more.



Find out more.



E210	ESB	EN	E260	E290	E297
Indicator Lights	Installation Contactors	Installation Contactors with override	Electronic Latching Relays	Latching Relays	Installation Relays
Space saving & modular	Lighting, heating, EV, motors...	Lighting, heating, EV, motors...	Residential and commercial	Multiple point operation	Low power control interface
DIN EN 62094-1	IEC/EN 60947-1 IEC/EN 60947-4-1 IEC/EN 61095	IEC/EN 60947-1 IEC/EN 60947-4-1 IEC/EN 61095	IEC 60669-1 IEC 60669-2-1 VDE	IEC/EN 60669-1 IEC/EN 60669-2-2	IEC/EN 60669-1 IEC/EN 60669-2-2
–	2...4P	2...4P	1, 2, 4 N/O 1 N/O + 1 N/C	1...2 N/O 1 N/O + 1 N/C	1...2 N/O 1 N/O + 1 N/C
Various	Various	Various	8...240V AC/DC	Various	Various
–	16...100A	20...40A	16A	16A / 32A	16A



M1*	DBT	E232	TL	E450	LCR
Modular Sockets	Digital Time Switches	Staircase Time Switches	Twilight Switches	Priority Switches	Load Management Relay
Country specific options	Automating installations	Specific stairwell application	Switching based upon ambient light	Load prioritisation	Priority load switching / shedding
SEV 1011 DIN VDE 0620-1 CEI 23-50 NF C 61314 BS1363	EN 60730-1 EN 60730-2-7	EN 60669-1 EN 60669-2-3	EN 60669-1 EN 60662-2-1 EN 60730-1	IEC/EN 60947-5-1	EN 61010 EN 61000-6-2 EN 61000-6-3 EN 50581
–	–	–	–	–	–
–	1...2 C/O	1P	1 N/O	1 N/C	1 N/O
250V AC	230V AC	230V AC	110...230VAC	230V AC	230V AC
As per socket	–	16A (230V AC)	–	43A	32A

SMISLINE TP PLUG-IN SYSTEM

Technical details

Introduction

Smissline TP is the complete line protection solution for critical power applications for buildings and machines, where safety and flexibility matters.

The **Smissline TP** (touch proof) plug-in distribution system is the World's first plug-in socket system to ensure that load-free devices and components can be snapped on and off under Voltage, with no need for added personal protective equipment to guard against electrical shock (local applicable regulations and laws according to the Country apply).

The system is ideal for critical power applications such as Data Centers, Communication Centers, Airports, Train Stations, Hospitals, Process and Factory Automation, Machinery, Telecommunications and Industrial buildings.

From planning to execution

Clear advantages and great benefits for end-users, operators, technical service, planners, and panel-builders.

Electrical planners

- Flexibility up to the last minute
- Highest flexibility in planning and arrangement

Panel builders

- Timesaving assembly
- Space savings due to vertical mounting
- Unmatched flexibility

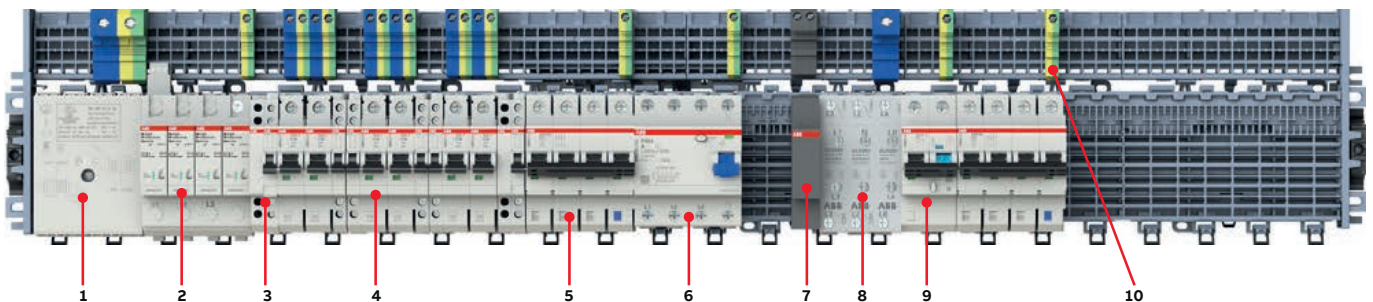
End customers, technical service and operators

- Flexible supplementing and modification during operation
- High security in maintenance and service
- Economical

Start the configuration

The online Design Software tool supports the configuration for the Smissline TP busbar system, including the complete range of products in the system. It allows the easy planning and managing of a project.

SYSTEM EXAMPLE



- | | |
|--|---|
| 1 Incoming block 125/160 A | 6 4-pole Residual current operated circuit breaker (RCCB) |
| 2 Surge arrester | 7 Busbar insulator |
| 3 Auxiliary switch | 8 Incoming block 63A |
| 4 Miniature circuit breaker (MCB) 1 pole | 9 2-pole Residual current operated circuit breaker (RCBO) |
| 5 Miniature circuit breaker (MCB) 4 pole | 10 N terminals and PE terminals |

Smissline TP plug-in System

The world's safest socket system



125A Busbar System

125A rated current side feeding socket system with integrated busbars for L1, L2, L3, N and 2 busbars for signalisation. Additional socket with N and PE busbars.

- IEC/EN 61439-6 and UL508
- Rated conditional short-circuit current (Icc) with XT4 100kA (415V)



250A Busbar System

250A rated current side feeding socket system with integrated busbars for L1, L2, L3, N and 2 busbars for signalisation. Additional socket with N and PE busbars.

- IEC/EN 61439-6 and UL508 (UL only main socket)
- Rated conditional short-circuit current (Icc) with XT4 100kA (415V)



250A Direct Feed System

Top or bottom feed solution. The direct feed solution allows a direct connection to a plug-in circuit-breaker Tmax XT4 Moulded Case Circuit Breaker with one 250A busbar system.

- IEC/EN 61439-6 and UL508 (UL only main socket)
- Rated conditional short-circuit current (Icc) with XT4 100kA (415V)



Top or Bottom Feed Solution

The Pan Assembly solution allows a direct connection to a plug-in circuit breaker Tmax XT4 Moulded Case Circuit Breaker with two 250A busbar system.

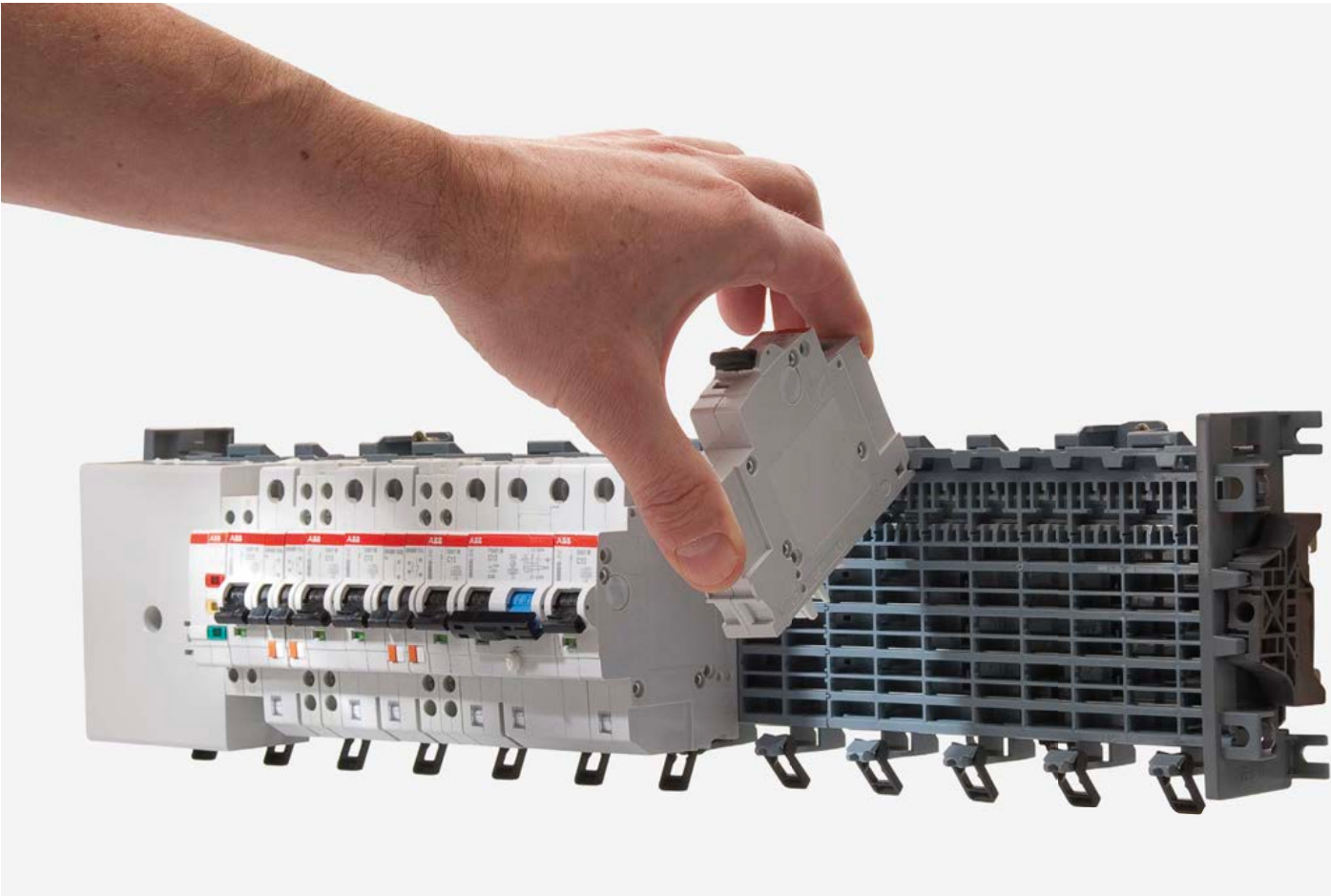
SOLUTIONS OVERVIEW

The world’s safest socket system



SMISSLINE TP PLUG-IN SYSTEM

	S400M	S400P	S400M-UC	SUP400M
Product Type	MCB	MCB	MCB	MCB
Applications	Commercial / Industrial / Critical Power	High Fault Ratings	AC/DC 220V DC (1P) 440V DC (2P)	UL/CSA applications
Standards	IEC/EN 60898-1 (S400 B,C,D,K) IEC/EN 60947-2 (S400 C,K)	IEC/EN 60947-2	IEC/EN 60947-2	IEC/EN 60947-2 UL 489 CSA 22.2 No.5
Poles	1P, 1P+NP, 2P, 3P, 3P+NP	1P, 1P+NP, 2P, 3P, 3P+NP	1P, 1P+NP, 2P, 3P, 3P+NP	1P, 2P, 3P
Protection	B, C, D, K	B, C, K	C, K	K
Rated Current I_n	0.5...63A	2...63A	0.5...63A	2...35A





F400	FS400	IS404	OVR404	HK400	SK400
RCCB	RCBO	Isolator	SPD	Auxiliary Contact	Signal Contact
Ground Fault Protection	Complete Protection	Electrical Isolation	Sub Distribution	Status	Status
IEC/EN 61008-1 IEC/EN 61008-2-1 (IEC/EN 62423)	IEC/EN 61009-1 IEC/EN 61009-2-1 (IEC/EN 62423)	IEC/EN 60947-3	IEC/EN 61643-11	IEC/EN 60947-5-1	IEC/EN 60947-5-1
1P+N, 3P+N	1P+N, 3P+N	4P	4P	2 Contacts	2 Contacts
A, APR-F	A, APR-F	–	Type 2	–	–
25...40(63)A	6...32A	63A (AC22A)	I _{max} = 40kA	2A (AC15)	2A (AC15)

SMISLINE TP plug-in distribution system is the world's first plug-in socket system to ensure that load-free devices and components can be snapped on and off under voltage with no need for added personal protective equipment to guard against electrical shock.

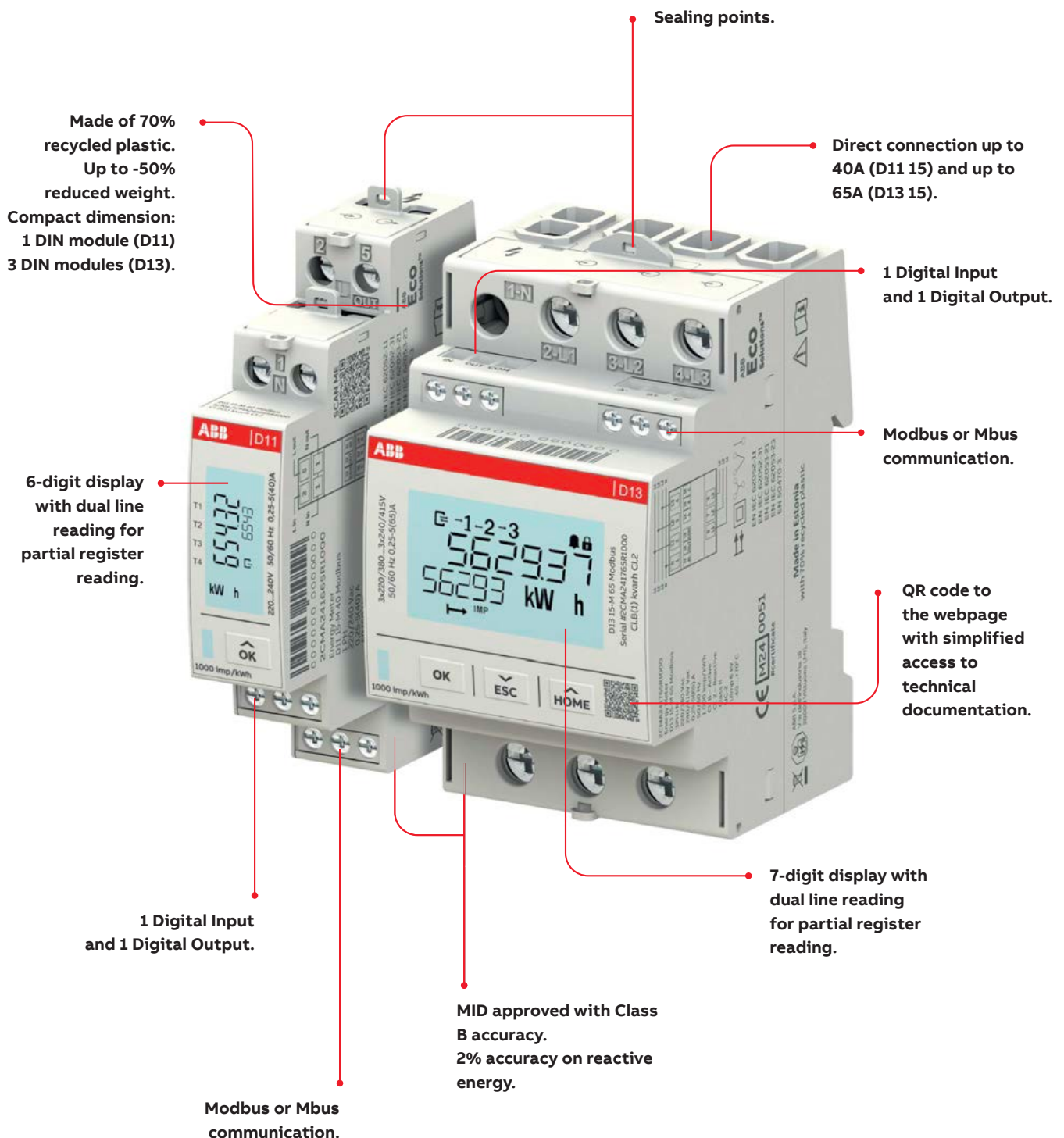
Find out more.



ENERGY METERS

The details that make the difference

Energy monitoring and analysis play a pivotal role in reducing energy costs and enhancing the efficiency of electrical assets. ABB's complete DIN-rail energy meters offer facilitates the identification of improvement areas, allowing buildings to operate more efficiently, thus reducing energy consumption and saving costs.



Energy Meters

Main applications



Commercial
buildings



Residential
buildings



Industrial
plants



Data
centres



EV Chargers /
ESS



Renewables

ENERGY METERS DIRECT CONNECTED



	D11	B21	A41	D13	B23	A43
Active Energy Class	Class B	Class B	Class B	Class B	Class B	Class B
Phase	Single Phase	Single Phase	Single Phase	Three Phase	Three Phase	Three Phase
Max Current	40A	65A	80A	65A	65A	80A
Communication	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*
MID Approved	Yes	Yes	Yes	Yes	Yes	Yes
4Quadrant Measurement	Yes	Yes**	Yes**	Yes	Yes**	Yes**
Digital I/P & OP	1/1	2/2**	2/2**	1/1	2/2**	2/2**

*Depending on meter type

**Optional feature according to order codes.



INDIRECT METERS

	B24	A42	A44
Active Energy Class	Class B	Class B	Class B
Phase	Three Phase	Single Phase	Three Phase
Secondary CT Rating	1A/5A	1A/5A	1A/5A
Communication	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*	M-Bus* / Modbus RS485*
MID Approved	Yes	Yes	Yes
4Quadrant Measurement	Yes**	Yes**	Yes**
Digital OP	2**	2**	2**

*Depending on meter type

**Optional feature according to order codes.

D11 & D13

NEW

15

voltage: 220-240 VAC
3x230/400 VAC



D11	Single phase, up to 40A
D13	Three phase, up to 65A

A SERIES

STEEL BRONZE
SILVER GOLD PLATINUM

voltage: 57.7...288 VAC
57.7.../100...288 VAC
3x57.7/100 ... 288/500 VAC
3x57.7/100 ... 400/690 VAC



A41	Single phase, up to 80A
A42	Single phase, with CT/VT
A43	Three phase, up to 80A
A44	Three phase, with CT/VT

B SERIES

STEEL BRONZE
SILVER

voltage: 220-240 VAC
3x230/400 VAC



B21	Single phase, up to 65A
B23	Three phase, up to 65A
B24	Three phase, with CT

M4M NETWORK ANALYZERS

Accurate electrical measuring and power monitoring

Simple in every aspect, **M4M** enables accurate energy efficiency evaluations and perfectly fits the ABB solution for monitoring, optimisation and control of electrical systems.

Accurate measurement

Class 0,5 measurement according to IEC 61557-12 and advanced power quality functionalities, including historical measurements.

Option for MID Approval

Class C accuracy in accordance with 2014/32/EU for billing applications.

Clear visualisation

Color display and App-structured menu for advanced graphic visualisation.

Full communication

ABB Ability™ native network analyzers with complete communication protocols and I/O options for integration in any system.

Smart commissioning

Bluetooth module for easy configuration through EPiC Mobile App unique commissioning tool.

Intuitive access

Simplified access to the device via touch screen display or 5 pushbuttons keypad.

Easy to install

Fast one-hand mounting and comfortable installation with clips in only 57 mm depth inside the panel.

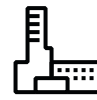
Fast wiring

All-removable terminals and one tool process to speed up the wiring activities.



M4M Network Analyzers

Main applications



Commercial buildings



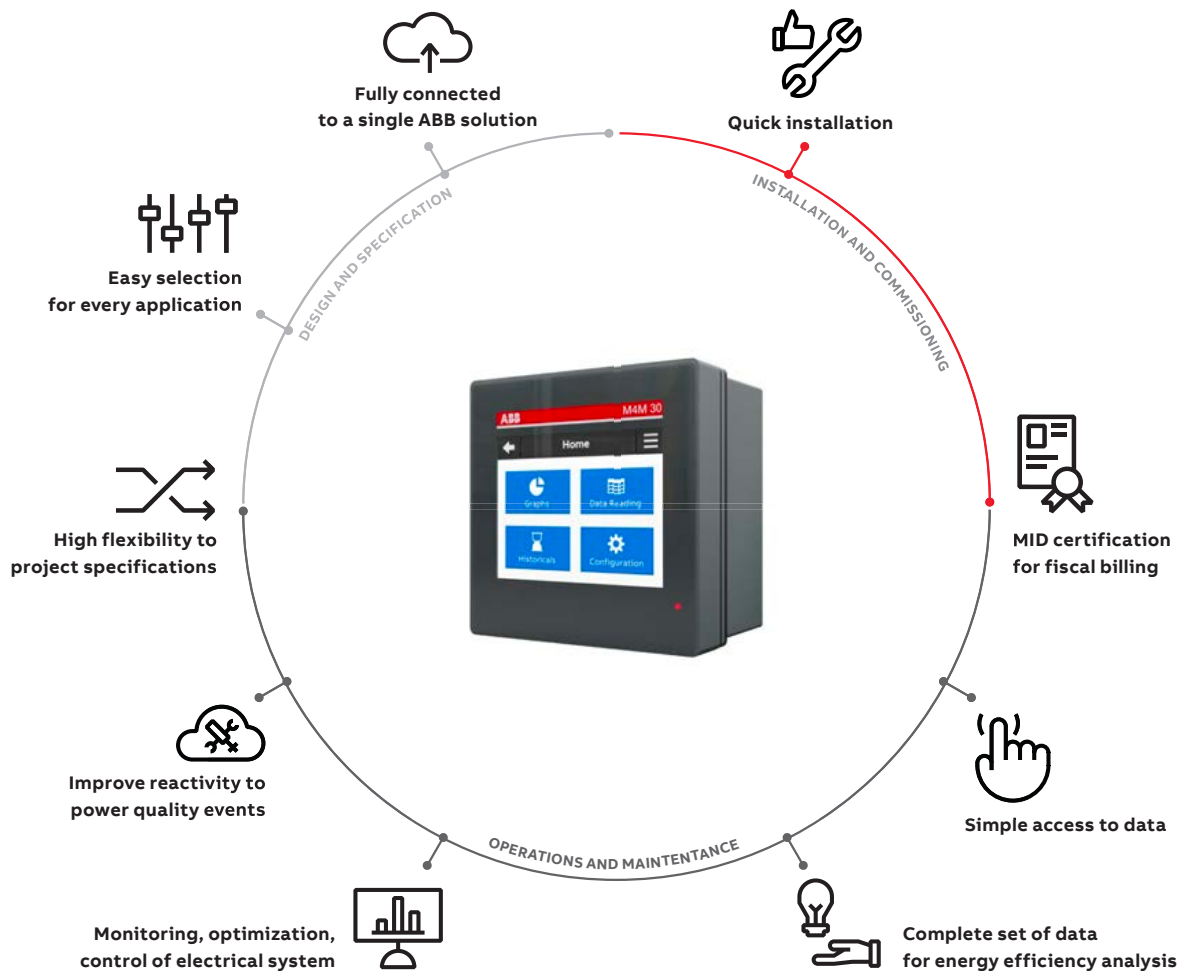
Industrial plants



Rail infrastructure



Data centres



M4M NETWORK ANALYZERS



	M1M 15	M1M 20	M1M 30	M4M 20	M4M 30
Active Energy Class	Class B (IEC 61557-12)	Class B (IEC 61557-12) Option: 0.5S	Class B (IEC 61557-12) Option: 0.5S	Class B (IEC 61557-12) Option: 0.5S	Class B (IEC 61557-12) Option: 0.5S
Secondary CT Rating	1A/5A	1A/5A	1A/5A	1A/5A*	1A/5A*
Harmonics	N/A	15th	40th	N/A	40th
Communication	Modbus RS485	Modbus TCP**/ Modbus RS485**	Modbus TCP**/ Modbus RS485**	Modbus TCP**/ Modbus RS485**/ BACnet-IP**/ Profibus DP**/V0**	Modbus TCP**/ Modbus RS485**/ BACnet-IP**/ Profibus DP**/V0**
MID Approved	No	No	No	Yes	Yes
4Quadrant Measurement	Yes	Yes	Yes	Yes	Yes***
Digital I/P & O/P	N/A	1/1	2/2 (I/O version)	2 DO	4 I/O

* Rogowski Coils Option available.

** Depending on meter type.

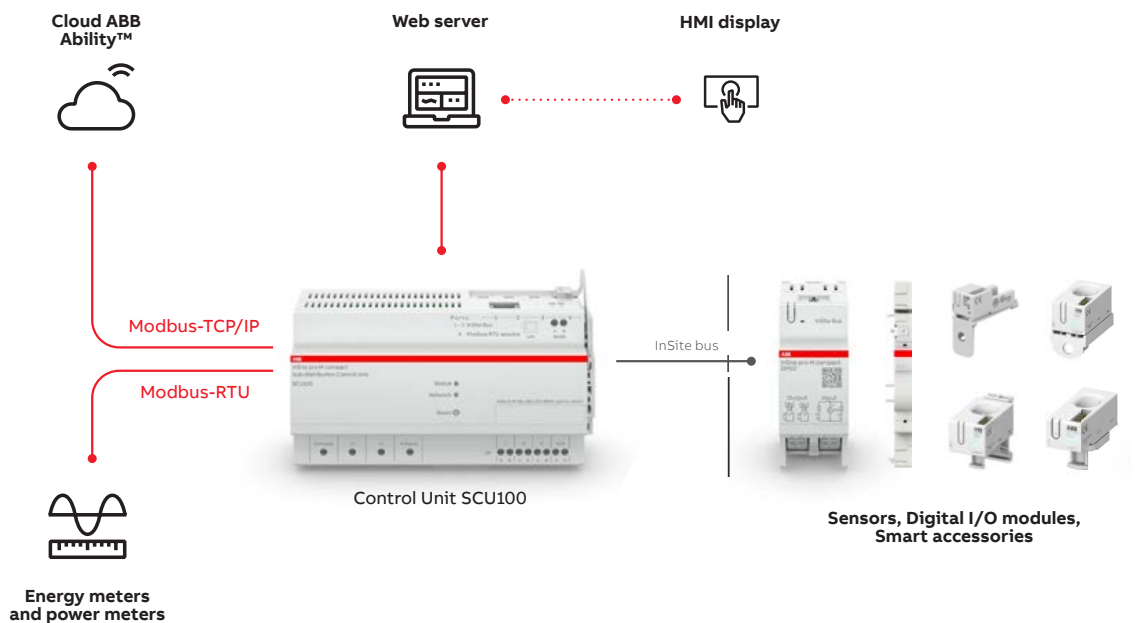
*** 6 additional Tariffs are available.

InSite ENERGY MANAGEMENT SYSTEM

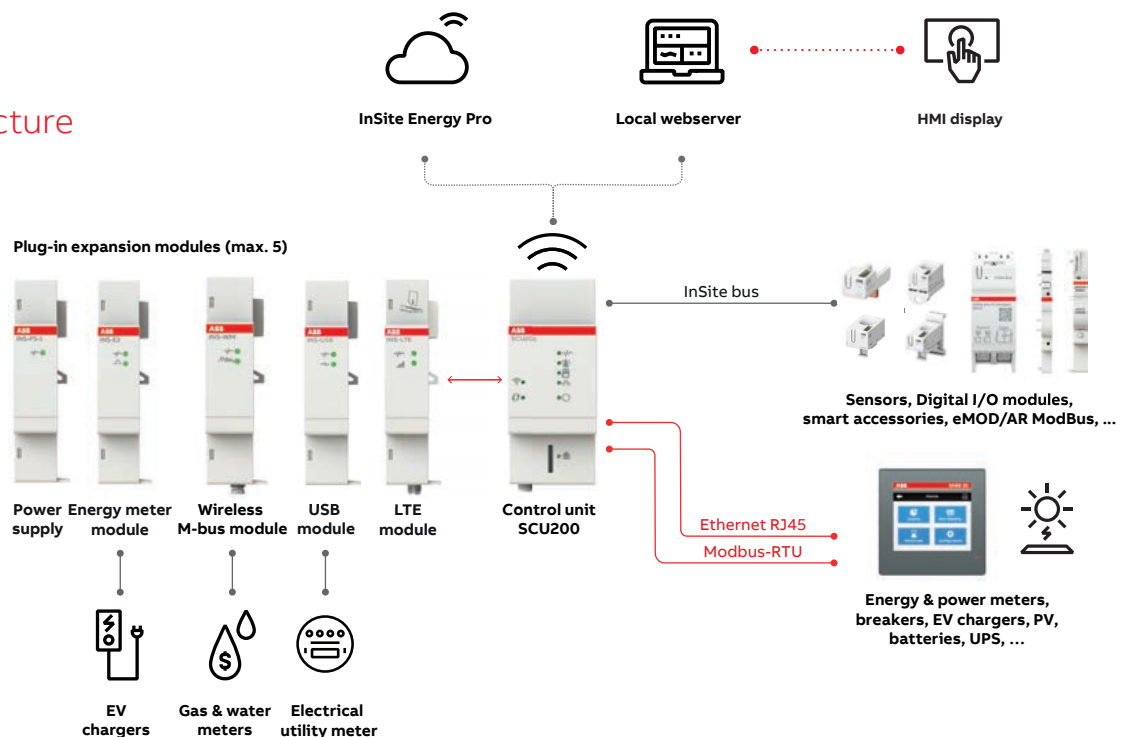
Smart energy and load management

The InSite energy management system offers **smart energy and load management** to improve energy efficiency in both sub and final distribution. Through the control unit, data is gathered from the field devices, that can then be accessed via the InSite web server or a 3rd party application.

System Architecture with SCU100



System Architecture with SCU200



System pro M compact® InSite

Main applications



Large
residential



Commercial
buildings



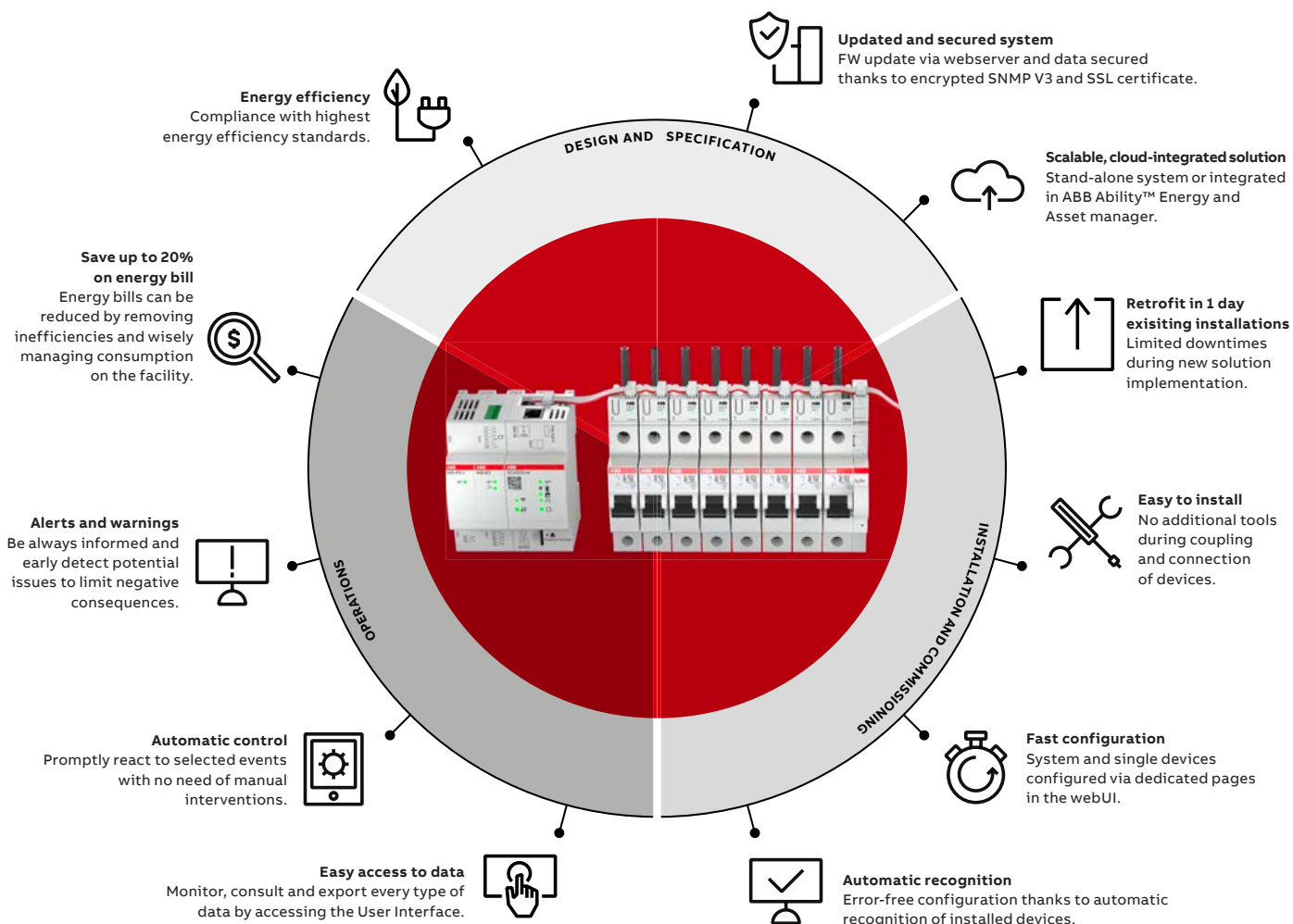
Large
commercial



Industrial
plants



Data
centres



InSite ENERGY MANAGEMENT SYSTEM

	SCU100	SCU200
Number of connectable sensors	96	32**
Smart signal/auxiliary contact connection	Yes*	Yes*
Number integrable Modbus devices	Up to 32 (16 RTU + 16 TCP)	Up to 32 (16 RTU + 16 TCP)
Communication protocols available for data transfer upstream (BMS/SCADA/Cloud, etc.)	Modbus RTU, Modbus TCP, SNMP, FTP, SFTP, SMTP, Rest API	Modbus TCP, SNMP, FTP, SFTP, SMTP, Rest API
Wi-Fi connection	No	Yes
Power supply	AC	AC and DC
Expandable memory storage	No	Yes (SD card)

* Both ABB or/and 3rd party meters can be connected.

** Can be extended to 160 sensors.

AP SURFACE-MOUNTED JUNCTION BOXES

for demanding environments

Introducing **coloured AP9, AP10 and AP45 boxes** for demanding environments. Boxes are produced using recycled material, which reduces carbon footprint and saves natural resources, especially water.



Total 14 cable entries.
Three on each side (Ø 17 mm)
and two at the bottom Ø 19 mm



IP65 enclosure class



Mounting temperature
-25...+60 °C



Large space for wires
and connectors



Superior self-sealing membrane
cable entries



Quick snap-on cover
fastening



Sealing possibilities



The lid is reassembled
to the box at the
factory. It can be
removed manually
without any tools.



High-quality halogen-free
material

AP Surface-mounted junction boxes

Main applications



Commercial
buildings



Residential
buildings



Industrial
plants

Approved for -25°C...+60°C
mounting temperature



Includes 14 (Ø 19mm) membrane cable entries
3 on each sides and 2 at the bottom. The entries
include markings for the maximum cable size.

Quick snap-on cover
Fastening and no need for
separate fixing screw caps.



Approved for IP65
enclosure class.

Sealing possibility
on two opposite sides.



AP JUNCTION BOXES



Type:	AP45	AP9	AP10
Description	Compact, with many features. Suitable for installations with limited space.	Basic junction box full of features.	When extra installation space is needed.
Dimensions: (WxLxH)	105x43x40 mm	86x86x39 mm	104x104x48 mm
Enclosure class:	IP65	IP65	IP65
Number of inlets:	12	14	14
Installation temperature:	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C
Rated voltage:	500 V	500 V	500 V
Wire range:	2.5 mm ²	2.5 mm ²	6 mm ²
Available colours:			
	 RAL 7035 / AP45G-Grey	 RAL 7035 / AP9G-Grey	 RAL 7035 / AP10G-Grey
Order Code	2TKA00005253	2TKA140014G1	2TKA140003G1
	 RAL 9011 / AP45M-Black	 RAL 9011 / AP9M-Black	 RAL 9011 / AP10M-Black
Order Code	2TKA00005256	2TKA140013G1	2TKA00004261
	–	 RAL 9003 / AP9-White	 RAL 9003 / AP10-White
Order Code	–	2TKA140012G1	2TKA140002G1
	–	 RAL 3033 / AP9R-Red	–
Order Code	–	2TKA00001563	–
	–	 RAL 6000 / AP9V-Green	–
Order Code	–	2TKA00001564	–

POLYESTER BOXES

APO

A range of boxes made of G.R.P. (Glass Reinforced Polyester) suitable for outdoor and heavy-duty environments.

Find out more.



Specifications

- The range comprises of nine different sizes with 300 and 185 mm modules.
- The base is fabricated from polyester, hot press moulded and reinforced with glass fiber, dyed in mass RAL7035 light grey colour. It is equipped with M4 inserts (Dodge-type) for attaching a mounting plate or a frame.
- The cover may be fabricated from transparent polycarbonate or hot press molded polyester, reinforced with glass fiber, dyed in mass RAL7035 light grey colour.
- Maximum protection for the user and equipment thanks to its total insulation and IP67 protection rating in accordance with EN/IEC 60529.
- IK08 protection rating against external mechanical impacts in accordance with EN/IEC 62208.
- Each box, which is a multiple of a smaller one, also has a variety of the mounting points of the smaller box. These points have non-threaded holes for embedded M4 inserts.
- The base also includes four to six non-threaded holes for embedded M6 inserts.
- The box may be wall-mounted or on a pedestal.
- Material is simple to work with using conventional tools such as drills, mills, saws, etc.

- Polyester boxes can resist temperatures of up to 70°C under continuous operation and peak temperatures of up to 130°C. The transparent polycarbonate covers can resist operating temperatures of up to 120°C.
- Insulation Voltage $U_i = 1000V$ AC and 1500V DC.
- APO enclosures are UL Listed, in accordance with the UL Standard 508. They are also CSA certified.

Applications

- Heavy industry
- Steelworks
- Breweries
- Solar energy applications
- Refineries
- Petro-chemical industry
- Public works
- Shipyards

Standard: EN/IEC 62208



- Boxes with polyester cover: types 3, 3R, 4, 4X, 6, 6P, 12 and 13
- Enclosures with polycarbonate cover: types 3, 3R, 4, 4X, 12 and 13
- Boxes with hinged cover: types 3, 3R, 4, 4X, 6, 12 and 13 available upon request



- Boxes with polyester cover: types 3, 3R, 4, 4X, 6, 6P, 12 and 13
- Boxes with polycarbonate cover: types 3, 3R, 4, 4X, 12 and 13
- Boxes with hinged cover: types 3, 3R, 4, 4X, 6, 12 and 13 available upon request
- Lloyd's Register of Shipping⁽¹⁾

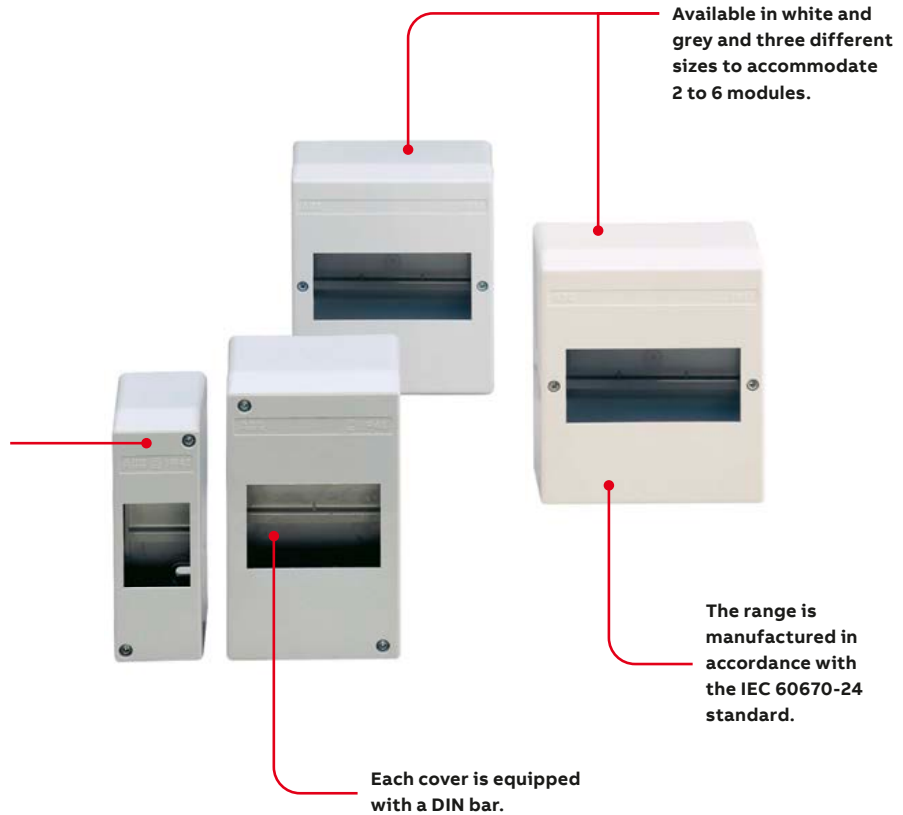
⁽¹⁾ Except APO 12

THERMOPLASTIC ENCLOSURES

Mini EUROPA40

Wall-mounting covers without door IP40.

The particularly robust and shock resistant frame ensures complete protection of the equipment installed.



This consumer unit without door reaches IP40.



The upper and lower walls include precuts on the internal side for the passing through of wiring trunking.



These covers can be opened from the front side to ensure easier access during installation.

Specifications

- IP40 protection degree
- RAL9016 white and RAL7035 grey colours
- Manufactured in self-extinguishing thermoplastic material
- Resistant to abnormal heat and to fire up to 650°C (glow wire test), according to IEC 60695-2-11 standard.
- Installation temperatures from -25°C to +60°C
- Shock resistant to 6 joule (with mounted circuit breakers)

Standard: IEC 60670-24



THERMOPLASTIC ENCLOSURES

Mistral65

Designed for harsh and outdoor environments, Mistral65 consumer units come with IP65 protection degree.



The 180° door opening facilitates total accessibility to the interior of the consumer unit

The decorative texture of the door underlines the attention to detail and the quality of the finish

The minimalistic simplicity of the new design combines technological reliability with the most innovative aesthetic trends

Transparent door (petrol blue)

The symmetrical design allows opening of the reversible door either from the left or from the right

The door has an ergonomic handle with snap-on closing or a lock (optional)

Find out more.



Specifications

- 10 sizes and a choice of between 4 and 72 modules
- IP65 degree of protection
- Thermoplastic material and halogen free
- Self-extinguishing and resistant to abnormal heat and fire up to 650°C (GWT)
- Mechanical strength of the consumer units are IK09 (10 joule) and IK08 for the precut parts
- Transparent doors which open to 180°
- Equipped with smooth surfaces on top and bottom sides
- Knockouts are available on both sides of the enclosure
- Interior slots allow the consumer unit to be fixed to the wall in points which are not visible from the outside, thus contributing to an aesthetically clean installation
- Special snap-in closure plugs guarantee protection class II (double insulated).

- The standard door with ergonomic handle and snap-on closure can be equipped with a lock and key on request, ensuring only authorised persons have access and avoiding tampering or incorrect operations
- Resistance to salt, dust and UV rays (essential feature in outdoor applications)
- 100% recyclable
- Operating temperature: -25°C to +60°C
- Insulation Voltage: $U_i = 1000V$ AC and 1500V DC

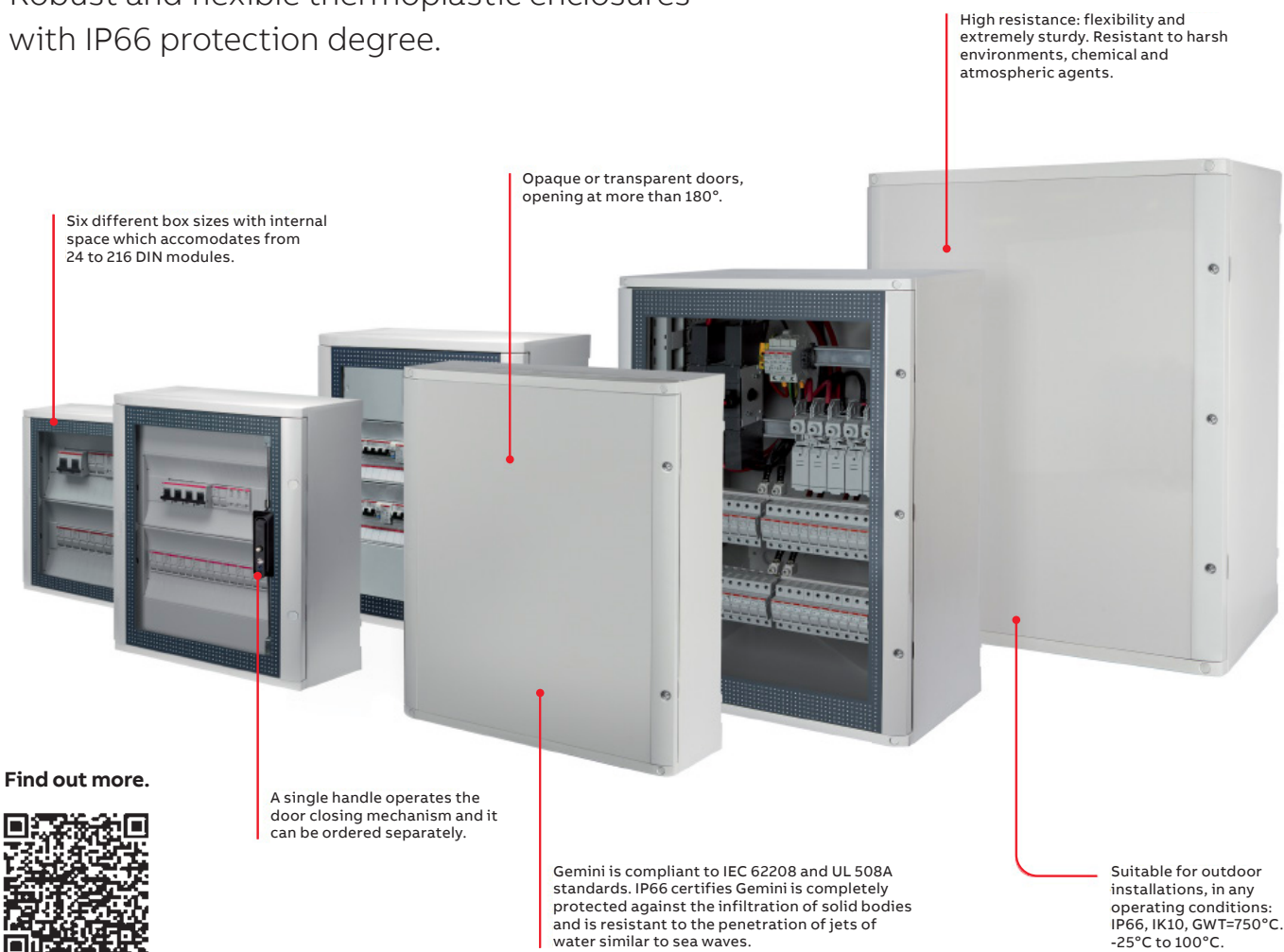
Standards

- Dust/sand resistance (factory internally tested)
- Saline environments (according to IEC 60068-2-52)
- Weathering (according to IEC 60068-2-5)
- Permanent sun exposure (IEC 60068-2-5)

THERMOPLASTIC ENCLOSURES

Gemini

Robust and flexible thermoplastic enclosures with IP66 protection degree.



Find out more.



Specifications

- 6 sizes from 335 x 400 x 210mm to 840 x 1005 x 360mm (W x H x D, external dimensions)
- DIN 24 to 216 modules
- IP66 protection degree (IEC EN 60529)
- Class II insulation
- Thermoplastic material moulded in co-injection
- Resistance to abnormal heat and fire up to a temperature of 750°C (IEC EN 60695-2-11)
- IK10 (IEC EN 50102) degree of resistance to impacts
- Protection against chemical and atmospheric agents (water, saline solutions, acids, basic agents, mineral oils, UV rays)

- Snap-on mounting of all components in compliance with safety Standards
- 100% recyclable
- Operating temperature: -25°C to +100°C.
- Insulation Voltage: $U_i = 1000V$ AC and 1500V DC

Standards

- Compliance with CEI EN 62208 international reference Standard, qualification for the requirements of CEI EN 61439-1 Standard, IMQ mark according to EN 62208 Standard
- EN 60068-2-52 resistance to marine environments
- EN 60068-2-5 resistance to direct sun exposure
- UL Listed: UL508A, UL50, UL50E
- NEMA: Types 1, 3R, 4, 4X, 12

UNIVERSAL POLYESTER ENCLOSURES

ARIA

Aria is a range of monobloc cabinets made of G.R.P. (Glass Reinforced Polyester) suitable for outdoor and heavy-duty environments.



Specifications

- 7 sizes from 215 x 315 x 170mm to 835 x 1035 x 300mm (W x H x D, external dimensions)
- Enclosures made from light grey polyester (RAL 7035), hot press moulded, glass fibre-reinforced, dyed in the mass
- The enclosure is equipped with 4 threaded rods and 4 nuts for securing a mounting plate or frame and is equipped as standard with a double-bit key lock
- Maximum protection for the user and equipment thanks to its total insulation and IP65/66 protection rating in accordance with EN/IEC 62208 (IP54 for enclosures with inspection windows)
- IK08 protection rating against external mechanical impacts in accordance with EN/IEC 62208 (IK07 for cabinets and windows)
- Polyester boxes can resist temperatures of up to 70°C under continuous operation and peak temperatures of up to 130°C
- Self-extinguishing polyester, halogen-free
- Insulation Voltage $U_i = 1000V$ AC and 1500V DC

Applications

- Manufacturing
- Breweries
- Steelworks
- Public works
- Petro-chemical industry
- Road signage
- Temporary connections
- Telecoms
- Solar energy applications

Standards:

**EN/IEC 61439-2, EN/IEC 60529,
EN/IEC 62262, EN/IEC 62208**



- UL types 3, 3R, 3S, 4, 4X, 12 and 13 available on request
- CSA types 3, 3R, 3S, 4, 4X, 12 and 13 available on request



- Lloyd's Register of Shipping (IP66 versions with center lock)

Find out more.



MULTI-FUNCTION POLYESTER ENCLOSURES

PolySafe

Polysafe is a range of multi-function enclosures made of G.R.P. (Glass Reinforced Polyester) suitable for outdoor and heavy-duty environments.



Specifications

- 16 standard dimensions from 500 x 500mm to 1000 x 1250mm (W x H, external dimensions) with a depth of 320mm
- Enclosures supplied assembled
- IP65 high protection ratings in accordance with EN/IEC 60529 and IK10 (20J) in accordance with EN/IEC 62262
- Protection rating for enclosure with inspection window: IP54-IK07
- Material: polyester reinforced with glass fiber, halogen-free, hot press moulded and self extinguishing
- Colour: RAL 7035 grey, dyed in the mass
- Designed for wall, floor or pedestal mounting
- Option of stacking vertically or horizontally width wise or depth wise
- Total insulation
- 5-point door closure mechanism
- Optional version on a DIN base
- Insulation Voltage $U_i = 1000V$ AC and $1500V$ DC
- Product is easy to recycle: no moulded metal parts
- Polyester boxes can withstand temperatures between $-25^{\circ}C$ to $+70^{\circ}C$ under continuous operation and peak temperatures of up to $130^{\circ}C$

Applications

- **Commercial**
 - Leisure (marketplaces, camps, leisure ports, attraction parks, etc.), gas stations, carwashes, laundrettes, industrial laundries, construction site enclosures, etc.
- **Industrial**
 - Ship building, mining, automobile industry, paper industry, sugar refinery, food industry, distilleries, petrochemical industry, heavy industry, processing, surveillance systems, etc.
- **Utilities**
 - Water treatment sites, grey water processing, telecommunications, traffic signaling, traffic management, public transport, energy distribution (electricity, gas, water), cable television, public lighting, railways, etc.

Standards:

EN/IEC 60529, EN/IEC 61439-2,
EN/IEC 62208, EN/IEC 62262



- Single-door enclosure:
UL types 3, 3R, 3S, 4,
4X, 12K and 13
- Double-door enclosure:
type 3R
- Coupled enclosures:
types 3, 3R, 3S, 4, 4X, 12, 12K
and 13 available on request



Find out more.

STEEL DISTRIBUTION BOARD ENCLOSURES

ComfortLine

ComfortLine Compact CA and CU distribution boards for wall and flush mounting.



Find out more.

Cabinet Type	CA / enclosures for wall-mounting				CU / enclosures for flush- and hollow-wall mounting			
Degree of protection	IP 30 / IP 44				IP 30			
Protection class	II				II			
Depth	160 mm				110 mm			
Panel width	1	2	3	4	1	2	3	4
3 Grid units	●	●	–	–	–	●	–	–
4 Grid units	●	●	●	–	●	●	●	–
5 Grid units	●	●	●	●	●	●	●	●
6 Grid units	●	●	●	●	●	●	●	●
7 Grid units	●	●	●	●	●	●	●	–
8 Grid units	●	●	●	–	●	●	–	–

Specifications

- Made of sheet steel, colour white RAL 9016, powder-coated
- IP44 degree of protection.
- IK07 degree of resistance to impacts
- Numerous options for cable entry at the top, bottom, sides and rear
- Sheet steel rear wall with cable entry options
- The door is easy to attach and detach thanks to the upper hinge pin
- Two mounting levels: rear mounting level for the installation of media panels, front mounting level for the installation of distribution board panels and the distribution panel system CombiLine N

- Generous wiring space for N/PE cables and tool-free assembly of the N/PE Quick-terminals
- Protection class: II, double insulated and I, earthed in connection with earthing set (accessories)

Standards:

- DIN EN 61439-1, DIN EN 61439-3

STEEL SUBDISTRIBUTION BOARD ENCLOSURE

System pro E energy

The System pro E® energy range includes two types of cabinets and one internal configuration system.



System pro E® energy L

Tailored and proven wall mounted and floor standing sub distribution boards up to 800A.

Delivered in flat kits, System pro E® energy L provides a protection degree of up to IP43 (IP30 without the door).



System pro E® energy M

Monoblock cabinet with attachable side panels, available in both configurations: wall mounted and floor standing.

System pro E® energy M sub distribution boards provide a protection degree up to IP55 (IP30 without the door).



System pro E® energy Combi

The common internal configuration system facilitates the installation of a wide range of ABB Low Voltage devices based on its modular system, delivered in flat packs.



Find out more.

Specifications

- Easy, simple and flexible
- Wide range of enclosure dimensions and range of modules for different types of ABB electrical devices
- Several possibilities of wiring methods and cable entries, using different types of cable flanges and accessories
- Same interior fitting, doors, plinths and accessories for IP43 and IP55 types of cabinets
- Safe for users, reliable and sturdy
- High short-circuit resistance
- High IP and IK protection degrees
- Safety glass, no sharp edges, segregation up to Form 2b
- Innovative packaging concept for optimum protection during transportation
- Rigid cabinets for stand-alone and coupled panels
- Quick assembly
- Fixation of Internal supports and flanges without tools
- Pre-assembled ¼ turn screws for cover plates

- Reduced number of screws
- Only one type of screwdriver required
- Easy coupling of cabinets
- Wide space for wiring
- Frame allowing the removal of all cover plates at the same time
- Reversible door, ready to be assembled without any tools
- Easy fixation of the base

Standards:

- Certified electrical distribution solutions up to 800A according to IEC 61439-2

ENCLOSURES FOR AUTOMATION

IS2 Enclosures

Enclosure for Automation. Great quality, economically unbeatable.



Find out more.

ABB completes its offer of cabinets for automation with the IS2 series, also available in the kit version. The IS2 enclosures are suitable for making electrical automation, control and operation enclosures.

The IS2 enclosures are suitable for making electrical automation, control and operation enclosures, with the possibility of constructing batteries of cabinets side by side to control complex industrial plants.

They are suitable for floor mounting with the possibility of lateral and rear access and adjustment of the back plate position.

Versions available

The IS2 cabinets are available in the following versions:

- Cabinet with blind door
- Cabinet with glazed door
- Cabinet with 19" rack frame "L" shaped profile, full height fixed and full height swing
- Cabinet with 19" full height rack cranked shaped uprights and full height swing "C" shaped profile
- Cabinet with compartments
- Cabinet for modular apparatus

GENERAL PURPOSE ENCLOSURES

SR2 Enclosures

The range of SR2 enclosures is a complete offer of monobloc enclosures for constructing small and medium-sized electric automation, switching and control switchboards.



The SR2 enclosures come from the experience ABB has gained over the years in building IP65 metal structures (in accordance with the IEC 60529 Standard), together with the innovative new production process used for construction and patented by ABB.

The typical use of SR2 Enclosures is to make switchgear and controlgear switchboards for a very wide variety of industrial machines: from large machinery with automated production lines or parts of these, down to the typical installations of on-board machine switchboards, boilers, heating plants and so on.

They conform to the EN 62208 Standard "Empty enclosures for low voltage protection switchgear and controlgear assemblies" and allow realization of electrical equipment conforming to the prescriptions of the IEC 60204-1 Standard "Safety of machinery. Electrical equipment of machines" and of the EN 60439-1 Standard and the new EN 61439-1-2 Standard "Low voltage protection switchgear and controlgear for assemblies". The degree of protection, in accordance with the IEC 60529 Standard "Degrees of protection of enclosures (IP Code)", is IP65.

The SR2 enclosures have also passed the control required to obtain the UL (Underwriters Laboratories) and CSA (Canadian Standards Association) Type 12 marks.

The SR2 enclosures also allow secondary distribution switchboards to be made, thanks to the possibility, in the 400, 600 and 800 mm widths, of installing the whole range of apparatus and modular circuit-breakers on DIN rails combined with special pre-drilled and hinged modular front panels, thereby allowing construction of AS/ANS type electrical switchgear conforming to the IEC 60439-1 Standard and the new EN 61439-1-2 Standard. A single line of metalwork structures therefore allows construction of automation and secondary and end distribution electrical switchboards thanks to the availability of a series of accessories (modular panels, DIN rails) and to the possibility of stacking the enclosures.

GENERAL PURPOSE ENCLOSURES

SRX Enclosures

The AISI 304 stainless steel used allows the cabinets to be installed either indoors or outdoors, by fixing to the floor or a wall.



Find out more.

The AISI 304 stainless steel used allows the cabinets to be installed either indoors or outdoors, by fixing to the floor or a wall. AISI 304 stainless steel enclosures with opaque door, usually intended for making enclosures for automation, are supplied with the galvanised sheet metal internal plate and do not have cable entry flanges.

SRX enclosures always conform to IEC EN 62208 and to IEC 61439-1-2, have a degree of protection IP66 (IEC EN 60529); NEMA 4X and NEMA 3R (UL standard). The degree of protection against external mechanical impacts is IK10 for the version with opaque door and IK09 for the version with glass door (IEC 62262).

AISI 304 stainless steel enclosures with glass door can also be used for distribution configurations. Alternatively, the internal equipment is made by selecting special kits (Distribution Kit) consisting of a pair of functional uprights for assembly of the AISI 304 stainless steel modular panels (to be ordered separately) and any compensation panels. The modular panels, which can also be installed on the enclosures with opaque door using the same KD Kit....X, are all hinged and have vertical modularity of 185 mm.

SRX enclosures can be equipped with: standard plates, clip nuts, spacers, slotted internal plate, accessories for stacking, DIN rails and fixing brackets, shaped sections for accessories on doors, closing systems.



Spray protection roof

Improves protection against infiltration by liquids and accidental sprays. Made of AISI 304 stainless steel.



Distribution kit

All apparatuses and modular circuit breakers can be installed on a DIN rail combined with a modular panel.



Stacking

SRX enclosures can be stacked using the special kit. The plinth with removable flanges is made of 25/10 thick AISI 304 stainless steel.



Closing box

A new Ø19 mm closing box made of chrome-finished plastic with double tongue key.

SACE Tmax XT

Low voltage molded case circuit-breakers



Break new ground simply means delivering value through the entire customer journey by leaving behind the traditional concept of circuit-breaker. The SACE Tmax XT range offers a unique customer experience that, sharing the same features and logics with the Emax 2 range, for the first time ever overcomes the differences between moulded case and air circuit-breakers. The most advanced products designed to maximize data and connectivity, ease of use and installation, performance and protection, safety and reliability.

The SACE Tmax XT range offers higher performance, better protection and more precise metering than equivalent units, and can handle from 160 up to 1600A. Combined with the world's most precise electronic trip units in the smallest frames, the new range delivers significant time savings and enhances installation quality. Reliability is further increased, and speed of installation reduced, thanks to Bluetooth and Ekip connectivity for mobile devices.

SACE Tmax XT



Size	XT1					
Rated uninterrupted current	[A]	160				
Poles	[No.]	3, 4				
Rated service voltage, U_e (AC) 50-60Hz	[V]	690				
Rated insulation voltage, U_i	[V]	800				
Rated impulse withstand voltage, U_{imp}	[kV]	8				
Versions	Fixed, Plug-in ⁽¹⁾					
Max supply voltage on bottom side (F, P, W)	[V]	690				
Breaking capacities according to IEC 60947-2		B	C	N	S	H
Rated ultimate short-circuit breaking capacity, I_{cu}						
Icu @ 220-230-240V 50-60Hz (AC)	[kA]	25	40	65	85	100
Icu @ 380V 50-60Hz (AC)	[kA]	18	25	36	50	70
Icu @ 415V 50-60Hz (AC)	[kA]	18	25	36	50	70
Icu @ 440V 50-60Hz (AC)	[kA]	15	25	36	50	65
Icu @ 500V 50-60Hz (AC)	[kA]	8	18	30	36	50
Icu @ 525V 50-60Hz (AC)	[kA]	6	8	22	35	35
Icu @ 690V 50-60Hz (AC)	[kA]	3	4	6	8	10

⁽¹⁾ XT1 plug-in I_n max=125A ⁽²⁾ I_n <32A I_{cu} =25kA/ I_{cs} =20kA, with magnetic trip unit only and I_n ≤52A/ I_{cu} = I_{cs} =5kA.



Find out more.



The SACE Tmax XT family's built-in connectivity links smartphones, tablets and PCs to data analysis tools on the ABB Ability™ cloud platform in real time. The extreme precision of the data measured means users have access to accurate information anywhere and anytime, making it easier to monitor resources and identify savings opportunities. Using the embedded smart power controller can help reduce energy consumption by up to 20 percent.

Upgrading the breakers is straightforward: for the first time, customers can download new functions from the ABB Ability Marketplace™, choosing from among more than 50 different protection, metering and automation functionalities.



XT2					XT3		XT4					
160					250		160 / 250					
3, 4					3, 4		3, 4					
690					690		690					
1000					800		1000					
8					8		8					
Fixed, Withdrawable, Plug-in					Fixed, Plug-in		Fixed, Withdrawable, Plug-in					
≤ 480					690		690					
N	S	H	L	V	N	S	N	S	H	L	V	X
65	85	100	150	200	50	85	65	85	100	150	200	200
36	50	70	120	150	36	50	36	50	70	120	150	200
36	50	70	120	150	36	50	36	50	70	120	150	200
36	50	65	100	150	25	40	36	50	65	100	150	200
30	36	50	60	70	20	30	30	36	50	60	85	100
20	25	30	36	50	13	20	20	25	45	50	70	100
10	12	15	18	20	5	6	10	12	15	20	50 ⁽²⁾	100

SACE Tmax XT

Low voltage molded case circuit-breakers



SACE Tmax XT

Size		XT5					
Rated uninterrupted current		[A]	400 / 630				
Poles		[No.]	3, 4				
Rated service voltage, U_e (AC) 50-60Hz		[V]	690				
Rated insulation voltage, U_i		[V]	1000				
Rated impulse withstand voltage, U_{imp}		[kV]	8				
Versions			Fixed, Withdrawable, Plug-in ⁽²⁾				
Max supply voltage on bottom side (F, P, W)		[V]	690				
Breaking capacities according to IEC 60947-2			N	S	H	L	V X
Rated ultimate short-circuit breaking capacity, I_{cu}							
Icu @ 220-230-240V 50-60Hz (AC)	[kA]	70	85	100	150	200	200
Icu @ 380V 50-60Hz (AC)	[kA]	36	50	70	120	200	200
Icu @ 415V 50-60Hz (AC)	[kA]	36	50	70	120	200	200
Icu @ 440V 50-60Hz (AC)	[kA]	36	50	65	100	180	200
Icu @ 500V 50-60Hz (AC)	[kA]	25	30	50	85	150	150
Icu @ 525V 50-60Hz (AC)	[kA]	25	30	50	85	100	120
Icu @ 690V 50-60Hz (AC)	[kA]	20	25	40	70	80	100
Withdrawable (EF terminals) 3/4 poles	[kg]		5.4 / 6.9				

⁽¹⁾ Not suitable for IT distribution Systems, ⁽²⁾ Plug-in/Withdrawable: max In 40°C=600A

SACE Tmax XT SWITCH-DISCONNECTORS

Size		XT1D	XT3D	XT4D
Conventional free air thermal current, I_{th}		[A]	160	250
Poles		[No.]	3, 4	3, 4
Versions		Fixed, Plug-in	Fixed, Plug-in	Fixed, Plug-in, Withdrawable
Rated service voltage, U_e (AC) 50-60Hz		[V]	690	690
	(DC)	[V]	500	500
Rated insulation voltage, U_i		[V]	800	800
Rated impulse withstand voltage, U_{imp}		[kV]	8	8
Rated making capacity in shortcircuit, I_{cm} (Min) Disconnecter only		[kA]	2.8	5.3
	(Max) With automatic circuit-breaker on supply side	[kA]	154	330
Rated short-time withstand current for 1s, I_{cw}		[kA]	2	3
Rated operating current, I_e (AC) 50-60Hz				
AC-22A	415-440Vac		160	250
AC-23A			125	200
AC-22A	690V AC		160	250
AC-23A			125	200

⁽¹⁾ 1000A only for fixed execution with EF, ES, R and FCCuAl terminals. EF terminals are supplied as standard if no other terminals are ordered.



XT6 ⁽³⁾			XT7			XT7 M		
800 / 1000 ⁽³⁾			800 / 1000 / 1250 / 1600			800 / 1000 / 1250 / 1600		
3, 4			3, 4			3, 4		
690			690			690		
1000			1000			1000		
8			8			8		
Fixed, Withdrawable			Fixed, Withdrawable			Fixed, Withdrawable		
690			690			690		
N	S	H	S	H	L	S	H	L
70	85	100	85	100	200	85	100	200
36	50	70	50	70	120	50	70	120
36	50	70	50	70	120	50	70	120
30	45	50	50	65	100	50	65	100
25	35	50	45	50	85	45	50	85
25	35	50	45	50	65	45	50	65
20	22	25	30	42	50	30	42	50
12.1 / 15.1			29.7 / 39.6			32 / 42.6		

⁽³⁾ 1000A only for fixed execution with EF, ES, R and FCCuAl terminals. EF terminals are supplied as standard if no other terminals are ordered.

XT5D		XT6D		XT7D	XT7D M
400	630	630 - 800 - 1000		1000 - 1250 - 1600	1000 - 1250 - 1600
3, 4	3, 4	3, 4		3, 4	3, 4
Fixed, Plug-in, Withdrawable		Fixed, Withdrawable ⁽³⁾		Fixed, Withdrawable	Fixed, Withdrawable
690	690	690		690	690
750	750	750		750	750
1000	1000	1000		1000	1000
8	8	8		8	8
7,65	12,3	30		40	40
440	440	220		252	252
5	7,6	15		20	20
400	630	630 - 800 - 1000		1000 - 1250 - 1600	1000 - 1250 - 1600
400	630	630 - 800		1000 - 1250 - 1600	1000 - 1250 - 1600
400	630	630 - 800 - 1000		1000 - 1250 - 1600	1000 - 1250 - 1600
400	630	630 - 800		1000 - 1250 - 1600	1000 - 1250 - 1600

SACE Tmax XT

Protection trip units



PROTECTION TRIP UNITS

Rated uninterrupted current ranges [A]	XT1	XT2	XT3	XT4	XT5	XT6
Power Distribution Protection						
Thermal-magnetic						
TMD	16...160 ⁽¹⁾	1,6...32	63...250	16...32		
TMA		40...160		40...250	320...630	630...800
Ekip Dip						
Ekip Dip LS/I		10...160		40...250	250...630	630...1000
Ekip Dip LIG		10...160		40...250	250...630	630...1000
Ekip Dip LSI		10...160		40...250	250...630	630...1000
Ekip Dip LSIG		10...160		40...250	250...630	630...1000
Ekip Touch						
Ekip Touch LSI		40...160		100...250	250...630	
Ekip Touch LSIG		40...160		100...250	250...630	
Ekip Touch Measuring LSI		40...160		100...250	250...630	
Ekip Touch Measuring LSIG		40...160		100...250	250...630	
Ekip Hi-Touch LSI		40...160		100...250	250...630	
Ekip Hi-Touch LSIG		40...160		100...250	250...630	

⁽¹⁾ 16A and 20A for N, S, H have the TMF trip unit.

The thermal-magnetic trip units are used for the protection of AC and DC networks. They are a solution for systems where only protection against overloads and short-circuits are needed.

Power Distribution Protection

- TMD
- TMA

Motor Protection

- MA

Generator Protection

- TMG

- Key:
1. Current threshold for short-circuit protection;
 2. Rotary switch for short-circuit protection;
 3. Current threshold for overload protection;
 4. Rotary switch for overload threshold setting.



Rotary switch

Depending on the version it is possible to set the desired thresholds for protection by turning the front rotary switch.



XT7	XT7 M
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600
630...1600	630...1600

PROTECTION TRIP UNITS

	Field of application	Current protection	Remote Control	Measurement and protection of current, frequency, voltage power, energy	Embedded software functions
TMD/TMA	Power Distribution	●	●		
Ekip Dip		●	●		
Ekip Touch		●	●	●	●
MA	Motor	●	●		
Ekip M Dip		●	●		
Ekip M Touch		●	●	●	●
TMG	Generator	●	●		
Ekip G Dip		●	●		
Ekip G Touch		●	●	●	●

The Ekip Dip is a first level of electronic trip unit, used for the protection of AC networks.

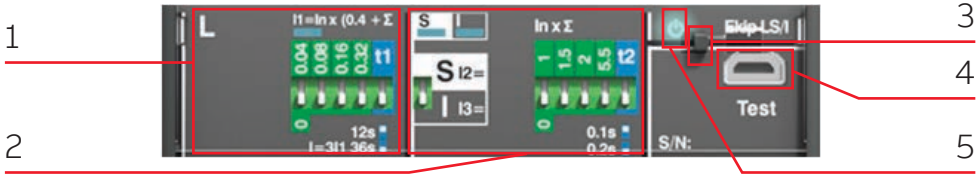
- Power Distribution Protection**

 - Ekip Dip LS/I
 - Ekip Dip LIG
 - Ekip Dip LSI
 - Ekip Dip LSIG
- Motor Protection**

 - Ekip M Dip I
 - Ekip M Dip LIU
- Generator Protection**

 - Ekip G Dip LS/I

- Key:
- 1. Dip switches for an overload protection setting.
 - 2. Dip switches for short-circuit and time delayed short-circuit protection settings.
 - 3. Slot for lead seal.
 - 4. Test connector.
 - 5. Power-on LED.



EKIP TOUCH/Hi-TOUCH

Protection trip units

The Ekip Touch/Hi-Touch provide a complete series of protections and high accuracy measurements of all electrical parameters and can be integrated perfectly with the most common automation and supervision systems.

Ekip DIP LS/I & Ekip DIP LIG – Available settings for Ekip Dip trip units:

ABB code	Protection Function	Threshold	Trip Time	Trip Curve
L	Overload	$I1 = 0.4...1 \times I_n$ with steps of 0.04	$t1$ at $3 \times I1 = 12 - 36s$ 12 - 48s for XT7	$t = k/I^2$
S	Selective short-circuit	$I2 = \text{Off} - 1 - 1.5 - 2 - 2.5 - 3 - 3.5 - 4.5 - 5.5 - 6.5 - 7 - 7.5 - 8 - 8.5 - 9 - 10 \times I_n$	$t2 = 0.1 - 0.2s$ at $10 \times I_n$ when $t = k/I^2$	$t = k$ $t = k$ or $t = k/I^2$ for XT7
I	Short-circuit	$I3 = \text{Off} - 1 - 1.5 - 2 - 2.5 - 3 - 3.5 - 4.5 - 5.5 - 6.5 - 7 - 7.5 - 8 - 8.5 - 9 - 10 \times I_n$	$t3 \leq 20ms$ $t3 \leq 30ms$ for XT7	$t = k$
G	Earth fault	$I4 = \text{Off} - 0.20 - 0.25 - 0.45 - 0.55 - 0.75 - 0.80 - 1 \times I_n$ $I4 = \text{Off} - 0.2 - 0.3 - 0.4 - 0.6 - 0.8 - 0.9 - 1.0 \times I_n$ for XT7	$t4 = 0.1 - 0.2 - 0.4 - 0.8s$ at $3 \times I_n$ when $t = k/I^2$	$t = k$ $t = k$ or $t = k/I^2$ for XT7

Power Distribution Protection

- Ekip Touch LSI
- Ekip Touch LSIG
- Ekip Touch Measuring LSI
- Ekip Touch Measuring LSIG
- Ekip Hi-Touch LSI
- Ekip Hi-Touch LSIG

Motor Protection

- Ekip M Touch LRIU

Generator Protection

- Ekip G Touch LSIG
- Ekip G Hi-Touch LSIG

Key:

1. Power-on LED; pre-alarm LED; alarm LED
2. Test and programming connector
3. Display
4. Home push-button to return to homepage;
5. Push-button for testing and tripping information



Trip Unit	Current measurement & protection	Voltage, power, energy measurements	Voltage, power, energy protections	Embedded functions*
Ekip Touch LSI	●	○	○	○
Ekip Touch LSIG	●	○	○	○
Ekip Touch Measuring LSI	●	●	○	○
Ekip Touch Measuring LSIG	●	●	○	○
Ekip Hi-Touch LSI	●	●	●	●
Ekip Hi-Touch LSIG	●	●	●	●
Ekip M Touch LRIU	●	●	●	●
Ekip G Touch LSIG	●	●	●	●
Ekip G Hi-Touch LSIG	●	●	●	●

● Default available

○ Additionable features

* See the following pages for more details

Interface

It is possible to interact with the trip unit in several ways via:

• The front display

An LCD display with a push button ensures easy navigation on the XT2 and XT4, while a colour touch screen is available for intuitive and quick navigation on the XT5 and XT7, together with the possibility of viewing the waveform for different parameters.

• Smartphone via Bluetooth

Thanks to the integrated Bluetooth functionality, it is possible to set and check all the measurements and information directly from a smartphone thanks to the EPiC app. Even when the cabinet door is closed, it is always possible to carry out maintenance in a safer way.

• PC with Ekip Connect

It is also easy to interact with the trip unit with a PC. Thanks to Ekip T&P cable the trip unit can be easily connected to a USB PC Port and using the Ekip Connect program it is possible to fully interact with the trip unit.

Digital upgrade

Ekip Touch/Hi-Touch trip units are available in different versions, to enable a wide range of functions: from the Ekip Hi-Touch, it is always possible to customise any device thanks to the additional digital modules.

All functions are available on the **ABB Ability Marketplace™** and can be added both when ordering the trip unit as well as after the installation of the circuit breaker. Ekip Connect efficiently provides desired functions.

Several packages are available to download, and all of them are designed to save time, costs and space, since no external devices are needed.

Thanks to the maximum flexibility guaranteed by these packages, the new Ekip trip units are now completely customizable. Depending on the specific trip unit version, different packages are available by default, but all of them can be added to the trip unit. Default functionalities and upgradability of the trip units include:

DEFAULT FUNCTIONALITIES

												
	Standard Protection	Standard Measures	Measuring Package	Voltage Protections	Frequency Protections	Power Protections	Adaptive Protections	Data Logger	Network Analyzer	Advanced Voltage Protections	ROCOF Protections	Power Controller
Ekip Touch	●	●	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Ekip Touch Measuring	●	●	●	↑	↑	↑	↑	↑	↑	↑	↑	↑
Ekip G Touch	●	●	●	↑	↑	↑	↑	●	↑	↑	↑	↑
Ekip M Touch	●	●	●	●	●	↑	●	↑	↑	↑	↑	↑
Ekip Hi-Touch	●	●	●	●	●	↑	●	●	●	↑	↑	↑
Ekip G Hi-Touch	●	●	●	●	●	●	●	●	●	●	●	↑

● Available by default ↑ Upgradable ↑ Some functions available. Upgradable with the full package.

COMMUNICATION

Power connection	Trip unit Type	Internal solution		External solution with Ekip Catridge	
		Module	Protocol	Module	Protocol
XT2-XT4	Switch disconnector	Ekip Com STA	Modbus RTU	–	–
	Thermomag		Modbus TCP		
	Ekip Dip				
	Ekip C Dip	Ekip Com Dip	Modbus RTU	–	–
XT5	Ekip Dip measuring				
	Ekip Touch / Hi-Touch	Ekip Com	Modbus RTU	Ekip Com	Modbus RTU, Modbus TCP
			Modbus TCP		Profinet, Ethernet/IP
			Profinet, Ethernet/IP		IEC 61850, DeviceNet
XT7-XT7M	Ekip Touch / Hi-Touch	Ekip Com	IEC 61850		Profibus-DP
	Switch disconnector	–			
	Ekip Dip				
	Ekip Touch / Hi-Touch	Ekip Com	Modbus RTU, Modbus TCP, Profinet, Ethernet/IP, IEC 61850, DeviceNet Profibus-DP		

COMMUNICATION

Connectivity



XT5 Ekip Com TCP
internal module

INTERNAL MODULES

Available with several different communication protocols, the Ekip Com internal module is installed directly inside the circuit-breaker. It allows the circuit-breaker to be integrated in a communication network for supervision and control.

Protocols	Ekip Com Module	Ekip Touch
Modbus RTU	Ekip Com Modbus RS-485	■
Modbus TCP/IP	Ekip Com Modbus TCP	■
Profinet	Ekip Com Profinet	■
EtherNet / IP	Ekip Com EtherNet	■
IEC 61850	Ekip Com IEC 61850	■



Communication module

EXTERNAL MODULES

Protocols	Ekip Touch	Ekip Touch
Modbus RTU	Ekip Com Modbus RS-485	■
Modbus TCP	Ekip Com Modbus TCP	■
Profibus-DP	Ekip Com Profibus	■
Profinet	Ekip Com Profinet	■
EtherNet / IP	Ekip Com Ethernet	■
DeviceNet	Ekip Com DeviceNet	■
IEC 61850	Ekip Com IEC 61850	■



Ekip TT testing and
power supply unit

TESTING AND PROGRAMMING

Ekip TT testing and power supply unit

This unit is compatible with the Ekip Dip and Ekip Touch trip units and allows a trip unit to be supplied so that the last protection device tripped can be viewed directly on the display or identified as the corresponding LEDs light up. The Ekip TT is a device that verifies that the circuit-breaker trip mechanism is functioning correctly (trip test). This device can be connected to the front test connector of any Ekip trip unit.

Ekip T&P testing kit

The Ekip T&P is a kit that includes different components for programming and testing the electronic protection trip units. The kit includes:

- The Ekip T&P unit;
- The Ekip TT unit;
- Adaptors for the Emax and Tmax trip units;
- A USB cable to connect the T&P unit to the Ekip trip units;
- An installation CD for the Ekip Connect and Ekip T&P interface software.



Ekip T&P testing kit

The Ekip T&P unit is easily connected from your PC (via USB) to the trip unit (via mini USB) with the cable provided. The Ekip T&P unit can perform simple manual or automatic tests of the trip unit functions. Additionally, the Ekip T&P provides the possibility to perform more advanced function testing that allows simulations of very critical applications: real conditions of a system can be accurately represented by considering additional harmonics and shifting of phases. It also generates a test report as well as monitor maintenance schedules.

Ekip Programming module

The Ekip Programming module is used for programming Ekip trip units via PC using the Ekip Connect software that can be downloaded online. The Ekip Programming module, which is connected to the PC via USB, can be useful for uploading/downloading entire sets of parameters for more circuit-breakers both for set-up and maintenance.



Ekip Programming
module

CLASS 1 ACCURACY

With the Ekip Touch trip units the embedded measurement functionalities allow the measurement of power and energy to a Class 1 degree of accuracy, as specified by IEC 61557-12 Standard, avoiding the need of additional device saving costs, space and installation time.

FIXED, PLUG-IN AND WITHDRAWABLE VERSION

SACE Tmax XT circuit-breakers are available in the following versions:



Fixed circuit-breaker



Plug-in circuit-breaker



Withdrawable circuit-breaker

• FIXED

Fixed circuit-breakers consist of a current-interrupting part connected to the trip unit, to be installed on the back plate of the cubicle or on a DIN-rail;

• PLUG-IN

Plug-in circuit-breakers consist of a fixed part that must be installed on the back plate of the cubicle, and of a moving part, obtained from the fixed circuit-breaker plus the relative kit that converts it from the fixed version into the moving part of the plug-in version;

• WITHDRAWABLE

Withdrawable circuit-breakers consist of a fixed part that must be installed on the back plate of the cubicle equipped with side runners to allow the moving part to be easily racked -in and -out. Such a solution is obtained from the fixed circuit-breaker plus the relative kit that converts it from the fixed version to a withdrawable moving part. To obtain the withdrawable version, a front accessory to be applied to the front of the circuit-breaker must be ordered so as to maintain the IP40 degree of protection over the entire disconnection run of the circuit-breaker (except for the XT7). This mandatory accessory is a standard supply for circuit-breakers fitted with accessories in the factory. The moving parts can always be obtained for the required version, fully pre-engineered from the factory, by ordering the fixed circuit-breaker and the conversion kit at the same time.

	Version		
	Fixed	Plug-in	Withdrawable
XT1	■	■	–
XT2	■	■	■
XT3	■	■	–
XT4	■	■	■
XT5	■	■	■
XT6	■	–	■ ⁽¹⁾
XT7	■	–	■
XT7 M	■	–	■

⁽¹⁾ In max = 800A, not suitable for XT6 1000A.

Power connection		XT1	XT2	XT3	XT4	XT5	XT6	XT7	XT7 M
Terminals for circuit-breaker	F - Front	■	■	■	■	■	■	■	■
	EF - Front extended	■	■	■	■	■	■	■	■
	ES - Front extended spread ⁽¹⁾	■	■	■	■	■	■	■	■
	FCCu - Front for copper cables ⁽¹⁾	■	■	■	■	–	–	–	–
	FCCuAl - Front for copper/aluminium cables ⁽¹⁾	■	■	■	■	■	■	■	■
	FB - Flexible busbars ⁽¹⁾	■	■	■	■	–	–	–	–
	MC - Multi-cable ⁽¹⁾	■	■	■	■	–	–	–	–
	R - Rear orientated	■	■	■	■	■	■	–	–
	HR/VR - Rear orientable terminal	–	–	–	–	–	–	■	■
Terminals for fixed part	EF - Extended front for fixed part	■	■	■	■	■	■	■	■
	HR/VR - Horizontal/vertical rear for fixed part ⁽²⁾	■	■	■	■	■	■	■	■
	ES - Extended spread front for fixed part	–	–	–	–	–	–	■	■
	SHR - horizontal rear spread terminals for fixed part	–	–	–	–	–	–	■	■
	FCCuAl - Front copper/aluminium cables for fixed part	–	–	–	–	–	–	■	■
Terminals for Residual current Device	HR for RC - for residual current release	■	–	■	–	–	–	–	–

⁽¹⁾ From the XT1 to XT6, the same terminals of fixed circuit-breakers can be mounted on the fixed part if the adapter is installed.

⁽²⁾ For the XT5 630A fixed part, the HR and VR have different codes.

AUXILIARY CONTACTS



Cabled auxiliary contact



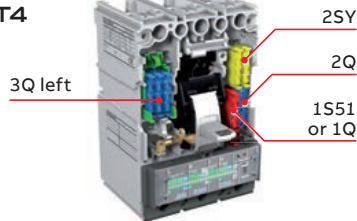
Uncabled auxiliary contact

AUXILIARY CONTACTS - AUX

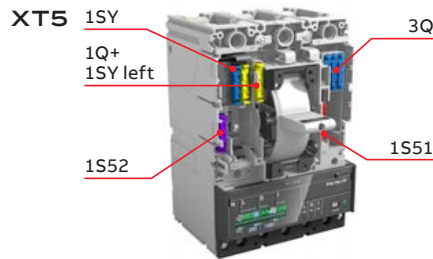
The SACE Tmax XT circuit-breakers can be equipped with auxiliary contacts that signal the status of the breaker and can be routed outside the circuit-breaker itself. The following information is available:

- **open/closed (Q):** indication of the status of the circuit-breaker power contacts;
- **trip (SY):** signals that the circuit-breaker is opening due to the intervention of the trip unit, or to the intervention residual current device, or to the opening of undervoltage releases, or to the use of the emergency opening pushbutton of the motor operator, or to the use of the test button;
- **trip unit tripping (S51):** indicates that one of the protection functions of the electronic or thermal-magnetic trip unit has tripped. In case of the Tmax XT5 equipped with thermal-magnetic trip unit and residual current device, S51 is activated also by the intervention of the residual current device.
- **YO/YU tripping (S52):** indicates that the under voltage or shunt opening release has been activated. The signaling depends on the service release used. For Tmax XT6 S52 can be used only with YU and is not available for YO. For Tmax XT5, in case of YO, shunt opening release must be permanently supplied to maintain the S52 signal.

XT2
XT4



XT5



ROTARY HANDLE OPERATING MECHANISM

This is an operating device that allows the circuit-breaker to be operated by means of a rotary handle, which makes the circuit-breaker easier to open and close thanks to its ergonomic handgrip.

Different types of handles are available:

- **direct (RHD):** installed on the front of the circuit-breaker for frontal operation;
- **transmitted (RHE):** installed on the panel door. It allows the circuit-breaker to be operated by means of a rod which acts on a base installed on the front of the circuit-breaker;
- **lateral (RHS):** installed directly on the front of the circuit-breaker for side operations.

For the XT1, XT2, XT3 and XT4 a large handle grip (LH) is also available, which can be combined with the transmitted handle (RHE) and with the lateral handle (RHS).

XT1
XT2
XT3
XT4



Direct rotary handle (RHD)



Transmitted rotary handle (RHE)



(LH) Handle grip

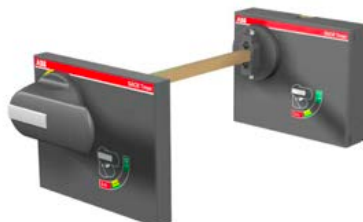


(RHS) Lateral handle

XT5
XT6
XT7



Direct rotary handle (RHD)



Transmitted rotary handle (RHE)

Conversion kit RHE into RHS⁽¹⁾

⁽¹⁾ Available for XT5 only.

Remote control

Residual current release

Remote control		XT1	XT2	XT3	XT4	XT5	XT6	XT7	XT7 M
Service release	SOR - Shunt opening release	■	■	■	■	-	-	-	-
	UVR - Undervoltage release	■	■	■	■	-	-	-	-
	YO - Shunt opening release	-	-	-	-	■	■	■	■
	YU - Undervoltage release	-	-	-	-	■	■	■	■
	YC - Shunt closing release	-	-	-	-	-	-	-	■
Remote reset	YR - Resetting remotely	-	-	-	-	-	-	-	■
YO/YC Test Unit	YO/YC Test Unit	■	■	■	■	■	■	■	■
Time delay device for YU	UVD - Time delay device for YU	■	■	■	■	■	■	■	■
Motor operator	MOD	■	-	■	-	-	-	-	-
	MOE	-	■	-	■	■	■	-	-
	MOE-E	-	■	-	■	■	-	-	-
	M - Motor	-	-	-	-	-	-	-	■

⁽¹⁾ Indication of alarm timing at 90% I_{Δn} for 30mA for XT1, XT2, XT3 and XT4. Indication of alarm timing at 75% I_{Δn} for 30mA for XT5.
⁽²⁾ Plug-in and withdrawable version: the 160 frame can be used with a max I_n = 135A; the 250 frame can be used with a max I_n = 210A; the 630 frame can be used with a max I_n = 500A.
⁽³⁾ Only for circuit-breakers with Icu up to 100kA@415V (N-S-H-L versions).

Electrical characteristics	Residual current devices				
	RC Sel 200 XT1	RC Inst XT1-XT3	RC Sel XT1-XT3	RC Sel XT2-XT4	RC Sel XT5 ⁽³⁾
Primary power supply voltage [V]	85...690	85...690	85...690	85...690	85...500
Operating frequency [Hz]	45...66	45...66	45...66	45...66	45...66
Fault frequency [Hz]	50-60	50-60	50-60	50-60	50-60
Test operating range [V]	85...690	85...690	85...690	85...690	85...500
Rated operating current [A]	up to 160	XT1 up to 160 XT3 up to 250	up to 160 XT1 up to 250 XT3	up to 160 XT2 ⁽²⁾ up to 250 XT4 ⁽²⁾	up to 550 ⁽²⁾
Adjustable trip thresholds [A]	0.03-0.05-0.1-0.3-0.5-1-3-5-10	0.03-0.1-0.3-0.5-1-3	0.03-0.05-0.1-0.3-0.5-1-3-5-10	0.03-0.05-0.1-0.3-0.5-1-3-5-10	0.03-0.05-0.1-0.3-0.5-1-3-5-10-30
Selective type S	■	-	■	■	■
Adjustable NON-trip time settings [s] at 2xI _{Δn}	Instantaneous 0.1-0.2-0.3-0.5-1-2-3	Instantaneous	Instantaneous 0.1-0.2-0.3-0.5-1-2-3	Instantaneous 0.1-0.2-0.3-0.5-1-2-3	Instantaneous 0.06-0.15-0.3-0.5-1-2-3-5
Power input	<5 W at 690V AC	<5 W at 690V AC	<5 W at 690V AC	<5 W at 690V AC	<5 W at 500V AC
Trip Coil with switch contact for trip signal	■	■	■	■	■
Input for remote controlled opening command	■	-	■	■	■
NO contact for pre-alarm signal	■	-	■	■	■
NO contact for alarm signal	■	-	■	■	■
Pre-alarm indication from 25% I _{Δn} . Steady yellow LED light	■	-	■	■	■
Alarm timing indication at 75% I _{Δn} . Flashing yellow LED light ⁽¹⁾	■	-	■	■	■
Type A pulsating alternating current	■	■	■	■	■
Type AC alternating current	■	■	■	■	■

RC SEL RESIDUAL CURRENT RELEASES FOR XT2 AND XT4

Current setting

Power-on LED

Alarm and pre-alarm signal LED

Magnetic indicator of residual current trip

Time of non-trip setting



Test push-button

Disconnection device for insulation test

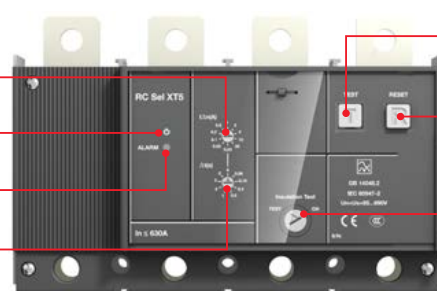
RC SEL CURRENT RELEASES (TYPE A) FOR XT5

Current setting

Power-on LED

Alarm and prealarm signal LED

Time of non trip setting



Test pushbutton

Reset pushbutton

Disconnection device for insulation test

SACE EMAX 3. SOLVING WHAT'S NEXT IN POWER DISTRIBUTION

The ABB SACE Emax 3 is the ultimate evolution in circuit breaker technology, building upon ABB's trusted Emax family with advanced adaptability, security, and reliability features. It meets the demands of modern systems with innovative technology, designed to evolve with your infrastructure and safeguard both assets and people.



ADAPTIVE

Seamlessly integrates with current systems and scales as your needs evolve, supporting continuous improvements to meet future challenges.



SECURE

Emax 3 brings an outstanding level of cybersecurity, safeguarding data and protecting personnel and assets.



RELIABLE

Advanced sensing and power management ensure uninterrupted system performance.

Discover how the Emax 3 offers unparalleled next-generation protection.

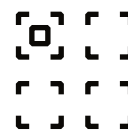
Emax 3 protects people, data, assets and investments with the highest reliability, enabling businesses to operate at peak safety and efficiency 24/7/365.

Building on the robust foundation of ABB's revolutionary Emax 2 circuit-breaker, Emax 3 seamlessly integrates into electrical-distribution systems and collaborates with other devices.

This next-generation circuit-breaker constantly collects and intelligently processes information, anticipating critical situations to enable fast decision-making and to avert potential problems.

Emax 3 proactively monitors the electrical system, sensing and interpreting environmental data, keeping its own health status under continuous control and optimising protection to ensure maximum efficiency.

01



Adaptive:

The power of adaptability is key to drive success in an evolving electrical landscape. The Emax 3 is designed to be adaptive, helping to ensure seamless integration into both new systems and those previously built with Emax 2.

02



Secure:

Safeguard assets and prevent unwanted access with Emax 3's offering of expanded protections and extensive level of cybersecurity.

03



Reliable:

Optimize uptime for electrical distribution systems through comprehensive sensing capabilities and effective power and asset management strategies.

SACE EMAX 3

Automatic circuit-breakers

Common data

Rated service voltage U_e	[V]	690
Rated insulation voltage U_i	[V]	1000
Rated impulse withstand voltage U_{imp}	[kV]	12
Frequency	[Hz]	50 - 60
Number of poles		3 - 4
Version		Fixed - Withdrawable
Suitable for isolation according to		IEC 60947-2



SACE Emax 3

E1.3

Performance levels

			B	C	N
Rated uninterrupted current I_u @ 40°C		[A]	630	630	250
		[A]	800	800	630
		[A]	1000	1000	800
		[A]	1250	1250	1000
		[A]	1600	1600	1250
		[A]			1600
Neutral pole current-carrying capacity for 4-pole CBs		[% I_u]	100	100	100
Rated ultimate short-circuit breaking capacity I_{cu}	400-415 V	[kA]	42	50	66
	440 V	[kA]	42	50	66
	500-525 V	[kA]	42	42	50
	690 V	[kA]	42	42	50
Rated service short-circuit breaking capacity I_{cs}		[% I_{cu}]	100	100	100 ⁽¹⁾
Rated short-time withstand current I_{cw}	(1s)	[kA]	42	42	50
	(3s)	[kA]	24	24	30
Rated short-circuit making capacity (peak value) I_{cm}	400-415 V	[kA]	88	105	145
	440 V	[kA]	88	105	145
	500-525 V	[kA]	88	88	105
	690 V	[kA]	88	88	105
Utilisation category (according to IEC 60947-2)			B	B	B
Breaking ⁽²⁾	Breaking time for $I < I_{cw}$	[ms]	40	40	40
	Breaking time for $I > I_{cw}$	[ms]	25	25	25

⁽¹⁾ I_{cs} : 50kA for 400V...440V voltage; ⁽²⁾ Total clearing time is the sum of breaking time and trip time.

Dimensions and weight

Dimensions	H - Fixed/Withdrawable	[mm]	296/363.5
	D - Fixed/Withdrawable	[mm]	185.5/288.6
	W - Fixed 3p/4p	[mm]	214/284
	W - Withdrawable 3p/4p	[mm]	278/348
Weights (CB with trip unit/current sensors/standard accessories)	Fixed 3p/4p	kg	15/19
	Withdrawable 3p/4p including fixed part		38/47

SACE Emax 3

E1.3

Mechanical life with regular maintenance prescribed by the manufacturer		[I_u]	≤ 1000	1250	1600
		[No. cycles x 1000]	20	20	20
	Frequency	[Oper./Hour]	60	60	60
Electrical life with regular maintenance prescribed by the manufacturer	440 V	[No. cycles x 1000]	8	8	8
	690 V	[No. cycles x 1000]	8	6,5	6,5
	Frequency	[Oper./Hour]	30	30	30

Common data

Rated service voltage U_e	[V]	690
Rated insulation voltage U_i	[V]	1000
Rated impulse withstand voltage U_{imp}	[kV]	12
Frequency	[Hz]	50 - 60
Number of poles		3 - 4
Version		Fixed - Withdrawable
Suitable for isolation according to		IEC 60947-2

**SACE Emax 3****E2.3****Performance levels**

			B	N	S	H
Rated uninterrupted current I_u @ 40°C		[A]	1600	800	250	800
		[A]	2000	1000	800	1000
		[A]		1250	1000	1250
		[A]		1600	1250	1600
		[A]		2000	1600	2000
		[A]		2500	2000	2500
		[A]			2500	
Neutral pole current-carrying capacity for 4-pole CBs		[% I_u]	100	100	100	100
Rated ultimate short-circuit breaking capacity I_{cu}	400-415 V	[kA]	42	66	85	100
	440 V	[kA]	42	66	85	100
	500-525 V	[kA]	42	66	66	85
	690 V	[kA]	42	66	66	85
Rated service short-circuit breaking capacity I_{cs}		[% I_{cu}]	100	100	100	100
Rated short-time withstand current I_{cw}	(1s)	[kA]	42	66	66	85
	(3s)	[kA]	42	50	50	66
Rated short-circuit making capacity (peak value) I_{cm}	400-415 V	[kA]	88	145	187	220
	440 V	[kA]	88	145	187	220
	500-525 V	[kA]	88	145	145	187
	690 V	[kA]	88	145	145	187
Utilisation category (according to IEC 60947-2)			B	B	B	B
Breaking ⁽¹⁾	Breaking time for $I < I_{cw}$	[ms]	40	40	40	40
	Breaking time for $I > I_{cw}$	[ms]	25	25	25	25

⁽¹⁾ Total clearing time is the sum of breaking time and trip time.

Dimensions and weight

Dimensions	H - Fixed/Withdrawable	[mm]	371/425
	D - Fixed/Withdrawable	[mm]	277/390
	W - Fixed 3p/4p	[mm]	276/366
	W - Withdrawable 3p/4p	[mm]	317/407
Weights (CB with trip unit/current sensors/standard accessories)	Fixed 3p/4p	kg	43/54
	Withdrawable 3p/4p including fixed part		87/101

SACE Emax 3**E2.3**

Mechanical life with regular maintenance prescribed by the manufacturer		[I_u]	< 1600	1600	2000	2500
		[No. cycles x 1000]	25	25	25	20
	Frequency	[Oper./Hour]	60	60	60	60
Electrical life with regular maintenance prescribed by the manufacturer	440 V	[No. cycles x 1000]	15	12	10	8
	690 V	[No. cycles x 1000]	15	10	8	7
	Frequency	[Oper./Hour]	30	30	30	30

SACE EMAX 3

Automatic circuit-breakers

Common data

Rated service voltage U_e	[V]	690
Rated insulation voltage U_i	[V]	1000
Rated impulse withstand voltage U_{imp}	[kV]	12
Frequency	[Hz]	50 - 60
Number of poles		3 - 4
Version		Fixed - Withdrawable
Suitable for isolation according to		IEC 60947-2



SACE Emax 3

E4.3

Performance levels

			N	S	H	V
Rated uninterrupted current I_u @ 40°C		[A]	3200	3200	3200	2000
		[A]	4000	4000	4000	2500
		[A]				3200
		[A]				4000
Neutral pole current-carrying capacity for 4-pole CBs		[% I_u]	100	100	100	100
Rated ultimate short-circuit breaking capacity I_{cu}	400-415 V	[kA]	66	85	100	150
	440 V	[kA]	66	85	100	150
	500-525 V	[kA]	66	66	85	100
	690 V	[kA]	66	66	85	100
Rated service short-circuit breaking capacity I_{cs}		[% I_{cu}]	100	100	100	100 ⁽¹⁾
Rated short-time withstand current I_{cw}	(1s)	[kA]	66	66	85	100
	(3s)	[kA]	50	66	75 ⁽²⁾	75
Rated short-circuit making capacity (peak value) I_{cm}	400-415 V	[kA]	145	187	220	330
	440 V	[kA]	145	187	220	330
	500-525 V	[kA]	145	145	187	220
	690 V	[kA]	145	145	187	220
Utilisation category (according to IEC 60947-2)			B	B	B	B
Breaking ⁽³⁾	Breaking time for $I < I_{cw}$	[ms]	40	40	40	40
	Breaking time for $I > I_{cw}$	[ms]	25	25	25	25

⁽¹⁾ I_{cs} : 125kA for 400V...440V voltage; ⁽²⁾ E4.3H 3200A: 66 I_{cw} (3s); ⁽³⁾ Total clearing time is the sum of breaking time and trip time.

Dimensions and weight

Dimensions	H - Fixed/Withdrawable	[mm]	371/425
	D - Fixed/Withdrawable	[mm]	277/390
	W - Fixed 3p/4p	[mm]	384/510
	W - Withdrawable 3p/4p	[mm]	425/551
Weights (CB with trip unit/current sensors/standard accessories)	Fixed 3p/4p	kg	58/73
	Withdrawable 3p/4p including fixed part		114/140

SACE Emax 3

E4.3

Mechanical life with regular maintenance prescribed by the manufacturer		[I_u]	< 2500	2500	3200	4000
		[No. cycles x 1000]	20	20	20	15
	Frequency	[Oper./Hour]	60	60	60	60
Electrical life with regular maintenance prescribed by the manufacturer	440 V	[No. cycles x 1000]	10	8	7	5
	690 V	[No. cycles x 1000]	10	8	7	4
	Frequency	[Oper./Hour]	20	20	20	20

Common data

Rated service voltage U_e	[V]	690
Rated insulation voltage U_i	[V]	1000
Rated impulse withstand voltage U_{imp}	[kV]	12
Frequency	[Hz]	50 - 60
Number of poles		3 - 4
Version		Fixed - Withdrawable
Suitable for isolation according to		IEC 60947-2

**SACE Emax 3****E6.3****Performance levels**

			H	V	X
Rated uninterrupted current I_u @ 40°C		[A]	4000	4000	4000
		[A]	5000	5000	5000
		[A]	6300	6300	6300
Neutral pole current-carrying capacity for 4-pole CBs		[% I_u]	50-100	50-100	50-100
Rated ultimate short-circuit breaking capacity I_{cu}	400-415 V	[kA]	100	150	150
	440 V	[kA]	100	150	150
	500-525 V	[kA]	100	130	130
	690 V	[kA]	100	100	120
Rated service short-circuit breaking capacity I_{cs}		[% I_{cu}]	100	100	100
Rated short-time withstand current I_{cw}	(1s)	[kA]	100	100	120
	(3s)	[kA]	100	100	100
Rated short-circuit making capacity (peak value) I_{cm}	400-415 V	[kA]	220	330	330
	440 V	[kA]	220	330	330
	500-525 V	[kA]	220	286	286
	690 V	[kA]	220	220	220
Utilisation category (according to IEC 60947-2)			B	B	B
Breaking ⁽¹⁾	Breaking time for $I < I_{cw}$	[ms]	40	40	40
	Breaking time for $I > I_{cw}$	[ms]	25	25	25

⁽¹⁾ Total clearing time is the sum of breaking time and trip time.

Dimensions and weight

Dimensions	H - Fixed/Withdrawable	[mm]	371/425
	D - Fixed/Withdrawable	[mm]	277/390
	W - Fixed 3p/4p/4p FS	[mm]	762/888/1014
	W - Withdrawable 3p/4p/4p FS	[mm]	803/929/1069
Weights (CB with trip unit/current sensors/standard accessories)	Fixed 3p/4p/4p FS	kg	112/127/143
	Withdrawable 3p/4p/4p FS including fixed part		211/237/237

SACE Emax 3**E6.3**

Mechanical life with regular maintenance prescribed by the manufacturer		[I_u]	4000	5000	6300
		[No. cycles x 1000]	12	12	12
	Frequency	[Oper./Hour]	60	60	60
Electrical life with regular maintenance prescribed by the manufacturer	440 V	[No. cycles x 1000]	4	3	2
	690 V	[No. cycles x 1000]	4	2	2
	Frequency	[Oper./Hour]	10	10	10

ACCESSORIES

SACE Emax 3 circuit-breakers

SACE Emax 3 circuit-breakers are the solution for all circuit protection needs. A wide range of accessories is offered specifically designed to meet the unique application and installation requirements of every customer.

Our circuit-breakers have been engineered with the latest technology and are guaranteed to perform optimally throughout their lifespan.

STANDARD SUPPLY

	Automatic circuit-breaker		Switch-disconnector		Derived versions (2)		
	E1.3	E2.3 E4.3 E6.3	E1.3	E2.3 E4.3 E6.3	CS	MT	MTP
	E2.3 - E4.3 - E6.3						
Signalling & Input/Output							
Open/closed auxiliary contacts - AUX 4Q (400V)	F/MP	F/MP	–	–	–	–	–
TU Reset mechanical signalling of the tripping of protection trip unit - TU Reset	F/MP	F/MP	–	–	–	–	–
Contact signalling tripping of Ekip protection trip unit - S51 (250V)	F/MP	F/MP	–	–	–	–	–
3-pin terminal blocks	F/FP	F/FP	F/FP	F/FP	F/FP	F/FP	F/FP
Safety & IP Protection							
Shutter lock – SL and Rail Lock - RL	FP	FP	FP	FP	FP	FP	FP
Lock for racking-out mechanism with circuit-breaker in closed position	FP	MP	FP	MP	MP	MP	MP
Anti-insertion pin	FP/MP	FP/MP	FP/MP	FP/MP	FP/MP	FP/MP	FP/MP
Lifting plates	–	F/MP	–	F/MP	MP	MP	MP
IP30 Protection	F/FP	F/FP	F/FP	F/FP	–	–	FP
Open trip unit cover	F/MP	F/MP	–	–	–	–	–
Power Connections							
Orientable rear terminal - HR/VR	FP	F/FP	FP	F/FP	–	–	F
Front terminal - F	F	–	F	–	–	–	–
Connectivity							
Power Supply							
Battery for Ekip Aware	F/MP	F/MP	–	–	–	–	–

MONITORING

Ekip Connect 3

In order to monitor the values via PC/Laptop/iPad, the democase can be connected to ABB Ekip Connect 3 software:

- Press the "Scan" button to search for the connected devices
- If the scan is successful:
 - The name of the device will appear in the found devices box
 - You will now be able to display all the measurements & parameters of the device

DOWNLOAD

Ekip Connect 3 can be downloaded free at <https://library.abb.com>



DOWNLOAD THE EPiC APP



Product Configuration

- Connect to ABB Ability™ Marketplace and download the software packages ready to be uploaded in the products according to their needed configuration.



Product Installation

- Accessorising and getting insights from alerts leveraging on Augmented Reality.
- Real time product information by QR code reading.



Product Commissioning

- Settings configuration and reporting from products by BLE and NFC.
- Read diagnostic data from own smartphone.



Product Assistance

- Remote assistance functionalities for after-sales help with active reality.
- List of contacts of ABB experts from all the globe.

SWITCH-DISCONNECTORS 16 TO 160 AMPS

High performance compact solution

Reliable in extreme conditions

ABB switch-disconnectors are designed, built and tested for the best possible performance. They are designed to be virtually maintenance-free across their entire extended lifespan and offer reliable performance in any and all possible circumstances. Durability has been ensured by testing switches against the IEC60947-3, UL508, UL98 and CSA standards.

Space saving

All our switches have been designed for easy and cost-efficient installation, maintenance and use. The modular design enables 2-, 3- and 4-pole installation with different position of the switching mechanism to suit your needs and spacial requirements. The devices can be optimised in relation to busbar and cable connections as well as handles and other accessories.

Easy to install

The adjustable shaft (for external handles) and mounting feet, along with snap-on auxiliary contacts and terminal shrouds create considerable savings in terms of installation time and costs. For example, the shaft can be adjusted to various installation depths, which eliminates the need for special cutting tools. This decrease handle installation times by up to 50%.

In addition, switch disconnectors from 160...4000 A are extremely flexible regarding installation orientation. They work just as well installed horizontally or vertically, or even on the ceiling.

The all-in-one OT Plus Switch-disconnector range, offers supreme protection and cutting-edge innovation for distribution and sub-distribution applications from 16A up to 160A, with 3-, 4-, 6-, and 8-pole options. So, whether your chosen application is low demand or requires the highest levels of continuity and safety, you have more options than ever before.

01 G1 frame
16A - 63A

02 G2 frame
63A - 101A

03 G3 frame
30A - 160A

01



02



03



Adaptable

Support more applications thanks to adjustable fourth-pole timing, which allows two different time offsets within the same switch: simultaneous or early-make / late-break. Find the right fit and install faster with overlapping current ratings, quick-spring terminals and more mounting positions.



Sustainable

Go greener with a range that cuts power losses by up 67%, that is designed for a circular economy and made with high portion of recycled materials. Additionally, the OT Plus switch is over 95% recyclable.



Reliable

Improve safety for people and assets, thanks to our true fourth-pole design, which reduces the risk of faults. Simplify and strengthen security with easier ways to lock and access the operating handle.

OT Plus Switch-disconnectors

Product range



Find out more.

OT PLUS SWITCH-DISCONNECTORS



IEC60947-3		OT16G1-	OT63G2-				OT63G3-								
		OT25G1-	OT80G2-				OT80G3-								
		OT40G1-	OT100G2-				OT100G3-								
		OT63G1-					OT125G3-								
							OT160G3-								
UL60947-4-1		OT16G1-	OT63G2-												
		OT25G1-	OT80G2-												
		OT40G1-	OT100G2-												
		OT63G1-													
UL98										OT30G3-					
										OT60G3-					
										OT100G3-					
Frame size		G1				G2				G3					
Switch size		16	25	40	45	63	80	100	30	60	63	80	100	125	160
IEC60947-3	I_{th} / I_{the}	16 A	25 A	40 A	63 A	63 A	80 A	100 A	40 A	63 A	63 A	80 A	100 A	125 A	160 A
	AC22A, <415VAC	16 A	25 A	40 A	63 A	63 A	80 A	100 A	40 A	63 A	63 A	80 A	100 A	125 A	160 A
	AC23A, <415VAC	16 A	25 A	40 A	40 A	63 A	80 A	80 A	40 A	63 A	63 A	80 A	100 A	125 A	125 A
	AC21A, 800VAC											40 A	63 A	80 A	80 A
UL	Ampere rating, 600VAC	20 A	30 A	40 A	50 A	63 A	80 A	101 A	30 A	60 A			100 A		
		UL60947-4-1				UL60947-4-1				UL98					

OT SWITCH-DISCONNECTORS



Find out more.

IEC		OT16F	OT63F	OT100F
		OT25F	OT80F	OT125F
		OT40F		
UL 508 file # E63822		OT16F	OT63F	
		OT25F	OT80F	
		OT40F		
UL98 file # E101914				OT30F
				OT60F
				OT100F

Switch size		16	25	40	63	80	30	60	100	125
IEC	I_{th}	25 A	32 A	40 A	63 A	80 A	40 A	63 A	115 A	125 A
	I_e / AC22A, 400...415 V	16 A	25 A	40 A	63 A	80 A	40 A	63 A	100 A	125 A
	I_e / AC23A, 400...415 V	16 A	20 A	23 A	63 A	75 A	40 A	63 A	80 A	90 A
UL	Ampere rating, 600 V	20 A	30 A	40 A	60 A	80 A	30 A	60 A	100 A	

SWITCH-DISCONNECTORS 160 TO 4000 AMPS



Find out more.

OT MANUAL SWITCH-DISCONNECTORS



Manual operation			
IEC	OT160G		
UL 98 file # E101914	OT160G		
Switch size	100	125	160
IEC			
I_{th}	160 A		
I_e / AC22A, 400...690 V	160 A		
I_e / AC23A, 400...690 V	160 A		
UL			
Ampere rating, 600V	100 A	125 A	

Accessories for manual switch-disconnectors

OT160...4000 include:

- Handles
- Shafts
- Auxiliary contacts
- Fourth poles
- N terminals
- Terminal shrouds
- Mounting accessories
- Terminal clamps
- Conversion kits
- Locking accessories
- Mechanical interlocks
- Electrical interlocks

OT MANUAL SWITCH-DISCONNECTORS



Manual operation										
IEC	OT160EV				OT315E			OT630E		
	OT200E				OT400E			OT800E		
	OT250E									
UL 98 file # E101914, CSA C2.22 No.4	OT200U				OT400U			OT600U		
Switch size	160	200	250	200	315	400	400	600	630	800
IEC										
I_{th}	160 A	200 A	250 A		315 A	400 A			630 A	800 A
I_e / AC22A, 415 V	160 A	200 A	250 A		315 A	400 A			630 A	800 A
I_e / AC23A, 415 V	160 A	200 A	250 A		315 A	400 A			630 A	800 A
UL / CSA										
Ampere rating	20 A	30 A	40 A	200 A			400 A		600 A	



Manual operation																
IEC	OT1000E							OT2000E				OT3200E				
	OT1600E							OT2500E				OT4000E				
	OT2000EC															
UL 98 file # E101914, CSA C2.22 No.4								OT800U		OT1600U						
								OT1200U		OT2000U						
Switch size	800	1000	1200	1250	1600	2000	800	1200	1600	2000	2000	2500	3200	4000		
IEC	I_{th}	1000 A		1250 A	1600 A	2000 A						2000 A	2500 A	3200 A	160 A	
	I_e / AC22A, 415 V	1000 A		1250 A	1250 A	2000 A						2000 A	2500 A			
	I_e / AC23A, 415 V	1000 A		1250 A	1250 A											
UL / CSA	Ampere rating	800 A	1200 A					800 A	1200 A	1600A	2000 A					

Motorised switch-disconnectors

Made for remote operations

MOTORISED SWITCH-DISCONNECTORS



Motor operation												
IEC	OTM40F			OTM160E			OTM315E			OTM630E		
	OTM63F			OTM200E			OTM400E			OTM800E		
	OTM80F			OTM250E								
	OTM100F											
	OTM125F											
Switch size	40 A	63 A	80 A	100 A	125 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A

MOTORISED SWITCH-DISCONNECTORS



Motor operation					
IEC	OTM1000E	OTM1600E	OTM2000E		
	OTM1250E		OTM2500E		
			OTM3200E		
			OTM4000E		
Switch size	1000 A	1250 A	1600 A	2000 A	2500 A

Accessories for motorised switch-disconnectors include:

- Handle accessories
- Auxiliary contacts
- Fourth poles
- N & PE terminals
- Terminal shrouds
- Terminal clamps

Find out more.



SWITCH-DISCONNECTORS

800 TO 1000VAC

For high-performance applications

Our high-performance switch disconnectors are designed to meet the demanding need of applications requiring high voltage supply, especially at 800VAC or 1000VAC. With advanced switching technology and reliable construction, our switch disconnectors range is a critical component to ensure safety and control of electrical systems. In photovoltaic installations, higher voltages (800-1000VAC increase the power density inside inverters, which gives overall savings up to 20%.



Safety focus
Safety is our top priority. Our switch disconnectors are equipped with multiple layers of safety features, including clear off and on markings, door interlocked in ON-position and a padlockable in OFF-position to prevent accidental usage.



High quality
Manufactured from high-quality materials and advanced technology, our switch disconnectors are built to be durable and reliable even under tough conditions.



Easy installation
The modular design and clear connections make installation straightforward and convenient.



Versatile usage
Our switch disconnectors range is the perfect fit for various industries, including industrial automation, energy distribution, power plants and more.

OTHV100...250 MANUAL SWITCH-DISCONNECTORS

Designed for higher voltages



Find out more.



Manual operation					
IEC		OTHV160E	OTHV315E	OTHV630E	OTHV1000E
		OTHV200E	OTHV400E	OTHV800E	OTHV2500E
		OTHV250E		OTHV1600E	

DC SWITCHES

Switches for all DC applications



Find out more.

OTDC switch-disconnectors and OT(M) Disconnectors are suitable for many applications, including Solar/PV, Energy Storage System (ESS), EV Charging, Marine, DC Micorgrids, DC Datacentres, Rail and DC Distribution.

PORTFOLIO OVERVIEW



Enclosed XS-Series 16...32 Amps

Enclosed low current OTDC is IP65 rated. It has a selector handle (I-O/ON-OFF) with cover interlock and defeatable interlock function.



OTDC XS-Series 16...32 Amps

Low current OTDC is equipped with high thermal capacity for 1000V DC applications. Available for base, door or DIN-rail mounting.



OTDC S1.0-Series 100...250 Amps

Compact and reliable solution for 1000V DC DC-21B applications. S1.0-Series has one of the smallest power losses on the market. They are an efficient solution for the end application.



OTDC S2.0-Series 100...250 Amps

Compact, high efficiency DC switch for 1500V DC DC-21B/ DC-PV2 applications. This series include variants for 10kA short-circuit applications and unique -ESS variants. The ESS variants are designed and tested with fuses for higher short-circuit applications up to 40kA.



OTDC M-Series 315...1000 Amps

High performance switch with DC-PV2 ratings up to 800A, with small power losses and compact size. The M-Series includes variants for 10kA short-circuit applications and unique -ESS variants, designed and tested with and without fuses for higher short-circuit applications up to 100kA.



OT(M)-135 1600...6000 Amps

Compact and robust DC disconnecter for 1500V DC DC-20B applications. This series include variants for remote operation. Rated short-time withstand currents up to 100kA.

MANUAL AND MOTORISED TRANSFER / CHANGE-OVER SWITCHES

Securing your power to perform

A secure power supply is essential to any application relying on electricity. We offer a full range of smart, safe and reliable change-over switches for your critical applications.



Find out more.



Comprehensive

COMPREHENSIVE OFFERING

ABB offers a wide variety of switches to cover all your needs. A complete range from 16 to 3200 Amperes in manual, remote, and automatic switches is further enhanced by vast amounts of additional accessories ranging from advanced controllers to auxiliary contacts.



Reliable performance

RELIABLE PERFORMANCE

ABB change-over, bypass, and transfer switches are designed, built, and tested for the best possible performance. Switches are designed to be virtually maintenance free across their entire extended lifespan and offer reliable performance in any and all possible circumstances. Durability has been ensured by testing switches against the IEC 60947-6-1 standard.



Smart and compact

SMART AND COMPACT DESIGN

All switches have been designed for easy and cost-efficient installation, maintenance, and use. Their modular design and smaller dimensions enable installation into smaller enclosures saving precious space and significantly reducing material, handling, and installation costs. The simple design also makes use easy even without previous experience or training.



Safe operations

SAFE OPERATIONS

ABB change-over, bypass and transfer switches come equipped with a comprehensive range of inbuilt safety features such as mechanical interlock. All motorised and automatic switches can also be operated manually in emergency situations, but can also be padlocked when the handle is removed to prevent unwanted manual or remote operations or enable safe maintenance work.



Product support

ABB PRODUCT SUPPORT

All our switches have been built to the highest standards and are always supported by our dedicated and skilled worldwide service network. If you ever find yourself in need of immediate service or assistance, do not hesitate to get in touch with us. With a product by ABB you are never alone.

Manual change-over switches

From 12 to 3200 Amps

MANUAL CHANGE-OVER SWITCHES 16-125A



Manual operation, change-over switches 16-125A

Types	OT16_C			OT63_C		OT100_C	
	OT25_C			OT80_C		OT125_C	
	OT40_C						
I_{th}	25 A	32 A	40 A	63 A	80 A	115 A	125 A
I_e / AC-22A, <415 V	16 A	25 A	40 A	63 A	80 A	100 A	125 A
I_e / AC-23A, <415 V	16 A	20 A	23 A	63 A	75 A	80 A	90 A

MANUAL CHANGE-OVER SWITCHES 160-800A



Manual operation, change-over switches 160-800A

Types	OT160_C			OT160_W_C			OT315_C		OT630_C	
	OT200_C			OT200_W_C			OT400_C		OT800_C	
	OT250_C			OT250_W_C						
I_{th}	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-22A, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-23A, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-31B, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A

MANUAL CHANGE-OVER SWITCHES 1000-3200A



Manual operation, change-over switches 1000-3200A

Types	OT1000_C		OT1600_C		OT2000_C		OT3200_C	
	OT1250_C				OT2500_C			
I_{th}	1000 A	1250 A	1600 A		2000 A	2500 A	3200 A	
I_e / AC-22A, <415 V	1000 A	1250 A	1600 A		–	–	–	
I_e / AC-23A, <415 V	1000 A	1250 A	1600 A		–	–	–	
I_e / AC-21B, <415 V	–	–	–		2000 A	2500 A	3200 A	
I_e / AC-31B, <415 V	1000 A	1250 A	1600 A		2000 A	2500 A		

MANUAL CHANGE-OVER SWITCHES 30-800 A



UL/CSA manual change-over switches, 30-800 A

Types	OT30_C	OT60_C	OT100_C	OT200_C	OT400_C	OT600_C	OT800_C
Current, general use	30 A	60 A	100 A	200 A	400 A	600 A	800 A
UL98, 600 V	30 A	60 A	100 A	200 A	400 A	600 A	800 A
I_e / AC-22A, <415 V	40 A	63 A	100 A	200 A	400 A	600 A	800 A

Motorised change-over switches

Open transition from 40 to 3200 Amps



Find out more.

MOTORISED CHANGE-OVER SWITCHES 16-125A



Manual operation, change-over switches 16-125A

Types	OTM63F_C				
	OTM80F_C				
	OTM100F_C				
	OTM125F_C				
I_{th}	40 A	63 A	80 A	115 A	125 A
I_e / AC-22A, <415 V	40 A	63 A	80 A	100 A	125 A
I_e / AC-23A, <415 V	40 A	63 A	80 A	80 A	90 A

MOTORISED CHANGE-OVER SWITCHES 160-800A



Motor operation, change-over switches 160-800A

Types	OT160E_C			OT160E_WC			OT315E_C		OTM630_C	
	OT200E_C			OT200E_WC			OT400E_C		OTM800_C	
	OT250E_C			OT250E_WC						
I_{th}	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-22A, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-23A, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A
I_e / AC-31B, <415 V	160 A	200 A	250 A	160 A	200 A	250 A	315 A	400 A	630 A	720 A

MOTORISED CHANGE-OVER SWITCHES 1000-3200A



Motor operation, change-over switches 1000-3200A

Types	OTM1000E_C		OTM1600E_C		OTM2000E_C	
	OTM1250E_C				OTM2500E_C	
					OTM3200E_C	
I_{th} / A	1000 A	1250 A	1600 A		2000 A	2500 A
I_e / AC-t22A, <415 V	1000 A	1250 A	1600 A		–	–
I_e / AC-21B, <415 V	–	–	–		2000 A	2500 A
I_e / AC-31B, <415 V	1000 A	1250 A	1600 A		–	–

COMPACT ATS

Compact without compromise

The new Compact ATS by ABB is just that – It is a compact, economical, and innovative all-in-one solution that delivers all the safety and performance you would expect from a product supplying your most valuable assets. An automatic transfer switch does not need to be complex and difficult to use. Compared to conventional solutions, the ABB Compact ATS offers 100% easier operation in a 40% more compact package.



OTM_C20D, for Network/Network applications.

The Compact ATS is an ideal device for securing the availability of stand-by power in a wide variety of residential, commercial, industrial, and agricultural structures. The IEC 60947-6-1 tested devices fulfil the requirements of Part 6-1, making them multiple function apparatus. ABB Compact ATS is a safe and approved solution for any application where a reliable and complete source transfer device is required.

To learn how Compact ATS works
watch the video



Compact ATS - Operation and functionality.



OTM_C21D, for Network/Network and Network/Genset applications.

Find out more.



INTRODUCING TruONE™ ATS FROM ABB

A critical breakthrough for critical power

The all-new TruONE™ is the world's first true purpose-built automatic transfer switch, engineered to incorporate switch and controller in one seamless unit.

01 Detachable HMI.
Three levels of control
to meet different
customer requirements.

02 All-in-one concept
that brings easy and
fast installation.

Performance tested beyond standard requirements, TruONE™ stands ready to ensure the steady delivery of critical power at all times. Its self-contained design reduces the number of wires and connections, which speeds installation and minimizes the potential for connection failures to ensure best-in-class reliability. Its predictive maintenance and modular components reduce downtime and service costs and its advanced connectivity is ready for the future. In addition, unlike typical ATS solutions, TruONE™ allows emergency manual operation under load for immediate power restoration in the event of an equipment malfunction.

TruONE™ represents a major shift in engineering and a critical breakthrough for critical power.

—
ABB Wins,
Global New Product
Innovation Award



Find out more.



01 / 02



THE ONE ATS WITH ALL THESE ADVANTAGES



Easy to Install

Reduces installation time by up to 80%.

Why waste time piecing together an ATS from multiple components and as many as 20 connection wires, not to mention the time spent testing? TruONE™ is the first automatic transfer switch to put it all together, including the controller with detachable HMI. It can be installed with a single wire using standard enclosures.



Safety and Protection

Reduces risk of operator injury.

TruONE™ enables emergency manual operation – even under load – without opening the panel door when the HMI is mounted to the ATS frame. The HMI can be detached from the frame for door mounting, offering more flexibility for the panel designer. Best of all, regardless of the HMI installation method, there's no need for connecting dangerous line voltages to the door, so the risk of operator injury due to equipment malfunction is reduced.



Optimum Interface

Simplifies connectivity.

TruONE™ features cloud-based connectivity through the ABB Ability™ Energy and Asset Manager. ABB Ability simplifies implementation and use of TruONE™ in coordination with other ABB devices, ensuring one common user interface and one common software environment. Market-leading modular connectivity with seven communication protocols ensures easy installation and connectivity now and far into the future.



Speed Up Your Project

Now you can speed up your project even more, thanks to TruONE™ automatic commissioning capabilities. Premade configuration files can be uploaded from your PC to TruONE™, minimising the risk of human error and reducing programming time by 80%.



Continuous Operation

TruONE™ features predictive maintenance, self-diagnostics and customer-replaceable critical modules to simplify service and significantly reduce downtime and service costs. Say goodbye to blinking lights and stopping motors. TruONE™ provides a fast in-phase open transition of power, ensuring unnoticed generator use during business hours.



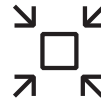
Energy Efficiency

Full compatibility with ABB Ability™ Energy and Asset Manager allows data processing from the site's electrical equipment to deliver analysis and make recommendations for optimising the electrical system's performance. This allows remote monitoring of plants, energy consumption and costs at a glance, making implementation of energy management strategies easier and faster.



Optimised Logistics

TruONE™ features a wide voltage range from 200 to 480 VAC (with +/- 20% tolerance), reducing the need to stock multiple SKUs, reducing inventory and saving space in the warehouse.



Space Saving

TruONE™ features plug-in factory and field-mount accessorising, so you don't need extra space inside the panel. Even in the case of specialized customer needs, you can use standard cabinets.

Find out more.



TruONE® ATS



UL Rating	30-200 A	260 A	400-600 A	800-1200 A
IEC Rating	160-250 A	315-400 A	500-800 A	1000-1600 A

SWITCH FUSES

World class performance in the most demanding applications

OS and OSM switch fuses by ABB have been designed to deliver world-class performance in even the most extreme conditions. Our extensive range of reliable switch fuses, both manual and motorised, is ensured to have your application needs covered.



Find out more.



RELIABLE IN EXTREME CONDITIONS

Reliability and performance

OS switch fuses are the optimal solution for motor protection. They can be installed next to transformers in heavy industry. The contact design combined with the fuse link enables rapid fault clearance and maintains protection level even after a fault occurs. Our motorised switch fuses protect motors from overcurrent and can be operated both remotely and manually.



SAFETY AND PROTECTION

Safe maintenance and operation

OS switch fuses are designed for personal safety as well as for reliable process protection. When in the ON position, the interlocked fuse protection covers cannot be removed. When in the OFF position, the fuse link is fully isolated from both ends. Also, the handle is padlockable with three separate padlocks for ensured safety.



SPEED UP YOUR PROJECTS

Proven and practical

Test proven type 2 coordination tables for the OS switch fuses are available online 24/7. From there you can easily select the appropriate ABB components for motor starting and protection. These motor starting solutions also help minimise the time needed for sizing all the starter components and ensure reliable operation after a fault occurs.

Manual operated switch fuses 20...1250 A

Designed to deliver

MANUAL SWITCH FUSES 20...1250 A



Switch size [A]	20	25	30	32	40	32	50	60	63	100	125	160	100	200	250
DIN	–				OS40FD	OS32GD				OS125GD					OS200D
	–					OS63GD				OS160GD					OS250D
B5	OS20FB					OS32GB				OS100GB					OS200B
	OS32FB					OS63GB				OS125GB					OS250B
										OS160GB					OS250B
NFC	OS25FF					OS50GF				OS125GF					
	OS32FF														
UL98 File #E101914	OS30FACC					OS60GJ							OS100GJ		
	OS30FAJ														
AC23/400V [kW]		11		15	18.5	15	22		30		55	75		110	140
AC23/415V [kW]	7.5			15		15			30	55	55	75		110	145
480 V [HP]			15					30					60		
600 V [HP]			20					30					75		

MANUAL SWITCH FUSES 20...1250 A



Switch size [A]	200	315	400	1600	630	800	1200	1250
DIN		OS400D		OS630D			OS1250D	
				OS800D				
BS		OS315B		OS603B			OS1250B	
		OS400B		OS800B				
UL98 File #E101914	OS200J	OS400J		OS600J			OS1200L	
				OS800L				
AC23/400V [kW]			230		355	450		560
AC23/415V [kW]		180	230		355	450		560
480 V [HP]	150		230	400		500	–	
600 V [HP]	200		230	500		600	–	

Find out more.





Motorised operated switch fuses 32...1250 A

Ideal for remote use

MOTORISED
SWITCH FUSES
32...1250 A



Switch size [A]	32	50	60	100	125	160	200	250
DIN	OSM32GD			OSM125GD			OSM200D	
	OSM63GD			OSM160GD			OSM250D	
BS	OSM32GB			OSM100GB			OSM200B	
	OSM63GB			OSM125GB			OSM250B	
				OSM160GB				

MOTORISED
SWITCH FUSES
32...1250 A



Switch size [A]	315	400	630	800	1250
DIN	OSM400D		OSM630D		OSM1250D
			OSM800D		
BS	OSM315B		OSM603B		OSM1250B
	OSM400B		OSM800B		

Find out more.



SLIMLINE XRG

Enhance energy efficiency for increasingly demanding markets



Convenience
and ease

CONVENIENCE AND EASE

- Easy, pre-engineered wire-free installation – be up and running in minutes
- Simple removal and replace with plug-in contacts – even in a switchboard with live busbars
- All accessories related to measuring and remote controlling are integrated to the switch – no external devices needed



Find out more.

SAVE UP TO

40% floor space



Safe and reliable

SAFE AND RELIABLE

- The only horizontal switch disconnector fuse in the market with true position indication
- Fuse monitoring functionality (EFM)
- Total safety concept that fulfills the highest requirements
- Real-time monitoring for: voltage, current, temperature, frequency, active and reactive power, power factor, switch position and energy consumption

SUITABLE FOR

800V AC applications



Enhanced
performance

ENHANCED DESIGN AND PERFORMANCE

- Up to 35% lower power losses
- Short circuit capacity increased by 118% from 55 kA up to 120 kA
- Utilisation category changed from AC23B to AC23A, so operations increase by 400% and extend product lifetime
- Only device on market with all silver-plated active parts and no bare copper

REDUCE POWER LOSSES UP TO

35%



Integrated and
future-ready

INTEGRATED AND FUTURE-READY

- Easy, efficient power distribution
- Monitor the electrical system from anywhere, anytime
- Cloud-based connectivity with ABB Ability™ Energy and Asset Manager
- Simple ITS2 configuration with Ekip Connect
- ABB Ability™ Energy and Asset manager compatible with Emax 2, Ekip UP and TruONETM ATS (equipped with Ekip Com Hub) or with Edge Industrial Gateway via Modbus RS-485

Find out more.



CONFIGURE ITS2 MONITORING IN

1 MINUTE

SLIMLINE XRG

Applications and approvals

Applications

- Distribution boards
- Building industry
- Oil and Gas industries
- Data centers
- Load Shedding
- Hospitals
- Airports
- Banks
- Shopping Centers
- In combination with Motor Control Centers
- When using emergency power supply
- Photovoltaic Power Plants

Approvals

- IEC / EN 60947-3
- CB
- EAC
- CCC



Find out more.

SLIMLINE XRG GENERAL OVERVIEW



Switch size [A]	XRG00	XRG1	XRG2	XRG3
Frame size	00	1	2	3
Rated current up to (A)	160	250	400	630
For NH fuses	●	●	●	●
For BS88 fuses	●	●	●	●
Electronic fuse monitoring (EFM)	●	●	●	●
Intelligent Tier Switch without display (ITS2.1)	●	●	●	●
Intelligent Tier Switch with display (ITS2.D)	●	●	●	●
Handle operation	●	●	●	●
Motor operation (MOT)	●	●	●	●
Auxiliary switch	●	●	●	●
Multiplug	●	●	●	●
Ammeter	●	●	●	●
Current transformers (CT) integrated	●	●	●	●
Terminal extension for CT's integrated	●	●	–	–
Current transformers (CT) with contact extension	●	●	●	●
Cable shroud	●	●	●	●
V-Clamp	●	●	●	●
Double clamp	–	●	–	–
Contact extension	●	●	●	●
SlimLine Cassette	●	●	●	●
Double handle	–	–	●	●



800V AC FUSEGEAR

Product overview



INLINE II FUSE SWITCH-DISCONNECTORS

- Suitable in AC combiner boxes, typically used in non-segregated panels
- Allows reduced dimension installations especially in vertical installations
- Rated operational current up to 1000 V AC
- AC-22B utilisation category, with a rated operational current of up to 630 A
- Short circuit protection up to 120 kA
- Available in essential configuration and enhanced configuration with factory mounted Electronic Fuse Monitoring



EASYLINE XLP FUSE SWITCH-DISCONNECTORS

- Suitable for power distribution panels and in AC combiner boxes, typically used in segregated panels
- Mounted in horizontal position, allows to realize easy segregation
- Rated up to operational current up to 1000 V AC
- AC-22B utilisation categories with a rated operational current of up to 400 A
- Short circuit protection up to 120 kA
- Available in essential configuration and enhanced configuration, with EFM accessories or factory mounted EFM



SLIMLINE XRG SWITCH-DISCONNECTOR FUSES

- Suitable for AC combiner boxes and switchboards
- Integrated motor operation unit allows remote operation
- Rated up to operational current up to 800 V AC
- AC-22B utilisation categories with a rated operational current of up to 250 A
- Short circuit protection up to 100 kA
- Available in essential configuration and enhanced configuration with factory mounted Electronic Fuse Monitoring



OFAZ-HV FUSE BASES

- The OFAZ-HV plastic fuse bases fulfill the highest requirements with a total safety concept and now are available with Ui and Ue 1000 V AC/DC
- Meet market requirements, no added niche features
- Simple, reliable and functional

Find out more.



ENCLOSED SWITCH-DISCONNECTORS

Safe and dependable performance

Our enclosed switch-disconnectors support you in creating a safe working environment, reducing the risk of electrical and mechanical accidents, especially during maintenance and repair work.



Find out more.

Enclosed switch-disconnectors with auxilliary contact and 'Safety Switch' -sticker are designed to be used near motors or machines to isolate them from the main circuit.

We offer the widest portfolio of IEC standard switches (from 16 to 1200 A) in both side and front operated, with a range of pole and cable configurations. We also offer a full range of enclosure materials, including plastic, aluminium, steel sheet, and acid-proof stainless steel to ensure you find the right enclosed switch-disconnectors for your application and operating environment.



Reliable in extreme conditions

All our enclosed switch-disconnectors are built to last and resist the wear of harsh operating conditions. The enclosures are made of high-quality, UV-resistant materials and the degree of protection is up to IP65. All switches are suitable for use both indoors and outdoors.



Safety and protection

Our design is based on ensuring safety and preventing electrical accidents. To make maintenance and installation as safe as possible, we have included features such as padlockable handles, cover interlocks and gas pressure relief functions to our products.



Speed up your project

We can help speed up your project by making the selection of the right switch as quick and easy as possible. Our web-based selection tool, e-Configure, enables you to select the best switch for your particular application in the easiest way possible.



Every aspect of our enclosed switch-disconnectors is designed for safety and dependable performance, even in demanding operating conditions. This helps ensure that machinery can't be accidentally started while maintenance is in progress.

Tried and tested performance

To ensure maximum safety, it is always good practice to use a separate switch for normal start and stop, and to use the enclosed switch-disconnector (safety switch) only during repair and maintenance. ABB's range of enclosed switch-disconnectors includes side and front operated enclosed switch-disconnectors from 16 to 1200 Amperes, with power ratings from 7.5 to 1200 kW up to 690 V. The ratings correspond to utilisation category AC-23A.

As the overall naming for the product series, ABB is using Enclosed Switch Disconnectors. In different countries there are different terminology, like Safety switch, Isolator, Maintenance switch, etc. The standard IEC62626-1:2014 defines the name to Maintenance switch. In the enclosed switches where there are auxiliary contacts there is also the sticker for Safety switch.

Enclosures are available in plastic, aluminium, steel sheet, stainless steel sheet, and acid-proof material. The appropriate material can be selected according to preference or application. All our enclosed switch-disconnectors have been tested according to IEC 60947-3 standard. After rigorous testing, our switches have proven to maintain a high degree of safety.

The enclosed switch-disconnectors have either standard or as optional auxiliary contacts that can be used for electrical interlocking. This is done by connecting the enclosed switch-disconnector to a starter or other motor control devices. For the most extreme operational conditions, corrosion-resistant gold plated auxiliary contacts are available upon request.

Aluminium cables

The terminals in the switches cannot be directly connected to an aluminium wire due to electromechanical corrosion. Therefore, we recommend the use of compression type terminals made for aluminium wires, if aluminium cables are to be used.

Operating temperature

ABB enclosed switches can withstand an ambient temperature of -25°C to +40°C without derating. Please contact your local ABB dealer in case you need support with de-rating, due to higher temperatures.

Ensured EMC safety

ABB's design also takes into consideration the need for reliable performance in environments with electromagnetic disturbances (EMC), with full compliance with IEC 61000-6-3/4 or EN 55011, according to EU directive 2004/108/EC. Electro-magnetic compatibility (EMC) refers to the ability of a device to function despite electromagnetic disturbances in the environment without electro-magnetically disturbing other devices in its surroundings. This is important in environments where the disturbance from frequency converters may rise up to tens, or even hundreds of MHz.

Find out more.



02



CONTROL & PROTECTION

094–095	AF Contactors
096–097	3-Pole contactors
098–099	4-Pole contactors
100–101	Overload relays
102–103	Additional products
104–105	Manual motor starters
106–107	Pilot devices
108	Modular plastic range
109	Compact range
110	Modular metal range
111	Plastic & metal enclosures
112–115	Softstarters
116–117	Limit switches

AF CONTACTORS

for motor starting and power switching up to 2850 A



The latest technology of electronically controlled coil is our standard. It offers multiple benefits over conventional alternatives, and together with ABB's wide product offering, it is an optimal configuration, every time.



OPTIMISED LOGISTICS

Cut your costs

With its contactor and motor protection range, ABB has managed to reduce the number of contactor coils to just four. Total number of product variants has been reduced by up to 90%. This simplifies the customers' logistics while cutting storage and administration costs.



CONTINUOUS OPERATION

Secure uptime

Prevent stoppages caused by voltage fluctuations. The AF contactor ensures distinct operation in unstable networks and signifies a major advance in motor control and power switching. Voltage sags, dips and surges pose no threat. The AF contactor secures your uptime.

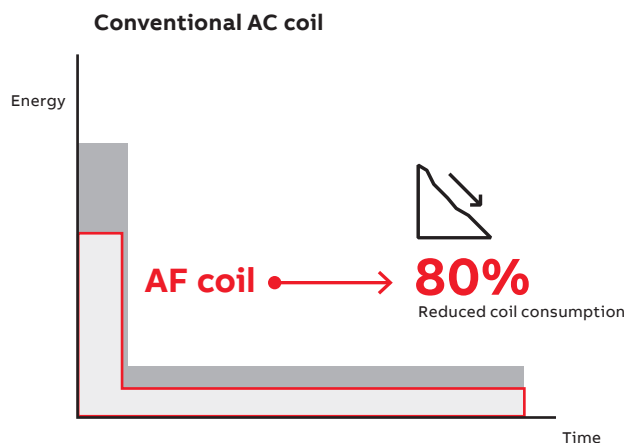
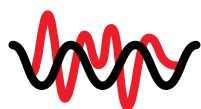


SPEED UP YOUR PROJECTS

Simplify design

Use the same part number in Europe, Asia and North America as one contactor coil now handles 100 V – 250 V AC / DC, 50 / 60 Hz. By reducing contactor coil energy consumption by up to 80%, panels can be built smaller and transformers more compact.

AF TECHNOLOGY MAIN BENEFITS

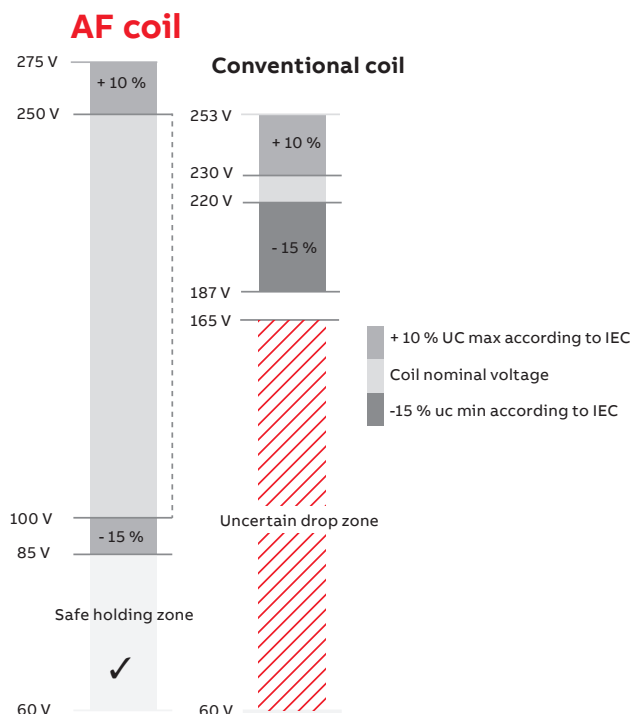


Reliable in all networks

The electronic system within the AF contactor continuously monitors the current and voltage apply to the coil. The contactor is safely operated in an always optimised condition and hum free.

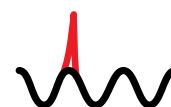
Reduced coil consumption

AF coil and energy consumption is reduced up to 80%. This allows a reduction of the temperature rise, the size of control transformers and size of cabinets.



Wide control voltage range

With conventional contactor technology, different contactors are 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 of the contactor. With the AF technology, the surges are handled by the contactor and never reach the control circuit. One less product and one less complication to worry about.

3-POLE CONTACTORS

for motor starting and power switching



3-POLE CONTACTORS

AC / DC Control supply				Type	AF09	AF12	AF16	AF26	AF30	AF38	AF40	AF52	AF65	AF80	AF96
IEC	AC-3	Rated operational power θ ≤ 60 °C for AF09 ... AF370 θ ≤ 55 °C for AF400 ... AF2650	220 - 230 - 240 V	kW	2.2	3	4	6.5	9	11	11	15	18.5	22	30
			380 - 400 V	kW	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45/55
			415 V	kW	4	5.5	9	11	15	18.5	22	30	37	45	55
			440 V	kW	4	5.5	9	15	18.5	22	22	30	37	45	55
			500 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	45	55
			690 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	45	55
			1000 V	kW	–	–	–	–	–	–	–	–	–	35	40
		Rated operational current	380 - 400 V	A	9	12	18	26	32	38	40	53	65	80	105
AC-1	Rated operational current	θ ≤ 40 °C, 690 V	A	25	28	30	45	50	50	70	100	105	125	130	
UL / CSA	1-phase motor rating		120 V	hp	0.75	1	1.5	2	2	2	3	3	5	7.5	7.5
			240 V	hp	1.5	2	3	3	5	5	7.5	10	15	15	20
	3-phase motor rating		200 - 208 V	hp	2	3	5	7.5	10	10	10	15	20	25	30
			220 - 240 V	hp	2	3	5	7.5	10	10	15	20	25	30	40
			440 - 480 V	hp	5	7.5	10	15	20	25	30	40	50	60	60/75
			550 - 600 V	hp	7.5	10	15	20	25	30	40	50	60	75	75
		General use rating	600 V	A	25	28	30	45	50	50	60	80	90	105	115
NEMA	NEMA Size			00	0	–	1	–	–	2	–	–	3	–	

MAIN ACCESSORIES

Auxiliary contact blocks	Front mounting	CA4-10 (1 x N.O.) CA4-01 (1 x N.C.)
	Side mounting	CAL4-11 (1 x N.O. + 1 x N.C.)
Timers	Electronic	TEF4-ON TEF4-OFF
Interlocking units	Mechanical	VM4
	Mechanical / Electrical	VEM4
Connection sets	For reversing contactors	BER16-4
Surge suppressors		Built-in surge protection

OVERLOAD RELAYS

	Thermal relays	Class 10 (Class 10A for TF140, TA200DU)	TF42 (0.10...38 A)	TF65 (22...67 A)	TF96 (40...96 A)
	Electronic relays	Class 10E, 20E, 30E	EF19 (0.10...18.9 A)	EF19 (0.10...18.9 A) EF45 (9...45 A)	EF65 (20...70 A) EF96 (36...100 A)

MANUAL MOTOR STARTERS

	Thermal / magnetic protection Class 10	MS116 (0.10...32 A) lcs up to 50 kA for class 10 A MS132 (0.10...32 A) lcs up to 100 kA	MS165 (10...80 A) lcs up to 100 kA ⁽¹⁾
	Magnetic only types	MO132 (0.16...32 A) lcs up to 100 kA	MO165 (16...80 A) lcs up to 100 kA ⁽¹⁾
Accessories		For contactor mounting	BEA16-4
			BEA38-4
			BEA65-4 ⁽²⁾

⁽¹⁾ MS165/MO165 are suitable for use with AF09 ... AF30 for North American applications.

⁽²⁾ BEA65-4 suitable for MS165 and MO165 only.

⁽³⁾ –5 ... +40 °C for TA200-V1000.



AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370	AF400	AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650	AF2850
30	37	45	55	55	75	90	110	110	132	160	220	–	257	315	–	–	–
55	75	75	90	110	132	160	200	200	250	315	400	–	475	560	–	–	–
55	75	75	90	110	132	160	200	220	250	355	425	–	500	630	630	–	–
75	90	90	110	132	160	160	200	220	250	355	450	–	560	710	710	–	–
75	90	90	110	132	160	200	250	250	315	400	520	–	560	710	–	–	–
55	75	90	132	160	200	250	315	315	355	500	600	–	800	1000	1000	–	–
–	–	75	110	132	160	185	200	220	280	355	400	–	560	600	630	–	–
116	140	146	190	205	265	305	370	400	460	580	750	–	860	1060	1060	–	–
160	200	225	275	350	400	500	600	600	700	800	1050	1260	1350	1650	2050	2650	2850
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
30	40	40	50	60	75	100	125	125	150	200	250	–	–	–	–	–	–
40	50	50	60	75	100	125	150	150	200	250	300	–	400	450	–	–	–
75	100	100	125	150	200	250	300	350	400	500	600	–	800	900	–	–	–
100	125	125	150	200	250	300	350	400	500	600	700	–	1000	1150	–	–	–
160	200	200	250	300	350	400	520	550	650	750	900	1210	1350	1650	2100	2700	2850
–	4	–	–	–	5	–	–	–	6	–	7	–	–	8	–	–	–

CAL19-11 (1 x N.O. + 1 x N.C.)				CAL18-11 (1 x N.O. + 1 x N.C.)			
VM19 (for same size contactors)				VM750H VM750V			
BER140-4				BER205-4			
BER370-4				BEM460-30			
BEM750-30				VM1650H			

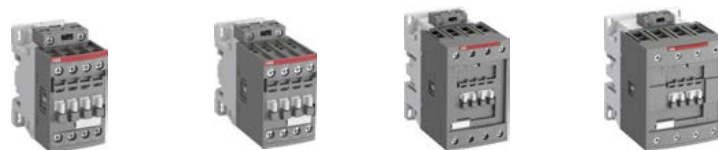
TF140DU (66...142 A) $\theta \leq 55^\circ\text{C}$		TA200DU (66...200 A) $\theta \leq 55^\circ\text{C}(3)$			
EF146 (54...150 A)		EF205 (63...210 A)		EF370 (115...380 A)	
				EF460 (150...500 A)	
				EF750 (250...800 A)	
				EF1250DU (350...1250 A)	

Find out more.



4-POLE CONTACTORS

Overview



4-POLE CONTACTORS

IEC	AC-1 Rated operational current	$\theta \leq 40\text{ }^{\circ}\text{C}$, 690 V	A	25	30	45	55	70	100	125
UL/CSA	General use rating	600 V	A	25	30	45	55	60	80	105
AC / DC Control supply										
			Type	AF09	AF16	AF26	AF38	AF40	AF52	AF80
AC Control supply										
			Type	AF09	AF16	AF26	AF38	AF40	AF52	AF80
DC Control supply										
			Type	AF09	AF16	AF26	AF38	AF40	AF52	AF80
IEC	AC-1 Rated operational current	$\theta \leq 40\text{ }^{\circ}\text{C}$	A	25	30	45	55	70	100	125
	690 V	$\theta \leq 60\text{ }^{\circ}\text{C}$ ⁽¹⁾	A	25	30	40	45	60	80	105
		$\theta \leq 70\text{ }^{\circ}\text{C}$	A	22	26	32	37	50	70	90
	With conductor cross sectional area		mm²	4	6	10	16	35	35	50
	Rated operational voltage Ue max.		V	690	690	690	690	690	690	1000

⁽¹⁾ $\theta \leq 55\text{ }^{\circ}\text{C}$ for EK550, EK1000 contactors.

MAIN ACCESSORIES

Auxiliary contact blocks	Front mounting	CA4-10 (1 x N.O.), CA4-01 (1 x N.C.)
	Side mounting	CAL4-11 (1 x N.O. + 1 x N.C.)
Timers	Electronic	TEF4-ON TEF4-OFF
Interlocking units	Mechanical	VM4
	Mechanical / Electrical	VM96-4
Surge suppressors	Varistor + RC (AC / DC)	VEM4
		Built-in surge protection



160	200	275	350	400	500	525	800	1000
160	175	230	250	300	350	420	540	–
AF116	AF140	AF190	AF205	AF265	AF305	AF370	–	–
AF116	AF140	AF190	AF205	AF265	AF305	AF370	EK550	EK1000
AF116	AF140	AF190	AF205	AF265	AF305	AF370	EK550	EK1000
160	200	275	350	400	500	525	800	1000
145	175	250	300	350	400	425	650	800
130	160	200	240	290	325	350	575	720
70	95	150	240	240	300	2 x 185	2 x 240	2 x 300
690	690	1000	1000	1000	1000	1000	1000	1000

CAL19-11 (1 x N.O. + 1 x N.C.)	CAL16-11 (1 x N.O. + 1 x N.C.)
VM19 (for same size contactors)	VH800
	RC-EH800

Find out more.



OVERLOAD RELAYS

Thermal and electronic



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	–	–	–

Find out more.



JUST PUSH IT!

The next evolution in motor starter solutions

With the new complete **Push-in** Spring motor starting solution, one push is all you need for extremely fast wiring.

No tool is required, so you can save up to 50% wiring time with Push-in Spring compared to conventional spring solutions. And the connections are just as reliable. So for speed, ease and reliability, just push it

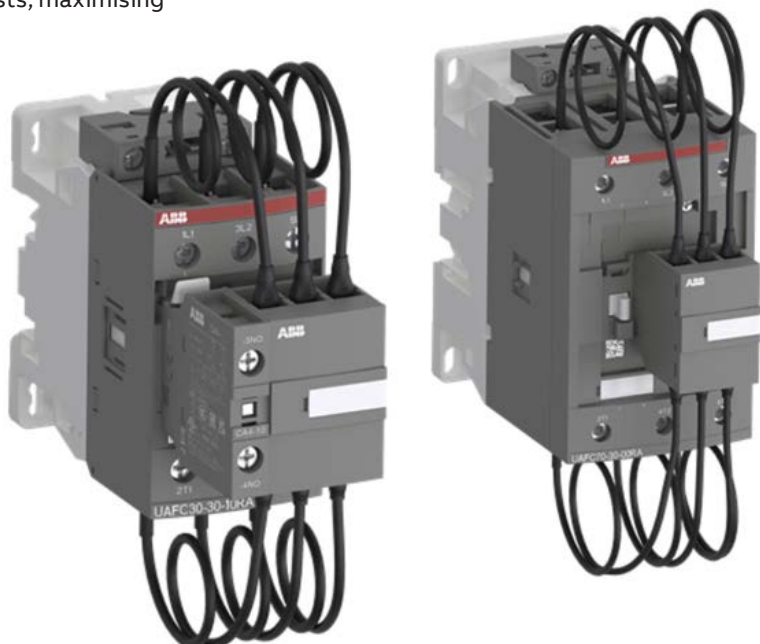
Find out more.



CONTACTORS FOR CAPACITOR SWITCHING

Power factor correction

Designed to handle high peak currents, allowing safe control of the Power Factor correction capacitor banks, outlasts capacitor lifespan, reducing maintenance costs, maximising KVAR correction for bill reductions.



Find out more.



AC CONTROL

Up to 96 A, 45 kW AC-3

For installations requiring electromagnetic control

Tender specifications or existing customer applications might require control panels with AC electromagnetic coil control - AFC contactors offer the perfect solution.

Find out more.



MINI CONTACTORS

Smart flexibility and diversity in a small size



Find out more.



Mini contactors are ideally suited for applications where **reliability is a must** and space is at a premium. The dimensions, technical features and the variety of the assortment provide customers a high flexibility in a wide-range of applications.

MANUAL MOTOR STARTERS

Overview

MANUAL MOTOR STARTERS



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

⁽¹⁾ Compensated. ⁽²⁾ Available with Push-in Spring terminals.

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.



Find out more.

MANUAL MOTOR STARTERS



Type	MO132	MO165	MS132-T
Thermal and electromagnetic protection	–	–	Yes
Electromagnetic protection	Yes	Yes	–
Phase loss sensitivity	–	–	Yes
Switch position	ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP
Magnetic trip indication	–	–	Yes
Lockable handle without accessories	Yes	Yes	Yes
Disconnecting feature	Yes	Yes	Yes
Width	45 mm	55 mm	45 mm
Rated operational current I _e	0.16 ... 32 A	16 ... 80 A	0.16 ... 25 A
Setting range	–	–	0.10 ... 25 A
Ambient air temperature	–25 ... +60 °C	–25 ... +60 °C	–25 ... +60 °C ⁽¹⁾
Accessories			
Auxiliary contact	HKF1, HK1 ⁽²⁾		HKF1, HK1 ⁽²⁾
Signaling contact	for tripped alarm SK1 ⁽²⁾		SK1 ⁽²⁾
	for short-circuit alarm –		CK1
Shunt trip	AA1		AA1
Undervoltage release	UA1		UA1

⁽¹⁾ Compensated. ⁽²⁾ Available with Push-in Spring terminals.

TABLE FOR SHORT-CIRCUIT RATINGS FOR 400 V AC

Performance range MO132, MO165				Transformer protection MS132-T	
Selection parameters				Type	Short-circuit breaking capacity I _{cu} / I _{cs}
Rated operational power	Type	Short-circuit breaking capacity			
		I _{cu}	I _{cs}		
0.03 kW ⁽¹⁾	MO132-0.16	100 kA	100 kA	MS132-0.16T ⁽²⁾	100 kA
0.06 kW	MO132-0.25	100 kA	100 kA	MS132-0.25T ⁽²⁾	100 kA
0.09 kW	MO132-0.4	100 kA	100 kA	MS132-0.4T ⁽²⁾	100 kA
0.18 kW	MO132-0.63	100 kA	100 kA	MS132-0.63T ⁽²⁾	100 kA
0.25 kW	MO132-1.0	100 kA	100 kA	MS132-1.0T ⁽²⁾	100 kA
0.55 kW	MO132-1.6	100 kA	100 kA	MS132-1.6T ⁽²⁾	100 kA
0.75 kW	MO132-2.5	100 kA	100 kA	MS132-2.5T ⁽²⁾	100 kA
1.5 kW	MO132-4.0	100 kA	100 kA	MS132-4.0T ⁽²⁾	100 kA
2.2 kW	MO132-6.3	100 kA	100 kA	MS132-6.3T ⁽²⁾	100 kA
4.0 kW	MO132-10	100 kA	100 kA	MS132-10T ⁽²⁾	100 kA
5.5 kW	MO132-12	100 kA	100 kA	MS132-12T	100 kA
7.5 kW	MO132-16 / MO165-16	100 kA	100 kA	MS132-16T ⁽²⁾	100 kA
7.5 kW	MO165-20	100 kA	100 kA		
7.5 kW	MO132-20	100 kA	100 kA	MS132-20T ⁽²⁾	100 kA
11 kW					
11 kW	MO132-25 / MO165-25	50 kA / 100 kA	50 kA / 100 kA	MS132-25T ⁽²⁾	50 kA
15 kW	MO132-32	50 kA	30 kA	Transformer protection: The instantaneous short-circuit current setting I _i is 20 times the maximum rated operational current.	
15 kW	MO165-32	100 kA	100 kA		
22 kW	MO165-42	50 kA	50 kA		
22 kW	MO165-54	50 kA	30 kA		
30 kW	MO165-65	50 kA	30 kA		
37 kW	MO165-73	30 kA	30 kA		
45 kW	MO165-80	30 kA	30 kA		

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

PILOT DEVICES

Engineered for total reliability



ABB pilot devices are engineered for total reliability. Our products are tested to extremes and proven in the toughest environments. Their innovative design simplify the entire process, from selection to installation. Enclosures and accessories complete the portfolio.



CONTINUOUS OPERATION

Engineered for tough environments

ABB pilot devices are designed with protection degree of up to IP69K and 4X, guaranteeing reliability in extreme environments – making ABB pilot devices ideal for use in demanding industries such as construction and food and beverage. An innovative design that automatically cleans contacts ensures high reliability for all products.



GLOBAL AVAILABILITY

Simple selection and stock management

ABB's core offering includes the pilot devices most in demand, so product selection is easier, stock management is simpler and product availability is higher. Support for exporters is world-class, thanks to ABB's standardized global range, certified to comply with all major international standards.



EASY TO INSTALL

Save time and space

The unique design of ABB's modular ranges enable tool-free installation that is quick and simple. It provides high flexibility for last-minute changes. With its all-in-one construction, the compact range reduces installation space and saves time.

Find out more.



RELIABILITY THAT LASTS

CONTINUOUS OPERATION

Longer lifetime

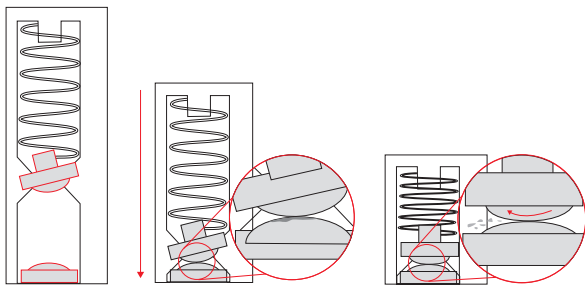
- ABB pilot Devices are engineered and tested to sustain frequent use over time in any environment

High mechanical durability

- Tested to achieve mechanical life time of up to 10 million operations

Ensuring electric connectivity

- Self-cleaning contacts ensure reliable operation without the need for maintenance, increasing uptime



The built-in wiping mechanism cleans the contacts when operated to remove dust and oxidation on the contacts and improve

Dust and water proof

All ABB pilot devices are impenetrable to dust and are extremely resistant to water exposure.

IP66

IP66-classed pilot devices can withstand high-pressure water jets and are suitable for tough outdoor use.

IP67

IP67-classed pilot devices can withstand immersion in one metre of water for 30 minutes. They are suitable for use in the harshest environments with water and dust.

IP69K

IP69K pilot devices can withstand both rough treatment and intensive, high-temperature cleaning. They are ideal for environments with high sanitary requirements, such as the food and beverage industry.

Find full test description in general technical data section.

Trust ABB to produce products that work in any environment.

01 Mechanical durability test.

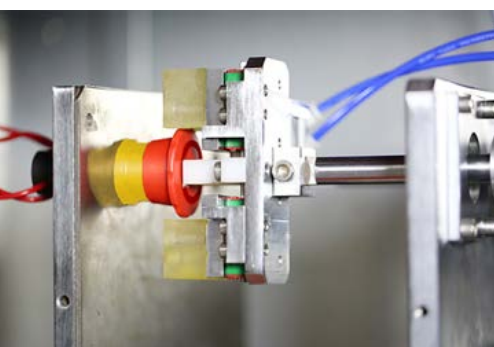
02 Total protection against any kind of dust.

03 Powerful water jets projected against the front from a distance of 3 meters.

TESTING THAT GOES BEYOND THE STANDARDS



Find out more.



01



02

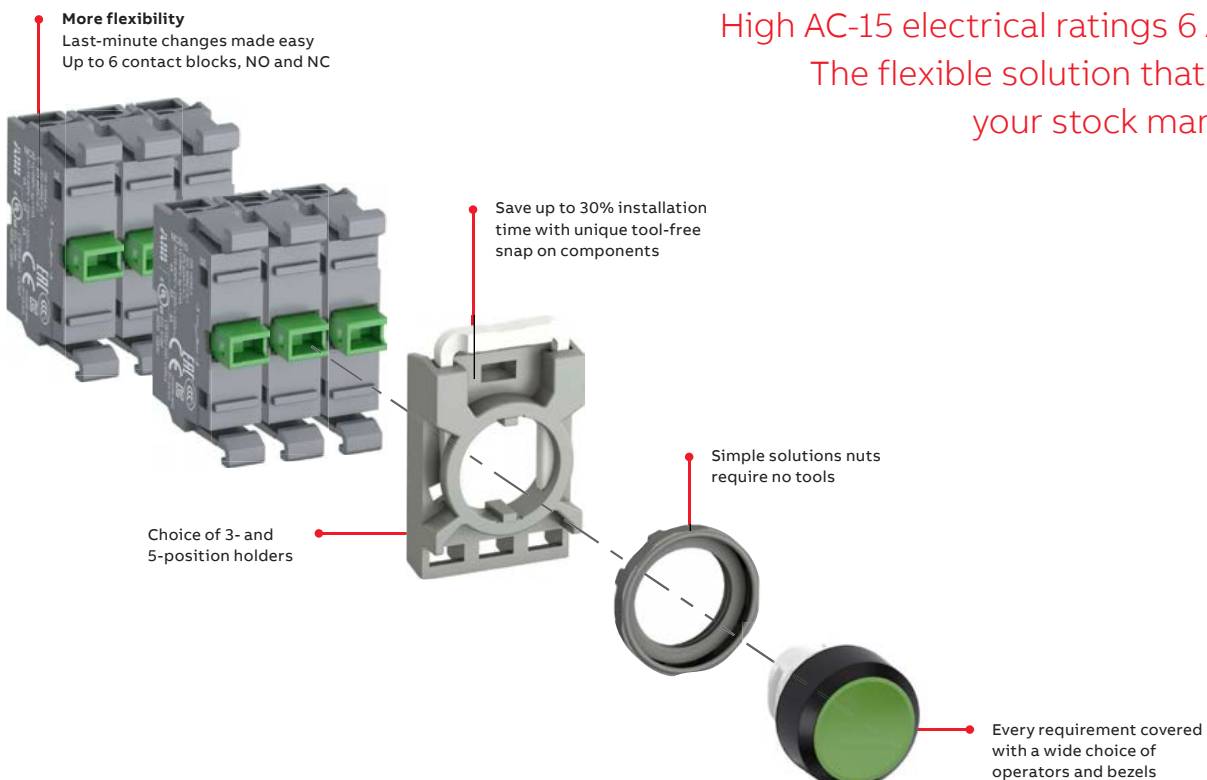


03

MODULAR PLASTIC RANGE

Flexible configuration

A versatile selection of operators with high levels of flexibility and a broad choice of electrical ratings. Find the perfect solution for almost every application.



High AC-15 electrical ratings 6 A at 230 V.
The flexible solution that simplifies your stock management.

COMPACT RANGE

All-in-one solution

The most efficient solution available, reducing installation time and cost. The compact range have the highest level of dust and water resistance on the market.



Pushbuttons



Heavy duty pushbuttons



Mushroom pushbuttons



Emergency stop pushbuttons



Machine stop pushbuttons



Pilot lights



Selector switches



Buzzers

Fewer order codes make selection easy and save time. All-in-one design makes installation fast.



Improve reliability
Higher protection levels with IP66, IP67 and IP69K classification and 4X (NEMA)

Compact
Just 42 mm built in depth

MODULAR METAL RANGE

Designed for demanding applications

ABB's modular metal range combines ultimate reliability with the total flexibility of a modular range. For mining, construction and heavy industry applications, find the right solution here.



ENCLOSURES

Robust ready-to-go solutions



PLASTIC & METAL ENCLOSURES



Plastic enclosure for modular and compact

This enclosure can fit both modular and compact operators with the unique possibility to mount up to 5 contact blocks assigned to one operator.

Degree of protection: IP66 UL/NEMA type 1, 3R, 4, 4X, 12, 13



Compact plastic enclosure

The compact enclosure is one of the smallest on the market intended for compact operators.

Degree of protection: IP66, 67, 69K UL/NEMA type 1, 3R, 4, 4X, 12, 13



Metal enclosure

Metal line is made in addition to our plastic lines when metal is required. Featuring a high protection degree and large installation space.

Degree of protection: IP66, 67, 69K

Assembled stations

We can also offer some of the most common assembled stations as a standard in combination with both modular and compact range.

SOFTSTARTERS

How are we helping the industry

A softstarter from ABB offers you several values and benefits. Whether you are a consultant, OEM, panel builder or end-user, A softstarter will add to your business value by securing motor reliability, improving installation efficiency and increasing application productivity.



Find out more.



SECURE MOTOR RELIABILITY



Reliability

ABB softstarters help increase your motors lifetime by protecting it from electrical stress. Starting currents are easily optimised to your load, application and motor size. Over ten motor protection features are included to keep your motor safe from different load and network irregularities.

IMPROVE INSTALLATION EFFICIENCY



Installation
efficiency

Reduce your installation time and panel size by having all features you need built into your softstarter. Our softstarters are easy to install thanks to their compact design and many built-in features. The built-in bypass saves energy and space while reducing heat generation. A complete motor starting solution in one unit.

INCREASE APPLICATION PRODUCTIVITY



Increase
productivity

Reduce the number of stops in your production by allowing your softstarter to do more than just starting. Our softstarters reduce the mechanical stress on your motor application, which will increase your uptime. Torque control, pump cleaning, motor brake and many other features enable you to operate your process at its full potential.

FEATURES AND BENEFITS

01



Secure motor reliability

- **Increase your motors lifetime**
 - With ABB softstarters, starting currents are easily optimised to your load, application and motor size.
- **Protection from electrical stresses**
 - Over ten motor protection features are included to keep your motor safe from overloads and network irregularities.

Softstarter features	PSR	PSE	PSTX
Current limit	–	●	●
Current limit ramp and dual current limit	–	–	●
Electronic motor overload protection	–	●	●
Dual overload protection	–	–	●
Underload protection	–	●	●
Power factor underload protection	–	–	●
Locked rotor protection	–	●	●
Current/Voltage imbalance protection	–	–	●
Phase reversal protection	–	–	●
Customer defined protection	–	–	●
Motor heating	–	–	●
PTC/PT100 input for motor protection	–	–	●
Overvoltage/undervoltage protection	–	–	●
Earth-fault protection	–	–	●

● = standard, O = option, – = not available

02



Improve installation efficiency

- **Reduce your installation time and panel size**
 - ABB softstarters are easy to install thanks to their compact design and many built-in features.
- **Everything that you need built in**
 - Built-in bypass saves energy and space while reducing heat generation: a complete motor starting solution in one unit designed and verified by ABB.

Softstarter features	PSR	PSE	PSTX
Built-in bypass	●	●	●
Inside-delta connection possible	–	–	●
Graphical display and keypad	–	●	●
Detachable keypad	–	–	●
Motor runtime and start count	–	–	●
Programmable warning functions	–	–	●
Diagnostics	–	–	●
Overload time-to-trip	–	–	●
Overload time-to-cool	–	–	●
Analog output	–	●	●
Fieldbus communication	O	●	●
Event log	–	O	●
Multiple languages	–	–	17
Electricity metering	–	–	●

● = standard, O = option, – = not available

03



Increase application productivity

- **Reduce the number of production stops**
 - ABB softstarters reduce mechanical stress on your application which increases uptime.
- **Softstarters do more than just starting**
 - Torque control, pump cleaning, motor break and many more features enables you to use your process to its full potential.

Softstarter features	PSR	PSE	PSTX
Torque control	–	●	●
Torque limit	–	–	●
Coated PCBA	–	●	●
Limp mode	–	–	●
Jog with slow speed forward/ reverse	–	–	●
Dynamic brake	–	–	●
Stand still brake	–	–	●
Sequence start	–	–	●
Full voltage start	–	–	●
Kick start	–	●	●
Automatic pump cleaning	–	–	●

● = standard, O = option, – = not available

SOFTSTARTERS

Portfolio

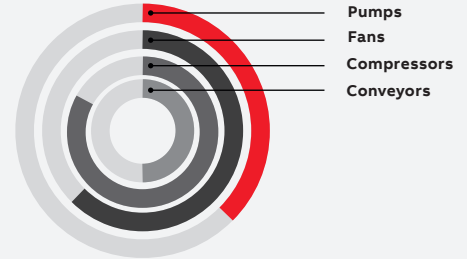


PSR - THE COMPACT RANGE

- **PSR** is our most compact softstarter with basic benefits and values. PSR can handle up to 100 starts per hour. Suitable for small motors.

- **Current:** 3 A... 105 A
- **Main voltage:** 208 V... 600 V

APPLICATION FEATURES

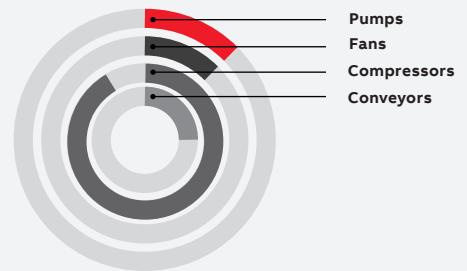


PSRC - FOR SCROLL COMPRESSOR

- **PSRC** is fast and easy to install with fixed settings. Designed for scroll compressors results in less stress on the compressor reducing the maintenance cost to a minimum.

- **Current:** 3 A... 105 A
- **Main voltage:** 208 V... 600 V

APPLICATION FEATURES

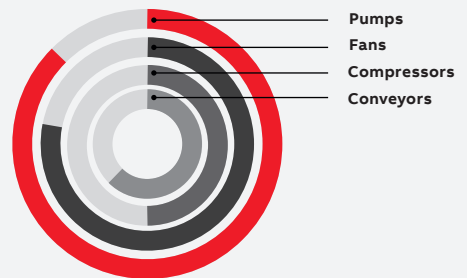


PSE - THE EFFICIENT RANGE

- The new generation **PSE** is a true general purpose softstarter. It's a perfect balance between high starting capacity and cost efficiency. Now featuring built-in fieldbus communication.

- **Current:** 18 A... 370 A
- **Main voltage:** 208 V... 600 V

APPLICATION FEATURES

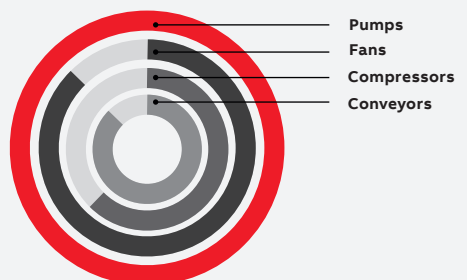


PSTX - THE ADVANCED RANGE

- **PSTX** is the most complete alternative for any motor starting application. Featuring built-in modbus and anybus modules that support all major communication protocols.

- **Current:** 30 A... 1250 A
- **Main voltage:** 208 V... 690 V

APPLICATION FEATURES



SELECTION PROCESS

ABB softstarters offering consists of four ranges, covering every need. The products help you secure motor reliability, improve installation efficiency and increase application productivity.



PRODUCT RANGE OVERVIEW

	PSR	PSRC	PSE	PSTX
Technology	Basic	Basic	General	Advanced
Motor size	Small – up to 105 A	Small – up to 105 A	Medium – up to 370 A	Large – up to 1250 A
Installation efficiency	Basic	Basic	Medium	High
Motor protection	–	–	Medium	High
Application	All	Scroll compressor	All	All
Application enhancement	Basic	Basic	Medium	High
Fieldbus Communication	Yes	Yes	Yes	Yes
Anybus Communication	–	–	–	Yes
Torque control	–	–	Yes	Yes
Heavy duty starts	–	–	Yes	Yes
Frame sizes	A, B, C, D	A, B, C, D	A, B, C	A, B, C, D, E, F

01

- **Determine softstarter series**
 - First, determine the softstarter series that fulfill the needs of the application and motor.
 - Use the guide on the left to explore the three series and the power range each one covers.

Altitude formula

De-rate for altitudes between 1000-4000 m or 3280-13123 ft with the following equations for all softstarters:

In meters: % of I_e = 100 – (x-1000)/150

In feet: % of FLA = 100 – (y-3280)/480

Where x/y is the actual altitude in m/ft

02

- **Match the softstarter size with the motor current**
 - When the softstarter series is selected, the correct size should now be determined. The selection of a softstarter is based on the current. Find the softstarter that corresponds to the motor current.

Temperature equations

PSTX and PSR In Celsius: 40...60 °C: Reduce I_e with 0.8%/°C

PSTX and PSR In Fahrenheit: 104...140 °F: Reduce FLA with 0.44%/°F

PSE In Celsius: 40...60 °C: Reduce I_e with 0.6%/°C

PSE In Fahrenheit: 104...140 °F: Reduce FLA with 0.33%/°F

03

- **Fine tune and select the correct size**

The last step is to fine tune the selection, and there are three different factors to consider:

 - Normal or a heavy load: If the load is characterised as a heavy load, select the next size softstarter in the series.
 - High ambient temperature
 - High altitude
 - Use the equations and the table on the right to find the correct de-rating equation.

Typical applications

Normal duty start	Heavy duty
Bow thrusters	Centrifugal fan
Centrifugal pump	Conveyor belt (long)
Compressors	Crusher
Conveyor belt (short)	Stirrer
Elevator	Sawmill

LIMIT SWITCHES

Trustworthy detection devices

Using limit switches is the easiest way to convert mechanical movements in to electrical signals. They combine different types of actuators, casings and contacts and are perfectly suited to a large variety of applications, whatever the environment.



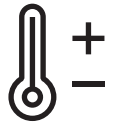
DETECTION FOR A WIDE VARIETY OF APPLICATIONS

Sustainability of detection for a wide variety of applications. Material handling equipment (cranes, ramps, elevators, etc.) / Escalators, parking barriers and automatic doors / Machine tools and manufacturing lines.



FEATURES AND BENEFITS

01



Reliable in extreme conditions:

- **Ready for anything**
 - Limit switches are designed to operate in the most difficult environments.
- **A high degree of protection**
 - Up to IP66 and the positive contact opening, guarantees reliable operation.

02



Continuous operation:

- **Keep your installation running 24 hours a day**
 - Limit switches secures your uptime.
- **High mechanical durability**
 - can handle up to 10 million operations with contacts that are mechanically linked to actuators.

03



Global availability:

- **Wherever you are**
 - Easy product selection from our core offering that covers most applications.
- **Global certification**
 - Our products can be used everywhere to ensure your peace of mind.

Find out more.



03



ELECTRONIC RELAYS AND CONTROLS

120–121	Time relays
122–123	Primary switch mode power supplies
124–125	Measuring and monitoring relays
126–127	Interface relays and optocouplers

Further product information



Marketing material

More brochures, catalogues and other tools about electronic relays and control products in rail applications, explosive atmospheres, as well as information about applications, safety products and motor protection and control products are available online.



new.abb.com/low-voltage/products/power-supplies
<https://new.abb.com/low-voltage/products/electronicrelays/electronic-timers>



Online data sheets

For detailed product information, use the order code to access the online datasheets as in the following example:



new.abb.com/products/1SVR750740R0120

TIME RELAYS

Have the perfect timing - everywhere

Available in three different ranges to cover every application, the CT range time relays are used to provide reliable timing functions worldwide. In both industrial and building applications, the time relays of the CT range have proven their excellent functionality in daily use under the toughest conditions.

Choose ABB as the partner for all your low voltage timing control needs to leverage our wide variety of product options. From economic to high-end solutions – the range offers maximum value. Time relays are found everywhere, for example in air conditioning systems, heaters and fans in industrial and in residential buildings. On-delay, off-delay and a range of other functions cover all requirements.



Find out more.



TIME RELAYS FOR INDUSTRIAL APPLICATIONS

TYPE SELECTION

		Multi-functional	Single-functional	Multi-functional	Single-functional
Timing function		CT-C		CT-S	
	ON-delay	CT-MFC, CT-MKC	CT-ERC	CT-MVS, CT-MFS, CT-MBS, CT-WBS	CT-ERS
	OFF-delay	CT-MFC, CT-MKC, CT-ARC	CT-AHC	CT-MVS, CT-MFS, CT-MBS	CT-APS, CT-AHS, CT-ARS
	ON- and OFF-delay			CT-MVS, CT-MXS, CT-MFS, CT-MBS	
	Impulse-ON	CT-MFC, CT-MKC	CT-VWC	CT-MVS, CT-MFS, CT-MBS, CT-WBS	
	Impulse-OFF	CT-MFC, CT-MKC, CT-ARC		CT-MVS, CT-MFS, CT-MBS	
	Impulse-ON and OFF			CT-MXS	
	Flasher starting with ON	CT-MFC, CT-MKC	CT-EBC	CT-MFS, CT-MBS, CT-WBS	
	Flasher starting with OFF	CT-MFC, CT-MKC	CT-EBC	CT-MFS, CT-MBS, CT-WBS	
	Flasher starting with ON or OFF			CT-MVS	
	Pulse generator starting with ON or OFF		CT-TGC	CT-MXS	
	Pulse former	CT-MFC, CT-MKC		CT-MVS, CT-MFS, CT-MBS	
	Star-delta change-over		CT-SDC, CT-SAC		CT-SDS
	Star-delta change-over with impulse			CT-MVS.2x, CT-MFS, CT-MBS	
	+ further functions (depending on device)			CT-MVS, CT-MXS, CT-MFS, CT-MBS, CT-WBS	
Alternating without time delay			CT-PAC		

CT-C RANGE

Compact range



Find out more.



The **CT-C range** combines lower cost with higher value and performance by offering essential functions in a space-saving 17.5 mm housing. The range offers a choice of 15 devices, including single and multifunctional types, with timing functions that range from 0.05 seconds to 100 hours. Equipped with a wide voltage range, the CT-C range is suitable for a huge variety of applications worldwide. Together with ABB's global support and sales network, using CT-S gives customers the confidence of worldwide sourcing – no matter where they build, install or operate their equipment.

CT-D RANGE

Distribution range



Find out more.



The **CT-D range** is ideal for building applications and installation panels, due to its compact modular housing. For maximum flexibility in operation, nine single-function as well as two multifunction devices with seven timing functions are available. The devices offer time ranges from 0.05 seconds up to 100 hours. Their wide supply voltage range allows their use in applications worldwide.

CT-S RANGE

High-performance range



Find out more.



The advanced **CT-S range** is ABB's universal range of electronic timers. It includes 22 single-function devices and 16 multifunction time relays, offering flexibility in operation with up to 13 functions. The devices feature time ranges adjustable from 0.05 seconds to 300 hours. Additionally, every device is available in two different connection technologies: familiar double-chamber cage connection terminals (screw terminals) and ABB's vibration-resistant Easy Connect technology (push-in terminals).

PRIMARY SWITCH MODE POWER SUPPLIES

Overview

Modern power supply units are a vital component in energy management and automation technology. As your global partner in these areas, ABB pays the utmost attention to the resulting requirements. Innovation is the key to ABB's power supply product program.



[Find out more.](#)

CP-E RANGE



CP-E RANGE: ECONOMY RANGE

This range offers versions with output voltages of 5 V, 12V, 24V and 48V DC at output currents of 0.625 A to 20 A. With their high thermal efficiency of up to 90%, these power supplies have very low power and heat dissipation and can be operated without forced cooling. They can be supplied within a wide range of AC or DC voltages. Adjustable output voltages. U/I characteristic output design. All power supply units can be operated at an ambient temperature of up to 70 degrees C.



[Find out more.](#)

CP-S.1 RANGE



CP-S.1 RANGE: HIGH EFFICIENCY AND RELIABILITY

High efficiency and reliability delivered in a compact footprint. Designed for a huge variety of applications, including machine building, Solar, Wind, Paper, Water and Marine segments, this advanced range boosts an integrated 150 % power reserve for five seconds and operates at an efficiency of up to 94 %. This range has coated PCBA as standard. With overheat protection, active power factor correction, a broad certified AC and DC input range and extensive worldwide approvals including marine, the all-new CP-S.1 power supplies are a preferred choice for multiple industrial applications.



[Find out more.](#)

CP-C.1 RANGE



CP-C.1 RANGE: HIGH-PERFORMANCE

ABB's high-performance and most advanced range. With excellent efficiency, high reliability and innovative functionality, it is ready to take on the most demanding of industrial applications. These power supplies have a 150 % integrated power reserve, operate at an efficiency of up to 94 % and are equipped with overheat protection and active power factor correction. Combined with a broad AC and DC input range and extensive worldwide approvals, including ATEX and IECEx approvals are available for the use in hazardous areas. CP-C.1 power supplies are the preferred choice for professional DC applications.

CP-D RANGE



CP-D RANGE: MDRC

CP-D range of modular power supply units in MDRC (modular DIN rail components) design is ideally suited for installation in distribution panels. This range offers devices with output voltages of 12 V DC and 24 V DC at output currents of 0.42 A to 4.2 A. Thanks to their high thermal efficiency, these power supplies have very low power and heat dissipation and can be operated without forced cooling. All power supply units in the CP-D range are approved according to all relevant international standards.



[Find out more.](#)

CP-S.3 THREE PHASE RANGE CP-S.DC INPUT



CP-S.3 RANGE: HIGH EFFICIENCY AND RELIABILITY

High efficiency and reliability delivered in a compact footprint. Designed for a huge variety of applications, including industrial automation, Solar, Wind, Paper, Water and Marine segments, this advanced range boosts an integrated 150 % power reserve for five seconds and operates at an efficiency of up to 94 %. With overheat protection, active power factor correction, a broad certified AC and DC input range and extensive worldwide approvals including marine, the all-new CP-S.3 power supplies are a preferred choice for multiple industrial applications. CP-S.DC DC-DC convertor rated input voltage of 420-870V DC with a 24VDC output.



[Find out more.](#)

CP-B BUFFER MODULES



CP-B BUFFER MODULES: UNINTERRUPTED POWER

CP-B buffer modules serve to ensure a short-term uninterrupted power supply system with a voltage of 24 V DC by buffering the load in case of power loss. The buffer modules feature a technology for storing energy: the use of ultra-capacitors obviates the need for maintenance and exempts deep discharge in comparison to batteries. Buffering 24 V DC supply of up to 572 s. Maintenance-free, ultra-capacitor technology. Temperature resistant, no discharge and small footprint.



[Find out more.](#)

REDUNDANCY UNITS



REDUNDANCY UNITS: AVAILABILITY AND RELIABILITY

Whenever the highest availability and reliability are key requirements, a true redundancy setup with two power supplies connected to a redundancy unit is the best solution. In case one power supply fails, the other one keeps supplying the load. Furthermore, even a short circuit in one power supply will not affect the other one, which keeps supplying the load. The CP-C.1-A-RU is also available with coated PCBA (CP-C.1-A-RU-C) for harsh environments.



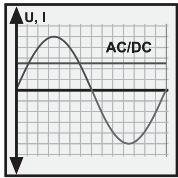
[Find out more.](#)

MEASURING AND MONITORING RELAYS

Overview

Measuring and monitoring relays monitor and detect operating conditions with regard to phase, current, voltage, frequency, temperature, liquid level or insulation faults. The relays inform users about abnormal conditions and allow them to take necessary corrective actions before severe and costly failures can occur.

Depending on the product model, measuring and monitoring relays are categorised into seven product families:



SINGLE-PHASE CURRENT MONITORING RELAYS



Find out more.

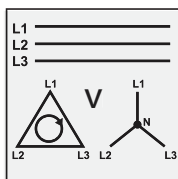
- Monitoring of motor current consumption
- Monitoring of lighting installations and heating circuits
- Monitoring of transportation equipment overload
- Monitoring of locking devices, electromechanical brake gear and locked rotors

Single-phase voltage monitoring relays

- Speed monitoring of DC motors
- Monitoring of battery voltages and other supply networks

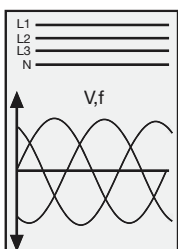


Find out more.



THREE-PHASE MONITORING RELAYS

- Voltage monitoring of mobile three-phase equipment
- Protection of personnel and installations against phase reversal
- Monitoring of the supply voltage of machines and installations
- Protection of equipment against damage caused by unstable supply voltage
- Protection of motors against damage caused by unbalanced phase voltages and phase loss

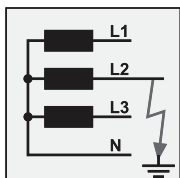


GRID FEEDING MONITORING RELAYS



Find out more.

- The CM-UFD.M* range monitors all voltage and frequency parameters in a grid and ensures the safe feeding of de-centrally produced electrical energy into the grid.
- In compliance with several local standards. (G99 for the UK Market.)



INSULATION MONITORING RELAYS

The insulation monitoring relays of the CM-IWx range guarantee a continuous insulation monitoring of an IT system (a system with no earth).

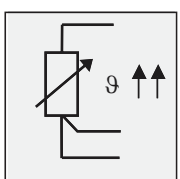


Find out more.

The devices recognise insulation faults as they develop and warn immediately if the value has fallen below the minimum set threshold. This ensures a reliable operation of the system and prevents operational interruption caused by a second, more severe, insulation fault which may lead to a short circuit tripping the main circuit breaker.



Find out more.

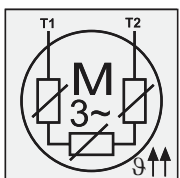


TEMPERATURE MONITORING RELAYS

The temperature monitoring relays of the CM-TCS range are able to measure temperatures of solids, liquids and gaseous media using PT100, PT1000, MTC and PTC sensors.

Typical applications include transformer windings, motor bearing monitoring and busbar temperature monitoring. Over temperature and under temperature monitoring, as well as open- or closed- circuit principle is configurable for all devices. As soon as the temperature falls below or exceeds the set threshold value, the output relays change their positions and the front-face LED's display the current status.

Set up for the smart versions can be done either via a back-lit LCD or smartphone app. Parametrization and configuration are just one touch away with the ABB EPiC app – even in a non-powered state via NFC technology. This reduces setup and installation time by 80%. And with just one relay covering a wide range of application, stocks can be reduced significantly, making ABB's Smart monitoring relays a true game changer.

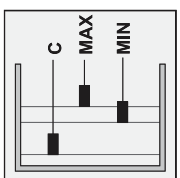


THERMISTOR MOTOR PROTECTION

- CM-MSE and CM-MSS provide full protection of motors with integrated PTC resistor sensors
- Protection of motors against thermal overload, e.g. caused by insufficient cooling, heavy load starting conditions, undersized motors, etc.



Find out more.



LIQUID LEVEL MONITORING RELAYS

- Protection of pumps against dry running
- Protection against container overflow
- Control of liquid levels
- Detection of leaks



Find out more.

INTERFACE RELAYS AND OPTOCOUPLERS

Proven technology used worldwide

A proven technology used worldwide. Relays are universally applicable and are utilised in a diverse array of applications. They are a significant element in contemporary industrial processes and are used in applications where galvanic isolation, signal separation, voltage coupling and signal amplification are required.

CR-S RANGE



Find out more.



THE SLIM LINE OF INTERFACE RELAYS AND OPTOCOUPLERS

The pluggable interface relays and optocouplers of the CR-S range are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC, iPC or field bus systems and the sensor / actuator level. The CR-S range combines the flexibility of a modular system and the ability of switching high currents on a small footprint thus can be used in applications where space saving is essential. The CR-S range also includes complete versions consisting of a relay, socket and marker.

R600 RANGE



Find out more.



BOXED INTERFACE RELAYS AND OPTOCOUPLERS

Boxed interface relays of the R600 range are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC, iPC or field bus systems and the sensor / actuator level. The relay itself is built in thus the perfect solution because this design fulfills highest vibration requirements. The compact design and different connection terminal possibilities further optimise your panel installation.



Find out more.

CR-P RANGE



THE PLUGGABLE PCB INTERFACE RELAYS AND OPTOCOUPLERS

The pluggable interface relays of the CR-P range are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC, iPC or field bus systems and the sensor / actuator level. The CR-P range offers highest current switching in an IP67 rated relay housing. Furthermore, nine different coil voltages are available to suit world wide applications and even gold contact versions are available which is essential when it comes to switch sensitive signals. The CR-P range also includes complete versions consisting of a relay, socket, holder, marker and function module.



Find out more.

CR-M RANGE



THE PLUGGABLE MINIATURE INTERFACE RELAYS

The pluggable interface relays of the CR-M range are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC, iPC or field bus systems and the sensor / actuator level. The CR-M range offers up to 4 contacts in one relay and a built in test button which makes a circuit check fast and easy. 12 different coil voltages are available to suit world wide applications and even gold contact versions are available which is essential when it comes to switch sensitive signals. The CR-M range also includes complete versions consisting of a relay, socket, holder, marker and where applicable a function module.



Find out more.

CR-U RANGE



THE PLUGGABLE UNIVERSAL INTERFACE RELAYS

The pluggable interface relays of the CR-U range are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC, iPC or field bus systems and the sensor / actuator level. The CR-U range offers up to 3 contacts in one relay and a built in test button which makes a circuit check fast and easy. 12 different coil voltages are available to suit world wide applications.

04



SAFETY PRODUCTS

130–131 **Safety products**

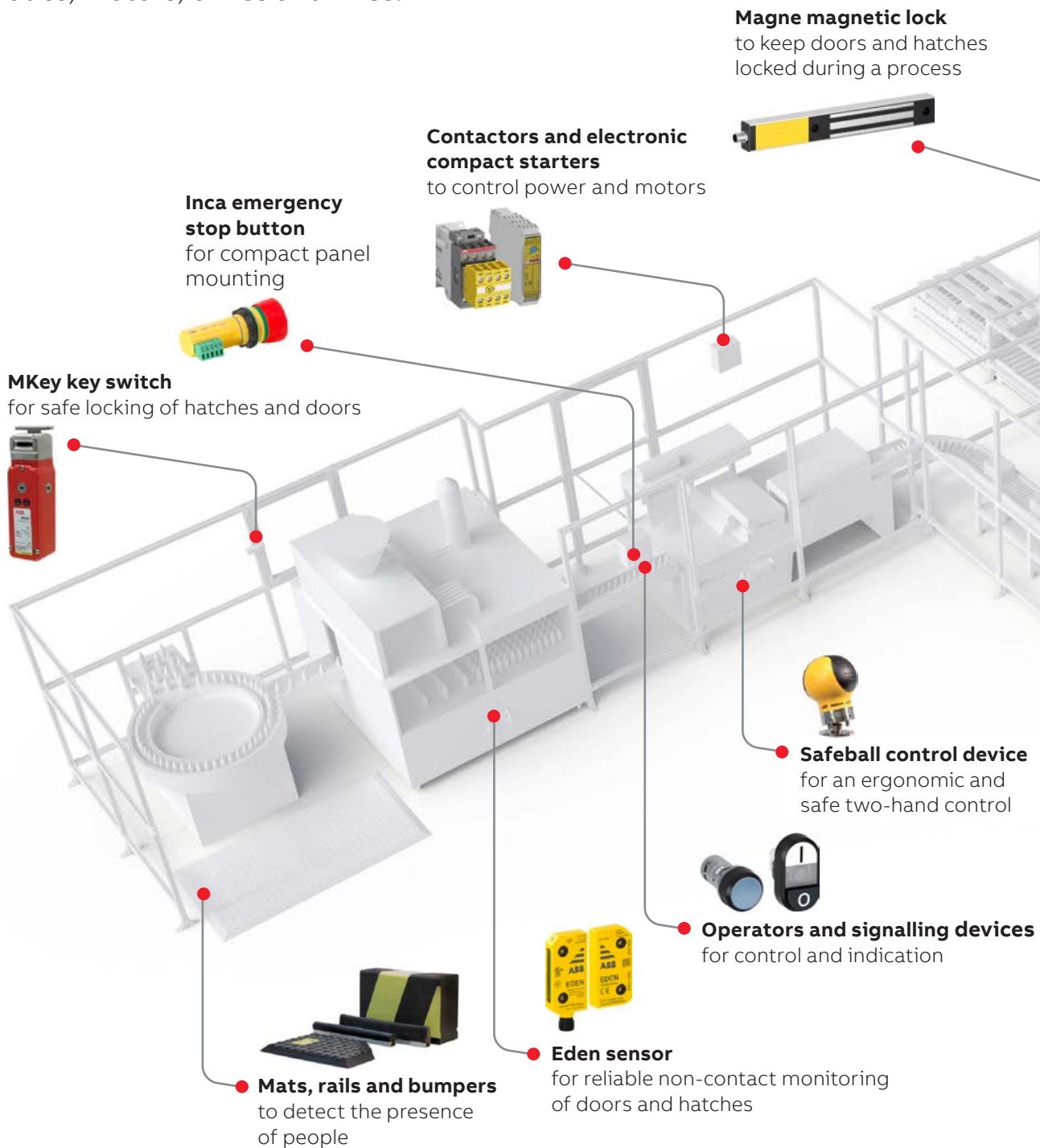
132–139 **Machine safety**

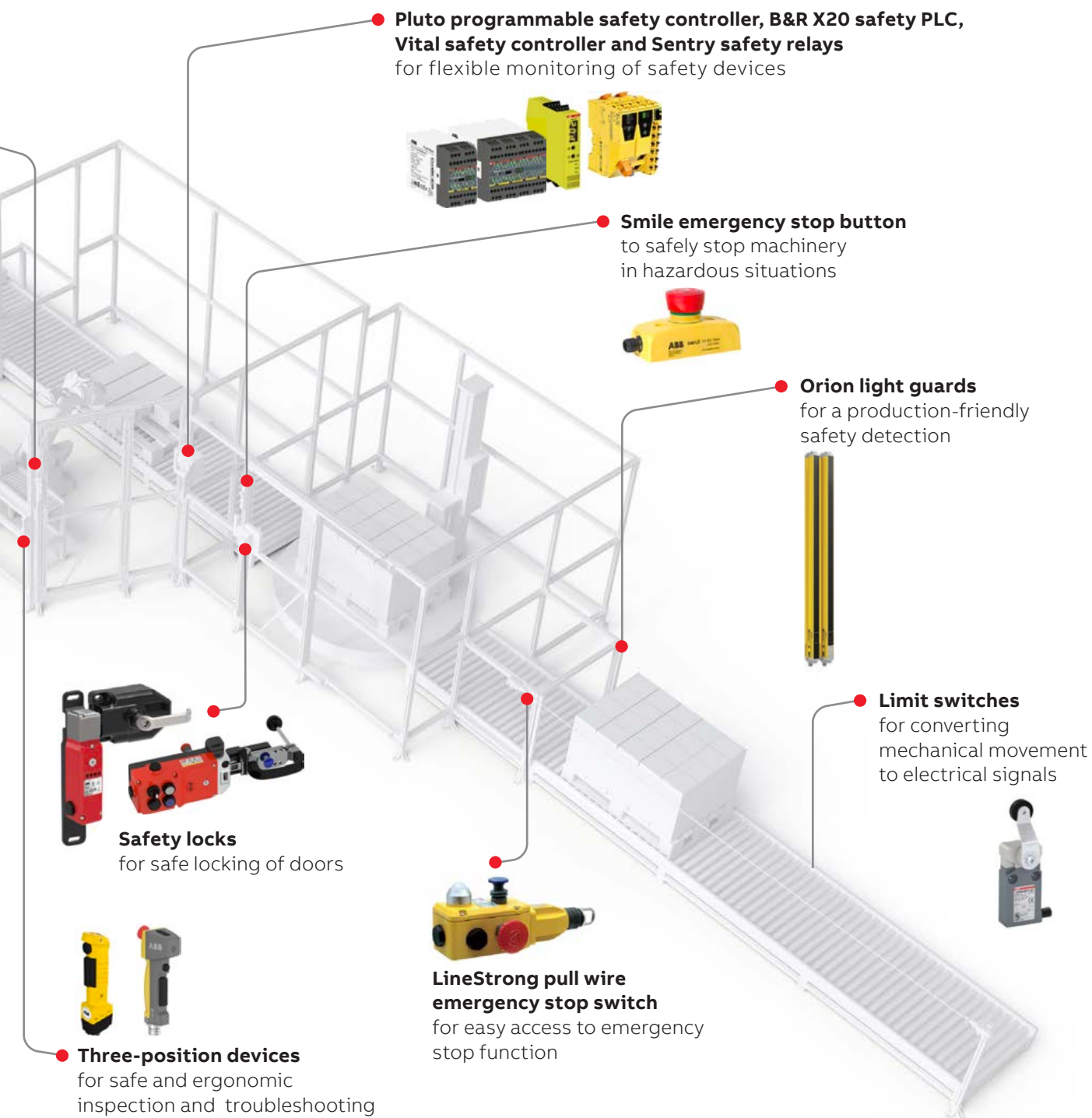
SAFETY PRODUCTS

ABB is the only supplier that can deliver complete safety solutions (including output devices such as contactors and frequency converters) together with automation solutions such as robotics, motors, drives and PLCs.



Find out more.





MACHINE SAFETY

Overview



Find out more.

PLUTO SAFETY PLC: SAFETY CONTROLLER



Pluto Safety PLC is a cost effective, powerful and compact programmable safety controller used in a variety of applications: in large and small systems for process and functional safety. Pluto can control most types of safety devices on the market, as well as ABB DYNlink safety devices, analogue sensors, encoders, contactors, valves and many more. Programming is done easily in the complimentary software, Pluto Manager. The models with safety bus communication simplify the design of safety systems, thanks to our All-Master concept. A wide range of gateways allows communication with other networks and also remote monitoring of a Pluto system.

VITAL: SAFETY CONTROLLER



Find out more.

Vital configurable safety controller does not require programming. It uses the DYNlink system, which allows up to 30 safety devices to be connected in series to the same circuit, while achieving PL e. This enables a single Vital to supervise all safety functions on many machines that otherwise would have required a programmable safety controller or multiple safety relays. Vital is also commonly used to supervise all emergency stops for larger machine lines.

SENTRY: SAFETY RELAY



Find out more.

Sentry safety relays are powerful and easy to use safety relays, suitable for all common types of safety applications. The Sentry series contains basic models for simple applications and easy output expansion, as well as highly flexible models with extremely accurate timer functions. Sentry safety relays are used in both simple and more advanced safety solutions when safety devices need to be monitored according to the requirements of functional safety standards.

ORION: LIGHT CURTAINS



Find out more.



Orion Light Curtains are easy to use light curtain with compact dimensions and resolutions for detection of fingers, hands or body protection. Light curtains are usually used close to the hazardous zone when repeated access to the machine is necessary, for example manually serviced machines. Light curtains can also be used to limit work zones inside the hazardous area and be mounted horizontally for area protection. Orion is available in two versions, the Base version is purely ON-OFF, and the Extended version allows Muting, Blanking and Cascading.

EDEN: NON-CONTACT SAFETY SENSORS



Find out more.



Eden non-contact safety sensors are used as interlocking device for e.g. doors and safe position monitoring. Eden consists of two parts: Adam and Eva. Adam senses the presence of Eva without mechanical contact and therefore, without any wear. The compact size of Eden and its 360° mounting possibility make it easy to use in most applications. Different models of Eden are available for different types of control modules. All Eden models make it very easy to reach PL e, often using fewer components than other solutions. All Eden models have an IP67/IP69K sealing and Eden is available with coated electronics for increased protection.

SENSE7: CODED MAGNETIC NON-CONTACT SWITCH



Find out more.



Sense7 is a coded magnetic non-contact switch for interlocking gates and hatches. Sense7 has a stainless steel housing that is designed for harsh environments and extreme temperatures. Sense7 offers an interlocking function reaching up to PL e/SIL3 with low level coding.

MACHINE SAFETY

Overview



Find out more.

MAGNE: ELECTROMAGNETIC PROCESS LOCK



Magne is an electromagnetic process lock intended for locking doors and hatches. Magne is usually used to prevent unwanted process interruptions, e.g. during a welding operation. Magne models with integrated Adam safety sensor make it easy to achieve the highest safety level for the interlocking function.

MKey RFID: SAFETY LOCK



MKey RFID is a safety lock with dual interlocking function used to safely lock doors, gates and hatches. In addition to the standard mechanical key, there is also an integrated RFID sensor. This makes it easy to reach the highest safety level. The head of MKey RFID is always stainless-steel, but the body is available in plastic, die cast metal or stainless-steel to suit different demands.



Find out more.

MKEY: MECHANICAL SAFETY SWITCHES



Find out more.

MKey are mechanical safety switches used for monitoring doors and hatches. The switch is mounted on the frame and the actuator key on the moving part of the guard. All MKey models have a safe interlocking function. Some MKey models can be locked and depending on the locking signal they can be used either as process locks or safety locks (with a safe unlocking function). MKey switches are available in different material and sizes in order to meet the requirements of different applications.



Find out more.

GKEY: SAFETY LOCK



GKey is a robust safety lock with a die cast housing for hinged and sliding doors. GKey offers an interlocking function reaching PL e/SIL 3 with high level coding. Power is needed to unlock GKey which makes GKey a safety lock. GKey is fitted with a rear escape release button and manual unlocking (auxiliary release). GKey offers four positions for 22 mm pilot devices.

SAFEBALL™: ERGONOMIC CONTROL DEVICE



Find out more.



Safeball™ is an ergonomic control device used for safe start and stop of machine cycles. Usually two Safeball™ are used together to form a two-hand control. It consists of a spherical ball containing two embedded push button switches, one on each side of the ball. Both buttons must be pressed in order to start and operate the machine. The risk of unintentional activation is thereby minimised and the device is simple and ergonomic to use. When two Safeball™ are used in a two-hand device application, the operator must press all four push buttons simultaneously in order to operate the machine. If one or more of the buttons are released, a stop signal is given to the machine.

JSHD4: THREE-POSITION DEVICE



Find out more.



JSHD4 is a three-position device used to allow a limited movement of the machine when the operator is in the dangerous area, for example during troubleshooting, test running and programming. The operator pushes the larger black button to a middle position in order to allow a movement. In case of danger, the operator will either release the button or squeeze it to its bottom position and the machine will stop. JSHD4 is available with different types of connectors for an optimal adaptation to the application. Some models offer additional top and front button to control a non-safe signal, for e.g. move forward and/or backward.

MACHINE SAFETY

Overview



Find out more.

HD5: THREE-POSITION DEVICE



HD5 is a three-position device developed to meet most demands of the Food and Beverage industry. A three-position device is used to allow a limited movement of the machine when the operator is in the dangerous area, for example during troubleshooting, test running and programming. The operator pushes the larger black button to a middle position in order to allow a movement. In case of danger, the operator will either release the button or squeeze it to its bottom position and the machine will stop. The housing of the HD5 is made of PPh, that not only is approved for contact with foodstuff, but also resists the most commonly used chemicals during cleaning in the Food and Beverage industry. Without sharp edges, there are no places where dirt and bacteria can be accumulated. The construction of the HD5 prevents condensation inside the product when subject to temperature changes in a wet environment. The PPh used is fiberglass reinforced to prevent breakage and minimise risk of small broken bits falling in the foodstuff.

EMERGENCY STOP BUTTONS



Emergency stop buttons are used to safely stop dangerous machine functions. ABB offers a wide range of emergency stop buttons for external mounting or panel mounting, with plastic or metal housing and for different types of connections.



Find out more.

LINESTRONG: PULL WIRE EMERGENCY STOP SWITCH



Find out more.

LineStrong is a pull wire emergency stop switch, used for easy reach of the emergency stop function along machines and sections of conveyors. A pull wire emergency stop switch allows to initiate the emergency stop command from any point along the installed wire length by pulling the wire. It replaces a series of emergency stop buttons and is easier to install. LineStrong is also available in different models for different lengths of wires, with different housing material as well as an explosion proof version.



Find out more.

SAFETY STOP BUTTONS



Safety stop buttons are used to safely stop a certain part of a dangerous machine. ABB offers safety stop buttons to suit different needs of connection and communication. Models are available for e.g. external mounting or panel mounting, in compact size or robust design, adapted for the DYNlink solution or with 2 NC contacts.

SMILE: RESET BUTTONS



Smile reset buttons have compact housings with M12 connectors for easy connection. The reset button contains an integrated white LED, and all buttons are delivered with a kit of colored filters to snap on the top of the button. In this way the color of the button can be chosen after delivery and is also possible to be changed later. The different models also allow a choice of:

- Local reset connected directly to the sensor, or
- Global reset connected to the safety control module



Find out more.

AFS: 3-POLE SAFETY CONTACTORS



Find out more.

AFS 3-Pole Safety Contactors. Designed for machine safety applications, AFS contactors now complete ABB's safety component portfolio. With a range stretching from 9 A up to 750 A for motor starting applications and with a design complying with the latest safety standard, the AFS range of contactors is the given choice for any application that puts the user's safety first.

MACHINE SAFETY

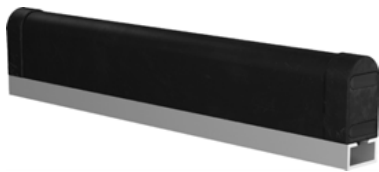
Overview



Find out more.

ABB has different types of pressure sensitive devices to cover the needs in various applications:

SAFETY EDGES



Safety edges are pressure sensitive devices that are used on leading edges of doors or moving machine parts to prevent crushing injuries. The contact edges from ABB are available in two sizes and custom lengths. They are supplied together with an aluminum profile for simple mounting.

ASB: SAFETY BUMPERS



Find out more.

Safety bumpers are pressure sensitive devices used to prevent crushing injuries. They are mounted on leading edges of large doors or moving machinery such as automated guided vehicles. The bumpers are available in four different sizes, and the internal foam construction allows for long deformation zones to provide optimum protection for individuals and material.

ASK-1T: SAFETY MATS



Find out more.

Safety mats are pressure sensitive devices placed on the floor to detect if someone is standing on them. They are mostly used inside hazard zones around, e.g. presses, robots and production lines to prevent the machine from running when someone is in the hazard zone.

O1 ABB Safety Products deliver machine safety solutions for single machines or entire production lines. Our long experience of helping customers making solutions for demanding environments has made us experts in combining production demands with safety demands for production-friendly solutions.







Additional information

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