

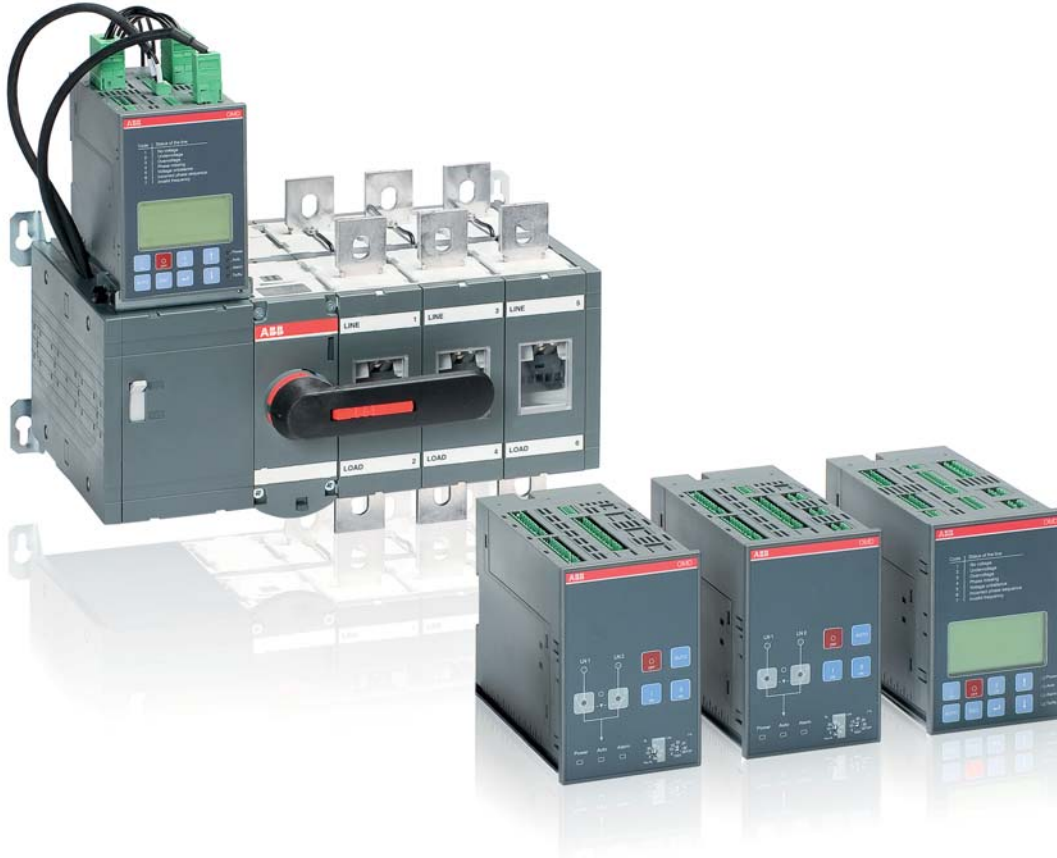
Breakers and Switches

Switches Automatic Transfer Switches

Power and productivity
for a better world™



Growing importance of a secure power supply



ABB's range of automatic transfer switches goes from 160 to 1600 Amperes. There are three types of ATSS with three different OMD control units: OMD200, OMD300 and OM800. ABB's ATSS have the features and functionality that makes them suitable for diverse applications: industrial plants, docks, airports and data centers.

Safe and reliable operation

The change-over mechanism has three stable positions, which ensure isolation of the two asynchronous power supplies.

- ▶ No risk of short circuit between the sources, even in the presence of transient voltages

The switch has a selector to choose between manual and automatic operation. Automatic operation is disabled by padlocking the latch or by fitting the handle. Both manual and automatic operation can be prevented by padlocking the handle in O position.

- ▶ Unwanted operation prevented

Manual operation is always possible in emergency situations, even without electricity.

- ▶ All-time safe and reliable operation

Easy installation

The design of ABB automatic transfer switch is advanced and compact. The OMD control unit can be adjusted according to the depth of the panel and the voltage sensing kit is installed at the factory.

- ▶ Reduce installation cost and time

The motor operator of the ATS is protected by a fuse. If the operation frequency is exceeded, the fuse protects the motor.

- ▶ No more expensive repair work

It is also possible to purchase the control units and motorized change-over switches as separate components, so the users can build the automatic transfer switch by themselves if desired.

User friendly interface

The panels of the OMD control units show the status of the system clearly: line status, switch position, alarms and operation mode (manual or automatic). The OMD can be configured in an easy way.

OMD800 shows the information on a LCD display, with menus available in eight languages.

- ▶ Simplicity of usage

Fully automatic solution. Our ATS range includes sophisticated features in extremely compact footprint area without neglecting features that makes assembly easy and safe, every time.



Technical data

Automatic transfer switches

OTM160...1600_C_D

Automatic transfer switches

Data according to IEC 60947-3		Switch size		OTM160_
Rated insulation voltage and rated operational voltage AC20		Pollution degree 2	V	415
Dielectric strength		50 Hz 1min.	kV	10
Rated impulse withstand voltage			kV	6
Rated thermal current and rated operational current AC20	/ ambient 40°C	In open air	A	160
..with minimum conductor cross section	/ ambient 40°C	In enclosure	A	160
Rated operational current, AC-21A		Cu	mm²	70
Rated operational current, AC-22A		up to 415 V	A	160
Rated operational current, AC-23A		up to 415 V	A	160
Rated operational power, AC-23A ¹⁾		up to 415 V	A	160
The kW-ratings are accurate for 3-phase 1500		230 V	kW	45
R.P.M. standard asynchronous motors		400 V	kW	90
Rated breaking capacity in category AC-23		415 V	kW	90
Rated conditional short-circuit current I_p (r.m.s.) and cut-off current \hat{I}_c (peak) value. The cut-off current \hat{I}_c refers to values listed by fuse manufacturers (single phase test acc. to IEC60269).	I_p (r.m.s.) 80 kA, 415 V Max. OFA_ fuse size	up to 415 V	A	1 280
Rated short-time withstand current		\hat{I}_c (peak)	kA	40.5
		gG/aM	A/A	355/315
	I_{cw} (r.m.s.)	415 V 0.15s	kA	15
		415 V 0.25s	kA	15
		415 V 1s	kA	8
Rated short-time making capacity ²⁾	I_{cm} (peak) ³⁾	415 V	kA	30
Power loss / pole	With rated current		W	2.4
Mechanical endurance	Number of oper. cycles ⁴⁾		Cycles	8 000
Mechanical endurance / switch	Number of operations		Oper.	16 000
Terminal bolt size	Metric thread diameter x length		mm	M8x25
Terminal tightening torque	Counter torque required		Nm	15-22
Operating torque	Typical for 3-pole switches		Nm	7
Weight without accessories		3-pole switch	kg	5.7
		4-pole switch	kg	6.4
Data according to IEC 60947-6-1				
Class of equipment				PC
Rated short-time withstand current	I_{RW} (r.m.s.)	415 V 0.1s	kA	15
Rated operational current, AC-31B		up to 415 V	A	160
Rated operational current, AC-33B		up to 415 V	A	160

¹⁾ These values are given for guidance and may vary acc. to the motor manufacturer

²⁾ Short circuit duration > 50 ms, without fuse protection

³⁾ Max. distance from switch frame to nearest busbar / cable support 150 mm

⁴⁾ Operating cycle: O - I - O - II - O

OTM200_	OTM250_	OTM315_	OTM400_	OTM630_	OTM800_	OTM1000_	OTM1250_	OTM1600_
415	415	415	415	415	415	415	415	415
10	10	10	10	10	10	10	10	10
6	6	6	6	6	6	6	6	6
200	250	315	400	630	800	1 000	1 250	1 600
200	250	315	400	630	800			
95	120	185	240	2x185	2x240	2x300	2x400	2x500
200	250	315	400	630	800	1 000	1 250	1 600
200	250	315	400	630	800	1 000	1 250	1 600
200	250	315	400	630	800	1 000	1 250	1 250
60	75	100	132	200	250	315	400	400
110	140	160	220	355	450	560	710	710
110	145	180	230	355	450	560	710	710
1 600	2 000	2 520	3 200	5 040	6 400	10 000	10 000	10 000
40.5	40.5	59	59	83.5	83.5	100	100	100
355/315	355/315	500/500	500/500	800/1 000	800/1 000	1 250/1 250	1 250/1 250	1 250/1 250
15	15	31	31	38	38	50	50	50
15	15	24	24	36	36	50	50	50
8	8	15	15	20	20	50	50	50
30	30	65	65	80	80	92	92	92
4	6.5	6.5	10	25	40	19	29	48
8 000	8 000	8 000	8 000	5 000	5 000	3 000	3 000	3 000
16 000	16 000	16 000	16 000	10 000	10 000	6 000	6 000	6 000
M8x25	M8x25	M10x30	M10x30	M12x40	M12x40	M12x60	M12x60	M12x60
15-22	15-22	30-44	30-44	50-75	50-75	50-75	50-75	50-75
7	7	16	16	27	27	78	78	78
5.7	5.7	10.2	10.2	17.5	17.5	42	42	44
6.4	6.4	11.4	11.4	20.4	20.4	50	50	52
PC	PC	PC	PC	PC	PC	PC	PC	PC
15	15	25	25	38	38	50	50	50
200	250	315	400	650	720	1 000	1 250	1 600
200	250	315	400	650	650	1 000	1 000	1 000

Technical data

Automatic transfer switches/power circuit and dual power source

Technical data for automatic transfer switches, power circuit

OTM_C2D_ (OMD200)	
Rated operational voltage U_e	208 - 415 V AC +/- 20 % + N
Phase - Neutral	120 - 240 V AC +/- 20 %
Rated frequency	50 / 60 Hz +/- 10 %
Rated impulse withstand voltage U_{imp}	6 kV
OTM_C3D_ (OMD300)	
Rated operational voltage U_e	208 - 415 V AC +/- 20 % + N
Phase - Neutral	120 - 240 V AC +/- 20 %
Rated frequency	50 / 60 Hz +/- 10 %
Rated impulse withstand voltage U_{imp}	6 kV
OTM_C8D_ (OMD800)	
Rated operational voltage U_e on 3 phase system	100 - 415 V AC +/- 20 %
Phase - Neutral	57,7 - 240 V AC +/- 20 %
Rated operational voltage U_e on 1 phase system ¹⁾	57,7 - 240 V AC +/- 20 %
Rated frequency	50 / 60 Hz +/- 10 %
Rated impulse withstand voltage U_{imp}	6 kV
AUX voltage ¹⁾	24 V DC - 110 V DC (-10 to 15 %)
Operating temperature	-5...+40°C
Transportation and storage temperature	-25...+70°C
Altitude	Max.2000m

¹⁾ If on 1 phase system the voltage level is between 57,7 – 109 V AC, AUX voltage supply must be used

Technical data for dual power source ODPSE230C

Dual power source ODPSE230C	
Rated operational voltage U [V]	220...240 V AC +/- 20%
Rated frequency	50 / 60 Hz +/- 10%
Short-circuit protection device	Max. MCB 4 A
Nominal output current I_n [A]	4 A
Startup time	Max. 1.0 s (with 230 V AC)
Operating transfer time LN1 - LN2 or LN2 - LN1	Max. 0.5 s (with 230 V AC)
Cable size	0,2...2,5 mm ²
Rated impulse withstand voltage, U_{imp}	4 kV
Overvoltage category	III
Pollution degree	3
Protection rating for the front panel	IP20
Operating temperature	- 25...+ 60 °C
Transportation and storage temperature	- 40...+ 70 °C
Altitude	Max. 2000m

Technical data, motor operator

Automatic transfer switches

Technical data for motor operator, control circuit

Motor operator, control circuit			OTM160...250	OTM315...400	OTM630...800	OTM1000...1600
Rated operational voltage U [V]	Pollution degree 3	50/60 Hz	220 - 240 V AC			
Operating voltage range			0,8...1,2 x U _n			
Operating times			See the table below			
Nominal current I _n ^{a)}		A	0.2	0.5	0.7	1.8
Current Inrush ^{a)}		A	1.3	2.1	2.8	7.7
Overload fuse	Type / In / Capacity	mA	T/315/H	T/500/H	T/1000/H	T/2000/H
	Size	mm	5x20	5x20	5x20	5x20
Operating rate	Cycle 0 - I - 0 - II - 0					
	Max. continuous	cycles / min	1	1	1	0.5
Max. short-time ≤ 10 cycles		cycles / min	10	10	10	5
Overvoltage category			III			
Rated impulse withstand voltage U _{imp}		kV	4			
Dielectric strength	50 Hz 1 min.	kV	1.5			
Terminals						
Voltage supply wiring for U			PE - N - L			
Cross section	solid/stranded	mm ²	1.5 - 2.5			
Short-circuit protection device	max. MCB	A	C16			
State information of locking (no SELV)						
Cross section	solid/stranded	mm ²	1.5 - 2.5			
Locking motor operator	23-24 (NO)		5A/250V/cosφ=1			
Short-circuit protection device	Max. MCB	A	C2			
Protection degree			IP20			
Operating temperature		°C	-25...+55			
Transportation and storage temperature		°C	-40...+70			
Max. altitude		m	2000			

Operating times

Type	Operating transfer time ^{a)}	OFF-time when operating ^{a)}
	I - II, II - I [s]	I - II, II - I [s]
OTM160...250_C2D_	2.0 - 4.0	0.4 - 1.0
OTM160...250_C3D_	2.0 - 4.0	0.4 - 1.0
OTM160...250_C8D_	1.5 - 3.0	0.4 - 1.0
OTM315...400_C2D_	2.0 - 5.0	0.4 - 1.0
OTM315...400_C3D_	2.0 - 5.0	0.4 - 1.0
OTM315...400_C8D_	1.5 - 3.0	0.4 - 1.0
OTM630...800_C2D_	2.0 - 5.0	0.4 - 1.0
OTM630...800_C3D_	2.0 - 5.0	0.4 - 1.0
OTM630...800_C8D_	1.5 - 3.0	0.4 - 1.0
OTM1000...1600_C2D_	3.0 - 6.0	0.6 - 1.5
OTM1000...1600_C3D_	3.0 - 6.0	0.6 - 1.5
OTM1000...1600_C8D_	2.5 - 4.0	0.6 - 1.5

^{a)} Under nominal conditions

Ordering information

Automatic transfer switches



Automatic transfer switches functionality

	OTM_C2D_	OTM_C3D_	OTM_C8D_
OTM_C_D products overview			
Includes automatic control unit	OMD200_	OMD300_	OMD800_
Manual operation with handle	x	x	x
Local operation with front panel keypad	x	x	x
Automatic transfer switching equipment (ATSE)	x	x	x
Dual power source for the motor operator ¹⁾	o	x	o
Measurements			
Three phase voltage measurement on LINE 1	x	x	x
Single phase voltage measurement on LINE 1	x	x	x
Three phase voltage measurement on LINE 2	x	x	x
Single phase voltage measurement on LINE 2	x	x	x
Frequency on LINE 1	x	x	x
Frequency on LINE 2	x	x	x
Possibility to check the measurements via LCD			x
Source failure detections			
No voltage	x	x	x
Undervoltage	x	x	x
Overvoltage	x	x	x
Phase missing	x	x	x
Voltage unbalance	x	x	x
Invalid frequency	x	x	x
Incorrect phase sequence			x
Configuration			
By DIP switches	x	x	
By rotary switches	x	x	
By keypad and LCD			x
Voltage threshold setting	x	x	x
Voltage hysteresis setting			x
Frequency threshold setting			x
Frequency hysteresis setting			x
Time delays			
Switching delay	x ²⁾	x ²⁾	x
Delay on transfer ³⁾			x
Dead band time I-II (stop switching to position O)			x
Back-switching delay	x ⁴⁾	x ⁴⁾	x
Dead band time II-I (stop switching to position O)			x
Generator stop delay	x ⁵⁾	x ⁵⁾	x
Status of time delays on the LCD			x

¹⁾ Dual power source allows the motor operator to be supplied by two separate voltage supplies.
This way the motor operator is always energized from the available line.

²⁾ Four options: 0, 5, 10 or 30 seconds

³⁾ Delaying the switching sequence before transferring to generator, guaranteeing that in cold locations the generator is properly warmed up

⁴⁾ Two options: the duration of back-switching delay is the same as Switching delay, i.e. the time delay is same for I - II and II - I, or the back-switching delay is fixed 5 min

⁵⁾ Two options: the duration of generator stop delay is the same as Switching delay or fixed 5 min

x = included as standard

o = as an accessory

Ordering information

Automatic transfer switches



Automatic transfer switches functionality

	OTM_C2D_	OTM_C3D_	OTM_C8D_
Features			
Generator start and stop	x	x	x
Off-load test sequence	x	x	x
On-load test sequence	x	x	x
Source status via front panel	x	x	x
Source status via digital outputs			x
Switch position via front panel	x	x	x
LCD ⁶⁾			x
Fieldbus interface ⁷⁾			x
Event/alarm log			x
Counter for number of operations			x
Auxiliary voltage supply ⁸⁾			x
Programmable digital inputs (eight) and digital outputs (six)			x
Secondary load control (load shedding)			x
Digital input - Allow transfer to secondary ⁹⁾			x
Digital input - Generator alarm ¹⁰⁾			x
Digital input - Remote control to positions I, O and II			x
Operating mode			
Line priority	x ¹¹⁾	x ¹¹⁾	x ¹²⁾
Manual back-switching ¹³⁾	x	x	x
Automatic operation to position O, in case of source failure ¹⁴⁾			x
Applications			
Transfer between two transformers	x	x	x
Transfer between a transformer and a generator	x	x	x

⁶⁾ Menus available in eight languages; English, French, German, Italian, Spanish, Russian, Chinese and Finnish

⁷⁾ Two-way communication, bus communication protocol is Modbus

⁸⁾ In case of source failure, the control unit can be supplied with an external auxiliary supply with 24...110 V DC

⁹⁾ Control unit requires an external signal before allowing the transfer to secondary

¹⁰⁾ Two options for the operating mode after receiving the alarm: control unit either works normally, or initiates generator stop with operation to position O

¹¹⁾ Two options: No line priority, or Source 1 is the priority source

¹²⁾ Three options: No line priority, Source 1 or Source 2 is the priority source

¹³⁾ Automatic back-switching to primary source is prevented

¹⁴⁾ Control unit and motor operator must be energized

x = included as standard

o = as an accessory

Ordering information

Automatic transfer switches, IEC-types

OTM160...250E4WC3D_



OTM630...800E4C2D_



OTM1000...1250E4C3D_



Automatic transfer switches, I-O-II operation, open transition

Including a handle for manual operation, PCB connectors, bolt kit with nuts and washers for all terminals. Types OTM160...1600_C_D_, including a voltage sensing kit on the top of the switch. Voltage sensing kit on the bottom on the switch, available on request, please add letter "B" to the type code. For example, OTM160E4C2D230C ▶ OTM160E4CB2D230C. Types OTM160...1600E_ include a storage clip for the handle and spare fuses. Types OTM160...250_WC_D_ are equipped with extended phase distance.

No. of poles	Rated current AC-21A, AC-22A ≤ 415V, I[A]	Rated power 400V S[kVA]	Rated current AC-31B/ AC-33B 415V, I[A]	Type	Order number	Units/ type [pcs]	Weight/ unit [kg]
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Automatic operation, OTM_C2D_ types, voltage sensing on the top

Motor operator voltage $U_m = 220...240 \text{ V AC}^{1)}$

4	160	110	160/160	OTM160E4C2D230C	1SCA106230R1001	1	11
4	160	110	160/160	OTM160E4WC2D230C	1SCA101033R1001	1	11
4	200	135	200/200	OTM200E4C2D230C	1SCA106671R1001	1	11
4	200	135	200/200	OTM200E4WC2D230C	1SCA101034R1001	1	11
4	250	170	250/250	OTM250E4C2D230C	1SCA101016R1001	1	11
4	250	170	250/250	OTM250E4WC2D230C	1SCA101035R1001	1	11
4	315	215	315/315	OTM315E4C2D230C	1SCA101059R1001	1	15
4	400	275	400/400	OTM400E4C2D230C	1SCA101060R1001	1	15
4	630	435	650/650	OTM630E4C2D230C	1SCA108434R1001	1	37
4	800	550	720/650	OTM800E4C2D230C	1SCA108439R1001	1	37
4	1000	680	1000/1000	OTM1000E4C2D230C	1SCA112858R1001	1	66
4	1250	850	1250/1000	OTM1250E4C2D230C	1SCA112857R1001	1	66
4	1600	1000	1600/1000	OTM1600E4C2D230C	1SCA112854R1001	1	70

Automatic operation, OTM_C3D_ types, voltage sensing on the top

Including in-built dual power source for the motor operator. Motor operator voltage $U_e = 220...240 \text{ V AC}^{1)}$

4	160	110	160/160	OTM160E4C3D230C	1SCA106305R1001	1	11
4	160	110	160/160	OTM160E4WC3D230C	1SCA106306R1001	1	11
4	200	135	200/200	OTM200E4C3D230C	1SCA106309R1001	1	11
4	200	135	200/200	OTM200E4WC3D230C	1SCA106310R1001	1	11
4	250	170	250/250	OTM250E4C3D230C	1SCA106313R1001	1	11
4	250	170	250/250	OTM250E4WC3D230C	1SCA106314R1001	1	11
4	315	215	315/315	OTM315E4C3D230C	1SCA106317R1001	1	15
4	400	275	400/400	OTM400E4C3D230C	1SCA106318R1001	1	15
4	630	435	650/650	OTM630E4C3D230C	1SCA108726R1001	1	37
4	800	550	720/650	OTM800E4C3D230C	1SCA108728R1001	1	37
4	1000	680	1000/1000	OTM1000E4C3D230C	1SCA112852R1001	1	66
4	1250	850	1250/1000	OTM1250E4C3D230C	1SCA112851R1001	1	66
4	1600	1000	1600/1000	OTM1600E4C3D230C	1SCA112848R1001	1	70

¹⁾ Under nominal conditions

Handles and bolt kits included as standard

Suitable for switches	Handle	Bolt kit
OTM160...250	OTV250ECMK	M8x25
OTM315...400	OTV400ECMK	M10x30
OTM630...800	OTV800ECMK	M12x40
OTM1000...1600	OTV1000ECMK	M12x60