







ROTARY SWITCH DISCONNECTORS

ROTARY SWITCH DISCONNECTORS - MSS

Technical data

TYPE		MSS 125			MSS 160	MSS 250	MSS 630		MSS 125 (Three-way switch)	MSS ATS 160
										
Reference Standard:		EN 60947-3								EN 60947-3 EN 60947-6-1
Rated current (In): (A)		63	100	125	160	250	400	630	125	160
No. poles:		3-4	3-4	3-4	3-4	3-4	3-4	3-4	4	4
Rated operational voltage (Ue): AC (V)		400	400	400	400	400	400	400	400	400
		DC (V)	220	220	220	220	220	220	-	230
Maximum operating voltage (max Ue): AC (V)		690	690	690	690	690	690	690	690	690
		DC (V)	440	440	440	440	500	500	220	-
Rated insulation voltage (Ui): AC (V)		800	800	800	800	800	1000	1000	800	800
Rated impulse withstand voltage (Uimp): (kV)		8	8	8	8	8	12	12	8	6
Voltage	Category of use ⁽¹⁾	Operating currents Ie (A)								
400V AC	AC-21 A / AC-21 B	63 / 63	100 / 100	125 / 125	160 / 160	250 / 250	400 / 400	630 / 630	125 / 125	160 / 160
	AC-22 A / AC-22 B	63 / 63	100 / 100	125 / 125	160 / 160	250 / 250	400 / 400	630 / 630	125 / 125	160 / 160
	AC-23 A / AC-23 B	63 / 63	63 / 63	63 / 63	160 / 160	250 / 250	400 / 400	500 / 500	63 / 63	125 / 160
415V AC	AC-31 A / AC-31 B	-	-	-	-	-	-	-	-	100 / 160
	AC-32 A / AC-32 B	-	-	-	-	-	-	-	-	100 / 160
	AC-33 A / AC-33 B	-	-	-	-	-	-	-	-	- / 80
500V AC	AC-21 A / AC-21 B	63 / 63	100 / 100	125 / 125	160 / 160	250 / 250	400 / 400	630 / 630	-	-
	AC-22 A / AC-22 B	63 / 63	100 / 100	100 / 100	160 / 160	250 / 250	400 / 400	500 / 500	-	-
	AC-23 A / AC-23 B	50 / 50	50 / 50	50 / 50	160 / 160	250 / 250	315 / 315	315 / 315	-	-
690V AC ⁽²⁾	AC-20 A / AC-20 B	63 / 63	100 / 100	125 / 125	160 / 160	250 / 250	400 / 400	630 / 630	125 / 125	-
	AC-21 A / AC-21 B	63 / 63	80 / 80	80 / 80	160 / 160	250 / 250	400 / 400	500 / 500	80 / 80	160 / 160
	AC-22 A / AC-22 B	40 / 40	40 / 40	40 / 40	160 / 160	125 / 160	250 / 315	315 / 315	40 / 40	100 / 125
	AC-23 A / AC-23 B	25 / 25	25 / 25	25 / 25	63 / 80	100 / 125	160 / 200	160 / 200	25 / 25	80 / 80
220V DC	DC-20 A / DC-20 B	63 / 63	100 / 100	125 / 125	160 / 160	250 / 250	400 / 400	630 / 630	125 ⁽³⁾ / 125 ⁽³⁾	-
	DC-21 A / DC-21 B	63 ⁽³⁾ / 63 ⁽³⁾	100 ⁽³⁾ / 100 ⁽³⁾	125 ⁽³⁾ / 125 ⁽³⁾	160 ⁽³⁾ / 160 ⁽³⁾	250 / 250	400 / 400	630 / 630	125 ⁽³⁾ / 125 ⁽³⁾	-
	DC-22 A / DC-22 B	63 ⁽³⁾ / 63 ⁽³⁾	100 ⁽³⁾ / 100 ⁽³⁾	100 ⁽³⁾ / 100 ⁽³⁾	160 ⁽³⁾ / 160 ⁽³⁾	250 / 250	400 / 400	500 / 500	100 ⁽³⁾ / 100 ⁽³⁾	-
	DC-23 A / DC-23 B	63 ⁽³⁾ / 63 ⁽³⁾	63 ⁽³⁾ / 63 ⁽³⁾	63 ⁽³⁾ / 63 ⁽³⁾	160 ⁽³⁾ / 160 ⁽³⁾	200 / 200	400 / 400	500 / 500	63 ⁽³⁾ / 63 ⁽³⁾	-
400V DC	DC-20 A / DC-20 B	-	-	-	-	250 / 250	400 / 400	630 / 630	-	-
	DC-21 A / DC-21 B	-	-	-	-	200 ⁽⁴⁾ / 200 ⁽⁴⁾	400 ⁽⁴⁾ / 400 ⁽⁴⁾	500 ⁽⁴⁾ / 500 ⁽⁴⁾	-	-
	DC-22 A / DC-22 B	-	-	-	-	200 ⁽⁴⁾ / 200 ⁽⁴⁾	400 ⁽⁴⁾ / 400 ⁽⁴⁾	500 ⁽⁴⁾ / 500 ⁽⁴⁾	-	-
	DC-23 A / DC-23 B	-	-	-	-	200 ⁽³⁾ / 200 ⁽³⁾	400 ⁽³⁾ / 400 ⁽³⁾	500 ⁽³⁾ / 500 ⁽³⁾	-	-
440V DC	DC-20 A / DC-20 B	63 ⁽³⁾ / 63 ⁽³⁾	100 ⁽³⁾ / 100 ⁽³⁾	125 ⁽³⁾ / 125 ⁽³⁾	160 ⁽³⁾ / 160 ⁽³⁾	-	-	-	-	-
	DC-21 A / DC-21 B	40 ⁽³⁾ / 40 ⁽³⁾	40 ⁽³⁾ / 40 ⁽³⁾	40 ⁽³⁾ / 40 ⁽³⁾	160 ⁽³⁾ / 160 ⁽³⁾	-	-	-	-	-
	DC-22 A / DC-22 B	32 ⁽³⁾ / 32 ⁽³⁾	32 ⁽³⁾ / 32 ⁽³⁾	32 ⁽³⁾ / 32 ⁽³⁾	100 ⁽³⁾ / 100 ⁽³⁾	-	-	-	-	-
	DC-23 A / DC-23 B	32 ⁽³⁾ / 32 ⁽³⁾	32 ⁽³⁾ / 32 ⁽³⁾	32 ⁽³⁾ / 32 ⁽³⁾	63 ⁽³⁾ / 63 ⁽³⁾	-	-	-	-	-
500V DC	DC-20 A / DC-20 B	-	-	-	-	250 / 250	400 / 400	630 / 630	-	-
	DC-21 A / DC-21 B	-	-	-	-	200 ⁽⁴⁾ / 200 ⁽⁴⁾	400 ⁽⁴⁾ / 400 ⁽⁴⁾	500 ⁽⁴⁾ / 500 ⁽⁴⁾	-	-
	DC-22 A / DC-22 B	-	-	-	-	200 ⁽³⁾ / 200 ⁽³⁾	315 ⁽³⁾ / 400 ⁽³⁾	500 ⁽³⁾ / 500 ⁽³⁾	-	-
	DC-23 A / DC-23 B	-	-	-	-	200 ⁽³⁾ / 200 ⁽³⁾	315 ⁽³⁾ / 400 ⁽³⁾	500 ⁽³⁾ / 500 ⁽³⁾	-	-
Rated short-time withstand current (Icw): (kA)		2.5	2.5	2.5	4	9	13	13	2.5	4
Rated short-circuit making capacity (Icm) ⁽⁵⁾ : (kA)		12	12	12	16	30	45	45	12	17
Conditional short-circuit current with fuse (Icc) ⁽⁶⁾ : (kA)		100 (gG 63)	100 (gG 100)	50 (gG 125)	50 (gG 160)	50 (gG 250)	100 (gG 400)	70 (gG 630)	50 (gG 125)	50 (gG 160)
Conditional short-circuit current with miniature circuit breakers (Icc) ⁽⁶⁾ : (kA)										
MT 60		6	6	6	-	-	-	-	6	-
MT 100		10	10	10	-	-	-	-	10	-
MTHP 160		16	16	16	16	-	-	-	16	16
MTHP 250		25	25	25	-	-	-	-	25	-
MTX 160c B / C		12	11	11	16	16	-	-	11	16
N		12	11	11	20	36	-	-	11	20
MTX/E 160 N / S / H		10	10	10	16	36	-	-	10	16
MTX 250 / MTX/E 320 N / S / H / L		8	8	8	10	28	-	-	8	10
N		-	-	-	-	22	36	36	-	-
S / H / L		-	-	-	-	22	55	55	-	-
N		-	-	-	-	-	36	36	-	-
S / H / L		-	-	-	-	-	40	40	-	-
Pre-arrangement for lock in OFF position:		yes (ø 6mm max)	yes (ø 6mm max)	yes (ø 6mm max)	yes (ø 6mm max)	yes (ø 8mm max)	yes (ø 8mm max)	yes (ø 8mm max)	yes (ø 6mm max)	yes (ø 8mm max)*
Mechanical endurance: (n. of manoeuvre cycles)		20,000	20,000	20,000	10,000	10,000	5,000	5,000	10,000	10,000
Maximum no. of auxiliary contacts that can be installed:		2	2	2	2	1	1	1	1	2
Power loss at In: (W/pole)		1,2	3,1	5,7	3,3	5,8	10,8	30,9	5,7	7,5
Minimum cable section: (mm²)		4	4	4	10	95	185	2 x 150	4	6
Maximum cable section: rigid / flexible (mm²)		50 / 35 ⁽⁷⁾	50 / 35 ⁽⁷⁾	50 / 35 ⁽⁷⁾	95 / 70 ⁽⁸⁾	150 / 70 ⁽⁸⁾	240	2x300	50 / 35 ⁽⁷⁾	70
Maximum busbar width: (mm)		-	-	-	20	32	40	50	-	-
Rated tightening torque: (Nm)		6	6	6	9	20	20	20	6	5

⁽¹⁾ category with index A = frequent manoeuvres/category with index B = non-frequent manoeuvres; ⁽²⁾ with terminal covers or pole separation shield; ⁽³⁾ 4-pole device with 2 poles in series for each polarity; ⁽⁴⁾ 3-pole device with 2 poles in series for "+" and 1 pole for "-"; ⁽⁵⁾ indicates the peak current value for an operating voltage Ue = 400V AC; ⁽⁶⁾ for an operating voltage Ue = 400V AC; ⁽⁷⁾ connected directly on the frame; ⁽⁸⁾ also with terminals.

*In the case of special needs the locking function can be set also in position I or II.

For technical information contact the Technical Assistance Service or visit gewiss.com

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MSS ATS - AUTOMATIC TRANSFER SWITCH

TECHNICAL DATA		
Thermal current I _{th} at 40°C	(A)	160
Insulating voltage (U _i) - Power circuit	(V)	800
Shock withstand voltage (U _{imp}) - Power circuit	(kV)	6
Insulating voltage (U _i) - Command circuit	(V)	300
Shock withstand voltage (U _{imp}) - Command circuit	(kV)	4
Operational currents (I _e) (A) according to IEC 60947-3		
Voltage	Utilisation category ⁽¹⁾	
415V AC	AC-21A / AC-21B	160 / 160
415V AC	AC-22A / AC-22B	160 / 160
415V AC	AC-23A / AC-23B	125 / 160
690V AC	AC-21A / AC-21B	160 / 160
690V AC	AC-22A / AC-22B	100 / 125
690V AC	AC-23A / AC-23B	80 / 80
Operational currents (I _e) (A) according to IEC 60947-6-1		
Voltage	Utilisation category	
415V AC	AC-31A / AC-31B	100 / 160
415V AC	AC-32A / AC-32B	100 / 160
415V AC	AC-33A / AC-33B	- / 80
Rated short-time withstand current 1s (I _{cs})	(real kA)	4
Dynamic seal in short-circuit ⁽²⁾	(peak kA)	17
Presumed short-circuit current ⁽²⁾	(real kA)	50
Associated fuse gauge ⁽²⁾	(A)	160
Connection		
Min/MAX cable section	(mm ²)	6 / 70
Min/MAX tightening torque	(Nm)	4 / 6
Switching duration		
I - 0 or II - 0 ⁽³⁾	(ms)	50
I - II or II - I ⁽³⁾	(ms)	180
Blackout I - II (minimum time)	(ms)	90
MAX number of switching operations in 1 minute		12
Power supply		
230V AC min / MAX	(V)	176 / 288
Electric command consumption during switching		
MAX consumption at 230V AC	(A)	30
Rated power	(VA)	6
Mechanical characteristics		
Duration (number of operation cycles)		10'000
Weight	(kg)	3.5

⁽¹⁾ A = frequent operations / B = infrequent operations; ⁽²⁾ For an operating voltage = 400V AC; ⁽³⁾ Total time from position I to II



ROTARY SWITCH DISCONNECTORS

Description

This device ensures the automatic switching (while live) of two low voltage networks (network-emergency power unit or network-network).

Its extremely compact size means it can be installed even in 46QP range boards and CVX630K / CVX630M structures, by assembling on a standard DIN rail (EN50022).

The simple product set-up, various operating logics (with excludable automatic return to a priority line) and self-powering system (taking L-N directly from the priority line) make this a highly practical, competitive product.



Product set-up

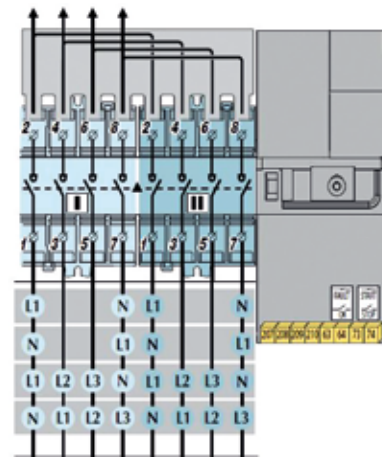
Wiring the two input lines

The wiring must be carried out in compliance with the instruction leaflet. In the case of network-emergency power unit switching, the priority line (I) must be wired on the left.

The neutral wire can be connected to either the right or left terminal, but not the central terminals.

The sequence of the 3 phases + neutral in the terminals must be respected for both lines.

The switching automatism and the electronic part take their power supply directly from terminals L1-N / N-L1 / N-L3 (depending on the wiring).



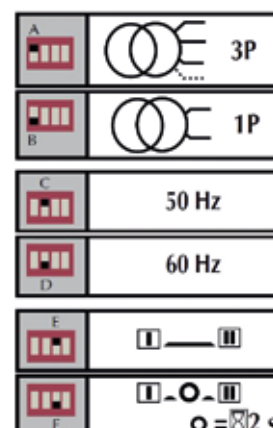
Preliminary operations

Operation 1

Open the cover. The automatic transfer switch will transfer from Manual mode to Programming mode.

Operation 2

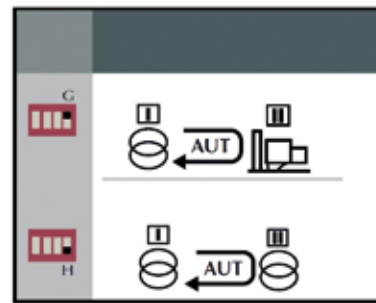
- Set the first switch on A if you want to obtain switching between two three-phase lines, or on B if the lines are single-phase.
- Set the second switch on C if the frequency is 50Hz, or on D if it is 60Hz.
- The third switch sets direct switching I - II (position E) or with a 2s stop in the central position I - 0 - II (position F) - (used when you want to be sure there is no residual voltage on the lines).



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Operation 3

Use the fourth switch to select the switching mode: G for network-emergency power unit , H for network-network.



Programming thresholds and times



Trimmer key

- **Un** Rated voltage setting (there are 2 scales: PN for single-phase and PP for three-phase)
- **ΔU / ΔF** Setting of the percentage tolerance value for voltage and frequency fluctuations on the priority line. The setting of this trimmer identifies a range (for example $\pm 10\%$) that the Voltage and Frequency parameters must remain in. If one of the two parameters on the priority line emerges from this range, the device switches to line II.
- **MFT** (Main Failure Time) Regulates the time between priority line blackout (or the emergence of the Voltage and Frequency parameters from the set thresholds) and generator start-up.
- **MRT** (Main Return Time) Regulates the delay time before the switching from line II to line I.

Note: by regulating these trimmers, you can obtain a control plan based on the line characteristics.

If the main line is very stable or the connected loads are sensitive to Voltage or Frequency variations, the $\Delta U / \Delta F$ sensitivity must be set at low values. Otherwise, it is a good idea to set a high value because untimely switching operations may result from the scanty line stability.















In the same way, you must evaluate the need for quick switching operations, or envisage a switching delay, depending on the need for continuity on the priority line.

LED signal table

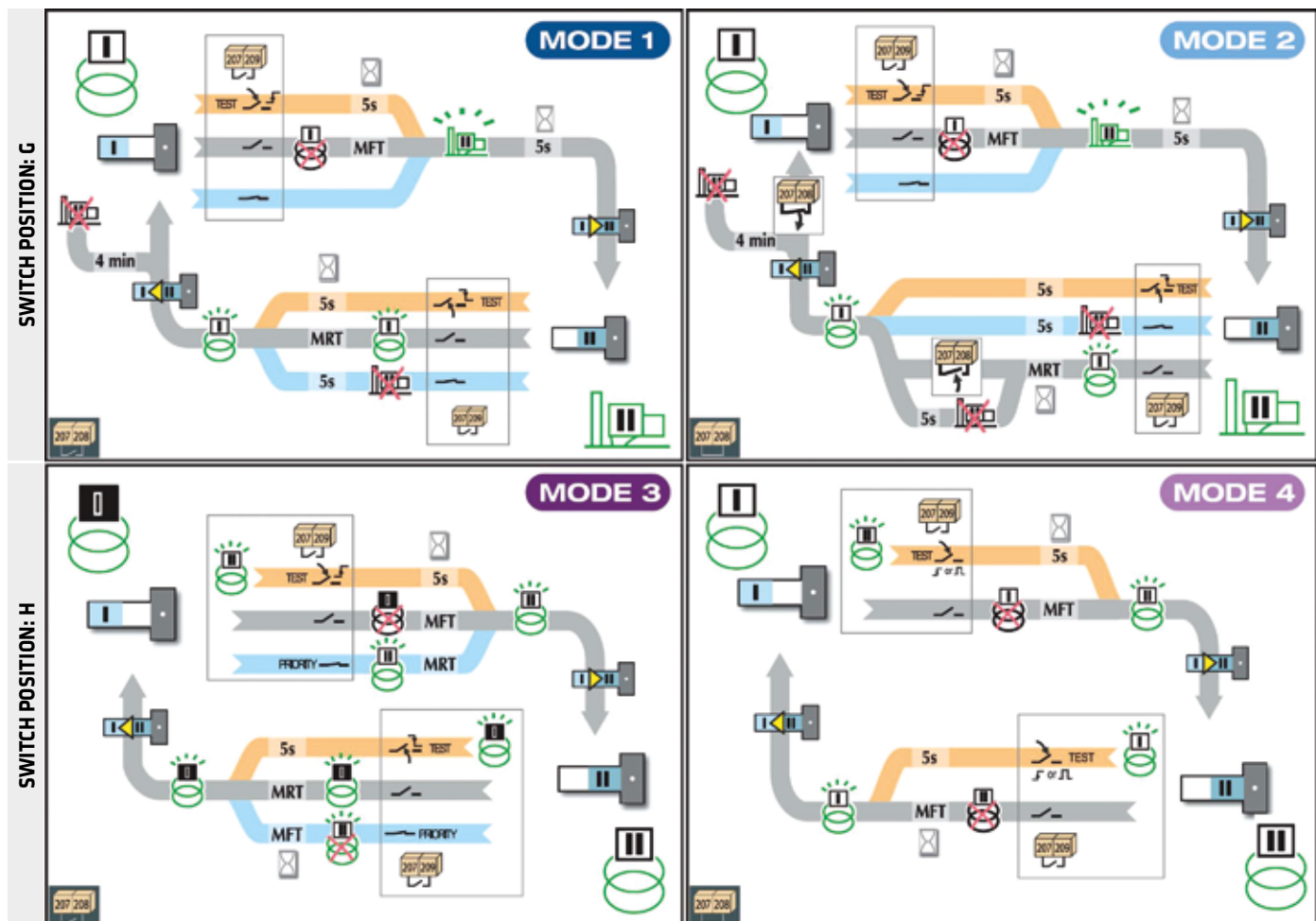
	ON	OFF	Flashing
● I	Line I active	Line I not active	TEST phase / Standby
● II	Line II active	Line II not active	Standby
● ⚠	FAULT (call the assistance service)	OK	Internal set-up procedure
● AUT	Automatic mode	Manual mode	Priority line ready, waiting for external command.

ROTARY SWITCH DISCONNECTORS

Wiring the terminal block

Terminals	Application	Contact status	Description
207 / 208	Network - Emergency power unit		Automatic return to network I
			Without automatic return
	Network - Network		Operation with priority network
			Operation without priority network
207 / 209	Network - Emergency power unit		TEST function stop
			TEST function start
	Network - Network		Priority line I
			Priority line II
207 / 210	Network - Emergency power unit		Automatic mode
	Network - Network		Automatic mode inhibition
63 / 64	Network - Emergency power unit		Correct product operation
	Network - Network		Indicates Manual mode or Product anomaly
73 / 74	Network - Emergency power unit		No function
			Emergency power unit start-up consent

Choosing the operating logic



ROTARY SWITCH DISCONNECTORS

MODE 1: Network - emergency power unit switching, with automatic return to priority line



MODE 2: Network - emergency power unit switching, without automatic return to priority line



In this case, the emergency power unit must be connected to line II.

Following a blackout or instability of priority line I, the MFT time count begins; at the end, the start-up command is sent to the emergency power unit. When the generator is at full speed, the device waits 5s and then switches to line II.

MODE 1: If priority line I returns to full speed, the MRT time count begins, followed by II – I switching.

MODE 2: If priority line I returns to full speed, the MRT time count begins; authorise II – I switching via terminals 207/208.

If the 2s stop is set in position 0, the sequence becomes I – 0 – II or II – 0 – I.

After the return to priority line I, the generator shifts to cooling mode for 4 min.

MODE 3: Network - network switching, with automatic return to priority line



MODE 4: Network - network switching, without automatic return to priority line



If the active line (or the priority line if the operating mode is MODE 3) suffers a blackout or loses stability, the MFT time count begins and then the device switches to the other network.

MODE 3: If the operating logic includes a priority line, and this line returns within the parameters, the device counts the MRT time and then switches.

MODE 4: If there is no priority line, the device counts the MRT time. External consent (via the opening of contact 207/208) is then needed for switching onto the other line.

If the 2s stop is set in position 0, the sequence becomes I – 0 – II or II – 0 – I.

TEST: for checking correct system operation

The TEST function is used in particular to check the correct operation of the emergency power unit connected to line II.

In MODE 1 or MODE 2, when contact 207/209 is closed the device counts 5 sec before sending emergency power unit start-up consent.

When the emergency power unit is active and its supply is stable, the device counts a further 5 sec and then switches to line II.

After making sure the emergency power unit is operating correctly, you must open contact 207/209 to return to the priority line.

If the emergency power unit suffers a blackout during this phase, or it does not operate correctly, the device counts 5 sec before autonomously switching to the priority line. If the emergency power unit is still active, cooling mode begins and then the emergency power unit is switched off after 4 min.

In MODE 3 and MODE 4, contact 207/209 is used to establish the priority line. By opening and closing this contact, the TEST is simulated and, in this case, it checks the correct operation of the switching between the two transformers.

Inhibition of automatic switching

In the case of maintenance or specific needs, automatic switching can be inhibited:

- Via remote implementation, closing contact 207 / 210
- By opening the cover (in this case, the system passes to manual mode and, if necessary, you can take out the block and insert a padlock (see the figure below).



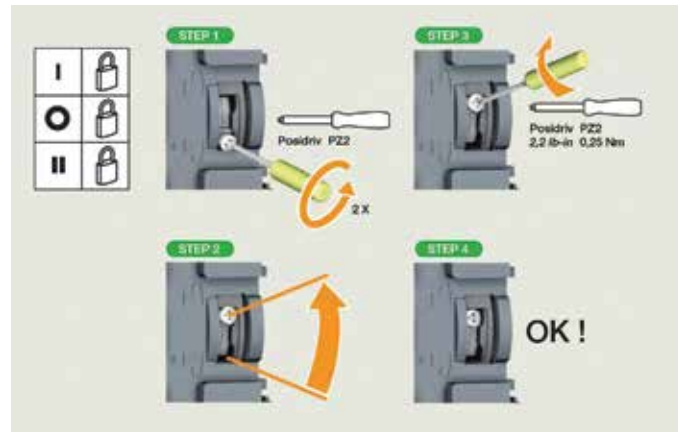
min. 4mm (3/16")
max. 8mm (5/16")

ROTARY SWITCH DISCONNECTORS

Locking function - Choosing the positions

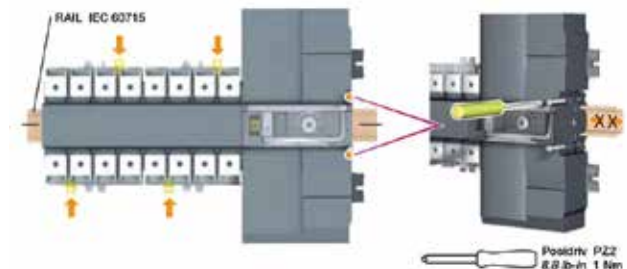
The locking function is only possible in position 0 or, in the case of special needs, also in position I or II.

The device is designed so that the padlock can only be fitted in position 0. To change this setting, adjust the screw on the back of the automatic transfer switch:



Assembly on DIN rail (IEC 60715)

The device can be assembled on a normal DIN rail. To ensure the stability of the product and prevent it sliding on the rail, position it and then tighten the screws on its right side.

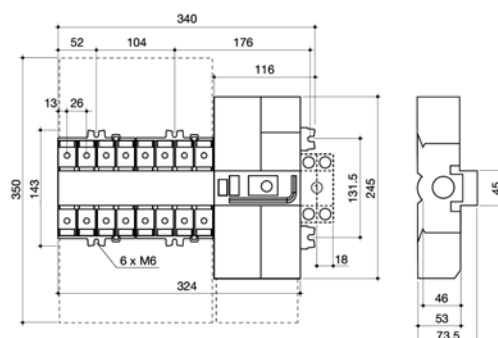


Further information

- Switching takes place very quickly, as it is enabled by electromagnetic coils. To prevent the coils from overheating and thereby damaging the product, make sure there is an internal system that inhibits switching (until the coils are cool) if more than 8 switching operations occur in the space of 1 minute.
- If both lines suffer a blackout, the device automatically positions itself on the line that returns to full speed first (even if this is not the priority line). If both lines return to full speed simultaneously after a blackout of this type, the device automatically positions itself on the priority line; if there is no priority line, it will position itself on line I.
- A maximum of two auxiliary contacts (code GW 97 774) can be fitted, on the right side. Each contact has 3 NO/NC terminals, and each terminal is dedicated to a single position (I - 0 - II).
Example: terminals 11/12/14 indicate that the 3-way switch is in position I.

Dimension tables

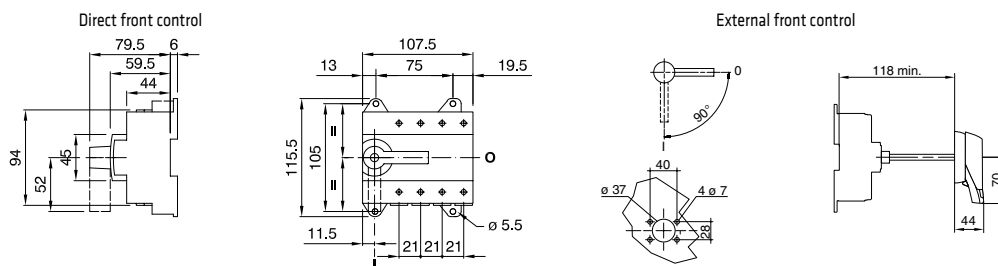
MSS 160 ATS - AUTOMATIC TRANSFER SWITCH



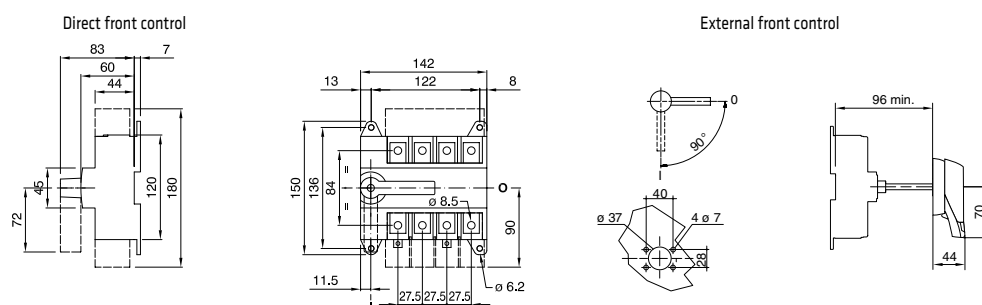
ROTARY SWITCH DISCONNECTORS

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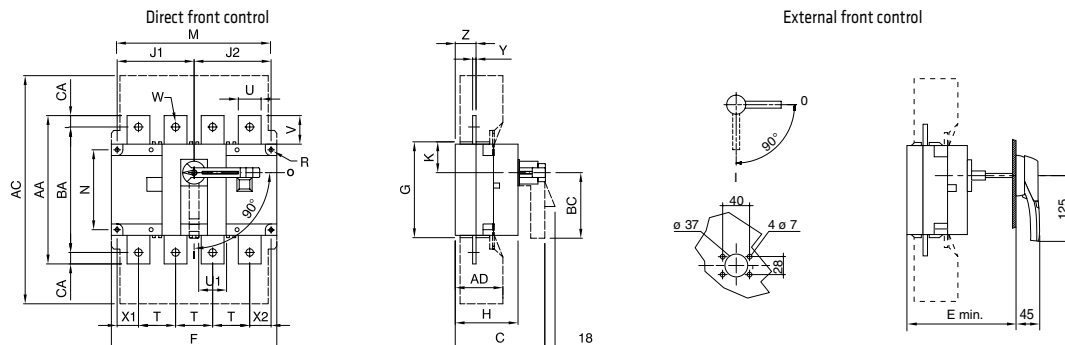
MSS 125



MSS 160



MSS 250-630



In (A)	External		Terminal covers		Casing									Fixing					Connection											
	C	E min.	AC	AD	F3p.	F4p.	G	H	J13p.	J14p.	J2	K	BC	M3p.	M4p.	N	R	T	U	U1	V	W	X13p.	X14p.	X2	Y	Z	AA	BA	CA
250	130	135	290	60	180	230	108	75	55	105	105	34	115	160	210	80	5.5	50	25	25.5	30	11	33	33	27	3.5	22.5	160	130	15
400	160	165	401	89	230	290	170	110	75	135	135	55	115	210	270	140	7	65	32	45.5	37.5	11	42.5	37.5	37.5	5	36	235	305	15
630	160	165	401	89	230	290	170	110	75	135	135	55	115	210	270	140	7	65	45	45.5	37.5	13	42.5	37.5	37.5	5	36	260	220	20

MSS 125 - THREE-WAY SWITCH I O II

