

Selection Guide

Single phase voltage relays

3-phase voltage relays

3-Phase monitoring relays

Single phase current relays

Single phase high current relays

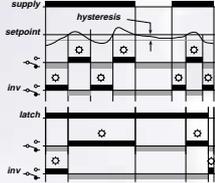
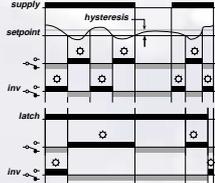
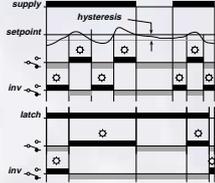
Level relays

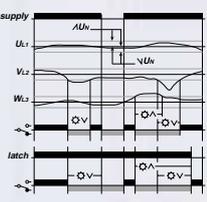
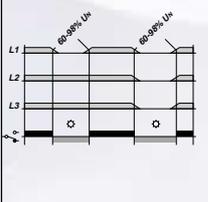
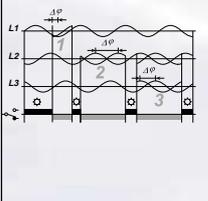
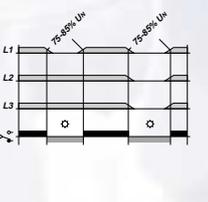
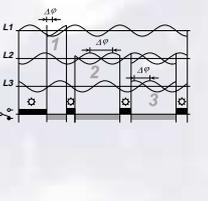
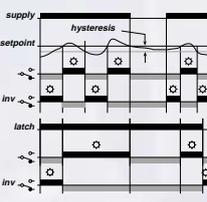
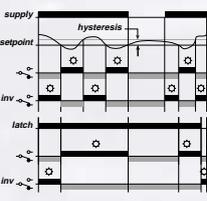
Thermostat relays

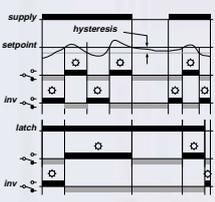
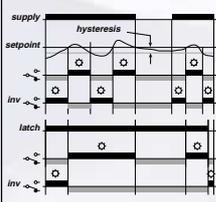
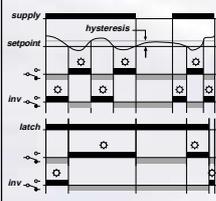
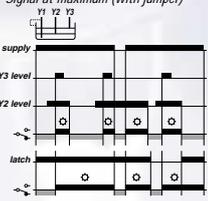
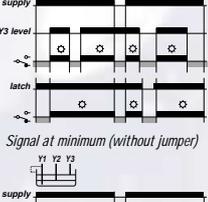
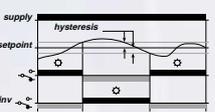
Power supplies



Series 1600 MX

		
Type	MXV-10 <i>Single phase voltage relay for detecting AC/DC over- or under-voltage. Adjustable setpoint and hysteresis on the front panel. Hysteresis adjustable: 0.5-20%. Automatic locking (latch) on connection of jumper. Inversion (inv) of relay operation on connection of jumper. Analogue output for accurate adjustment of setpoint.</i>	MXV-20 <i>Single phase voltage relay for detecting a level of AC and DC voltage. Adjustable setpoint and hysteresis. Adjustable hysteresis 3-35%. Inversion (inv) of relay operation on connection of jumper. Automatic locking (latch) on connection of jumper.</i>
Ordering Code Example	MXV-10.230.1	MXV-20.230.1
Input Signal	1-5V AC/DC 4-20V AC/DC 10-50V AC/DC 40-200V AC/DC 100-500V AC/DC Selected via switch on the front panel.	1-5V AC/DC 1 4-20V AC/DC 2 10-50V AC/DC 3 40-200V AC/DC 4 100-500V AC/DC 5
Supply Voltage	24V DC 924 115V AC/24V AC 115 230V AC/24V AC 230	24V DC 924 24V AC 024 115V AC 115 230V AC 230 400V AC 400
Output	Relay SPDT 8A/240V AC & 2-10V DC (relative to setpoint)	Relay SPDT 8A/240V AC
Operation Diagrams	<p>Over-voltage 1</p>  <p>Under-voltage 2</p> 	

			
<p>MXV-30</p> <p>3-phase voltage relay with or without neutral for detecting over- and under-voltage. Limit values adjusted on the front panel. Lower limit adjustable: 80-99% U_n. Upper limit adjustable: 101-120% U_n. Automatic locking (latch) on connection of jumper. LED indication of over- and under-voltage.</p>	<p>MXP-10</p> <p>Phase monitoring relay for detecting correct phase sequence, symmetry via phase angle and low voltage. Connection to 3-phase mains with or without neutral. Adjustable limit values on the front panel. U_n adjustable $\pm 15\%$ Adjustable limit for low voltage: 69-98% U_n. Also available for separate supply voltage.</p>	<p>MXP-20</p> <p>Phase monitoring relay for detecting correct phase sequence, symmetry via phase angle and low voltage. Connection to 3-phase mains with or without neutral. Fixed limit for low voltage: 75-85% U_n.</p>	<p>MXC-10</p> <p>Single phase current relay for detecting AC/DC over- or under-current. Adjustable setpoint and hysteresis on the front panel. Hysteresis adjustable: 0.5-20%. Inversion (inv) of relay operation on connection of jumper. Automatic locking (latch) on connection of jumper. Analogue output for accurate adjustment of setpoint.</p>
<p>MXV-30.400/400</p> <p>3 x 230V AC (\pm neutral) /230 3 x 400V AC (\pm neutral) /400</p>	<p>MXP-10.400</p> <p>3 x 115V AC (\pm neutral) 115 3 x 230V AC (\pm neutral) 230 3 x 400V AC (\pm neutral) 400</p>	<p>MXP-20.400</p> <p>3 x 115V AC (\pm neutral) 115 3 x 230V AC (\pm neutral) 230 3 x 400V AC (\pm neutral) 400</p>	<p>MXC-10.230.1</p> <p>4-20mA AC/DC 10-50mA AC/DC 40-200mA AC/DC 100-500mA AC/DC 0.4-2A AC/DC Selected via switch on the front panel.</p>
<p>230V AC 230 400V AC 400</p>	<p>Option: External supply voltage</p>		<p>24V DC 924 115V AC/24V AC 115 230V AC/24V AC 230</p>
<p>Relay SPDT 8A/240V AC</p>	<p>Relay SPDT 8A/240V AC</p>	<p>Relay SPDT 8A/240V AC</p>	<p>Relay SPDT 8A/240V AC 2-10V DC (relative to setpoint)</p>
<p>Over- and under-voltage</p> 	<p>Voltage monitoring</p>  <p>Phase monitoring</p>  <p>Examples of types of phase error: 1. Motor-generated phase, for example, when L1 is disconnected to an unloaded or lightly loaded 3-phase motor ($\Delta\phi > 20^\circ$). 2. Ohmic load or heavily loaded 3-phased motor, where L2 is disconnected ($\Delta\phi = 180^\circ$). 3. Reversed phase sequence (L2 and L3) ($\Delta\phi = 120^\circ$).</p>	<p>Voltage monitoring</p>  <p>Phase monitoring</p>  <p>Examples of types of phase error: 1. Motor-generated phase, for example, when L1 is disconnected to an unloaded or lightly loaded 3-phase motor ($\Delta\phi > 20-30^\circ$). 2. Ohmic load or heavily loaded 3-phased motor, where L2 is disconnected ($\Delta\phi = 180^\circ$). 3. Reversed phase sequence (L2 and L3) ($\Delta\phi = 120^\circ$).</p>	<p>Over-current 1</p>  <p>Under-current 2</p> 

 <p>MXC-20</p>	 <p>MXC-30</p>	 <p>MXL-10</p>	 <p>MXT-10</p>
<p>Single phase current relay for detecting a level of AC and DC current. Adjustable setpoint and hysteresis. Adjustable hysteresis 3-35%. Inversion (inv) of relay operation on connection of jumper. Automatic locking (latch) on connection of jumper.</p>	<p>Single phase high current relay for detecting AC/DC over- or under-current via external DC shunt or AC current transformer (CT). Adjustable setpoint and hysteresis on the front panel. Hysteresis adjustable: 0.5-20%. Inversion (inv) of relay operation on connection of jumper. Automatic locking (latch) on connection of jumper. Analogue output for accurate adjustment of setpoint.</p>	<p>Level relay for conducting fluids. Control of one or two levels. Adjustable sensitivity and response time on the front panel. Sensitivity adjustable: 5-50 kOhm. Response time adjustable: 0.1-5 sec. Automatic locking (latch) on connection of jumper. Operation selection (signal at max./min.) on connection of jumper.</p>	<p>Thermostat relay for 2/3-wire Pt-100 probe. -50-300 °C in five ranges. Adjustable setpoint and hysteresis on the front panel. Hysteresis adjustable: ± 0.5 - 20% Inversion (inv) of relay operation on connection of jumper. LED indication on disconnected probe. Analogue outputs for measured temperature and for accurate adjustment of setpoint.</p>
<p>MXC-20.230.1</p> <p>0,01-0,05A AC/DC 1 0,04-0,2A AC/DC 2 0,1-0,5A AC/DC 3 0,4-2A AC/DC 4 1-5A AC/DC 5</p>	<p>MXC-30.230.1</p> <p>0-60mV DC (via external shunt; 0-60mV voltage drop) 0-1.0A AC (via external current transformer with secondary current 0-1.0A AC) Selected via terminals.</p>	<p>MXL-10.230</p> <p>2/3- wire probes</p>	<p>MXT-10.230</p> <p>-50-50 °C 0-50 °C 0-100 °C 100-200 °C 200-300 °C Selected via switch on the front panel.</p>
<p>24V DC 924 24V AC 024 115V AC 115 230V AC 230 400V AC 400</p>	<p>24V DC 924 115V AC/24V AC 115 230V AC/24V AC 230</p>	<p>24V DC 924 115V AC/24V AC 115 230V AC/24V AC 230</p>	<p>24V DC 924 115V AC/24V AC 115 230V AC/24V AC 230</p>
<p>Relay SPDT 8A/240V AC</p>	<p>Relay SPDT 8A/240V AC 2-10V DC (relative to setpoint)</p>	<p>Relay SPDT 8A/240V AC</p>	<p>Relay SPDT 8A/240V AC 2-10V DC (relative to setpoint) 2-10V DC (relative to temperature)</p>
	<p>Over-current 1</p>  <p>Under-current 2</p> 	<p>Signal at maximum (with jumper)</p>  <p>Signal at minimum (without jumper)</p> 	<p>Temperature monitoring</p> 



MXS-40

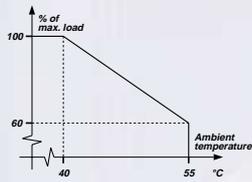
Switch mode power supply with regulated 12 or 24V DC output.
The power supply can be connected to any mains voltage within the range 110-240V AC/DC.
The output has short circuit and overload protection and LED indication of output voltage.

MXS-40 230 12

110/240V AC 230

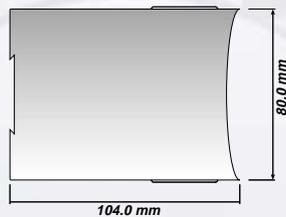
12V DC \pm 0.5V, max. 1.0A continuously. 12
24V DC \pm 0.5V, max. 0.5A continuously. 24
Electronic short circuit and overload protection.

Output load diagram

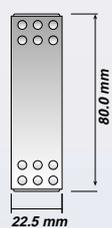


Mechanical Dimensions

Side



Front



Output Relay:

Contacts:
AgNi 0.15 with hardened gold plating Au.

Max. AC load:
8A/240V AC (cos ϕ =1)

Max. AC breaking capacity:
2000VA.

Inductive load:
See fig. 1.

Max DC load:
8A/24V DC.

Max. DC breaking capacity:
50-270W, see fig. 2.

Max. in rush current:
15A (max. 4s/duty cycle less than 10%).

Min. in rush current:
10mA, 24V DC.

Frequency:
Max. 1000 operations pr. hour.

Life time:
Mechanical: Min. 3 x 10⁶ operations.
Electrical: Min. 1 x 10⁶ operations with full load.

Delay:
< 20ms.

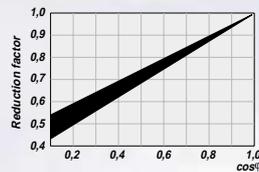


fig. 1
DC-Load

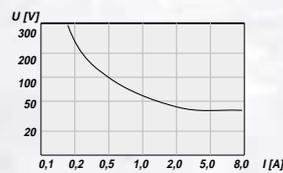


fig. 2

General Data & Specifications

Ambient temperature:
-20 to 55°C.

Storage temperature:
-40 to 80°C.

Mounting:
35mm DIN-rail (EN50022).

Terminals:

Screw terminals with dual compartment.

Terminal screws are combined crosshead/slotted.

Up to 2 x 2.5mm² wire (2 x 1.5mm² inc. ferrule).

Recommended torque: 0.5 Nm, max. 0.7 Nm. (VDE0609-1).

Terminal identification in accordance with DIN46199/EN50005.

Indicators:

Green LED = operating voltage.

Red LED = relay status.

Protection:

IP20.

Electrical isolation:

3,75kV AC (1 min.) between input, supply and relay output (EN61010).

Housing:

Noryl (GE), UL94V1.

Terminal block:

Noryl (GE), UL94V0.

Weight:

180 g.

The MX series is designed and developed with regard to relevant specifications:

- EN60204-1/VDE0113 electrical material on machines.
- VDE0110/IEC664 Isolation specifications/creepage and clearance distances.
- Electrical safety in accordance with EN61010.
- IEC414 Safety regulations for control and monitoring equipment.
- EMC: Emission EN50081-1/Immunity EN50082-2.
- Humidity in accordance with IEC68-2-3: RH=95%, 40°C.
- Vibration in accordance with IEC68-2-6.
- Shock when mounted, in accordance with IEC68-2-27.

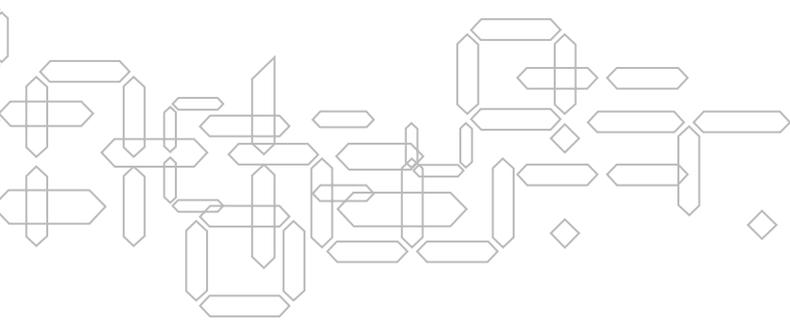
The MX series is CE-marked in accordance with EMC and the Low Voltage Directive.

BRODERSEN

simplifying process



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