



INTRODUCTION & SELECTION GUIDE. 109

MCS-40/340 110

MXS-40 111

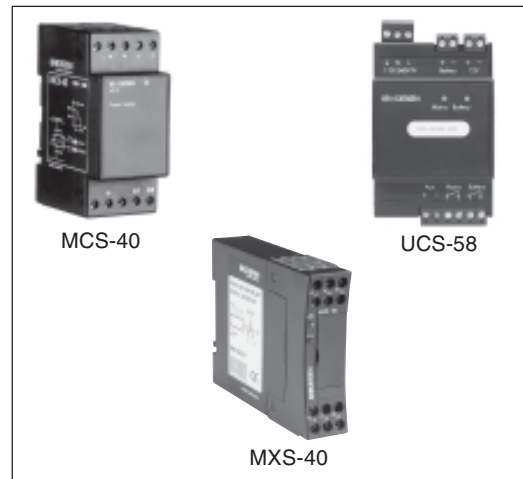
UCS-58 112

POWER SUPPLIES



INTRODUCTION

This section includes switch mode power supplies and charger. Consult the selection guide below to quickly find the relevant data sheet with detailed technical information. All the power supplies meet the requirements to isolation from main to output. Furthermore the product meets the hardest environmental level in the generic EMC-standards. Extensive testing and obligatoric burn-in procedure provides you with high reliable products.



SELECTION GUIDE

	Input/Supply	Output	Housing	Description	Type	Page
	110-240V AC/DC	Charger output-12v DC 12V DC 24V DC	36mm installation design for DIN Rail or plug-in 22,5mm Industrial Housing for Din Rail Mounting 11 pole plug-in. 54mm Installation/Industrial design Housing (standard System 2000 profile)			
Switch mode Power supplies	• • • •	• • • • • • •	• • •	Power supply Power supply Power supply Charger/Power supply	MCS-40 MCS-340 MXS-40 UCS-58	110 110 111 112

Power Supplies

Power Supply MCS-40/340



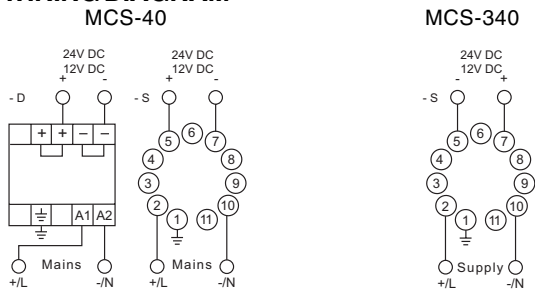
DESCRIPTION

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. Versions available for DIN rail or 11-pole plug-in mounting.

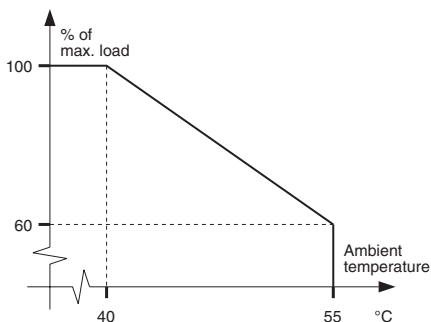
VERSIONS/ORDERING CODES

Type: Power supply.	MCS	MCS	40	S	230	12
DIN/PLUG-IN standard type: PLUG-IN type to direct replacement of MC-320/340	40					
Mounting: 11-pole plug-in. DIN rail.	S					
Mains voltage: 110/240V AC/DC	D					
Output: 12V DC/1.0A DC 24V DC/0.5A DC						24

WIRING DIAGRAM



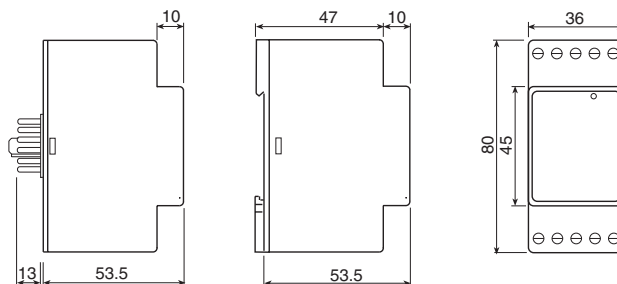
OUTPUT LOAD DIAGRAM



TECHNICAL DATA

Output:	12V DC \pm 0.5V, max. 1.0A continuously. 24V DC \pm 0.5V, max. 0.5A continuously. Electronic short circuit and overload protection.
Ripple/noise:	Max. 100mV pp.
Efficiency:	50-75%, depend on ambient temperatur. Typically: 70%.
Mounting:	S: 11-pole plug-in. D: Directly on 35 mm DIN rail (EN50022).
Terminals (D only):	Max. conductor size 4 mm ² . Screw type terminals with self-lifting clamps schrouded in accordance with VDE0106 (finger and back of hand protection). Doubled output terminals.
Mains voltage:	110-240V AC/DC (95-265V).
Mains frequency:	40-60Hz.
No-load current:	12V: 14-16mA~ 24V: 18-20mA~
Isolation:	Primary to secondary: EN 60950 class II, 3,75kV AC.
Ambient temperature:	-20 to 55°C.
Protection:	S: IP40. D: IP20.
Housing:	Noryl SE-1.
Weight:	Typically 100 g.

MECHANICAL DIMENSIONS





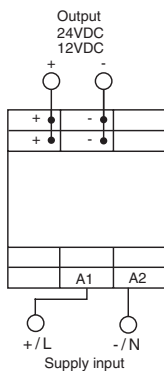
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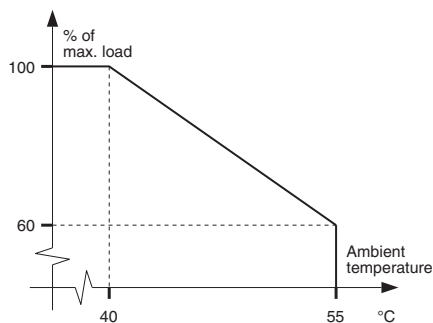
VERSIONS/ORDERING CODES

Type: Power supply.	MXS-40	MXS- 40	230	12
Mains voltage: 110/240V AC/DC	230			
Output: 12V DC/1.0A DC 24V DC/0.5A DC	12			24

WIRING DIAGRAM



OUTPUT LOAD DIAGRAM



TECHNICAL DATA

Output: 12V DC \pm 0.5V, max. 1.0A continuously.
24V DC \pm 5%, max. 0.5A continuously.
Electronic short circuit and overload protection.

Ripple/noise: Max. 100mV pp.

Efficiency: 60-80% depend on ambient temperatur.
Typically: 75%.

Supply voltage: 110-240V AC/DC (95-265V).

Net frequency: 40-60Hz.

No-load current: 12V: 14-16mA~
24V: 18-20mA~

General data:

Ambient temperature: -20 to 55°C.

Storage temperature: -40 to 80°C.

Mounting: 35mm DIN-rail (EN50022).

Note: Air space of 3mm on both sides of the power supply is highly recommended at loads above 50%.

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).

Indicators: Green LED = working voltage. Red LED = overload.

Protection: IP20.

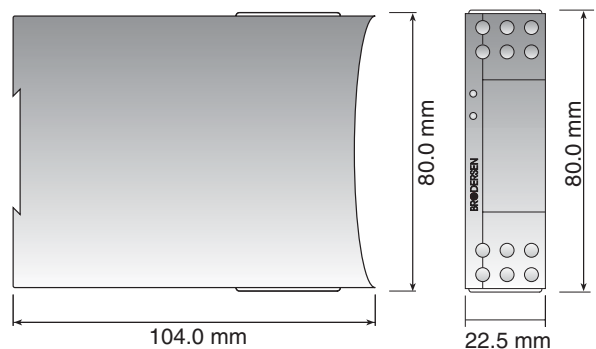
Electrical isolation: 3,75kVAC (1 min.) between supply and output (EN60950).

Housing: Noryl (GE), UL94V1.

Terminal block: Noryl (GE), UL94V0.

Weight: Approx. 200g.

MECHANICAL DIMENSIONS



Power Supplies

Power Supply MCS-40/340



DESCRIPTION

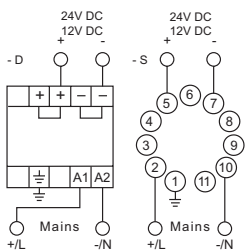
Switch mode power supply with regulated 12 or 24V DC output. The power supply can be connected to any mains voltage within the range 110-240V AC/DC. The output has short circuit and overload protection and LED indication of output voltage. Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

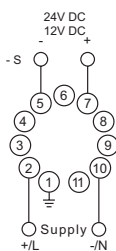
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DIN/PLUG-IN standard type: PLUG-IN type to direct replacement of MC-320/340	40					
Mounting: 11-pole plug-in. DIN rail.	340	S				
Mains voltage: 110/240V AC/DC		D			230	
Output: 12V DC/1.0A DC 24V DC/0.5A DC						12 24

WIRING DIAGRAM

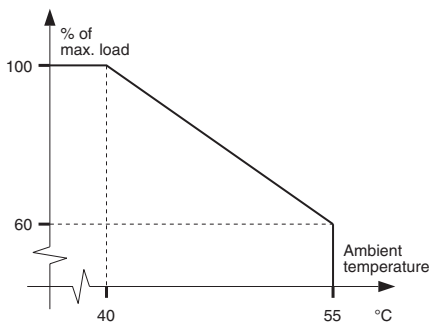
MCS-40



MCS-340



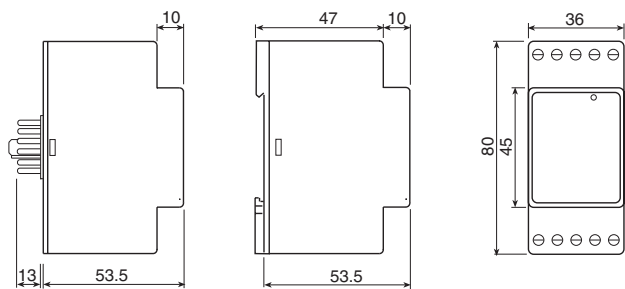
OUTPUT LOAD DIAGRAM



TECHNICAL DATA

Output:	12V DC \pm 0.5V, max. 1.0A continuously. 24V DC \pm 0.5V, max. 0.5A continuously. Electronic short circuit and overload protection.
Ripple/noise:	Max. 100mV pp.
Mounting:	S: 11-pole plug-in. D: Directly on 35 mm DIN rail (EN50022).
Terminals (D only):	Max. conductor size 4 mm ² . Screw type terminals with self-lifting clamps schrouded in accordance with VDE0106 (finger and back of hand protection). Doubled output terminals.
Mains voltage:	110-240V AC/DC (95-265V).
Mains frequency:	40-60Hz.
Isolation:	Primary to secondary: EN 60950 class II, 3,75kV AC.
Ambient temperature:	-20 to 55°C.
Protection:	S: IP40. D: IP20.
Housing:	Noryl SE-1.
Weight:	Typically 100 g.

MECHANICAL DIMENSIONS



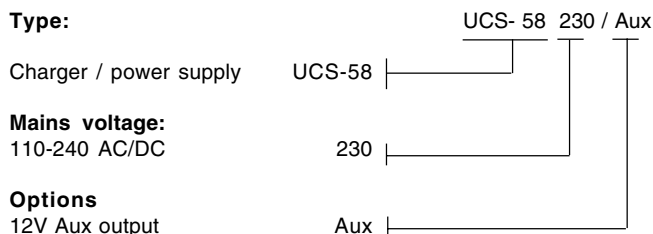
DESCRIPTION

General purpose power supply and charger unit which can be used wherever a 12V DC (nominal) with battery back-up is required with an average load up to 1A.

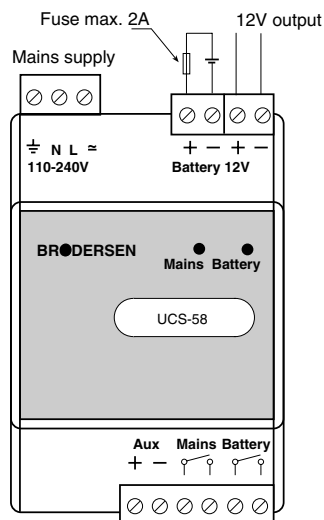
The unit includes a switch mode power supply and a charger circuit able to charge and monitor an external lead acid battery. Two indicators and two associated relay outputs are available for the user or the equipment supplied from the power supply unit, one indicating mains OK the other indicating battery OK.

The unit is made in the standard profile used for other Series 2000 modules. The width of the unit is 54 mm (half module).

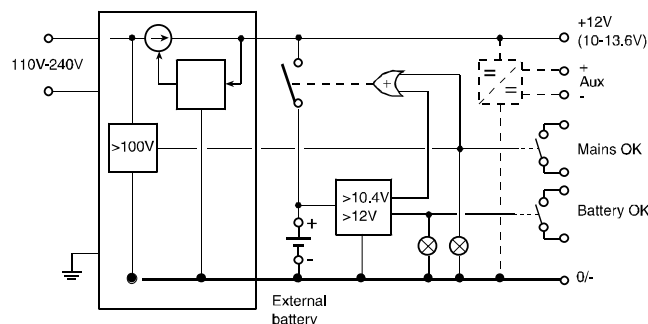
VERSIONS/ORDERING CODES



WIRING DIAGRAM



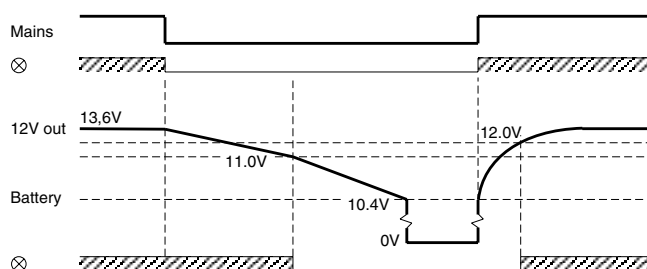
BLOCK DIAGRAM



TECHNICAL DATA

- Mains supply:**
 Supply voltage: 110-240V AC/DC (100-265V).
 Mains frequency: 40-60Hz.
 Power consumption: Max. 23W (mains).
- Output:**
 Supply: 12V (10-13.6V), max. 2 A (note 4).
 Aux: 12V (10-16V), max. 200mA (note 7).
- Battery back-up**
 Battery: 12V lead acid.
 External fuse: max. 2A (note 4).
 Battery capacity: 3-12 Ah (note 3).
 Charging current: 0-1.1 A (note 3).
 Charging time: Battery capacity / (1.1A - average load current) (note 4).
 Back-up capacity (battery fully charged): Average load current x 0.8 x battery capacity.
 Cut-off voltage: 10.4V (note 6).
 Off state battery load: <1.5 mA.
- Voltage Monitors:**
 Mains: >100V: ON (note 1).
 Battery: >12.0V: ON, >80% capacity (note 5).
 <11.0V: OFF, <20% capacity.
- Relay outputs: 2 SPST-NO max. 30V/0.5A (note 5).
 Indicators: 2 (green).
- EMC:** EN50081-1, EN50082-2.
- Isolation**
 Mains to 12V out: IEC class II, 4 kV. Safety earth required.
 12V to AUX out: 2kV (note 7).
- Ambient temperature:**
 Charging: 5 to 35°C.
 Operation: -10 to 55°C
- Protection:** IP20.
- Mounting:** 35 mm DIN-rail, EN50022.
Terminals: Plug in screw terminals
 Max. 1.5 mm² wire.
- Housing:** Anodised aluminium with plastic ends.
 According to DIN 43880.
- Dimensions:** HxWxD: 80 (+ connectors) x 54 x 62 mm.

TYPICAL CHARGE / DISCHARGE CYCLE



Power suppliesPower supply / charger unit UCS-58

NOTES/REMARKS

- 1) The mains indicator is activated when the mains voltage is sufficient to enable the power supply to work.
- 2) The capacity of the battery must be selected according to the actual consumption and required back-up time. Please note that the figures for the battery could degrade dramatically depending on temperature and age.
- 3) The power supply and charger will act as a constant current source until the battery is charged. The actual charging current will be the difference between the capacity of the power supply (1.1A nominal) and the actual consumption. The following formula can be used to calculate the actual charging time (hours):

$$\frac{\text{Battery capacity [Ahours]}}{1.1 - \text{average load [A]}}$$

- 4) The 12V output is supplied from the power supply/battery circuit. When the battery is fully charged (operating on mains supply) the voltage will typically be 13.6V. When operating at battery supply, the voltage drops slowly while discharging until the cut-off voltage is reached (typically at 10.4V).
If the current exceeds the maximum current of the built-in power supply (1.1A), the excessive current will be drawn from the battery thus discharging the battery. The power supply/charger circuit includes thermal protection. At maximum ambient temperature (55°C) the continuous output current is automatically reduced to approx. 0.8A after a certain time (10-15 minutes). The de-rating is approximately 1% per °C above 25°C.
If the unit has a battery connected to it, it is possible to supply a high output current (maximum 2A specified) for a period of time, as the battery will deliver the remaining current. At high ambient temperature the recharging time may be prolonged.
The battery **MUST** be equipped with an external fuse, max. 2A.
- 5) The monitor outputs and indicators are activated when mains and battery voltages are OK.
Please note that the circuit is **NOT** able to detect that the battery is disconnected as the open circuit voltage will be above 12V.
- 6) To prevent deep discharge, the battery will automatically be disconnected if the battery voltage goes below 10.4V. The battery is automatically reconnected when the mains supply reappear.
- 7) The Aux output is designed for driving the process I/O and is therefore isolated from the supply. The output is short circuit protected.
The isolation does not fully fill requirements for safety isolation.