

# MAVOLOG PS/C

## Power Supply for MAVOLOG 10 and RS232-RS485 Interface Converter

### 1 Applications

The MAVOLOG PS/C (PS = power supply, C = converter) has been designed for use with MAVOLOG 10 series instruments. It includes a mains power pack with 24 V DC output and is capable of supplying power to up to 5 MAVOLOG 10 instruments and one MAVOLOG BP, and is also equipped with a bidirectional RS232-RS485 interface converter for the establishment of communications between a PC with MAVOLOG control software and the individual instruments. Up to 32 MAVOLOG 10 instruments can be connected to the RS485 bus. The RS485 and RS232 interfaces are electrically isolated from one another, as well as from the MAVOLOG PS/C power supply, in order to assure highly reliable operation and immunity to interference, especially for the interconnected PC.

### 2 Safety Features and Precautions

The MAVOLOG BP has been manufactured and tested in accordance with safety regulations IEC 61010-1 / EN 61010-1 / VDE 0411-1.

If used for its intended purpose, the safety of the user, as well as that of the device, is assured.

Read the operating instructions carefully and completely before using your power supply, and observe all points included therein.

#### The device may not be used:

- If the housing is open
- If it demonstrates visible damage
- If it no longer functions flawlessly
- After extreme stresses due to transport
- After lengthy periods of storage under unfavorable conditions (e.g. moisture, dust, excessive temperature)
- After extreme overloading, i.e. if the maximum permissible loads listed under characteristic values have been exceeded

#### Meanings of symbols on the device:

The symbols on the device have the following meanings:



Warning concerning a point of danger.  
(Attention: observe documentation!)

Indicates EC conformity



Continuous double, or reinforced insulation

### 3 Connecting the MAVOLOG PS/C

The MAVOLOG PS/C may only be connected to the mains voltage specified at the connector terminals.

Special attention must be paid to correct poling, especially for the power supply, as well as correct connection of terminals "A" and "B" at the RS485 interface when connecting the MAVOLOG PS/C to the MAVOLOG 10 instruments.

#### 3.1 Connecting the MAVOLOG Instruments

- ⇒ Use only insulated cable (e.g. H07V-U), or insulated wires with connector sleeves for connecting the power supply. Wires without connector sleeves may be pulled out of the connector terminals at the MAVOLOG PS/C and cause short-circuiting.
- ⇒ Connect the "+24 V DC" and "-24 V DC" terminals to the terminals with the same designations at the other instruments.
- ⇒ Only suitable, twisted-conductor cables may be used for wiring the RS485 interface. Shielding is optional.
- ⇒ Connect the "A" and "B" terminals at the RS485 interface to the terminals with the same designations at the other instruments. The "SH" (shield) terminal is provided for connecting the shield, if a shielded bus cable is used.
- ⇒ If a type MAVOLOG BP uninterruptible power supply is used, the "SYSCLK" terminal must be connected to the terminal with the same designation at the MAVOLOG BP, in order to assure correct functioning of both units.
- ⇒ Connect the "230 V 50 Hz" terminals to mains power.
- ⇒ Use a 9-pole Sub-D extension cable (1:1, non-reversed cable) to connect the serial ports at the PC and the MAVOLOG PS/C.



#### Note

When installing the MAVOLOG PS/C, a clearance of 1 to 2 cm must be left between the MAVOLOG PS/C and all neighboring devices, so that heat generated within the device can be adequately dispersed.

#### 3.2 RS485 Bus Termination

- ⇒ The MAVOLOG PS/C is equipped with an internal, 1.2 k $\Omega$  matching resistor. The power supply can be operated either with or without additional matching resistors. A 120  $\Omega$  matching resistor should be used at each end of the bus, especially where expansive RS485 bus systems are involved. For less expansive wiring (approx. 50 to 100 m), a 1.2 k $\Omega$  matching resistor at one end, and the matching resistor integrated into the MAVOLOG PS/C at the other end of the bus are sufficient. If the MAVOLOG PS/C is not at the end of the bus, both ends of the bus must be equipped with matching resistors.



#### Note

Low value matching resistors result in a lesser voltage excursion between conductors A and B. A 1.2 k $\Omega$  matching resistor may thus be more favorable than a 120  $\Omega$  matching resistor.

### 4 Working with the MAVOLOG PS/C

#### 4.1 The Power Supply

The green "ON" LED lights up after supply power has been switched on, if the MAVOLOG PS/C has been correctly connected. The green "ACTIVE" LED at the MAVOLOG BP lights up, if one has been connected.

If an undervoltage occurs at the mains, or if the MAVOLOG PS/C is overloaded, the red "FAULT" LED also lights up. This indicates that output voltage has dropped to below its minimum value of 18 V. In such cases, check to see if too many users have been connected, or if one of the users is defective, by disconnecting them one after the other.



#### Note

If you want to connect more than the recommended maximum number of MAVOLOG 10 instruments, these can be divided into groups, each of which is powered by one MAVOLOG PS/C. However, the RS485 interfaces are all connected only to the terminals of the MAVOLOG PS/C power supply which is used for data transmission to the PC.

If a short-circuit has occurred during wiring of the supply voltage, or if one of the connected users is defective, the "SHORT" LED lights up in addition to the "FAULT" LED. In such cases, disconnect the users one after the other until the fault has been localized.

**Note**

The MAVOLOG PS/C is equipped with short-circuit interrupt as well as electronic current limiting. This assures that the power supply itself is not damaged in the event of short-circuit or overload. The interface converter functions independently of the power supply and is thus ready for operation, even if short-circuit or overload should occur.

**4.2 The Interface Converter**

The interface converter transforms RS232 signals into RS485 signals and vice versa. The two interfaces are electrically isolated from one another. Both interfaces are also electrically isolated from the MAVOLOG PS/C power supply, as well as mains power. The possibility of potential transfer to the control PC is thus excluded.

Data transfer can be observed at the "RxD" and "TxD" LEDs during data transmission. These LEDs indicate transmission activity from the standpoint of the PC. Please be aware that the LEDs often flicker only dimly, depending upon the length of the transmitted data frame. Dim flickering does not provide any information concerning the quality of the transmission cable or the transmission itself, but rather only indicates that transmission is taking place.

**5 Characteristic Values****Electrical Data**

Mains Voltage	230 V ±10%
Frequency	50 ... 60 Hz
Max. Current Consumption	200 mA
Max. Power Consumption	46 VA
Nominal Power Consumption	12 VA

Fault protection provided by PTC at mains side

**DC Output**

Open-Circuit Voltage	28 V
Nominal Voltage	24 V
Voltage at Max. Load Current	18 V
Nominal Current	0.25 A
Max. Load Current	0.75 A
Residual Ripple	< 1 V

Protection provided with electronic current limiting and short-circuit protection, undervoltage is displayed

**RS485 Interface**

Internal Matching Resistor	1.2 kΩ
Max. Voltage Excursion, A to B	10 V
Max. Baud Rate	115 kBaud
Operating Mode	half-duplex
Connector Cable	twisted two conductor cable

**RS232 Interface**

Connector Socket	9-pin Sub-D socket
Voltage Excursion	> ±5 V
Baud Rate	max.115 kBaud
Connector Pin Assignments	1: NC, 2: TxD, 3: RxD, 4: -Vcc, 5: GND, 6: NC, 7: -Vcc, 8: NC, 9: NC

**Ambient Conditions**

Storage Temperature	-20° C ... +60° C
Operating Temperature	-10° C ... +50° C
Deployment	indoor use only
Climatic Category	3z/-20/50/60/75% (in compliance with VDI/VDE 3540)
Altitude	max. 2000 m above sea level

**Electrical Safety**

Protection Class	II per IEC 61010-1/EN 61010-1/VDE 0411-1
Operating Voltage	300 V
Test Voltage	circuits to mains: 1.35 kV RS485—RS232: 1000 V
Overvoltage Category	II
Contamination Factor	2
Interference Emission	EN 50081-1
Interference Immunity	EN 50082-2

**Mechanical Design**

Housing	plastic housing for snap mounting to standard top-hat rail per DIN EN 50022/35 x 15, or for wall mounting
Terminals	screw terminals, max. conductor cross-section: 2.5 square mm
Protection	terminals: IP20 housing: IP40
Dimensions	75 mm x 55 mm x 111 mm (HxWxD)
Weight	approx. 800 gr.

**6 Housing Maintenance**

Use a dry or slightly dampened cloth to clean the housing. Avoid the use of cleansers, abrasives or solvents. No moisture may be allowed to enter the housing!

**7 Repair, Replacement Parts and Rental Device Services**

When you need service, please contact:

GOSSEN-METRAWATT GMBH  
Service Center  
Thomas-Mann-Strasse 20  
90471 Nuremberg, Germany  
Phone +49 911 86 02 - 410 / 256  
Fax +49 911 86 02 - 2 53  
e-mail fr1.info@gmc-instruments.com

This address is for Germany only.  
Abroad, our representatives or establishments are at your disposal.

**8 Product Support**

When you need service, please contact:

GOSSEN-METRAWATT GMBH  
Product Support Hotline  
Phone +49 911 86 02 - 112  
Fax +49 911 86 02 - 709