

Measurement data acquisition systems



The monitoring of electrical networks and their documentation are of increasing importance.

The PLMulti and PLMaster systems from JEAN MÜLLER include devices for the recording, indication and relaying of the data which provide permanent support for the technical personnel.

The sensors, which can be integrated in low voltage systems, give information on voltage fluctuations, current load, required power and

electrical energy. In addition, relevant load states can be passed on to the factory level conveniently and without any additional space requirement.

The visualization of the measurement data and switching states allows the technical personnel to detect critical loads at an early stage and to make correct decisions rapidly in the event of a fault.

- Long-time recording of measured values
- Remote inquiry via field-bus interfaces, modem or Ethernet
- On-site display of measured values
- Low space requirement
- Economical acquisition of all electrical quantities
- Easy fault analysis
- Event logging
- Limit-value monitoring
- Rapid fault documentation
- Individualized software
- High investment protection
- SMS message service for PLMaster

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Product Line

The PLMaster energy management system from JEAN MÜLLER is used for the acquisition, storage, display, automation and visualization of electrical quantities in low voltage networks up to AC690V. A display allows all measured quantities to be read out on site. An exchangeable PC memory card (4MB-440MB) enables long-term recording of the measurement data for PC analysis. The system can thus be operated independently, i.e. without a fieldbus interface. The PLMaster measuring panel is a central unit for the acquisition of all relevant current and voltage quantities in a three-phase system.

The PLMaster central unit includes the following basic features:

- Plain text display
- Slot for memory card
- Integrated entry keyboard
- Frontal service interface RS232
- Optional adaptability to peripheral equipment
- Parametering of all default values
- Recording of events
- Access authorization by password
- Topology: single master

Applications

In main and subdistribution boards up to AC690V, the PLMaster system complies with all requirements of modern energy monitoring for the following applications:

- Power stations
- Public buildings
- Chemical industry
- Hospitals
- Automotive industry
- Building services

The PLMaster measuring panel and the connected PLSensor measuring sensors enable the following applications:

- Signalling, visualization and operation
- Clear system design
- Reduced operating costs
- Early detection of failures
- Display of events
- Consumption measurement

A PLMaster measuring panel with PLSensor measuring sensors forms a comprehensive system for complete energy control in a three-phase network. The software, which is specially designed for the PLMaster system, allows a convenient analysis of the measured values.

Operational principle

The PLMaster measuring panel is the central unit of the system. It can communicate with up to 60 external PLSensor, SASIL/EE05 measuring sensors via a serial data bus.

The PC memory card is used for bulk storage. Optional interfaces allow the exchange of data between PLMaster and the PC. The exchangeable memory card enables the recorded measurement data to be read out. The data can be further processed conveniently from the PC work station using software specially designed for the PLMaster system. PLSensor measuring sensors are available prewired in the SASIL strips or as DIN rail module.

Product construction

The dimensions of the PLMaster measuring panel correspond to those of the SASIL size 1 fuse combination rail of 75mm overall height. The measuring panel is designed as a plug-in device. A DC24V voltage must be supplied externally.

Accessories

- PLSensor measuring sensor [EE05]
- SASIL outgoing strip, 185mm busbar system, 3-pole, LV HRC system, PLSensor EE05
- SASIL coupling strip, 185mm busbar system, 3-pole, LV HRC system, PLSensor EE05
- Memory card: ATA flash PCMCIA card [4MB] Art. No. E8030002
- PLSoft [JEANVIS]
- PLSoft [JEANLOG]
- Ethernet gateway expansion module for fitting in the PLMaster central unit.
- Profibus DP gateway expansion module (PBMDP) for fitting in the PLMaster central unit.
- Profibus FMS gateway expansion module (PBMFM) for fitting in the PLMaster central unit.
- Serial interface gateway expansion module RS422 (PBM39422) for fitting in the PLMaster central unit.
- Serial interface gateway expansion module RS232 (PBM39232) for fitting in the PLMaster central unit.
- IOM input/output expansion module for fitting in the PLMaster central unit. 8 analog inputs and 8 analog outputs.
- For retrofitting of gateway modules, the PLMaster unit must be sent to the factory.

LV-
HRC fuse-
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HV-
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D-
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Colour	External supply	Fieldbus interfaces	Input/output module	Std.P	Type	Art. no.
RAL7035	DC 24V	Ethernet		1	ETHERNET	E9405012
RAL7035	DC 24V	Ethernet	Yes	1	ETHERNET/IO	E9405015
RAL7035	DC 24V	Input/output module	Yes	1	IO	E9405018
RAL7032	DC 24V	Input/output module	Yes	1	IO/7032	E9405100
RAL7035	DC 24V	Profibus DP		1	PBDP	E9405013
RAL7035	DC 24V	Profibus DP	Yes	1	PBDP/IO	E9405016
RAL7032	DC 24V	Profibus DP	Yes	1	PBDP/IO/7032	E9405101
RAL7035	DC 24V	Profibus FMS		1	PBFMS	E9405014
RAL7035	DC 24V	Profibus FMS	Yes	1	PBFMS/IO	E9405017
RAL7035	DC 24V			1	STANDARD	E9405011

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PLSensor measuring sensor



Product Definition

The intelligent PLSensor measuring sensor is a highly integrable module for the measuring of electrical quantities at the lowest level.

The measurement data are relayed to the PLMaster central unit via a bus.

The integrated relay allows selective fault signals to be passed on (e.g. fuse failure, energized and asymmetrical voltage). Fault LEDs ensure that the fuse concerned is easily localized in the low voltage system. Phase-related signals are provided for F1, F2 and F3.

Applications

The PLSensor measuring sensor is used for the acquisition of energy data in 3-phase low voltage networks. It is prepared for

connection to the PLMaster energy management system from JEAN MÜLLER.

The PLSensor module is available prewired in SASIL strips or as DIN rail module. Used for the monitoring of switching stations, e.g. at circuit-breakers or switch strips, PLSensor stand-alone measuring sensors used in conjunction with external transformers and voltage taps are suitable for a complete determination of network data. Prior to commissioning, each PLSensor measuring sensor is allocated a definite address for correct logon to the system.

Operational principle

In conjunction with current transformers and voltage taps, the PLSensor measuring sensor determines all

relevant current and voltage quantities. The measured values are relayed to the PLMaster measuring panel via a serial data bus. Switching states and trip indications e.g. of a circuit-breaker are acquired by PLSensor and relayed as events.

Product construction

The plastic case of the PLSensor measuring sensor is designed for mounting on DIN and C rails. Since the PLSensor measuring sensor can be fitted to any mounting location in a power distribution system, it allows any power distribution component to be integrated in the PLMaster energy management system by means of voltage taps and current transformers. The contacting is effected by screw terminals.

External supply	Voltage measuring range	Overall width	Relay contacts	Std.P	Type	Art. no.
DC 24V	AC 400V-690V	76.5mm	2 make / 1 break	1	EE05...	E9305002

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Product Definition

PLMulti 96mm x 96mm is a multifunction measuring device for panel mounting in accordance with DIN 43700. PLMulti replaces analog current, voltage, power and current meters in low voltage systems. An exchangeable PC memory card (4MB - 440MB) enables long-term recording of the measured values. The measurement data are further processed in a PC for analysis, documentation and cost unit calculation using JeanLog software. The data is exchanged by a simple exchange of the PC memory card or by long-distance transmission.

Two measurement cards are available, each with 6 measuring channels (3 x UI and 6 x I). This allows a modular fitting of the PLMulti devices with up to 18 measuring channels. All measured values can be called up on site via the clear display.

Applications

PLMulti provides all relevant data of a modern low voltage system. It can also be applied in the medium voltage range using voltage transformers.

The current measurement card of PLMulti measures six independent operating currents. The current/voltage measurement card allows the measurement of all electrical quantities in 3-phase low voltage networks or the non-phase-related independent display of all quantities. The measuring device is configured using the PC memory card and PLMultiStat software. The recorded measurement data can be visually displayed and further processed using the software.

Operational principle

Currents can be measured using 1A or 5A current transformers. Automatic measuring range conversion at 1.2A ensures a high degree

of measuring accuracy, also in the lower measuring range in the event of 5A current transformers.

Due to high measuring accuracy, PLMulti can also be applied in the medium voltage range using voltage transformers.

The 6 measuring channels of a measurement card are on the same potential. The measurement cards are electrically isolated from each other.

Product construction

PLMulti 96mm x 96mm has a plastic case for fitting or retrofitting in the panel cut-out in accordance with DIN 43700. PLMulti is equipped with plug-in screw terminals and two RS232/RS485 serial interfaces for modem connection and networking of PLMulti devices.

The memory card, which can be exchanged from the front, provides very easy access to the recorded measurement data. 3 keys allow all values to be called up on the clear display.

Accessories

- Memory card: ATA flash PCMCIA card [4MB]
- Art. No.: E8030002 [4MB]
- Front door Art. No.: E8000007 [EX9TUR]
- PLSOFT [JEANLOG]

External supply	Measuring channels	Std.P	Type	Art. no.
			...	
AC 230V	12xl	1	12XI/230V	E5020002
DC 24V	12xl	1	12XI/24V	E5050002
DC 24V	18xl	1	18XI/24V	E5050003
DC 24V	3xU,15xl	1	3XU,15XI/24V	E5050102
AC 230V	3xu,3xl	1	3XU,3XI/230V	E5020100
DC 24V	3xu,3xl	1	3XU,3XI/24V	E5050100
AC 230V	3xU,9xl	1	3XU,9XI/230V	E5020101
DC 24V	3xU,9xl	1	3XU,9XI/24V	E5050101
AC 230V	6xl	1	6XI/230V	E5020001
DC 24V	6xl	1	6XI/24V	E5050001
DC 24V	6xU,12xl	1	6XU,12XI/24V	E5050201
AC 230V	6xU,6xl	1	6XU,6XI/230V	E5020200
DC 24V	6xU,6xl	1	6XU,6XI/24V	E5050200
DC 24V	9xU,9xl	1	9XU,9XI/24V	E5050300

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Accessories for the measurement data acquisition system from JEAN MÜLLER allow easy application of the JEAN MÜLLER products PLMaster, PLMulti and PLSoft.

Applications

The accessories are specially designed for the JEAN MÜLLER products PLMaster and PLMulti.

Product construction

PC MEMORY CARD
The exchangeable 4MB PC memory card is used as a

bulk storage for the PLMaster and PLMulti measurement data acquisition devices from JEAN MÜLLER. The ATA flash memory cards type I and II are available with memory capacities from 4MB to 440MB.

READER FOR PC MEMORY CARD

The external PC memory card reader allows the PC memory cards to be read out and in where the PC has no PCMCIA interface. The reader is connected to the LPT 1 interface and can be operated under Windows 95/98/NT.

SOCKET CONNECTOR, 16-POLE


The 16-pole socket connector is used to connect the signal lines of PLMaster. The socket connector is plugged on the SASIL strip guide.

SASIL GUIDE


The PLMaster push-in case is designed for SASIL size 1 strips of 75mm overall height. The SASIL size 1 strip guide is required to integrate the PLMaster device in the cabinet system.


FRONT DOOR FOR PLMULTI

The front door for PLMulti 96mm x 96mm provides IP54 protection. The door interlock can be sealed.

Accessories for PLMaster/PLMulti		Std.P	Type	Art. no.
	ATA Flash PC memory card	1	4MB	E8030002
	PC memory card reader	1	SRAM-/ATA-FLASH	E8030003

Accessories for PLMaster		Std.P	Type	Art. no.
	Socket connector, 16-pole	1	BL/SASIL00-3	A8016141

Accessories for PLMaster		Std.P	Type	Art. no.
	Strip guide size 1 / height of module 75mm	1	LF01/SASIL1	A8600066

Accessories for PLMulti		Std.P	Type	Art. no.
	Front door for PLMulti 96x96mm, IP54	1	EX9TUR	E8000007

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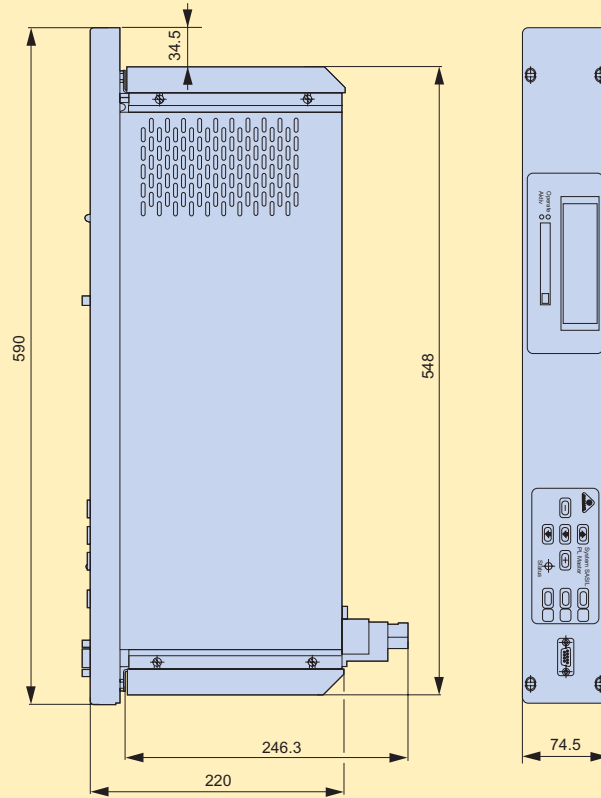
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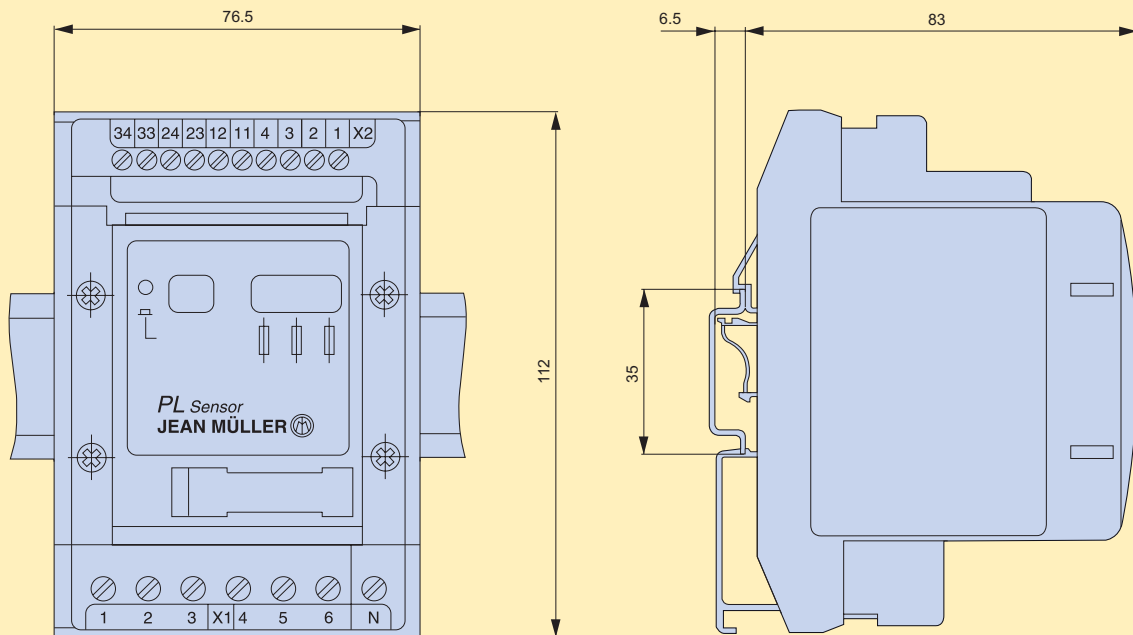
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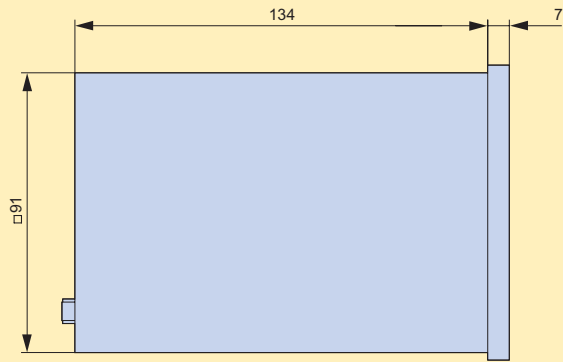
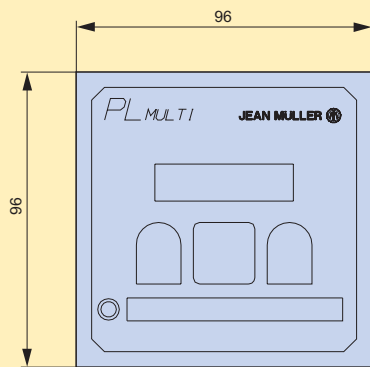
PLMaster measuring panel

Ordering details see page 16-3



PLSensor/Eo05

Ordering details see page 16-5



PLMulti 96mm x 96mm

Ordering details see page 16-7

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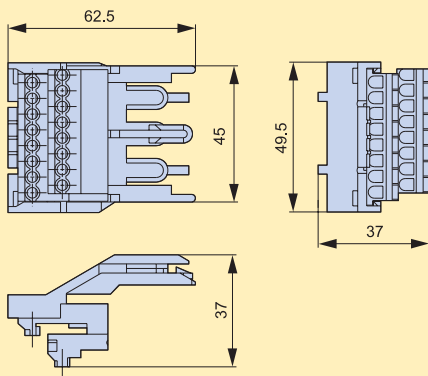
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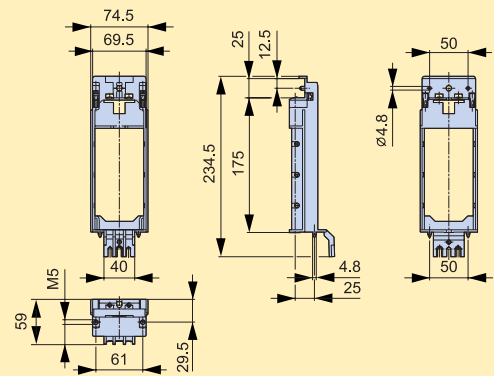
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BL/SASIL00-3

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LFo1/SASIL1

Ordering details see page 16-9

Technical data for Measurement data acquisition systems (in accordance with EN 61 000-2,-3,-4, EN 55 011, ENV 50 140 and ENV 50204)

Type PLMaster

Electrical characteristics	Power input	P _V	VA	15	
	Auxiliary voltage	U	V	DC 24	
Interface	Data bus	-	-	RS 485	
	Data transmission	-	-	Asynchronous / half-duplex	
	Baud rate	-	kBaud	156.25	
	Transmission integrity	-	-	With Hamming distance 4	
	Communication	-	-	Up to 60 PLSensor	
	Service	-	-	RS 232	
	Slot for PC card	-	-	PCMCIA	
EMV	IEC 61000-4-3	Electronic fields	-	V/m	10
	IEC 61000-4-2	Air discharge	U	kV	8
		Contact discharge	U	kV	4
	EN 60947-1 Table 18	Emitted interference	-	MHz	30 to 1000
Conducted interference		-	MHz	0.15 to 30	
General data	Temperature range	-	C°	- 10 to + 55	
	Utilization type	-	-	Horizontal	
	Indication	-	-	LCD. 2-line, 32 characters	
	Type of protection	-	-	IP 20	
	Connection	16-pole screw terminals	-	mm ²	1.5
	Mounting	-	-	-	Strip guide for SASIL size 1
	Dimensions	W x H x D	-	mm	590 x 75 x 246.3
	Weight	-	-	kg	6

LV-HRC fuse-links

HV-HRC fuse-links

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D-type fuse-bases

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Technical data for measurement data acquisition systems (in accordance with IEC/EN 60947-1,-3, VDE0106 and EN 60747-1, Table 23)

Type PLMulti

Electrical characteristics	Measurement input	Voltage	U_e	V	AC 50 up to 500V	
	Voltage range		U_N	V	0.8 to 1.1	
	Power input		P_V	VA	6	
	Rated frequency		-	Hz	50 / 60	
	Internal resistance	Phase to phase		R_i	Ohm	4M
		Phase to N conductor		R_i	Ohm	2M
	Auxiliary voltage		U	V	DC 24 / AC 230	
	Current transformer	Secondary current		I	A	1 or 5

EMV	EN 60947-1 Table 23	Impulse voltage	U_{L-E}	V	2kV
		Impulse voltage	U_{L-L}	V	1kV
	IEC61000-4-3	Electronic fields	-	V/m	10
	IEC61000-4-2	Air discharge	U	kV	8
		Contact discharge	U	kV	4
	EN60947-1 Table 18	Emitted interference	-	MHz	30 to 1000
Conducted interference		-	MHz	0.15 to 30	

General data	Temperature range		-	C°	- 10 to + 55
	Utilization type		-	-	As required
	Display	LED	-	-	8-digit
	Protection class		-	-	IP 20
	Connection	Screw terminals	-	mm ²	2.5
	Mounting	Panel, DIN 43700	-	mm	92x92
	Dimensions	W x H x D	-	mm	96x96x134
	Weight	Max.	-	kg	0.8

Technical data for measurement data acquisition systems (in accordance with IEC/EN 60947-1,-3, VDE0106 and EN 60747-1 Table 23)

Type PLSensor				EE05	
Electrical characteristics	Nominal voltage	U_B	V	AC 400 up to 690V	
	Voltage range	U_N	V	0.8 to 1.1	
	Power input	P_V	VA	2	
	Rated frequency	-	Hz	50/60	
	Internal resistance	Phase to phase	R_i	Ohm	4M
		Phase to N conductor	R_i	Ohm	2M
	Response threshold factory setting	U_A	V	> 25	
	Auxiliary voltage	U	V	DC24	
Relay	Response time	t	s	3	
	Relay contacts	-	-	2 make/1 break	
	Max. switching voltage	U	V	AC 250	
	Max. switching current	I	A	AC 5	
	Max. switching capacity	P	W	100	
	Operational principle	-	-	Energized circuit	
EMV	EN 60947-1 Table 23 Impulse voltage	U_{L-E}	V	2kV	
	Impulse voltage	U_{L-L}	V	1kV	
	IEC61000-4-3 Electronic fields	-	V/m	10	
	IEC61000-4-2 Air discharge	U	kV	8	
		Contact discharge	U	kV	4
	EN60947-1 Table 18 Emitted interference	-	MHz	30 to 1000	
Conducted interference	-	MHz	0.15 to 30		
General data	Temperature range	-	C°	- 10 to + 55	
	Utilization type	-	-	As required	
	Protection class	-	-	IP 20	
	Indication	Operation	-	-	1 LED (green)
		Fault indication	-	-	3 LEDs (F1,F2,F3 red)
	Connection	Screw terminals	-	mm ²	6/2.5/1.5
	Mounting	-	-	-	EN mounting rail
	Dimensions	W x H x D	-	mm	76.5 x 112 x 89.5
	Weight	-	-	kg	0.3

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