PLM33 Power Line Monitor

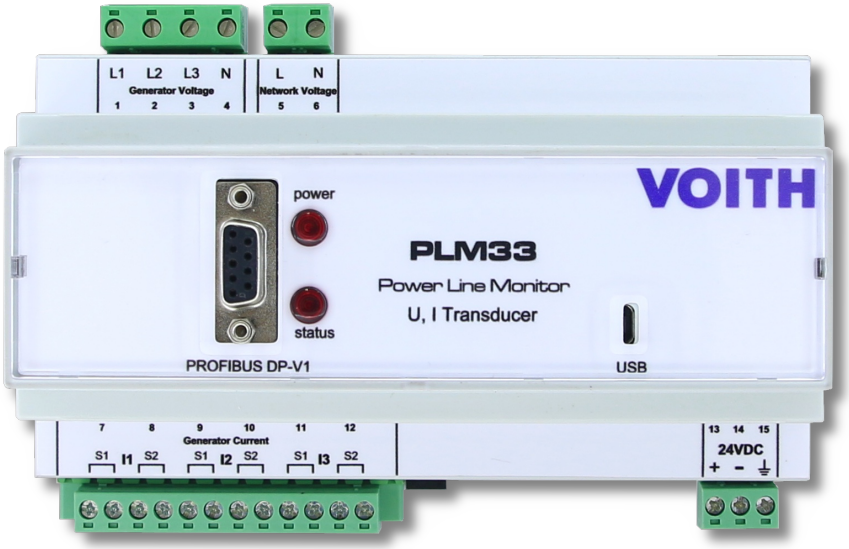
VOITH

PLM33 is fast transducer of electrical values. Thanks high accuracy and fast actualization of measured values is device suitable especially in electrics networks or anywhere fast control loops are needed. PLM33 provides measured data to superior system (e.g. PLC, data logger, monitoring system etc) by Profibus interface. Actualization of measured values runs in interval of 2 ms.

The device is also equipped with a service USB interface, which is used for communication with PLM33PC software. Software allows basic overview of measured values and setting of device parameters. More information about the software is available on www.bmr.cz/PLM33.

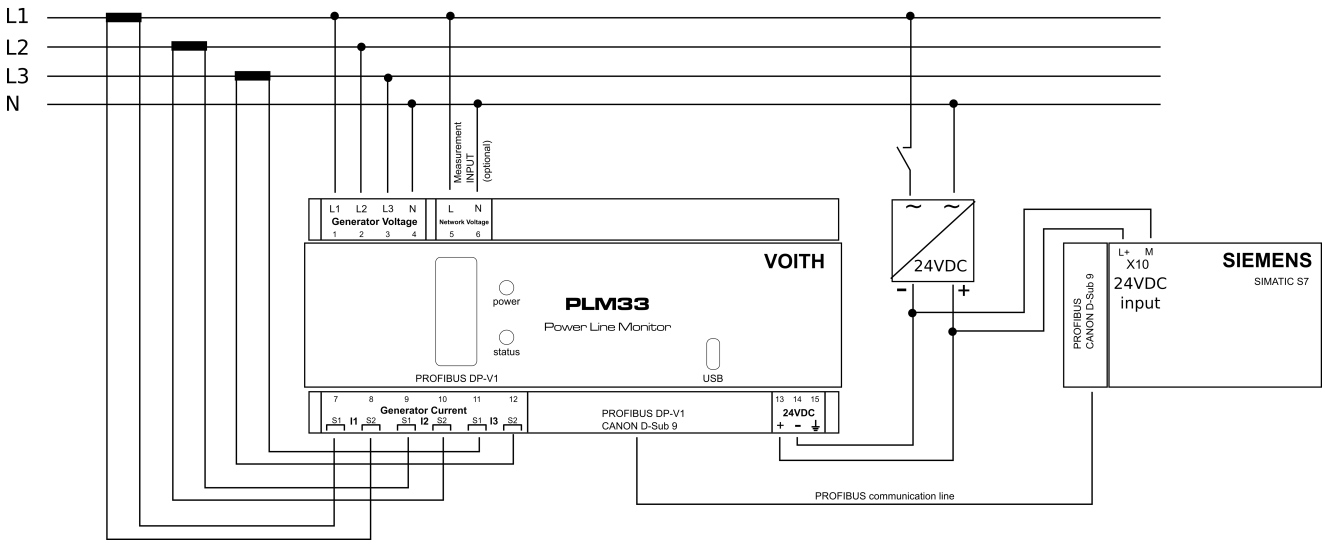
Main features

- 3 phase voltage inputs and 3 phase current inputs (Generator input)
- 1 phase separate voltage input (Network input)
- Software switchable range of current input - 1A or 5A
- 24VDC power supply
- Profibus DP-V1 communication interface with actualization of measured values in interval of 2 ms
- USB service interface
- PC software for basic measurement overview and device settings
- Power LED indicator and Profibus LED status indicator



DOC. REVISION	1.1
DATE	2022-10-03
Device firmware	1.3.7 or newer
Device hardware version	1.4 or newer

Typical connection



PLM33 allows measurement in TN, TT and IT networks. In case of IT network measurement N (4) pole is not connected.

Measured parameters

	Generator input				Network input		
Parameter	L1	L2	L3	ΣL1...L3	L1	Measuring range	Displayed value
Phase voltage	•	•	•	•	•	1VAC ... 300VAC	0 ... 750kVAC
Line voltage	•	•	•			1.7VAC ... 520VAC	0 ... 1.3MVAC
Current	•	•	•	•		10mA ... 13A	0 ... 750kA
Active power	•	•	•	•		10mW ... 3900W	0 ... 999GW
Reactive power	•	•	•	•		10mvar ... 3900var	0 ... 999Gvar
Aparent power	•	•	•	•		10mVA ... 3900VA	0 ... 999GVA
Cosinu φ	•	•	•			0.01L ... 0.01C	0.01L ... 0.01C
Power-factor	•	•	•	•		0.01L ... 0.01C	0.01L ... 0.01C
Frequency	•	•	•		•	10Hz ... 130Hz	10Hz ... 130Hz
Voltage asymmetry				•		1VAC ... 300VAC	0 ... 750kVAC
Current asymmetry				•	•	10mA ... 13A	0 ... 750kA

Technical features

Supply voltage

Power supply	24VDC ±15%
Burden	< 8VA

Measuring accuracy

U, I, P, Q	1% (10-40Hz), 0.2% (40-70Hz), 1% (70-130Hz)
Response time	2.5ms (50Hz), 2.08ms (60Hz)

Voltage input

Measuring range - Generator voltage	1 ... 300VAC (L -N)
Measuring range - Network voltage	1 ... 300VAC (L- N)
Voltage Un	100V
Frequency	10 … 130Hz
Overload voltage	3 x Un - continuously, 6 x Un - 10s
Overvoltage	CAT IV - 300V
Consumption	< 0.2 VA / phase (300 V)

Current input

Current In	1A, 5A - Software switchable
Measuring range - In[1A]	10mA ... 5A
Measuring range - In[5A]	10mA ... 13A
Overload current	13A - continuously, 50A - 15s, 100A - 1s
Consumption	< 0.05 VA / phase

General data

Communication interface	PROFIBUS DP-V1 , USB
Galvanic isolation	power supply, measuring inputs and communication
Ambient temperature	+5°C ... +70°C (operation), -40°C ... +85°C (storage)
Dimension	157 x 86 x 60mm, DIN rail mounting
Weight	ca 300g
Related standards	IEC60688 ed.2, EN 61557-12, EN 61010, EN 61010 - 1 ed.2, EN 61010-2-30

Profibus data

PLM33 supports three types of communication protocols on Profibus interface. Protocol type is software switchable by software PLM33PC. After consultation with the manufacturer, the communication protocol and measured parameters can be expanded according to the customer's requirements.

Communication: Type_1

Parameter	Range	Value	Byte order	Type	Formula
BIN		0 ... 65535	1, 2	Word uint16	Bus Increment Number
DIN		0 ... 65535	3, 4	Word uint16	Data Increment Number
I RMS	0 ... 12A	0 ... 65535	5, 6	Word uint16	(I1 + I2 + I3) / 3
U RMS	0 ... 300V	0 ... 65535	7,8	Word uint16	(U1 + U2 + U3 / 3) L-N
P RMS	+/- 10800W	+/- 10800000	9,10,11,12	Double word int32	P = P1 + P2 + P3
Q RMS	+/- 10800Var	+/- 10800000	13,14,15,16	Double word int32	Q = Q1 + Q2 + Q3
Frequency	0 ... 300Hz	0 ... 65535	17, 18	Word uint16	Generator frequency

Communication: Type_2

Parameter	Range	Value	Byte order	Type	Formula
BIN		0 ... 65535	1, 2	Word uint16	Bus Increment Number
DIN		0 ... 65535	3, 4	Word uint16	Data Increment Number
I RMS	0 ... 12A	0 ... 65535	5, 6	Word uint16	(I1 + I2 + I3) / 3
U RMS	0 ... 300V	0 ... 65535	7,8	Word uint16	(U1 + U2 + U3 / 3) L-N
P RMS	+/- 10800W	+/- 10800000	9,10,11,12	Double word int32	P = P1 + P2 + P3
Q RMS	+/- 10800Var	+/- 10800000	13,14,15,16	Double word int32	Q = Q1 + Q2 + Q3
Frequency	0 ... 300Hz	0 ... 65535	17, 18	Word uint16	Generator frequency
NV U RMS	0 ... 300V	0 ... 65535	19, 20	Word uint16	Network voltage
NV Frequency	0 ... 300Hz	0 ... 65535	21, 22	Word uint16	Network frequency

Communication: Type_3

Parameter	Range	Value	Byte order	Type	Formula
BIN			1, 2	Word uint16	Bus Increment Number
DIN			3, 4	Word uint16	Data Increment Number
I RMS	0 ... 12A	0 ... 65535	5, 6	Word uint16	(I1 + I2 + I3) / 3
U RMS	0 ... 300V	0 ... 65535	7,8	Word uint16	(U1 + U2 + U3 / 3) L-N
P RMS	+/- 10800W	+/- 10800000	9,10,11,12	Double word int32	P = P1 + P2 + P3
Q RMS	+/- 10800Var	+/- 10800000	13,14,15,16	Double word int32	Q = Q1 + Q2 + Q3
Frequency	0 ... 300Hz	0 ... 65535	17, 18	Word uint16	Generator frequency
NV U RMS	0 ... 300V	0 ... 65535	19, 20	Word uint16	Network voltage
NV Frequency	0 ... 300Hz	0 ... 65535	21, 22	Word uint16	Network frequency
Unbalance U1	0 ... 500V	0 ... 65535	23, 24	Word uint16	Voltage positive sequence
Unbalance U2	0 ... 500V	0 ... 65535	25, 26	Word uint16	Voltage negative sequence
Unbalance U0	0 ... 500V	0 ... 65535	27, 28	Word uint16	Voltage zero sequence
Unbalance I1	0 ... 17A	0 ... 65535	29, 30	Word uint16	Current positive sequence
Unbalance I2	0 ... 17A	0 ... 65535	31, 32	Word uint16	Current negative sequence
Unbalance I0	0 ... 17A	0 ... 65535	33, 34	Word uint16	Current zero sequence

Device manufacturer

BMR s.r.o.
Lipovka 17
Rychnov nad Kněžnou 516 01
Czech Republic

Email: obchod@bmr.cz
Website: https://www.bmr.cz/PLM33