



CewePrometer

Energy meter in class 0.2S, 0.5S and in class 1

- Rack or wall mounted
- Three serial communication ports alternatives
- More than one year logging memory
- Instantaneous values with high accuracy
- Shows harmonics and power quality
- Easy to configure
- Open protocol, IEC 62056-21 and DLMS
- Built in terminal
- Supported by CeweCetrics, Görlitz, Itron, Energy ICT and ELIN softwares



CewePrometer^W



CewePrometer^R

The CewePrometer is the energy meter that apart from measure also shows your power quality. The meter is developed and produced by Cewe Instrument AB

What the CewePrometer can do!

Measure energy

CewePrometer can measure

- Active energy (Wh)
- Reactive energy (VARh)
- Apparent energy (VAh)

The measured energy is accumulated in energy registers for import and export energy directions. For Reactive energy values are stored for all quadrants. Apparent energy is calculated independently for each phase and the total is calculated as a square root sum of watts and vars.

Energy registers

Energy	Import/ Export	QI-QIV	Capacitive/ Inductive
Active	•	-	-
Reactive	•	•	•
Apparent	•	-	-

Store loggers (load profile) for longer periods.

CewePrometer is equipped with a large capacity flash memory for data-logging purposes. Up to 20 logging channels in two loggers may be used to record energy, power, and voltage etc. The two loggers can have separately demand period. When using the logger for energy values, the CewePrometer stores the actual meter reading (counter value). For instantaneous values, the meter can store one of four alternatives; average, max, min or instant values for the period.

Table showing approximate storage capacity in days:

Number of logging channels per logger										
Demand period in min	1	2	3	4	5	6	7	8	9	10
1	21	14	10	8	7	6	5	4	4	3
5	108	72	54	43	36	31	27	24	21	19
15	326	217	163	130	108	93	81	72	65	59
30	652	434	326	260	217	186	163	144	130	118
60	1304	869	652	521	434	372	326	289	260	237

*) 2,3,4 and 20 minutes is also available

General description of the CewePrometer

Logged values

	By phase	Total
Active energy import/export	•	•
Reactive energy import/export	-	•
Reactive energy inductive/capacitive	-	•
Reactive energy QI-QIV	-	•
Apparent energy import/export	-	•
Phase voltage	•	•
Phase to phase voltage	•	•
Current	•	•
Active power	•	•
Reactive power	•	•
Apparent power	•	•
Frequency	N/A	•
Phase angle	•	•
Power factor	•	•
THD voltage	•	•
THD current	•	•
External registers 1-8	N/A	•

Display instantaneous values with high accuracy

In addition to the conventional data from the energy registers, instantaneous values can be read with the same class as for energy:

- Current in each phase
- Phase to phase voltage
- Phase to neutral voltages
- Power factor per phase and total
- Phase angle per phase and total
- Frequency
- Active power per phase and total
- Reactive power per phase and total
- Apparent power per phase and total
- THD (Total Harmonic Distortion) for voltage and current
- Display of individual voltage and current harmonics
- Vector diagram

These values are calculated 12 to 15 times each second, based on data from four periods. The display is updated every second with an instantaneous value.

Act as a terminal

The CewePrometer is equipped with four inputs, which can be used to record energy from other meters.

Transmit and receive pulse information, alarms etc

The CewePrometer can be equipped with pulse inputs and outputs.

The inputs can be used to receive external pulses from meters. The pulses are stored as logg channels and accumulating registers.

The outputs are primary used for alarms and/or energy pulses.

Calculate maximum demand

The CewePrometer can be set to calculate up to eight different maximum demand values in eight (8) MD registers. MD for active, reactive and apparent energy in import export direction are possible.

Store and provide periodical invoicing data

The CewePrometer takes a "snapshot" of all accumulating and MD registers.

- 15 readings can be stored
- End of period determined with calendar, pulse input or by software.

Security

The security system in the CewePrometer and CeweConfig software consists of five password levels. The highest level is protected with a hardware jumper and is used for calibration and initiation of the meter. The lowest level gives you read only access.

The meter is provided with sealing tabs screws.

Self diagnostic

The CewePrometer display and register module continuously verifies that memory and registers are in good condition. This module also communicates with all other modules to verify that they are running.

User interface via graphical display and front panel keys

A graphical display on the front and three buttons to navigate makes it easy for the user to find useful information on the meter. The information is displayed as text and as graphic. The user can configure up to five different display sequences where one is accessed with a forth button under a sealable cover..

Easy configured

With the software CeweConfig, the user can easily change the parameters in the meter. The user can also make instantaneous readings, have a view on the harmonics or read out the events. The software is available for numerous languages.

Communication

The CewePrometer is always equipped with an optical port, complying with IEC 62056-21. In addition to that, the meter can also be ordered with RS232, RS422/485 or Ethernet port. Up to two extra ports can be fitted into the meter.

The RS422/485 port is used to connect many meters on the same site in a LAN with i.e. a modem (PSTN/GSM/GPRS).

With Ethernet port you can easily connect the meter directly to the Intranet/Internet which gives you a cheap and quick connection.

Front panel LED indicators

The CAL Active and CAL Reactive is used when performing a calibration or checking the meter accuracy. It emits a light pulse frequency proportional to the power level, and consequently every pulse corresponds to a certain amount of energy. The constant (pulses per kWh or pulses per kVARh) can be set by the user.

The Alarm-LED is flashing when it indicates that an alarm condition is present.

The Power LED simply indicates that the meter power supply is working and the meter is alive.

Diagnose installation/connection errors

Voltage phase sequence and correct connection of the currents can be checked on the display.

Store event and error messages

The user can set alarm and alarm conditions. The user sets if the alarm shall be indicated on the front and/or a pulse output.

Power quality

The CewePrometer has a module, which can measure chosen part, of the EN51060 standard.

- Logging of voltage and current outages, with timestamp and duration
- Monitoring of short voltage fluctuations
- Monitoring of long voltage fluctuations
- Measuring of harmonics and THD
- Vector diagram and harmonics are shown graphically
- Alarm for harmonics and THD
- Alarm for current, voltage, power, power factor, and voltage unbalance

Application of corrections for measuring and power transformer errors and losses

The measuring transformers have errors that contribute to the total error in the system. The CewePrometer can compensate for these errors and to achieve a system with higher accuracy without replacing existing transformers.

Sometimes the system energy selling point and the most convenient or economical position in the system for measuring the energy are not the same. For example, the commercial interface for a generator station selling the energy may be on the HV side of the line transformer. The most economical place to measure the energy is on the LV side of the power transformer, because of the cost for measuring transformers. To measure and sell the energy in different places in the system requires some means of accounting for the losses between these two positions, i.e. the power transformer losses.

CewePrometer can perform these corrections and compensations for measuring transformer errors and power transformer losses.

Correction for measuring transformer errors, CT's and VT's can be done for phase angle error and magnitude error.

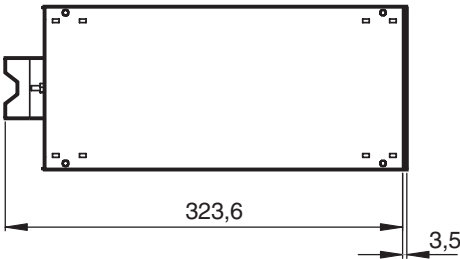
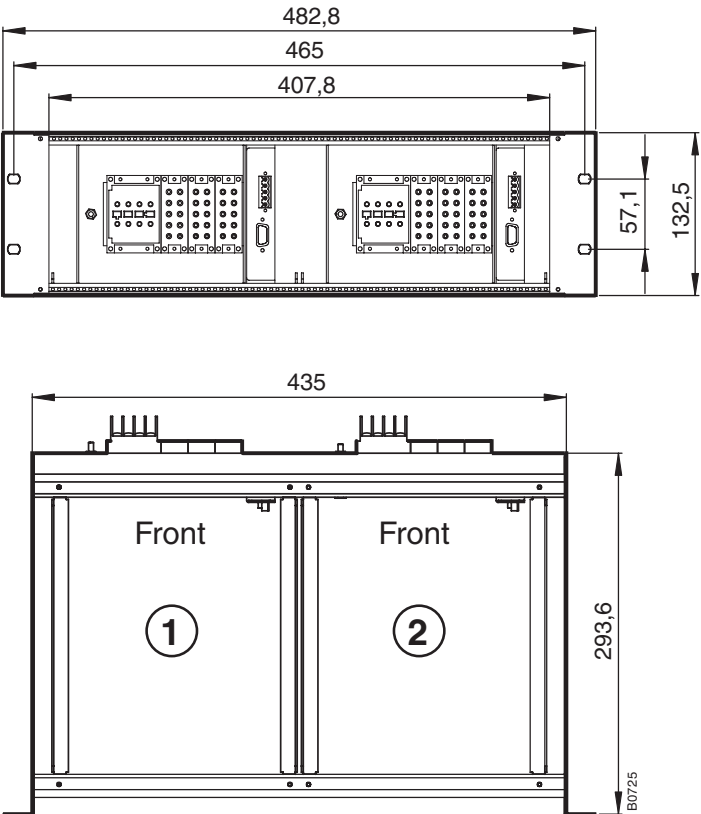
Compensation for power transformer losses can be done for iron losses (magnetisation losses) that are more or less constant and copper losses (resistive losses) that are proportional to the square of the current.

Mounting and accessories

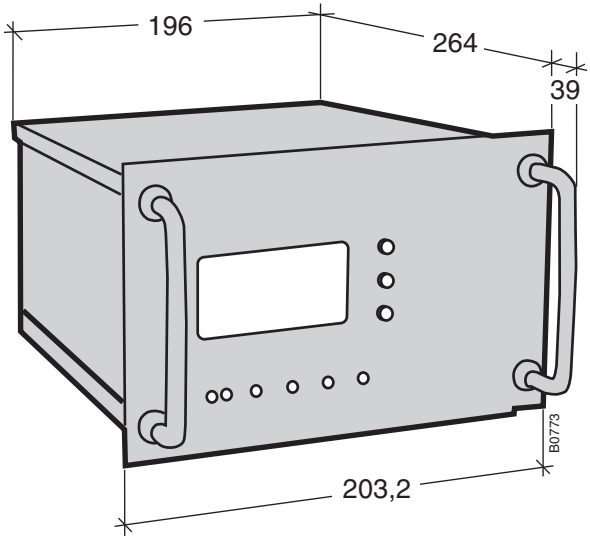
For installation of the CewePrometer-R (rack) there is a ready-to-use 19" rack and also plug-in cable packages for measuring circuits and I/O ports.

Dimensions

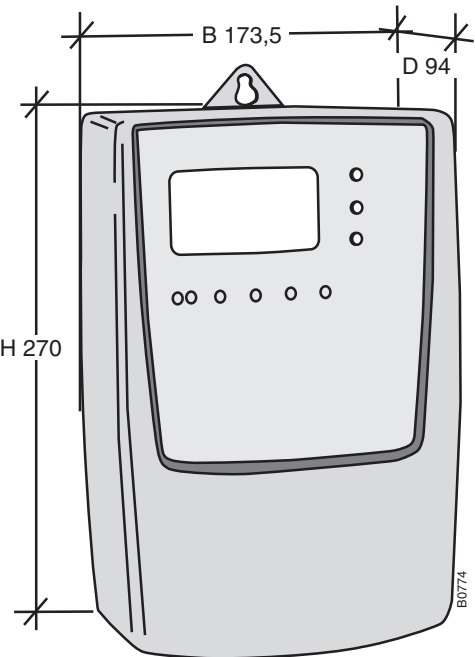
Dimensions 19" rack, DIN 43862



CewePrometer-R dimensions



CewePrometer-W dimensions



CewePrometer-W panel mounting kit



For the Wall meter there is a panel mounting kit for use in panels.

Materials and components – CewePrometer-

Parts	Material	Trade name (example)	Self-exting
Meter case parts	Stainless steel		ULV0
Connector		GE Cycloy 2950	ULV0
Display window	PC	GE Lexan 141 transparent	ULV0
Small parts	PC-ABS	GE Lexan 141 IR-filter	ULV0
PC boards	FR4 GF epoxy		ULV0

Materials and components – CewePrometer-W

Parts	Material	Trade name (example)	Self-exting
Meter case parts	PC-ABS	GE Cycloy 2950	ULV0
Terminal block	PPO +10%GF	GE Noryl GFN1SE1	ULV0
Display window	PC	GE Lexan 141 transparent	ULV0
Small parts	PC	GE Lexan 141 IR-filter	ULV0
PC boards	FR4 GF epoxy		ULV0

Test and approvals

Performed by the SP, Technical Research Institute of Sweden

SP
Box 857
S-501 15 BORÅS
SWEDEN

Certificates:

SP - Sweden

Certificate no. 22 00 04. CewePrometer-R Electronic watt-hour and var-hour meter
Certificate no. 22 00 05. CewePrometer-W Electronic watt-hour and var-hour meter

To the following standards:

- EN62052-11:2003 and 62053-22:2003 class 0.2S and 0.5S
“Alternating current static watt-hour meters for active energy”
- EN62052-11:2003 and 62053-23:2003 Class 2
“Alternating current static var-hour meters for reactive energy”

Tests have also been done in part for the following standards:

- EN61038:1996 Time switches for tariff and load control. Applicable parts according to accuracy requirements for the real time clock.

Performed by Ofgem - UK

Certificate no. 983. CewePrometer-R Electronic watt-hour and var-hour meter
Certificate no. 999. CewePrometer-W Electronic watt-hour and var-hour meter

Performed by SGS - UK

Compliance with Code of Practice 1, 2, 3 & 5
CewePrometer-R and CewePrometer-W

Performed by Justervesendet - Norway

Certificate no. 08/2005. CewePrometer-R and W Electronic watt-hour and var-hour meter

Performed by BRML - Romania

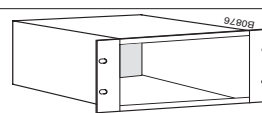
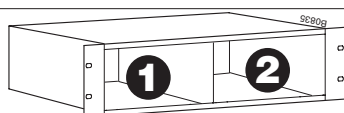
Certificate no. 212/23.09.2005

Performed by PTB - Germany

Certificate no. PTB-2.3-4025263, 15 Dec. 2006

Ordering key – CewePrometer-R/W

Meter specification					Code	Sample	
Product group							
CewePrometer-R			<input type="checkbox"/>	36	375243111		
CewePrometer-W			<input checked="" type="checkbox"/>	37			
Accuracy class							
0.2S	2-element (3wire) measuring	(only 1(2)/5(10) for –R)	<input type="checkbox"/>	0	375243111		
0.5S	2-element (3wire) measuring		<input type="checkbox"/>	1			
1	2-element (3wire) measuring	(Only CewePrometer-W)	<input type="checkbox"/>	2			
0.2S	3-element (4wire) measuring		<input checked="" type="checkbox"/>	5			
0.5S	3-element (4wire) measuring		<input type="checkbox"/>	6			
1	3-element (4wire) measuring	(Only CewePrometer-W)	<input type="checkbox"/>	7			
Measuring module							
3-element meter		2-element meter					
3x57/99 – 240/415 V		50 Hz	<input checked="" type="checkbox"/>	2	375243111		
3x57/99 – 240/415 V		60 Hz	<input type="checkbox"/>	3			
		3x100 – 240 V	<input type="checkbox"/>	8			
		3x100 – 240 V	<input type="checkbox"/>	9			
Current							
1(6) A			<input type="checkbox"/>	1	375243111		
1(2) A or 5(10) A user programmable			<input checked="" type="checkbox"/>	4			
Auxiliary supply							
Selfpowered (Internal)		Only CewePrometer-W	<input type="checkbox"/>	2	375243111		
40-276VAC/DC	Single aux. supply		<input checked="" type="checkbox"/>	3			
2 x 40-276VAC/DC	Dual aux. supply	Only CewePrometer-R	<input type="checkbox"/>	4			
40-276VAC/DC + selfpowered	Dual aux. supply	Only CewePrometer-R	<input type="checkbox"/>	5			
I/O module							
CewePrometer-W							
No inputs and no outputs			<input type="checkbox"/>	0	375243111		
4 inputs and 8 outputs			<input checked="" type="checkbox"/>	1			
CewePrometer-R							
No inputs and no outputs			<input type="checkbox"/>	0	375243111		
4 inputs and 6 outputs			<input type="checkbox"/>	1			
2 inputs and 10 outputs	Only available with single aux supply		<input type="checkbox"/>	2			
0 inputs and 12 outputs	Only available with single aux supply		<input type="checkbox"/>	3			
0 inputs and 8 outputs	Common ground in two groups – only -R		<input type="checkbox"/>	8			
0 inputs and 8 outputs	Norway specific CewePrometer-R		<input type="checkbox"/>	9			
Communication							
No communication			<input type="checkbox"/>	10		375243111	
RS422 + RS232			<input checked="" type="checkbox"/>	11			
RS422 + RS422			<input type="checkbox"/>	12			
RS232 + RS232			<input type="checkbox"/>	13			
RS422			<input type="checkbox"/>	14			
RS232			<input type="checkbox"/>	15			
RS232 + Ethernet			<input type="checkbox"/>	16			
RS422 + Ethernet			<input type="checkbox"/>	17			
Ethernet	Only CewePrometer-W		<input type="checkbox"/>	18			
RS422 + RS232+Ethernet	Only CewePrometer-R		<input type="checkbox"/>	19			



Rack for CewePrometer-R

Name	Position	Description	Article no.
19" Rack for one meter	1	No communication	369109001
	2	—	
19" Rack for two meters	1	No communication	369100001
	2	No communication	
19" Rack for one meter	1	RS422 + RS232	369119001
	2	—	
19" Rack for two meters	1	RS422 + RS232	369111001
	2	RS422 + RS232	
19" Rack for one meter	1	RS422 + RS422	369129001
	2	—	
19" Rack for two meters	1	RS422 + RS422	369122001
	2	RS422 + RS422	
11" Rack for one meter	—	No communication	369100501
11" Rack for one meter	—	RS422 + RS232	369110501
11" Rack for one meter	—	RS422 + RS422	369120501
11" Rack for one meter	—	RS232 + RS232	369130501
11" Rack for one meter	—	RS422	369140501
11" Rack for one meter	—	RS232	369150501
19" Rack without ESSAILEC connectors	—	—	369199001

Rack – CewePrometer-R + ISKRA/EMH/L+G meter

Meters of different brand, differs in connection, therefore Cewe Instrument offer you a rack that have connectors for various meters

Name	Position	Description	Article no.
19" Rack for two meters	1	No communication	369209010
CewePrometer-R + ISKRA/L+G	2	—	
19" Rack for two meters	1	RS422 + RS232	369219011
CewePrometer-R + ISKRA/L+G	2	—	
19" Rack for two meters	1	RS422 + RS422	369229012
CewePrometer-R + ISKRA/L+G	2	—	
19" Rack for two meters	1	RS232 + RS232	369239013
CewePrometer-R + ISKRA/L+G	2	—	
19" Rack for two meters	1	No communication	369209020
CewePrometer-R + EMH	2	—	
19" Rack for two meters	1	RS422 + RS232	369209021
CewePrometer-R + EMH	2	—	
19" Rack for two meters	1	RS422 + RS422	369209022
CewePrometer-R + EMH	2	—	
19" Rack for two meters	1	RS232 + RS232	369209023
CewePrometer-R + EMH	2	—	

Ordering key – Accessories

Accessories – Rack

Name	Description	Article no.
Cable harness 2.5 m	Cables for Current + Voltage + Earth. Crimped plugs in one end.	369900006
I/O cables 2.5 m	Cables for I/O. Crimped plugs in one end. For 10 I/O's per package (20 cables).	369900007
Back plane kit <i>CewePrometer-R</i>	Essailec connectors + communication connectors. Fits to CewePrometer Rack.	369900001
Back plane kit <i>ISKRA/L+G</i>	Essailec connectors. Fits to CewePrometer Rack.	369900004
Back plane kit <i>EMH</i>	Essailec connectors. Fits to CewePrometer Rack.	369900011
Front plate kit	Front plate to cover an empty slot in a CewePrometer Rack.	369900002
Crimped plugs	Crimped plugs. 10 pcs. Fits to Essailec connector.	369900009
Cable markings	Markings for Essailec connectors. One chart has marks for one meter.	369900010
Cable Sheath	For I/O cables \approx 2 m	369900008

Accessories – General

Name	Description	Article no.
Battery	3 V lithium battery for clock backup. Fits both CewePrometer-R and W.	798301
Null Modem cable	Null modem cable for direct communication between PC and CewePrometer.	502090100
Serial cable	Common serial cable for connection between Modem/converter and CewePrometer. Pin-to-pin cable.	501590102
Optical head-RS232	RS232 Optical head for IEC1107 communication.	379891003
Optical head-USB	USB Optical head for IEC1107 communication.	379891002

Accessories – CewePrometer-W

Name	Description	Article no.
Panel mounting kit	Panel mounting kit for CewePrometer-W.	379891001
Communication port RS232	Extra Communication port for CewePrometer-W.	379891004
Communication port RS422	Extra Communication port for CewePrometer-W.	379891005
Communication port Ethernet	Extra Communication port for CewePrometer-W.	379891008

Software

Name	Description	Article no.
CeweConfig	Configuration and read out tool for CewePrometer-R/W.	379810001
CeweConfig kit	Configuration and read out tool for CewePrometer-R/W + Optical head and USB adapter.	379811001

Accuracy

Class 0.2S and class 0.5S
Class 1 available for CewePrometer-W

Voltage circuit (U_N)

Measuring voltage	
3-wire system:	3x100-240 V
4-wire system:	3x57/99-3x240/415 V
Range	80% – U_N – 115%
Burden	5 mVA/phase at 57.7 V 17 mVA/phase at 120V 67 mVA/phase at 240 V
Max overload voltage	1.3 x U_N continuously, 2 x U_N 0.5 s

Current circuit (I_N)

Measuring current	1(6) or 1(2)/5(10) A user programmable
Measuring range	1 - 600% of I_N or 1 - 200% of I_N
Burden	0.7 mVA/phase at 1 A 0.02 mVA/phase at 5 A
Max overload current	2 x I_N continuously, 10 x I_N during 10 s, 40 x I_N during 1 s
Starting current	<0.1% of I_N

Frequency

50 Hz (45-55) or 60 Hz (55-65)

Auxiliary supply

Voltage range	40-276 VAC/DC
Max burden	typical 6-8VA
CewePrometer-R can be equipped with two power supplies	
CewePrometer-W can either have internal (self powered) or external supply.	

Inputs

Number of inputs	
<i>CewePrometer-R</i>	0, 2 or 4 inputs
<i>CewePrometer-W</i>	4 inputs
Type	Opto coupler
Max pulse frequency	depending on pulse width, max duty cycle 50%
Voltage	(AC or DC) 48-230V
Burden	Input resistance 20 k Ω

Outputs

Number of outputs	
<i>CewePrometer-R</i>	0, 6, 10 or 12 outputs
<i>CewePrometer-W</i>	8 outputs
Type	Solid-state MosFET relay, bi-directional rating 0,2 A, 110 VAC/DC
Pulse length	40 ms - 1 s

IEC62056-21 communication port

Hardware	IEC62056-21 optical com. port
Com. protocol	IEC62056-21
Baud rate	300 - 9600 baud

Serial communication port

Hardware	RS232 or RS422/485 serial com. port
Connector	RS232 9-pin D-SUB RS422 screw connector
Com. protocol	IEC62056-21, DLMS
Hand shaking	Not supported
Baud rate Port 1	300 - 19200 baud
Baud rate Port 2	1200 - 19200 baud

Ethernet communication port

Connector	RJ45
Com. Protocol	IEC 62056-21, DLMS
Baud rate Port 1	300 - 19200 baud
Baud rate Port 2	1200 - 19200 baud

Temperature range

Working temperature	-20 °C - +55 °C
Operating temperature	-40 °C - +70 °C
Storage temperature	-40 °C - +80 °C
Temperature coefficient	<0,3%/10°C

Real time clock

Accuracy	<6 s/month (EN61038 15 s/month), TCXO crystal controlled
Backup variants	Super capacitor gives 3 days backup. A lithium battery can be added for longer backup; >1.5 year. Maximum lifetime for an unused battery is 10 years.

Safety

CewePrometer-R connects via the rack to protective earth.

Protection class

CewePrometer-R IP51 according to IEC529
CewePrometer-W IP51 according to IEC529

Display

128 x 64 pixels, 69 x 36 mm, graphical display in extended temperature range, -20 - +70 °C
Counter values are shown with 9 digits including 0 - 4 decimals; e.g. 999999999, 99999.9999
Height: 8 mm
Width: 4 mm

Specification

Memory for configuration register and data

1 Mb Data flash for logging and configuration
8 kb FRAM (non volatile) for energy registers
128 kb RAM for software

Weight

CewePrometer-W	2.7 kg
CewePrometer-R	4.0 kg
Rack	3.5 kg

Connections

CewePrometer-R

Entrelec Essailec connectors

Serial port RS-232	9-pin D-sub
Serial port RS-422	Screw terminal
Protective earth	crimped lug for M4

CewePrometer-W

Current and Voltage are connected via screw terminal

Terminal size 10 mm²; Ø 4.2 mm

Auxiliary are connected via screw terminal

Terminal size 4 mm²

Serial port RS-232 9-pin D-sub

Serial port RS-422 Screw terminal

I/O connections 1.5 mm²

EMC (electro magnetic compatibility)

Reference IEC 62052-11, chap. 7.5

Immunity to Electrostatic Discharges, EN61000-4-2

Test voltage: 8 kV *CewePrometer-R*

Test voltage: 15 kV *Ceweprometer-W(air discharge)*

Immunity to electromagnetic RF-fields, IEC 61000-4-3

Field strength (80MHz to 2GHz):

- normal condition: 10V/m

- without any current in current circuits: 30V/m

Fast transient burst test, IEC 61000-4-4

Test voltage:

- current & voltage circuits: 4kV

- auxiliary circuits: 2kV

Immunity to conducted disturbances induced by RF-fields,
IEC 61000-4-6

Voltage level (0,15-80MHz):10V



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