

METRALINE | ENERGY

Single-phase Digital Energy meters

Direct connection 80 A

Operating instructions

- This family of metering equipments provides the essential measurement capabilities required to monitor a single phase electrical installation.
- There are 3 models, mainly distinguished by the type of remote communication:

(*) certification parameters: 0.2S-5 (80 A, Class B, 230 VAC 50 Hz, -25 °C ... +55 °C, 4 Quadrants, 2 Tariffs, Active Energy Class B (according to EN-50470) and Reactive Energy Class 2 (according to IEC 62053-23)

- Direct connection (up to 80 A)
- Backlight LCD display and 3 push-button keys (to read Energies, V, I, PF, F, Q and to configure some parameters)
- Display with 8 digits
- Self supplied by the input voltage itself
- 2 DIN modules width (36 mm)
- 2 Tariffs controlled by a 230 VAC digital input
- Depending on the module:
 - 2 S0 standard low voltage pulse outputs, or
 - communication via Modbus RTU or
 - communication via M-Bus (1 unit load)

RISK OF ELECTRIC SHOCK, BURNS OR EXPLOSION

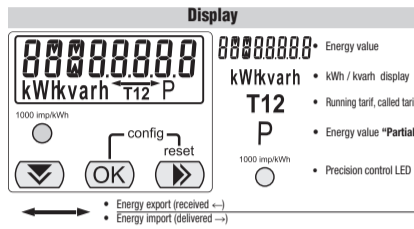
This device must be installed and maintained ONLY by qualified and duly authorized personnel.

During its installation, be sure there is no voltage applied.

Ordering information

Model	Communication
U282A	S0 Pulse outputs MID certified
U282B	Built in RS-485 Modbus RTU MID certified
U282C	Built in M-Bus (1 unit Load) MID certified

(*) For swiss market only active energy on display

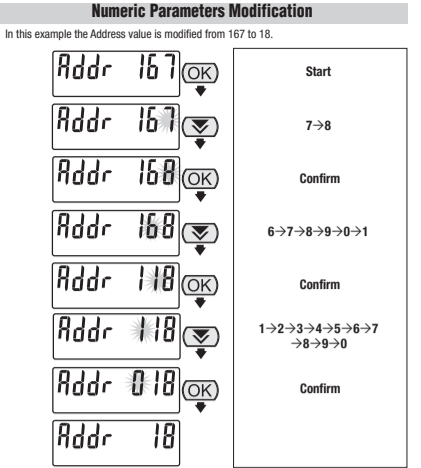
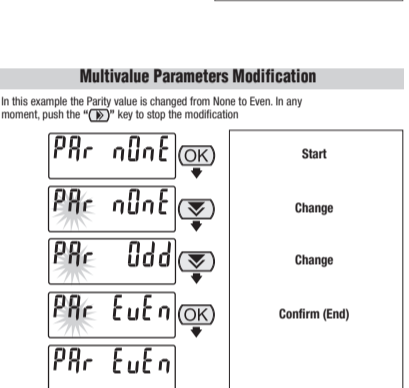
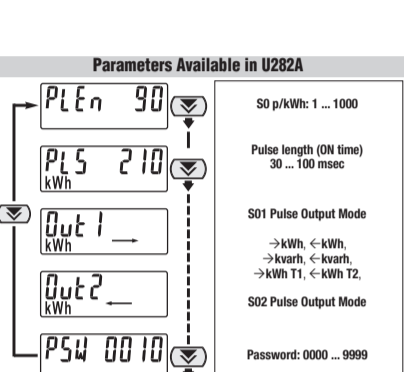
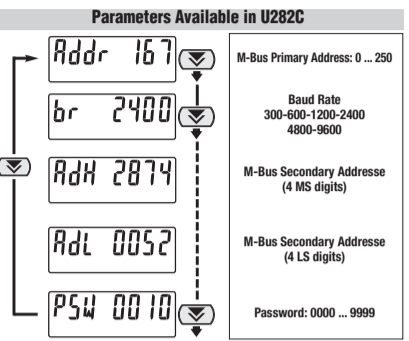
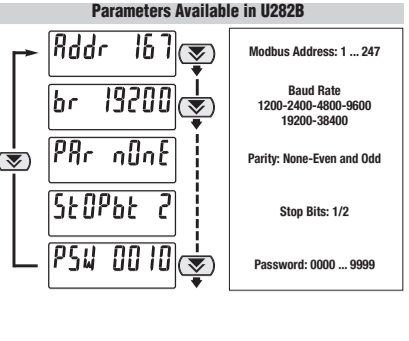
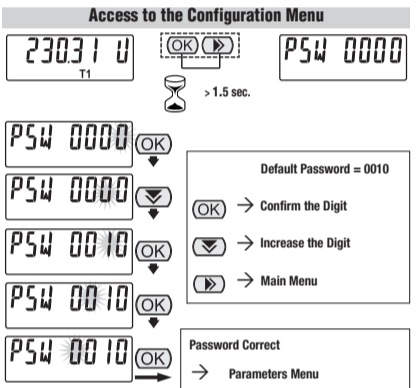
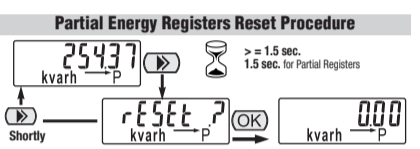
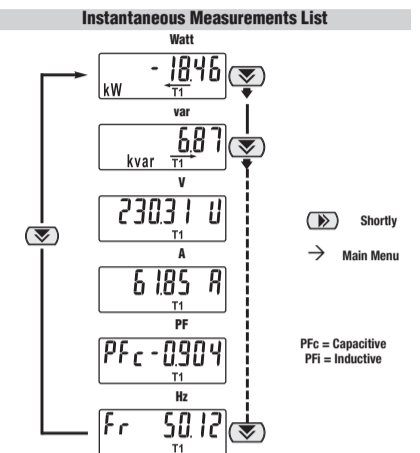
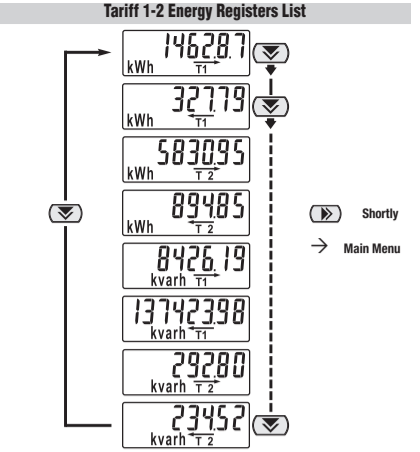
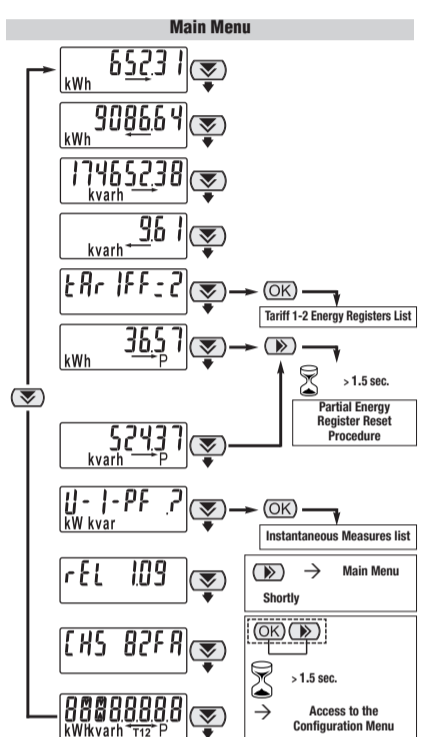
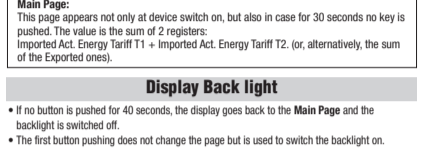
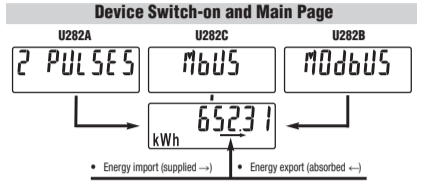
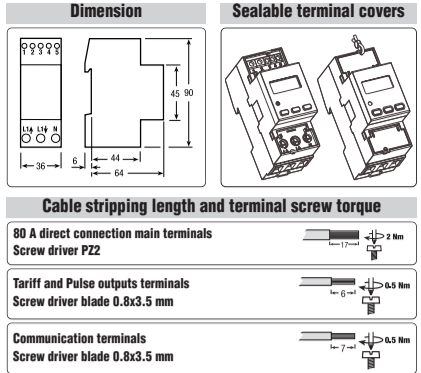
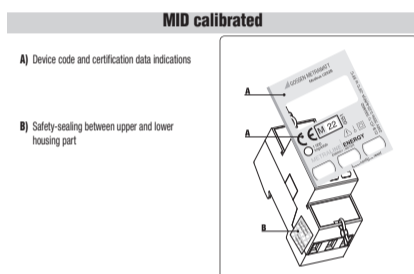


Commands

- Scroll Key:** This key is used to scroll pages and to modify parameters value. Its pushing is accepted only if it is shorter than 1.5 second.
- OK key:** This key is used alone to enable a new menu function or to confirm a parameter value during its modification. Its pushing is accepted only if shorter than 1.5 seconds
- ESC key:** This key is used alone to exit from a sub-menu, to cancel a parameter modification or to go back to the main page. In these cases, its pushing is accepted only <1.5 seconds
- A long pushing (>1.5 seconds) of the "ESC key" is used in the Partial Energy Registers Pages to reset their values.
- Push these 2 keys together, for at least 1.5 seconds, to enter into the Configuration Menu

Symbols

- Measuring elements
- Protected by double insulation



Diagnostic Message

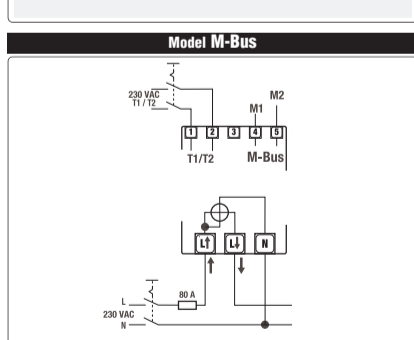
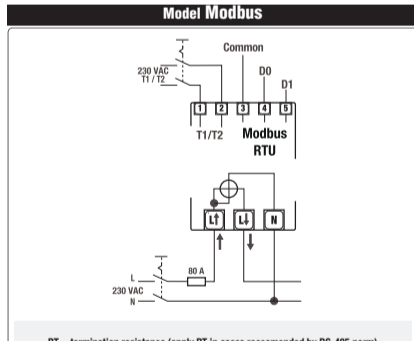
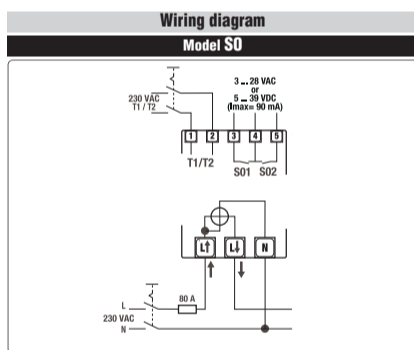
Error Condition

Error 02

Error 03

Service and Maintenance

It should not be necessary to recalibrate device during its lifetime as it is an electronic meter with no moving parts with electronics and voltage and current sensors that do not naturally degrade or change with time under specified environmental conditions. If a degradation in the performance is observed the device has probably been partly damaged and should be sent for repair or exchanged. If the meter is dirty and needs to be cleaned, use lightly moistened tissue with a water based mild detergent. Make sure no liquid goes into the meter as this could damage the meter.



Applications

Please read this important information!

Intended Use / Use for Intended Purpose

The instrument is a digital multifunctional energy meter certified in accordance with MID. Integrated 4-quadrant measurement permits measurement of energy import and export.

Thanks to MID certification, acquired data (display) can also be used for the purpose of billing energy costs to third parties.

Via integrated communication interfaces, the values are also forwarded to superordinate management systems. Protection against tampering is provided through adequate measures (tamper-proof cover).

Safety of the operator, as well as that of the instrument, is only assured when it's used for its intended purpose

Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in the product documentation is contrary to use for intended purpose.

Liability and Guarantee

Gossen Metrawatt GmbH assumes no liability for property damage, personal injury or consequential damage resulting from improper or incorrect use of the product, in particular due to failure to observe the product documentation. Furthermore, all guarantee claims are rendered null and void in such cases.

Nor does Gossen Metrawatt GmbH accept any liability for data loss.

Scope of Delivery

1 instrument (U282A) - (U282B) - (U282C)

1 operating instructions

Safety Instructions

Read and follow these instructions carefully and completely in order to ensure safe and proper use. Keep for future reference.

DANGER

Electric shock due to live components!

Life endangering due to electric arcs!

Touching voltage conducting components is life endangering!

- The installation and any work performed on the instrument may only be carried out by a qualified electrician.
- Observe and comply with all safety regulations which are applicable for your work environment.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the instrument.
- During installation, the installation environment must be voltage-free. For that, observe the five safety rules in accordance with DIN VDE 0105-100.

ATTENTION

Faulty installation & incorrect operation

Faulty installation/incorrect operation can damage your instrument/system.

Risk of malfunctions and disruptions

- Comply with the specified technical data and conditions
- Do not install the instrument in potentially explosive atmospheres.
- Do not install the instrument in locations where it may be exposed to direct sunlight.
- Install and operate the instrument only if it and all connection cables and leads are in good working order and damage-free. Inspect the instrument at regular intervals.
- If the instrument doesn't function flawlessly, permanently remove it from operation and secure it against inadvertent use.

Symbols on the Instrument

European conformity marking

Double insulation (protection category II)

CE and metrology mark with indication of year (M22) and registration number of the notified body for module D, country-specific calibration validity period

CE IM 22 0051 398 / MID

Standards, Regulations and Directives

- DIN 43880
- EN 50470-1
- EN 50470-3
- EN 60715
- EN 62053-31
- IEC 62053-23

Transport & Storage

Transport and store the instrument only within the limits of permissible ambient conditions. Also use suitable packaging in order to ensure adequate protection against environmental influences and mechanical stress.

Maintenance

The instrument is maintenance-free. Keep outside surfaces clean. Clean the instrument only with a dry cloth.

Recalibration

Comply with national recalibration regulations and laws. The calibration period in Germany is 8 years.

A broken manufacturer's seal means equals invalidated calibration. The instrument must not be used for billing purposes.

Repairs & Manufacturer's Guarantee

If your instrument requires repair, please contact our service department; see Support & Contact.

Unauthorized modification of the instrument is prohibited. This also includes opening the meter.

If it can be ascertained that the instrument has been opened by unauthorized personnel, no guarantee claims can be honored by the manufacturer with regard to personal safety, measuring accuracy, compliance with applicable safety measures or any consequential damages. If the manufacturer's seal is damaged or removed, all guarantee claims are rendered null and void.

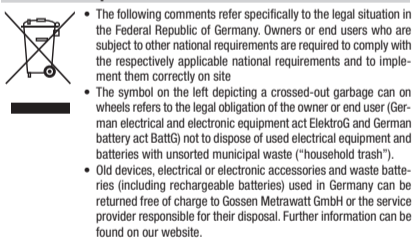
The instruments are guaranteed for a period of 2 years after shipment. The manufacturer's guarantee covers materials and workmanship. Damage resulting from use for any other than the intended purpose or operating errors, as well as any and all consequential damage, are excluded.

Disposal & Environmental Protection

The following comments refer specifically to the legal situation in the Federal Republic of Germany. Owners or end users who are subject to other national requirements are required to comply with the respectively applicable national requirements and to implement them correctly on site.

The symbol on the left depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end user (German electrical and electronic equipment act ElektroG and German battery act BattG) not to dispose of used electrical equipment and batteries with unsorted municipal waste ("household trash").

Old devices, electrical or electronic accessories and waste batteries (including rechargeable batteries) used in Germany can be returned free of charge to Gossen Metrawatt GmbH or the service provider responsible for their disposal. Further information can be found on our website.



Support and Contact

Please contact us at +49 911 8602-0 Monday - Thursday: 08:00 Uhr - 16:00 Uhr Friday: 08:00 Uhr - 14:00 Uhr support.industrie@gossenmetrawatt.com

Please contact GMCI-Service GmbH for repairs, replacement parts and calibration: +49 911 817718-0 service@gossenmetrawatt.com www.gmci-service.com

CE Declaration

The device fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark.

The CE declaration is available on our website: https://www.gmci-instruments.de/en/services/download-center/download-center/

GOSSEN METRAWATT

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Technical Data

Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31	Direct Connection 80 A Pulse output S0	Direct Connection 80 A built-in Comm. Modbus/M-Bus
General characteristics		
• Housing	DIN 35 mm	2 Modules
• Mounting	EN 60715	DIN rail
• Depth	mm	70
• Weight	g	175
Operating features		
• Connection	to single-phase network	n° wires
• Storage of energy values and config.	Internal flash memory	yes
• Tariff	for active and reactive energy	n° 2
Approval (according to EN 50470-1, EN 50470-3)		
• Reference Voltage Un	VAC	230
• Reference Current Iref	A	5
• Minimum Current Imin	A	0.25
• Maximum Current Imax	A	80
• Starting Current ISt	A	0.015
• Reference Frequency fn	Hz	50
• Number of phases (number of wires)	-	1 (2)
• Certified Measures	kWh	→ kWh T1, ← kWh T1, → kWh T2, ← kWh T2
• Accuracy	Active Energies (accor. to EN 50470-3) and Active Powers	classe B
	Reactive Energies (accor. to EN 62053-23) and Reactive Power	classe 2
Supply Voltage and Power Consumption		
• Operating Supply Voltage range	V	92 ... 276
• Maximum Power Dissipation (Voltage circuit)	VA (W)	≤2 (1)
• Maximum VA burden (Current circuit) @ Imax	VA	≤1
• Voltage Input Waveform	-	AC
• Voltage impedance	MΩ	1
• Current impedance	mΩ	≤20
Overload capability		
• Voltage	VAC	276
	Temporary (1 s)	VAC
• Current	A	80
	Temporary (10 ms)	A
Measuring Features		
• Voltage range	VAC	92 ... 276
• Current range	A	0.015 ... 80
• Frequency range	Hz	45 ... 65
• Measured Quantities	-	V, A, kWh, kVarh, PF, Hz, kW, kVar
Display features		
• Display type	LCD backlighted	-
	Energy digits dimension	mm
• Active Energy	6 digits + 2 decimal digits	min. ... max. kWh
• Reactive Energy	6 digits + 2 decimal digits	min. ... max. kvarh
• Voltage	3 digits + 2 decimal digits	92.00 ... 276.00
• Current	2 digits + 2 decimal digits	0.00 ... 80.00
• Power factor	2 digits + 3 dec. digits + capac./induc. indic.	0.000 ... 1.000
• Frequency	2 digits + 2 decimal digits	Hz
• Active Power	2 digits + 2 decimal digits with sign	kW
• Reactive Power	2 digits + 2 decimal digits with sign	kVAR
• Running Tariff	1 digit	-
• Display refresh period	-	s
Optical metrological LED		
• Front mounted red LED (meter constant)	proportional to active imp/exp Energy	p/kWh
		1000
Safety		
• Protective class	classe	II
• AC voltage test (EN 50470-3, 7.2)	kV	4
• Degree of pollution	-	2
• Operational voltage	V	300
• Impulse voltage test	1.2/50 µs-kV	6
• Housing material flame resistance	UL 94	V0
• Safety-casing between upper and lower housing part	-	yes
Pulse Outputs (S0) signals, acc. to IEC 62053-31		
• Pulse Output 1 or 2	-	selectable
	kWh →, kWh ←, kvarh →, kvarh ←, kWh (T1) →, kWh (T2) →	-
• Pulse Rate	adjustable	p/kWh - p/kvarh
• Pulse ON duration	adjustable	msec
• Operating voltage	Min. - Max.	VAC (DC)
• Pulse ON maximum current	In the range 3 ... 28 VAC (5 ... 39 VDC)	mA
• Pulse OFF leakage current	In the range 3 ... 28 VAC (5 ... 39 VDC)	µA
• Display class	-	SELV
Tariff		
• Tariff 1	-	open contact
• Tariff 2	VAC	230 ±20%
• Input impedance	kΩ	224
Embedded communication		
• Modbus RTU	RS-485 - 3 wires	-
• M-Bus	2 wires	-
• Isolation class	-	SELV
IR Connectable Communication Modules		
• For communication moduls connection (LAN-TCP/IP / M-Bus / Modbus RTU / KNX)	-	yes
Connection terminals		
• Screwdriver for main terminals	head with 2 +/-	POZIDRIV
• Screwdriver for tariff and communication terminals	slotted head	mm
• Terminal capacity main current paths	solid wire min. (max)	mm²
	stranded wire with sleeve min. (max)	mm²
• Terminal capacity for tariff and communication	solid wire min. (max)	mm²
	stranded wire with sleeve min. (max)	mm²
Environmental conditions (storage)		
• Temperature range	°C	-25 ... +70
Environmental conditions (operating)		
• Temperature range	°C	-25 ... +55
• Mechanical environment	-	M1
• Electromagnetic environment	-	E2
• Installation	Indoor	yes
• Altitude (max)	m	≤2000
• Humidity	yearly average, not condensing	≤75%
	on 30 days per year (not condensing)	≤95%
• IP rating	-	IP51 (w/ IP40)

(*) The metering equipment must be installed inside a cabinet with IP rating IP51 or better.