Electricity meter DZG DVS76 / DWS76

Installation guide. Based on the DZG Metering GmbH manual “DVS76/DWS76 Handbuch” (14.07.2025). Covers installation, tariff control, the front panel and plug-in modules.

General

The DVS76/DWS76 is a direct-connected, three-phase four-wire active energy meter. The **DWS76** can also be used as a two-wire (single-phase) meter. The phase to be used is indicated on the nameplate (usually L3).

Only the energy registers shown in the **top line** of the LCD may be used for billing. Second-line values and all other data are for information only and are not legally verified.

Type designation

Code	Meaning
DVS76	Three-phase four-wire meter
DWS76	Four-wire meter, can also be used as single-phase
…06 / **… 12**	Current range 10/60 A or 5/60 A
.1 / **2** / **3** / **4**	+A with backstop · +A/−A bidirectional · −A with backstop · −A without backstop (net)
T / **V** / **E**	Dual tariff: all directions / import (+A) only / export (−A) only

Backstop (German *Rücklaufsperre*): energy flowing in the opposite direction does not reduce the register reading.

Technical data

Nominal voltage U_n	3 × 230/400 V AC (0.8–1.15 U_n)
Frequency	50 Hz (±2 %)
I_{ref} / I_{max}	5 A or 10 A / 60 A
Accuracy class	A or B (MID)
Energy directions	+A (import), −A (export)
Tariffs	T1, T2 (controlled via terminals 13/15)
Test output LED (IR)	10 000 imp/kWh
Power consumption	voltage circuit < 0.9 W, current circuit < 0.04 VA
Operating temperature	−40 … +70 °C
Protective class / degree of protection	II / IP51 (installed in an enclosure)
Overvoltage category	OVC III (4 kV)
Dimensions (H × W × D), weight	approx. 240 × 178 × 72 mm (DIN 43857), approx. 1 kg
Interfaces	Optical IR interface, RS485 (terminals 22/23), plug-in module slot

Safety before installation

DANGER! Incorrect handling of live parts can cause serious or fatal injury, even at 230 V. During installation and removal, all conductors connected to the meter must be disconnected from the mains and secured against unintentional reconnection.

- Installation, commissioning and removal may only be carried out by a qualified electrician who has read this guide.
- Follow local occupational safety and electrical safety regulations as well as the requirements of the distribution system operator.
- The meter is intended for indoor use or installation in a meter cabinet. In hot climates the housing surface can become hot and there is a risk of burns.
- A **circuit breaker** must be installed upstream of the meter. Its rated current and characteristics must be coordinated with the meter’s I_{max} = 60 A and utilisation category **UC1**.
- Check on the nameplate that the mains voltage matches the meter voltage and that the load current does not exceed I_{max}. Select the conductor cross-section according to the maximum load.
- Do not open the meter. Opening it voids the warranty. Clean with a dry cloth only.

1. Mechanical installation

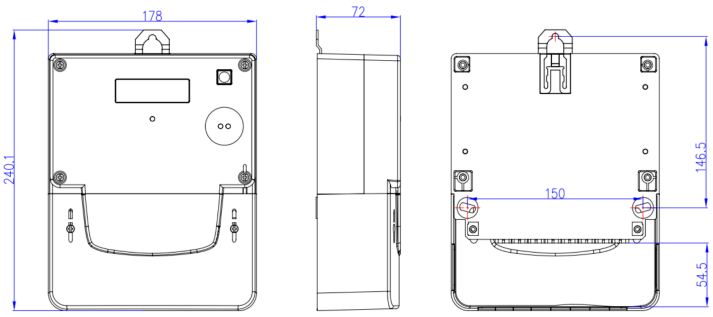


Figure 1. Housing dimensions (mm): front, side and rear view with fixing points

- **Three-point fixing** (DIN 43857): top suspension hook and two lower fixing screws next to the terminal block.
- Spacing between the lower holes is **150 mm**. The vertical distance between the suspension hole and the lower holes is **146.5 mm**.
- Mount vertically with the terminal block at the bottom. Leave room under the terminal cover for bending the conductors.

2. Electrical connection

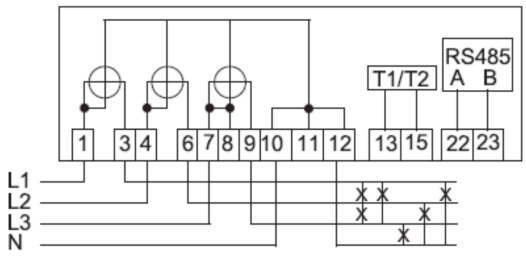


Figure 2. Connection diagram (direct connection, four-wire)

1. Switch off the supply, verify that the circuit is dead and secure it against reconnection.
2. Remove the terminal cover (2 sealable fixing screws).
3. Connect the incoming phases to terminals **1, 4, 7** (L1, L2, L3) and the outgoing phases to terminals **3, 6, 9**. Connect the neutral to **10** (in) and **12** (out).
4. Tighten the screws to the specified torque (see table). Do not exceed the maximum torque.
5. If required, connect tariff control (13/15, see section 3) and RS485 (22 = A, 23 = B).

> **Note!** The diagram and explanations given here are for illustration only. The electrician must follow the connection diagram printed on the meter's front cover.

Terminals	Numbers	Terminal bore	Conductor cross-section	Screw	Tightening torque
Current terminals L1 / L2 / L3 (in–out)	1–3 / 4–6 / 7–9	6.5 mm	1.5–25 mm²	M6 Pozidriv PZ2	3.0–6.0 Nm
Neutral terminals (in–out)	10–12				
Auxiliary terminals: L3 voltage output / N	8 / 11	2.7 mm	0.75–2.5 mm²	M3	0.5–0.6 Nm
Tariff control input / control input N	13 / 15				
RS485 A / B	22 / 23				

> **Caution!** Auxiliary voltage terminals 8 and 11 are not fused inside the meter. The maximum permissible output current per terminal is **0.5 A**. Devices connected to them must be protected by their own fuse. Auxiliary devices may only be supplied from the **unmetered side** of the meter.

3. Connecting a tariff time switch (T1/T2)

On dual-tariff meters (type designation T, V or E), the tariffs are switched by the contact of an external tariff time switch, which applies a 230 V AC signal to terminal **13**. Terminal **15** is the neutral of the control signal.

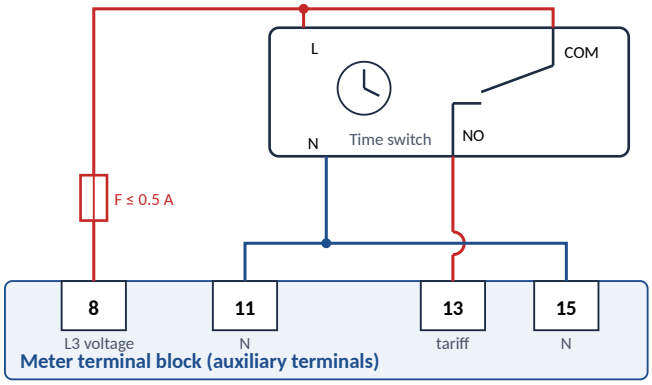


Figure 3. Example diagram: time switch supplied from auxiliary terminals 8/11. Contact closed: 230 V on terminal 13

Mode	Term. 13	Term. 15	Active
Normal (default)	0 V	0 V	**T1**
	230 V AC	0 V	**T2**
Inverted	0 V	0 V	**T2**
	230 V AC	0 V	**T1**

- The time switch may also be supplied from the unmetered mains via a separate fuse. Auxiliary terminals 8/11 allow max. 0.5 A and require a separate fuse.
- Control circuit conductor 0.75–2.5 mm², M3 screw, 0.5–0.6 Nm.
- Program the time switch so that the contact is closed during the T2 period (e.g. night tariff).

Activating the tariff function

- The tariff function must be configured by the manufacturer (type designation T, V or E). It may be **deactivated** on delivery.
- **Activation:** apply the control signal (230 V AC) to terminals 13/15 for at least **15 seconds**. The function is then fully activated and remains active after a power failure.
- **Function not active:** the LCD shows only the total register `1.8.0` / `2.8.0`.
- **Function active:** the LCD shows tariff registers `1.8.1` and `1.8.2` (and `2.8.1`, `2.8.2`). **The OBIS code of the active tariff is underlined.**
- On bidirectional meters, the registers displayed depend on the type designation: **T** → 1.8.1, 1.8.2, 2.8.1, 2.8.2 · **V** → 1.8.1, 1.8.2, 2.8.0 · **E** → 1.8.0, 2.8.1, 2.8.2.

4. Front panel



Figure 4. Front panel

No.	Element	Function
1	Blue push-button	**Short press:** next value or menu item. **Long press (≥ 5 s):** confirm selection, toggle on/off, reset, or open historical values.
2	LCD	Readings, OBIS codes and status symbols (see Figure 5)
3	Optical interface with light sensor	Data output to an IR reading head. The light sensor works as an **optical button**: a short or long (≥ 5 s) flashlight signal equals the corresponding button press. May be disabled at the factory.
4	Terminal cover screws	Two sealable fixing screws
5	Terminal cover	Covers the terminal block and the plug-in module slot

LCD

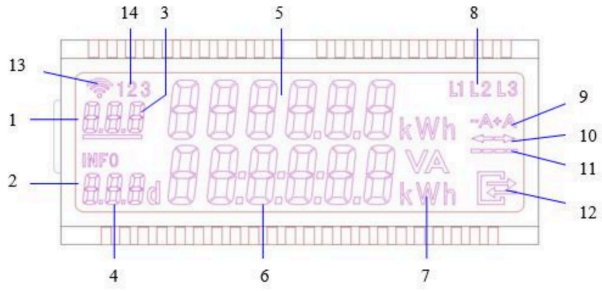


Figure 5. LCD elements

In the normal (scrolling) display, the billing registers in the top line change every 10 s. In the event of a fatal error, `F.F FFFFFF` is shown for 2 s between values; in that case contact your supplier.

No.	Meaning
1	Top line: billing register reading with OBIS code
2	Second line (INFO): non-billing information, e.g. instantaneous power
3	OBIS code (e.g. 1.8.1). The code of the active tariff is underlined.
4	INFO line indicator: PIn, P, E, HIS, InF, 1d / 7d / 30d / 365d
5	Register reading: 6 digits with leading zeros, no decimals
6	Consumption: 6 digits, 1 decimal place
7	Unit: kWh, W
8	L1 L2 L3: phase voltage present. All flashing = wrong phase sequence.
9	−A / +A: current energy direction
10	Direction arrow: → import, ← export
11	Power bar: advances with each test LED pulse. Hidden when there is no load (meter at rest).
12	Communication status
14	Plug-in module communication (2 = LoRa module)

5. Commissioning and sealing

1. Switch on the voltage. The meter runs a **display test** (all segments 3× on both lines). It then shows the firmware version `0.2.0` and checksum `C.90.2`.
2. Check that the **L1 L2 L3** symbols are lit steadily (all phases present). If **all three are flashing**, the phase sequence is wrong (counter-clockwise rotating field).
3. Under load, the direction arrow must show the correct direction (→ import +A) and the power bar must move. The test LED flashes (10 000 imp/kWh); with no load it is lit continuously.
4. Check that the tariff registers change over when the time switch contact operates.
5. Fit the terminal cover and seal both fixing screws (Figure 6).



Figure 6. Utility seals on the terminal cover

The front cover is closed at the factory with 4 screws whose caps cannot be removed without being destroyed (manufacturer's seals).

6. Button-operated menu

From the normal display, a short press (or a short light signal) starts the display test and opens the menu. In the menu, a **short press** moves to the next item and a **long press (≥ 5 s)** performs the action. After about 2 minutes without operation, the display returns to the normal display.

Second line	Meaning	Long press (≥ 5 s)
PIn 0000	Entry of the 4-digit PIN (if PIN protection is on). Select each digit with short presses (0→1→…→9), then wait 3 s. After the 4th digit, wait another 3 s.	—
P	Instantaneous active power (W)	—
E	Consumption since last reset	**E CLr**: reset (confirm with a second long press)
1d / 7d / 30d / 365d	Consumption over the last day / 7 days / 30 days / 365 days. Up to 730 daily, 104 weekly, 24 monthly and 2 yearly values are stored.	Opens previous values (−1, −2, …). Browse with short presses, return with a long press.
HIS CLr	Clear historical values	Clear (confirm with **HIS CLr on**)
InF on / OFF	IR interface data set: full (with decimals and power) or reduced	Toggles on ↔ OFF. The full data set also requires **PIn OFF**.
PIn on / OFF	PIN protection. When OFF, instantaneous power is shown permanently in the second line.	Toggles on ↔ OFF

7. Interfaces and plug-in modules

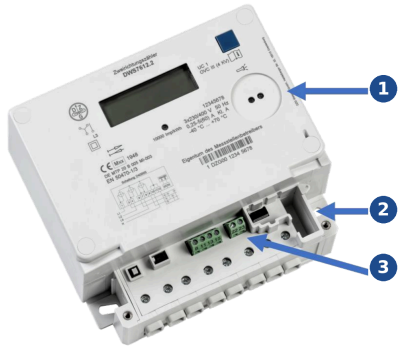


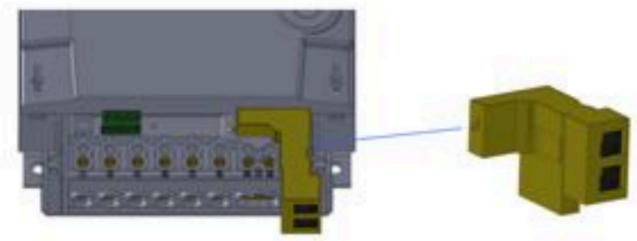
Figure 7. 1 optical interface · 2 plug-in module slot · 3 RS485 (terminals 22/23)

Built-in interfaces

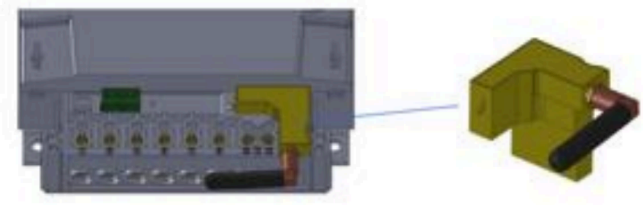
- **Optical IR interface** (IEC 62056-21): data is output every 1 s and can be read with an optical reading head.
- **RS485** on terminals 22 (A) / 23 (B), 9600 Bd 8N1: for reading registers and setting parameters. The RS485 terminals are disabled when a plug-in module is fitted.

Plug-in module slot: the module is fitted in the designated position on the terminal block, under the terminal cover. It connects via a 4-pin socket and is powered by the meter. Only modules approved by the manufacturer may be used.

Available plug-in modules



Wired module
RS485 module: standard RS485 interface with two RJ12 sockets for connecting several meters on one bus (daisy chain).



Radio modules (with antenna)
LoRaWAN module: European frequency band 863–870 MHz. **wM-Bus module**: wireless M-Bus for remote reading.

For module availability, order codes and prices, contact OÜ Pistrik I-V: sales@pistrik.ee.