

CloudImp device

pulse concentrator 8× S0 / NB-IoT

User manual

22 October 2026



1. Specifications

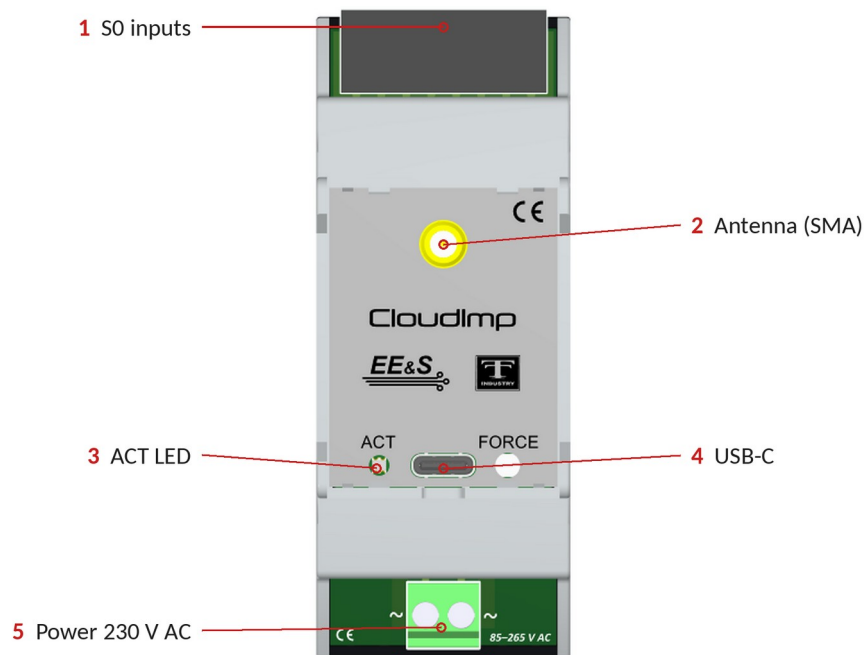
Power supply	230 V AC, 50/60 Hz (range 85–265 V AC)
Power consumption	max. 1 W
Inputs	8× S0 (according to EN 62053-31) for electricity, water and gas meters and other devices with a pulse output common ground (GND) for all inputs
Communication	NB-IoT (LTE Cat-NB) manufacturer's own connectivity – SIM built into the device
Antenna	SMA connector angled NB-IoT antenna included
Data transmission	in 5-minute intervals synchronised with real time (minute 0, 5, 10, 15 ...)
Reported values	in engineering units (e.g. kWh, m³) converted using the configured meter constant
Configuration port	USB-C (virtual serial port) 115200 Bd, 8 data bits, no parity, 1 stop bit (115200/8/N/1)
Indication / controls	ACT LED, FORCE button
Mounting	35 mm DIN rail (EN 60715)
Dimensions	89.7 × 36 × 62.2 mm (2 DIN modules)
Operating temperature	–20 to +85 °C

2. Description

CloudImp is a compact DIN-rail device for remote data collection from meters with a pulse output. Its eight S0 inputs accept electricity, water and gas meters, heat meters or any other device whose number of pulses is proportional to the measured quantity.

The device continuously counts the pulses and sends the measured values over the NB-IoT network to the MetrixPortal cloud platform. Connectivity is provided by the manufacturer, so the customer does not need a SIM card or a data plan. The device is powered directly from the 230 V AC mains and is therefore typically installed in the distribution board right next to the meters.

3. Front view



#	Element	Function
1	S0 input connector	inputs IN1–IN8 and common ground GND (see section 4.3)
2	SMA connector	connection of the supplied angled NB-IoT antenna
3	ACT LED	device status indication (see table below)
4	USB-C	configuration and service
5	Terminals ~ ~	230 V AC power supply (85–265 V AC)

ACT LED indication

Indication	Meaning
flashing green	the device is powered on and running
single blue flash	a pulse was received on one of the inputs IN1–IN8
flashing red	the device repeatedly failed to communicate with MetrixPortal in the cloud – check the antenna and NB-IoT coverage (section 4.4)

4. Installation and wiring

4.1 Safety

- Installation may only be carried out by a person with appropriate electrical qualification.
- Before starting work, disconnect the power supply and verify that the circuit is de-energised.
- **We recommend always connecting the device behind a protective device**, e.g. a B10 / 1P circuit breaker. The breaker also serves to isolate the device for servicing.

4.2 Power supply

The 230 V AC supply is connected to the green terminal block marked ~ ~ at the bottom of the device. Bring the phase (L) through the circuit breaker and connect the neutral (N) to the other terminal.

4.3 S0 inputs

The S0 inputs are brought out to a black two-row angled connector on the upper edge of the device. In Fig. 1 (top view), the **upper row** – closer to the front panel – contains inputs **IN1–IN8**, the **lower row** is the **common ground GND** for the negative poles of the S0 outputs. Looking at the front of the device installed in the board, input IN1 is on the left and IN8 on the right.

Top view of the upper edge of the unit
(front panel is at the top of the picture)

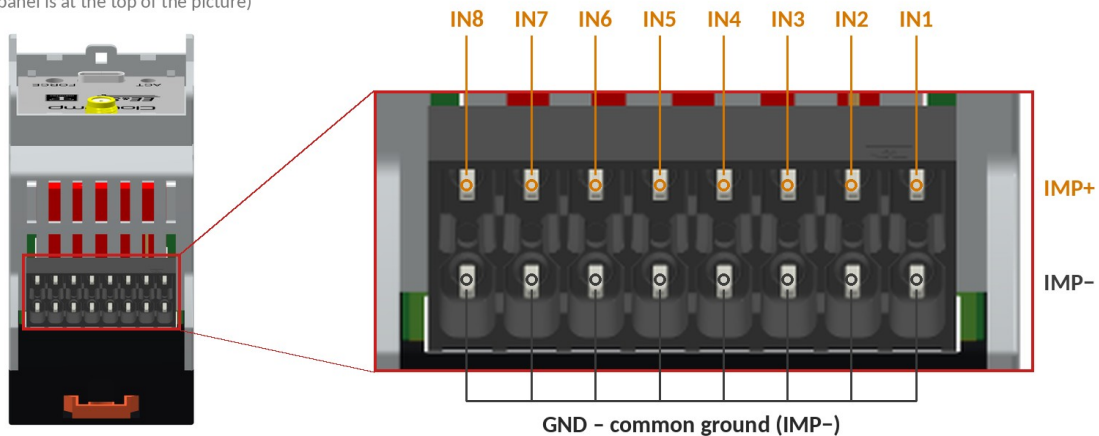


Fig. 1 – S0 input connector pinout

Caution: All S0 inputs must be connected correctly with respect to the **IMP+ / IMP-** marking of the respective meter:

meter IMP+ → input INx (upper row)

meter IMP- → GND (lower row)

With reversed polarity, pulses may not be registered.

For longer runs we recommend a shielded cable routed separately from power conductors.

4.4 Antenna

The device is supplied with an angled NB-IoT antenna with an SMA connector; screw it directly onto the antenna connector of the device. In most cases it provides reliable connectivity from plastic as well as most metal distribution boards.

If necessary (weak signal, fully enclosed metal board, basement location), the antenna must be relocated outside the board – e.g. using an antenna with an extension cable.

4.5 Illustrative wiring in a distribution board

Example wiring of two electricity meters with S0 pulse output and one CloudImp device powered behind a B10 circuit breaker:

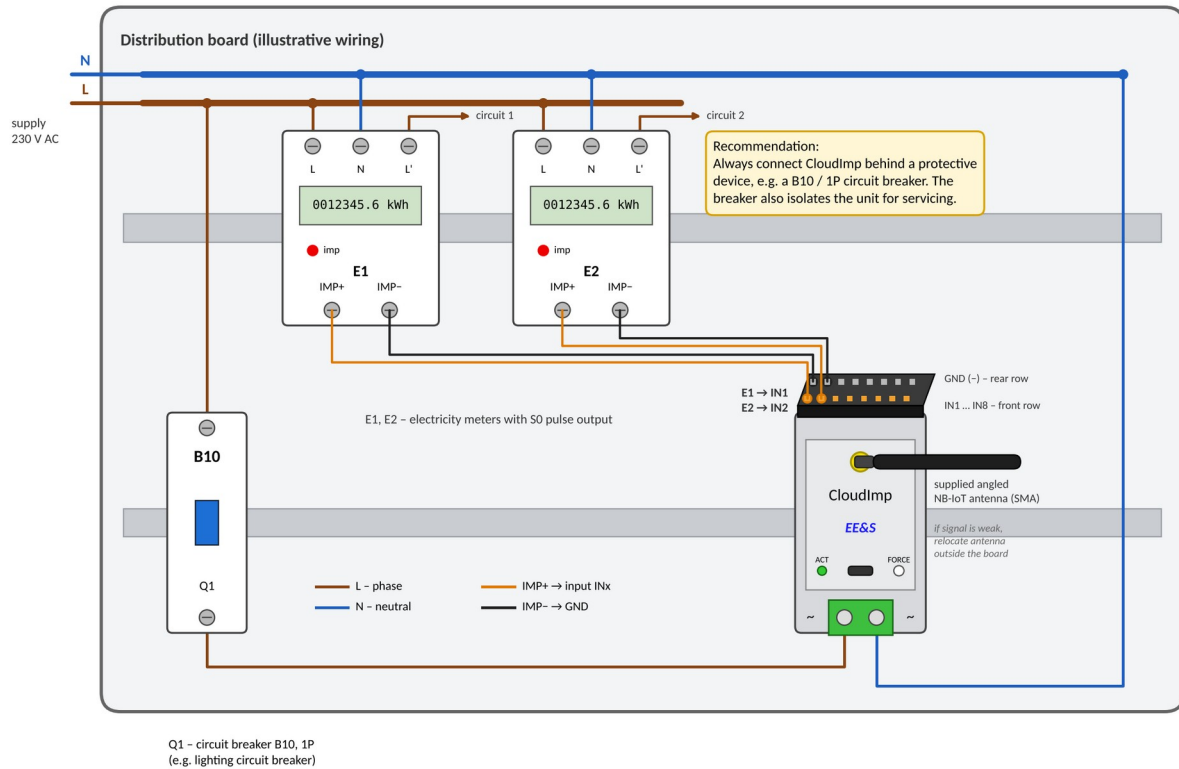


Fig. 2 – Illustrative wiring: meters E1, E2 on inputs IN1, IN2; CloudImp powered via circuit breaker Q1 B10/1P

5. Commissioning

1. Switch off circuit breaker Q1 and verify that the circuit is de-energised.
2. Mount CloudImp on a 35 mm DIN rail.
3. Connect the pulse outputs of the meters: IMP+ to input INx, IMP- to GND (section 4.3).
4. Screw the supplied angled antenna onto the SMA connector.
5. Connect the 230 V AC supply to the ~ ~ terminals behind circuit breaker Q1.
6. Switch on the circuit breaker – the ACT LED starts flashing green.
7. Configure the inputs via USB – first the meter constants, then the meter readings (section 6).
8. Check that data are arriving in MetrixPortal (data are sent every 5 minutes, see section 7).

6. Input configuration

The inputs are configured during installation using any PC connected to the device with a USB-C cable. Any serial terminal can be used, e.g. Termit, PuTTY, Tera Term, CuteCom or picocom. The device provides a simple console with text commands.

Serial port settings in the terminal: **115200 Bd, 8 data bits, no parity, 1 stop bit (115200/8/N/1).**

Communication rules

- Commands are sent over USB (serial line 115200/8/N/1); each command must be terminated with LF (\n). Device responses are also terminated with \n.
- Commands are recognised by the beginning of the string and must be written in **upper case**.
- Without unlocking, only VER? and UNLOCK work; all other commands return Locked.
- Unlocking remains valid until the device is reset.
- An unknown command (after unlocking) returns Error.

Command overview

Command	Description	Response
VER?	firmware version (build date)	CloudImp Unit build: <date>
UNLOCK=<password>	unlocks the interface (password max. 10 characters)	Unlocked / Wrong password
IMPCFG?	pulses per unit for channels 1-8	IMPCFG=a,b,c,d,e,f, g,h
IMPCFG=a,b,c,d,e,f,g,h	sets pulses per unit; all 8 values must be given, each max. 65000	OK / ERROR
COUNTERS?	lists the current counter values	counter listing
VAL=<channel>,<value>	sets the counter value in units; channel 1-8, value is a decimal number	OK / ERROR
PASS=<password>	changes the unlock password (max. 10 characters)	OK / Error
RESET	software reset of the device	OK

Important – order of settings: First set the correct meter constant (e.g. imp/kWh) with IMPCFG=, and only then enter the current meter reading with VAL=.

Configuration example

Electricity meter E1 with a constant of 1000 imp/kWh on input IN1 and a reading of 12345.6 kWh, water meter with a constant of 100 imp/m³ on input IN2 and a reading of 85.25 m³:

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UNLOCK=<password> → Unlocked
IMPCFG=1000,100,1,1,1,1,1,1 → OK
VAL=1,12345.6 → OK
VAL=2,85.25 → OK
COUNTERS? → check the configured values
```

Values in VAL= are entered with a decimal point.

7. NB-IoT connectivity

CloudImp communicates over the NB-IoT network, which is designed for devices with low data volumes and offers good signal penetration into buildings and basements. The device uses the manufacturer's own connectivity – the SIM is built in and activated at the factory. Measured values are sent to the MetrixPortal platform, where they are available for display and further processing.

Values in engineering units: The device reports values to the MetrixPortal cloud portal in **engineering units** – pulses are converted using the configured meter constant (section 6). For electricity meters the values are therefore in **kWh**, for water and gas meters in **m³**.

Data transmission interval

Data are sent in **5-minute intervals**, synchronised with real time – always at minute 0, 5, 10, 15, 20 ... 55 of every hour. The intervals are therefore identical for all devices and meters and are aligned to fixed time boundaries.

Thanks to this synchronisation, **15-minute peak demand** values can be determined precisely – each quarter-hour (00–15, 15–30, 30–45, 45–60) consists of exactly three 5-minute intervals.

Before installation, check NB-IoT coverage at the installation site. If the signal is weak, relocate the antenna outside the board (section 4.4). Repeatedly failed communication with the portal is indicated by the ACT LED flashing red.

Document revisions

Date	Revision
22 October 2026	Initial release

**On behalf of
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we would like to thank you.**

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