

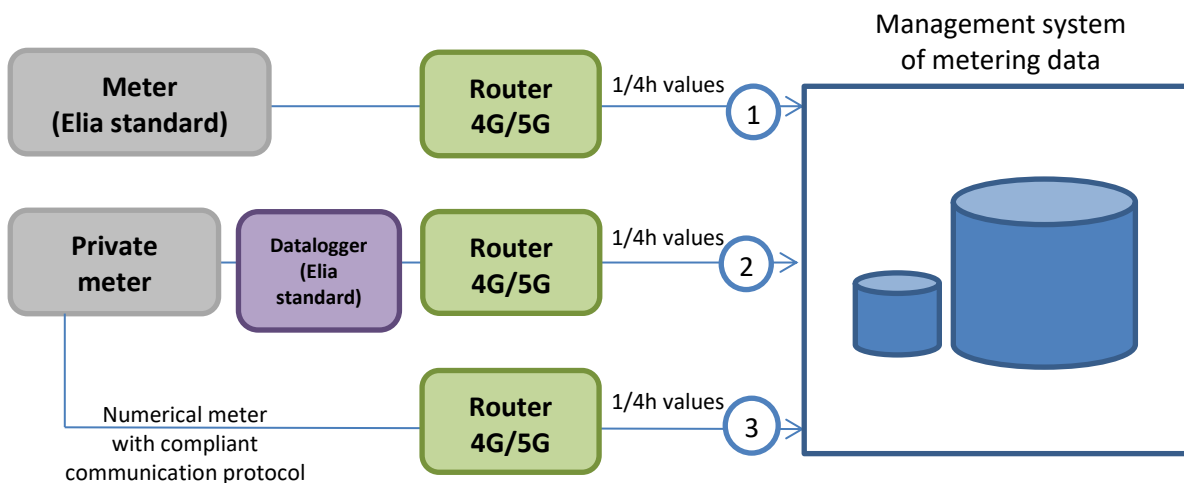
General technical requirements of the submetering solutions

This document describes the general technical requirements for submetering solutions (i.e. energy meters) connected to the Elia grid.

The following solutions are possible:

1. The use of a meter (Elia standard) that communicates directly the 1/4h-values of active/reactive power to the Elia metering data management system by using a 4G/5G router via a communication protocol known by Elia.
2. The use of a datalogger (Elia standard) that collects the metering pulses of a private meter and communicates the 1/4h-values of active/reactive power to the Elia metering data management system by using a 4G/5G router via a communication protocol known by Elia.
3. The use of a 4G/5G router that communicates directly the 1/4h-values of active/reactive power coming from a private meter to the Elia metering data management system through a communication protocol known by Elia. The quality and the completeness of the supplied data and the compliancy with the communication protocol is the responsibility of the owner of the private meter.

Schematic view



These solutions apply exclusively to Delivery Points within the electrical facilities of a grid user connected to the ELIA Grid.

The metering system meets the following minimum requirements:

- 1 Common technical requirements applying to metering installations for grid users (of Elia and CDS) connected to the federal transmission grid.
 - Options 1, 2 and 3:
 - The accuracy class of the measurement core of current transformers (CT) meets at least the requirements specified in the table 1.
 - The accuracy class of the measurement core of voltage transformers (VT) meets at least the requirements specified in the table 1.
 - Options 2 and 3:
 - Only digital technology meters are accepted.

- The accuracy class of the meter for active energy meets at least the requirements specified in the table 1.

A numerical Wh-meter with an S in the precision class needs a compliant CT with an S precision. All Wh-meters should be MID compliant for classes 2, 1 and 0.5%.

Power of measured process	VT	CT	Wh-meter
≥ 10 MVA	0.2	0.2S	0.2S
≥ 5 MVA à < 10 MVA	0.2 ⁽¹⁾	0.2S ⁽¹⁾	0.5S ⁽¹⁾
≥ 1 MVA à < 5 MVA	0.2 ⁽¹⁾	0.2 ⁽¹⁾	0.5
≥ 100 kVA à < 1 MVA	0.5	0.5	1
< 100 kVA	NA	0,5 ⁽²⁾	2

Table 1

⁽¹⁾ Elia can allow an accuracy of 0,5 or 0.5S for installation put into service before 01/12/2023

⁽²⁾ if required

2 Common technical requirements applying to metering installations for grid users (of Elia and CDSs) connected to the local transmission grid.

• Options 1, 2 and 3:

- The accuracy class of the measurement core of current transformers (CT) meets at least the requirements specified in the table 2.
- The accuracy class of the measurement core of voltage transformers (VT) meets at least the requirements specified in the table 2.

• Options 2 and 3:

- Only digital technology meters are accepted.
- The accuracy class of the meter for active energy meets at least the requirements specified in the table 2.

Power of measured process	TP	TI	Wh-meter
≥ 20 MVA	0.2	0.2s	0.2s
≥ 5 MVA à < 20 MVA	0.2	0.2	0.2
≥ 1 MVA à < 5 MVA	0.2	0.2	0.5
≥ 250 kVA à < 1 MVA	0.2	0.5	1

Table 2

3 Common technical requirements applying to all metering installations.

- Any cable connecting the current or voltage transformers to a meter must be as short as possible.
- The section of the connection wires between the meter and the current transformer is ideally minimum 4 mm².

- The section of the connection wires between the meter and the voltage transformer is ideally minimum 10 mm². Remark: depending on the length on the connecting wires/cable between the VT and the meter, greater section might be necessary.
- The connection wires to current and voltage transformers may not be located in the same cable.
- An earthing terminal is available near the installation.
- The signal level for 4G/5G router must be sufficient to enable a communication with the Elia management system of metering data. If necessary, an extra antenna will be added to the system.
- The following communication protocol are allowed: DLMS/Cosem.

4 Specific technical requirements

Depending on the chosen option, the following requirements must be observed as well:

- Options 1: Elia submeter
 - A system of 3 current and 3 voltage transformers is required for measurement of imbalanced loads.
 - The current and voltage signals are available on a dedicated terminal close to the place where the Elia submeter will be installed.
 - The needed space for the installation of an Elia submeter is: W600 mm x H800 mm (indicative values). Optional, the active metering pulses or all metering pulses are made available to the grid user.
 - It is necessary to switch off the electrical load downstream the meter for the installation and commissioning of the metering equipment.
 - The Elia submeter can be compliant with class 0.2S (option 1A), can be compliant with class 0.5S (option 1B) or can be compliant with class 1S (option 1C)
- Option 2: Datalogger (Elia standard) and private meter
 - The metering pulses for active energy are made available on a dedicated terminal close to the datalogger. The impulse contacts need to be potential free.
 - The weight of the metering impulses is known (and programmable). If necessary, this weight will be adapted to ensure a maximum accuracy. Maximum pulse frequency= 4 Hz.
 - The space for the installation of a datalogger is: W600 x H800 (indicative values).
 - A power off is not necessary for the installation and commissioning of the equipment.
- Option 3: Private meter and 4G/5G router
 - The autonomy of the memory of the meter is ideally greater than 30 days.
 - The meter uses 1/4h integration period for calculating the energy values.
 - A specific communication port is available for connecting the 4G/5G router.
 - The space for the installation of the router is: W400 x H400 (indicative values).
 - An external synchronization signal for the private meter is required. Synchronization is necessary at least on a daily basis and the clock must have an accuracy better than 20 ms (maximum admissible deviation per 1/4h). In case of disappearance of the external synchronization, the internal clock of the private meter may not have a deviation greater than 1 s (per day).
 - A power off is not necessary for the installation and commissioning of the equipment.

-----oOo-----