TENDER SPECIFICATION

DIRIS B-10L

Multifunction measurement meter with LoRaWAN® radio communication

for measuring and monitoring electrical installations

**Object of the specification**

This specification describes a multifunction measurement unit and the associated current sensors intended for the measurement and monitoring of electrical installations embedding LoRaWAN® type wireless communication. This measurement unit is particularly suitable for isolated measurement points requiring radio frequency communication.

The technical reference is SOCOMEC DIRIS B-10L or a similar solution approved by us.

1. **Main Features**

The multifunction measurement unit must be CE marked and must be of the compact PMD\* type in modular format and compliant with the IEC 61557-12 standard.

It must provide all voltage, current, power, energy and quality measurement functions and allow joint analysis of single-phase and three-phase loads.

It will be based on a Plug & Play concept which offers automatic detection of the type of network, types of loads, current sensor ratings and verification of the direction of the current. It will have:

* 4 independent RJ12 current inputs allowing simultaneous measurement of up to 4 loads (single-phase, three-phase, with or without neutral, etc.)
* native radio communication compliant with the LoRaWAN® protocol
* an optional remote screen for displaying measurement and counting data
* option modules offering additional functions (discrete inputs/outputs)
* with a class 0.5 measurement accuracy for the overall measurement chain (PMD + sensors) according to standard IEC 61557-12

The PMD must be modular allowing mounting on a DIN rail or on a plate.

*\*PMD: Power Metering and Monitoring Device according to IEC 61557-12.*

Current sensors shall:

* Be an integral part of the measurement system and in fact will have to come from the same supplier as the measurement modules.
* Have mV output and RJ type connection to PMD.
* Allow connection and opening under load to the secondary without risk.
* Eliminate the risk of error during installation, thanks to the automatic identification by the measurement unit of the type of load, the sensor rating, or even the direction of the current on each of the feeders.

If an installation error is detected during commissioning, an alarm will automatically be generated.

The measurement system can be adapted to any type of new or existing electrical installation thanks to closed current sensors TE from 5A to 2000A, opening TR/iTR from 25A to 600A and flexible TF from 150A to 6000A. No calibration of the measurement system or the current sensors will be necessary.

The closed and split-core current sensors can be mounted in line or in staggered rows to guarantee step-by-step integration of the protection devices.

1. **Features and performance**

From a functional point of view, the measurement system must meet the following requirements:

* **Accuracy of the measurement chain**

The combination of the PMD and the sensors will guarantee overall accuracy of the measurement chain for power (kW) and energy (kWh):

* **Class 0.5 according to IEC 61557-12:** Within the range of 2 to 120% of the rated current for the entire measurement chain (PMD + current sensors).
* **Class 0.2 according to IEC 61557-12 and ANSI C12.20** for the PMD alone.
* **General measures**
* Electrical quantities voltage, current, frequency
* Active, reactive, apparent powers, power factor
* **counting**
* Active (+/-), reactive (+/-, inductive and capacitive) and apparent energies, partial and total
* Load curves (powers 10min)
* Pulse count input
* **Alarms**
* Time-stamped alarms on instantaneous or average values of an electrical quantity
* Alarm on voltage presence detection (only available with iTR type current sensors)
* Alarm on change of state of a binary input
* System alarm (disconnection of a sensor, current/voltage association, phase rotation.)
* **Entries exits**
* 2 native logic inputs
* **Communication**
* Native 868 MHz Radio-Frequency communication compliant with the LoRaWAN® protocol.
* The provision of measures (Payloads) will be organized according to defined profiles. Several profiles will be offered to the user depending on the desired information such as:
  + "Energy" profile used to collect the energies and the state of the digital inputs
  + “Monitoring” profile allowing to collect the power factor, the power and current averages, the state of the digital inputs
  + "Load curves" profile for collecting load curves and the status of digital inputs
* **Visualization**
* Local possible via optional Diris D-30 screen

1. **Options**

An optional remote display can be connected to the measurement unit for local display of the measurements. The screen will have the following characteristics:

* High resolution graphic display
* 24VDC power supply to avoid dangerous voltages on the door
* Degree of protection IP65 on the front panel
* 10 Direct access keys to PMD measurement and configuration information

Expansion option modules are available and can be connected to the PMD:

* 2 digital inputs / 2 digital outputs
* 2 analog inputs / 2 analog outputs
* Temperature measurement inputs
  + Up to 4 option modules per PMD

The following accessories may be offered:

* Sealing kit to secure the wiring of the measurement unit.
* Remote radio antenna kit, 3 min long, allowing the antenna to be moved outside the cabinet in which the Diris B-10L measurement unit is located. This improves the span on constraining structures.