

UNICOM™ III Probe



The Next Generation

Elster's UNICOM III probe supports 57,600 bps communications with electricity meters equipped with ANSI C12.18 or IEC 61107 FLAG-compliant optical ports. The UNICOM III does not use a battery pack, special power connector, or AC adapter. Its state-of-the-art circuits are powered directly from the computer's RS-232 9-pin serial port or universal serial bus (USB) port.

Features

The UNICOM III probe has the following features:

- complies with the requirements of ANSI C12.18
- operates in pass-through mode at communication data rates up to 57,600 bps
- requires no external power source
- RS-232 models support true RS-232 \pm electrical signal levels
- USB models support USB 1.1 and USB 2.0 standards
- Available with other connectors for third party hardware such as DAP MICROFLEX (LEMO), Itron FS/2 and FS3 (AMPHENOL), and Itron G5 (HIROSE)
- operates over wide temperature range (-40 °C to +85 °C)
- uses a sunlight filter to enhance infrared (IR) communications in bright sunlight
- probe molded from lightweight, durable polycarbonate plastic
- cable jacket molded from high-endurance polyurethane
- equipped with a super powerful rare earth retention magnet for attaching to a metal port plate on a meter
- equipped with a removable retention spring for attaching to the plastic port under the cover of an Elster meter
- optional optical port adapter available for using ANSI style probes with IEC 61107 FLAG-compliant meters

Circuit Design

State-of-the-art circuit design provides for low power requirements and high communication rate of the UNICOM III. A fast photodiode-based receiver circuit replaces the slower IR phototransistor receiver. This unique receiver incorporates automatic gain control that provides extreme sensitivity in the presence of low IR signal levels but prevents signal distortion in the presence of high IR signal levels. The IR transmitter employs a constant current source that produces constant IR signal output over a wide range of RS-232 signal levels.

The miniaturized components comprising the UNICOM III circuits are placed on a single circuit board that is located in the probe head. There are no circuits in the connector housing.

Meter Support Software Operational Details

Typical meter support software uses either RTS or DTR to turn on the probe power supply. The highly efficient RS-232 model UNICOM III probes use either one but not both of these signals as its sole power source. This eliminates the need for a battery pack, special power connector, or AC adapter. USB models are powered by the USB power source.

The UNICOM III also supports meters that use a variant to the ANSI C12.18 Tx signal. To communicate with these meters, the meter support software uses RTS to signal the probe to turn on and DTR to signal the probe to invert the Tx digital logic for the optical signal. In this situation only, both RTS and DTR should be turned on.

UNICOM III has an internal wire jumper between DTR and DCD. This connection is a probe signature. Some meter support software applications use this jumper to determine which COM port has the connected probe. Also, the UNICOM III probe asserts the DSR signal which some meter support software applications use to determine that the probe is powered.



Standard ANSI C12.18 Probe

The UNICOM III probe attaches directly to the ANSI C12.18-compliant optical port (Figure 1). An internal magnet holds the probe on the port. The probe is equipped with a removable retention spring for attaching to the plastic port under the cover of an Elster meter.

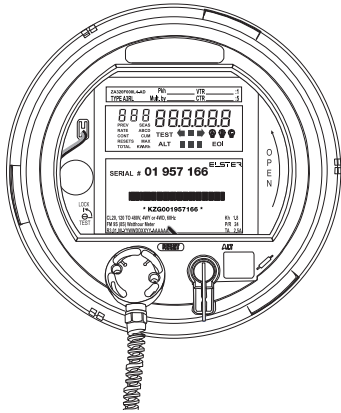


Figure 1. A3 ALPHA meter with ANSI probe

IEC Adapter for ANSI Probe

The IEC adapter (Figure 2) provides the mechanical interface between the UNICOM III (ANSI) probe and IEC electricity meters equipped with the IEC 61107 FLAG-compliant optical port.

Elster recommends using an ANSI probe in conjunction with this adapter in situations where both ANSI and IEC 61107 FLAG-compliant meters are supported.

The adapter's ANSI side is held in place on the probe by the probe's magnetic and spring retention features. The IEC 61107 FLAG side is equipped with a ring retention magnet that holds the probe-adapter combination in place on the IEC 61107 FLAG port of the meter.

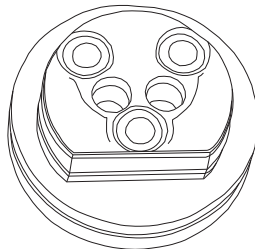


Figure 2. IEC probe adapter

Although the center-to-center spacing between optical elements is compatible between the ANSI C12.18 and IEC 61107 standards, placement of the Rx and Tx elements is reversed. Therefore, when using an ANSI probe and an IEC adapter with IEC 61107 FLAG-compliant meters, attach the probe with the cable oriented up (Figure 3). This reverses the probe's Rx and Tx elements to match the reversed Rx and Tx elements of the IEC 61107 FLAG port of the meter.

Standard IEC 61107 FLAG Probe

For applications where only IEC 61107 FLAG probes are required, Elster recommends using the standard IEC probe styles (Figure 4). With these styles, the adapter is permanently mounted and the Rx and Tx elements are internally reversed. Attach these probes to the IEC 61107 FLAG port of the meter with the cable oriented down.

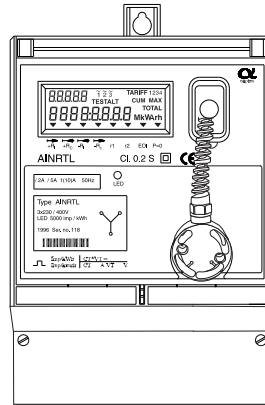


Figure 3. AIN ALPHA meter with ANSI probe and IEC adapter

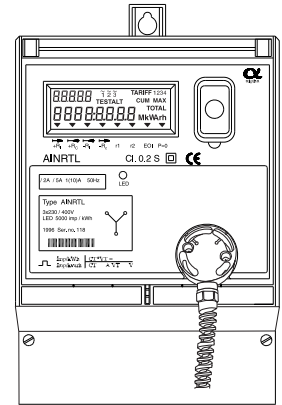


Figure 4. AIN ALPHA meter with IEC probe

Common Style Numbers

The following table lists the most common probe offerings. Other configurations are available, including probes with different connectors (such as LEMO, AMPHENOL, and HIROSE) and cables.

ANSI probes	Style number
10 ft (3 m) retractile coil cable (DB-9)	5D25274G01
6 ft (2 m) retractile coil cable (DB-9)	5D25274G02
10 ft (3 m) retractile coil cable with calibration pulse output via RCA connector	5D25274G96
NPN Transistor rated 15 mA Max (DB-9)	
Adapter for ANSI probes to accommodate IEC 61107 FLAG port	3A34485G01
6 ft (2 m) straight cable (USB)*	5D25334G01
IEC 61107 probes	Style number
3 m (10 ft) retractile coil cable (DB-9)	5D25274G03
2 m (6 ft) retractile coil cable (DB-9)	5D25274G04
2 m (6 ft) straight cable (USB)*	5D25334G04

* USB probes require USB driver software, available free of charge at the Elster Solutions Web site

Probes for ANSI Type 1 Port

The patented optical communications technology used for certain EMF electronic registers (Westinghouse and ABB Types EMF-1A, EMF-1B, EMF-2, and EMF-2110) have a Type 1 communications port. Consult Elster Sales Support for availability of the Type 1-compliant probe.