



DATASHEET

Issue 1



Multifunction Meters

Transducers & Isolators

Temperature Controllers

Converters & Recorders

Digital Panel Meters

Current Transformers

Analogue Panel Meters

Shunts

Digital Multimeters

Clamp Meters

Insulation Testers

AP15-3DL RJ12 MULTIFUNCTION POWER METER

Features

- Phase to Neutral Voltage (V)
- Phase Current (A)
- Voltage Total Harmonic Distortion (U%THD)
- Current Total Harmonic Distortion (I%THD)
- Frequency (Hz)
- Power Factor (PF)
- Current Max Demand (MD A)
- Power Max Demand (MD kW)
- Active Power (kW) Reactive Power (kVAr)
- Apparent Power (kVA)
- Import Active Energy (kWh)
- Export Active Energy (kWh)
- Total Active Energy (kWh)
- Import Reactive Energy (kVArh)
- Export Reactive Energy (kVArh)
- Total Reactive Energy (kVArh)

SUBJECT TO CHANGE WITHOUT NOTICE

This manual superseded all previous versions – please keep for future reference

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Sifam Tinsleys AP15-3DL RJ12 Multifunction Power Meter is a new generation modern design power monitor that will measure and display electrical power quality parameters for two three phase circuits. This replaces the use of two separate meters, this has been designed specifically for a split load board where power and lighting has to be measured separately due to building regulations. It has been engineered to cover most applications (Three Phase networks / Built in Pulsed and RS485 Modbus / Import and Export kWh), replacing the need for several different models of this power meter.

The Sifam Tinsley AP15-3DL RJ12 is produced to the highest quality and utilizes the latest microprocessor and technology. It has a backlit display and 16 different measuring parameters. This includes a negative power reading to indicate reversal of CT installation or connection. With built in pulsed outputs and RS485 Modbus RTU it is fully compatible for integration with BMS and remote monitoring systems.

This specific model from the Sifam Tinsley RJ range is configured to work in conjunction with our RJ12 fast connect CT's.

1. Specifications

Measured Parameters

The unit can monitor and display the following parameters of a single phase two wire (1p2w) or three phase four wire (3p4w) systems.

Voltage and Current

- Phase to neutral voltages 100 to 289V a.c. (not for 3p3w supplies).
- Voltages between phases 173 to 500V a.c. (3p supplies only).
- Percentage total voltage harmonic distortion (THD%) for each phase to N (not for 3p3w supplies).
- Percentage voltage THD% between phases (three phase supplies only).
- Current THD% for each phase

Power factor and Frequency and Max. Demand

- Frequency in Hz
- Instantaneous power:
- Power 0 to 3600 MW
- Reactive power 0 to 3600 MVA
- Volt-amps 0 to 3600 MVA
- Maximum demanded power since last Demand reset Power factor
- Maximum neutral demand current, since the last Demand reset (for three phase supplies only)

Energy Measurements

Imported/Exported active energy	0 to 9999999.9 kWh
Imported/Exported reactive energy	0 to 9999999.9 kVarh
Total active energy	0 to 9999999.9 kWh
Total reactive energy	0 to 9999999.9 kVarh

Measured Inputs

Voltage inputs through 4-way fixed connector with 2.5mm² stranded wire capacity, single phase two wire(1p2w) or three phase four wire(3p4w) unbalanced. Line frequency measured from L1 voltage or L3 voltage. Three or Six Current inputs for connection of external CTs with RJ12 cable. Nominal rated input Current 100mA AC RMS per Phase.

Nominal Voltage Input (Ph+N)	100 to 289V (Ph+Ph) 173 to-500V
Max Continuous Voltage	120% of nominal
Nominal Input Current	2 X 10-100 (120mA)
Max Continuous Current	120% of nominal
Nominal Input Current Burden	0.5VA
Frequency	45-65Hz

Accuracy

Voltage	0.5% of range maximum
Current	0.5% of nominal
Frequency	0.2% of mid-frequency
Power factor	1% of unity (0.01)
Active power (W)	±1% of range maximum
Reactive power (VAr)	±1% of range maximum
Apparent power (VA)	±1% of range maximum
Active energy (Wh)	Class 1 IEC 62053-21
Reactive energy (VARh)	±1% of range maximum
Total harmonic distortion	1% up to 31st harmonic
Response time to step input	1s, typical, to >99% of final reading, at 50 Hz.

Interfaces for External Monitoring

Three interfaces are provided:

- RS485 communication channel that can be programmed for Modbus RTU protocol
- Relay output indicating real-time measured energy. (configurable)
- Pulse output 3200imp/kWh (not configurable)

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kWh/kVarh, import/export etc.) are configured through the set-up screens.

Pulse Output

Opto-coupler with potential free SPST-NO Contact (Contact range 5-27VDC / Max current input: Imin 2mA and Imax 27mA DC).

The pulse output can be set to generate pulses to represent kWh or kVarh.

Rate can be set to generate 1 pulse per:

0.01 = 10 Wh/VArh

0.1 = 100 Wh/VArh

1 = 1 kWh/kVarh

10 = 10 kWh/kVarh

100 = 100 kWh/kVarh

Pulse width 200/100/60 ms.

RS485 Output for Modbus RTU

For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu:

Baud rate 2400, 4800, 9600, 19200, 38400

Parity none (default) / odd / even

Stop bits 1 or 2

RS485 network address nnn – 3-digit number, 1 to 247

Modbus™ Word order Hi/Lo byte order is set automatically to normal or reverse. It cannot be configured from the set-up menu.

Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

Ambient temperature	23°C ±1°C
Input waveform	50 or 60Hz ±2%
Input waveform	Sinusoidal (distortion factor < 0.005)
Auxiliary supply voltage	Nominal ±1%
Auxiliary supply frequency	Nominal ±1%
Auxiliary supply waveform (if AC)	Sinusoidal (distortion factor < 0.05)
Magnetic field of external origin	Terrestrial flux

Environment

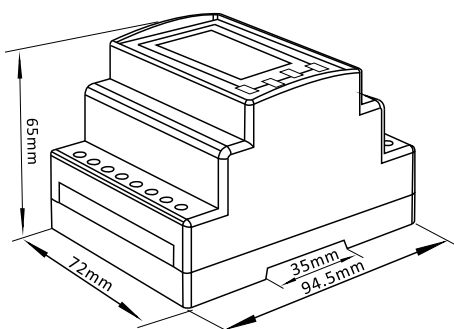
Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 3000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

*Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

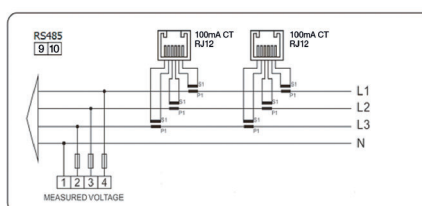
Mechanics

DIN rail dimensions	72 x 94.5 mm (WxH) per DIN 43880
Mounting	DIN rail (DIN 43880)
Sealing	IP51 indoor
Material	Self-extinguishing UL 94 V-0

2. Dimensions



3. Installation



Installation 1.2

Meter to CT RJ12 Cable

Pre-wired looms ensure an error-free install!

Instead of using traditional terminals, the RJ12 cable is a proven method of connecting the meter to the current transformer significantly quicker; eradicating human error.

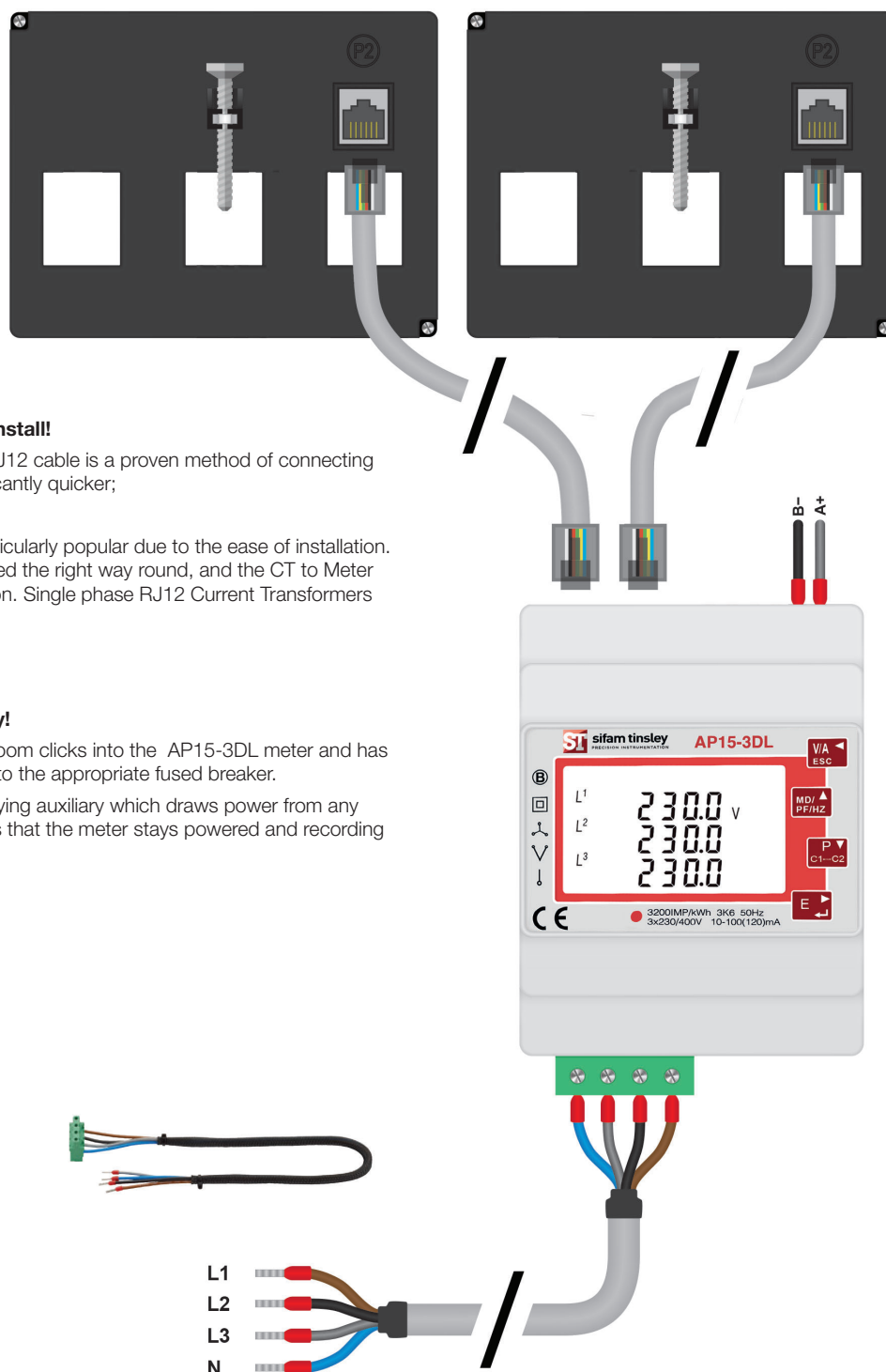
Three-in-one Current Transformers are particularly popular due to the ease of installation. The CT is clearly labelled so that it is installed the right way round, and the CT to Meter RJ12 cable ensures an error-free connection. Single phase RJ12 Current Transformers are also available for 1P2W installations.

Voltage to Fuse Loom

Quick and easy to connect, no auxiliary!

The pre-wired plug of the Voltage to Fuse loom clicks into the AP15-3DL meter and has open tails on the other end for connection to the appropriate fused breaker.

The AP15-3DL has an intelligent self-supplying auxiliary which draws power from any available phase connected, this guarantees that the meter stays powered and recording if one of the connected phases fails.



Fuse to Voltage loom options and ordering codes:

Part Number	Length
Q2C-VFO-0600-01	600mm
Q2C-VFO-1000-01	900mm
Q2C-VFO-1200-01	1200mm
Q2C-VFO-1500-01	1500mm

Other lengths available upon request.

Contact



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