FEATURES

- Digital power meter
- Three phases
- Can be used with single-phase and 3-phase networks
- Built-in pulsed outputs
- RS485 modbus communications
- 16 measuring parameters
- Panel mount (DIN 96, 92mm² cutout)
- Backlit display
- 12 digits
- Made from self-extinguishing UL 94 V-0 plastic
- IP51 rated as offering protection from condensation and dust
- Certified for import/export kWh
- MID B&D approved
- Conforms to EC Directive 2014/32/EU as a class C meter

RS PRO 3 Phase Backlit Digital Power Meter with Pulse Output, 96mm Cutout Height

RS Stock No.: 144-0527

RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

Why fit several power meters when just one can do everything you need? This multi-function digital power meter from RS PRO covers a multitude of applications, including single-phase and 3-phase networks, built-in pulsed and RS485 modbus communications, and measuring imported and exported kWh. It measures 16 different parameters, from phase current (A) to total reactive energy (kVArh).

The meter comes with a white backlit display that's easily readable. It provides readings with an accuracy of within 1%. The casing is made from self-extinguishing plastic and is IP51 rated, so it protects against condensation and dust.

General Specifications

Meter Type	Digital
Display Type	Backlit
Number of Digits	12
Meter Accuracy	1 %
Communication Port Type	RS485 Output for Modbus RTU
Mounting Type	DIN-rail mounting
Sampling Rate	1600 samples/s @ 50Hz
Type of measurement	Voltage, Current, Active Energy, Reactive Energy
Colour	White
Applications	Demand-side management, sub-metering and energy monitoring applications

Electrical Specifications

Number of Phases	3
Pulse Output	Yes/No
Maximum Measurement	9999999.9 kWh (Imported/Exported active energy), 9999999.9 kVArh (Imported/Exported reactive energy), 9999999.9 kWh (Total active energy), 9999999.9 kVArh (Total reactive energy)
Minimum Measurement	0kWh, 1kVArh
Measurement Range	0 to 9999999.9 kWh (Imported/Exported active energy), 0 to 9999999.9 kVArh (Imported/Exported reactive energy), 0 to 9999999.9 kWh (Total active energy), 0 to 9999999.9 kVArh (Total reactive energy)
Current Range	0.25A - 5A(6)A AC rms
Frequency	45Hz - 65Hz.
Active Power	0 to 9999999.9kWh
Reactive Power	0 to 9999999.9kVArh

Mechanical Specifications

Cut-out Height	96mm
Cut-out Width	96mm
Depth	74mm
Depth	74mm

Operation Environment Specifications

Minimum Temperature	-25°C
Maximum Temperature	+55°C
Storage Temperature	-40°C to +70°C
Relative Humidity	0 to 95%, non-condensing

Protection Category

IP Rating	IP51 Indoor

Approvals

Compliance/Certifications	CE, EC Directive 2014/32/EU as a class C meter, ANSI/ESD S20.20:2014 and BS EN 61340-5-1:2007, RoHS (Restriction of Hazardous Substances) Compliant, UL 94 V-0
Approvals	MID B+D Certified

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The 144-0527 is a new generation modern design power monitor that will measure and display electrical power quality parameters. It has been engineered to cover most applications (Single Phase and Three Phase networks / Built in Pulsed and RS485 Modbus / Import and Export kWh), replacing the need for several different models of this power meter.

- MID B+D Certified
- Certificate Number 0120/SGS0321
- Class C (0.5% Accuracy) EC Directive 2014/32/EU
- Certified for Single & Three Phase
- Certified for Import / Export kWh

As the demand for MID certified meters has increased, we have obtained annex B and D of the EC Directive 2014/32/EU. This power meter has been tested and certified for single or three phase networks and import and export active energy (kWh).

The 144-0527 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.

Parameters

- 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)

Specifications

Measured Parameters

The unit can monitor and display the following parameters of a single phase two wire (1p2w), three phase three wire (3p3w) or three phase four wire (3p4w) system.

Voltage and Current

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

Interfaces for External Monitoring

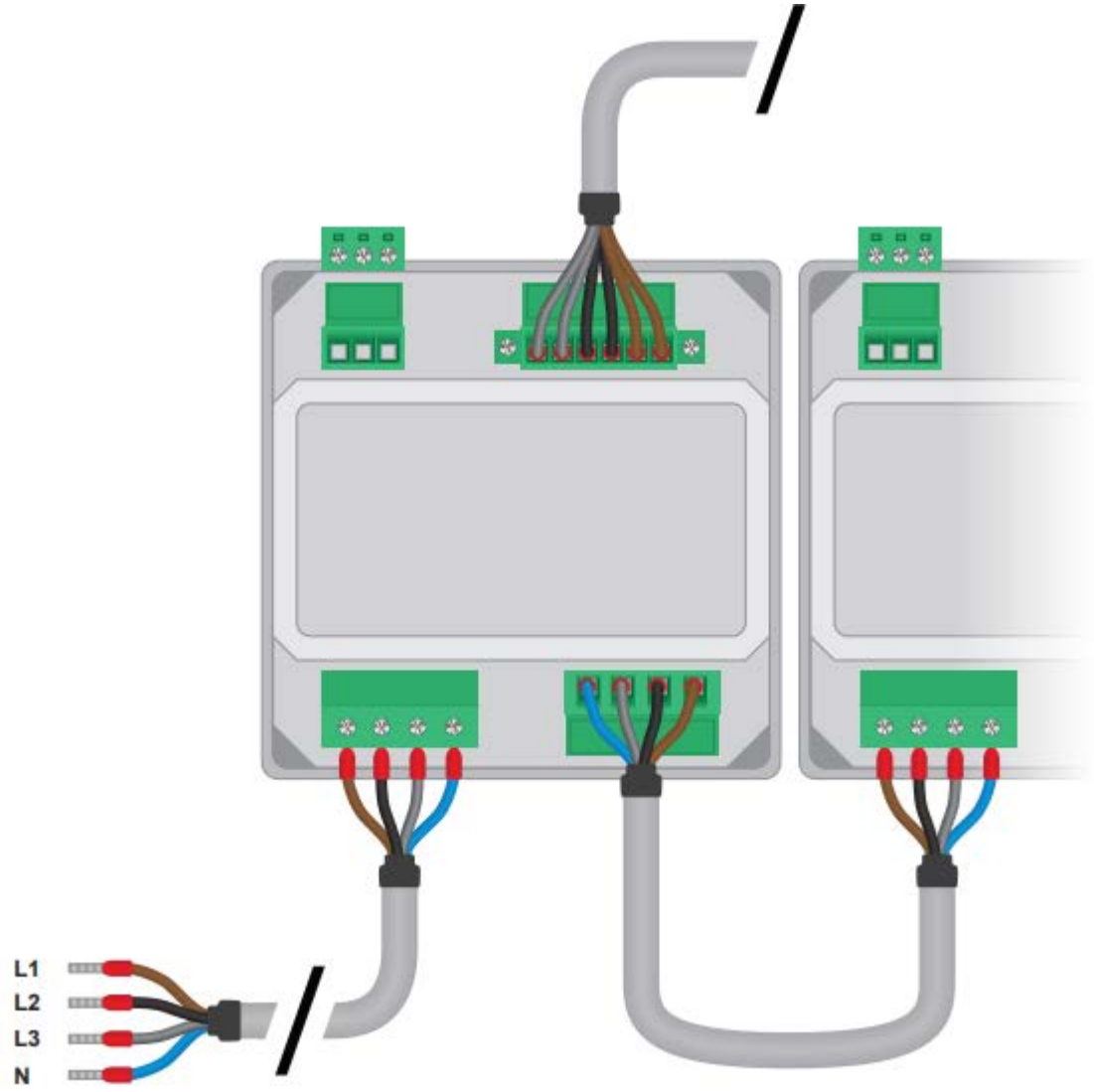
Three interfaces are provided:

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

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kW/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.

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 C (0.5% Accuracy)
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.

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

Auxiliary Supply

This unit does not require a separate auxiliary supply; the unit draws the necessary power from the voltage input connections. If a three phase supply is connected, and the phase that is powering the unit fails, it will change the phase supply to avoid shutting down.

Measured Inputs

Voltage inputs through 4-way fixed connector with 2.5mm² stranded wire capacity. single phase two wire(1p2w), three phase three wire(3p3w) or three phase four wire(3p4w) unbalanced. Line frequency measured from L1 voltage or L3 voltage. Three current inputs (six physical terminals) with 2.5mm² stranded wire capacity for connection of external CTs. Nominal rated input current 5A or 1A a.c. Rms.

Nominal Voltage Input	(Ph+N) 100 to 289V (Ph+Ph) 173 to-500V
Max Continuous Voltage	120% of nominal
Nominal Input Current	0.25-5A(6)A AC rms
Max Continuous Current	120% of nominal
Nominal Input Current Burden	0.5VA
Frequency	45-65Hz

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

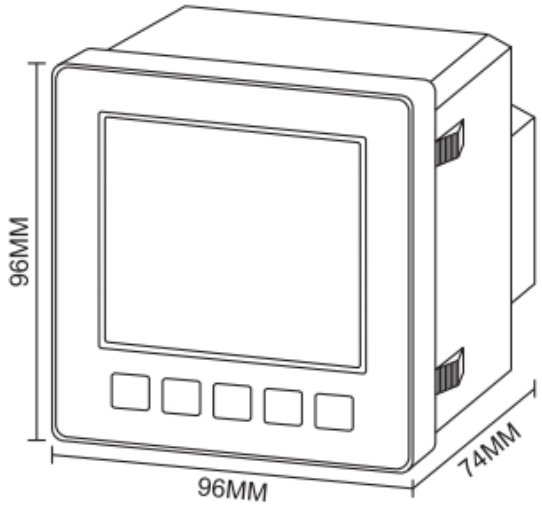
Environment

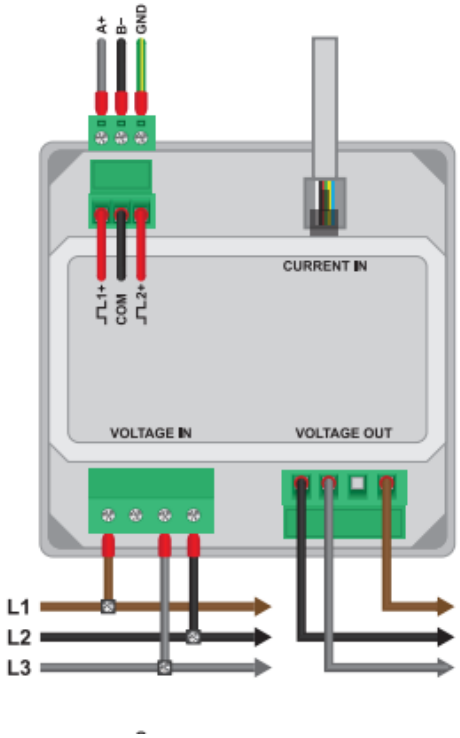
Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 3000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

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

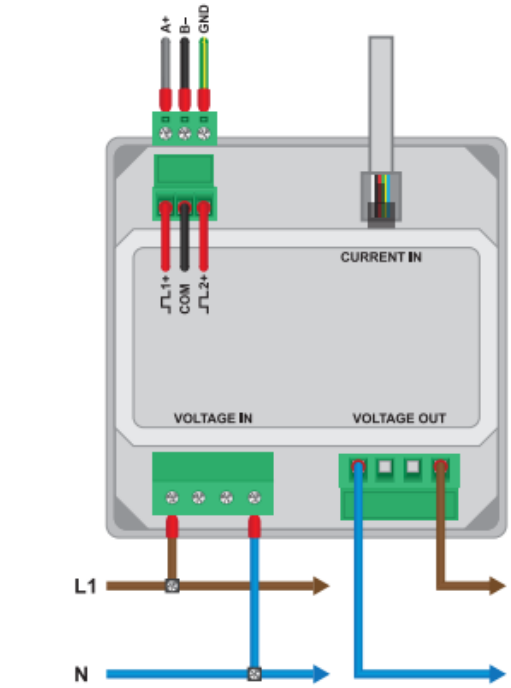
Mechanics

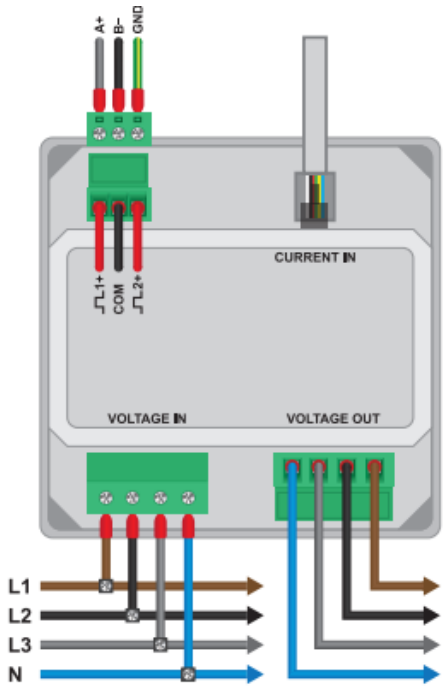
Dimensions	96 x 96 x 74mm (WxHxD)
Mounting	DIN 96 (92mm² Cutout)
Sealing	IP51 indoor
Material	Self-extinguishing UL 94 V-0





Installation





Specifications are subject to change without notice.

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