Installation & Operating Instructions

254-TXX

Paladin Advantage
Programmable Transducer

Product: **Advantage Programmable Transducer**		
Part No.		
254-TXX-M-2-030	2x Analogue, USB	Aux. 100-250V AC/DC
254-TXX-M-2-070	2x Analogue, Ethernet	
254-TXX-M-4-030	4x Analogue, USB	
254-TXX-M-4-070	4x Analogue, Ethernet	
254-TXX-L-2-030	2x Analogue, USB	Aux. 12-48V DC
254-TXX-L-2-070	2x Analogue, Ethernet	
254-TXX-L-4-030	4x Analogue, USB	
254-TXX-L-4-070	4x Analogue, Ethernet	

Warnings **Caution: Risk of Electric Shock and Danger**

- **During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and servicing should be performed only by qualified, properly trained personnel abiding by local regulations. Ensure all supplies are de-energised before attempting connection or other procedures.**
- **It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.**
- **Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.**
- **This unit is not intended to function as part of a system providing the sole means of fault protection - good engineering practice dictates that any critical function be protected by at least two independent and diverse means.**
- **The unit does not have internal fuses therefore external fuses must be used for protection and safety under fault conditions.**
- **If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.**

EMC Installation Requirements

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with the requirements of EU and other regulations. The precautions necessary to provide proper operation of this and adjacent equipment will be installation dependent, and further recommendations or
requirements are provided in this document. The following should be considered as good practice, even if not specifically required:

- Avoid routing wiring to this unit alongside cables and products that are, or could be, a source of interference.
- To protect the product against incorrect operation or permanent damage, surge transients must be controlled. It is good EMC practice to suppress differential surges to 2kV or less at the source.
- The unit has been designed to automatically recover from typical transients, however in extreme circumstances it may be necessary to temporarily disconnect the supply for a period of greater than 5 seconds to restore correct operation.
- In applications that have inherently high levels of electrical interference, to ensure reliable operation it may be necessary to provide additional EM suppression to the generator input of this unit. Typically, clip over ferrite absorbers are both an effective and convenient mitigation. Where very high levels of electrical noise are prevalent, multiple turns of the supply lines through the suppressor may be required.

It is good practice to install sensitive electronic instruments that are performing critical functions in EMC enclosures that protect against electrical interference causing a disturbance in function.

Installation

254 models may be mounted in a symmetrical 35mm DIN Rail Consideration should be given to the space required behind the units to allow for bends in the connecting cables. The terminals at the front of the case should be protected from liquids. Units should be mounted in a reasonably stable ambient temperature and in any event where the temperature is within the range -20 to +45ºC

The unit should not be mounted where it is subjected to excessive direct sunlight; vibration should be kept to a minimum. Labels are fixed to the units and carry full connection information and data including type number, input voltage, current, frequency and supply as appropriate.

The products do not have internal fuses therefore external fuses **must** be used for safety protection under fault conditions.

Fusing & Connections

This unit must be fitted with 1A quick blow external fuses, or a circuit breaker in the voltage supply lines. Fuse type and breaking capacity should be appropriate to the supply and in accordance with local regulations. A switch or disconnecting device
should be provided and positioned close to the unit allowing for isolation of the supplies. Cabling should be rated for 1A minimum and at least the highest voltage of the supply lines.
Connection is made through screw clamp terminals that will accept 0.5 to 2.5mm (30/12 AWG) stranded conductors. Recommended tightening torque is 0.5Nm

Setting Up and Maintenance

During routine servicing and inspection of the associated equipment, the unit should be inspected to normal standards for this class of equipment. For example, remove accumulations of dust and check all electrical connections for tightness and corrosion.

Product Description

The Paladin Advantage, 254-TXX is a programmable transducer which provides measurement isolation and conversion of all main electrical parameters into an industry standard DC output signal.

The 254-TXX can be used in single and three-phase balanced or unbalanced, 3 or 4 wire electrical systems. The 254-TXX has an accuracy of CL0.2 and includes RS485 Modbus RTU communications protocol and Pulse/Alarm output as standard.

Measurement

The 254-TXX is an accurate device for the conversion of all main electrical parameters into a Voltage or mA output and provides measurement, isolation and conversion of up to 4 user defined **Inputs and Outputs.**
The device is supplied programmed to the users requirements but can easily be reprogrammed to suit any application.

Range of Use

Values of measured quantities, components of measured quantities, and quantities which affect measurement errors to some degree, for which the product gives meaningful readings:

Voltage	5 … 120% of nominal
Current	5 … 120% of nominal
Active power	50 … 120% of nominal
Apparent power	50 … 120% of nominal

Power is only registered when voltage and current are within their respective range of use.

Accuracy

Voltage (V)	< 0·2% of range
Current (A)	< 0·2% of range
Neutral current calculated (A)	< 1% of range
Frequency (Hz)	< 0.1 Hz
Active power (W)	± 0.2% of range
Reactive power (VAr)	± 0.2% of range
Apparent power (VA)	± 0.2% of range
Active energy (kWh)	Class 0.2 (IEC 62053-21)
Reactive energy (kVArh)	+/- 0.2% of range
THD	2% up to 63rd harmonic
Response time to step Input	<200ms

Outputs

Analogue Output

0... +/- 1mA	0... +/- 5mA
0... +/- 10mA	0... +/- 20mA
4... +/- 20mA	
0... +/- 1V	2... +/- 10V

All programmable

RS485 output

Type	2-wire half duplex
Baud rate	2400, 4800, 9600, 19200, 38400

*Ensure any external circuits connected to RS-485 output modules are provided with double/reinforced insulation.

Pulse / Alarm Output

Type	User defined Solid State Relay
Pulse duration	20msec to 300 msec
Alarm Delay	0-120 secs
Hysteresis	1 – 99 %

Ethernet Output

The ethernet supports Modbus TCP/IP.
Default address 192.168.1.11.

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)

Magnetic field of external origin Terrestrial flux

Environment

Operating temperature	-10°C to +55°C*
Storage temperature	-30°C to +70°C*

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

Relative humidity	0 to 90%, non-condensing
Altitude	Up to 2000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes
Dielectric voltage	Withstand test 4kV, 50Hz for 1 minute between auxiliary/input/output

Mechanics

Dimensions	100 x 70 x (WxH)
Depth	120.5 mm maximum
Sealing	IP23 (front panel)
Mounting	DIN Rail (DIN 43880)

Approval, Certification, and Standards Compliance

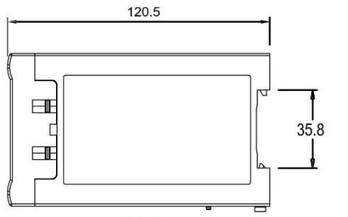
- IEC 61326
- IEC 61010-1
- IEC62053-21
- EN60688
- RoHS Compliant
- UL Certified

Product Image

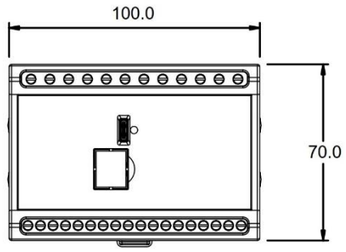
Image for illustrative purposes only.

Scan QR code to view product on our website

Product Dimensions



Side View



Front View

Set Up

The Paladin 254-TXX is a programmable Transducer. For initial programming or reprogramming of an existing product please use the Crompton Instruments Transducer Configurator software. Make sure that you have the latest version of Transducer Configurator software installed on your computer. You can download the latest version at

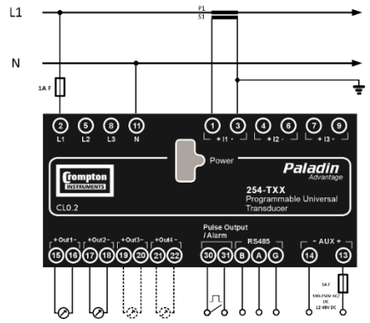
https://www.te.com/en/private/energy/crompton-software-downloads-254-TXX-programmabletransducer.html

Wiring Diagrams

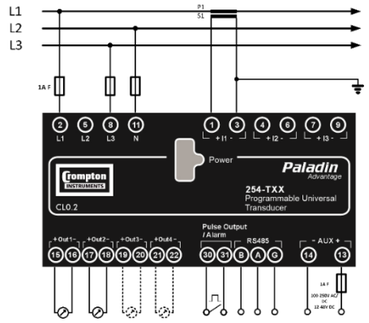
WARNING

It is essential that the primary current is isolated BEFORE connecting or disconnecting the secondary current connections

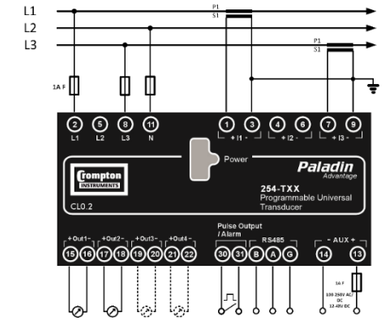
SINGLE PHASE



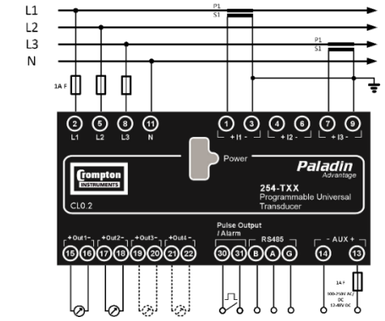
THREE PHASE THREE WIRE BALANCED LOAD



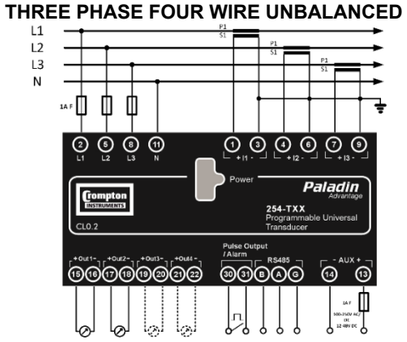
THREE PHASE THREE WIRE UNBALANCED LOAD



THREE PHASE FOUR WIRE BALANCED LOAD



THREE PHASE FOUR WIRE UNBALANCED LOAD



Explanation of Symbols:

Refer to manual

Danger of electric shock

Do not discard

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