

Products Covered

253-TAA~	253-TAL*	253-TAR*	253-THZ*
253-TAM~	253-TAN~	253-TAP~	253-TDN~
253-TVL*	253-TVR*	253-TVA*	253-TVZ~
253-TDM#	253-TDP#	253-TRT#	253-TRP#
253-TRR#	252-T/XAS*	252-T/XAL*	252-T/XAR*
252-T/XAA*	252-T/XVA*	252-T/XVL*	252-T/XVS*
252-T/XVR*	252-T/XVZ*	252-T/XHA*	252-T/XHL*
252-T/XHS*	(*,~,# = varies)		

Paladin Transducers, Class 0.5 253 Series and Class 0.2 252 Series Current, Voltage, Frequency, Resistance & Integrating Demand



Caution: Risk of Danger

These instructions contain important safety information: Read before starting installation or servicing of the equipment



Caution: Risk of Electric Shock

Introduction

Paladin Transducers give a dc output proportional to the input. Zero and span adjustments are accessible without opening the transducer.

Ratings

Side labels show product function, and electrical ratings for measurement inputs and auxiliary supplies where applicable. Product side labels show full connection information. Terminal numbers are identified on the coloured foil label adjacent to the terminals and correspond with those shown on the connection diagram. DC outputs of these transducers include an internal power supply and may be connected directly across a passive load as stated on the rating label.

DC output circuits are separated from metering inputs and auxiliary circuits by at least basic insulation for products marked * above. Such DC output circuit terminals are only suitable for connection to equipment which has no user accessible live parts. The insulation for such DC output circuits must be rated for the highest voltage connected to the instrument and suitable for single fault condition. The connection at the remote end of such circuits should not be accessible in normal use. Depending on application, equipment connected to DC output circuits may vary widely. The choice of connected equipment or combination of equipment should not diminish the level of user protection specified. TRP, TRR, TDM/N/P and TRT products (marked #) do not provide input to output galvanic isolation. Products marked ~ provide galvanic isolation only (ie no direct electrical connection between input and output, but not safety rated isolation)

These units are designed for operation between 0 and 60 deg C at less than 80% relative humidity for temperatures up to 31 deg C, decreasing linearly to 50% relative humidity at 40 deg C, for indoor use at an altitude of less than 2000m.

Installation

These Transducers should be installed in compliance with electrical codes for the territory of final use. For example for USA, in line with National Electrical Code and for Canada in line with Canadian Electrical Code. They should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and will not be outside the range noted above. Terminals should not be user accessible after installation. Mounting will normally be on a vertical surface but other positions will not affect operation. Vibration should be kept to a minimum. Transducers are designed for mounting on a 35mm rail to DIN 46277. Alternatively they may be screw fixed. These units may be mounted adjacent to other DIN rail products on the same rail, however at least 35mm (1.5 inches) of free air space should be allowed above and below the transducer.

To mount a Transducer on a DIN rail, position the transducer with the black release clip on the lowest face. Clip the transducer over the top edge of the rail and click the bottom edge carrying the release clip into place. Check that the unit is firmly fixed. Removal or repositioning may be achieved by levering down the release clip and lifting the unit up and off the rail. These units do not require a protective earth, but where fitted, current transformer (CT) secondaries must be connected to protective earth in accordance with local regulations.

Fusing and connections

Connection diagrams should be carefully followed to ensure correct polarity where applicable. External voltage transformers (PTs) and CTs may be used to extend the range, provided that transducer ratings are not exceeded at the point of connection to transducer. These products do not have internal fuses therefore external fuses **must** be used for safety protection under fault conditions. Voltage input lines must be fused with a quick blow fuse 1A maximum. Auxiliary supply lines must be fused with a slow blow fuse rated 1A maximum. Do not fuse CT connections. DC current inputs should be fused according to the rated current of the transducer. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with regulations.

Connection wires should be sized to comply with applicable regulations and codes of practice, and be rated for minimum 75 deg C. Terminals are suitable for use with one or two copper wire conductors per terminal, AWG12 (3 mm²) or less. Wiring is to comply with class 1 requirements in North America.

Tighten terminal screws to 1.35Nm (1 ft/Lb) only. Ensure all connection wires are rated and approved to the highest voltage connected to the transducer.

Note that minimum wire current ratings for CT circuits ensure that the wire is capable of carrying the current safely, however it may be desirable to use heavier gauge wiring, particularly for long cable runs to ensure that the CT class accuracy VA rating is not exceeded and it's accuracy impaired.

The equipment into which these transducers are installed must have a readily accessible, clearly marked, adjacent switch or circuit breaker which will isolate the supply voltage and permit safe access for subsequent maintenance. Products marked * offer electrical isolation between measurement inputs and outputs in accordance with IEC1010-1 (BSEN 61010-1) Permanently connected use, Normal Condition Measurement category III, pollution degree 2 (e.g. non ventilated panels or ventilated panels with filters, without condensation occurring), Basic Insulation, for rated voltage. All products listed offer the same degree of isolation between auxiliary supply circuits and DC output circuits for rated auxiliary supply voltage.

Maintenance

No routine maintenance is required, beyond removing any accumulations of dust or other foreign matter and ensuring that connection screws remain tight.

Warning

- During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and maintenance should be performed only by qualified, properly trained personnel' abiding by local regulations. Ensure all supplies are de-energised before attempting connection or maintenance.
- It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.
- 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.
- Never open circuit the secondary winding of an energised current transformer.
- If this equipment is used in a manner not specified by the manufacturer, protection may be impaired.

Commissioning

The units are calibrated at the factory for full accuracy. No further adjustments are required. Zero and span adjustment where provided are under the bungs on the front panel. Resetting these will degrade the accuracy of this transducer, but may be used to compensate for system errors etc. Typically adjustment of 10% of span and 2% of zero is available, but this varies by model..

Electromagnetic Compatibility

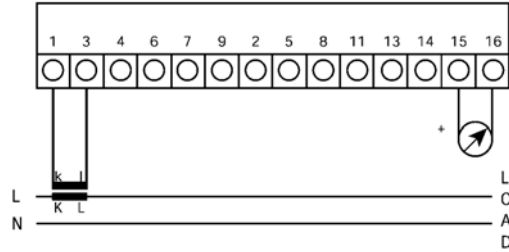
This unit has been designed to provide protection against EM (electromagnetic) interference in line with requirements of EU, FCC and other regulations. Precautions necessary to provide proper operation of this and adjacent equipment will be installation dependent and so the following can only be general guidance:-

- Avoid routing wiring to this unit alongside cables and products that are, or could be, a source of interference.
- The auxiliary supply to the unit should not be subject to excessive interference. In some cases, a supply line filter may be required.
- To protect the product against incorrect operation or permanent damage, surges and transients must be controlled. It is good EMC practice to suppress transients and surges at the source.

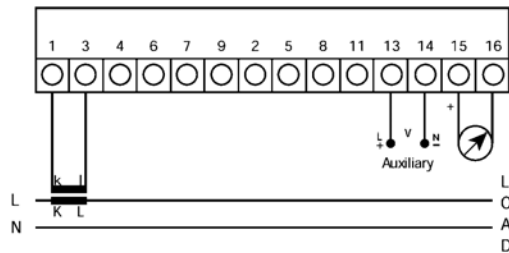
- Screened small signal leads are recommended and may be required. Connecting leads may require the fitting of RF suppression components, such as ferrite absorbers or line filters
 - It is good practice to install sensitive electronic instruments that are performing critical functions in EMC enclosures that protect against electrical interference causing a disturbance in function.
- For assistance on protection requirements please contact your local sales office.

Connection Diagrams

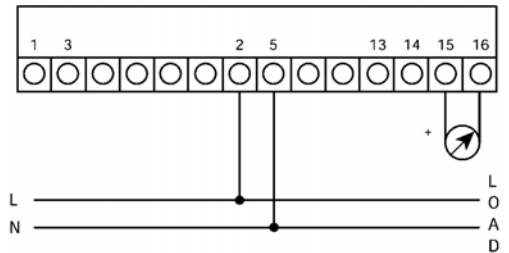
253-TAA/252-TAA/252-XAA Average Current Sensing, self powered



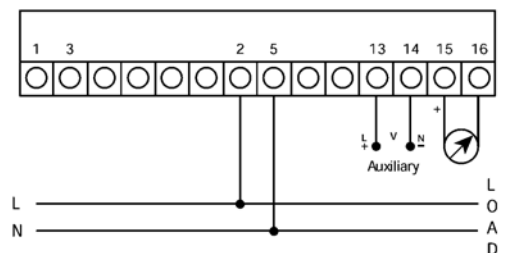
**253-TAL/252-TAL/252-XAL Live Zero, Average Current Sensing
252-TAS/252-XAS Normal Zero, Average Current Sensing
253-TAR, 252-TAR/252-XAR RMS Current Sensing**



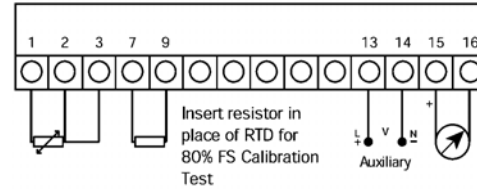
**253-TVA/252-TVA/252-XVA, Voltage Average Sensing, self powered
253-TVZ, Suppressed Zero Voltage
253-THZ/252-THZ/252-XHZ, Frequency**



**253-TVL/252-TVL/252-XVL, Live Zero, Average Voltage Sensing
252-TVS/252-XVS Normal Zero, Average Voltage Sensing
252-TVZ/252-XVZ RMS Voltage Sensing, Suppressed Zero
253-TVR/252-TVR/252-XVR, RMS Voltage Sensing**



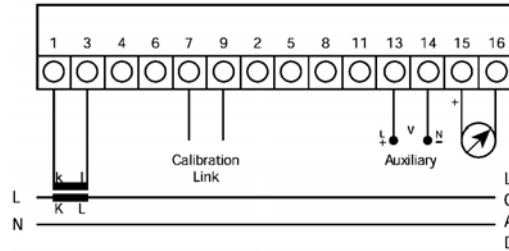
253-TRR Temperature Transmitter



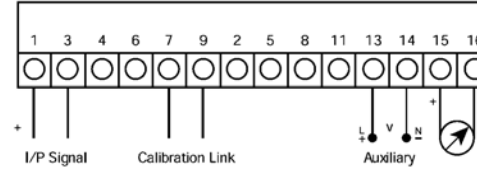
Special considerations for 253-TRR

Ensure that the input to 253-TRR is not open circuited. In these circumstances excessive current may flow in the output circuit. If there is a possibility that the 253-TRR input may become open circuit, ensure that the total load impedance is no less than 400 ohms, if necessary by adding a resistor in series with the functional load.

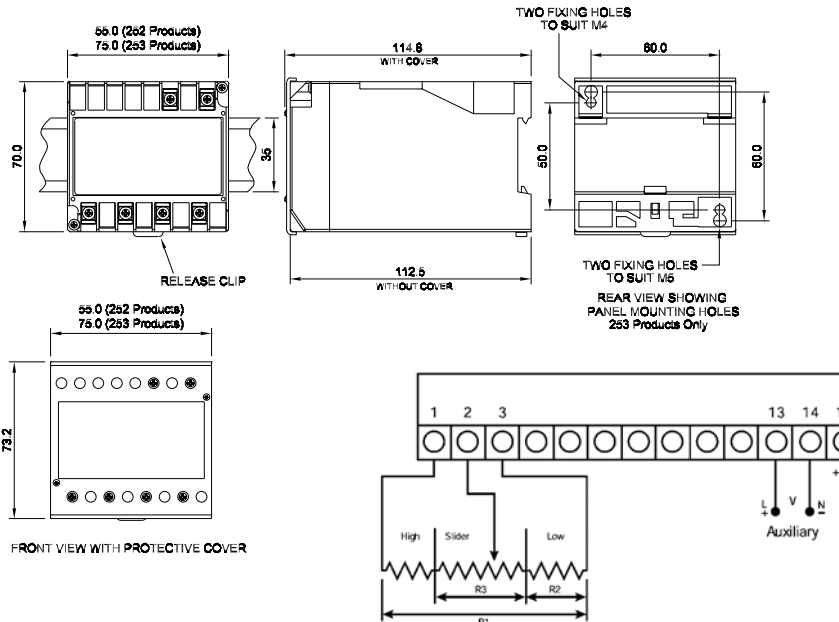
253-TAM/N/P Integrating AC Current



253-TDM/N/P Integrating DC Current



253-TRP/TRT Tap Position & Slidewire Transmitter



Dimensions

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale.

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Ref: IW250T – Revision 6 – March 02

Models Covered

256-TAL	256-TVL
256-TAR	256-TRV
256-TAS	256-TVS

Introduction

Paladin Transducers give a dc output proportional to the input. Zero and span adjustments are accessible without opening the transducer. The cases are moulded in a tough flame-retardant material.

Installation

The Transducer should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and will not be outside the range 0 to 60 degrees Celsius. Mounting will normally be on a vertical surface but other positions will not affect the operation and vibration should be kept to a minimum. The Transducers are designed for mounting on a 35mm rail to DIN 46277. Alternatively they may be screw fixed to mount a Transducer on a DIN rail; the top edge of the cutout on the back is hooked over one edge of the rail and bottom edge carrying the release clip clicked into place. Check that the unit is firmly fixed. Removal or repositioning may be achieved by levering down the release clip and lifting the unit up and off the rail.

Connection diagrams should be carefully followed to ensure correct polarity and phase rotation where applicable. External voltage transformers may be used to extend the range. Connection wires should be sized to comply with applicable regulations and codes of practice. These products do not have internal fuses therefore external fuses must be used for safety protection under fault conditions. Side labels show full connection information and data.

Electromagnetic Compatibility (EMC) Installation Requirements

This product range has been designed to meet the certification requirements of the EU Directives when installed to a good code of practice for EMC in industrial environments. e.g.

1. Screen output and low signal input leads. In the event of RF fields causing problems where screened leads can not be used, provision for fitting RF suppression components, such as ferrite absorbers, line filters etc., must be made.
- N.B. 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.
2. Avoid routing leads alongside cables and products that are, or could be, a source of interference.

Paladin Transducers

Class 0.5 250 Series

Voltage and Current 3 in 1

3. To protect the product against permanent damage, surge transients must be limited to 2kV pk.
4. Electro Static Discharge (ESD) precautions must be taken at all times when handling this product.

Commissioning

The units are calibrated at the factory for full accuracy. No further adjustments are required. Zero and span adjustment where provided are under the bungs on the front panel. Resetting these will degrade the accuracy of this transducer, but may be used to compensate for system errors etc. typically 10% of the span of the control concerned.

Typical Applications

Switchboards, distribution panels, control panels, SCADA systems, local and remote monitoring. The product housing is industry standard.

Maintenance

No routine maintenance is required. Should repair be necessary it is recommended that the transducer be returned to the factory or to the nearest Crompton Instruments Service Centre.

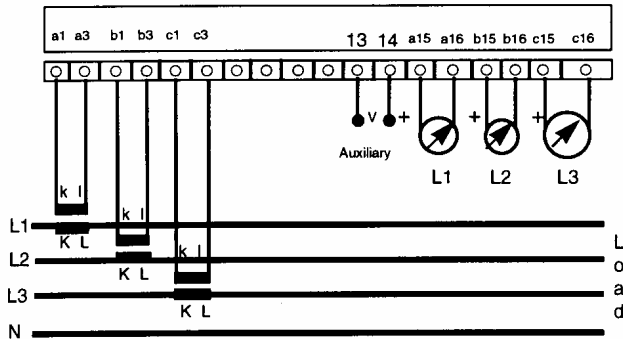
Earth/Ground Connections

For safety reasons, CT secondary connections should be grounded according to local codes of practice.

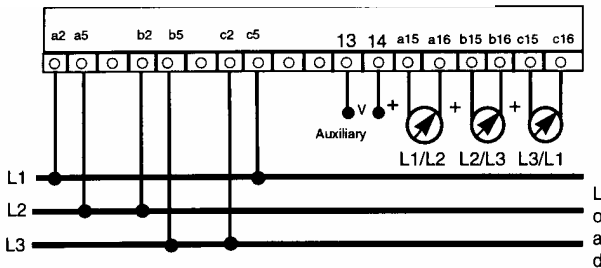
INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.5 250 Series Voltage and Current

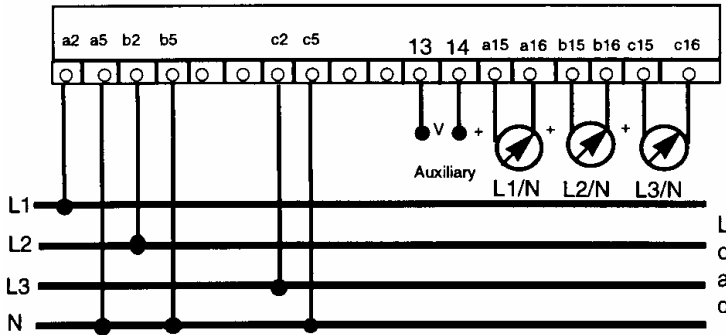
Type 256-TAL, TAR, TAS 3 Ø Current, 3 Outputs



Type 256-TVL, TVR, TVS 3 Ø 3 W Voltage, 3 Outputs



Type 256-TVL, TVR, TVS 3 Ø 4W Voltage, 3 outputs



LOW VOLTAGE DIRECTIVE:- This product complies with BSEN61010-1

WARNING

Voltages dangerous to human life may be present at some of the terminals of this unit. Ensure all supplies are de-energised before attempting any connection/disconnection. If it is necessary to make adjustments with the power connected then exercise extreme caution. This product is manufactured by Crompton Instruments, Freebournes Road, Witham, Essex. England CM8 3AH. Telephone +44 (0) 1376 509509 Fax: +44 (0) 1376 509511.

This product is manufactured by Crompton Instruments, Freebournes Road, Witham, Essex. CM8 3AH. Telephone 01376 509 509, Fax: (01376) 509 511.

The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Tyco Electronics has no control over the field conditions, which influence product installation. It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics' only obligations are those in Tyco Electronics' standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products. Crompton is a trademark.



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Ref: IW256NA – Rev 4 – March 02

Products Covered

256-TW*U, 256-TX*U, 256-TY*U
 253-TA*U, 253-TV*U, 253-TZU
 256-TT*U,
 * = Any letter or number

Introduction

Paladin Transducers give a dc output proportional to the input. Zero and span adjustments are accessible without opening the transducer. The cases are moulded in a tough flame retardant material.

Installation

The Transducer should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and will not be outside the range 0-60°C. Mounting will normally be on a vertical surface but other positions will not affect the operation and vibration should be kept to a minimum. The Transducers are designed for mounting on a 35mm rail to DIN 46277. Alternatively they may be screw fixed. To mount a Transducer on a DIN rail, the top edge of the cut-out on the back is hooked over one edge of the rail and the bottom edge carrying the release clip clicked into place. Check that the unit is firmly fixed. Removal or repositioning may be achieved by levering down the release clip and lifting the unit up and off the rail. Connection diagrams should be carefully followed to ensure correct polarity and phase rotation. External current and voltage transformers may be used to extend the range. Current Transformers must be used with models 256-TWG, 256-TWH, 256-TWN. These products do not have internal fuses therefore; external fuses **must** be used for safety protection under fault conditions. Side labels show full connection information and data.

Electromagnetic Compatibility (EMC) Installation Requirements

This product range has been designed to meet the certification requirements of the EU Directives when installed to a good code of practice for EMC in industrial environments. e.g.

1. Screen output and low signal input leads. In the event of RF fields causing problems where screened leads can not be used, provision for fitting RF suppression components, such as ferrite absorbers, line filters etc., must be made. N.B. 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.

**Paladin Transducers Class 0.5
 250 Series - Watt, VA, Var, Volts,
 Amps, Frequency, Integrating &
 D.C. Transducers**

2. Avoid routing leads alongside cables and products that are, or could be, a source of interference.
3. To protect the product against permanent damage, surge transients must be limited to 2kV pk.
4. Electro Static Discharge (ESD) precautions must be taken at all times when handling this product. For assistance on protection requirements please contact your local sales office.

Commissioning

The units are calibrated at the factory for full accuracy. No further adjustments are required. Zero and span adjustment is provided under the bungs on the front panel. Resetting these will degrade the accuracy of this transducer, but may be used to compensate for system errors etc.

Maintenance

No routine maintenance is required. Should repair be necessary it is recommended that the transducer be returned to the factory or to the nearest Crompton Instruments Service Centre.

Low Voltage Directive:- This product complies with BSEN61010-1

Warning

Voltages dangerous to human life may be present at some of the terminals of this unit. Ensure all supplies are de-energised before attempting any connection/disconnection. If it is necessary to make adjustments with the power connected then exercise extreme caution.

This product is manufactured by Crompton Instruments, Freebournes Road, Witham, Essex. England CM8 3AH. Telephone +44 (0) 1376 509509, Fax: +44 (0) 1376 509511.



INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.2 250 Series

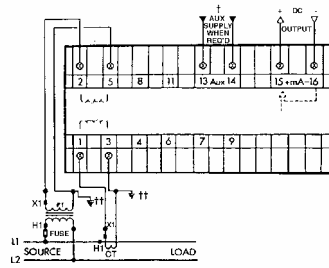


Fig No:1
WATTS
types 256-TWKU
or VARS
type 256-TXKU
or VA
type 256-TYKU
(single phase, 2 wire
single element

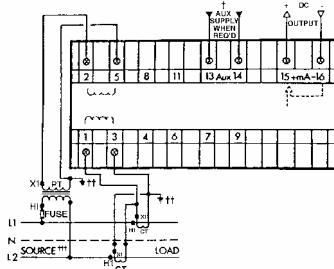


Fig No:2
WATTS
types 256-TWKU
or VARS
type 256-TXKU
or VA
type 256-TYKU
(single phase, 3 wire
single element

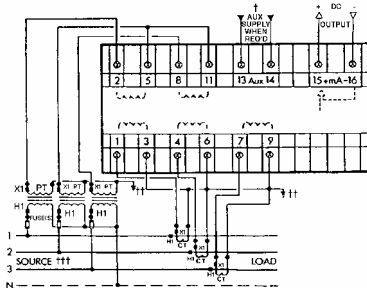


Fig No:3
WATTS
types 256-TWNU
(3 phase, 4 wire
3 CT's
3WYE/WYE pts)
(2 1/2 element)

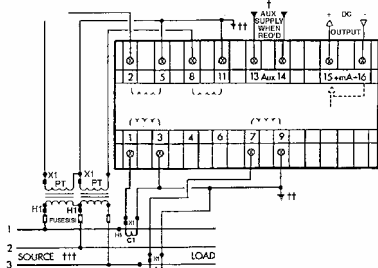


Fig No:4
WATTS
types 256-TWMU
or VARS
type 256-TXMU
or VA
type 256-TYMU
(3 phase, 3 wire
balance
or unbalanced loads)
(Double element)

WATTS

256-TWKU Single Phase 2 wire - Fig 1
256-TWKU Q8 FA Single Phase 3 wire - Fig 2
256-TWMU 3 phase 3 wire unbal - Fig 4
256-TWNU 3 phase 4 wire unbal - Fig 5VA

VA

256-TYKU Single Phase 2 wire - Fig 1
256-TYMU 3 Phase 3 wire bal or unbal - Fig 4
256-TYNU 3 phase 4 wire bal or unbal - Fig 5

VARS

256-TXKU Single Phase 2 wire - Fig 1
256-TXKU Q8 FA Single Phase 3 wire - Fig 2
256-TXMU 3 phase 4 wire unbal - Fig 3
256-TXNU 3 phase 3 wire unbal - Fig 4

AC AMPERES (Fig 6)

253-TAAU Average sensing input milliamps output
253-TALU Average sensing input 4/20 milliamps o/p
243-TARU RMS sensing input any standard output

AC VOLTS (Fig 7)

253-TVAU Average sensing input milliamps output
253-TVLU Average sensing input 4/20 milliamps o/p
253-TVRU RMS sensing input any standard output
253-TVZU Suppressed zero and standard output

FREQUENCY (Fig 7)

253-THZU Frequency

INTEGRATING AC AMPERES (Fig 8)

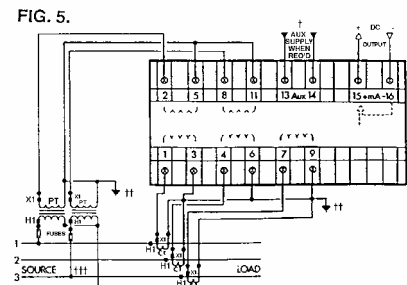
253-TAPU Time delay 8 minutes
253-TAMU Time delay 15 minute
253-TANU Time delay 30 minutes

DC INPUT/DC OUTPUT (Fig 9)

256-TTAU DC Current input
256-TTVU DC Voltage input
256-TTMU DC mV input
256-TTFU Thermocouple -Fe/Const
256-TTNU Thermocouple - Ni Cr5/NIAi
256-TTPU Thermocouple - Pt Rh/Pt

Fig No: 5

WATTS
types 256-TWNU
or VA 256-TYNU
(2 phase, 4 wire -
3 CTS 2 phase/
neutral Pts)
(2 1/2 element)



- 1) When no terminal screws are fitted to terminals 13 and 14 the transducer application /characteristics do not necessitate the use of a separate auxiliary supply
- 2) Point(s) indicated to be grounded - if no other point(s) in the CT and/or PT secondary circuit(s) are grounded.
- 3) Three phase hook-ups necessitate phase sequence 1-2-3

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INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.2 250 Series

Connection Diagrams (continued)

Fig No:6
AC AMPERES
types 253-TAAU
253-TALU
253-TARU

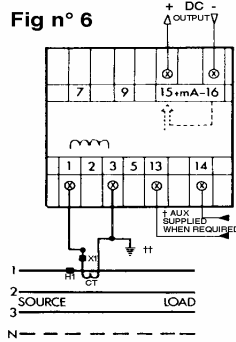


Fig No:7
AC VOLTS
types 253-TVAU
253-TVLU
253-TVRU
253-TVZU
or Frequency
253-THZU

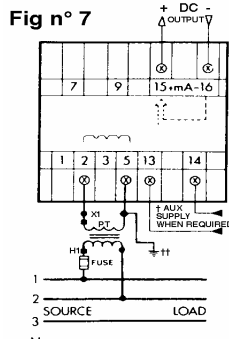


Fig No:8
INTEGRATING
AC AMPERES
types 253-TAPU
253-TAMU
253-TANU

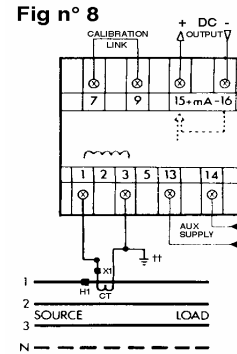
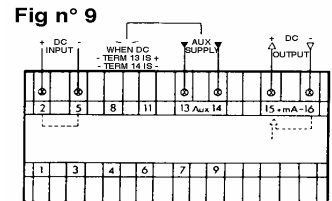


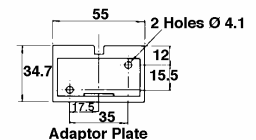
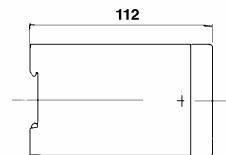
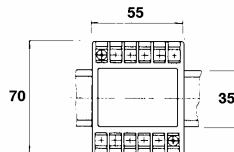
Fig No:9
INPUT/DC OUTPUT
types 256-TTAU
(DC CURRENT INPUT)
256-TTVU (DC VOLT INPUT)
256-TTMU (DC mV INPUT)
256-TTFU (THERMOCOUPLE -
FE/CONST)
256-TTNU (THERMOCOUPLE -
NiCir/NiAi)
256-TTPU (Thermocouple -PtRh/Pt)



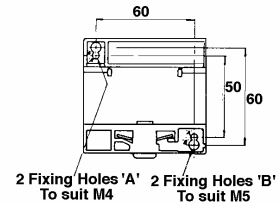
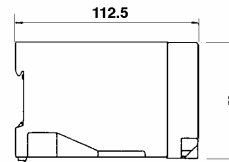
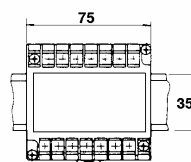
Dimensions

	A	B	N° of release
253	75	60	1
256	150	135	2

Model 252



Model 253



The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Tyco Electronics has no control over the field conditions, which influence product installation. It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics' only obligations are those in Tyco Electronics' standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products. Crompton is a trade mark.



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INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.2 250 Series

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