

Products Covered

256-TFT	256-TDS
256-TDT	256-TDB
256-TDA	256-TDE

Introduction

The power factor transducer measures phase between current and voltage and gives an output proportional to the power factor. Zero and span adjustments are accessible without opening the unit.

The cases are moulded in a tough flame-retardant thermoplastic material.

Installation

Units should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and not outside the range 0 to 60°C. Mounting will normally be on a vertical surface but other positions will not affect operation. Vibration should be kept to a minimum, 256 units are designed for mounting on a 35mm rail to DIN 46277. Alternatively they may be screw fixed.

To mount 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 clips 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. 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.

Earth/Ground Connections

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

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.

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 Series 250

Power Factor Transducers

Side labels show full connection information and data, including Type No., Range, Voltage, Current, Frequencies, Auxiliary Supply (when required), Class Index and Output.

Setting Up

The units are adjusted before despatch but, should it be necessary to trim the transducer output to suit system inaccuracy, this may be carried out by adjusting the potentiometers located under the bungs on the front panel. It should be noted that this might affect the accuracy of the product, resulting in the need for re-calibration.

Typical Applications

For measuring power factor between current and voltage to ensure power factor correction is optimised. For large variations use the auxiliary powered version. Self-powered units permit voltage variations upto ± 20%.

Operation

This model measures the timing difference between the voltage and current waveforms and the internal microcontroller calculates the corresponding power factor. This method ensures a linear output suitable for directly driving a digital meter or other linear indicator, e.g. chart recorder, computer, plc.

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 Instrument Service Centre.

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

Warning

- 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.

Fusing and connections

This unit must be fitted with external fuses in voltage and auxiliary supply lines. 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. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

Screw torque

Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.



INSTALLATION INSTRUCTIONS

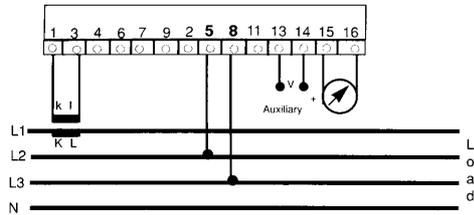
Paladin Transducers

Class 0.5 Series 250

Connections

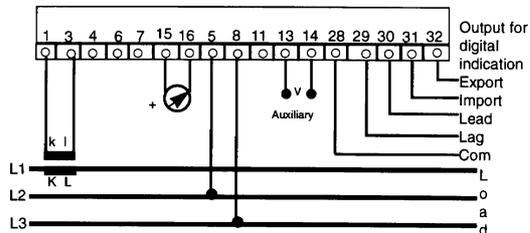
Type 256-TDT

3 Ø 3/4W, balanced load, Power Factor, with an output for a digital indicator



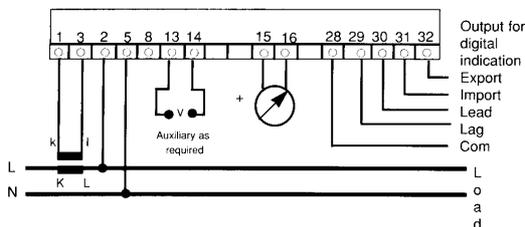
Type 256-TFT

3 Ø 3/4W, balanced load, Power Factor



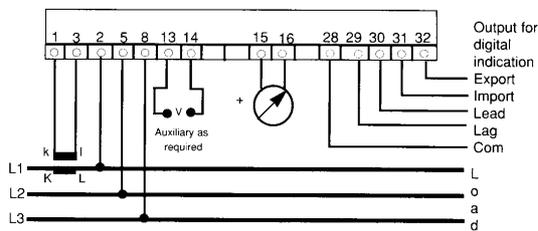
Type 256-TDA/TDC/TDS

4 Quadrant. Single Phase Power Factor with an output for a Digital Indicator

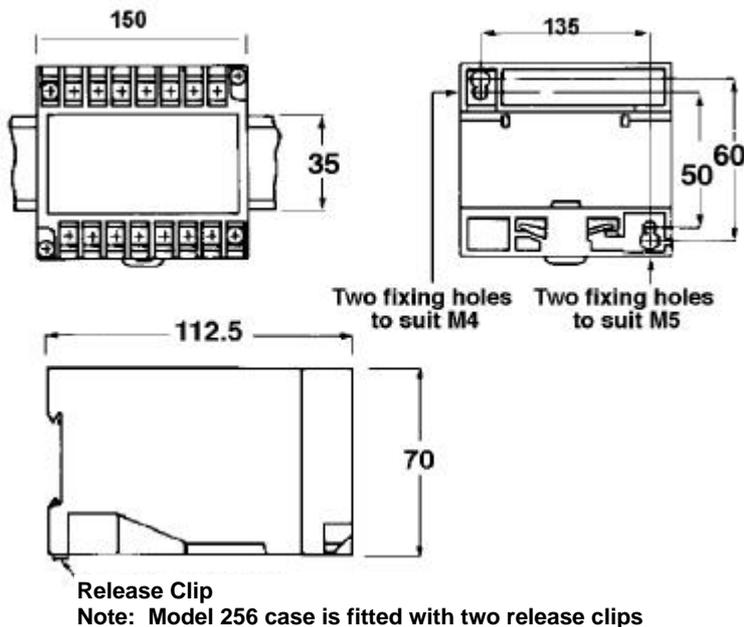


Type 256-TDB-TDE

4 Quadrant. 3 Phase 3/4 Wire Balanced Load, Power Factor with an output for a digital indicator



Dimensions



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: IW256TPB/B/S/T – Rev 7 – Sept 02

Products Covered

- 256-TPA - Phase Angle Single Phase 180° - 0 - 180°
- 256-TPB - Phase Angle 3 Phase 180° - 0 - 180°
- 256-TPT - Phase Angle 3 Phase 0.5 - 1 - 0.5
or 0.2 - 1 - 0.8
- 256-TPS - Phase Angle Single Phase 0.5 - 1 - 0.5
or 0.2 - 1 - 0.8

Introduction

The phase angle transducer measures the phase angle between current and voltage and gives an output proportional to the phase angle. Zero and span adjustments are accessible without opening the unit. The cases may be DIN rail mounted or screw fixed.

Installation

Units should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and not outside the range 0 to 60°C. Mounting will normally be on a vertical surface but other positions will not affect operation. Vibration should be kept to a minimum, These units are designed for mounting on a 35mm rail to DIN 46277. Alternatively, they may be screw fixed.

To mount 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 clips 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. 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.

Fusing and connections

- This unit must be fitted with external fuses in voltage and auxiliary supply lines.
- 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.
- Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

Screw torque

Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU and other regulations. Precautions necessary to provide proper operation of this and adjacent equipment will

Paladin Transducers

Class 0.5 Series 250

Phase Angle

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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- 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.

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. Trimming these will degrade the accuracy of this transducer, but may be used to compensate for local conditions.

Typical Applications

For measuring phase angle between current and voltage to ensure power factor correction is optimised. For large variations use the auxiliary powered version. Self-powered units permit voltage variations upto ±20%.

Operation

For use on most single phase balanced systems, this unit measures phase angle and provides milliamp output proportional to angle. Current and voltage inputs are fed to separate zero crossing detectors and resultant pulses are fed to bistable comparator. The output from this is filtered and then amplified to give a dc output directly proportional to the phase angle.

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

Warning

- 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.



INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.5 Series 250 Phase Angle

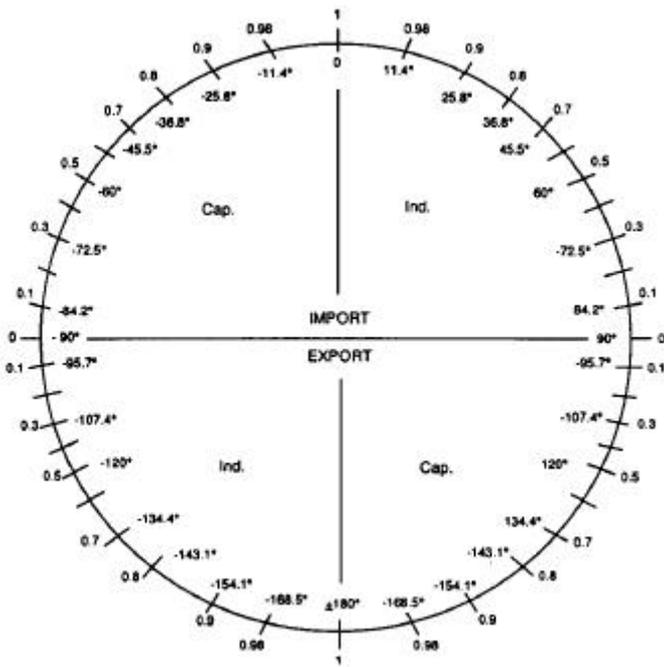
- It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.
- Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.

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 Instrument Service Centre.

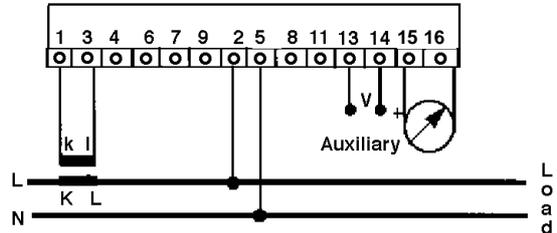
Conversion to P.F.

The transducer output, if displayed on an analog meter, produces an inconvenient non-linear scale. Computer users may find the need for a linearising program. Other transducers are available from Crompton Instruments with a linearised output if required.

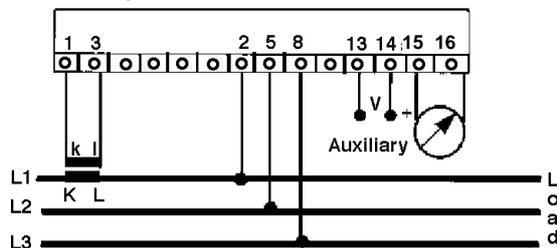


Connection diagrams

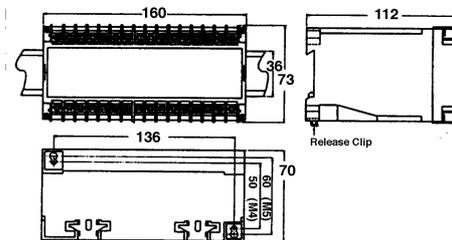
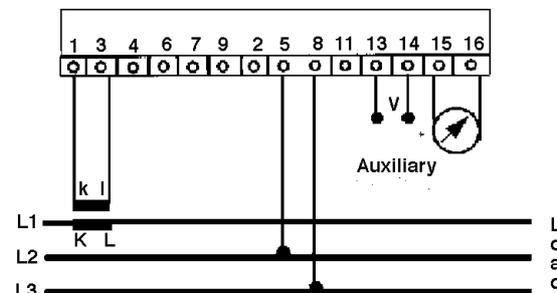
256TPA/TPS
Phase angle single phase



256TPB
Phase angle 3 phase



256TPT
Phase Angle 3 Phase



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Ref: IW250T – Revision 6 – Sept 02

Models Covered

256-TAL	256-TVL
256-TAR	256-TVR
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.

Warning

- 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.

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. 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 current or 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

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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.

Paladin Transducers

Class 0.5 250 Series

Voltage and Current 3 in 1

- 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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- 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.

Fusing and connections

- This unit must be fitted with external fuses in voltage and auxiliary supply lines.
- 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.
- Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

Screw torque

Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.

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. Trimming these will degrade the accuracy of this transducer, but may be used to compensate for local conditions.



**Paladin Transducers
Class 0.5 250 Series
Voltage and Current**

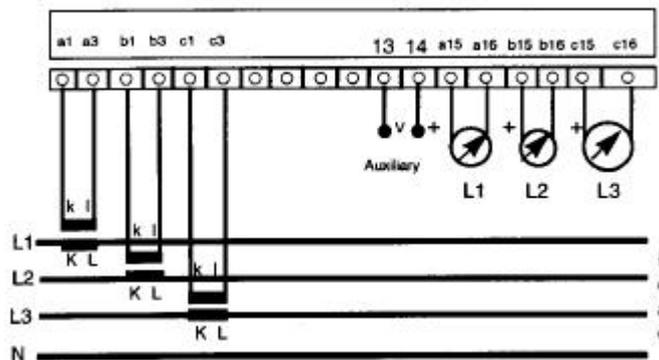
Typical Applications

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

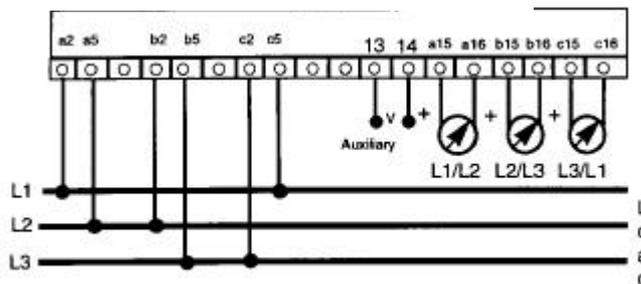
Maintenance

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.

**Type 256-TAL, TAR, TAS
3 ϕ Current, 3 Outputs**



**Type 256-TVL, TVR, TVS
3 ϕ 3 W Voltage, 3 Outputs**



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Ref: IW253TIK – Rev 5 –Sept 02

Product Covered
253-TIK

Introduction

The Transducer Indicator derives its input from a d.c. milliamp signal that might be typically produced by a Watt transducer, such as the Crompton "Paladin" 256-TW. Output of input current versus time is given by the number of contact closures of the in-built relay which may be varied over a 10,000 to 100/hr range to suit the application. This is normally set in the factory.

Installation

Units 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 during operation. Mounting will normally be on a vertical surface but other positions will not affect operation. Vibration should be kept to a minimum. 253 units are designed for mounting on DIN rail. They may also be screw fixed using an adaptor. To mount on a Din rail, to top edge of the cutout on the back is hooked over one edge of the rail and the bottom edge carrying the release clip clicked in to 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 wires should be sized to comply with application regulations or code of practice.

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

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.

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 Series 250
Linear Integrator
Pulsed Output Transducer

Typical Applications

The unit will find application in conjunction with a watt transducer where it is required to monitor auxiliary power being generated and fed in to the normal supply system to extend its capacity or in import/export systems between supply sources.

Operation

The signal input current is converted to a high frequency pulse train by a voltage to frequency converter IC. To reduce this high frequency to the required low frequency output pulse rate, a binary counter is employed. The division ratio is set by a series of links. To provide the relay with a constant width drive pulse, a monostable multivibrator is used.

Setting Up

Units are adjusted before despatch and therefore no adjustments are normally required.

Maintenance

Unless a fault develops the unit requires little attention. During routine servicing and inspection of the associated equipment, the device should be inspected to normal standards for this class of equipment. For example, remove accumulations of dust and check connections for tightness and corrosion. In the event of a repair being necessary, it is recommended that the instrument is returned to the factory or to the nearest Crompton Instruments Service Centre. Should repair be attempted then replacement components must be of the same type, rating and tolerance as those used in the original circuit. With any enquiry please quote the full model number found on the nameplate. The unit must be recalibrated after repair.

Fusing and connections

This unit must be fitted with external fuses in voltage and auxiliary supply lines. 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. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

Warning

- 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.

Screw torque

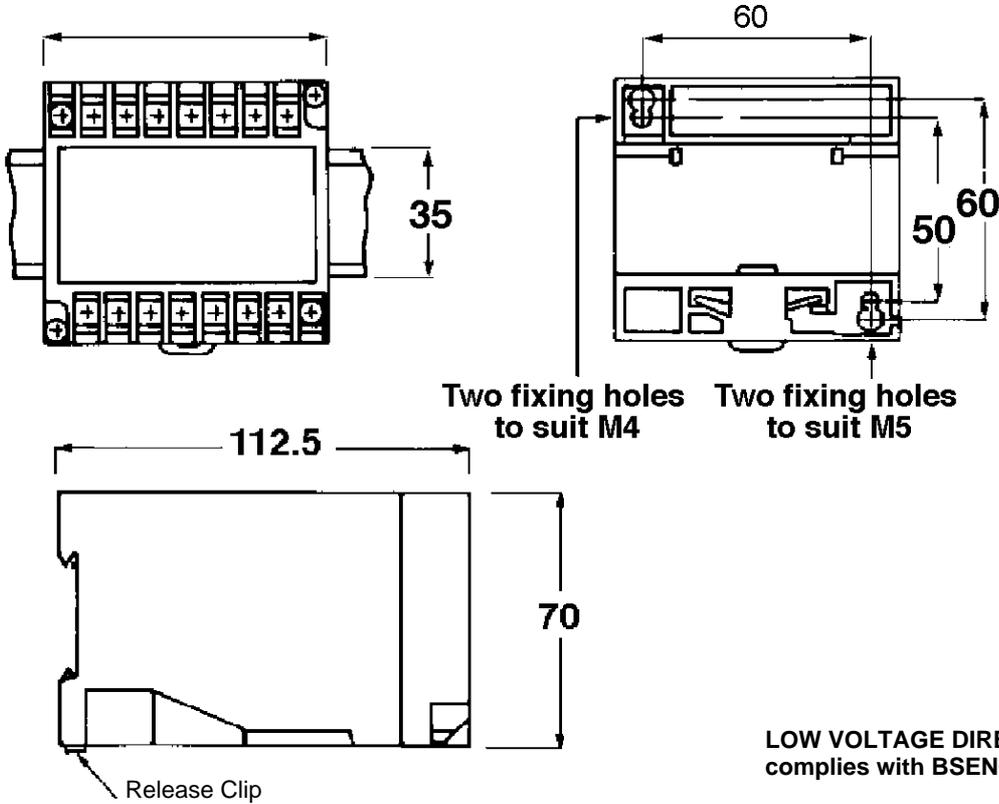
Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.



INSTALLATION INSTRUCTIONS

Paladin Transducer Class 0.5 250 Series Linear Integrator Pulsed Output Transducer

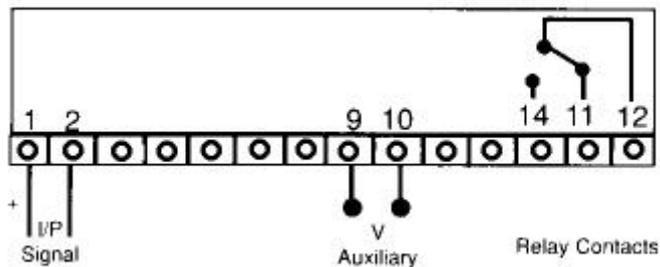
Dimensions



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

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

Connection Diagram



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Products Covered

256-TAB, 256-TT*, 256-TW*, 256-TX*, 256-TY*

* = 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.

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. Trimming these will degrade the accuracy of this transducer, but may be used to compensate for local conditions.

Screw Torque

Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.

Fusing and Connections

This unit must be fitted with external fuses in voltage and auxiliary supply lines. 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. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

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

Paladin Transducers Class 0.5

250 Series - Watt, VAr, VA, Amps and DC Transducers

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- 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.

Warning

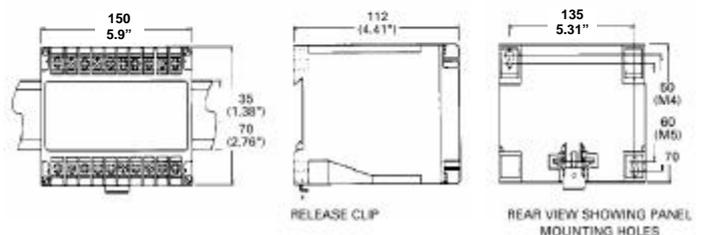
- During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and servicing should be performed only by qualified, properly trained personnel' abiding by local regulations. Ensure all supplies are de-energised before attempting connection or 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

Model 256



Model 256



Paladin Transducers Class 0.5 250 Series

<p>256-TAB SINGLE OR 3-PHASE 4-WIRE BI-DIRECTIONAL CURRENT TRANSDUCER</p>	<p>256-TAB 3-PHASE 3-WIRE BI-DIRECTIONAL CURRENT TRANSDUCER</p>	<p>256-TT* DC current, Voltage or thermocouple</p>
<p>256-TWG 3-PHASE 3-WIRE BALANCED LOAD WATT TRANSDUCER WITH REVERSE CONNECTED CTs</p>	<p>256-TWL 3-PHASE 3-WIRE BALANCED LOAD WATT TRANSDUCER</p>	<p>256-TWM, 256-TXM, 256-TYM 3-PHASE 3-WIRE UNBALANCED LOAD WATT TRANSDUCER</p>
<p>256-TWH, 256-TXH, 256-TYH 3-PHASE 4-WIRE BALANCED LOAD WATT TRANSDUCER</p>	<p>256-TXJ 3-PHASE 4-WIRE UNBALANCED LOAD VAR TRANSDUCER WITH DELTA CONNECTED CTs</p>	<p>256-TXN 3-PHASE 4-WIRE UNBALANCED LOAD VAR TRANSDUCER WITH STAR CONNECTED CTs</p>
<p>256-TWJ, 256-TYJ 3-PHASE 4-WIRE UNBALANCED LOAD WATT TRANSDUCER WITH DELTA CONNECTED CTs</p>	<p>256-TWN, 256-TXP, 256-TYN 3-PHASE 4-WIRE UNBALANCED LOAD WATT TRANSDUCER WITH STAR CONNECTED CTs</p>	<p>256-TWK, 256-TXK, 256-TYK SINGLE PHASE WATT/VAR TRANSDUCER</p>
<p>256-TWR 3-PHASE 3-WIRE BALANCED LOAD WATT TRANSDUCER</p>	<p>256-TWE, 256-TXG, 256-TYG 3-PHASE 3-WIRE BALANCED LOAD WATT TRANSDUCER</p>	<p>256-TWS 3-PHASE 3-WIRE BALANCED LOAD WATT TRANSDUCER</p>

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

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 5 oct 03

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.

Fusing and connections

This unit must be fitted with external fuses in voltage and auxiliary supply lines. 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. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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, surge transients must be

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

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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.

- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- 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.

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. Trimming these will degrade the accuracy of this transducer, but may be used to compensate for local conditions.

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.

Screw torque

Main terminal screws should be tightened to 1.35Nm or 1.0 ft/lbf only. Detachable terminal connector screws should be tightened to 0.9Nm or 0.7 ft/lbf only. Where fitted, terminal covers are held in place by miniature self tapping screws into plastic. These screws should be tightened by hand only, sufficiently to secure the terminal cover and prevent it vibrating.

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

Warning

- 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.



INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.2 250 Series

Connection Diagrams

- 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

Fig No:1

WATTS- 256-TWKU Single Phase 2 wire
VARS- 256-TXKU Single Phase 2 wire
VA - 256-TYKU Single Phase 2 wire

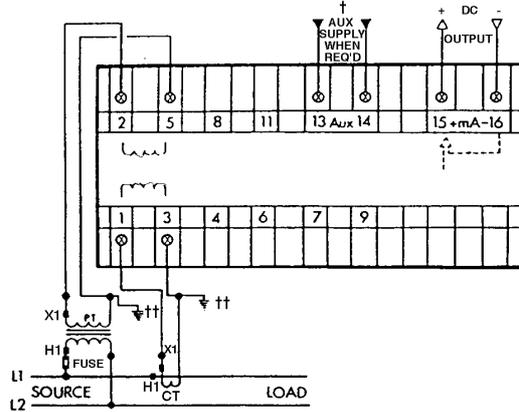


Fig No:2

WATTS - 256-TWKU Q8 FA Single Phase 3 wire
VARS - 256-TXKU Q8 FA Single Phase 3 wire
VA - type 256-TYKU (single phase, 3 wire single element)

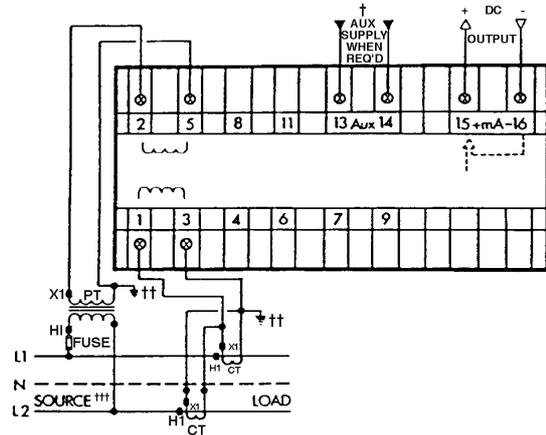


Fig No:3

WATTS - types 256-TWNU (3 phase, 4 wire 3 CT's
3WYE/WYE pts, 2 1/2 element)
VARS - 256-TXMU 3 phase 4 wire unbalanced

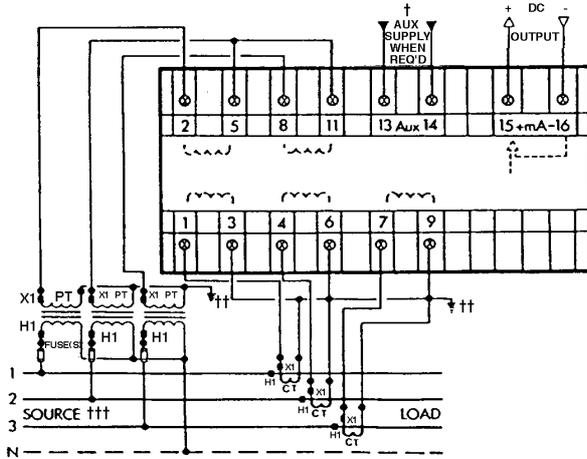


Fig No:4

WATTS - 256-TWMU 3 phase 3 wire unbalanced
VARS - 256-TXNU 3 phase 3 wire unbalanced
VA - 256-TYMU 3 Phase 3 wire bal or unbalanced

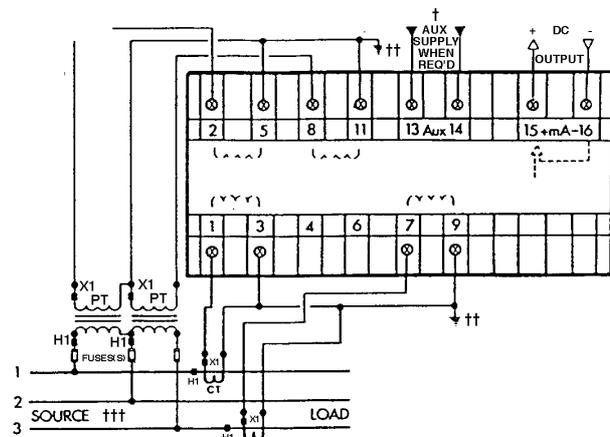


Fig No: 5

WATTS -256 TWNU 3 phase 4 wire unbalanced
VA -256 TYNU 3 phase 4 wire bal or unbalanced

Fig No: 6

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

FIG. 5.

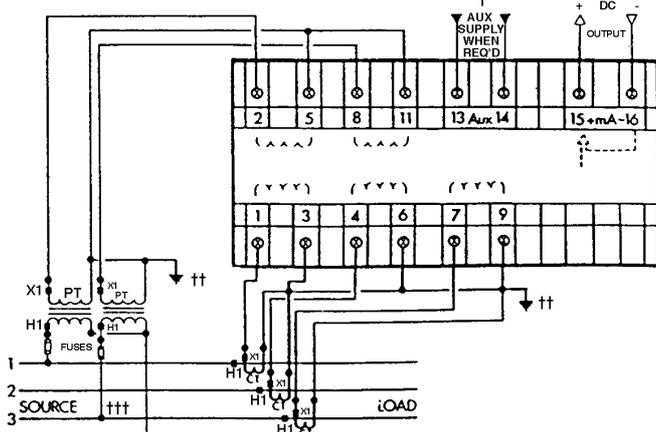
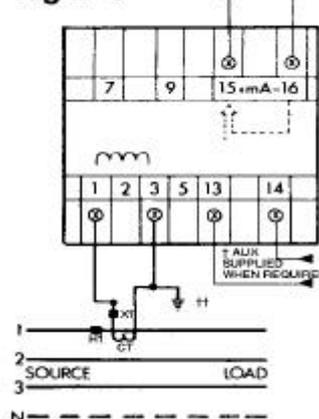


Fig n° 6



INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.2 250 Series

Connection Diagrams (continued)

Fig No: 7

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

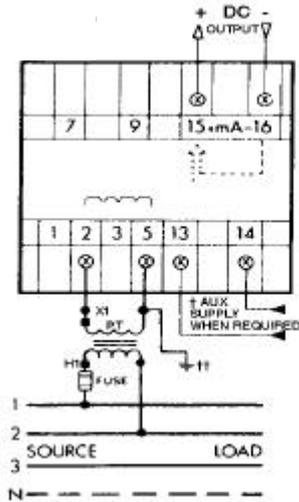


Fig No: 8

DC INPUT/DC OUTPUT -
 DC INPUT/DC OUTPUT - 256-TTAU DC Current input
 DC INPUT/DC OUTPUT - 256-TTVU DC Voltage input
 DC INPUT/DC OUTPUT - 256-TTMU DC mV input
 DC INPUT/DC OUTPUT - 256-TTFU Thermocouple -Fe/Const
 DC INPUT/DC OUTPUT - 256-TTNU Thermocouple - Ni Cr5/NiAi
 DC INPUT/DC OUTPUT - 256-TTPU Thermocouple - Pt)

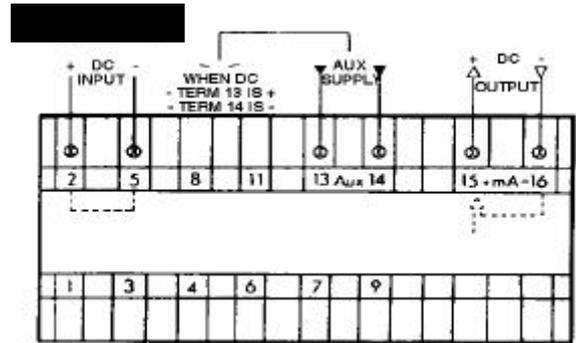
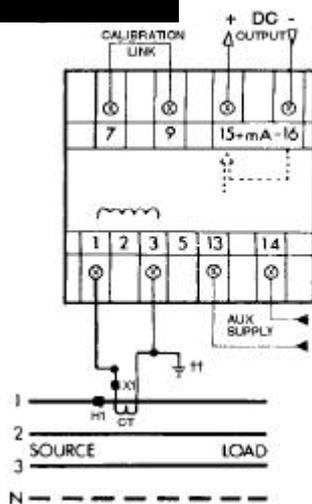


Fig No: 9

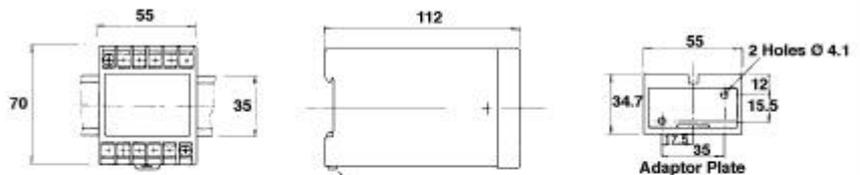
INTEGRATING AC AMPERES - 253-TAPU Time delay 8 minutes
 INTEGRATING AC AMPERES - 253-TAMU Time delay 15 minute
 INTEGRATING AC AMPERES - 253-TANU Time delay 30 minutes



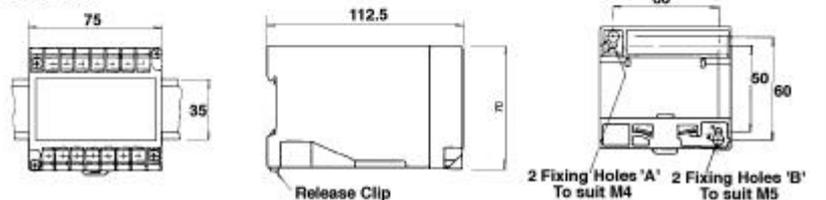
Dimensions

Model	A	B	No. of release clips
253	75	60	1
256	150	135	2

Model 252



Model 253



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Products Covered

253-TAA	253-TRR	253-TAL	253-TRT
253-TAM	253-TVA	253-TAN	253-TVL
253-TAP	253-TRV	253-THZ	253-TVZ
253-TDN	253-TAR	253-TDM	253-TDP
253-TRP			

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 cut-out 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.

Earth/Ground Connections

For safety reasons, CT secondary connections should be grounded according to local codes of practice. Side labels show full connection information and data.

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.

Fusing and connections

1. This unit must be fitted with external fuses in voltage and auxiliary supply lines.
2. Voltage input lines must be fused with a quick blow fuse 1A maximum.
3. Auxiliary supply lines must be fused with a slow blow fuse rated 1A maximum.
4. Choose fuses of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.
5. Where fitted, CT secondaries must be grounded in accordance with local regulations.

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU 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:-

**Paladin Transducers
Class 0.5 250 Series
Current, Voltage, Frequency, Resistance
& Integrating Demand**

- 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, 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 auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
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.

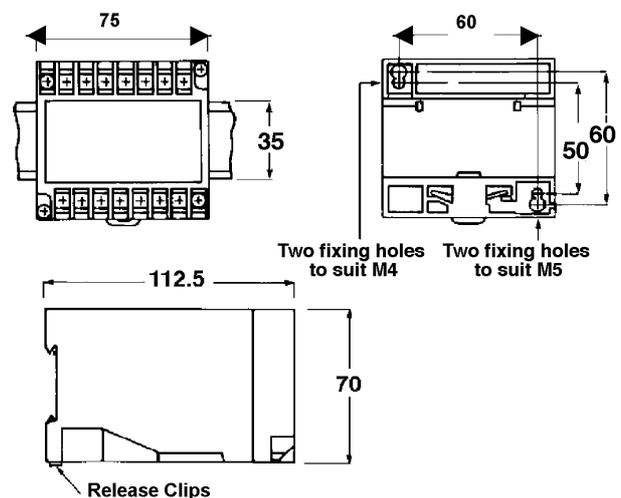
For assistance on protection requirements please contact your local sales office.

Low Voltage Directive:- This product complies with BS EN 61010-1.

Warning

- 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.
- Never open circuit the secondary winding of an energised current transformer.

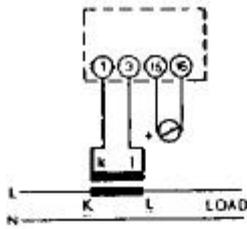
Dimensions



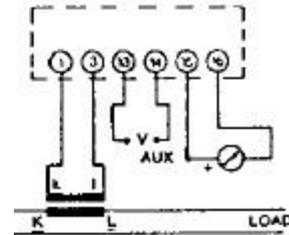
INSTALLATION INSTRUCTIONS

Paladin Transducers Class 0.5 250 Series

253-TAA
Current Average
Sensing

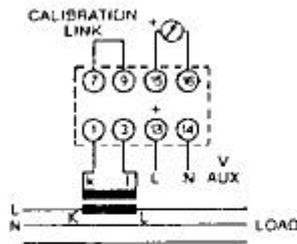


253-TAL
Live Zero Current

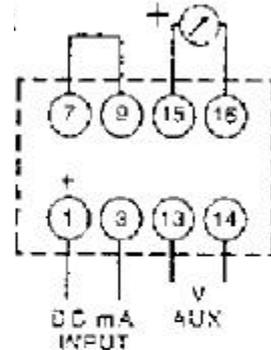


253-TAR
RMS Current

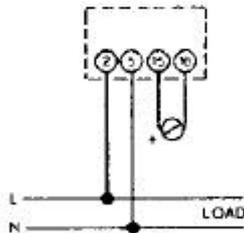
253-TAM
253-TAN
253-TAP
Integrating AC
Current



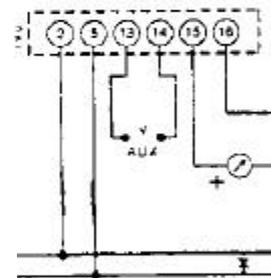
253-TDP
253-TDM
253-TDN
Integrating DC
Current



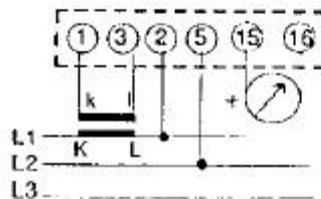
253-TVA
Voltage Average
Sensing



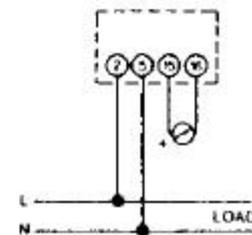
253-TVL
Live Zero Voltage
253-TRV
RMS Voltage



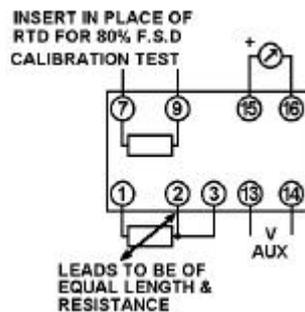
256-TWS
3 Phase 3 Wire
Balanced Load



253-TVZ
Suppressed Zero
Voltage
253-THZ
Frequency



253-TRR
Temperature
Transmitter



253-TRP/TRT
Tap Position &
Slidewire
Transmitter



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