



Paladin Transducers 250 Series Class 0.5 and Class 0.2

An extensive range of transducers providing measurement, isolation and conversion of electrical parameters into industry standard DC output signals. The range offers protection against high voltage and overload, and resistance to vibration in harsh electrical environments. The transducer range also offers multiple analogue outputs in a single housing and individual measurement of most electrical parameters.

Advantages

- Convert high voltage signals to a low voltage DC output
- Limit voltage levels to the attached equipment and minimise the possibility of overloads or transients being passed on
- Provide a signal that can be transmitted from the measuring location to a remote point

Safety

Crompton transducers and transmitters are designed for use in harsh electrical environments and feature:

- High protection against overload - 20 x rated current for 1 second
- High degree of mechanical shock and vibration resistance
- Protection against high voltage
- Inputs, outputs and power supply are galvanically isolated (excluding resistance transmitters)

Measured Parameters

- AC and DC current and voltage
- Active (Watts), reactive (VAr) and apparent (VA) power
- Frequency
- Power factor and phase angle
- Suppressed zero voltage for a narrow voltage range
- Tap position on a high voltage transformer
- Temperature transmitters for resistance thermometer detectors (RTD's)
- Resistance transmitters

Features

- Measurement of most electrical parameters
- Conversion to standard DC output signals
- Outputs suitable for indication, PLCs
- High accuracy
- Multiple outputs in single housing
- Exceptional waveforms handling
- Zero and span adjustments
- Single and three-phase systems
- Flame retardant cases
- Screw clamp terminals
- DIN-rail mounting

Benefits

- Cost savings remote metering
- Reduction of signal levels for ease of metering
- Isolated output for safety
- Protection against high voltage and overload

Applications

- Switchgear motor control centres, generating sets, energy management and building management systems

Ordering Information

When ordering please specify:

1. Product catalogue number
2. Current and/or voltage
3. Frequency
4. Auxiliary voltage AC or DC
5. For power products:
 - a. VT & CT ratios
 - b. System configuration i.e. single-phase, three-phase, three or four-wire, balanced or unbalanced load
 - c. required primary power level for DC full output
6. National specification indicated by 7th digit in the product number

253 Paladin Transducers, Class 0.5

The workhorse of the industry, thoroughly proven and installed in thousands of locations across the world. This range offers a very wide range of functions to complement the 256 Paladin range of power transducers. Functions include Voltage, current, frequency, tap position and resistance.

256 Paladin Transducers, Class 0.5

The industry standard power transducer, incredibly popular and available in a huge range of metering options. Power transducers are also available to special order with calibration at non standard frequencies. Alongside the Watt, VAr and VA transducers, the range also includes 3 in 1 current or voltage transducers and a DC to DC transducer.

252 Paladin Advantage Transducers, Class 0.2

Our premium range of higher specification transducers for voltage current and frequency offering Class 0.2 measurement of up to eight electrical parameters. These products are housed in an industry standard 2" (50mm) wide case. The range offers resistance to EMC protection against high voltage and overload, temperature extremes and resistance to vibration in harsh electrical environments.

256-X Paladin Advantage Transducers, Class 0.2

Complementing the 252 Paladin Advantage range and offering multiple outputs and a wide range of options. The 256-X Paladin Advantage products include Watt, VAr, VA, power factor, phase angle, and 3 in 1 voltage, current, or voltage/current/frequency transducers.

250 Signal Isolator

Offers DC isolation of 0-20mA or 4-20mA signals.

General Specifications

	Class 0.5 range	Class 0.2 range
Performance:	Designed to comply with BS6253 part 1, EN60688, IEC688, AS1384 and ANSI. C37	Designed to comply with BS6253 part 1, EN60688, IEC688, AS1384 and ANSI. C37
Temperature range:	Storage -20°C to +70°C operating 0°C to +60°C calibrated at 23°C	Storage -55°C to +85°C operating (-20 to +70 for 256-X) -10°C to +60°C, calibrated at 23°C
Temperature coefficient:	0.03%/per °C typical	0.01%/per °C typical
Humidity range:	Up to 95% RH	Up to 95% RH
Zero adjustment:	±2% minimum (except TAA & TVA)	±2% minimum
Span adjustment:	±10% minimum	±10% minimum
Accuracy class:	0.5 unless otherwise specified	0.2 unless otherwise specified
Accuracy range:	0 to 120% (except self powered)	0 to 120% (except self powered)
Stability:	+0.25% per annum typical (reducing with time)	+0.2% per annum typical (reducing with time)
Response time:	<400 ms from 0 to 99% of rated output, 250ms to 90%	<200ms from 0 to 99% of rated output, <400ms to 95% for 253-THZ
DC outputs (varies by model bipolar for some models):	0/1mA into 0-10kΩ 0/5mA into 0-2kΩ 0/10mA into 0-1kΩ 0/20mA into 0-500Ω 4/20mA into 0-500Ω 0/5V 1k ohm minimum load 0/10V 1K ohm minimum load	0/1mA into 0-15kΩ 0/5mA into 0-3kΩ 0/10mA into 0-1.5kΩ 0/20mA into 0-750Ω 4/20mA into 0-750Ω 0/5V 250 ohm minimum load 0/10V 500 ohm minimum load
Current output protection:	Fully protected against open and short circuited output	Fully protected against open and short circuited output
Voltage output protection:	Fully protected against open circuit output	Fully protected against open circuit output
Maximum output:	24V DC when open circuit	24V DC when open circuit
Output ripple:	<0.5% of full rated output	<0.5% of full rated output
Continuous overload capacity:	2 x rated current continuous 1.25 x rated voltage continuous	2 x rated current continuous 1.5 x rated voltage continuous
Short duration overload capacity:	20 x rated current for 1 second 1.5 x rated voltage for 10 seconds	20 x rated current for 1 second 2 x rated voltage for 1 second
Input burden:	AC <2 VA	AC <2 VA
Auxiliary burden:	<2 VA AC <3.5 W DC auxiliary voltage variation	<2 VA AC <3.5 W DC auxiliary voltage variation
Auxiliary permissible variation:	AC ±20%, DC ±15% including ripple, except wide range auxiliary A2: 12-48V DC, +25%, -15% (10.2V absolute minimum to 60V absolute maximum) A5: 100 to 250V AC ±15% 85V AC absolute minimum to 287V AC absolute maximum, 100V DC to 250V DC +25%, -15% (85V DC absolute minimum to 312V DC absolute maximum)	AC ±20%, DC ±20% including ripple
Safety:	To IEC1010 with terminal cover, basic insulation category	To IEC1010 with terminal cover, basic insulation category
Flammability:	Flame retardant enclosure to UL90-V0 (terminal cover UL90-V2)	Flame retardant enclosure to UL90-V0 (terminal cover UL90-V2)
Isolation:	Input/output/supply/case (except TRR, TRP, TRT and TRV with no input/output isolation)	Input/output/supply/case
Interference:	In accordance with IEC 61326	In accordance with IEC 61326
Input impedance: (DC I/P)	DC 1000 ohms/volt as standard 10k ohms/volt available on request	DC 1000 ohms/volt as standard 10k ohms/volt available on request

Voltage Transducers

AC Voltage Average Sensing - Auxiliary Powered

Single or three-phase models offering voltage measurement down to zero input. Average sensing and calibrated to indicate the RMS value of a sine wave with up to 1% distortion. Input, output and auxiliary are isolated.

Model	Accuracy	Function	Connection diagram
253-TVL	Class 0.5	AC voltage average sensing, 75mm(3") case	15
256-TVL	Class 0.5	AC voltage average sensing, 3-phase 3 DC outputs, 150mm(6") case	11
252-XVL	Class 0.2	AC voltage average sensing, 50mm(2") case	15

Specifications

Input*:	63.5V, 100V, 110V, 120V, 150V, 220V, 230V, 240V, 300V, 380V, 400V, 415V, 440V, 480V, 500V & 600V AC
Output:	0/1mA, 0/5mA, 0/10mA, 0/20mA or 4/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	50Hz, 60Hz
Auxiliary*:	100-480V AC 12V, 24V, 48V, 110V or 125V DC

*Max AC input & Aux on 256-TVL is 300V

AC Voltage Average Sensing - Self Powered

Average sensing and calibrated to indicate the RMS value of a sine wave with less than 1% distortion. Internal power is derived from the input signal and will maintain accuracy down to 20% of full scale. Input and output are isolated.

Model	Accuracy	Function	Connection diagram
253-TVA	Class 0.5	AC voltage average sensing, 75mm(3") case	10
252-XVA	Class 0.2	AC voltage average sensing, 50mm(2") case	10

Specifications

Input:	63.5V, 100V, 110V, 120V, 150V, 220V, 230V, 240V, 300V, 380V, 400V, 415V, 440V, 480V, 500V & 600V AC
Output:	0/1mA, 0/5mA, 0/10mA or 0/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	50Hz, 60Hz

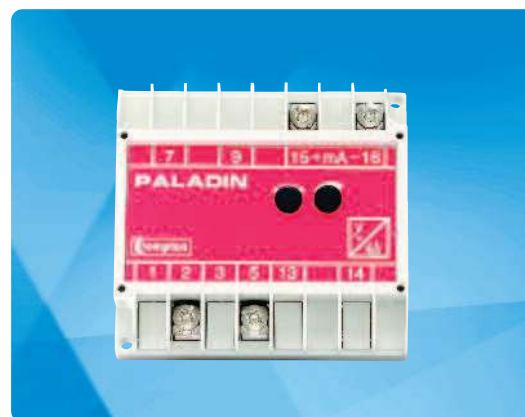
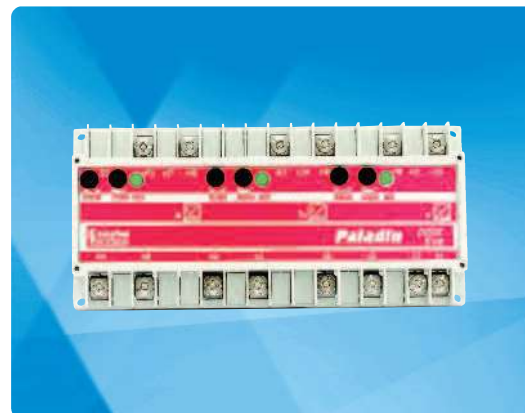
True RMS Voltage - Auxiliary Powered

Single or three-phase models offering voltage measurement down to zero input. True RMS measurement of the input voltage, measuring non standard and distorted waveforms. Calibrated for sine waves with up to 30% of 3rd harmonic distortion. Isolation is provided between input, output and auxiliary.

Model	Accuracy	Function	Connection diagram
253-TRV	Class 0.5	AC voltage RMS sensing, 75mm(3") case	15
256-TRV	Class 0.5	AC voltage RMS sensing, 3-phase, 3 DC outputs, 150mm(6") case	11
252-XVR	Class 0.2	AC voltage RMS sensing, 50mm(2") case	15
256-XVR	Class 0.2	AC voltage RMS sensing, 3-phase 4-wire, 3 DC outputs, 150mm(6") case	15

Specifications

Input*:	63.5V, 100V, 110V, 120V, 150V, 220V, 230V, 240V, 300V, 380V, 400V, 415V, 440V, 480V, 500V & 600V AC
Output:	0/1mA, 0/5mA, 0/10mA, 0/20mA or 4/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	50Hz, 60Hz





AC Voltage Suppressed Zero - Auxiliary or Self Powered

Single or three-phase models offering 'expanded scale' measurements at critical voltage levels, indicating small changes within a large voltage span. Average sensing and calibrated to indicate the RMS value of a sine wave less than 1% distortion. Isolation is provided between input, output and auxiliary.

Model	Accuracy	Function	Connection diagram
253-TVZ	Class 0.5	AC voltage RMS sensing suppressed zero, 50mm(2") case - self powered	15
256-XVZ	Class 0.2	AC voltage RMS sensing suppressed zero, 3-phase 4-wire, 3 DC outputs, 150mm(6") case - auxiliary powered	15

Specifications

Input*:	Between +/-10% and +/-30% of nominal 63.5V, 100V, 110V, 120V, 139V, 208V, 220V, 240V, 250V, 277V, 380V, 400V, 415V, 440V, & 480V AC
Output:	0/1mA, 0/5mA, 0/10mA or 0/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	50Hz, 60Hz
Auxiliary:	100-480V AC 12V, 24V, 48V, 110V or 125V DC



Frequency Transducers

Frequency Sensing - Self Powered

Provides a DC output which is directly proportional to input frequency. Internal power is derived from the input signal and will maintain accuracy between 80% and 120% or better of nominal input voltage. Input and output are isolated.

Model	Accuracy	Function	Connection diagram
253-THZ	Class 0.5	Frequency sensing, 75mm(3") case	10
252-XHA	Class 0.2	Frequency sensing, 50mm(2") case	10

Specifications

Input:	63.5V, 100V, 110V, 120V, 139V, 208V, 220V, 240V, 250V, 277V, 380V, 400V, 415V, 440V, & 480V AC
Output:	0/1mA, 0/5mA, 0/10mA or 0/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	45/55Hz, 55/65Hz, 45/65Hz & 360/440Hz

Frequency Sensing - Auxiliary Powered

Provides a DC output which is directly proportional to input frequency. Internal power is derived from the input signal and will maintain accuracy whilst the auxiliary input is within specification limits. 253-THZ offers AC auxiliary and 252-THL/Z caters for both AC and DC auxiliary. Isolation is provided between input, output and auxiliary.

Model	Accuracy	Function	Connection diagram
252-THL	Class 0.2	Frequency sensing, live zero 50mm(2") case	15
252-THS	Class 0.2	Frequency sensing, true zero 50mm(2") case	15

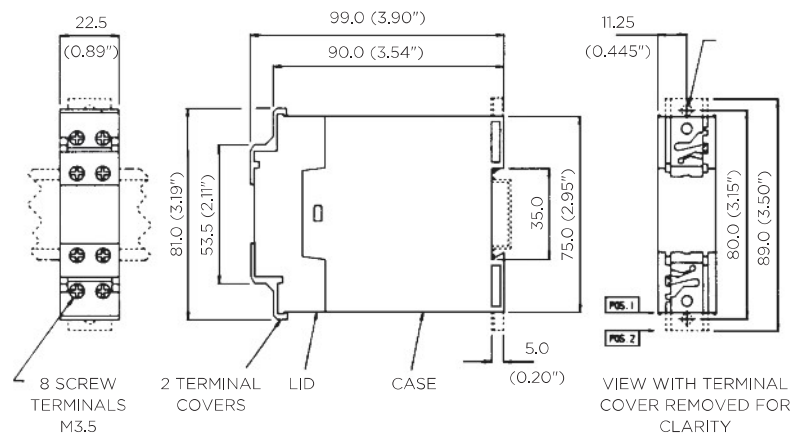
Specifications

Input:	63.5V, 100V, 110V, 120V, 139V, 208V, 220V, 240V, 250V, 277V, 380V, 400V, 415V, 440V, & 480V AC
Output:	0/1mA, 0/5mA, 0/10mA or 0/20mA DC 0/1V, 0/5V or 0/10V DC
Current:	1 or 5A AC
Frequency:	45/55Hz, 55/65Hz, 45/65Hz
Auxiliary:	100-480V AC

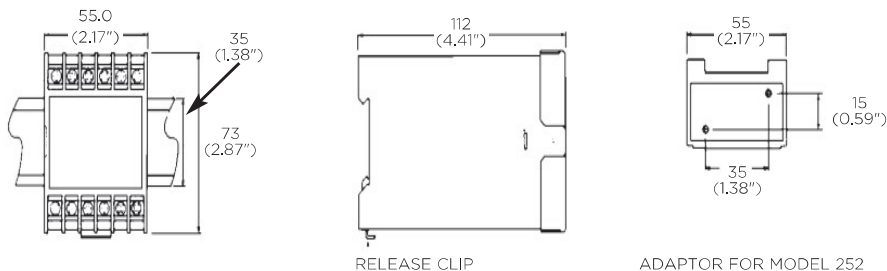
Paladin Transducers 250 Series

Dimensions

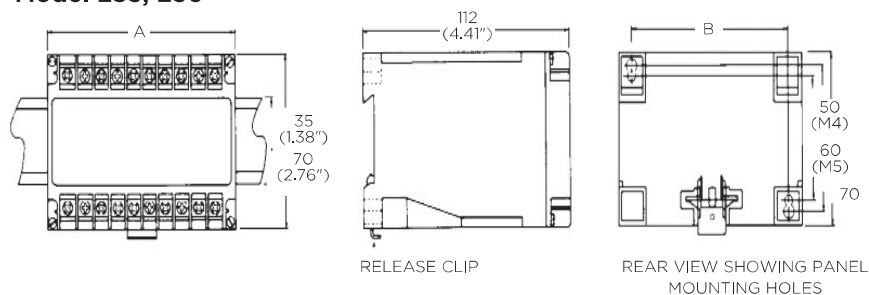
Model 250



Model 252



Model 253, 256



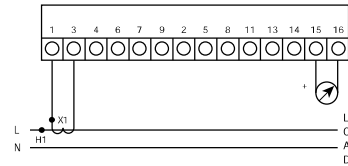
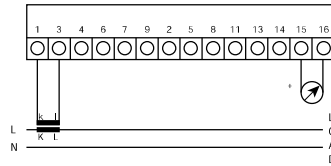
Model	A mm	A inches	B mm	B inches
250	22.5	0.88	-	-
252	55	2.17	-	-
253	75	2.96	60	2.36
256	150	5.90	135	5.31

The signal isolator is designed for use in signal transmission and processing applications to prevent noise and interference caused by ground loops between signal source and the measuring device. The isolator provides galvanic high voltage isolation between the source and measuring device.

Connection Diagrams

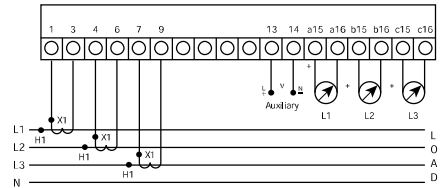
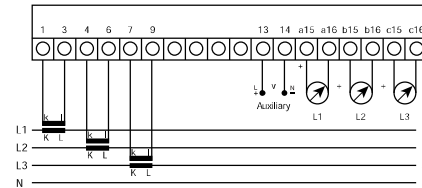
Type 252-XAA, Type 253-TAA

Single-phase Current, Self Powered – Diagram 1



Type 256-XAS/XAR, Type 256-TAS, TAL, TAR

3 Ø Current, 3 Outputs – Diagram 2



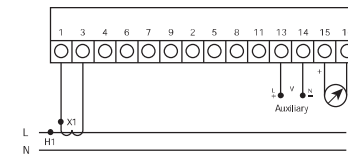
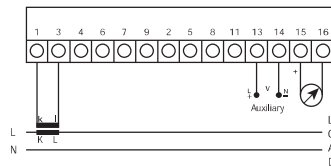
Type 250-ISA

Signal Isolator – Diagram 5



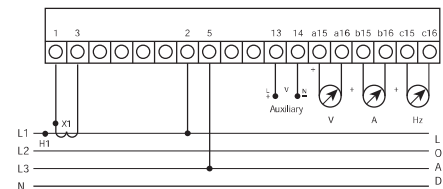
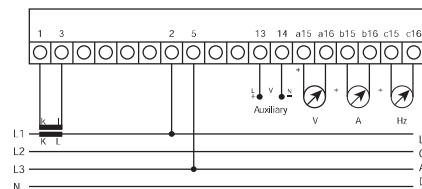
Type 252-XAS/XAR/XAL, Type 253-TAL/TAR

Single-phase Current – Diagram 6



Type 256-XLK

Voltage, Current and Frequency, 3 Outputs – Diagram 9

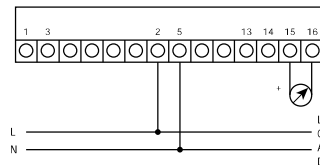


Type 252-XVA & Type 253-TVA

Single-phase Voltage Self Powered

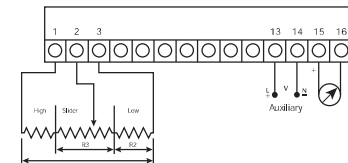
Type 252-XHA, 253-THZ

Frequency – Diagram 10



Type 253-TRT

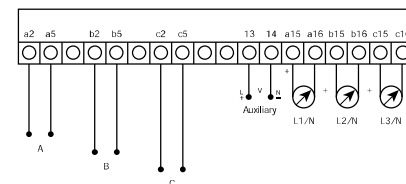
Tap Position Diagram 12



Type 256-TVL, TVR, TVS, TVW

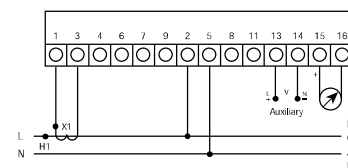
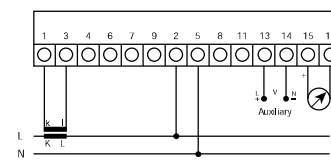
Type 256-XVU, XVW, XVY, XVX

3 x 1Ø Voltages 3 Outputs – Diagram 11



Type 256-XWK/XXK/XYK/XDK /XEK/XGK/XFS/XFA/XPS/XPA Type 256-TWK/TXK/TYK

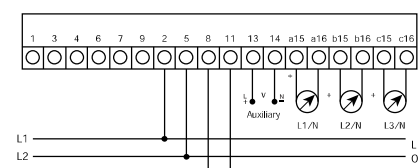
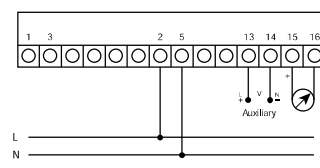
Single-phase, Watts or VARs or VA or Phase Angle or Power Factor, Watt and VAR: Watt, VAR and VA: Watt, VAR and Power Factor. One Output – Diagram 14



Type 252-XVS, XVZ, XVR, XVL, XHL, XHS

Type 253-TVL, TVR, TVZ

Single-phase Voltage – Diagram 15



Type 256-XVS/XVR/XVZ/XVL

3 Ø 4W Voltage, 3 Outputs – Diagram 16

