Paladin Transducers
250 Series Class 0.5

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)

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 one current or voltage transducers and a DC to DC transducer.

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

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

General Specifications

	Class 0.5 range	
Performance:	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	
Temperature coefficient:	0.03%/per °C typical	
Humidity range:	Up to 95% RH	
Zero adjustment:	±2% minimum (except TAA & TVA)	
Span adjustment:	±10% minimum	
Accuracy class:	0.5 unless otherwise specified	
Accuracy range:	0 to 120% (except self powered)	
Stability:	+0.25% per annum typical (reducing with time)	
Response time:	<400 ms from 0 to 99% of rated output, 250ms to 90%	
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	
Current output protection:	Fully protected against open and short circuited output	
Voltage output protection:	Fully protected against open circuit output	
Maximum output:	24V DC when open circuit	
Output ripple:	<0.5% of full rated output	
Continuous overload capacity:	2 x rated current continuous 1.25 x rated voltage continuous	
Short duration overload capacity:	20 x rated current for 1 second 1.5 x rated voltage for 10 seconds	
Input burden:	AC <2 VA	
Auxiliary burden:	<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)	
Safety:	To IEC1010 with terminal cover, basic insulation category	
Flammability:	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)	
Interference:	In accordance with IEC 61326	
Input impedance: (DC I/P)	DC 1000 ohms/volt as standard 10k ohms/volt available on request	

VAr Transducers – Auxiliary or Self Powered

A range of VAr transducers in single or three-phase, balanced or unbalanced, 3 or 4-wire systems. Class 0.5 products utilise the well established 'time division multiplication' method of measuring power while the class 0.2 products are microprocessor based and offer exceptional waveform handling on distorted waveforms. In the self powered products the system voltage provides both power supply and input to the measurements circuit but for systems with large voltage variations auxiliary powered products should be used. Input, output and auxiliaries are isolated.

Model	Accuracy	Function	Connection diagram
256-TXK	Class 0.5	1-phase, 150mm(6") case	14
256-TXG	Class 0.5	3-phase 3-wire balanced load, 150mm(6") case	41
256-TXH	Class 0.5	3-phase 4-wire balanced load, 150mm(6") case	42
256-TXM	Class 0.5	3-phase 3-wire unbalanced load, 150mm(6") case	20
256-TXN	Class 0.5	3-phase 4-wire unbalanced load, 150mm(6") case	40

Specifications

Input:	57.7V, 63.5V, 100V, 110V, 120V, 139V, 208V, 220V, 240V, 250V, 277V, 380V, 400V, 415V, 440V, & 480V AC
Output:	0/1mA, 0/5mA, 0/10mA, 0/20mA or 4/20mA DC 1/0/1mA, 5/0/5mA, 10/0/10mA or 20/0/20mA DC 0/1V, 0/5V or 0/10V DC 1/0/1V, 5/0/5V or 10/0/10V DC
Current:	1 or 5A AC
Frequency:	50Hz, 60Hz
Optional	100-480V AC
Auxiliary:	12V, 24V, 48V, 110V or 125V DC

Paladin Transducers 250 Series

Dimensions

Model 250

22.5 (0.89")
99.0 (3.90")
90.0 (3.54")
11.25 (0.445")
81.0 (3.19")
53.5 (2.11")
35.0
75.0 (2.95")
80.0 (3.15")
89.0 (3.50")
5.0 (0.20")

8 SCREW TERMINALS M3.5
2 TERMINAL COVERS
LID
CASE

POS.1
POS.2

VIEW WITH TERMINAL COVER REMOVED FOR CLARITY

Model 252

55.0 (2.17")
35 (1.38")
73 (2.87")

112 (4.41")

55 (2.17")
15 (0.59")
35 (1.38")

RELEASE CLIP

ADAPTOR FOR MODEL 252

Model 253, 256

A
35 (1.38")
70 (2.76")

112 (4.41")

B
50 (M4)
60 (M5)
70

RELEASE CLIP

REAR VIEW SHOWING PANEL MOUNTING HOLES
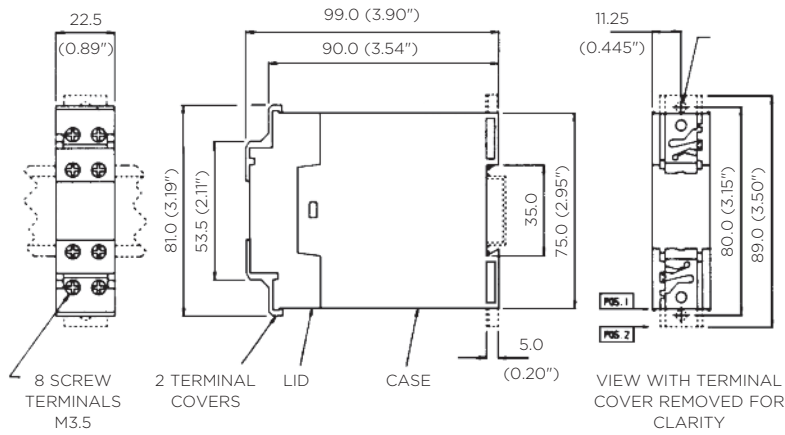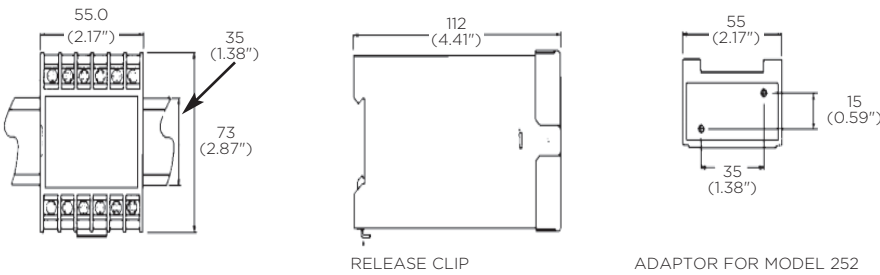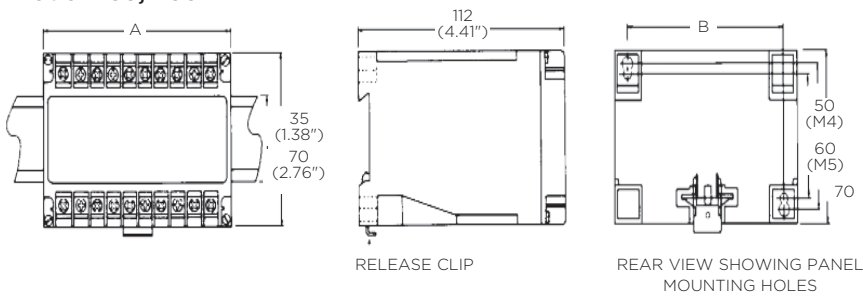
Model	A mm	A inches	B mm	B inches
250	22.5	0.88	-	-
252	55	2.17	-	-
253	75	2.96	60	2.36
256	150	5.90	135	5.31

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
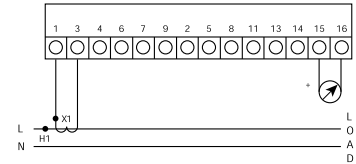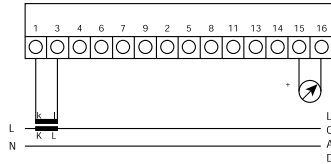
Type 256-XAS/XAR,
Type 256-TAS, TAL, TAR
3 Ø Current, 3 Outputs – Diagram 2
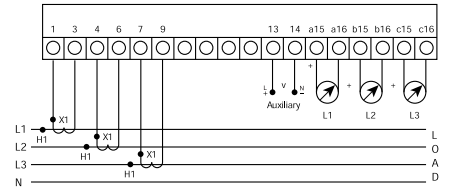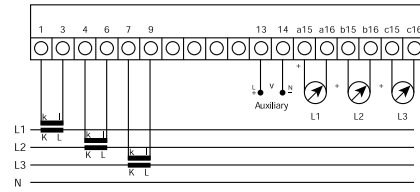
Type 250-ISA
Signal Isolator – Diagram 5

Type 252-XAS/XAR/XAL,
Type 253-TAL/TAR
Single-phase Current – Diagram 6
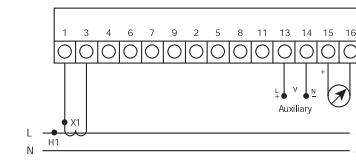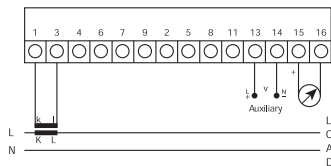
Type 256-XLK
Voltage, Current and Frequency,
3 Outputs – Diagram 9
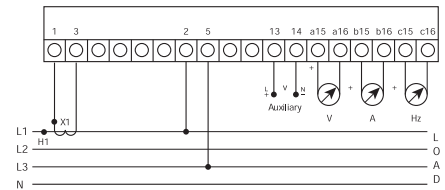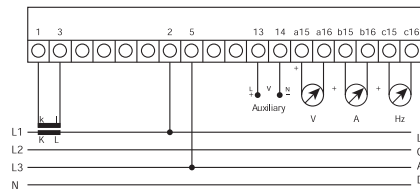
Type 252-XVA & Type 253-TVA
Single-phase Voltage Self Powered
Type 252-XHA, 253-THZ
Frequency – Diagram 10
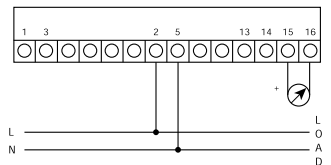
Type 253-TRT
Tap Position Diagram 12
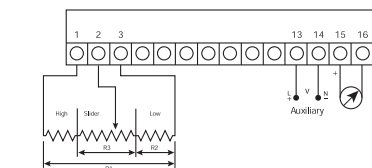
Type 256-TVL, TVR, TVS, TVW
Type 256-XVU, XVW, XVY, XVX
3 x 1Ø Voltages 3 Outputs – Diagram 11
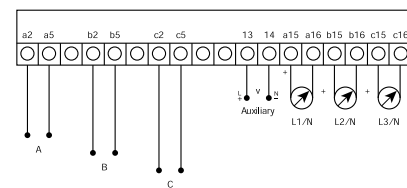
Type 256-XWK/XXK/XYK/XDK
/XEK/XGK/XFS/XFA/XPS/XPA
Type 256-TWK/TXK/TYK
Single-phase, Watts or VArs or VA or
Phase Angle or Power Factor, Watt
and VAr: Watt, VAr and VA: Watt,
VAr and Power Factor.
One Output – Diagram 14

Type 256-XVS/XVR/XVZ/XVL
3 Ø 4W Voltage, 3 Outputs – Diagram 16
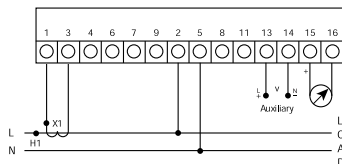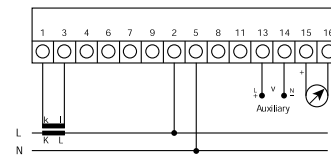
Type 252-XVS, XVZ, XVR, XVL,
XHL, XHS
Type 253-TVL, TVR, TVZ
Single-phase Voltage – Diagram 15
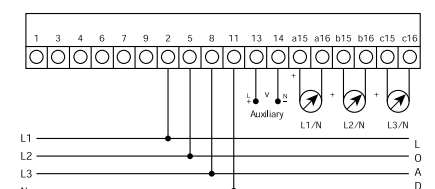
Type 253-TRR

Temperature Transmitter – Diagram 17

Insert resistor in place of RTD for 80% FS Calibration Test

Auxiliary
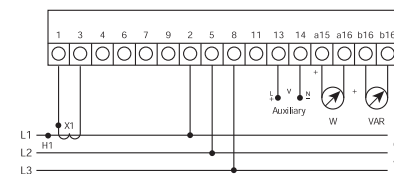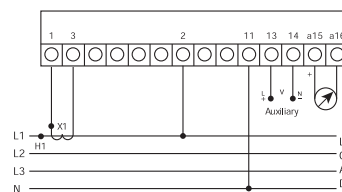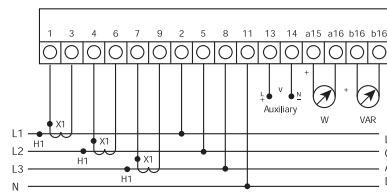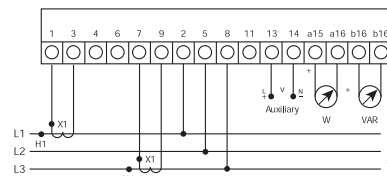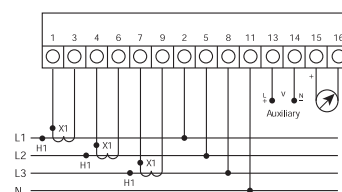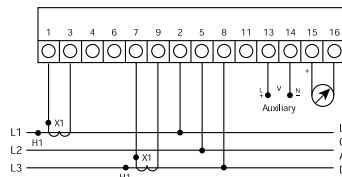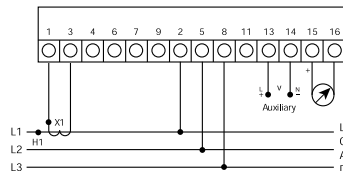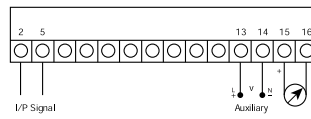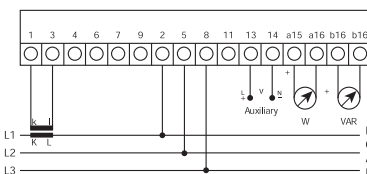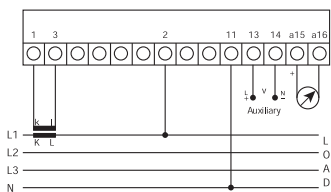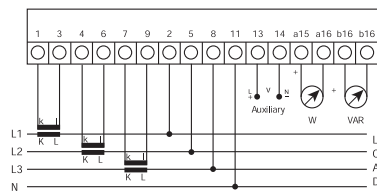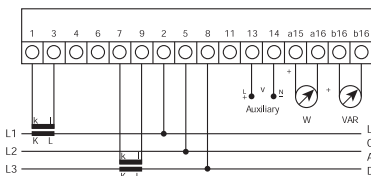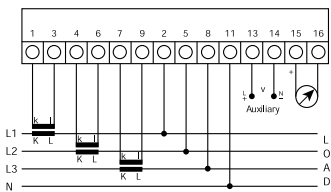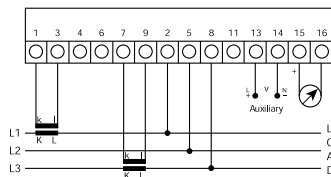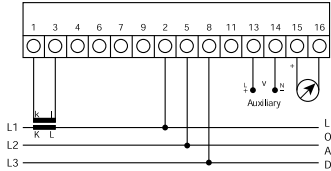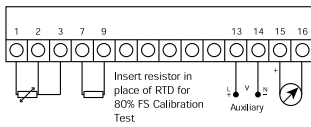
Type 256-TTA/M/V/F/C/N

DC/DC Transducer and Temperature
Diagram 18

I/P Signal

Auxiliary

Auxiliary

L1 K L
L2
L3

LOAD

Type 256-XWL/XXL/XYL/XFW/ XPW/XPG/XFG
Type 256-TWL/TPB/TFB/TFE

3 Ø 3W Balanced Load, Watts or VArs or
VA or Phase Angle or Power Factor.
One Output – Diagram 19

Auxiliary

L1 X1
H1
L2
L3

LOAD

Auxiliary

L1 K L
L2
L3

LOAD

Type 256-XWM/XXM/XYM/XZM/ XFU/XFC/XPU/XPC
Type 256-TWM/TXM/TYM

3 Ø 3W Unbalanced Load, Watts or VArs
or VA or Phase Angle or Power Factor.
One Output – Diagram 20

Auxiliary

L1 X1
H1
L2
L3
X1
H1

LOAD

Auxiliary

L1 K L
L2 K L
L3 K L
N

LOAD

Type 256-XWW/XXW/XYW/XZW/ XFT/XFB/XPT/XPB

3 Ø 4W Unbalanced Load, 3 Elements,
Watts or VArs or VA or Phase Angle or
Power Factor.
One Output – Diagram 21

Auxiliary

L1 X1
H1
L2 X1
H1
L3 X1
H1
N

LOAD

Auxiliary

W VAR

L1 K L
L2 K L
L3

LOAD

Type 256-XDM

3 Ø 3W Unbalanced Load, Watt
and VAr, 2 Outputs – Diagram 22

Auxiliary

W VAR

L1 X1
H1
L2
L3
X1
H1

LOAD

Auxiliary

W VAR

L1 K L
L2 K L
L3 K L
N

LOAD

Type 256-XDW

3 Ø 4W Unbalanced Load, 3
Elements, Watt and VAr, 2
Outputs – Diagram 23

Auxiliary

W VAR

L1 X1
H1
L2 X1
H1
L3 X1
H1
N

LOAD

Auxiliary

L1 K L
L2
L3
N

LOAD

Type 256-XWH/XXH/XYH/XFV /XFD/XPV/XPD
Type 256-TWH/TXH/TYH

3 Ø 4W Balanced Load, Watt, VAr
and VA or Phase Angle or Power
Factor. 1 Output – Diagram 24

Auxiliary

L1 X1
H1
L2
L3
N

LOAD

Auxiliary

W VAR

L1 K L
L2
L3

LOAD

Type 256-XDL

3 Ø 3W Balanced Load, Watt and
VAr, 2 Outputs – Diagram 25

Auxiliary

W VAR

L1 X1
H1
L2
L3

LOAD

Type 256-XDH

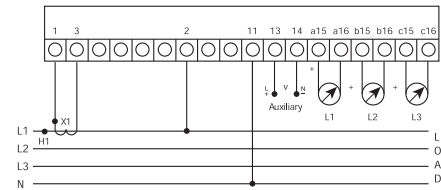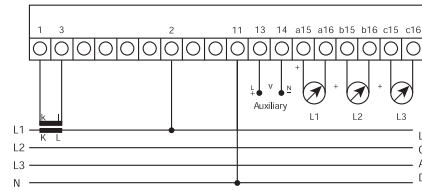3 Ø 4W Balanced Load, Watt and VAr, 2 Outputs – Diagram 26
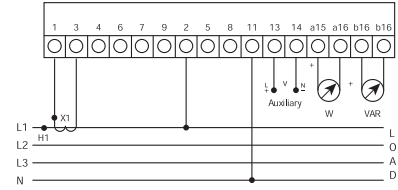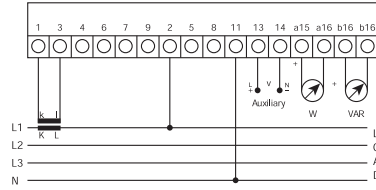
Type 256-XRL/XSL/XJL

3 Ø 3W Balanced Load, Watt, VAr and VA:
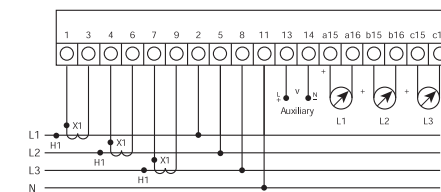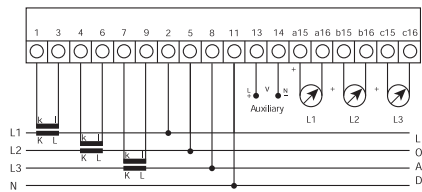Watt, VAr and Power Factor.
3 Outputs – Diagram 27
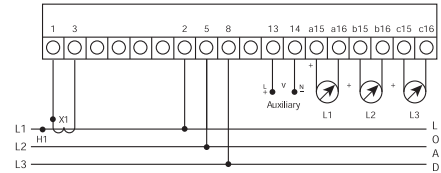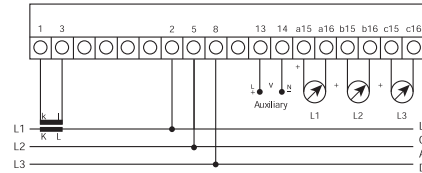
Type 256-XRH/XSH/XJH

3 Ø 4W Balanced Load, Watt, VAr and VA:
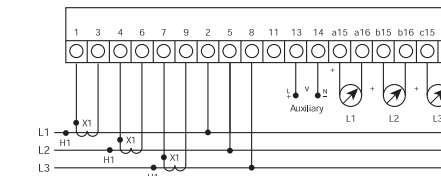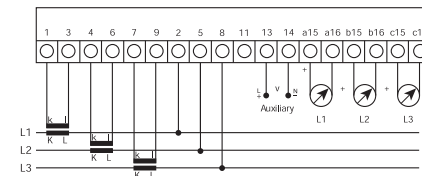Watt, VAr and Power Factor.
3 Outputs – Diagram 28

Type 256-XWE/XXE/XYE/XFE/XFF/XPE/XPF

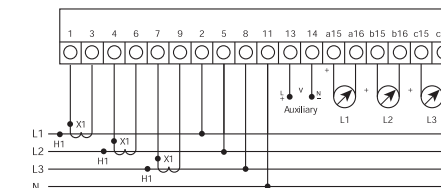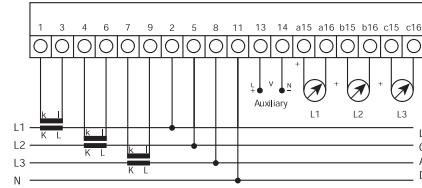3 Ø 4W Unbalanced Load, Watt, VAr and VA or Phase Angle or Power Factor. 3 Outputs – Diagram 29

Type 256-XRM/XSM/XJM

3 Ø 3W Unbalanced Load, Watt, VAr and VA: Watt, VAr and Power Factor. 3 Outputs – Diagram 31

Type 256-XRW/XSW/XJW

3 Ø 4W Unbalanced Load, 3 Elements, Watt, VAr and VA: Watt, VAr and Power Factor. 3 Outputs – Diagram 32
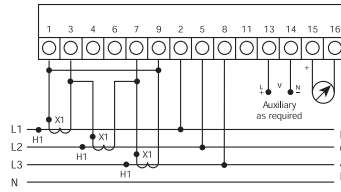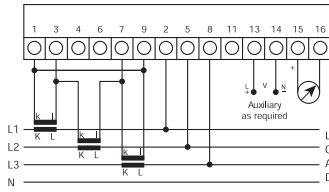

Type 256-TWE/TXG

3 Phase 3-wire Balanced Load, Watt, VAr or Phase Angle – Diagram 34
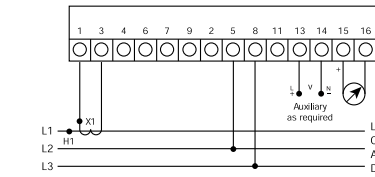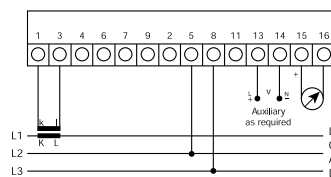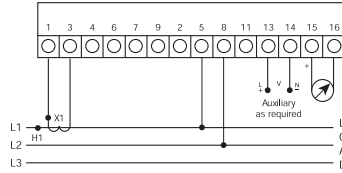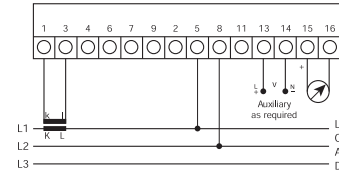

Type 256-TWN/TXP/TYN
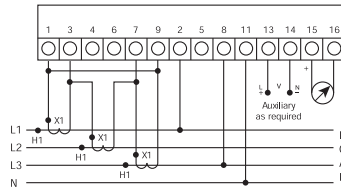
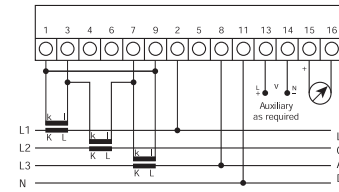3 Ø 4W Unbalanced Load, Watt or VAr, or VA – Diagram 35
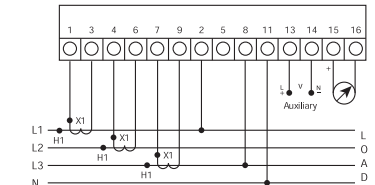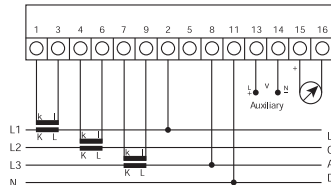
Type 256-TXJ

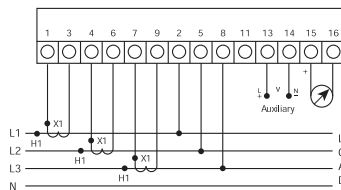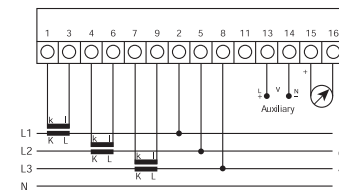3 Ø 4W Unbalanced Load, VArs, Delta Connected CT's – Diagram 37

Type 256-TWS

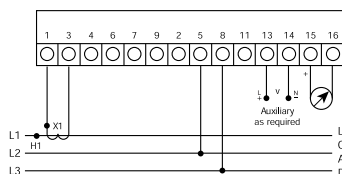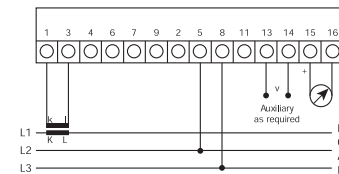3 Ø 3W Balanced Load, Watts – Diagram 38

Type 256-TWJ/TYJ

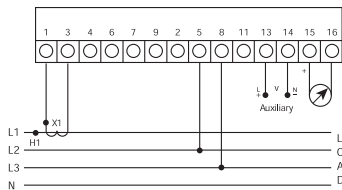3 Ø 4W Unbalanced Load, Watts or VA Delta Connected CT's – Diagram 39

Type 256-TXN

3 Ø 4W, Unbalanced Load, VArs – Diagram 40

25D-ODA

Pin 2 = data, 4 and 5 = power for ODA, 6 and 20 = power for ODA, 7 = ground
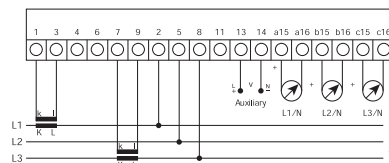
Type 256-TYG, XWL

3 Ø 3W Balanced Load, VA, WATT – Diagram 41
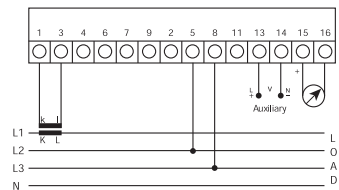
Type 256-TXH/TYH

3 Phase 3/4W, Balanced Load, Phase Angle or Power Factor – Diagram 42

Type 256-XVW/XVY/XVX

3 Ø 3W Voltage, 3 Outputs – Diagram 48

Notes on connection diagrams

1. When using more than one item via a current transformer, inputs must be in series.

2. Auxiliary supply applies only if ordered. For maximum performance an AC or DC auxiliary is recommended. Self powering is achievable for a voltage variation of less than 20%.

3. When there is more than one output the outputs are in the sequence listed on the description, i.e. on a Watt, VAr and VA Transducer, output (a) is Watt, (b) is VAr and (c) is VA.

4. Where more than one output is provided there is no isolation between outputs. User may require a signal isolator (Module 250-ISA).