

SECTION 2

Digital Indicators / Relays

(Panel Meters / Meter Relays,
Switchboard Meters, Power Meters)

- Conzerve
- Crompton
- Laurel
- Simpson
- Texmate
- Yokogawa (YCA)

Digital indicators from the following
manufacturers are also available
but not shown in catalog:

- Electro Industries
- Electro-Numerics
- Modutec
- M-System
- Triplet (LFE)



DIGITAL INDICATORS



LAUREATE™ Panel Meter Series

Available for all popular industrial analog signals. High performance, extensive output options and programmable features to solve application problems at minimum cost.



Basic Features

- 5 LED digits, 0.56" high
- NEMA-4X, 1/8 DIN front panel
- Detachable screw-terminal connectors
- Isolated sensor excitation output
- 0.01% accuracy for DC signals
- All ranges factory calibrated
- Read rate to 60/sec
- Adaptive digital noise filtering
- Peak & valley capture
- Auto-tare
- Easy setup via front panel or PC

Selectable Features

- **Display color:** Red or green.
- **Signal conditioner:**
 - 1) Universal DC
 - 2) AC rms
 - 3) Load cell & microvolt
 - 4) Temperature (T/C & RTD)
- **Alarm/control outputs:**
 - 1) Dual 8A, 250V contact relays
 - 2) Dual solid state relays
- **Isolated analog output:**
 - 1) 4-20 mA
 - 2) 0-10V (selectable at connector)
- **Communications:**
 - 1) RS232, point to point
 - 2) RS485, addressable
 - 3) MODBUS (RTU or ASCII)
 - 4) Parallel BCD output
- **Power to meter:**
 - 1) Worldwide 95-240V ac $\pm 10\%$
 - 2) Low-voltage 12-34V ac or 10-48V dc

DC Voltmeter & Ammeter

Five DC voltage ranges and four current ranges, all factory calibrated to 0.01% accuracy with calibration factors stored in EEPROM. Built-in 5.000A current shunt, plus easy scaling for external shunts. Fast read rate to 60 per second with user selectable adaptive digital noise filtering.

Process Signal Meter

User scalable from -99,999 to 99,999 for process signals such as 4-20 mA or 0-10V. Most sensitive ± 200.00 mV range for use with strain gauges. Built-in isolated transducer excitation supply. Ratiometric operation eliminates power supply effects. Three scaling methods, including use of known signals.

Process Signal Meter & Totalizer

User scalable from -999,999 to 999,999 to display or totalize 4-20 mA, 0-1 mA or 0-10V process signals. For example, display kilowatt-hours from a 0-1 mA Watt transducer, or display volume from a 4-20 mA flow transducer. Isolated 10V or 24V excitation for transducers or 2-wire transmitters. Error < 0.01% of full scale.

Load Cell & Microvolt Meter

User scalable from -99,999 to 99,999. Most sensitive range of ± 20.000 mV for load cells or microvolt signals. Isolated 10V excitation for four 350 ohm load cells in parallel. 4 or 6-wire bridge connection to compensate for power supply effects and lead resistance. Error < 0.01% of full scale.

True AC RMS Voltmeter & Ammeter

Five AC voltage ranges and four current ranges with 0.1% accuracy for signals from 10 Hz to 10 kHz. All ranges factory calibrated, with calibration factors stored in EEPROM. Built-in 5.000A scale for direct connection to 5A current transformers.

Scale Meter

DC or load cell signal conditioner, plus firmware for weighing applications: display to 999,990, auto-tare or manual tare, auto-zero, display toggle between gross or net weight, scale calibration using known weight, count by 1, 2, 5, 10, 20, 50 or 100 with rounding. Exceptional 0.01% accuracy.

Universal Temperature Meter / Controller

User selections include seven thermocouple types or two RTD types, display in $^{\circ}\text{C}$ or $^{\circ}\text{F}$, and 1° or 0.1° resolution. The entire range of each sensor is provide on one scale. An optional dual-relay board converts the meter from a temperature indicator to a controller. An optional analog output board adds an isolated transmitter output linearized to the display.

Choice of Options Boards

Relays Output Options: Dual 8A mechanical relays or dual solid state relays for alarm or control. Multiple programmable setpoint control modes, including hysteresis and deviation bands.

Analog Output Option: Isolated 4-20 mA, 0-20 mA or 0-10V linearized to the displayed reading. For example, turn your thermocouple meter into an ultralinear 4-20 mA transmitter.

Communication Options: Isolated RS232 with a single RJ11 jack, RS485 with two RJ11 jacks, or Modbus with two RJ45 jacks. Two jacks allow daisy chaining with addressing on a serial line.



LAUREATE™ Panel Meter Specifications

Case

Dimensions 48 x 96 x 102 mm (1/8 DIN)
 Panel cutout 45 x 92 mm (1/8 DIN)
 Connectors Screw clamp plugs

Display

Type 7-segment LEDs + 3 LED indicators
 Display color Red or green
 Digit height 0.56" (14.2 mm)
 Range.. -99999 to 99999 or -99990 to 99990

A-to-D Conversion

A-to-D rate 60/s at 60 Hz, 50/s at 50 Hz
 Display update 3.5/s at 60 Hz, 3/s at 50 Hz

Noise Rejection

CMR, DC to 60 Hz 130 dB
 NMR at 50/60 Hz 90 dB with no filtering

Max Error at 25°C

DC, strain, load cell 0.01% of FS ±1 count
 AC rms 0.1% of FS ±1 count
 Thermocouple 0.3°C
 RTD 0.04°C

Temperature Coefficients

Span tempco 0.003% of reading / °C
 Zero tempco 0.1 digits / °C
 TC reference junction 0.03 degree/degree

Power Input

Voltage 95-240V ac or 95-300V dc, ±10%
 Low voltage option 12-34V ac or 10-48V dc
 Power frequency DC or 47-440 Hz
 Isolation 300V rms, 2.3 kV rms for 1 min

Excitation Output (std)

5V dc 100 mA
 10V dc 120 mA
 24V dc 50 mA
 Output isolation 50V dc

Analog Output (opt)

Output levels 4-20 mA or 0-10V (selectable)
 Output error < 0.05% of full scale
 Compliance at 20 mA ... 12V (0-600 ohm load)
 Compliance at 10V 2 mA (5 kOhm load)
 Update rate 60/s at 60 Hz, 50/s at 50 Hz
 Isolation 250V rms, 2.3 kV rms for 1 min

Relay Outputs (opt)

Relay types Dual contact or solid state
 Contact relays 8A at 250V ac or 24V dc
 Solid state relays 120 mA at 125V ac
 or 240 mA at 150V dc
 Update rate 60/s at 60 Hz, 50/s at 50 Hz
 Setpoint setup Via front panel or PC
 Isolation 250V rms, 2.3 kV rms for 1 min

Serial Communications (opt)

Serial formats RS232, RS485, MODBUS
 Data rates, max 19200 bps
 Data update rate 60/s at 60 Hz, 50/s at 50 Hz
 Isolation 250V rms, 2.3 kV rms for 1 min

Environmental

Operating temperature 0°C to 55°C
 Storage temperature -40°C to 85°C
 Protection NEMA-4X when panel mounted

Safety & EM Certifications

USA & Canada U/L listed
 Europe CE certified per EN 61010-1:1993

2

LAUREATE™ Panel Meter Ordering Guide

Create a model number like **L20100DCV1**. For custom scaling, specify min input, min reading, max input, max reading.

Laureate Main DPM Board

L Laureate panel meter
 LW Laureate weight meter
 (not for AC rms or temperature)

Display Color

1 DPM with green LEDs
 2 DPM with red LEDs

Power

0 95-240V ac or 95-300V dc
 1 12-34V ac or 10-48V dc

Setpoint Output

0 None
 1 Dual 8A contact relays
 2 Dual solid state relays

Analog Output

0 None
 1 4-20 mA or 0-10V

Digital Interface

0 None
 1 RS232
 2 RS485
 3 Parallel BCD
 4 MODBUS

Input Type

DC Input

DCV1 200 mV
 DCV2 20.000 V
 DCV3 200.00 V
 DCV4 200.00 V
 DCV5 600.0 V
 DCA1 2.0000 mA
 DCA2 20.000 mA
 DCA3 200.00 mA
 DCA4 5.000 A

AC RMS Input

RMV1 200.00 mV
 RMV2 2.0000 V
 RMV3 20.000 V
 RMV4 200.00 V
 RMV5 600.0 V
 RMA1 2.0000 mA
 RMA2 20.000 mA
 RMA3 200.00 mA
 RMA4 5.000 A

Process Signals (e.g., 4-20 mA)

P 4-20 mA = 0-10000
 P1 Custom Scaling

Strain Gauge (4-wire ratio)

SG 0-200 mV = 0-20000
 SG1 Custom Scaling

Load Cells (6-wire ratio)

WM1 Custom Scaling

Thermocouples

JC -210 to 760°C
 JF -347 to 1400°F
 KC -244 to 1372°C
 KF -408 to 2501°F
 TC -257 to 400°C
 TF -430 to 752°F
 EC -240 to 1000°C
 EF -400 to 1830°F
 NC -245 to 1300°C
 NF -410 to 2370°F
 SC -46 to 1768°C
 SF -51 to 3214°F
 RC -45 to 1768°C
 RF -49 to 3213°F

100-Ohm Platinum RTD's

P385C -202 to 850°C
 P385F -331 to 1562°F
 P392C -202 to 850°C
 P392F -331 to 1562°F

Meter Relays

2

Features

- » Up to 2 plug-in option modules
- » 4 digit high intensity LED display
- » Simple 3 button user interface
- » 96x48mm DIN bezel
- » IP65 sealing
- » Wide selection of caption labels
- » Peak (Maximum) hold feature
- » Valley (Minimum) hold feature
- » UL Approved
File No: E75911SP

Applications

- » Voltage monitoring and control
- » Current monitoring
- » Overload Alarm
- » Battery monitoring/Charging
- » Temperature Indication
- » Temperature Control
- » Load Shedding
- » Power Factor Correction
- » Frequency Monitoring
- » Level Control

262-30 Series Digital Meter Relays

The 262-30 series of digital meters offer a highly accurate and stable measurement solution. Three models are available: 262-300 is for process control inputs, 262-30T for temperature inputs and 262-30A for true RMS A.C. voltage and current.



Description

An internal switched mode power supply caters for a wide range of A.C. and D.C. auxiliary voltages. The front panel is sealed to IP65. Readings are displayed on high visibility red LEDs that provide daylight readability. The display can be set to show a fixed number of decimal places and to auto scale to show the maximum resolution. A simple 3 button user interface allows full configuration via the front

panel, which can also be password protected to prevent tampering. The meter can be used as a stand alone indicator, or upgraded using up to two plug-in modules. The optional modules add functionality, such as relay setpoints, analogue output or Modbus Communications. The modules are easily installed, without the need for dismantling or re-calibration.

True RMS

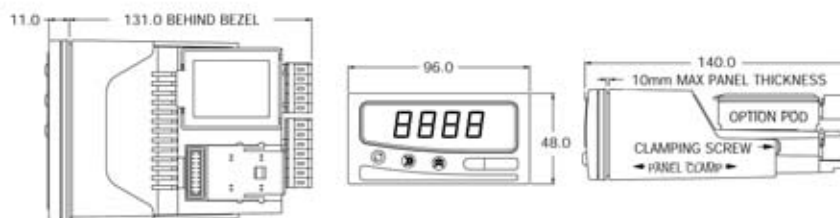
True RMS example: This sinewave comprises of a fundamental plus 30% of the 3rd harmonic. The 262-30A accurately measures this waveform, however, an average sensing meter could have a typical 12% error. A peak sensing meter could be up to 25% inaccurate.



Product Codes

Process Control Version	262-300	Dual Relay Output Module	262-RLY
Temperature Control Version	262-30T	Analogue Output Module	262-ALG
A.C. Voltage and Current Control	262-30A	ModBus Communication Module	262-MOD

Dimensions



Cutout: 92.0/92.8mm x 45.0/45.6mm (DIN 43700)



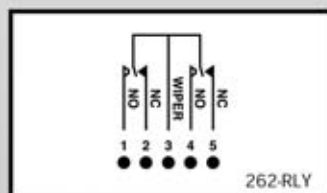
Meter Relays

262-30 Series Plug-In Modules

The functionality of the 262-30 series of meter relays can be enhanced with up to two plug-in modules. The modules offer relay setpoints, analogue output or ModBus communications, which are easily installed, without the need for dismantling or re-calibration.



2



262-RLY Dual Relay Output Module

Two independent setpoint relays are contained in this plug-in module. Connection is via a 5-way removable tension clamp plug. Since the 262-30 series can accept two option modules, if two relay modules are fitted, four programmable setpoints are available. All alarms can be inhibited for a time period after power-up.

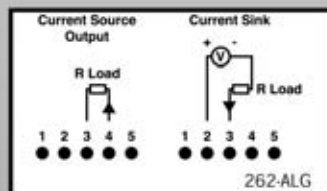
Configurable Parameters (each relay)

Using the three front panel buttons, the following parameters can be set and adjusted:

- Setpoint
- Differential (hysteresis)
- Latching on/off
- Invert (energize/de-energize on trip)
- Alarm delay 0/2/5/10/20/60/120/240 seconds

Electrical Specifications (each relay)

Contact configuration:	Single Pole Change Over (SPCO)
	Important Note: a common connection is shared for both relays
Contact ratings:	A.C. 5A 250V 1750 VA maximum D.C. 5A 30V 210W maximum (125V max)
Rating for UL:	2 Amps
Contact life:	> 100,000 operations at rated load
Alarm indication:	Red LED indicators 2.5mm high numeric



262-ALG Isolated Analogue Output

This plug-in module can source or sink up to 23mA. The output signal is fully scaleable, and can be used as a signal isolator or signal level converter on the 262-300, or as a 'temperature transducer' on the 262-30T. Connection is via a 5-way removable tension clamp plug.

Please note that the 262-30 series will only support one 262-ALG option module.

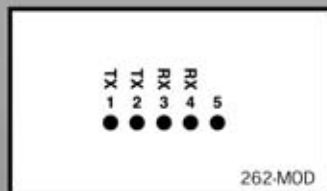
Configurable Parameters

Using the three front panel buttons, the following parameters can be set and adjusted:

- Display Reading For Low Output
- Display Reading For High Output

Electrical Specifications

Output Ranges:	0-10mA 0-20 mA 4-20 mA
Minimum output current:	0 mA
Maximum output current:	23 mA
Accuracy:	0.07% of full scale
Stability:	1µA/°C
Output Ripple:	Less than 3µA
Maximum Output Load:	1 KΩ (when sourcing)
Maximum Ext. Voltage:	30V (when sinking)
Voltage effect:	0.2 µA/V
Isolation Level:	500 Volts A.C.



262-MOD Modbus Communication Module

This plug-in module enables connection to a RS485 network, which is ideal for use with PLC systems or industrial PC based systems. The displayed measurement is available, and the relay setpoint conditions can be monitored. Additionally, all internal parameters can be read or modified, so that product configuration, scaling and setpoint settings can all be remotely set up or changed. Connection is via a 5-way removable tension clamp plug.

Please note that the 262-30 series will only support one 262-MOD option module.

Electrical Specifications

Physical Layer:	RS485 4 wire RS485 2 wire half duplex
Baud Rate: (selectable)	9,600 19,200
Protocol:	Modbus RTU format
Isolation Level:	500 Volts A.C.
Maximum Fan out:	32 units

Digital Indicators

2

Features

- » Sealed case front
- » Clear bright LED digits allow easy reading from up to 25 feet
- » Customised scaling allows OEM logo and engineering units
- » Advanced and rugged design allows simple installation and use
- » UL Approved File No. E140758
- » IP66 (front of panel using optional gasket)

Additionally for DD:

- » Dummy RH zero
- » Multiple D.C. inputs
- » Front External zero + span adjustment
- » External scaling
- » Non-standard update rates
- » Adjustable brightness display

Additionally for DG:

- » Display blanking
- » Update rate adjustment
- » Display hold - not on DGH/DGF

262 Series LED Digital Indicators



Applications

- Genset panels
- Food industry equipment
- Process monitor systems
- Test equipment
- Control panels
- Dirty environments.

Introduction

The 262 series are a range of digital panel meters. These meters are versatile in their measuring range which includes A.C. and D.C. current/voltage. Some versions allow display blanking and hold.

The meter front is totally sealed and when panel mounted with an optional gasket is hose proof to IP66, allowing washing and use in wet areas, e.g. food industry, quarries, portable test gear. Other parameters, e.g. Watts, VAR, VA, PF, temperature etc. may be

measured using an additional transducer from our transducer range.

Panel mounting is quick, with two corner clamps tensioned by thumb screws or alternatively by a quick-fix ratchet.

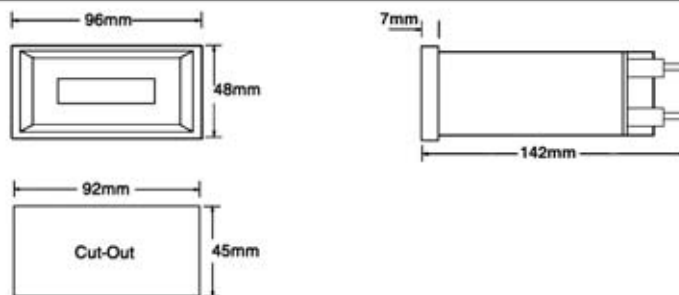
Other than the frequency versions, these instruments can be powered by a variety of A.C. or D.C. supplies. Care has been taken to provide isolation from the measured input signal.

Product Code

D.C. Current
 A.C. Current
 Transducer Input
 D.C. Voltage
 A.C. Voltage
 Tachometer Input
 Line Frequency
 Dummy Zero
 Power Factor
 50mV, 1, 10, 200 & 600V D.C.

312 Digits	4 Digits	412 Digits
262-DDA	262-DGA	
262-DOB	262-DGB	
262-DO1	262-DGT	
262-DOV	262-DGV	
262-DOW	262-DGW	
262-DO2	262-DG2	
	262-DGH	
		262-DOZ
262-DPF		
262-DOJ		

Panel Cut-out



For digital indicators with setpoints, analogue output and Modbus see 262-30 Digital Meter Relays





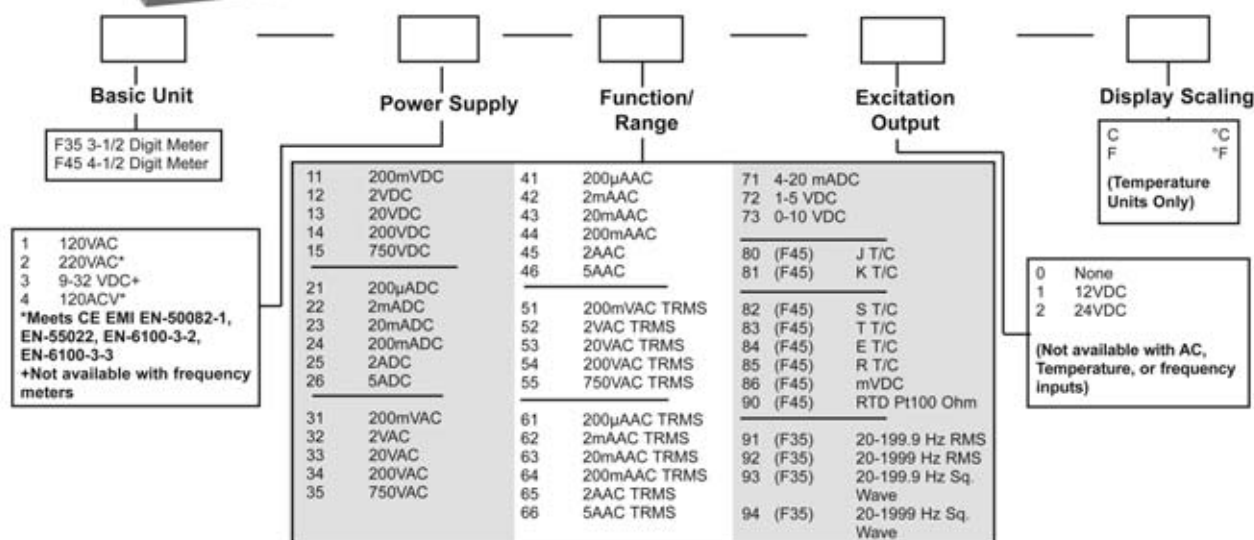
Digital Panel Indicators & Instruments

Falcon F35/F45 Indicators



- 1/8 DIN Indicator
- 3-1/2 or 4-1/2 digit bright red LED display
- Front panel pops off for easy decimal point setting and display scaling
- Only 3.12" (79 mm) required behind panel
- Screw terminal connectors for easy installation
- Optional excitation output

Ordering information: To order, insert corresponding number code for each category. Example: F45-1-52-0

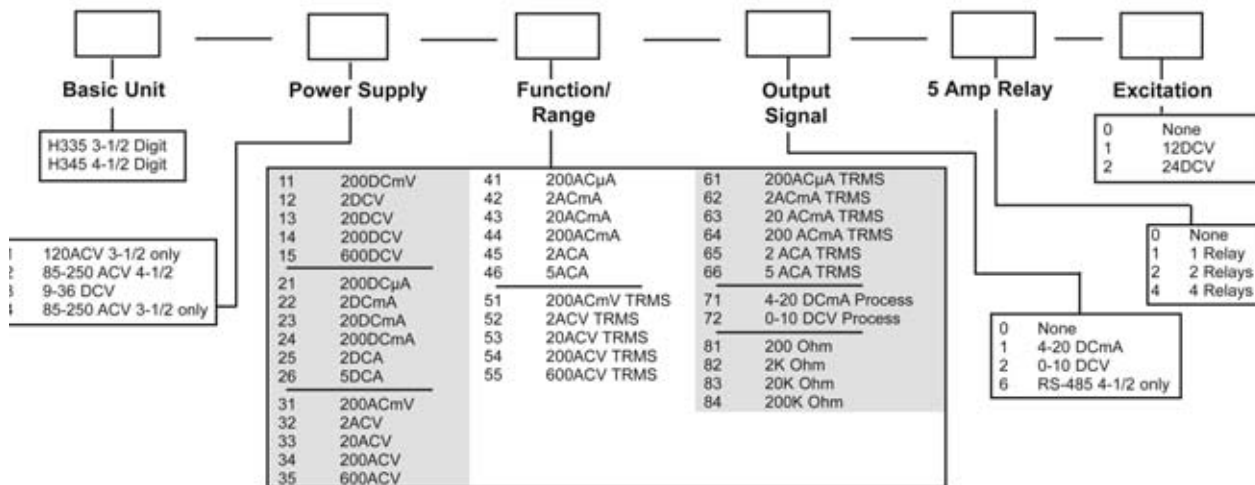


Hawk 3 Advanced DPM



- 1/8 DIN, shallow depth case, 3.24"
- All parameters set from easy to understand front panel access
- 3-1/2 or 4-1/2 digit red LED
- One, two or four 5-amp relays optional
- Screw terminal connectors for easy installation
- cUL and UL Recognized

Ordering information: To order, insert corresponding number code for each category. Example: H335 1-46-0-2-0.



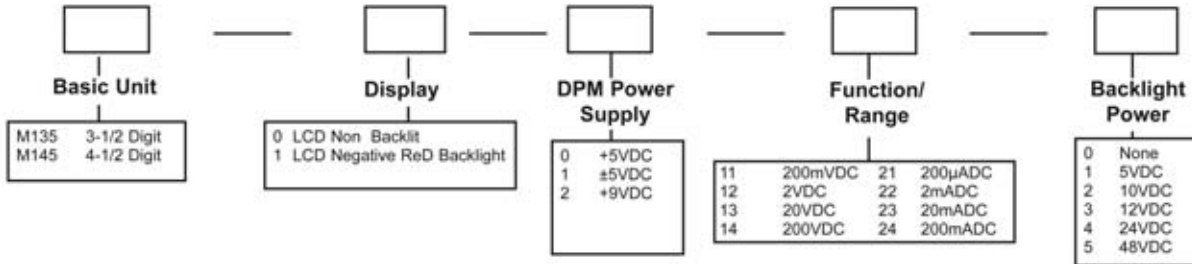
Digital Panel Indicators & Instruments

Mini M135 & M145 Indicators



- High quality, accuracy and reliability in a compact case
- Fits 3/64 DIN cutout (22mm x 68mm)
- Minimum depth - requires less than 0.7" (17mm) behind the panel
- 3-1/2 or 4-1/2 digit LCD display
- Snaps right into panel - no mounting hardware required
- 12-pin mating connector with 6" lead wires
- Optional negative image, bright red backlighting

Ordering information: To order, insert corresponding number code for each category. Example: M135-0-1-13-0

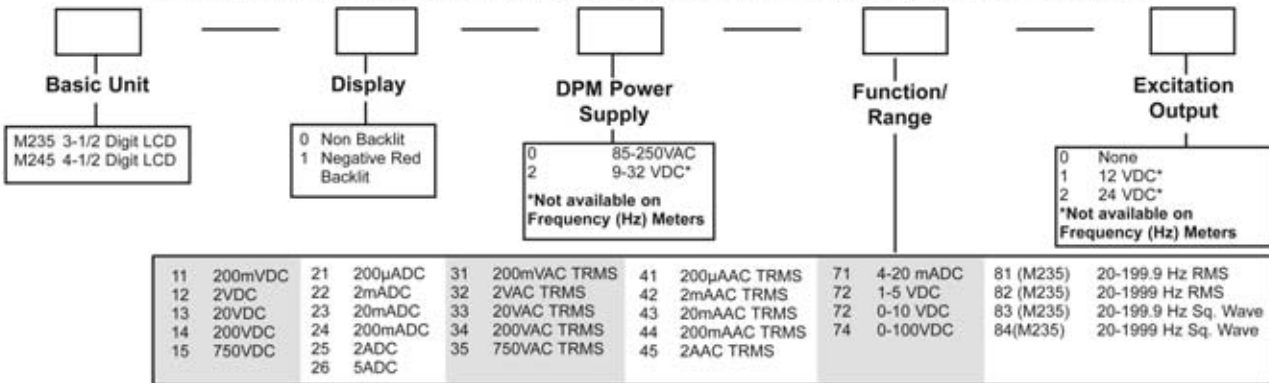


Mini-Max M235 & M245 Indicators



- 3/64 DIN cutout (22mm x 68mm)
- Unique mounting bracket allows stacking of multiple meters
- Minimum depth indicator - less than 2.5" (60mm) required behind panel
- 3-1/2" or 4-1/2" digit LCD display with optional negative red backlighting
- Screw terminal connectors for easy installation

Ordering information: To order, insert corresponding number code for each category. Example: M235-1-0-21-0



Panel Meter Accessories

AC CURRENT TRANSFORMERS				TRANSDUCERS			SHUNTS	
Current Transformers w/Terminals		Donut Current Transformers		Reduces AC Current to 4-20mA			Reduces DC Current to 50mV drop	
Part No.	Range	Part No.	Range	Part No.	Input Range	Output Range	Part No.	DC Amps
37020	100:5	01293	50:5	37000	0-5A	4-20mA	06700	1
37021	150:5	01306	75:5	37001	0-50A	4-20mA	06705	15
37022	200:5	01297	100:5	37003	0-100A	4-20mA	06707	25
37023	300:5	01298	150:5	37004	0-150A	4-20mA	06709	50
37024	500:5	01299	200:5	37005	0-200A	4-20mA	06713	100
37025	1000:5	01300	300:5	37006	0-300A	4-20mA	06715	200



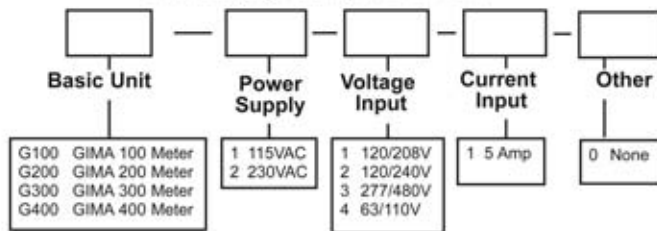
Digital Power Meters & Counters

GIMA® Meter



- Four model types fit a wide range of applications
- One meter to measure all your values
- 1/4 DIN (92 x 92mm) cutout needing only 2.8" (71mm) behind the panel
- Easy installation - software detection/correction of wiring errors
- Wide backlit LCD display for easy viewing
- Four keys select all parameters
- Optional MODBUS module for serial (RS485 and RS422) communications
- Optional Analog Output Module

Ordering information: To order, insert corresponding number code for each category. Example: G300-1-2-1-0



Three-Phase Current Transformer



	G100	G200	G300	G400
Phase Amps	•	•	•	•
Phase Volts	•	•	•	•
Line Volts	•	•	•	•
Per phase PF	•	•	•	•
Per phase kW	•	•	•	•
Per phase kvar			•	•
Per phase kVA				•
3 Phase PF	•	•	•	•
3 Phase kW	•	•	•	•
3 Phase kvar			•	•
3 Phase kva				•
Frequency	•	•	•	•
kWh		•	•	•
Capacitive kvarh			•	•
Inductive kvarh			•	•
Total kvarh			•	•
Import kWh			•	•
Current Demand	•	•	•	•
Voltage Demand	•	•	•	•
kW Demand			•	•
Peak Amps				•
Peak Phase Volts				•
Peak Current Demand	•	•	•	•
Peak Voltage Demand	•	•	•	•
Neutral Current				•

Ordering Information:

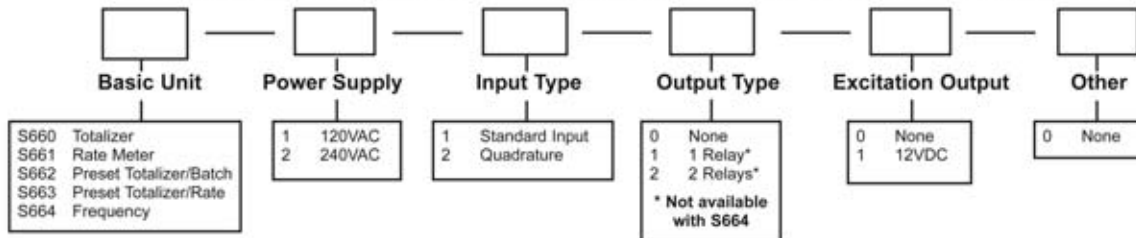
Cat. No.	Ratio	Burden VA @ 60 Hz
37026	50.5	2.0
37027	100.5	2.0
37028	150.5	4.0
37029	200.5	5.0
37030	300.5	10.0
Cat. No.	Description	
46240	All Value Modbus Module	
47130	Analog Output Module	

S660 Series Counters



- 6-digit bright LED display (4-digit, S664)
- NEMA 4X rated front panel
- Simple menu-driven front panel programming with password protection
- Large buttons with audible and tactile feedback to prevent keystroke errors
- Optional plug-in relay card and excitation output
- Count speeds of up to 20KHz (30KHz S661, 35KHz S664)
- Only 3.12" deep and fits into standard 1/8 DIN cutout

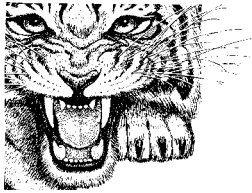
Ordering information: To order, insert corresponding number code for each category. Example: S660-1-2-1-0-0



Counter Accessories

ENCODERS	MEASURING SYSTEM	COUPLINGS
SE-060 60 p.p.r.	Chariot	Flexible Couplings
SE-100 100 p.p.r.	46012 Chariot	46001 Connects encoder to 3/8" Shaft
SE-120 120 p.p.r.	12" Circumference Wheels	46002 Connects encoder to 1/4" or 5/16" shaft
SE-360 360 p.p.r.	46007 70A Durometer Black Tire	46003 Includes one flexible coupling (1/2" I.D.) and three reducing inserts (1/4", 5/16", 3/8")
SE-600 600 p.p.r.	46004 80A Durometer Polyurethane Tire	
	46005 83A Durometer Polyurethane Tire	
	46006 92A Durometer Polyurethane Tire	

Digital Panel Meters



TEXMATE Tiger Series Super Intelligent Programmable Panel Meters and Bargraphs



DI-50S Super Tiger

- 160-point linearization
- Integrator/Totalizer
- Clock/Timer
- Remote setpoint
- Square root of input
- 256 sample data logging
- Macro loading capability
- User-pre-programmed math functions
- Built-in pH tables, including 2-point pH software calibration
- Five 32-point linearization tables (4 selectable from rear of meter)
- Independent software scaling and linearization for each channel (CH1 and CH2)
- In addition to these advanced programmable functions, the DI-50S also incorporates all the core functions of the DI-50D Tiger listed below

DI-50D Tiger

- Auto-tare
- Tendency indication
- Counter
- Period measurement
- Software scaling of input, MX + B
- 5-digit 0.56" red or green LED display
- Adjustable display brightness
- Alarm indication – display flash and/or LED indication
- Built-in RTD and thermocouple temperature tables
- 10-pt. linearization
- Dual-channel math functions
- Optional isolated software-programmable analog output
- Optional isolated RS232C or RS485
- Auto-sensing AC/DC, universal switching power supply
- Cos ϕ , power factor indication

DI-45U Tiger Cub

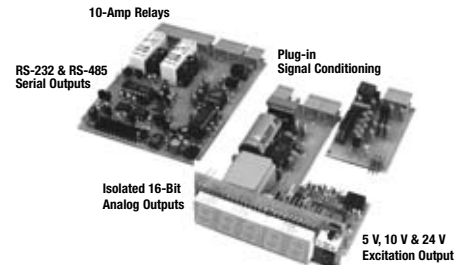
- Economy version of the DI-50D with transformer power supply – 120/240 V AC, optional non-isolated analog output and TTL-level serial communication

DI-40R Leopard

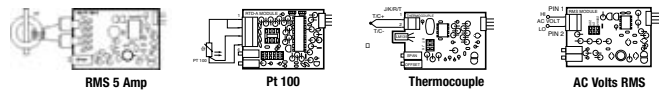
- Dual setpoint meter relay
- Single relay with optional non-isolated, software-programmable analog output (4-20 mA)
- Linear transformer power supply – 120/240 VAC standard



Plug-in Signal Conditioning

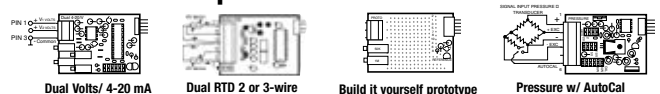


Tiger Plug-In Signal Conditioning Modules include: Single Channel Input Modules:



- AC RMS current, mA
- ACV RMS
- Process 4-20 mA *
- DC current, mA *
- Low drift DC mA w/ temp comp
- DCV, mV *
- Low drift DCV w/ temp comp
- DC volt ext. lin. table select
- DC volt. external decimal select
- Frequency
- Infra-red
- LVDT *
- pH
- Pressure *
- Proto PCB
- Resistance
- RPM *
- RTD
- Strain gage
- T/C
- Watt / wattour
- Inverse DCV
- Pressure w/ext. exc.
- Counter
- DCV fast peak hold

Dual Channel Input Modules:



- Dual 4/20 mA
- Dual mA
- Dual mV
- Dual DCV
- Dual pressure*
- Dual strain gage
- Dual RTD
- Dual T/C
- DCV & RTD
- DCV & T/C
- 4-20 mA & T/C
- 4-20 mA & RTD

*** Excitation POWER IS available FROM THESE MODULES**

MeterBOSS™ PC Software to Communicate with Intelligent Panel Meters

- Automates meter programming and setup
- Programmable output sequencing and data logging
- Generates optimal 32-point linearizing tables
- Enables linearizing table and macros to be down-loaded through serial port
- Creates charts and graphs for system analysis
- Generates customized alarm, alert, and warning messages
- Can be used on any PC including AT, XT, 286, 386, 486, and Pentium

Bargraph Meters



DI-50S Super Tiger Bargraph

- All the DI50S and DI-50D functions
- Up to 4 setpoints (2 indication points shown on bar)
- Min /max points displayed on bar or min/max bar
- Bar showing processed data, displayed data, raw data, total, time, or serial input
- Linear or log bar
- 160-point linearization table
- Five 32-point linearization tables (4 selectable from rear of meter)
- 144 x 72mm and 144 x 36mm case sizes
- Tri-color
- 101 bar segments
- 144 x 72mm with five 1" digits (red)
- 144 x 36mm with five 0.2" digits (red)
- Optional – 1 isolated analog output
- Optional – 1 isolated serial output
- Uses DI-50S input signal conditioning modules



DI-40R Leopard Bargraph

- 144 x 24mm case size – 101 bar segments
- 96 x 24mm case size – 51 bar segments
- Optional – 4 digits (red)
- Optional – 2 relays
- Uses DI-40R range of input modules

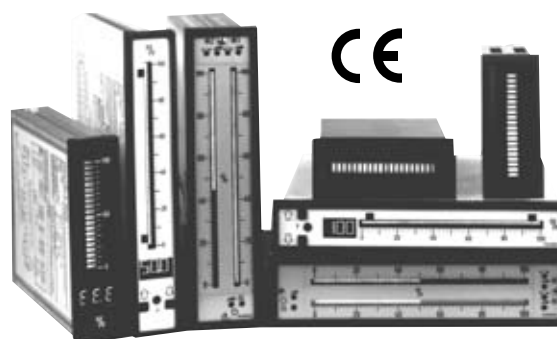
Neko Bargraph

- Excitation header-selectable
- Optional – up to four 5 amp relay outputs
- Optional – isolated analog output (4-20mA)
- Software-scalable digits / bar
- Auto-calibration (2-point calibration)
- Center zero selectable
- Case size: 144 x 36mm
- Tri-color
- Optional – with 4 digits (red)
- 2 V, 20 V, 200 V, 4-20 mA, mA, and custom header-selectable signal input



Bargraph Family General Features

- 20, 30, 40, 50 and 101 segment displays
- Optional 3.0 and 4.0 digit digital displays
- DCV, DC mV, DC mA, process, 4-20 mA, ACV and ACA average and true RMS, Hz, pressure, strain gage, RTD, and T/C inputs
- Horizontal, vertical, quadrant, and circular styles
- Optional relay output
- Optional isolated analog output
- Optional isolated communications



AM-100 Series

- 101-segment LED bargraphs
- Optional 3-digit red or green LED digital display
- DCV, DC mV, DC mA, process, 4-20 mA, ACV and ACA average and true RMS, Hz, pressure, strain gage, RTD, and T/C inputs
- Horizontal or vertical mounting
- Optional relay output
- Case size: 144 x 36mm (9/64 DIN)

F Series

- 50 and 101 segments, single or dual LED bargraphs
- Optional 4-digit LED digital display
- DCV, DC mV, DC mA, process, 4-20 mA, ACV and ACA average and true RMS, RTD inputs
- Vertical mounting
- Optional relay outputs
- Optional isolated analog output, voltage and current
- Optional isolated communications: RS-232C and RS-485
- AC or DC power supply
- Case size: 144 x 36mm (5.6" x 1.6")

AM-30

- 30-segment LED bargraph with setpoints
- Red, amber, and/or green display
- Horizontal or vertical mounting, short depth
- Optional 1 or 2 relays
- Seven user-selectable input ranges:
50 mV/100 mV/200 mV/1 V/5 V/10 V/4-20 mA
- 5 V DC power supply
- Case size: 96 x 24mm (1/16 DIN)

AM-20

- 20-segment utility bargraph
- Low cost
- Low profile, less than 1" height, and stackable case
- Red LED display
- 5 user-selectable DCV and DC mV ranges
- 5 V DC power supply
- Case size: slim bezel stackable case, 2.755" x 1.157" (70 x 29.6mm)

Single-Function Digital Meters



Single-Function DIN Meters



DU Series

- DCV, AC true RMS, T/C, RTD, Pressure, Process, DC mV, DC mA, DC μ A, ACV-true RMS and Average, AC mA/ACA-true RMS and Average, Frequency, Strain Gage
- Excitation supplied for process and pressure
- 3.5, 4.0, and 4.5 digit red LED displays
- Optional green or super-bright red LED Display
- 120/240 V AC standard power supply
- Optional isolated 9 to 48 V DC/9-24 V AC power supply
- Case size: 96 x 48 mm (1/8 DIN) 3.78" x 1.89" polycarbonate case, optional metal sheathed

Single-Function Utility Meters



UM Series

- Low cost
- DCV, DC mV, ACV/ACA-Average, Process 4-20 mA, T/C, RTD, Line Frequency, Pressure
- Excitation supplied for process and pressure
- 3.5, 4.0, and 4.5 digit red LED displays
- Optional green, 0.8" red LED or super-bright red LED Display
- 120/240 V AC standard power supply
- Optional isolated 9 to 48 V DC/9-24 V AC power supply
- Case size: Nema 4.06" x 1.91" replacer series

Temperature Controllers and Indicators

Temperature & Process Controllers



VT Series

- Full PID/autotune or On/Off mode
- 8 software-selectable T/C, Linear, Process, and 100-ohm RTD inputs
- Dual 4-digit LED displays (PV/SP)
- Output: Relay, Triac, SSR driver, 4-20 mA/1-5 V DC
- Optional additional alarm relay
- Universal power supply 85-260 V AC
- Case sizes: 48 x 48mm (1/16 DIN) and 96 x 96.6 mm (1/4 DIN)

Slim Bezel Temperature Meters



TM Series

- Low profile case, less than 1" height
- Full size, 0.56" LED or 0.48" LCD, 3.5 digit display
- T/C type J or K in $^{\circ}$ C or $^{\circ}$ F
- 5 V DC power supply
- Thermocouple break detection
- Case size: slim bezel stackable case 2.755" x 1.167" (70 x 29.6 mm). Two meters are shown in photo above.

Digital Meters

ELF 3200 Series

Digital Energy, Power & V,A,F Meters

ISO 9001-2000 Certified

2



So much in so little!

Tiny!

- 96 x 48 mm. 40 mm depth
- Exciting New applications
- Low CT, PT, Aux Supply burden

Smart!

- True RMS
- Auto scaling: Kilo - Mega - Giga
- 3 Phase Wiring Check
- Large Multi-function display
- Auto-scrolling

Global!

- Universal operation
- Dustproof
- One-click installation
- Retrofit 90 mm² cutouts
- Protection from accidental contact with live terminals

- User programmable, Multiple Parameters
Eg. ELF 3234: W, Wh or VA, VAh or VAR, VARh or PF
- User programmable Star or Delta. For the first time, you don't even need to specify CT secondary (1A / 5A)
- User Programable CT, PT ratios - Primary and Secondary
- Universal Auxiliary Supply

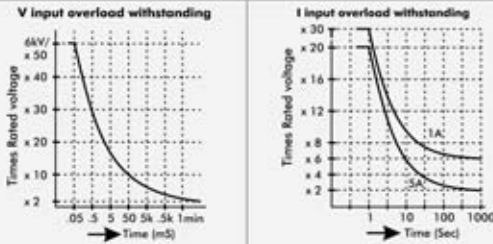
Rugged Construction :

- Emission : CISPR 22
Fast Transient : Upto 2kV
IEC 61000-4-4, level 3
- Impulse voltage : 6kV, IEC 60060, 1.2/50



Digital Meters

Technical Specifications



- Sensing : True RMS, 1 sec update time
4 Quadrant Power & 2 Quadrant Energy
- Input : 4 Voltage inputs (V₁, V₂, V₃, V_N)
110 or 415 V L-L nominal
(Range 80 to 500 V L-L)
- Auxiliary Supply (Control Power) : 80-270V AC, 45 to 65 Hz
- Input current : Current inputs (A₁, A₂, A₃)
Field configurable 1A or 5A
(Range 50mA to 6A)
Overload 10A max. continuous
50A max. for 3 Seconds
- Burden : 0.2 VA max. per Volts / Amps input
3VA max. on Auxiliary Supply
- Frequency : 45 to 65 Hz
- Display : 4 Digit 7 Segment 14 mm
LED Display
- Display sequence : Parameter, Value
- Resolution : Energy 8 digit (4 per page)
Power, 3Ø VAF 4 digit
- Environmental : Operating Temperature
-10°C to 60°C (14°F to 140°F)
Storage Temperature
-25°C to +70°C (-13°F to 158°F)
Humidity 5% to 95% Non
Condensing
- Weight : 225 gms approx
- Dimensions : Bezel 96 x 48 mm
Depth 40 mm behind Bezel
- Panel Cut-out : (90^{+1.0}) x (43^{+1.0}) mm
- Mounting : Flush Mount, Slide Lock
- Warranty : 1 Year from date of Invoice

Accuracy

Class 1.0: W / Wh: Class 1.0 as per IEC 62052-11 & IEC 62053-21, VAR / VARh: Class 2.0

All other parameters 1.0% of reading.

Class 0.5: W / Wh: Class 0.5 as per IEC 62052-11 & IEC 62053-21, VAR / VARh: Class 1.0

All other parameters 0.5% of reading.

Note: 1. PF Accuracy same as W/Wh in %

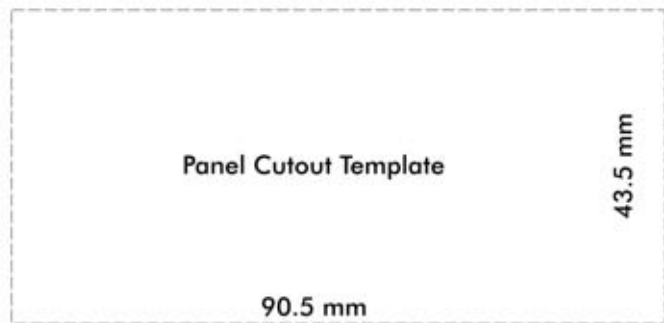
2. Additional error of 0.05% of full scale for current below 200 mA

Models

Parameter	3 Phase
Energy / Power W, Wh or VA, VAh or VAR, VARh or PF	ELF 3234
W, Wh, PF or VA, VAh, PF or VAR, VARh, PF	ELF 3234-3
VAF AC V, A, F	ELF 3259

- NOTES**
- ELF 3234: W, Wh or VA, VAh or VAR, VARh (Ind, Cap) or PF configured through Keypad.
 - ELF 3234-3: W, Wh, PF or VA, VAh, PF or VAR, VARh (Ind, Cap) PF configured through keypad.
 - V and A - Phase-wise & Average. V shows line to line and line to neutral.
 - F - Frequency of Input Signal.
 - Energy - Total Reading only.
Power - Total & Phase wise.
10 year back-up of integrated (Energy) data
 - VA function selectable: 3D or Arithmetic.

For comprehensive parameters and simultaneous viewing, we recommend the **DigitAN™ EM 6000 Series**



Accessories

Optional Fused Voltage Probes & Clamp-on Current Probes for portable use. 96 x 96 Adaptor plate

Ordering Information

Specify:
Model No.
Accuracy Class

YOKOGAWA ◆

Digital Meters

LOOP POWERED INDICATORS - MLD - MLA Explosion Proof – FM Approved

MLD Digital Loop Indicator

- Designed to meet FM standards for use in hazardous locations
- Enclosed in a NEMA 4X case
- Standard display is 0-100.0%; engineering units available as well
- Inputs: 4-20 mA DC
- Accuracy: $\pm 0.05\%$ of full scale



2

MLA Analog Loop Indicator

- Designed to meet FM standards for use in hazardous locations
- Enclosed in a NEMA 4X case
- Black background, white numerals and letters
- Standard 50-division display, 0-100%; engineering units available
- Accuracy: $\pm 1.5\%$ of full scale
- Inputs: 4-20DCMA, 10-50DCMA, 1-5DCV



AC AMPS / VOLTS / FREQUENCY

MODEL FORMAT: 2491 ① ② ③ ④
 █ - █ - █ - █
Insert model code from the selection below:

MODEL

2491 ① **MAX. INPUT RATING**

- 11 1 AMP AC
- 15 5 AMP AC
- 21 150 VOLTS AC
- 25 300 VOLTS AC
- 81 FREQUENCY (150 V Rating)
- 83 FREQUENCY (300 V Rating)

② **FREQUENCY**

- 1 50/60 Hz
- 2 400 Hz
- 3 SPECIAL CALIBRATION



③ **ANALOG OUTPUT** (see notes below)

- AAA No output
- AFA 0 TO 1 mA
- AFB 0 TO ±1 mA
- AHD 4 TO 20 mA
- AHF 12± 8 mA

④ **COMMUNICATION**

- 0 NONE
- 1 RS-485

NOTES:

- MAXIMUM SCALING RATIO FOR AMPS IS 5000:1 (25.00 KILOAMPS FOR 5A INPUT).
- MAXIMUM SCALING RATIO FOR VOLTS IS 125:1 (15.000 KILOVOLTS FOR 120V INPUT).
- AHD SUFFIX NOT AVAILABLE WITH FREQUENCY METER.
- AFB AND AHF SUFFIX NOT AVAILABLE WITH AMP OR VOLT METERS.
- 120/240V AUXILIARY POWER IS STANDARD WITH ALL 2491 MODELS.
- NIST CALIBRATION CERTIFICATE: PRICE TO BE DETERMINED.
- NIST CALIBRATION CERTIFICATE WITH TEST DATA: PRICE TO BE DETERMINED.
- CERTIFICATE OF CONFORMANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

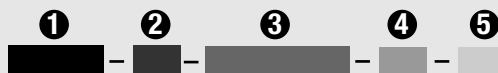
Also Available In: **Watts and Vars – Call For Complete Number**
 Power Factor and Phase Angle – Call For Complete Number

Selector Guide

POWER SERIES ^{Plus}

AC VOLT / AMP DUAL FUNCTION

MODEL FORMAT: 2492



MODEL

2492

① INPUT RATING

- 12 150 VOLT / 1 AMP AC
- 13 300 VOLT / 1 AMP AC
- 16 150 VOLT / 5 AMP AC
- 17 300 VOLT / 5 AMP AC

② FREQUENCY

- 1 50/60 Hz
- 2 400 Hz

③ Analog Output

- AAA None
- AFA 0 TO 1 mA
- AHD 4 TO 20 mA

④ COMMUNICATION

- 0 NONE
- 1 RS-485

⑤ Aux. Power Supply

- 1 120 V 50/60 Hz
- 2 240 V 50/60 Hz



NOTES:

- MAXIMUM SCALING RATIO FOR VOLTS IS 125:1 (15.00 KILOVOLTS); FOR AMPS IT IS 5000:1 (25.00 KILOAMPS)
- NIST CALIBRATION CERTIFICATE: PRICE TO BE DETERMINED.
- NIST CALIBRATION CERTIFICATE WITH TEST DATA: PRICE TO BE DETERMINED.
- CERTIFICATE OF CONFORMANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

Also Available In: **AC Volt/Frequency / AC Watt/Power Factor / Watt/VAR**

Outline Dimensions

POWER SERIES^{Plus}

The POWER SERIES^{Plus} is enclosed in a rugged steel case treated with zinc chromate to resist corrosion. The cover assembly and faceplate are constructed of high temperature polycarbonate material and have several gaskets which seal out dust and moisture from the front cover. The 26 position terminal board is a glass-filled polycarbonate material with #8 nickel-plated brass terminals.

2

