SECTION 5

Signal Conditioners & Transducers
(Analog / Digital)

- **Laurel**
- **M-System**
- **Yokogawa (YCA)**
- **Veris**

Signal conditioners and transducers from the following manufacturers are also available but not shown in catalog:

- **Crompton**
- **Dwyer**
- **Instrument Transformer, Inc.**
- **Love**
- **Texmate**

SIGNAL CONDITIONERS & TRANSDUCERS

LAUREL ELECTRONICS, INC.

LAUREATE™ DIN Rail Transmitters MODBUS & 4-20 mA Output

Available for all popular industrial analog signals plus pulse signals used to measure frequency, rate, total, time, or quadrature. Exceptional accuracy at high read rates, optional dual relay output, and programmable features to solve tough application problems at minimum cost.

Basic Features

- Mountable to 35 mm DIN rail
- Only 22.5 mm (0.89") thick
- Detachable screw clamp connectors
- Isolated sensor excitation output
- Exceptional accuracy at high speed
- Adaptive digital noise filtering
- Peak & valley capture
- Programmable scale factor
- Digital setup via PC

Selectable Features

- **Transmitter output versions:**
  1) MODBUS interface
  2) 4-20 mA & 0-10V analog output
- **Power input:**
  1) Wordwide 95-240V ac ±10%
  2) 12-34V ac or 10-48V dc
- **Signal conditioner:**
  1) Universal DC (includes process, strain & potentiometer follower)
  2) AC rms
  3) Load cell
  4) Temperature (T/C & RTD)
  5) Dual channel pulse input for:
     Frequency & rate
     Counts & up/down total
     Time & stopwatch
     Phase angle
     Duty cycle
     Combinations of two channels (A+B- A-B, AxB, A/B, A/B-1)
  6) Process totalizer
  7) Quadrature (position & rate)
  8) Serial input (transmiter acts as an isolated digital-to-analog converter)
- **Control / alarm option:**
  Dual solid state relays

Counterparts to Laureate 1/8 DIN Meters

Laureate DIN rail transmitters duplicate the input and signal processing capabilities of the complete range of Laureate 1/8 DIN panel meters, counters and timers. This includes pulse rate meters, pulse totalizers, quadrature meters, and instruments which combine channels A and B: A+B, A-B, AxB, A/B, A/B-1. Setup is via PC-based software. A serial interface comes with all models.

MODBUS Transmitters

Laureate MODBUS transmitters are fully compliant with the MODBUS Over Serial Line Specification V1.0 (2002) for 2-wire, half-duplex connection. This includes RTU or ASCII modes, up to 247 digital addresses, and up to 32 devices per RS485 line without a repeater. MODBUS transmitters maintain the full digital accuracy of the signal processing front end. For DC input signals (DC, process, strain, load cell), output accuracy is ±0.01% of full scale input. For frequency or pulse rate, output accuracy is that of the calibrated quartz crystal.

4-20 mA / 0-10V Transmitters

The current or voltage output is selectable at the connector. Output accuracy is ±0.05% for all DC signal and pulse inputs, and ±0.1% for AC rms inputs. All transmitter inputs and outputs are mutually isolated to eliminate possible ground loops. This includes power, signal, meter ground, the transmitter output, and serial I/O (used for setup with a PC).

Key Specifications

Dimensions ..... 120 x 101 x 22.5 mm
Mounting ..... 35 mm rail per DIN EN 50022
Connections ..... Screw clamp plugs
Operating Temperature ..... 0°C to 70°C
Power ..... 95-240V ac or 95-300V dc, ±10%
12-34V ac or 10-48V dc (optional)
Excitation output ..... Isolated 30 mA at 10V or 60 mA at 5V (selectable)
Compliance, 20 mA ..... 10V (0-500 ohm load)
Complance, 10V ..... 2 mA (5 kOhm load min.)
Relay option ..... Two solid state relays
Relay rating ..... 120 mA at 125 Vac or 240 mA at 150 Vdc

Ordering Guide

Create a model number like **TM2001JF**.

☐ **Transmitter Output**
TM ... MODBUS interface
TA ... 4-20 mA or 0-10V output

☐ **Main Board**
2 ..... Standard, analog inputs
4 ..... Extended, analog inputs
6 ..... Standard, AC, pulse or VF inputs
8 ..... Extended, AC, pulse or VF inputs
Extended adds the same capabilities as for Laureate meters, counters & timers.

☐ **Power**
0 ..... 95-240V ac or 95-300V dc, ±10%
1 ..... 12-34V ac or 10-48V dc

☐ **Setpoint Output**
0 ..... None
2 ..... Dual solid state relays

☐ **Analog Output**
0 ..... None
1 ..... 4-20 mA or 0-10V (included w/ TA)

☐ **Input Type**
Same ordering selections as for Laureate meters, counters & timers.

M·SYSTEM TECHNOLOGY, INC.

PC-Programmable High-Performance Universal Transmitters Models: M2XU, M2XUM

- Windows based "Fill-in-the-Blank" Programming
- Linearization up to 100 points
- RS-485 / Modbus RTU output
- 2000 Vac isolation
- 24 Vdc / Universal power supply 85 to 264 Vac
- CE marking
- Base socket included with the modules

CE

UL/cUL APPROVALS PENDING

DC Output Model M2XU
DC + Modbus Model M2XUM

M-System's Models M2XU and M2XUM accept a DC volts/current, thermocouple, RTD or potentimeter resistance input, conditions and provide signal isolation to output a proportional DC current or voltage signal. The Model M2XUM provides an additional RS-485/Modbus RTU communication output. Both models use a compact-size, plug-in socket base for quick installation or replacement of module without disturbing wiring.

The M2XU and M2XUM are designed for use in the UL and cUL Class 1, Division 2, Groups A, B, C and D applications (approvals pending). The combination of CE mark, UL recognition and rugged environmental electrical specifications ensure excellent reliability and stability in harsh industrial environments.

FEATURES

- I/O types and calibration ranges are fully-programmable via a PC
- Linearization up to 100 points programmable for DC/potentiometer inputs
- RS-485/Modbus RTU output added to Model M2XUM
- 2000 Vac isolation between input – output – RS-485 – power eliminates signal noise and ground loops.
- Plug-in base mount socket and hold-down screw included with each module for fast and easy installation.
- Each module includes an internal power fuse eliminating the need to provide and external power fuse to the module.

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■ Mini-M Series List

PC Programmable
M2XU Universal Transmitter
M2XUM Universal Transmitter (Modbus)
M2XV Signal Transmitter
M2XT Thermocouple Transmitter
M2XR RTD Transmitter
M2XM Potentiometer Transmitter
M2XPA Frequency Transmitter
M2XF Linearizer

Sensor Inputs
M2SN Loop Powered Isolator
M2VS Signal Transmitter
M2VF Signal Transmitter (high speed response)
M2TS Thermocouple Transmitter
M2RS RTD Transmitter
M2MS Potentiometer Transmitter
M2D Current Loop Supply (non-isolated)
M2DY Current Loop Supply
M2DL Current Loop Supply (square root output)
M2DYH Current Loop Supply (HART)
M2LCS Strain Gauge Transmitter
M2TG Tachogenerator Transmitter
M2AC AC Transmitter
M2CA CT Transmitter (average)
M2CE CT Transmitter (RMS)
M2PA PT Transmitter (average)
M2PE PT Transmitter (RMS)

Pneumatic Transducer
M2PV P/I Transducer

Limit Alarms
M2SED DC Alarm (thumbwheel switch adj.)
M2AVS DC Alarm (pot. adj.)

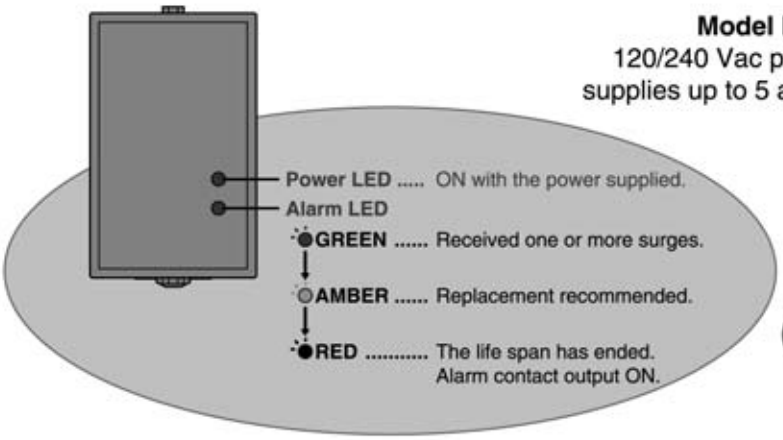
Pulse Transmitters
M2SP Low Frequency Transmitter
M2AP DC/Frequency Converter
M2PP Pulse Isolator

Function Modules
M2ADS Adder (isolated)
M2SBS Subtractor (isolated)
M2MLS Multiplier (isolated)
M2DIS Divider (isolated)
M2REB Ratio Transmitter (with output bias)
M2RTS Ratio Transmitter (with input bias)
M2FL Square Root Extractor
M2LMS Limiter
M2UDS Reverse Transmitter
M2CDS Delay Buffer
M2CRS Ramp Buffer
M2AMS Track/Hold
M2PHS Peak Hold
M2SES High/Low Selector

M-SYSTEM TECHNOLOGY, INC.

Lightning & Surge Protectors with Life Monitor Models MDM2A, MAA

- Life monitor function helps you to decide when you should replace the surge protector; reduces maintenance and prevents downtime
- LED display and alarm contact output indicate the degradation and life span of the surge protection circuits



Model MAA
120/240 Vac power supplies up to 5 amps

Model MDM2A
4-20 mAdc and pulse signal line including 4-/2-wire transmitters

Without question, the main complaint in the industry with regard to surge suppressors is the difficulty in determining whether the surge or lightning protector installed to protect your control system components is still functional. M-System's latest addition to their vast variety of surge suppression devices solves this problem. The surge suppressor models MDM2A and MAA provide 'health indication' for easy monitoring, maintaining and verifying the functionality of these control system protection devices. These surge and lightning suppressors include an amber alarm indicator to alert panel inspectors that the surge suppressor has reached its useful life and should be replaced before loss of surge protection. If these units are not replaced promptly, the alarm indicator changes from amber to red upon a complete loss of surge and lightning protection. Modern day industrial equipment relies heavily on microprocessor-based technology. This makes it essential for critical control components to be protected from lightning, transients and surges. M-System surge suppressors with health indication operate by monitoring the leakage current from signal to earth ground. Additionally the number of suppressed surges is also monitored. When a predetermined level of either the leakage current or number of suppressed surges is exceeded, the health indicator illuminates. Low in cost, these devices pay for themselves by providing early warning alarms and reducing ongoing unnecessary panel maintenance. To give you an idea of their functionality, consider opening a panel with a large number of surge suppressors. Instead of unplugging and testing every unit, for M-System's life monitor series all that is necessary is a quick visual indication. No further tools or checking are required!

When it comes to comparing the cost of downtime versus surge suppressor replacement, the choice is obvious.

How many surge devices does your company have installed that are potentially in poor health and still 'protecting' your control system?

M-Rester Series List

Signal Line Use

MDP-24-1	Signal Line & Pulse Use (24 V)
MDP-65-1	Signal Line & Pulse Use (48 V)
MDM2A	Signal Line & Pulse Use (life monitor)
MDP-TC	Thermocouple Use
MDP-RB	RTD Use
MDP-PM	Potentiometer Use
MDP-LC	Strain Gauge Use
MDR-8	On-Off Signal Use
MDP-SP	Low Frequency Pulse Use
MDP-DM3	MsysNet Use
MDP-FT	Telemetering Use

Power Line Use

MDP-100	Power Supply Use (120 V / 2 A)
MA-100	Power Supply Use (120 V / 2 A)
MAA	Power Supply Use (life monitor)
MAX-100	Power Supply Use (120 V / 5 A, high discharge current capacity)

Accessory

A-33	DIN Rail Mounting Adaptor

Veris

Power Monitoring Solutions

Power Transducers

KT® 6300, 6400

Split-Core kW/kWH Transducer... Enercept KT®
- A precision kW/KWH transducer inside an instrument grade CT... one device for monitoring kW or kWH!

6000 Series

kW/kWH Transducers
- Monitor online performance with your automation system...prevent costly errors
- 4-20 mA for instantaneous kW; pulse for kWH consumption, and phase loss...
- Safe CT's eliminate costly shorting bars and installation hazard

6010 Series

kWH Submeters/Pulse Meters
- Ideal for energy management and performance contracting
- Submetering for commercial tenants ...allocate costs equitably
- Accurate to ±0.5% of reading...true RMS power!

6810 Series

Instrument Grade Current Transformer
- High accuracy instrument grade CT... ±1% from 1% to 100% of rated current
- Safe 1 V output...great for data loggers, fault recorders and PLC's

Current Status Switches / Sensors

H-934 Series

Microprocessor Current Switch/ Command Relay
- A self-calibrating microprocessor based current sensor with a command relay...the only sensor you'll ever need for start/stop/status
- Amperage Range: 5-135A

H-930 Series

"Go/no" Current Switch/ Command Relay
- On/off status sensor and command relay for direct-drive fans, pumps, and process motors...reduces installation costs
- Amperage Range: 1.5-200A

H-904 Series

Microprocessor Current Switch
- Microprocessor-based...real labor saver! No need to calibrate to detect belt loss...clip-on and go!
- Automatically self-adjusts to detect belt loss...even VFD's
- Amperage Range: 5-135A

H-800/900 Series

"Go/no" Current Switches
- On/off status for direct-drive fans, pumps, and process motors
- More reliable for status than relays across auxiliary contacts
- Amperage Ranges: H-800...0.5-200A
  H-900...1.5-200A

H-938 Series

Split-core Current Switch / Command Relay
- Self-gripping split-core with command relay for start/stop & status
- New split-core status sensor with command relay...ideal for retrofits
- Amperage Range: 2.5-135A

H-5000 Series

Remote Set-Point and Display Switches
- Remote adjustment reduces installation cost and improves safety
- Adjustable hystersis

H-735 Series

Combo Current Switch/Command Relay
- Combines command relay and fan/pump status sensor in a single, easy to install unit
- Now...one device does the job of two!
- Amperage Range: 1-135A

H-715 Series

Motor Protection & Load Switching
- Protect motors from overload conditions... switches most contactors directly
- H-717 for locked rotor protection (Overcurrent). H-715 (Undercurrent)
- Amperage Range: 2-135A

H-708/908 Series

Adjustable Set-Point
- Detect belt loss and motor failure...ideal for fan and pump status
- Cost-effective...reduce install & service costs
- Amperage Ranges: H-708...1-135A
  H-908...2.5-135A

Veris

More Products

Analog Current Sensors

H-722/922/932 Series

Self-powered 0-5 VDC Analog and Command Relay
- Self-powered analog current sensor with integral/start/stop command relay
- Selectable factory calibrated ranges up to 120 A for increased flexibility and resolution!
- Easy installation in split-core or solid-core models

H-221/321/421 Series

High Amperage Split-cores
- Monitor larger motors and other loads from 300A to 2400A
- Loop powered 4-20 mA output

H-720 Series

High Accuracy 4-20 mA Output
- Exclusive polymer core is perfect for variable frequency drives (V.F.D.s)
- Perfect for industrial control applications... accurate to ±0.5% of reading
- Amperage Range: 0-20 to 200A

PS-24 Series

24 VDC Switching Power Supply
- High efficiency switching power supply for powering devices up to 30 Watts
- New DIN rail switching power supply provides 24 VDC, 1.2 A output

H-721/921/931 Series

Loop Powered 4-20 mA Analog and Command Relay
- Easy two-wire installation in split-core or solid core models
- Compatible with your automation system
- Loop-powered analog current sensor with integral/start/stop command relay

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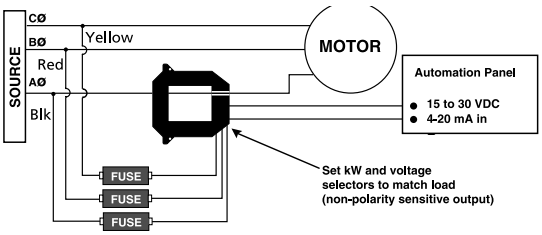
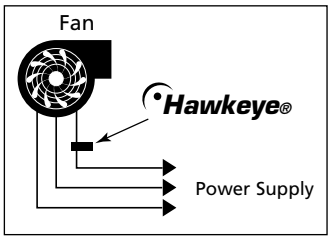
Applications

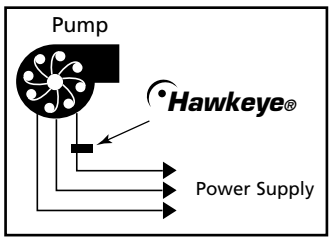


Accurate Power Monitoring
- Demand Monitoring
- Tenant Submetering
- Chiller Optimazation
- Energy Management
- Performance Contracting

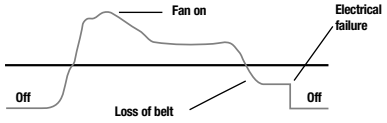
Positive Fan Status
- Detects belts breaking
- Replaces faulty differential pressure switches
- Works with variable speed drives



Cost-Effective Pump Status
- Constant Volume
- Variable Volume
- Stage pumps based on flow
- Protect valuable equipment
- Great for process control



Detects belts breaking!



Now you can easily detect drive belts slipping or breaking. In fact, a typical HVAC fan motor that loses its load (belt) has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status. It's proven and it really works!

JUXTA POWER TRANSDUCERS

	Standard transducer inputs / outputs	Model type	Model type
	120V, 5A AC, 60 Hz, Input powered	**2469 (0.5% Accuracy)**	**2489 (0.2% Accuracy)**
Watt-Var	Watt/Var 1P2W, 0 ± 1mA output (1 Element)	246941-540-AFB-0-M	248941-540-AFB-0-M
	Watt/Var 1P2W, 4 - 20mA output (1 Element)*	246941-540-AHD-0-M	248941-540-AHD-0-M
	Watt/Var 3P3W, 0 ± 1mA output (2 Element)	246943-540-AFB-0-M	248943-540-AFB-0-M
	Watt/Var 3P3W, 4 - 20mA output (2 Element)*	246943-540-AHD-0-M	248943-540-AHD-0-M
	Watt/Var 3P4W, 0 ± 1mA output (2½ Element)	246944-540-AFB-0-M	248944-540-AFB-0-M
	Watt/Var 3P4W, 4 - 20mA output (2½ Element)*	246944-540-AHD-0-M	248944-540-AHD-0-M
	Watt/Var 3P4W, 0 ± 1mA output (3 Element)	246945-540-AFB-0-M	248945-540-AFB-0-M
	Watt/Var 3P4W, 4 - 20mA output (3 Element)*	246945-540-AHD-0-M	248945-540-AHD-0-M
	120V, 5A AC, 60 Hz, 0-1- OPF Input powered	**2469 (± 0.01PF)**	**2489 (± 0.01PF)**
Power Factor	Power Factor - Single phase / ±1mA output	246971-540-AFB-0-P	248971-540-AFB-0-P
	Power Factor - Single phase / 12±8mA output	246971-540-AHF-0-P	248971-540-AHF-0-P
	Power Factor - 3P3W balanced / ±1mA output	246973-540-AFB-0-P	248973-540-AFB-0-P
	Power Factor - 3P3W balanced / 12±8mA output	246973-540-AHF-0-P	248973-540-AHF-0-P
	Power Factor - 3P4W balanced / ±1mA output	246974-540-AFB-0-P	248974-540-AFB-0-P
	Power Factor - 3P4W balanced / 12±8mA output	246974-540-AHF-0-P	248974-540-AHF-0-P
	120V, 5A AC, 60 Hz, ±90º PA, Input powered	**2469 (± 2º Accuracy)**	**2489 (± 1º Accuracy)**
Phase Angle	Phase Angle - Single phase / ±1mA output	246976-540-AFB-0-P	248976-540-AFB-0-P
	Phase Angle - Single phase / 12±8mA output	246976-540-AHF-0-P	248976-540-AHF-0-P
	Phase Angle - 3P3W balanced / ±1mA output	246977-540-AFB-0-P	248977-540-AFB-0-P
	Phase Angle - 3P3W balanced / 12±8mA output	246977-540-AHF-0-P	248977-540-AHF-0-P
	Phase Angle - 3P4W balanced / ±1mA output	246978-540-AFB-0-P	248978-540-AFB-0-P
	Phase Angle - 3P4W balanced / 12±8mA output	246978-540-AHF-0-P	248978-540-AHF-0-P
	DC Input / Output, 115V AC Aux. powered	**2469 (±0.5%)**	
****Isolator**	0-50mVDC / 0-1mADC	246911-001-AFA-1	
	0-50mVDC / 4-20mADC	246911-001-AHD-1	
	0-50mVDC / 0-10VDC	246911-001-VMT-1	
	0-1mADC / 0-1mADC	246912-101-AFA-1	
	0-1mADC / 4-20mADC	246912-101-AHD-1	
	0-1mADC / 0-10VDC	246912-101-VMT-1	

*** Note: VAR outputs are 12±8mA **Not UL**

General Specifications:	2469	2489
Accuracy:	0.5% of span0.2% of reading	
Sustained input overrange:	Voltage: 120% continuous, 150% for 5 seconds Current: 200% continuous, 1000% for 5 seconds	
Outputs:	0 to ±1mA DC into 10kOhm max., 10V DC compliance 4 to 20mA DC into 750 Ohm max., 15V DC compliance	
Output adjust:	zero ± 1% minimum span ± 2% minimum	zero ± 5% minimum span ± 10% minimum
Output ripple:	<0.3% fullscale peak to peak	<0.5% fullscale peak to peak
Response time:	<400 milliseconds 0-99% of full scale	

YOKOGAWA

Power Transducers

JUXTA POWER TRANSDUCERS

Yokogawa's JUXTA"AC POWER SERIES" transducers (2469 & 2489) are rugged metal case designs for utility and industrial applications. Most models are UL recognized under File E60579 and exceed IEEE472/ANSI C37.90.1 Surge Withstand Capability test. The "SWC" test assures maximum protection from damaging line transients caused by switchgear operation or lightning strikes upstream on the system.

Power transducers provide an analog DC Voltage or Current output proportional to an AC input. The input typically comes from the secondary of potential and/or current transformers such as 150V and 5A AC. The output is linked to remote monitoring equipment such as meters, recorders, PLC's, SCADA or Energy Management systems. For most industrial monitoring needs, 0.5% accuracy is acceptable, and our 2469 Series exceeds this requirement. Most power utilities require a higher level of accuracy; and our 2489 series is a superior choice for those applications.

Below, are the most popular models of both the 2469 and 2489 Power Transducers. For other input and output combinations, connection drawings, specifications and other models, please request catalog BU-JAC-05E.

	Standard transducer inputs / outputs	Model type	Model type
	Input 0-5 Amp AC, 60 Hz	**2469 (0.5% Accuracy)**	**2489 (0.2% Accuracy)**
Current	0-1 mA output / self-powered/60 Hz	246921-380-AFA-0	248921-380-AFA-0
	0-1 mA output / self-powered / rated 50/60 Hz	246921-382-AFA-0	248921-382-AFA-0
	True rms / 0-1mA output / 120V auxiliary power	246931-380-AFA-1	248931-380-AFA-1
	4-20mA output / 120V auxiliary power	246921-380-AHD-1	248921-380-AHD-1
	True rms / 4-20mA output / 120V auxiliary power	246931-380-AHD-1	248931-380-AHD-1
	3 in 1 transducer, 0-1mA output / self-powered	246923-380-AFA-0	248923-380-AFA-0
	Input 0-150 VAC, 60 Hz	**2469 (0.5% Accuracy)**	**2489 (0.2% Accuracy)**
	0-1 mA output / self-powered/rated 60 Hz	246922-330-AFA-0	248922-330-AFA-0
	0-1 mA output / self-powered / rated 50/60 Hz	246922-332-AFA-0	248922-332-AFA-0
Voltage	True rms / 0-1mA output / 120V auxiliary power	246932-330-AFA-1	248932-330-AFA-1
	4-20mA output / 120V auxiliary power	246922-330-AHD-1	248922-330-AHD-1
	True rms / 4-20mA output / 120V auxiliary power	246932-330-AHD-1	248932-330-AHD-1
	3 in 1 transducer, 0-1mA output / self-powered	246924-330-AFA-0	248924-330-AFA-0
	Input 120VAC, 60 Hz, self-powered	**2469 (±2% Span)**	**2489 (±0.2% Span)**
	Frequency ± 1.0 Hz deviation, 0-1mA output	246982-320-AFA-0	248982-320-AFA-0
	Frequency ± 1.0 Hz deviation, 4-20mA output	246982-320-AHD-0	248982-320-AHD-0
Frequency	Frequency ± 2.0 Hz deviation, 0-1mA output	246983-320-AFA-0	248983-320-AFA-0
	Frequency ± 2.0 Hz deviation, 4-20mA output	246983-320-AHD-0	248983-320-AHD-0
	Frequency ± 5.0 Hz deviation, 0-1mA output	246984-320-AFA-0	248984-320-AFA-0
	Frequency ± 5.0 Hz deviation, 4-20mA output	246984-320-AHD-0	248984-320-AHD-0
	Frequency ± 10 Hz deviation, 0-1mA output	246985-320-AFA-0	248985-320-AFA-0
	Frequency ± 10 Hz deviation, 4-20mA output	246985-320-AHD-0	248985-320-AHD-0
	Input 120V, 5A AC, 60 Hz, self-powered	**2469 (0.5% Accuracy)**	**2489 (0.2% Accuracy)**
***Watts**	Watt 1P2W, 0-1mA output (1 Element)	246951-540-AFA-0	248951-540-AFA-0
	Watt 1P2W, 4-20mA output (1 Element)	246951-540-AHD-0	248951-540-AHD-0
	Watt 3P3W, 0-1mA output (2 Element)	246953-540-AFA-0	248953-540-AFA-0
	Watt 3P3W, 4-20mA output (2 Element)	246953-540-AHD-0	248953-540-AHD-0
	Watt 3P4W, 0-1mA output (2½ Element)	246954-540-AFA-0	248954-540-AFA-0
	Watt 3P4W, 4-20mA output (2½ Element)	246954-540-AHD-0	248954-540-AHD-0
	Watt 3P4W, 0-1mA output (3 Element)	246955-540-AFA-0	248955-540-AFA-0
	Watt 3P4W, 4-20mA output (3 Element)	246955-540-AHD-0	248955-540-AHD-0
	Input 120V, 5A AC, 60 Hz, self-powered	**2469 (0.5% Accuracy)**	**2489 (0.2% Accuracy)**
***Vars**	VAR 1P2W, 0-1mA output (1 Element)	246961-540-AFB-0-M	248961-540-AFB-0-M
	VAR 1P2W, 12±8mA output (1 Element)	246961-540-AHF-0-M	248961-540-AHF-0-M
	VAR 3P3W, 0-1mA output (2 Element)	246963-540-AFB-0-M	248963-540-AFB-0-M
	VAR 3P3W, 12±8mA output (2 Element)	246963-540-AHF-0-M	248963-540-AHF-0-M
	VAR 3P4W, 0-1mA output (2½ Element)	246964-540-AFB-0-M	248964-540-AFB-0-M
	VAR 3P4W, 12±8mA output (2½ Element)	246964-540-AHF-0-M	248964-540-AHF-0-M
	VAR 3P4W, 0-1mA output (3 Element)	246965-540-AFB-0-M	248965-540-AFB-0-M
	VAR 3P4W, 12±8mA output (3 Element)	246965-540-AHF-0-M	248965-540-AHF-0-M

***Note: Standard calibration is 500W or VARs per element. Otherwise, specify CT/PT ratios and primary watts/vars relative to desired output for a particular model.**