

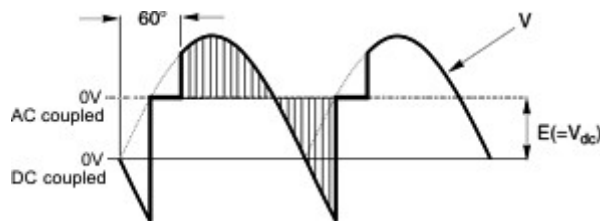


## Standard Features

- Ethernet serial data I/O, Modbus TCP or Laurel ASCII protocol
- 4-20 mA or 0-10V transmitter output, 16 bits, jumper selectable, isolated
- Dual 120 mA solid state relays for alarm or control, isolated
- True AC RMS measurement in one 50/60 Hz AC line cycle
- 0.2, 2, 20, 200, 300V and 600V AC voltage ranges
- 2, 20, 200 mA and 5A AC current ranges
- All input ranges user-selectable and factory calibrated
- AC or DC coupling for signals from DC to 10 kHz
- 0.03% accuracy of full scale, 0% to 100% of full scale, 3.0 crest factor
- Universal 85-264 Vac / 90-300 Vdc or 10-48 Vdc / 12-32 Vac power
- Power over Ethernet (PoE) jumper selectable with 10-48 Vdc supply

## Description

The Laureate AC RMS input transmitter & signal conditioner provides six voltage input ranges and four current input ranges, all factory calibrated and jumper selectable. A special 5.000A range utilizes a built-in 0.01Ω shunt to accept the output of 5A current transformers, with no need for a stepdown transformer. The current readings can easily be scaled digitally as needed.



**True RMS precision circuitry** is used to determine the root-mean-square of complex waveforms from DC to 10 kHz. Spikes up to 3.0 times the maximum of each range are accurately measured.

**Accuracy is 0.03% of full scale\*** for signals from DC to 15 kHz and signal amplitude down to 0. The crest factor ( $V_p / V_{rms}$ ) is 3.0 at full scale, increasing to 300 for a signal amplitude of 1% of full scale.

**True RMS readings in as little as one 50/60 Hz AC line cycle** are unmatched in the industry. Such a high read rate allows anomalies to be detected and alarmed before they become expensive problems. On/off control and alarm can be achieved dual solid state relays, which are standard. Transmitter can also capture peak and valley for times as short as one 50/60 Hz AC power line cycle.

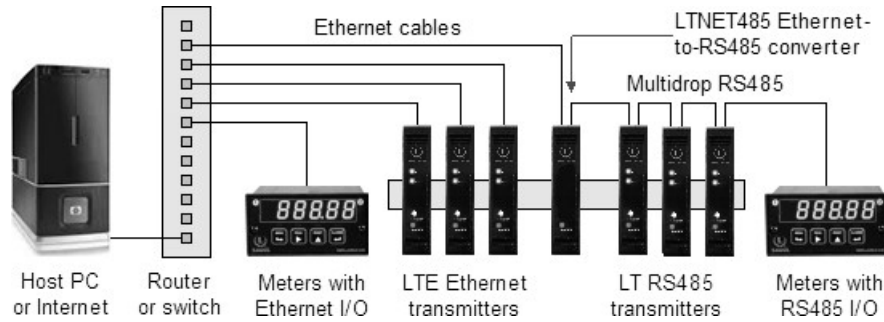
**AC or DC coupling is jumper selectable.** AC coupling accommodates signals from 10 Hz to 10 kHz for applications such as measuring the ripple on a DC power supply. DC coupling accommodates signals from 0 Hz to 10 kHz. Multiple integral cycles are averaged for signals above 50/60 Hz. A single cycle is captured for signals from 3 Hz to 50/60 Hz. Below 3 Hz and at DC, the capture rate is every 333 ms.

## Standard features of Laureate LTE transmitters include:

- **Ethernet I/O, isolated.** Supported protocols are Modbus RTU and ASCII (tunneled via Modbus TCP) and Laurel ASCII. The latter is simpler than the Modbus protocol and is recommended when all devices are Laureates. Note that RS232 or RS485 data I/O in lieu of Ethernet is provided by LT Series transmitters.
- **4-20 mA, 0-20 mA or 0-10V analog transmitter output,** isolated, jumper-selectable and user scalable. All selections provide 16-bit (0.0015%) resolution of output span and 0.02% output accuracy of a reading from -99,999 to +99,999 counts that is also transmitted digitally. Output isolation from signal and power grounds eliminates potential ground loop problems. The supply can drive 20 mA into a 500 ohm (or lower) load for 10V compliance, or 10V into a 5K ohm (or higher) load for 2 mA compliance.
- **Dual solid state relays, isolated.** Available for local alarm or control. Rated 120 mA at 130 Vac or 180 Vdc.
- **Universal 85-264 Vac power.** Low-voltage 10-48 Vdc or 12-32 Vac power is optional.

**Discovery and configuration** of Laureate Ethernet Nodes is easily achieved with Laurel's Node Manager Software, and the discovered transmitters can then be programmed using Laurel's Instrument Setup Software. Both softwares run on a PC under MS Windows and can be downloaded at no charge.



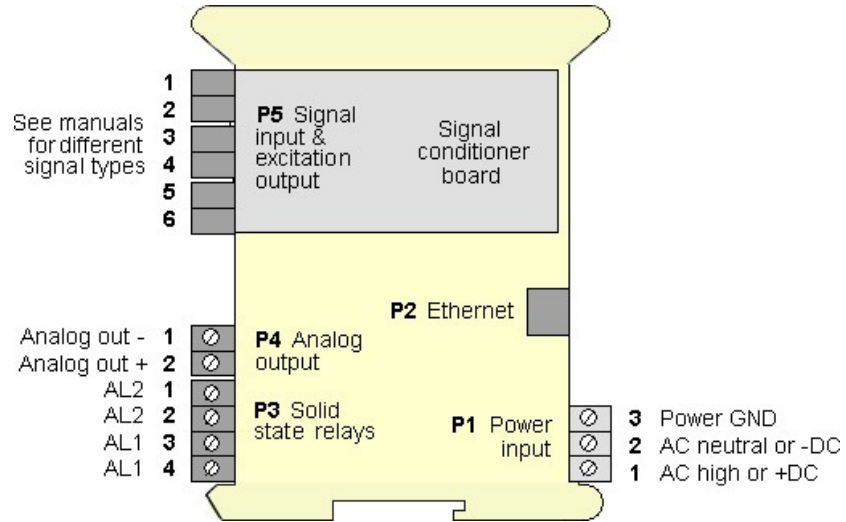


## Specifications

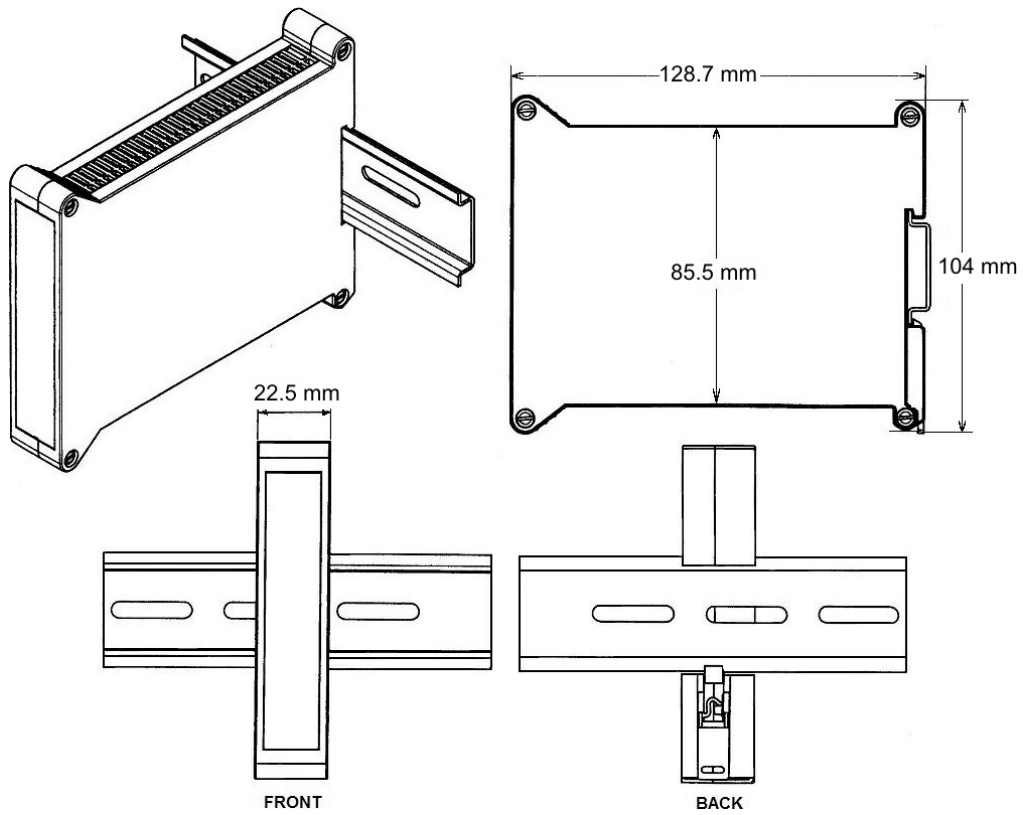
Analog Input	Range	Resolution	Input Ohms	Error at 25°C
<b>Voltage Ranges</b> 0% to 100% of FS, 10 Hz to 10 kHz	200.00 mV	10 $\mu$ V	1 M $\Omega$	$\pm$ 0.03% of FS
	2.0000 V	100 $\mu$ V		
	20.000 V	1 mV		
	200.00 V	10 mV		
	600.0 V*	100 mV	1 M $\Omega$	$\pm$ 0.3% of FS
<b>Current Ranges</b> 0% to 100% of FS, 10 Hz to 10 kHz	2.0000 mA	0.1 $\mu$ A	100 $\Omega$	$\pm$ 0.03% of FS
	20.000 mA	1 $\mu$ A	10 $\Omega$	
	200.00 mA	10 $\mu$ A	1 $\Omega$	
	5.000 A	1 mA	0.01 $\Omega$	$\pm$ 0.4% of FS
<b>Analog Output (standard)</b>				
Output Levels	0-20 mA or 0-10 Vdc (selectable)			
Compliance, 4-20 mA	10V ( 0-500 $\Omega$ load )			
Compliance, 0-10V	2 mA ( 5 k $\Omega$ load )			
Output Resolution	16 bits (65,536 steps)			
Output Accuracy	0.02% of output span plus conversion accuracy			
Output Isolation	250V rms working, 2.3 kV rms per 1 minute test			
<b>Serial Data Output (standard)</b>				
Type	10/100Base-T Ethernet per IEEE 802.3			
Data Rates	300, 600, 1200, 2400, 4800, 9600, 19200 baud			
Output Isolation	250V rms working, 2.3 kV rms per 1 min test			
Serial Protocols	Modbus TCP, Modbus RTU, Modbus ASCII, Laurel ASCII			
Modbus Compliance	Modbus over Serial Line Specification V1.0 (2002)			
Digital Addresses	247 for Modbus, 31 for Laurel ASCII			
<b>Dual Relay Output (standard)</b>				
Relay Type	Two solid state relays, SPST, normally open, Form A			
Load Rating	120 mA at 140 Vac or 180 Vdc			
<b>Power Input</b>				
Standard Power	85-264 Vac or 90-300 Vdc			
Low Power Option	10-48 Vdc or 12-32 Vac			
Power Frequency	DC or 47-63 Hz			
Power Isolation	250V rms working, 2.3 kV rms per 1 min test			
Power Consumption	2 Watts			
<b>Mechanical</b>				
Dimensions	129 x 104 x 22.5 mm case			
Mounting	35 mm rail per DIN EN 50022			
Signal & Power	Detachable screw-clamp connectors			
<b>Environmental</b>				
Operating Temperature	0°C to 55°C			
Storage Temperature	-40°C to 85°C			
Relative Humidity	95% at 40°C, non-condensing			
Cooling Required	Mount transmitters with ventilation holes at top and bottom. Leave 6 mm (1/4") between transmitters, or force air with a fan.			

\* Range ETL certified to 300.0 V. For purposes of accuracy calculation, the full scale range for the 200V and 600V scales is 2000V (20,000 counts), and the full scale range for the 5A scale is 20A (20,000 counts).

## Pinout



## Mechanical



## Ordering Guide

Create a model a model number in this format: **LTE20RMV4**

<b>Transmitter Type</b>	<b>LTE</b> Laureate Ethernet and 4-20 mA Transmitter
<b>Main Board</b>	<b>2</b> Standard Main Board <b>4</b> Extended Main Board <b>Note:</b> Extended allows custom curve linearization and rate from successive readings.
<b>Power</b>	<b>0</b> 85-264 Vac or 90-300 Vdc <b>1</b> 12-32 Vac or 10-48 Vdc
<b>Signal Input</b>	<b>True AC RMS Volts</b> <b>RMV1</b> 200.00 m <b>RMV2</b> 2.0000 V <b>RMV3</b> 20.000 V <b>RMV4</b> 200.00 V <b>RMV5</b> 600.0 V  <b>True AC RMS Amps</b> <b>RMA1</b> 2.0000 mA <b>RMA2</b> 20.000 mA <b>RMA3</b> 200.00 mA <b>RMA4</b> 5.000 A  <b>Note:</b> The same AC RMS signal conditioner can be user configured for AC Volts or AC Amps, and is precalibrated in EEPROM for all AC Volt and AC Amp ranges listed.