



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
- 10V excitation supply for up to four 350-ohm load cells in parallel
- 20, 50, 100, 250 and 500 mV full-scale input ranges
- 4 or 6-wire hookup to avoid power supply and lead resistance effects
- Digital span adjust from 0 to $\pm 99,999$, zero adjust from $-99,999$ to $+99,999$
- Analog output resolution 0.0015% of span (16 bits), accuracy $\pm 0.02\%$ of span
- 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
- Custom curve linearization and rate from successive readings (optional)

Description

The Laureate load cell or microvolt input transmitter is designed for use with load cells, strain gauges and microvolt input signals where exceptional sensitivity and stability are required. A most sensitive full-scale input range ± 20 mV can be scaled internally to $\pm 99,999$ counts. The selected input range for the full 0-20 mA output span can be as wide as $\pm 99,999$ counts or as narrow as 150 counts, limited only by considerations of electrical noise and time constants of the programmable moving average digital filter.

A built-in, isolated, 10V, 120 mA excitation supply can power up to four 350-ohm load cells in parallel. Load cell connection can be via 4 or 6 wires. With 4-wire load connection, the transmitter operates in a ratiometric mode to eliminate errors due to power supply variations. With 6-wire load connection, it also compensates for lead resistance, allowing long cable runs.

Fast read rate at up to 50 or 60 conversions per second while integrating the signal over a full power line cycle is provided by Concurrent Slope (Pat 5,262,780) analog-to-digital conversion. High read rate is ideal for peak or valley capture and for real-time computer interface and control.

Digital signal filtering modes are selectable for stable readings in electrically noisy environments.

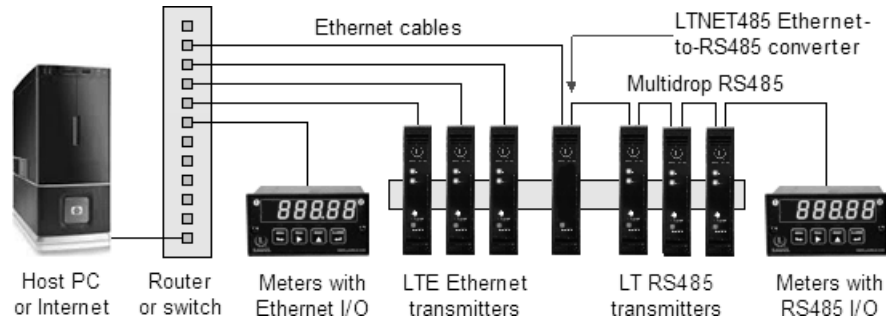
- **An unfiltered** selection provides true peak and valley readings and aids in control applications.
- **A batch average filter** selection averages each 16 conversions for an update every 1/4 sec.
- **An adaptive moving average filter** selection provides a choice of 8 time constants from 80 ms to 9.6 s. When a significant change in signal level occurs, the filter adapts by briefly switching to the shortest time to follow the change, then reverts back to its selected time constant. An Auto setting selects the time constant selection based on signal noise.

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 our 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.



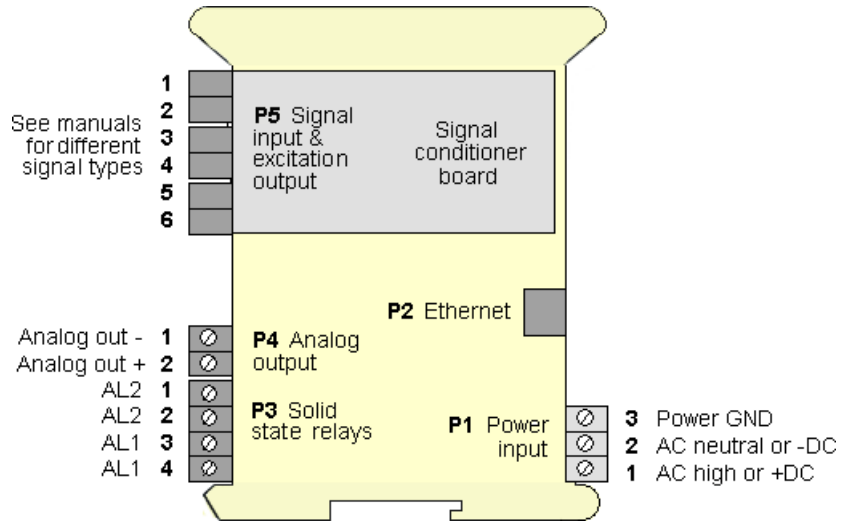


Specifications

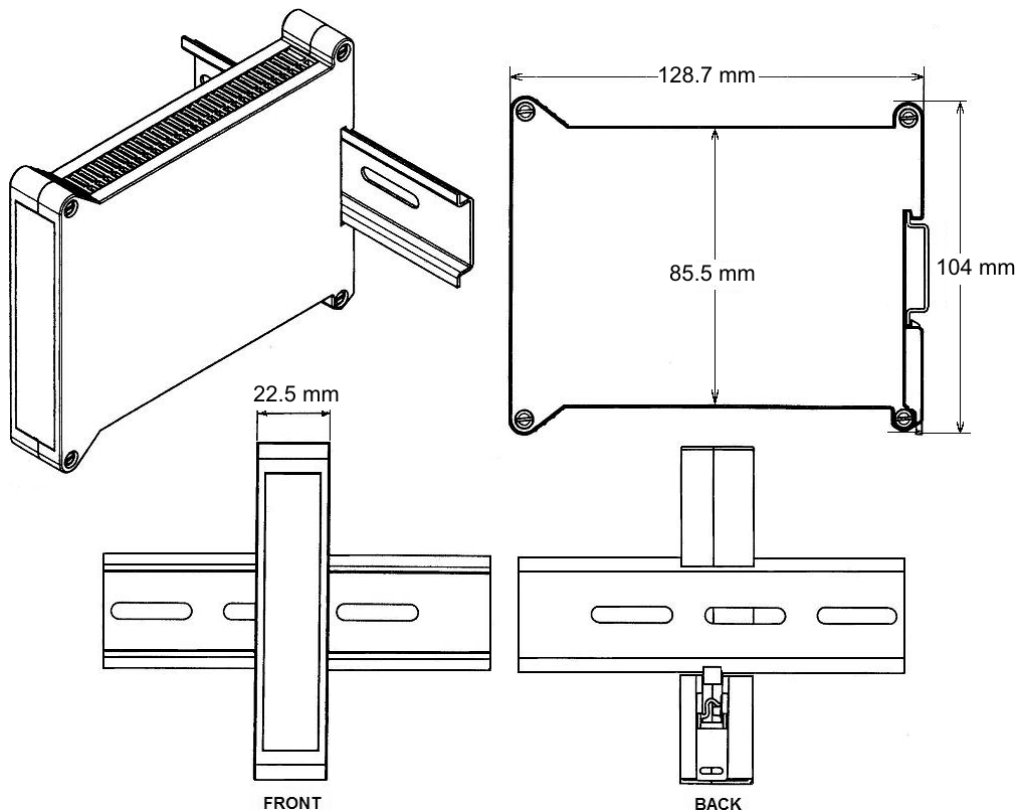
| Analog Input | Range | Input Ohms | Input Ohms |
|---|---|--|------------|
| Load Cell Input | ±20.000 mV ±50.0000 mV ±100.00 mV ±250.00 mV ±500.00 mV | -99,999 to +99,999 zero adjust. 0 to ±99,999 span adjust. | 1 GΩ |
| Microvolt Input | ±20.000 mV ±50.0000 mV ±100.00 mV ±250.00 mV ±500.00 mV | 1 μV 2.5 μV 5.0 μV 12.5 μV 25 μV | 1 GΩ |
| Input Resolution Input Accuracy Update Rate, Max Max applied voltage | 16 bits (65,536 steps) ±0.01% of full scale ± 2 counts 50/sec at 50 Hz, 60/sec at 60 Hz 100 V | | |
| Analog Output (standard) | | | |
| Output Levels Compliance, 4-20 mA Compliance, 0-10V Output Resolution Output Accuracy Output Isolation Step response time | 4-20 mA, 0-20 mA, 0-10 Vdc (jumper selectable) 10V (0-500Ω load) 2 mA (5 kΩ load or higher) 16 bits (65,536 steps) 0.02% of output span plus conversion accuracy 250V rms working, 2.3 kV rms per 1 minute test 50 ms | | |
| Serial Communications Output (standard) | | | |
| Type Data Rates Output Isolation Serial Protocols Modbus Compliance Digital Addresses | 10/100Base-T Ethernet per IEEE 802.3 300, 600, 1200, 2400, 4800, 9600, 19200 baud 250V rms working, 2.3 kV rms per 1 min test Modbus TCP, Modbus RTU, Modbus ASCII, Laurel ASCII Modbus over Serial Line Specification V1.0 (2002) 247 for Modbus, 31 for Laurel ASCII | | |
| Dual Relay Output (standard) | | | |
| Relay Type Load Rating | Two solid state relays, SPST, normally open, Form A 120 mA at 140 Vac or 180 Vdc | | |
| Transducer Excitation Output (standard) | | | |
| Output Levels Output Isolation | 5V@100 mA, 10 @120 mA, 24V@50 mA (jumper selectable) 50V from signal ground | | |
| Power Input | | | |
| Standard Power Low Power Option Power Frequency Power Isolation Power Consumption | 85-264 Vac or 90-300 Vdc 10-48 Vdc or 12-32 Vac DC or 47-63 Hz 250V rms working, 2.3 kV rms per 1 min test 2Watts | | |
| Mechanical | | | |
| Dimensions Mounting Electrical Connections | 129 x 104 x 22.5 mm case 35 mm rail per DIN EN 50022 Plug-in screw-clamp connectors | | |

| Environmental | |
|-----------------------|--|
| 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. |

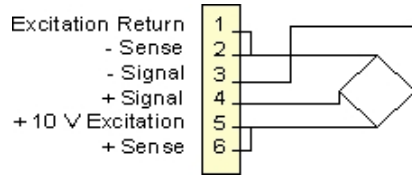
Pinout



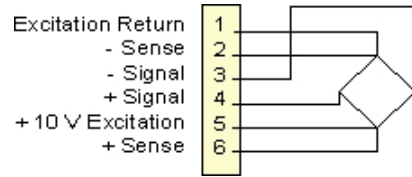
Mechanical



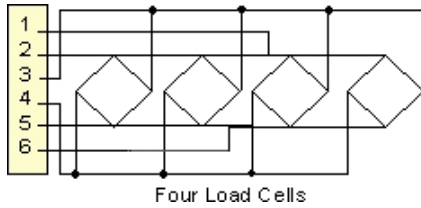
Load Cell Transmitter Connections



In 4-wire connection, the excitation and sense lines are tied together. The transmitter can make ratiometric corrections for supply voltage variations, but does not compensate for variations in lead resistance. This connection is often used with short cable runs.



In 6-wire connection, the sense lines are separate from the excitation lines, thereby eliminating effects due to variations in lead resistance. This allows long cable runs in outdoor environments with temperature extremes.



For large scales, up to four 350 ohm load cells in parallel can be powered by a single Laureate transmitter at 10V, 120 mA excitation. The excitation and sense points of the four bridges are connected in parallel through a summing box.

Ordering Guide

Create a model a model number in this format: **LTE20WM**

| | |
|-------------------------|--|
| Transmitter Type | LTE Laureate 4-20 mA & Ethernet Transmitter |
| Main Board | 2 Standard Main Board 4 Extended Main Board Note: Extended allows custom curve linearization and rate from successive readings. |
| Power | 0 Isolated 85-264 Vac or 90-300 Vdc 1 Isolated 12-32 Vac or 10-48 Vdc |
| Signal Input | WM1 Load Cell (4- or 6-wire ratio) with custom Scaling. Specify min input, min output; max input, max output |