

# 2920 Float & Tape Transmitter

View accurate level and temperature data at the tank side and transmit it to the control room

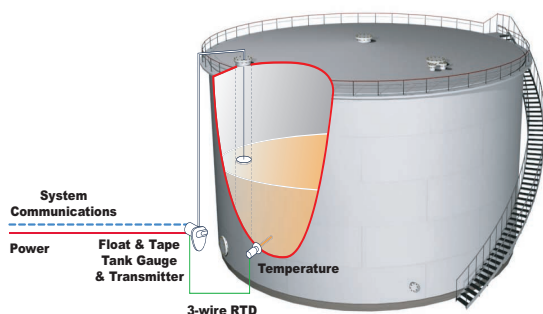
**Varec®**

## Highlights

- Digital display with capacitive touch control interface provides inventory information at the tank side and configuration of the transmitter for all connected devices
- Easy in-service installation - mounts directly to most mechanical tank gauges, including Varec, L&J, and GSI
- Industry Standard Protocols - MODBUS, GPU Bi-Phase Mark, Mark/Space, and L&J Tankway
- Integrate ancillary equipment and sensors - supports up to 4 HART devices and provides an on-board 3-wire RTD temperature input
- Activate alarms or relays with; 2 discrete inputs (as standard), 4 discrete inputs and 4 contact outputs (as option) or 2-4 SPDT cam-operated switches (as option)
- Approved for hazardous areas: cFMus, ATEX, IECEx, RoHS

## Applications

The 2920 Float & Tape Transmitter (FTT) provides data from the tank side to the control room for use in inventory management applications. It accurately converts mechanical level measurement from the connected tank gauge, integrates temperature and HART devices, and provides digital inputs and digital outputs for the indication of alarms or drive relays. The built-in display with capacitive touch control interface provides information at the tank side and allows configuration of the transmitter for all connected devices.



Example Tank Gauging System

## Service and Maintenance

The 2920 FTT is built to perform even in the most demanding of environments. All electronics are contained within explosion-proof, NEMA 4x rated enclosures. Utilizing capacitive sensors and precision direct-drive gearing, the encoder transmits the level reading accurately and consistently. This encoder can also read the absolute measurement, which eliminates the need for a battery back-up and maintains the correct level reading even after a power outage. Isolated power and communications circuits provide an extra measure of safety. The self-diagnostic circuit identifies any problems on the electronic components and isolates the unit to protect the communication loop.



## Technical Specifications

### Physical

|                    |                                                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------------------------|
| Weight             | Net 13 lbs (5.9 kg). Shipping 18 lbs (8.2 kg)                                                                           |
| Encoder            | Absolute, capacitive                                                                                                    |
| Gearing system     | Stainless Steel, Direct Drive                                                                                           |
| Enclosure          | Explosion proof die-cast aluminium<br>Rated IP66 (NEMA 4)                                                               |
| Conduit entries    | 2920 FTT Enclosure: 2 or 3 x 3/4" NPT<br>(standard configuration uses one entry)<br>Terminal junction box: 2 x 3/4" NPT |
| Entries on Display | Display 2 x 3/4" NPT                                                                                                    |

### Environmental

|                                |                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------|
| Standard operating temperature | -13 °F to +185 °F (-25 °C to +85 °C) (cFMus)<br>-4 °F to +185 °F (-20 °C to +85 °C) (ATEX/IECEx)  |
| Extended operating temperature | -40 °F to +185 °F (-40 °C to +85 °C) (cFMus)<br>-40 °F to +185 °F (-40 °C to +85 °C) (ATEX/IECEx) |
| Operating humidity             | 0 to 95% relative humidity, non-condensing                                                        |

### Limit Switch

|                            |                                        |
|----------------------------|----------------------------------------|
| 2 or 4 SPDT limit switches | 11 amp – 1/3 HP, 125, 250, or 277 VAC  |
|                            | 1/2 amp 125 VDC                        |
|                            | 1/4 amp 250 VDC                        |
|                            | 4 amp – 125 VAC Incandescent Lamp Lead |

### Power

|                    |                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------|
| Power requirements | Standard: 20 to 65 VDC 0.05A<br>Optional: 40 to 65 / 110 / 220 – 240 VAC<br>750 mW nominal, 50/60 Hz |
| Galvanic Isolation | Built in - Both AC and DC                                                                            |

## Performance

|               |                   |
|---------------|-------------------|
| Accuracy      | ± 1/16" (1.58 mm) |
| Repeatability | ± 1/16" (1.58 mm) |

## Functional

|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Available ranges      | 0 to 120 ft; 0 to 36 m<br><b>Note!</b> The available limit switch range is 100 ft (30 M) max.                                                       |
| Field communications  | GPU Bi-Phase Mark<br>With optical isolation from the micro controller.<br>EIA-485/GSI Type MODBUS®<br>Mark/Space<br>L&J Tankway                     |
| Temperature RTD input | High-accuracy 20-bit analog-to-digital converter. 3-wire RTD Copper (CU90, CU100) or Platinum (PT100).                                              |
| Discrete inputs       | Standard (DC Unit) Option: Two (2) discrete inputs.<br>Optional (AC Unit): 4 discrete inputs<br>Host Signal: Open/Closed                            |
| Contact outputs       | Optional (AC Unit): Four (4) software-driven contact outputs<br>Host Signal: Open/Closed<br>Ratings: 0.6 A @ 125 Vac, 1 A @ 30 Vdc, 0.6 A @ 110 Vdc |

## Analog 4-20 mA Input

|                         |                                              |
|-------------------------|----------------------------------------------|
| Internal Load to Ground | 100 Ω                                        |
| Measuring Range         | 0 to 20 mA                                   |
| Accuracy                | ±15 µA (after linearisation and calibration) |

## Analog 4-20 mA Outputs (2)

|                 |                                              |
|-----------------|----------------------------------------------|
| Output Current  | 3.5 to 22 mA                                 |
| Output Voltage  | U = 24 V - ILOAD 400 Ω                       |
| Output Load Max | 500 Ω                                        |
| Accuracy        | ±15 µA (after linearisation and calibration) |

## HART Interface

|                                                                                                |                                                                               |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| XP/Ex d Explosion Proof (Standard) OR XP-AIS/Ex d[ia] Associated Intrinsically Safe (Optional) | HART Master for measuring devices                                             |
| Source Voltage                                                                                 | U = 24 V (Typical)                                                            |
| Total Imax                                                                                     | Startup currents not to exceed 27 mA max                                      |
| Connectable Sensors                                                                            | Typically 4 max, depending on current consumption (including startup current) |

<sup>1</sup> Ensure a Limit Switch Range option from A to F has been selected.

<sup>2</sup> Applies only to Limit Switch option 0. Otherwise, select an option from A to F.

<sup>3</sup> The number of junction boxes supplied from the factory depends on the Communication, number of limit switches, Digital Input/Output, Analog Input/Output, and HART options selected. Transmitters are supplied with 1-3

junction boxes dependent on the terminal and wiring requirements.

<sup>4</sup> Select the appropriate Display Option depending on the tank gauge used.

## Order Codes

| Approvals |                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FC        | cFMus (USA & Canada) -- Explosion proof, Class I, Division 1, Groups C&D T5 -40 °C ≤ Ta ≤ +85 °C, -- Flameproof, Class I, Zone 1, AEx/Ex d IIB T5 -40 °C ≤ Ta ≤ +85 °C  |
| FM        | cFMus (≤USA & Canada) -- Explosion proof, Class I, Division 1, Groups C&D T5 -25 °C ≤ Ta ≤ +85 °C, -- Flameproof, Class I, Zone 1, AEx/Ex d IIB T5 -20 °C ≤ Ta ≤ +85 °C |
| AC        | ATEX/IECEx (Internat i onal) - Fl a meproof, Class I, Zone 1 ExII 2 G Ex d IIB T5 Gb -40 °C ≤ Ta ≤ +85 °C                                                               |
| AT        | ATEX/IECEx (Internat i onal) - Fl a meproof, Class I, Zone 1 ExII 2 G Ex d IIB T5 Gb -20 °C ≤ Ta ≤ +85 °C                                                               |
| EA        | Electronics Assembly (No housing)                                                                                                                                       |

| Power Input |                |
|-------------|----------------|
| 1           | DC Power Input |
| 2           | AC Power Input |

| Communication |                                |
|---------------|--------------------------------|
| MB            | EIA-485 MODBUS/GSI Type MODBUS |
| BP            | GPU Bi-Phase Mark (Enraf)      |
| MS            | Mark/Space                     |
| LJ            | L&J Tankway (L&J)              |

| Limit Switches |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| 0              | No limit switches                                                                     |
| 1              | Two (2) SPDT Limit Switches (18° adjustable dwell, positive activation) <sup>1</sup>  |
| 2              | Four (4) SPDT Limit Switches (18° adjustable dwell, positive activation) <sup>1</sup> |

| Limit Switch Range <sup>3</sup> |                             |
|---------------------------------|-----------------------------|
| N                               | Not Applicable <sup>2</sup> |
| A                               | 0-25 ft                     |
| B                               | 0-50 ft                     |
| C                               | 0-100 ft                    |
| D                               | 0-7.5 m                     |
| E                               | 0-15 m                      |
| F                               | 0-30 m                      |

| Digital Inputs/ Digital Outputs <sup>3</sup> |                                          |
|----------------------------------------------|------------------------------------------|
| 1                                            | 2 Digital Inputs                         |
| 2                                            | 4 Digital Inputs + 4 Dry Contact Outputs |

| Analog Inputs/Outputs <sup>3</sup> |                                     |
|------------------------------------|-------------------------------------|
| N                                  | Option no longer used. Use Option C |
| A                                  | Option no longer used. Use Option C |
| B                                  | Option no longer used. Use Option C |
| C                                  | Analog Input & Outputs (4-20 mA)    |

| HART Inputs/ Outputs (HART Master) <sup>3</sup> |                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------|
| 0                                               | XP/Ex d HART Master                                               |
| 1                                               | I.S. HART Master, Associated Intrinsically Safe (XP-AIS/Ex d[ia]) |

| Display Options <sup>4</sup> |                           |
|------------------------------|---------------------------|
| A                            | Forward Facing (Standard) |
| B                            | Backward Facing           |
| C                            | Right Side Facing         |

|        |                      |
|--------|----------------------|
| N2920- | Complete designation |
|--------|----------------------|

