LOYAL WINGMAN TECHNOLOGIES

PRODUCT DATASHEET

# LWT DSC

## *Digital Signal Conditioner*

The LWT DSC is an advanced, standalone digital signal conditioner engineered to support a comprehensive range of AC-operated LVDTs and inductive sensors, while providing a highly flexible selection of analog voltage, active current, and isolated RS-485 digital outputs. Intuitive front-panel push-button calibration provides immediate, automated zero and full-scale configuration, eliminating the complexity and drift associated with traditional manual trim pots.

System integrity is continuously monitored; critical fault conditions — such as disconnected sensor windings, excitation anomalies, or open current loops — are immediately identified and communicated via on-board hardware error flags and visual LED indicators.


Through the integrated half-duplex RS-485 communication port, host systems and PLCs can seamlessly retrieve high-resolution measurement data, monitor real-time diagnostic health, and execute remote parameter configuration without disrupting active manufacturing or testing processes.

### FEATURES

- Push-button zero and full-scale calibration
- 9 simultaneous analog voltage outputs and 2 selectable current loop outputs
- 1 dedicated, galvanically isolated RS-485 digital communication interface
- Supports standard AC LVDTs and inductive position sensors
- High-resolution, simultaneous-sampling digitization
- Non-volatile memory for calibration parameter retention
- Built-in diagnostic fault detection and visual LED status indicators

### USER SELECTABLE FEATURES

| | |
|---|---|
| **Standard voltage outputs** | 0–2.5V, 0–5V, 1–5V, 0–10V, ±5V, ±10V, 0–4V, 0–9V, 0.5–4.5V, 0.5–9.5V DC |
| **Current outputs** | 0–20 mA or 4–20 mA, active sourcing |
| **Excitation voltage** | Software-adjustable up to 4.5 Vrms (3.0 Vrms nominal) |
| **Excitation frequency** | Software-adjustable, 1 Hz to 10 kHz |
| **Sensor drive topology** | Selectable single-ended or push-pull differential |
| **Hardware calibration** | Tactile push-button zero and full-scale scaling |

### ENVIRONMENTAL & PERFORMANCE SPECIFICATIONS

| | |
|---|---|
| **Operating temperature** | -20 °C to +85 °C |
| **Temperature coefficient** | ±0.0025% of FSO/°C (combined span and zero shift) |
| **Output non-linearity** | < ±0.025% of Full Span Output (FSO) |

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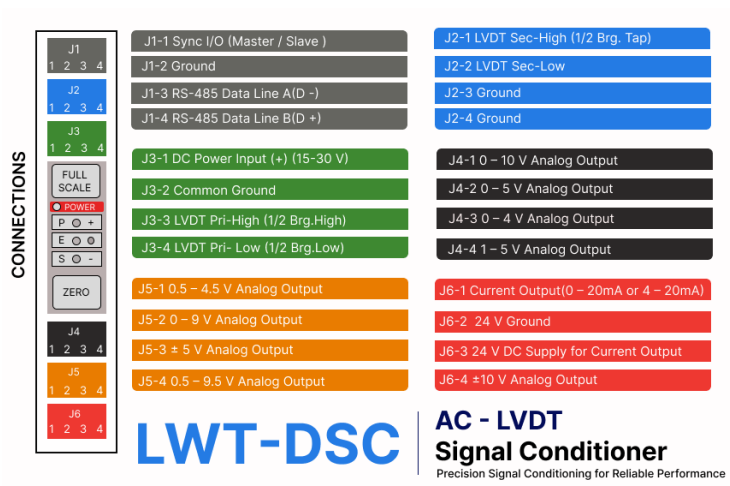
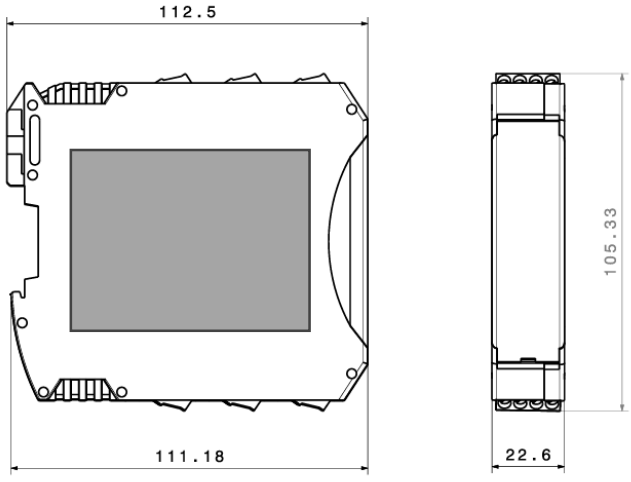
## TECHNICAL SPECIFICATIONS

| Feature | Specification |
|---|---|
| **Supply voltage** | +15 to +30 VDC (24 V nominal); ~250 mA max at 24 VDC |
| **Max loop resistance** | 850 Ω (with 24 VDC supply) |
| **Linearity error** | ≤ ±0.025% of Full Scale Output (FSO) |
| **Operating temperature** | -20 °C to +85 °C |
| **Thermal stability** | ±0.0025% of FSO/°C (combined zero and span shift) |
| **Excitation frequencies** | Software-configurable, 1 Hz to 10 kHz |
| **Isolation** | 1.6 kV DC, 1 min |
| **Sensor output range** | 50 to 5000 mVrms at full-scale displacement |
| **Excitation amplitude** | Software-configurable, 0 to 4.5 Vrms max (3.0 Vrms nominal) |
| **Frequency response (-3 dB)** | 10% of excitation frequency (normal); 10 Hz (low-noise, adjustable) |
| **Output noise & ripple** | ≤ 1 mVrms (voltage); ≤ 2 µArms (current loop) |
| **Diagnostic coverage** | Detects open/shorted/grounded windings, disconnected cables, analog output faults |
| **Failure indication** | Flashing LEDs; 30 mA fault current output |
| **Null position indicator** | Front-panel LED feedback (±3 mV threshold) |
| **Calibration** | Zero and full-scale settings via front-panel button or software |
| **Digital interface** | 2-wire half-duplex RS-485; 16-address multi-drop network |
| **Security** | User-enabled cybersecurity parameter lock |

## DIMENSIONS




*Dimensions in millimetres*