

# ZNC-DPT-LDS

## Smart Multivariable Differential Pressure Transmitter

The ZNC-DPT-LDS is an intelligent multivariable transmitter integrating differential-pressure measurement, temperature acquisition, pressure acquisition and flow totalization in one instrument. It can locally display operating pressure, temperature, instantaneous flow and totalized flow. For gas and steam applications, automatic temperature and pressure compensation enables local indication of standard-condition volumetric flow and mass flow. The transmitter can also operate on internal battery power and can be directly matched with differential-pressure primary flow elements.



### 1. Main Features

1. Dot-matrix LCD display with clear, intuitive operation.
2. Non-contact magnetic parameter setting; no need to open the housing, improving operational safety and convenience.
3. Compatible with multiple differential-pressure primary elements, including orifice plates, V-cones, Annubar-type averaging pitot tubes and elbow flow elements.
4. Optional temperature and pressure sensor interfaces with high interchangeability. Supports Pt100 or Pt1000 temperature sensors and either gauge-pressure or absolute-pressure sensors, with segmented correction capability.
5. Suitable for a wide range of media, including steam, liquids and common gases.
6. Excellent nonlinear correction capability for improved overall measurement linearity.
7. Turndown ratio up to 1:100; 1:200 available for special requirements.
8. Optional full-function HART protocol for remote parameter setting and commissioning.
9. Optional frequency pulse output, 4-20 mA analog output and RS485 communication. RS485 transmission distance can reach up to 1.2 km.
10. Selectable language: Chinese or English.
11. Convenient parameter configuration with permanent storage and historical-data storage for up to three years.
12. Ultra-low power consumption. Under battery operation, service life can reach at least three years under suitable operating conditions.
13. Automatic switching between supported operating modes, including battery-powered and two-wire operation.
14. Self-diagnostic function with detailed diagnostic information for maintenance and commissioning.
15. Independent password levels can be configured for parameter setting, totalizer reset and calibration to support secure user management.
16. Selectable and user-definable display units.

### 2. Electrical Performance

#### 2.1 Power Supply

- A. External power supply: +24 VDC  $\pm 15\%$ , ripple  $< 5\%$ . Suitable for 4-20 mA output, pulse output, alarm output, RS485 communication, etc.
- B. Internal power supply: one 3.6 V lithium battery pack (ER34615). A low-voltage indication appears when battery voltage drops below 3.0 V.

#### 2.2 Power Consumption

- A. External power:  $< 2$  W.
- B. Internal power: average power consumption 1 mW; continuous operation for more than two years.

#### 2.3 Pulse Output Modes

- A. Operating-condition pulse signal: the pulse signal detected by the flow sensor is optically isolated, amplified and output directly. High level  $\geq 20$  V; low level  $\leq 1$  V.
- B. Calibrated pulse signal for use with an IC-card valve controller. High-level amplitude  $\geq 2.8$  V; low-level amplitude  $\leq 0.2$  V. The volume represented by one pulse can be set from  $0.001 \text{ m}^3$  to  $100 \text{ m}^3$ . When this mode is selected, the calibrated pulse frequency must be  $\leq 900$  Hz.
- C. Calibrated pulse signal with optical isolation and amplification. High level  $\geq 20$  V; low level  $\leq 1$  V.

## 2.4 RS485 Communication (Optically Isolated)

- A. The RS485 interface can be directly connected to a host computer or secondary instrument for remote display of medium temperature, pressure, compensated standard volumetric flow and compensated standard totalized volume.
- B. When used with an HW-I data collector, a telephone-network communication system can be formed. One data collector can support up to 15 flowmeters.
- C. When used with an HW-II data collector, a broadband-network communication system can be formed for data transmission via the Internet. One data collector can support up to 8 flowmeters.

## 2.5 4-20 mA Standard Current Signal (Optically Isolated, HART)

The 4-20 mA output is proportional to standard volumetric flow. 4 mA corresponds to 0 m<sup>3</sup>/h and 20 mA corresponds to the configured maximum standard volumetric flow. The maximum flow value can be set in the primary menu. Two-wire or three-wire configurations are supported, and the instrument automatically identifies the installed current-output module and provides the corresponding output.

## 3. Typical Technical Specifications

| Parameter                    | Specification                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Differential Pressure Ranges | 0-3 kPa / 0-6 kPa / 0-40 kPa / 0-250 kPa                                                                                 |
| Static Pressure              | 10 MPa                                                                                                                   |
| Accuracy                     | 0.1%                                                                                                                     |
| Pressure Tapping Orientation | Horizontal / Vertical                                                                                                    |
| Ambient Conditions           | -20 to +50 °C; relative humidity <85%                                                                                    |
| Isolation Diaphragm Material | 316L stainless steel, Hastelloy C or tantalum                                                                            |
| Ingress Protection           | IP65                                                                                                                     |
| Explosion-Proof Rating       | ExIIdCT4 (excluding acetylene), as stated in the source specification                                                    |
| Output Signal                | Two-wire 4-20 mA with HART communication; maximum load 500 Ω                                                             |
| External Power Supply        | 18-30 VDC                                                                                                                |
| Internal Power Supply        | One 3.6 V lithium-thionyl-chloride battery; typical operating life 2-3 years. Low-voltage indication below 3.0 V.        |
| RF Immunity                  | 30 kHz to 200 MHz; interference field strength 1 V/mm                                                                    |
| Temperature Influence        | Temperature effect shall be considered when the operating ambient deviates from the stated reference range of 20 ±20 °C. |
| Additional Error K           | For ranges above 1 MPa, K = 0.3%/10 °C (0.15%/10 °C), as stated in the source specification.                             |
| Vibration Resistance         | 2-25 Hz with displacement amplitude ±1.6 mm; 25-100 Hz with acceleration amplitude up to ±40 m/s <sup>2</sup> .          |
| Power Supply Influence       | <0.005% of full scale per volt                                                                                           |
| Load Influence               | <0.01% of full scale per 100 Ω                                                                                           |

*Note: Technical values above are translated from the supplied source document. Confirm project-specific hazardous-area approvals and final configuration before order placement.*

## 4. Model Selection / Ordering Code

### Base Model: ZNC-DPT-LDS

| Selection Item               | Code        | Description                                           |
|------------------------------|-------------|-------------------------------------------------------|
| Base Model                   | ZNC-DPT-LDS | Smart Multivariable Differential Pressure Transmitter |
| Differential Pressure Range  | D1          | 0-3 kPa                                               |
|                              | D2          | 0-6 kPa                                               |
|                              | D3          | 0-40 kPa                                              |
|                              | D4          | 0-250 kPa                                             |
|                              | D5          | Other / customized range                              |
| Static Pressure              | S1          | 10 MPa (default)                                      |
| Isolation Diaphragm          | SS          | 316L stainless steel (default)                        |
|                              | HC          | Hastelloy C                                           |
|                              | T           | Other                                                 |
| Fill Fluid                   | S           | Silicone oil (default)                                |
|                              | F           | Fluorinated oil                                       |
| Seal Material                | N           | NBR (default)                                         |
|                              | F           | FKM                                                   |
|                              | P           | PTFE                                                  |
| Pressure Tapping Orientation | L           | Horizontal                                            |
|                              | V           | Vertical                                              |
| Process Connection           | TH          | 1/4 in. NPT and 7/16 in. UNF threaded holes           |
| Output Signal                | RI          | 4-20 mA + 3-wire RS485 communication (default)        |
|                              | HI          | 4-20 mA + HART communication                          |
| Power Supply                 | P0          | Lithium battery                                       |
|                              | P1          | 24 VDC / lithium battery (default; battery optional)  |
|                              | P2          | 24 VDC / 220 VAC                                      |



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