

D4T 1/4 DIN Data Logger

Watlow's D4T with INTUITION® Combines the Flexibility of a Modular I/O Data Logger with Best-in-Class Ease of Use

The D4T with INTUITION® data logger from Watlow® offers a data logger with a wide range of field removable I/O modules for maximum design flexibility. Configurations can be custom tailored to meet the scaling needs of a tremendous range of equipment and applications while providing exactly the hardware types required for compatibility. The D4T data logger also features a 4.3 inch, color, graphical touch panel. Combining power, flexibility and functionality, this new data logger offers unmatched versatility, and its best-in-class ease of use could very well make user manuals a thing of the past.

Features and Benefits

4.3-inch, color touch panel with high-resolution, graphical user-interface

- Shortens learning curve and reduces operator errors
- Allows channels, alarms, inputs and outputs to be personalized with user defined names
- Intuitive screens layout and menu navigation
- Programmable to show information in multiple languages

Data logging

- Easily complies with regulatory standards with ability to choose encrypted, .CSV or both types of file formats for tamper proof record needs
- Enables security using lock-out security levels for different user groups
- Simplifies record keeping management with ability to archive records to the cloud or a connected PC network
- Flexibility to select which parameters to log from one to up to 128 points simultaneously
- Choose where you want to store the files—inside the controller, on a connected USB memory device, or to a connected PC anywhere in the world
- Record as fast as one time per 0.1 second or as slow as one time per hour

1 to 24 channel data logger

- Scalable channels, pay for only what you need
- Compatible with temperature, altitude, humidity, ac current and other 0-10VDC or 0-20mA process units
- Flexibility to meet diverse process applications
- Field expandable channels and I/O if application needs grow in the future

Trend screens

- Create up to four unique trend graph screens
- Graph any input sensor or process value



Batch processing with bar code data entry

- Easily collects and manages data records
- Inputs information from bar code scan for fast and easy data entry
- Provides data security through password and data log encrypted file options
- Improves manufacturing robustness via reminder screens ensuring all data is entered during processing
- Helps ensure compliance with growing regulations and minimizes warranty exposure
- Eliminates part processing skips or walk arounds due to improved quality control
- Produces formatted data record report for easy receipt or record management uses

COMPOSER® graphical configuration PC software

- Speeds up and simplifies commissioning
- Archives and documents controller setup
- Connects with controller easily via Ethernet

Many communications options available including Ethernet Modbus® TCP and SCPI and EIA-232/485 Modbus® RTU

- Offers two USB host ports and one device port
- Simplifies methods to manually or automatically archive data log files to cloud or PC
- Easily connect and transfer data log or configuration set up files

Modular design

- Adapts quickly to evolving requirements
- Offers numerous types of field pluggable modules for maximum flexibility and easiest compatibility
- Features scalable and modular firmware functions
- Delivers scalable input/output quantities from 1 to 24

Agency certifications include UL®, FM, CE, RoHS, W.E.E.E., NEMA 4X/IP65

- Ensures high quality and reliability
- Verifies performance in installations worldwide

Off-the-shelf solution

- Provides cost-effective "make versus buy"
- Offers preconfigured touch-panel screens
- Assures quicker time to market

Key Features and Options

- Ethernet Modbus® TCP connectivity
- Multiple high-speed USB host ports
- Universal, thermistor and ac current measurement inputs
- Inputs and outputs expandable from 1 to 24
- Programmable timers, counters, math and logic
- Temperature, altitude, relative humidity and Vaisala® humidity compensation
- USB configuration port
- Configuration settings can be stored and recalled
- Removable modules and connectors
- Front-panel mount and flush mounting options
- Right angle and front-screw terminal options
- UL® listed, CSA, CE, RoHS, W.E.E.E., FM

Common Specifications

Line Voltage/Power

- Data retention upon power failure via nonvolatile memory

Functional Operating Range

- Type J: -346 to 2192°F (-210 to 1200°C)
- Type K: -454 to 2500°F (-270 to 1371°C)
- Type T: -454 to 750°F (-270 to 400°C)
- Type E: -454 to 1832°F (-270 to 1000°C)
- Type N: -454 to 2372°F (-270 to 1300°C)
- Type C: 32 to 4200°F (0 to 2315°C)
- Type D: 32 to 4200°F (0 to 2315°C)
- Type F: 32 to 2449°F (0 to 1343°C)
- Type R: -58 to 3214°F (-50 to 1767°C)
- Type S: -58 to 3214°F (-50 to 1767°C)
- Type B: 32 to 3300°F (0 to 1816°C)
- RTD (DIN): -328 to 1472°F (-200 to 800°C)
- Process: -1999 to 9999 units

Calibration Accuracy

- Calibration accuracy and sensor conformity: $\pm 0.1\%$ of span, $\pm 1^\circ\text{C}$ at the calibrated ambient temperature and rated line voltage
 - Types R, S, B: $\pm 0.2\%$
 - Type T below -50°C : $\pm 0.2\%$
- Calibration ambient temperature at $77^\circ\text{F} \pm 5^\circ\text{F}$ ($25^\circ\text{C} \pm 3^\circ\text{C}$)
- Accuracy span: 1000°F (540°C) min.
- Temperature stability: Typical $\pm 0.1^\circ\text{F}/^\circ\text{F}$ ($\pm 0.1^\circ\text{C}/^\circ\text{C}$) rise in ambient max.

Configuration Diagnostics

- Indicates if modules present match the expected configuration settings

USB Device Port (Coming soon, consult factory for availability.)

- Version: USB 2.0 full-speed
- Connector: USB Mini Type B, 5 position
- Recognized as a mass storage device/serial communications
- Driver for Microsoft® Windows® 7 and Windows® 8

USB Host Port

- Total of 2 available
- Version: USB 2.0 hi-speed
- Connector: USB Type A, high-retention
- Flash drive must be FAT32 file system
- Max. current 0.5A/port

System Configuration Requirements

- D4T has 6 slots for flex modules (FM)
- EIA-232/485 Modbus® RTU flex module, if used, must occupy slot 6 location
- A maximum of two 10A SSR FM modules can be used in the F4T and each will require space for 2 slots. Valid in slots 1, 2, 4 or 5

Wiring Termination—Touch-Safe Terminals

- Right-angle and front-screw terminal blocks for input, output and power supply connections
- Input, output and power terminals: touch safe, removable, 12 to 30 AWG

D4T Base Specifications

Line Voltage/Power

- High voltage option: 100 to 240VAC $\pm 10/-15\%$, 50/60Hz $\pm 5\%$
- Low voltage option: 24 to 28VAC/VDC $\pm 10/-15\%$, 50/60Hz $\pm 5\%$
- Power consumption: 23 W, 54VA

Environment

- NEMA 4X/IP65 front panel mount configuration only
- Operating temperature: 0 to 122°F (-18 to 50°C)
- Storage temperature: -40 to 185°F (-40 to 85°C)
- Relative humidity: 0 to 90%, non-condensing

Agency Approvals

- UL®/EN 61010 Listed, File E185611 QUXX
- UL® 508 Reviewed
- CSA CC.C#14, File 158031
- AMS 2750 E compliant: Analog input process values. Tip: Maximize field calibration accuracy and uniformity by using advanced F4T features such as Calibration Offset and Linearization Function Blocks. Refer to user manual for details.
- RoHS by design, China RoHS Level 2, W.E.E.E.
- CE
- Windows® Hardware Certification

User Interface

- 4.3 inch TFT PCAP color graphic touch screen
- LED backlife >50K hours
- 4 keys: Home, Main Menu, Back, Help

Inputs and Outputs

- Input sampling: 10Hz
- Output update: 10Hz

Communications

- Ethernet Modbus® TCP
- EIA-232/485 Modbus® RTU
- Isolated communications

Data Logging

- User selectable parameters: Up to a maximum of 128 active parameters depending on configuration
- Logging interval: Programmable increments between 0.1 seconds and 60 minutes if logging to internal memory. Logging directly to USB; 1.0 seconds to 60 minutes
- File types: .CSV for standard data logging or proprietary format for encrypted data log option
- Storage: 80MB internal memory or to USB memory stick
- File transfer: Internal memory to USB host port or to Ethernet Modbus® TCP
- Transfer options: On demand by user or user programmable based on when a new data log file record is available. Utilizes TFTP and Samba protocols
- Record: Date and time stamped

Batch Processing with Bar Code Data Entry Via USB Scanner

- Compatible with many bar code types including Code 128, Code 39, Extended Code 39, Data Matrix, Interleaved 2 of 5, ISSN, SISAC, LOGMARS, QR, UCC/EAN-128 (GS1-128, UPC-A & E)
- Compatible with most USB scanner types such as Zebra DS4308, DS2208, LI2208 and LS2208
- USB port provides 500mA max. power supply for bar code scanner/base charging
- Display can show bar code fields up to a maximum length of 48 characters. Characters might wrap to 2 rows after 24 characters
- Program the bar code scanner to add an enter key (carriage return feed) at the end of each bar code data field sent to the F4T/D4T. Refer to USB scanner user manual.

Trending

- 4 user programmable charts
- 6 pens available per chart
- View analog sensors and process values

Real Time Clock with Battery Backup

- Accuracy (typical): ± 1 to ± 3 ppm over -15 to 50°C
- Typical battery life: 10 years at 77°F (25°C)
- Field replaceable lithium battery

Number of Function Blocks by Ordering Option

| Function Block | Basic | Set 1 | Set 2 |
|--|-------|-------|-------|
| Alarm | 6 | 8 | 14 |
| Compare | None | 4 | 16 |
| Counter | None | 4 | 16 |
| Linearization | 4 | 4 | 8 |
| Logic | None | 12 | 24 |
| Math | None | 12 | 24 |
| Process Value | 4 | 4 | 8 |
| Special Output Function (including compressor) | None | 2 | 4 |
| Timer | None | 6 | 16 |
| Variable | 4 | 12 | 24 |

Compare

- Greater than, less than, equal, not equal, greater than or equal, less than or equal

Counters

- Counts up or down, loads predetermined value on load signal

Linearization

- Interpolated or stepped

Logic

- And, nand, or, nor, equal, not equal, latch, flip-flop

Math

- Average, process scale, switch over, deviation scale, differential (subtract), ratio (divide), add, multiply, absolute difference, minimum, maximum, square root, sample and hold, pressure-to-altitude and dew point

Process Value

- Sensor backup, average, crossover, wet bulb-dry bulb, switch over, differential (subtract), ratio (divide), add, multiply, absolute difference, minimum, maximum, square root, altitude, Vaisala® relative humidity and pressure-to-altitude

Special Output Function

- Compressor control (cool and/or dehumidify with single compressor), motorized valve, sequencer

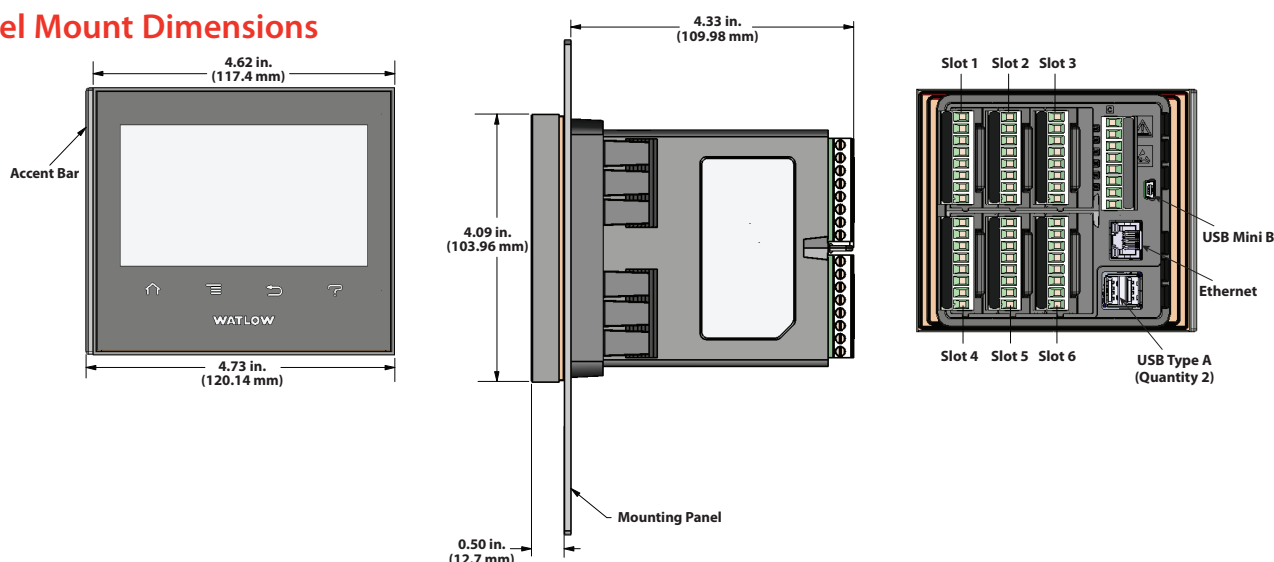
Timers

- On pulse, delay, one shot or retentive

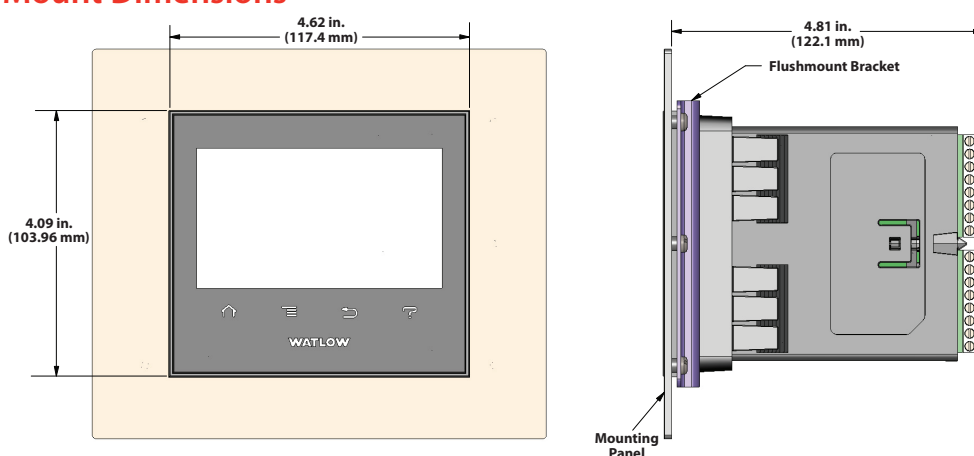
Variable

- User value for digital or analog variable

Panel Mount Dimensions



Flush Mount Dimensions



Powered by Possibility

To be automatically connected to the nearest
North American Technical Sales Office:

**1-800-WATLOW2 • www.watlow.com
inquiry@watlow.com**

International Technical Sales Offices:

| | | | |
|---------|-------------------|-------|------------------|
| Austria | +43 6244 20129 0 | India | +91 40 6661 2700 |
| China | +86 21 3532 8532 | Italy | +39 02 458 8841 |
| France | +33 1 41 32 79 70 | Japan | +81 3 3518 6630 |
| Germany | +49 7253 9400 0 | Korea | +82 2 2169 2600 |

| | |
|-----------|------------------|
| Mexico | +52 442 256 2200 |
| Singapore | +65 6773 9488 |
| Spain | +34 91 675 1292 |
| Taiwan | +886 7 288 5168 |
| UK | +44 115 964 0777 |

D4T Ordering Information

Base includes: 4.3 inch color graphical touch screen, standard bus communications, Ethernet Modbus® TCP and SCPI protocol.

Part Number

| ① ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ ⑨ | ⑩ ⑪ | ⑫ | ⑬ ⑭ | ⑮ |
|-----------|-----------|------------------|-----------------------------|--|-----------------|----------------|--|--------------------|---|--|
| Model | Base Type | Application Type | Data Logging & Trend Charts | Power Supply Voltage, Connector Style, Watlow Logo Screenprint | Function Blocks | Future Options | Documentation, Accent Bar, Replacement Connectors & Custom | Additional Options | Nbr. of Logging Channels & Input Hardware Types | Nbr. of Auxiliary/Alarm Outputs, Digital Inputs & Hardware |
| D4 | T | | | | | AA | | 5 | | |

| ③ | Base Type |
|-----|--------------|
| T = | Touch screen |

| ④ | Application Type |
|-----|------------------|
| 1 = | Standard |

| ⑤ | Data Logging and Trend Charts |
|-----|--|
| J = | Data logging |
| K = | Data logging with encrypted files |
| L = | Data logging with graphical trend charts |
| M = | Data logging with encrypted files, graphical trend charts and batch processing with bar code data entry. |

| ⑥ Power Supply Voltage, Connector Style, Watlow Logo Screenprint | | | |
|--|--------------------|------------------------|-------------|
| | Power Supply | Power Supply Connector | Watlow Logo |
| 1 = | 100 to 240VAC | Right angle (standard) | Yes |
| 2 = | 100 to 240VAC | Right angle (standard) | No |
| 3 = | 100 to 240VAC | Front screw | Yes |
| 4 = | 100 to 240VAC | Front screw | No |
| 5 = | 24 to 28VAC or VDC | Right angle (standard) | Yes |
| 6 = | 24 to 28VAC or VDC | Right angle (standard) | No |
| 7 = | 24 to 28VAC or VDC | Front screw | Yes |
| 8 = | 24 to 28VAC or VDC | Front screw | No |

| ⑦ | Function Blocks | | |
|-----|-----------------|-------|-------|
| | Basic Set | Set 1 | Set 2 |
| A = | X | | |
| B = | | X | |
| C = | | | X |

| ⑧ ⑨ | Future Options |
|------|----------------|
| AA = | Future Options |

| ⑩ ⑪ | Documentation, Accent Bar, Replacement Connectors & Custom | | | | |
|------|--|--|------|-----|------|
| | Documentation DVD / QSG | Decorated Brush Aluminum Accent Bar | | | |
| | | Gray | Blue | Red | None |
| 1A = | Yes | X | | | |
| 1B = | Yes | | X | | |
| 1C = | Yes | | | X | |
| 1D = | Yes | | | | X |
| 1E = | No | X | | | |
| 1F = | No | | X | | |
| 1G = | No | | | X | |
| 1H = | No | | | | X |
| 1J = | Replacement connectors only - for the model number entered | | | | |
| XX = | Contact factory, other custom-firmware, preset parameters, locked code, logo | | | | |

| ⑫ | Additional Options |
|-----|--------------------|
| 5 = | None |

⑬ ⑭ Number of Logging Channels & Input Hardware Types

Universal Input(s) (T/C, RTD 2- or 3-wire, 0-10VDC, 0-20mA)

| | |
|------|------------|
| U1 = | 1 channel |
| U2 = | 2 channels |
| U3 = | 3 channels |
| U4 = | 4 channels |
| U5 = | 5 channels |
| U6 = | 6 channels |

Thermistor Input(s)

| | |
|------|------------|
| T1 = | 1 channel |
| T2 = | 2 channels |
| T3 = | 3 channels |
| T4 = | 4 channels |
| T5 = | 5 channels |
| T6 = | 6 channels |

Universal Input(s) (T/C, RTD 2-wire, 0-10VDC, 0-20mA)

| | |
|------|-------------|
| 04 = | 4 channels |
| 08 = | 8 channels |
| 12 = | 12 channels |
| 16 = | 16 channels |
| 20 = | 20 channels |
| 24 = | 24 channels |

Thermistor Input(s)

| | |
|------|-------------|
| TA = | 4 channels |
| TB = | 8 channels |
| TC = | 12 channels |
| TD = | 16 channels |
| TE = | 20 channels |
| TF = | 24 channels |

Custom

| | |
|------|---|
| XX = | Different channel quantity and combination options. Contact factory for assistance. |
|------|---|

⑮ Number of Auxiliary/Alarm Outputs, Digital Inputs & Hardware

Options below are not available with 6 or 24 channel input models

| | |
|----------------------|--------------------------------------|
| A = | None |
| Single Output | |
| C = | 1 switched dc/open collector |
| E = | 1 mechanical relay 5A, Form C output |
| F = | 1 universal process/retransmit |

Multiple Digital Inputs/Outputs

| | |
|------|---|
| D = | 6 digital I/O |
| P = | 3 universal process/retransmit outputs |
| B = | 3 mechanical relay 5A, 2 Form C and 1 Form A (Form A shares a common with 1 Form C) |
| J = | 4 mechanical relay 5A, Form A |
| K = | 2 SSRs Form A, 0.5 A |
| T* = | 2 SSRs at 10A |
| L = | 4 SSRs at 2A each, SSRs grouped in 2 pairs with each pair sharing a common |

Communications

| | |
|---------------|--|
| M = | Modbus® RTU 232/485 |
| Custom | |
| X = | Different output quantity and combination options. Contact factory for assistance. |

* Option "T" not available with digit 13 & 14, options U5, U6, T5, T6, 20, 24, TE and TF.