WATLOW®

D4T™ 1/4 DIN Data Logger

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

The D4T™ 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.

Watlow's D4T is available through Watlow ***SELECT***®, a program that enables you to quickly identify, configure and receive your thermal products faster and easier than ever before. With ***SELECT***, you use a variety of tools to guide your decision, configure products for an exact fit and quickly receive your order. Visit www.watlow.com/select to learn more.

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

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

Email and text alerts
- Notifies users of an event that has occurred such as an alarm condition or analog input error

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/IP™, Modbus® TCP (Ethernet) SCPI and EIA-232/485 Modbus® RTU NEW!
- Offers two USB host ports and one device port
- Simplifies file transfers
- Connects easily

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

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
- Multi-language options
  - English, German, French, Italian, Spanish, Japanese, Korean and Chinese
- USB wired or wireless mouse user interface
  - Use in hazardous location, dirty environments or applications with gloves

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

Configuration Diagnostics

- Indicates if modules present match the expected configuration settings

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 +10/-15%, 50/60Hz ±5%
- Low voltage option: 24 to 28VAC/VDC+10/-15%, 50/60Hz ±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 QUYX
- UL® 508 Reviewed
- 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
- Multiple languages
  - English, German, French, Italian, Spanish, Japanese, Korean and Chinese
- USB wired or wireless mouse functionality
  - Right click for 4 keys: Home, Main Menu, Back, Help

Inputs and Outputs

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

Communications

- Modbus® TCP (Ethernet)
- 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): +/-3ppm 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

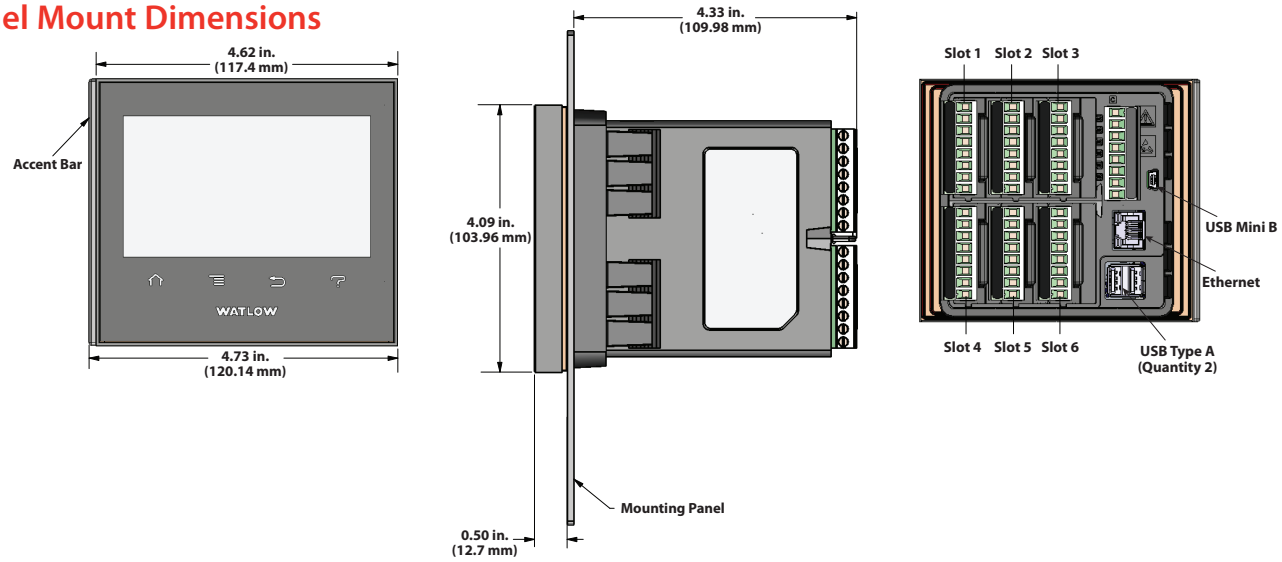
Process Value
- Sensor backup, average, crossover, wet bulb-dry bulb, switch over, differential (subtract), ratio (divide), add, multiply, absolute difference, minimum, maximum, square root, altitude, Vaisala® relative humidity and pressure-to-altitude

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

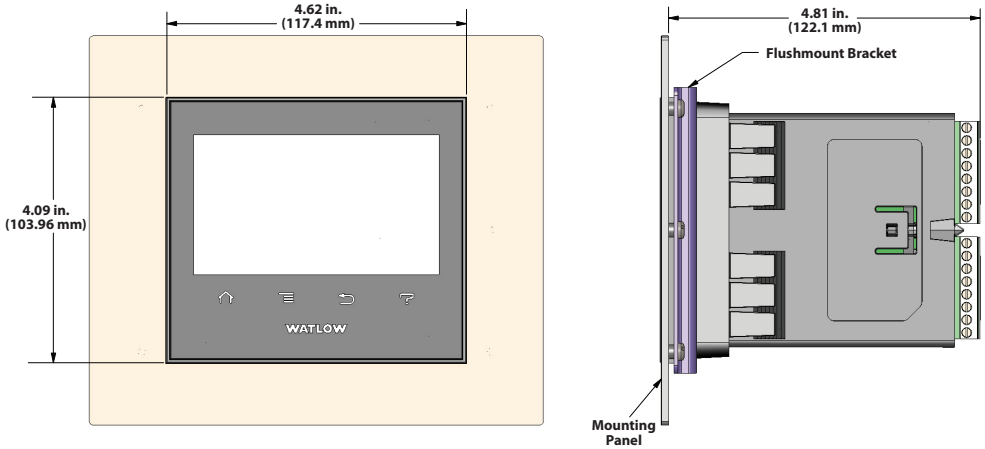
Timers
- On pulse, delay, one shot or retentive

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

International Technical Sales Offices:

Austria	+43 6244 20129 0	India	+91 40 6661 2700	Mexico	+52 442 256 2200
China	+86 21 3532 8532	Italy	+39 02 458 8841	Singapore	+65 6773 9488
France	+33 1 41 32 79 70	Japan	+81 3 3518 6630	Spain	+34 91 675 1292
Germany	+49 7253 9400 0	Korea	+82 2 2169 2600	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

①② Model	③ Base Type	④ Application Type	⑤ Data Logging & Trend Charts	⑥ Power Supply Voltage, Connector Style, Watlow Logo Screenprint	⑦ Function Blocks	⑧⑨ Comm. Options	⑩⑪ Documentation, Accent Bar, Replacement Connectors & Custom	⑫ Additional Options	⑬⑭ Nbr. of Logging Channels & Input Hardware Types	⑮ Nbr. of Auxiliary/ Alarm Outputs, Digital Inputs & Hardware
D4	T							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

⑧⑨ Communication Options

AA =	Modbus® TCP (Ethernet)
A3 =	EtherNet/IP™ (w/Modbus® TCP)

⑩⑪ 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

⑬⑭ 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.	