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
- 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
- Configurable 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
- Removable modules and connectors
- Configuration settings can be stored and recalled
- Front-panel mount and flush mounting options
- Right angle and front-screw terminal options
- 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: 100°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): +/-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

<table>
<thead>
<tr>
<th>Function Block</th>
<th>Basic</th>
<th>Set 1</th>
<th>Set 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Compare</td>
<td>None</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Counter</td>
<td>None</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Linearization</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Logic</td>
<td>None</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Math</td>
<td>None</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Process Value</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Special Output Function (including compressor)</td>
<td>None</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Timer</td>
<td>None</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Variable</td>
<td>4</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

**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

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

1-800-WATLOW2 • www.watlow.com

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### D4T Ordering Information

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

**Part Number**

<table>
<thead>
<tr>
<th>Model</th>
<th>Base Type</th>
<th>Application Type</th>
<th>Data Logging &amp; Trend Charts</th>
<th>Power Supply Voltage, Connector Style, Watlow Logo Screenprint</th>
<th>Function Blocks</th>
<th>Comm. Options</th>
<th>Additional Options</th>
<th>Nbr. of Logging Channels &amp; Input Hardware Types</th>
<th>Nbr. of Auxiliary/Alarm Outputs, Digital Inputs &amp; Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4</td>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

#### Base Type

- **T** = Touch screen

#### Application Type

- **1** = Standard

#### 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.

#### Power Supply Voltage, Connector Style, Watlow Logo Screenprint

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Power Supply Connector</th>
<th>Watlow Logo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = 100 to 240VAC</td>
<td>Right angle (standard)</td>
<td>Yes</td>
</tr>
<tr>
<td>2 = 100 to 240VAC</td>
<td>Right angle (standard)</td>
<td>No</td>
</tr>
<tr>
<td>3 = 100 to 240VAC</td>
<td>Front screw</td>
<td>Yes</td>
</tr>
<tr>
<td>4 = 100 to 240VAC</td>
<td>Front screw</td>
<td>No</td>
</tr>
<tr>
<td>5 = 24 to 28VAC or VDC</td>
<td>Right angle (standard)</td>
<td>Yes</td>
</tr>
<tr>
<td>6 = 24 to 28VAC or VDC</td>
<td>Right angle (standard)</td>
<td>No</td>
</tr>
<tr>
<td>7 = 24 to 28VAC or VDC</td>
<td>Front screw</td>
<td>Yes</td>
</tr>
<tr>
<td>8 = 24 to 28VAC or VDC</td>
<td>Front screw</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Function Blocks

- **A** = Basic Set
  - **A** = Set 1
  - **B** = Set 2

#### Communication Options

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

#### Documentation, Accent Bar, Replacement Connectors & Custom

<table>
<thead>
<tr>
<th>Documentation DVD / QSG</th>
<th>Decorated Brush Aluminum Accent Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray</td>
<td>Blue</td>
</tr>
<tr>
<td>1A</td>
<td>Yes</td>
</tr>
<tr>
<td>1B</td>
<td>Yes</td>
</tr>
<tr>
<td>1C</td>
<td>Yes</td>
</tr>
<tr>
<td>1D</td>
<td>Yes</td>
</tr>
<tr>
<td>1E</td>
<td>No</td>
</tr>
<tr>
<td>1F</td>
<td>No</td>
</tr>
<tr>
<td>1G</td>
<td>No</td>
</tr>
<tr>
<td>1H</td>
<td>No</td>
</tr>
<tr>
<td>1J</td>
<td>Replacement connectors only - for the model number entered</td>
</tr>
<tr>
<td>1X</td>
<td>Contact factory, other custom-firmware, preset parameters, locked code, logo</td>
</tr>
</tbody>
</table>

**Additional Options**

- **5** = None

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