WATLOW®

F4T® 1/4 DIN Process Controller

Watlow's F4T® Combines the Flexibility of a Modular I/O Controller with Best-in-Class Ease of Use

The F4T® temperature process controller from Watlow® offers 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 F4T controller also features a 4.3 inch, color, graphical touch panel. Combining power, flexibility and functionality, this new controller offers unmatched versatility, and its best-in-class ease of use could very well make user manuals a thing of the past.

Watlow's F4T 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, profiles, alarms, inputs and outputs to be personalized with user defined names

Temperature PID, data logger, trend chart, over/under-temperature limit, power switching, math, logic, timers and counters combined into an integrated system
- Lowers ownership costs
- Eliminates the need for separate discrete components
- Reduces complexity
- Simplifies design, ordering and installation
- Saves money

Robust algorithms for temperature, cascade, altitude, humidity and compressor
- Improves process control
- Offers one to four channels of control
- Provides multiple PID sets
- Enables TRU-TUNE®+ adaptive control algorithm
- Offers 40 ramp and soak profiles with real-time clock and battery backup

Email and text alerts
- Notifies users of an event that has occurred such as a specific profile or step within a profile, alarm condition, limit condition or analog input error

COMPOSER® graphical configuration PC software
- Speeds up and simplifies commissioning
- Archives and documents controller setup
- Connects with controller easily via Ethernet

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
- Offers foolproof processing via smart profile to part linkage
- 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

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

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 36

SERIES F4S/F4D/F4P backward compatible
- Provides easy retrofit with minimum pain and disruption
- Ensures proper fit in existing SERIES F4 panel cutout

Key Features and Options

- 1 to 4 control loops with TRU-TUNE+ adaptive control algorithm for superior controllability
- 40 profiles for ramp and soak
- EtherNet/IP™
- Ethernet Over Modbus® TCP connectivity
- Multiple high-speed USB host ports
- Over/under-temperature limits for safety shutdown
- Universal, thermistor and ac current measurement inputs
- Inputs and outputs expandable from 1 to 36
- SENSOR GUARD prevents unplanned process shutdowns and product loss by switching to a backup sensor if the primary sensor fails
- High current outputs for up to 10A heaters or other loads
- Programmable timers, counters, math and logic
- Temperature, cascade, altitude, relative humidity, compressor algorithms and Vaisala® humidity compensation
- Sequencer start-up and control
- Retransmit and remote set point
- 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

- F4T 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

F4T 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
- CSA CC.C#14, File 158031
- FM Class 3545 (configurations with limit modules)
- 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

Control Loops

- 1 to 4 PID or ON-OFF control loops
- 0 to 6 Limit loops
- User-selectable action: heat, cool or heat/cool
- Auto-tune with TRU-TUNE+ adaptive control

Control Loops and Over-temperature Limits

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

Communications

- Modbus® TCP (Ethernet)
- Isolated communications

Profile Ramp and Soak Option

- Profile engine affects 1 to 4 loops in sync
- 40 profiles with 50 steps per profile

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
- Part-Profile list entries – approximately 1,000 typical length part numbers of 15 characters each can be stored. Can easily import different part files via USB thumb drive connection to cover a higher quantity range of part lists
- Program the bar code scanner to add an enter key (carriage return feed) at the end of each bar code data field sent to F4T/D4T. Refer to USB scanner user manual.

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

Trending

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

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

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

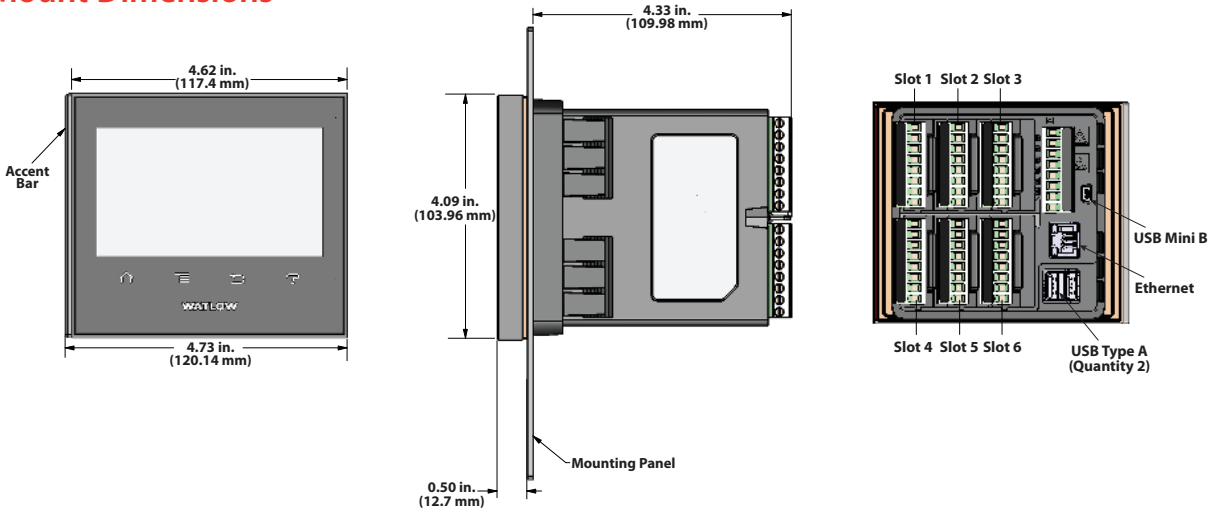
Timers

- On pulse, delay, one shot or retentive

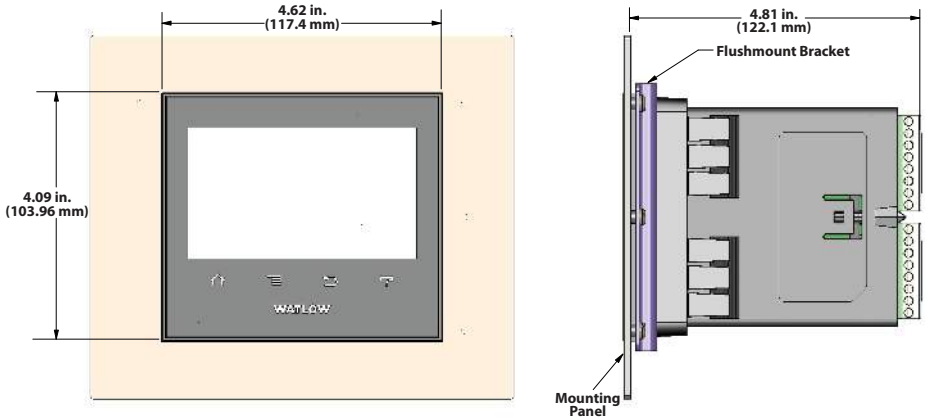
Variable

- User value for digital or analog variable

Panel Mount Dimensions



Flush Mount Dimensions



F4T Base Ordering Information

WATLOW SELECT

Base includes: 4.3 inch color graphical touch panel, 2 USB hosts, USB configuration port, standard bus, Ethernet Modbus® TCP. SCPI protocol and backwards compatible Modbus® for select key SERIES F4D/P/S parameters.

Part Number

① ②	③ Base Type	④ Application Type	⑤ Data Logging	⑥ Power Supply Connector & Voltage, Logo	⑦ Profiles & Function Blocks	⑧ ⑨ Communication Options	⑩ ⑪ Documentation, Accent Bar, Replacement Connector & Custom	⑫ Control Algorithms	⑬ ⑭ ⑮ Populated Flex Modules
F4	T								

③ Base Type

T =	Touch screen

④ Application Type

1 =	Standard
X =	Custom options, contact factory

⑤ Data Logging and Graphic Trend Charts

A =	None
B =	Graphical trend chart
J =	Data logging
K =	Data logging with encrypted files
L =	Data logging with graphical trend chart
M =	Data logging with encrypted files, graphical trend charts and batch processing with bar code data entry. ①

① Must also order digit 7: Profiles option D, E or F for batch processing with bar code data entry feature to be enabled.

⑥ Power Supply Connector & Voltage, Logo

	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 Profiles & Function Blocks

	Profiles		Function Blocks		
	None	40 Profiles, Battery Backup and Real-Time Clock	Basic Set	Set 1	Set 2
A =	X		X		
B =	X			X	
C =	X				X
D =		X	X		
E =		X		X	
F =		X			X

Note: Refer to top of page 3 *"Number of Function Blocks by Ordering Option"* for quantities and types of functions blocks in each set.

⑧ ⑨ Communication Options

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

⑩ ⑪ Documentation, Accent Bar, Replacement Connector & 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 Control Algorithms

	Control Loop	Cascade Loop
1 =	1	0
2 =	2	0
3 =	3	0
4 =	4	0
5 =	0	0
6 =	0	1
7 =	1	1
8 =	2	1
9 =	3	1
A =	0	2
B =	1	2
C =	2	2

Note: Each control loop algorithm requires 1 universal or thermistor input from a flex module.
Note: Each cascade loop algorithm requires 2 universal or thermistor inputs from flex modules.

⑬ ⑭ ⑮ Populated Flex Modules

AAA =	No populated flex modules
XXX =	Contact factory - Populated flex modules

Note: If AAA is selected you will need to order Flex Modules (FM) next to account for input and output hardware.

Flex Modules—High Density I/O Specifications

Four Universal Inputs (Control Loops, Auxiliary Input)

- Thermocouple: grounded or ungrounded sensors, greater than 20MΩ input impedance, 2kΩ source resistance max.
- RTD: 2-wire, platinum, 100Ω and 1000Ω at 32°F (0°C) calibration to DIN curve (0.00385Ω/Ω/°C)
- Process: 0-20mA at 100Ω, or 0-10VDC, 0-50mVDC at 20kΩ input impedance; scalable
- Potentiometer: 0 to 1,200Ω
- Inverse scaling

Four Thermistor Inputs (Control Loops, Auxiliary Input)

- 0 to 40kΩ, 0 to 20kΩ, 0 to 10kΩ, 0 to 5kΩ
- 2.252kΩ and 10kΩ base at 77°F (25°C)
- Preprogrammed Steinhart-Hart coefficients for Alpha Techniques (A curve 2.252k and 10k, C curve 10k), BetaTHERM (2.2K3A, 10K3A and 10K4A) and YSI (004, 016 and 006)
- User-settable Steinhart-Hart coefficients for other thermistors

Three Universal Process/Retransmit Outputs

- Output range selectable
- 0 to 10VDC ±15mV into a min. 4,000Ω load with 2.5mV nominal resolution
- 0 to 20mA ±30µA into max. 400Ω load with 5µA nominal resolution
- Temperature stability 100ppm/°C

Three Mechanical Relays

- 2 Form C relays, 1 Form A relay. Form A relay shares common with 1 Form C relay
- Each relay is 5A, 24 to 240VAC or 30VDC max., resistive load, 100,000 cycles at rated load. Requires a min. load of 20mA at 24V, 125VA pilot duty 120/240VAC, 25VA at 24VAC

Four Mechanical Relays

- Form A, 5A ea., 24 to 240VAC or 30VDC max., resistive load, 100,000 cycles at rated load. Requires a min. load of 20mA at 24V, 125VA pilot duty

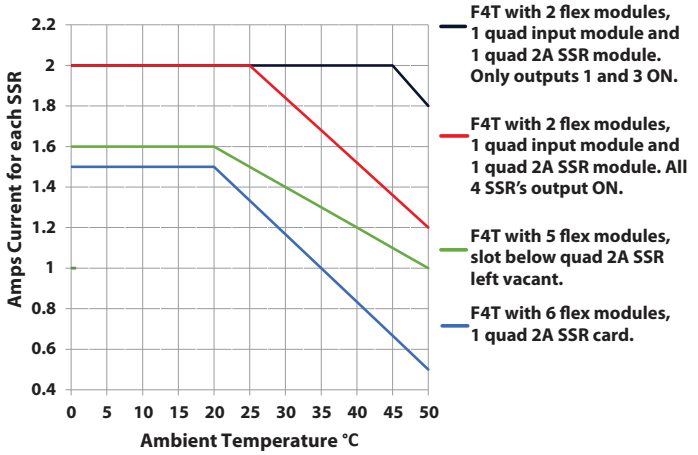
Two Solid State Relays

- Form A, 10A max. each SSRs combined at 24VAC min., 264VAC max., opto-isolated, without contact suppression, max. resistive load 10A per output at 240VAC, max. 20A per card at 122°F (50°C), max.

Four Solid State Relays

- Two pairs of SSRs, each pair shares a common
- Form A, 24VAC min., 264VAC max., opto-isolated, without contact suppression, resistive load 2A per output at 240VAC, max. See table for max. current per output

Quad 2A SSR Card Derating Curves



Six Digital I/O

- Each independently configurable as input or output
- Dry contact input: update rate 10Hz, min. open resistance 10kΩ, max. closed resistance 50Ω, max. short circuit 13mA
- DC voltage input: update rate 10Hz, max. input 36V at 3mA, min. high state 3V at 0.25mA, max. low state 2V
- Switched dc output: max. 5VDC at 130mA
- Open collector output: 32VDC at 1.5A max., 8A max. per 6 outputs combined

F4T Flex Module—High Density I/O Ordering Information

WATLOW SELECT

Part Number

①②	③	④		⑤	⑥⑦⑧		⑨	⑩	⑪⑫
	Module ID Type	Future Option		Input and Output Hardware	Future Options		Future Option	Custom Options and Connectors	Custom Options- Firmware, Overlay, Preset Parameters, Locked Code
FM	H	A	–		AAA	–	A		

③	Module ID Type
H =	High Density I/O

④	Future Option
A =	Future Option

⑤	Input and Output Hardware
R =	4 universal inputs (T/C, RTD 2-wire, 0-10VDC, 0-20mA)
P =	4 thermistor inputs
C =	6 digital I/O
F =	3 universal process/retransmit outputs
B =	3 mechanical relay 5A, 2 Form C and 1 Form A (Form A shares a common with one Form C)
J =	4 mechanical relay 5A, Form A
K =	2 SSRs 10A①
L =	4 SSRs at 2A each. SSRs grouped in 2 pairs with each pair sharing a common

① **Notes:** Input and Output hardware option K: 2 SSR's 10A.

The 2 SSR's 10A FM module requires 2 F4T slots. Valid slot locations are 1, 2, 4 or 5.

The F4T can support a maximum of two total of the K option FM module types (4 total SSR, 10A).

⑥⑦⑧	Future Options
AAA =	Future Options

⑨	Future Option
A =	Future Option

⑩	Custom Options and Connectors
A =	Right angle screw connector (standard)
F =	Front screw connector

⑪⑫	Custom Options - Firmware, Overlay, Preset Parameters, Locked Code
AA =	Standard with quick start guide
AB =	Standard without quick start guide
AC =	Replacement connectors hardware only - for the entered model number
XX =	Custom

Flex Modules—Mixed and Limit I/O Specifications

Universal Input

- Thermocouple: grounded or ungrounded sensors, greater than 20MΩ input impedance, 2kΩ source resistance max.
- RTD: 2- or 3-wire, platinum, 100Ω and 1000Ω at 32°F (0°C) calibration to DIN curve (0.00385Ω/Ω/°C)
- Process: 0-20mA at 100Ω, or 0-10VDC, 0-50mVDC at 20kΩ input impedance; scalable
- Potentiometer: 0 to 1,200Ω
- Inverse scaling

Thermistor Input

- 0 to 40kΩ, 0 to 20kΩ, 0 to 10kΩ, 0 to 5kΩ
- 2.252kΩ and 10kΩ base at 77°F (25°C)
- Preprogrammed Steinhart-Hart coefficients for Alpha Techniques (A curve 2.252k and 10k, C curve 10k), BetaTHERM (2.2K3A, 10K3A and 10K4A) and YSI (004, 016 and 006)
- User-settable Steinhart-Hart coefficients for other thermistors

Temperature Input

- Thermocouple: grounded or ungrounded sensors, greater than 20MΩ input impedance, 2kΩ source resistance max.
- RTD: 2-wire, platinum, 100Ω and 1000Ω at 32°F (0°C) calibration to DIN curve (0.00385Ω/Ω/°C)

Digital Input

- Update rate: 10Hz
- DC voltage: max. input 36V at 3mA, min. high state 3V at 0.25mA, max. low state 2V
- Dry contact input: min. open resistance 10kΩ, max. closed resistance 50Ω, max. short circuit 13mA

Current Transformer Input

- Accepts 0-50mA signal (user programmable range)
- Displayed operating range and resolution can be scaled and are user programmable
- Current input range: 0 to 50mA ac, 100Ω input impedance
- Response time: 1 second max., accuracy ±1mA typical
- Use with current transformer (Watlow part number: 16-0246)

Switched DC Output

- Max. 32VDC open circuit
- Max. current 30mA per single output
- Max. current 40mA per pair

Open Collector Output

- Max. 30VDC at 100mA

Solid State Relay (SSR) Output

- Form A, 1A at 50°F (10°C) to 0.5A at 149°F (65°C), 0.5A at 24VAC min., 264VAC max., opto-isolated, without contact suppression

Form A Electromechanical Relay Output

- 5A, 24 to 240VAC or 30VDC max., resistive load, 100,000 cycles at rated load, requires a min. load of 20mA at 24V, 125VA pilot duty

Form C Electromechanical Relay Output

- 5A, 24 to 240VAC or 30VDC max., resistive load, 100,000 cycles at rated load, requires a min. load of 20mA at 24V, 125VA pilot duty

NO-ARC Relay Output

- Form A, 12A at 122°F (50°C), 85 to 264VAC, no VDC, resistive load, 2 million cycles at rated load

Universal Process/Retransmit Output

- Range selectable
- 0 to 10VDC ±15mV into a min. 1,000Ω load with 2.5mV nominal resolution
- 0 to 20mA ±30µA into max. 800Ω load with 5µA nominal resolution
- Temperature stability 100ppm/°C

F4T Flex Module—Mixed I/O Ordering Information

Part Number

①②	③	④		⑤	⑥⑦	⑧		⑨	⑩	⑪⑫
	Module ID Type	Future Option		Input Hardware	Output Hardware Options	Future Option		Future Option	Custom Options and Connectors	Custom Options- Firmware, Overlay, Preset Parameters, Locked Code
FM	M	A	–			A	–	A		

③ Module ID Type	
M =	Mixed I/O

④ Future Option	
A =	Future Option

⑤ Input Hardware	
A =	None
U =	Universal input - T/C, RTD 2- or 3-wire, 0-10VDC, 0-20mA
T =	Thermistor input
C* =	Current transformer input

*Note: If option C is ordered than the following options are NOT valid for Outputs 1 & 2: FA, FC, FJ and FK.

⑥⑦ Output Hardware Options		
	Output 1	Output 2
AA =	None	None
AJ =	None	Mechanical relay 5A, Form A
AK =	None	SSR Form A, 0.5A
CA =	Switched dc/open collector	None
CH =	Switched dc/open collector	NO-ARC 12A power control
CC =	Switched dc/open collector	Switched dc
CJ =	Switched dc/open collector	Mechanical relay 5A, Form A
CK =	Switched dc/open collector	SSR Form A, 0.5A
EA =	Mechanical relay 5A, Form C	None
EH =	Mechanical relay 5A, Form C	NO-ARC 12A power control
EC =	Mechanical relay 5A, Form C	Switched dc
EJ =	Mechanical relay 5A, Form C	Mechanical relay 5A, Form A
EK =	Mechanical relay 5A, Form C	SSR Form A, 0.5A
FA =	Universal process/retransmit	None
FC =	Universal process/retransmit	Switched dc
FJ =	Universal process/retransmit	Mechanical relay 5A, Form A
FK =	Universal process/retransmit	SSR Form A, 0.5A
KH =	SSR Form A, 0.5A	NO-ARC 12A power control
KK =	SSR Form A, 0.5A	SSR Form A, 0.5A

⑧ Future Option	
A =	Future Option

⑨ Future Option	
A =	Future Option

⑩ Custom Options and Connectors	
A =	Right angle screw connector (standard)
F =	Front screw connector

⑪⑫ Custom Options - Firmware, Overlay, Preset Parameters, Locked Code	
AA =	Standard with quick start guide
AB =	Standard without quick start guide
AC =	Replacement connectors hardware only - for the entered model number
XX =	Custom

F4T Flex Module—Limit Ordering Information

Part Number

①②	③	④		⑤⑥⑦	⑧		⑨	⑩	⑪⑫
	Module ID Type	Future Option		Input and Output Hardware Options	Future Option		Future Option	Custom Options and Connectors	Custom Options- Firmware, Overlay, Preset Parameters, Locked Code
FM	L	A	–		A	–	A		

③ Module ID Type	
L =	Limit

④ Future Option	
A =	Future Option

⑤⑥⑦ Input and Output Hardware Options				
	Functions	Auxiliary Output Hardware	Limit Output Hardware	Auxiliary Input Hardware
LCJ =	Limit control with universal input	Switched dc/ open collector	Mechanical relay 5A, Form A	None
LEJ=	Limit control with universal input	Mechanical relay 5A, Form C	Mechanical relay 5A, Form A	None
LAJ =	Limit control with universal input	None	Mechanical relay 5A, Form A	None
MCJ =	Limit control with thermistor input	Switched dc/ open collector	Mechanical relay 5A, Form A	None
MEJ =	Limit control with thermistor input	Mechanical relay 5A, Form C	Mechanical relay 5A, Form A	None
MAJ =	Limit control with thermistor input	None	Mechanical relay 5A, Form A	None
YEB =	Limit control with tempera- ture input	None	Mechanical relay 5A, Form C	Single digital input (limit reset)

Notes: Universal input = T/C, RTD 2- or 3-wire, 0-10VDC, 0-20mA
Temperature input = T/C and RTD 2-wire only

⑧ Future Option	
A =	Future Option

⑨ Future Option	
A =	Future Option

⑩ Custom Options and Connectors	
A =	Right angle screw connector (standard)
F =	Front screw connector

⑪⑫ Custom Options - Firmware, Overlay, Preset Parameters, Locked Code	
AA =	Standard with quick start guide
AB =	Standard without quick start guide
AC =	Replacement connectors hardware only - for the entered model number
XX =	Custom

F4T Flex Modules—Communication Ordering Information

WATLOW SELECT

Part Number

① ②	③	④		⑤	⑥ ⑦ ⑧		⑨	⑩	⑪ ⑫
	Module ID Type	Future Option		Comm. Option	Future Options		Future Option	Custom Options and Connectors	Custom Options- Firmware, Overlay, Preset Parameters, Locked Code
FM	C	A	–	2	AAA	–	A		

③ Module ID Type	
C =	Communications

④ Future Option	
A =	Future Option

⑤ Communications Option	
2 =	Modbus® RTU 232/485

Notes: EIA-232/485 Modbus® RTU flex module, if used, must occupy F4T slot 6 location.

⑥ ⑦ ⑧ Future Options	
AAA =	Future Options

⑨ Future Option	
A =	Future Option

⑩ Custom Options and Connectors	
A =	Right angle screw connector (standard)
F =	Front screw connector

⑪ ⑫ Custom Options - Firmware, Overlay, Preset Parameters, Locked Code	
AA =	Standard with quick start guide
AB =	Standard without quick start guide
AC =	Replacement connectors hardware only - for the entered model number
XX =	Custom

Accessories

Part Number	Description
0830-0870-0000	Protective screen cover (2 per pack)
0822-0705-0000	F4T 1/4 DIN mounting collar - thru front panel mount
0216-1285-0000	Flush mount - mounting adapter plate
0847-0400-0000	USB 2.0 to RJ45 Ethernet adapter
0238-1245-ALUM	Accent bar (brushed aluminum gray)
0238-1245-REDD	Accent bar (brushed aluminum red)
0238-1245-BLUE	Accent bar (brushed aluminum blue)
16-0246	Current transformer
0804-0147-0000	RC suppression - Quencharc®
0601-0001-0000	Controller support tools (DVD)
0830-0808-0001 (CAPUSB-MB5)	Rubber plug USB mini
0830-0808-0002 (CAPUSB-A)	Rubber plug USB host
0830-0858-0000	Replacement battery
0822-0769-0000	Module slot plug (for vacant F4T slots without flex modules

Recommended Third-Party Components

Mfg.	Mfg. Part Number	Description	Website
Amphenol	USBF 21N SCC	USB - A receptacle with self closing cap	www.alliedelec.com
Amphenol	USBBF 21N SCC	USB - B receptacle with self closing cap	www.alliedelec.com
Amphenol	RJF 21N SCC	RJ45 receptacle with self closing cap	www.alliedelec.com
Molex	847290006	USB type A panel mount with 2 m cord	www.alliedelec.com
Molex	84700-0003	Dust cover	www.alliedelec.com

Documentation

Part Number	Description
1720-6742	Installation and Troubleshooting User Guide
1680-2414	Setup and Operations User Guide
1440-3329	F4T Controller Quick Start Guide
0600-0095-0000	Communications Flex Modules Quick Start Guide
0600-0096-0000	High Density Flex Modules Quick Start Guide
0600-0097-0000	Mixed I/O Flex Modules Quick Start Guide

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Germany	+49 7253 9400 0	Korea	+82 2 2169 2600	Taiwan	+886 7 288 5168
				UK	+44 115 964 0777