WATLOW ®

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

The F4T with INTUITION® 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.

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

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 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

Agency certifications include UL®, FM, CE, RoHS, W.E.E.E., NEMA 4X/IP65
- Ensures high quality and reliability
- Verifies performance in installations worldwide

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

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

WATLOW ®
Powered by Possibility

![WATLOW logo]

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 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

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 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
- 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

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
- Ethernet Modbus® TCP
- 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

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

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

4.62 in. (117.4 mm)

Accent Bar

4.73 in. (120.14 mm)

4.33 in. (109.98 mm)

4.09 in. (103.96 mm)

0.50 in. (12.7 mm)

Mounting Panel

Slot 1   Slot 2   Slot 3

Slot 4   Slot 5   Slot 6

USB Mini B

Ethernet

USB Type A (Quantity 2)

Flush Mount Dimensions

4.62 in. (117.4 mm)

4.09 in. (103.96 mm)

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Mounting Panel

4.81 in. (122.1 mm)

Flushmount Bracket
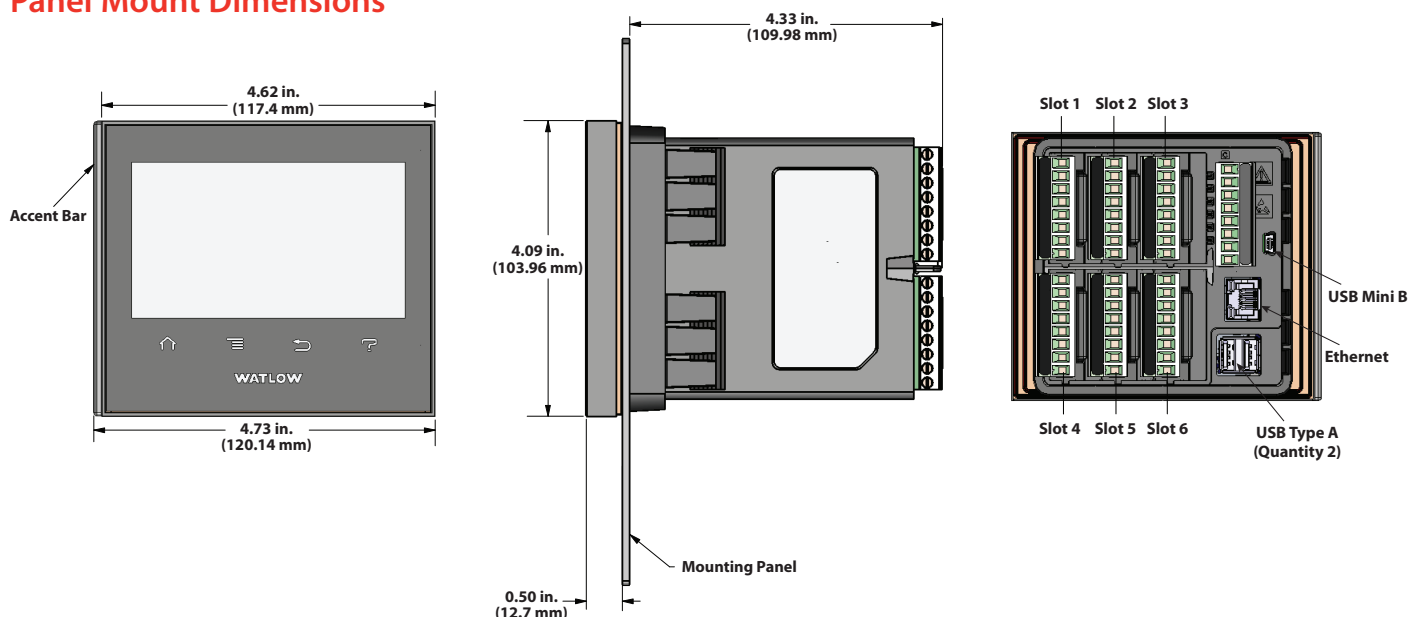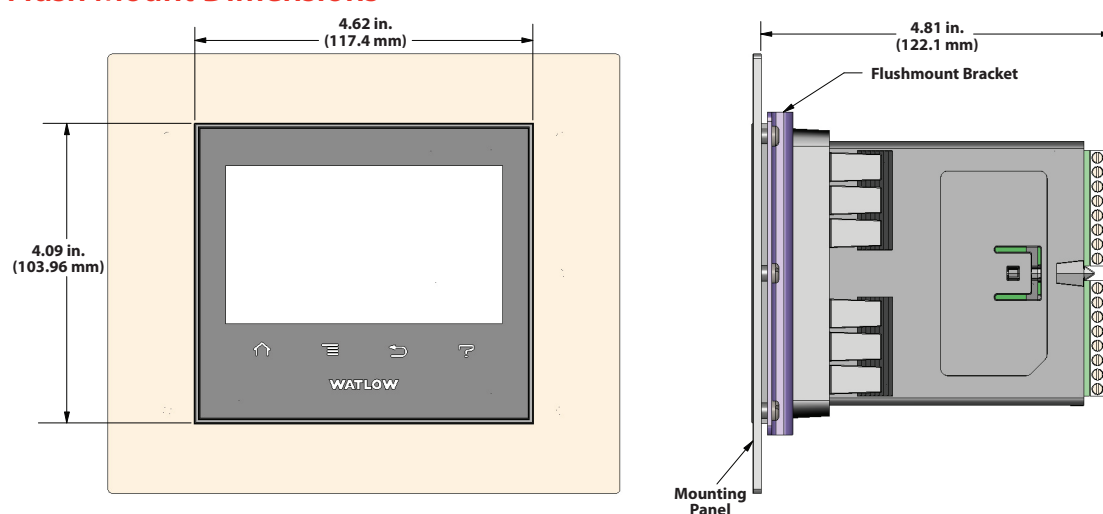
F4T Base Ordering Information

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 Future Options	⑩ ⑪ Documentation, Accent Bar, Replacement Connector & Custom	⑫ Control Algorithms	⑬ ⑭ ⑮ Populated Flex Modules
F4	T					A A			

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 and graphical trend chart

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	Future Options
AA =	Future Options

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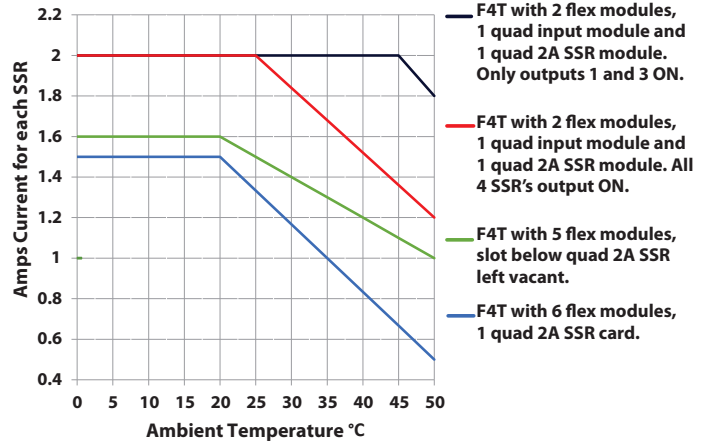
Two Solid State Relays
- Form A, 10A max. each SSRs combined at 24VAC min., 264VAC max., opto-isolated, without contact suppression, max. resistive load 10A per output at 240VAC, max. 20A per card at 122°F (50°C), max.

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

- F4T with 2 flex modules, 1 quad input module and 1 quad 2A SSR module. Only outputs 1 and 3 ON.
- F4T with 2 flex modules, 1 quad input module and 1 quad 2A SSR module. All 4 SSR's output ON.
- F4T with 5 flex modules, slot below quad 2A SSR left vacant.
- F4T with 6 flex modules, 1 quad 2A SSR card.

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, or 19-22VDC at 80mA; field selectable
- Open collector output: 32VDC at 1.5A max., 8A max. per 6 outputs combined

F4T Flex Module—High Density I/O Ordering Information

Part Number

① ②	③ Module ID Type	④ Future Option	⑤ Input and Output Hardware	⑥ ⑦ ⑧ Future Options	⑨ Future Option	⑩ Custom Options and Connectors	⑪ ⑫ 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 10A [①]
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).

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

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

① ②	③ Module ID Type	④ Future Option	⑤ Input Hardware	⑥ ⑦ Output Hardware Options	⑧ Future Option	⑨ Future Option	⑩ Custom Options and Connectors	⑪ ⑫ 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.

⑥ ⑦	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

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

F4T Flex Module—Limit Ordering Information

Part Number

① ②	③ Module ID Type	④ Future Option	⑤ ⑥ ⑦ Input and Output Hardware Options	⑧ Future Option	⑨ Future Option	⑩ Custom Options and Connectors	⑪ ⑫ 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

⑤ ⑥ ⑦	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

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

F4T Flex Modules—Communication Ordering Information

Part Number

① ②	③ Module ID Type	④ Future Option	⑤ Comm. Option	⑥ ⑦ ⑧ Future Options	⑨ Future Option	⑩ Custom Options and Connectors	⑪ ⑫ 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 supression - 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
0600-0092-0000	Installation and Troubleshooting User Guide
0600-0093-0000	Setup and Operations User Guide
0600-0094-0000	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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