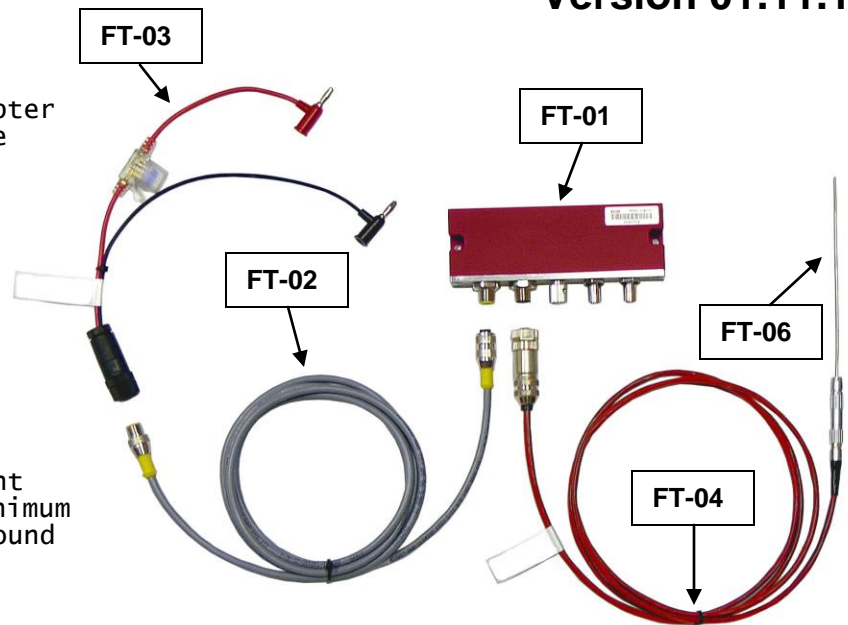


FastTEMP KIT CONTENTS

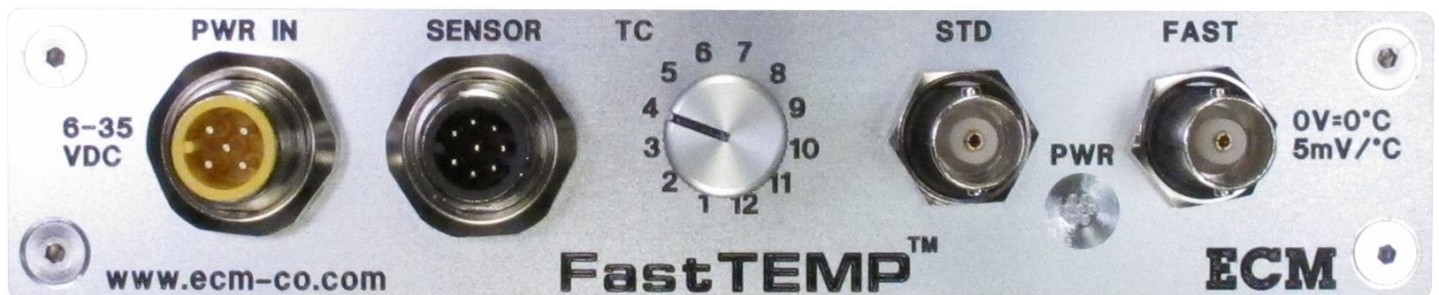
FT-01 FastTEMP module
FT-02 2m power cable
FT-03 power cable banana plug adapter
FT-04 2m thermocouple sensor cable
FT-05 1/16"Ø x 6" K-type probe

SPECIFICATIONS

Range: -60 to 1370°C
Accuracy: STD: ± 4.0°C
FAST: ± 6.0°C
Outputs: 5mV/°C, 0°C=0V, female BNC
both outputs floating
500Ω output impedance
Response time: STD: sensor dependent
FAST: 10x faster minimum
Sensor: Grounded K-type, sensor ground
galvanically isolated from
power input
Power: 6 to 35VDC @ 2 Watts
Environmental: -55°C to +85°C, IP67



GETTING STARTED



1. Connect the K-type thermocouple sensor (FT-06) to the sensor cable (FT-04). Ensure that the ground strap between the sensor and cable is attached and the Phillips screw is tight.
2. Set the "TC" knob on the front panel of the FastTEMP module to the appropriate number. As a general rule, set the knob to 4 for 1/16"Ø thermocouples, set the knob to 10 for 1/8"Ø thermocouples.
3. Connect the thermocouple sensor cable (FT-04) to the "SENSOR" connector on the front panel of the FastTEMP module.
4. Connect the power cables (FT-02 and FT-03) to the "PWR IN" connector on the front panel of the FastTEMP module. The power supply must be rated for 5 watts minimum with an output voltage between 6 and 35VDC.
5. Connect BNC cables (not supplied) to the "STD" and "FAST" outputs. The gain of both outputs is 5mV/°C with 0V = 0°C.
-60°C = -0.300V
0°C = 0.000V
1370°C = 6.850V

NOTES

1. Use a tubing bender to bend the thermocouple element. Ensure the bend radius is greater than 2.5 times the element diameter.
2. Minimize the temperature gradient across the sensor cable (FT-04) for best accuracy.

3. Mechanical stress and vibration can strain the thermocouple wires in the sensor resulting in noise and reduced sensor life.
4. Keep in mind that heat transfer due to conduction and radiation between the sensor sheath and the wall of the vessel will influence the accuracy of the temperature measurement.
5. After prolonged use at higher temperatures (> 500°C), K-type thermocouples experience a calibration drift due to oxidation which causes changes in the thermocouple wire alloy composition.

SENSOR COMPENSATION

To compensate for the non-linearity of the K-type Seebeck coefficient use the formula:
 Temperature (°C) = FastTEMP reading (°C) + DELTA (°C).

Example: The FastTEMP output reads 2.25V which corresponds to 450°C (2.25/.005 = 450).
 Look up the DELTA value at 450°C (-4.7), Temperature = 450 - 4.7 = 445.3°C

TEMP	DELTA	TEMP	DELTA	TEMP	DELTA	TEMP	DELTA	TEMP	DELTA	TEMP	DELTA	TEMP	DELTA
-60	-4.9	150	-0.7	360	-1.3	570	-10.2	780	-16.9	990	-13.9	1200	0.8
-50	-3.6	160	-0.6	370	-1.6	580	-10.7	790	-17.0	1000	-13.6	1210	1.8
-40	-2.5	170	-0.4	380	-1.9	590	-11.1	800	-17.1	1010	-13.1	1220	2.9
-30	-1.6	180	-0.2	390	-2.3	600	-11.6	810	-17.2	1020	-12.6	1230	4.0
-20	-0.9	190	0.0	400	-2.6	610	-12.0	820	-17.2	1030	-12.1	1240	5.2
-10	-0.4	200	0.2	410	-3.0	620	-12.4	830	-17.2	1040	-11.6	1250	6.4
0	0.0	210	0.3	420	-3.4	630	-12.8	840	-17.2	1050	-11.1	1260	7.7
10	0.3	220	0.5	430	-3.8	640	-13.2	850	-17.1	1060	-10.5	1270	9.0
20	0.4	230	0.6	440	-4.2	650	-13.6	860	-17.1	1070	-9.9	1280	10.3
30	0.5	240	0.7	450	-4.7	660	-14.0	870	-17.0	1080	-9.3	1290	11.6
40	0.4	250	0.7	460	-5.1	670	-14.3	880	-16.9	1090	-8.6	1300	13.0
50	0.3	260	0.7	470	-5.5	680	-14.6	890	-16.7	1100	-7.9	1310	14.5
60	0.2	270	0.6	480	-6.0	690	-15.0	900	-16.6	1110	-7.2	1320	16.0
70	0.0	280	0.5	490	-6.5	700	-15.3	910	-16.4	1120	-6.4	1330	17.5
80	-0.2	290	0.4	500	-6.9	710	-15.6	920	-16.2	1130	-5.7	1340	19.0
90	-0.4	300	0.2	510	-7.4	720	-15.8	930	-15.9	1140	-4.8	1350	20.6
100	-0.6	310	0.0	520	-7.9	730	-16.0	940	-15.6	1150	-4.0	1360	22.2
110	-0.7	320	-0.2	530	-8.4	740	-16.3	950	-15.4	1160	-3.1	1370	23.9
120	-0.8	330	-0.4	540	-8.8	750	-16.4	960	-15.0	1170	-2.2		
130	-0.8	340	-0.7	550	-9.3	760	-16.6	970	-14.7	1180	-1.2		
140	-0.8	350	-1.0	560	-9.8	770	-16.8	980	-14.3	1190	-0.3		

All values in degrees Celsius. Intermediate values can be interpolated linearly.
 NIST 175 rev ITS-90/EN 60584-1 with a reference junction temperature of 0°C.

BLOCK DIAGRAM

