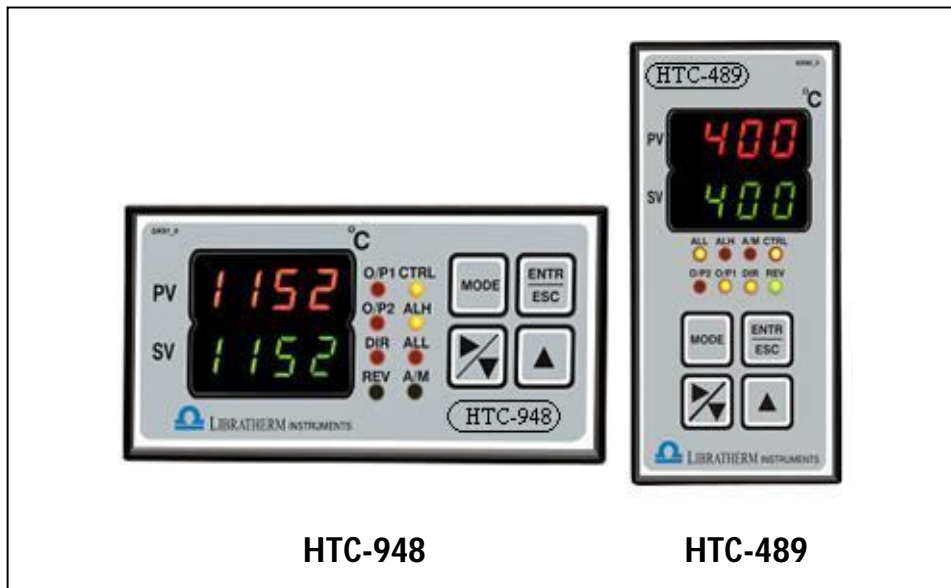


Temperature / Process On-Off Controller (Microcontroller based - 2 Set Points) (Product Code 4.8 to 4.9)



Model Wise Description:

Sr. No	Model	Product Description
4.8.1	HTC-948-U-2	Two Set Point on-off Temp / Process controller with Universal Input
4.8.2	HTC-948-F-2	Two Set Point on-off Temp / Process controller with Fixed Input
4.9.1	HTC-489-U-2	Two Set Point on-off Temp / Process controller with Universal Input
4.9.2	HTC-489-F-2	Two Set Point on-off Temp / Process controller with Fixed Input

Description:

Libratherm offers New version (Model HTC-948 and HTC-489) which are designed and developed using the latest micro-controller. The specification incorporated serves the every simple and critical process control applications of the industry. It accepts input from temperature sensors like thermocouple, RTD (Pt-100), Infrared thermocouple, or pyrometers generating mV or mA signals or from the level/flow/pressure/pH transmitters in the form of (4-20) mA. The input signals from thermocouples and RTD (Pt-100) are software Linearized for 1°C/0.1°C indicating accuracy. It can also be used for other process control applications like pressure control, level control etc. accepting input signals from the respective transmitter or transducers.

HTC-948 / HTC-489 accepts universal input. User can select one of 8 different types of input using side panel DIP switch. This is the added advantage over the fixed type of input.

The controller HTC-948 and HTC-489 has 2 programmable set points. Each can be configured as either High Alarm or Low Alarm or Deviation Alarm or for Off state with programmable ON/OFF hysteresis through user friendly membrane key board. Dual 4 digits display allows simultaneous

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indications of the process value and the set value. In addition this model can give retransmission output of 4-20mA proportional to process value having 12bit resolution, which can be used for remote indication of the process value or input to other process controller or PLC.

Features:

- ❖ Highly accurate and sturdy in operation.
- ❖ Elegant looks, Very easy to operate.
- ❖ Accepts standard type of thermocouple or RTD (Pt-100) 2 or 3-wire input.
- ❖ Control output of Relay or DC pulse or TRAIC.
- ❖ Programmable Hysterisis.
- ❖ User configurable output upto 2 set points.
- ❖ High quality membrane keypad.
- ❖ Operates on Universal supply of 90 to 250 VACS, 50/60 Hz.

Applications:

- ◆ Temperature control
- ◆ Pressure control
- ◆ Heater bank selection
- ◆ Star delta changeover
- ◆ Level control

Technical Specifications:

Input	Thermocouple type J, K, R, S, B, C, D or RTD(Pt-100) 2 or 3-wire input, (0-10)V and (4 – 20)mA (single fixed or 8 Universal)
Range	Subject to the full range of the specified input (Refer table)
Resolution	0.1/1 oC/ unit subject to the specified input and range
Indicating Accuracy	Better than $\pm 1^{\circ}\text{C}$ / 0.1°C /0.1 % of the specified range and the input (Software linearized for thermocouple and RTD inputs)
Display	4 digit 0.25" Red 7-segment LED display for process value. 4 digit 0.25" Green/Red 7-segment LED display for set value.
CJC	Built-in automatic from 0 - 50 °C (applies only for thermocouple)
Open sensor detection	Provided, outputs are turned off for fail safe operations.
Control Mode	Each output is user configurable for High/Low/Deviation/Off state.
Control Action	ON / OFF with programmable Hysterisis.
No. of Set points	2 set points (HTC-723)
Control outputs	DC pulses or only 2 Relays or 2 AC SSR (Triacs).
Output and Set Point indications	Front panel LED indications OUT1, OUT 2 for Outputs and SP1, SP2 for set points.
Key board settings	Front panel membrane key pad for parameter settings.
Retransmission Signal	4-20mA signal proportional and linearized to PV.
Supply	Universal supply of 90 to 250 VAC (5VA max.), 50/60Hz

Digital Serial Interface - Optional	Optically isolated 2 wire RS485 in Modbus RTU protocol. (Slave mode with programmable Modbus address)
Size	96 x 48 x 120 mm (HTC-948) 48 x 96 x 120 mm (HTC-489)
Enclosure	ABS plastic
Weight	0.25 Kg - (Both HTC-948 & HTC-489)

* All Optional Features are Available Extra Cost

Input and Range Selection Table:

Code	Input	Range
A1	Factory set to 8 universal inputs marked (*) below : A2,A3,A4,A5,A6,A13,A15,A17	Subject to input
A2	J type : Fe/Con thermocouple (*)	0 to 760 °C
A3	K type : Cr/Al thermocouple (*)	0 to 1372 °C
A4	R type : Pt/PtRh13% thermocouple (*)	0 to 1768 °C
A5	S type : Pt/PtRh10% - thermocouple (*)	0 to 1768 °C
A6	B type : Pt30%Rh/Pt6%Rh thermocouple (*)	200 to 1820 °C
A7	T type : Cu/Con thermocouple	0 to 350 °C
A8	E type : NiCr/CuNi thermocouple	0 to 900 °C
A9	C type : W5%Re/W26%Re thermocouple	0 to 2300 °C
A10	D type : W3%Re/W25%Re thermocouple	0 to 2300 °C
A11	G type : W/W26%Re thermocouple	0 to 2000 °C
A12	N type : Ni-Cr-Si/Ni-Si-Mg	0 to 1300 °C
A13	Pt-100 (Alpha = 0.00385) DIN 43760 (*)	0.0 to 400.0 °C
A14	Pt-100 (Alpha = 0.00385) DIN 43760	-199.0 to 200.0 °C
A15	4-20mA (*)	0 to 3500 unit
A16	4-20mA	-1500 to +2000 unit
A17	0-10VDC (*)	0 to 3500 unit
A18	0 -10VDC	-1500 to +2000 unit

Ordering Information for Model HTC-496 and HTC-948

Model	A- Input	B- 2 outputs	C- Retransmission	D – RS 485
HTC-948-U-2	A1 – (Factory set to 8 inputs) A2 - Single Fixed input (any one of A2 to A18)	B1- (Both DC pulses for SSRs)	C1- (4-20mA)	D1 – (Yes)
HTC-948-F-2		B2- (Both relays)	00- (None)	00 – (None)
HTC-489-U-2		B3- (Both triacs)		Optional feature at extra cost.
HTC-489-F-2		00- (None)		

* All Optional Features are Available Extra Cost

Example:

Model	A- Input	B- 2 outputs	C - Retransmission	D – RS 485
HTC-948-U-2	A 1	B2	C1	00
HTC-489-F-2	A 13	B3	00	D1

Example	Ordering Code	Description
1	HTC-948-U-2-A1-B2-C1-00	This is with Universal input of types J, K, R,S, B, PT-100, 4-20mA and (0-10)V with 2 set points and 2 relay outputs and Retransmission output of (4-20)mA proportional to selected process value.
2	HTC-489-F-2-A13-B3-00-D1	This is with Single Fixed input of Pt-100 in the range of 0.0 to 400.0oC with 2 set points, 2 Triac outputs, and RS485 interface.

REMARK :