

USER'S OPERATING MANUAL FOR ULTRA LOW TEMPERATURE CONTROLLER

(Models: ULT - 99)



ULT - 99
(96 X 96)

SPECIFICATIONS :-

1. **DISPLAY TYPE** : 8 - Digit 7 segment LED

Model no.	ULT-99	Display Colour
Display height (PV)	0.80"	White
Display height (SV)	0.56"	Green

2. **STATUS LED'S** : OUT1 : Cascade Output Status
OUT2 : Cabinet Output Status
ALM1 : Cascade Alarm Status
ALM2 : Cabinet Alarm Status

3. **INPUT**
Sensor Input : RTD Pt-100
Range : Refer below Table.

Sensor Type	Range	Resolution	Accuracy
Pt-100(RTD 0.1)	-99.9 ~ 450.0°C	0.1 °C	± 0.3 °C

Sampling Time : 125 msec.
Resolution : 0.1°C
LWC for Pt-100 : Built in up to 18E max.
Digital Filter : 1 to 10 Sec.

4. **RELAY OUTPUT**
Contact Type : N/O, COM
Contact Rating : 5A @ 250VAC or 30 VDC
Life Expectancy : > 5,00,000 operations
Isolation : Inherent

5. **SSR DRIVE OUTPUT**
Drive Capacity : 12V @ 30mA.
Isolation : Non-Isolated.

6. **FUNCTION**
Output 1 : Main Control output (Factory Set)
1) Relay
2) SSR
Output 2 : Cabinet Output (Factory Set)
1) Relay
2) SSR
Output 3 : Alarm Output (Programmable)
(common for cabinet & cascade)
1) High Absolute
2) Low Absolute
3) High Deviation
4) Low Deviation
5) Band
Control Action : On-Off
Control Mode : Cool

7. **ENVIRONMENTAL**
Operating Range : 0 ~50°C, 5~90% Rh
Storage Humidity : 95% Rh (Non-condensing)

8. **POWER SUPPLY**
Supply Voltage : 90~270VAC, 50/60Hz.
Consumption : 4W Maximum.

9. **PHYSICAL**
Housing : ABS Plastic

INSTALLATION GUIDELINES

1. Prepare the cut-out with proper dimension as shown in figure.
2. Remove clamp from Controller.
3. Push the Timer through panel cut-out and secure the Controller in its place by tightening the side clamp.

SAFETY INSTRUCTION

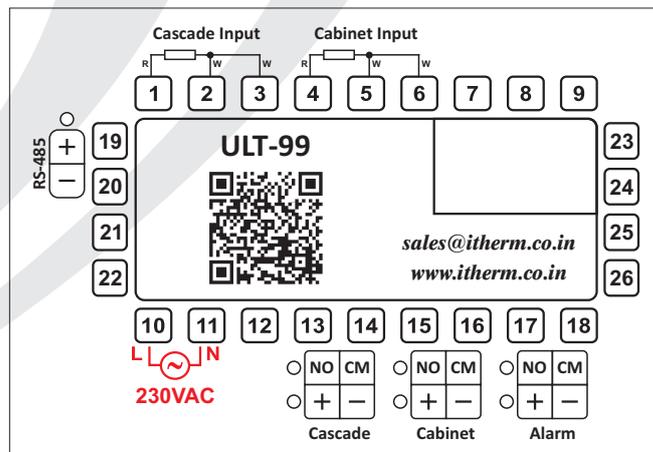
MECHANICAL

- ❖ Ambient temperature and relative humidity surrounding the Controller must not exceed the maximum specified limits.
- ❖ The Controller in its installed state must be protected against excessive electrostatic or electromagnetic interferences.

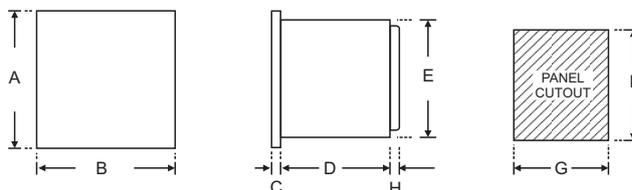
ELECTRICAL

- ❖ The Controller must be wired as per wiring diagram & it must comply with local electrical regulation.
- ❖ The Electrical noise generated by switching inductive loads might create momentary Fluctuation in display, latch up, data loss or permanent damage to the instrument. To reduce this use snubber circuit across the load.

TERMINAL CONNECTIONS :



OVER ALL DIMENSIONS & PANEL CUT OUT (IN MM)



Model	Dim	A	B	C	D	E	F	G	H
ULT-99		96	96	10	65	89	92	92	9

PROGRAMMING

USER LIST : To access the user list Press & Release SET key once.

Para Meter	Lower Display	Upper Display	Range	Description	Default
Cabinet Set Point	SP-L	0.0	LSPL ~ HSPL	User can change the SP1 value using UP/ DOWN and SHIFT keys. Holding the key will change the value at a faster rate. Press SET key to store the desired value.	0.0°C
Cascade Alarm Set Point	ASPH	0.0	LSPL ~ HSPL -99 to +99°C 2 to 99°C	This parameter is prompted if AL.SP is Enable & output 2 is configured as (1) Alarm (High/Low) mode. (2) As a deviation alarm mode. (3) As a band alarm.	0.0°C
Cabinet Alarm Set Point	ASPL	0.0	LSPL ~ HSPL -99 to +99°C 2 to 99°C	This parameter is prompted if AL.SP is Enable & output 2 is configured as (1) Alarm (High/Low) mode. (2) As a deviation alarm mode. (3) As a band alarm.	0.0°C

CONTROL LIST : To enter in this mode press SET & DOWN key simultaneously for 3 sec.

Para Meter	Lower Display	Upper Display	Range	Description	Default
Lock Code	LOCK	0	1 ~ 9999	Set this parameter to 15 (Default LOCK CODE) to access Control List. User has a choice to set different Lock Code via USER LOCK CODE in Config. List.	15
Cascade Delay Time	DL4H	90	0 to 500 sec	It sets the main output restart time where O/P once turned OFF will turn ON only after restart time, regardless difference between PV & SP in Heat or Cool mode. If set to '0', O/P will be switched without delay. Also, Delay will be applicable in case of every power ON.	90
Cascade Hysteresis	HYSH	0.2	0.1 to 100.0 °C	It sets the dead band between ON & OFF switching of the Output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors (between PV & SV).	0.2
Cabinet Delay Time	DL4L	90	0 to 500 Sec.	It sets the main output restart time where O/P once turned OFF will turn ON only after restart time, regardless difference between PV & SP in Heat or Cool mode. If set to '0', O/P will be switched without delay. Also, Delay will be applicable in case of every power ON.	90
Cabinet Hysteresis	HYSL	0.2	0.1 to 100.0 °C	It sets the dead band between ON & OFF switching of the Output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors (between PV & SV).	0.2
Cascade Alarm Hysteresis	AHYH	0.2	0.1 to 100.0 °C	It sets the dead band between ON & OFF switching of the Output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors (between PV & SV).	0.2
Cabinet Alarm Hysteresis	AHYL	0.2	0.1 to 100.0 °C	It sets the dead band between ON & OFF switching of the Output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors (between PV & SV).	0.2

CONFIGURATION LIST :

- (1) To enter in this mode, Press and hold SET & UP key simultaneously for 3 sec.
- (2) Press UP or DOWN key to scroll between parameter options.
- (3) Press SET key to store the current parameter & move on to the next parameter.

Para Meter	Lower Display	Upper Display	Description	Default
Lock Code	LOCK	0	Set this parameter to 15 (Default LOCK CODE) to access Config. List. User has a choice to set different Lock Code between 1 to 9999 via USER LOCK CODE in Config. List.	15
Cascade Offset	OFFSH	00	Function of this parameter is to add/subtract a constant value to the measured PV to obtain final PV for control applications. This parameter value can be altered : (i) To compensate for known thermal gradient. (ii) To match the display values with another recorder or indicator measuring the same PV.	0.0 °C
Cascade Filter	FLTH	3	The controller is equipped with an adaptive digital filter which is used to filter out any extraneous pulses on the PV. The filtered PV Value is used for all PV dependent functions. If the PV signal is fluctuating due to noise, increase the filter time constant value.	3
Lower SP Limit	LSPL	100	Sets the minimum limit for set point adjustment. It can be set from minimum specified range of selected sensor to HSPL value.	10.0 °C
Higher SP Limit	HSPL	-900	Sets the maximum limit for set point adjustment. It can be set from LSPL value to maximum specified range of selected sensor.	-90.0 °C
Cabinet Offset	OFFSL	00	Function of this parameter is to add/subtract a constant value to the measured PV to obtain final PV for control applications. This parameter value can be altered : (i) To compensate for known thermal gradient. (ii) To match the display values with another recorder or indicator measuring the same PV.	0.0 °C
Cabinet Filter	FLTL	3	The controller is equipped with an adaptive digital filter which is used to filter out any extraneous pulses on the PV. The filtered PV Value is used for all PV dependent functions. If the PV signal is fluctuating due to noise, increase the filter time constant value.	3
Cabinet Set Point	SP-L	Enbl v ^ dsbl	If Enabled, User can View & edit the Set point (SP1) in USER list. If disabled, User can not View or edit Set Point (SP1) in USER list.	Enable
Cascade Set Point	SP-H	00	User can change the SP1 value using UP/ DOWN and SHIFT keys. Holding the key will change the value at a faster rate. Press SET key to store the desired value.	0.0°C
Cascade Alarm Type	ALYM	LOY v ^ HIGH v ^ Ladu	<p><u>Low Alarm</u> : OP2 activates when PV < SP2.</p> <p><u>High Alarm</u> : OP2 activates when PV > SP2.</p> <p><u>Low Deviation Alarm</u> : OP2 activates when PV is less than SP1 ± set deviation value</p>	Low

Para Meter	Lower Display	Upper Display	Description	Default
Cascade Alarm Type	ALYH	Hidu	<p>High Deviation Alarm : OP2 activates when PV is greater than SP1 ± set deviation value</p>	Low
		band	<p>Band Alarm : OP2 activates when PV falls outside the band w.r.t. SP1 in either direction.</p>	
Cascade Alarm Logic	ALGH	dir rev	<p>If this parameter is set as 'Direct', Relay/SSR energizes under Alarm condition & remains De-energized otherwise. 'Direct' setting is generally used for Audio/Visual Alarm Output.</p> <p>If this parameter is set as 'Reverse', Relay/SSR De-energizes under Alarm condition & remains energized otherwise. 'Reverse' setting is generally used for tripping the process under Alarm condition.</p>	Direct
Cascade Alarm Inhibit	A1HH	YES NO	<p>This parameter can be used to inhibit (suppress) the Alarm activation upon power-up conditions by setting the parameter value to 'YES'. From Power-up, the Alarm system remains disabled until PV is found with in the limits.</p> <p>If Alarm activation is desired even under Power-up condition, Set this parameter value to 'NO'.</p>	No
Cascade Alarm Ack.	ALPH	AUTO	Once Alarm is activated, user has following three options to de-activate it. When PV falls within the programmed limits, Alarm will be de-activated automatically.	Auto
		MANU	Once Alarm is activated, it remains activated until manually acknowledged by UP key.	
		BOTH	Once Alarm is activated, it can be de-activated either by pressing UP key or when PV falls within the alarm limits.	
Cabinet Alarm Type	ALYL	LOW	<p>Low Alarm : OP2 activates when PV < SP2.</p>	Low
		HIGH	<p>High Alarm : OP2 activates when PV > SP2.</p>	
		Ladu	<p>Low Deviation Alarm : OP2 activates when PV is less than SP1 ± set deviation value</p>	

Parameter	Lower Display	Upper Display	Description	Default
Cabinet Alarm Type	ALYL	Hidu	<p>High Deviation Alarm : OP2 activates when PV is greater than SP1 ± set deviation value</p>	Low
		band	<p>Band Alarm : OP2 activates when PV falls outside the band w.r.t. SP1 in either direction.</p>	
Cabinet Alarm Logic	ALGL	dir	If this parameter is set as 'Direct', Relay/SSR energizes under Alarm condition & remains De-energized otherwise. 'Direct' setting is generally used for Audio/Visual Alarm Output.	Direct
		rev	If this parameter is set as 'Reverse', Relay/SSR De-energizes under Alarm condition & remains energized otherwise. 'Reverse' setting is generally used for tripping the process under Alarm condition.	
Cabinet Alarm Inhibit	AHL	YES	This parameter can be used to inhibit (suppress) the Alarm activation upon power-up conditions by setting the parameter value to 'YES'. From Power-up, the Alarm system remains disabled until PV is found with in the limits.	No
		no	If Alarm activation is desired even under Power-up condition, Set this parameter value to 'NO'.	
Cabinet Alarm Ack.	ACPL	AUTO	Once Alarm is activated, user has following three options to de-activate it. When PV falls within the programmed limits, Alarm will be de-activated automatically.	Auto
		MANU	Once Alarm is activated, it remains activated until manually acknowledged by UP key.	
		BOTH	Once Alarm is activated, it can be de-activated either by pressing UP key or when PV falls within the alarm limits.	
Device ID Number 1	id-1	1	Set device id for communication. Range:- 1 to 9999 Note :- This device id is for Temperature.	1
Device ID Number 2	id-2	2	This is a VIEW ONLY parameter. This device id is for Humidity. The device id for humidity will be the very next id after temperature device id.	2
Baud Rate	BAUD	9600 1920 3125 3840 7680	By this parameter user can select baud rate for communication purpose.	9600

Parameter	Lower Display	Upper Display	Description	Default
Parity	PAR	n_81 v ^ n_82 v ^ o_81 v ^ o_82 v ^ E_81 v ^ E_82	By this parameter user can select parity for communication purpose.	0_81
RS-485 response interval	Entu	1	Widen the time interval of receiving response (Set value x 20 ms)	1(20ms)
Lower Display Message	LDSP	E0GL v ^ SP v ^ InP	By pressing DOWN key, Lower display will Toggle between SP-L, ASP.H , ASP.L.	SP
			By this parameter Lower display will only show the SP-L value.	
			By this parameter Lower display will only show the Input type.	
User Lock Code	ULOC	15	Default USER LOCK CODE is 15 to access Control & Configuration List. User has a choice to set its own USER LOCK CODE between 1 to 9999, this is to prevent unauthorized access of Control & Configuration List.	15



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