OP1102-V01

selec HTC405

Operating Instructions



CE

36 x 72

PARAMETER	SPECIFICATIONS
Display	3 digit, 7 Segment display
Keys	4 (Capacitive Touch)
RH Range	0% to 100%
RTD Range	-150° to 850°
INPUT SPECIFICATIONS	
Input Signal	RH (HS-A-100) RTD (PT100)
Sampling time	250 ms
Input Filter (FTC)	0.2 to 10.0 sec for RH / RTD
Resolution	0.1 / 1 for RH / RTD inputs
Temperature Unit	°C / °F selectable
Relay action RH	Humidifier / Dehumidifier
Relay action RTD	RE / FD
FUNCTIONAL SPECIFICATIONS	
Control Method	1) PID control with auto tuning 2) ON-OFF control (For RH: ON-OFF Control only)
Proportional band (P)	1 to 400°
Integral time (I)	0.0 to 99.9 min
Derivative time (D)	0 to 999 sec
Cycle time	0.1 to 99.9 sec
Hysteresis Width	0.1 to 99.9°
Manual reset value	-19.9 to 19.9°

SENSOR INFORMATION

PARAMETER	SPECIFICATIONS
Cable Length	1 Meter
Dimensions (mm)	52 X 28.8 X 18
Input Range	5V DC
Weight (in gm)	33
Sensor Temperature	Operating : -20 to 100°C Storage : -40 to 120°C

OUTPUT	
RH Control output	**Relay contact (SPDT)** 7A@250V AC / 30V DC, Resistive
RTD Control output	**Relay contact (SPDT)** 7A@250V AC / 30V DC, Resistive
POWER SUPPLY	
Supply Voltage	90 to 270V AC / DC (AC : 50 / 60 Hz)
Power Consumption	4 VA max @230V AC
Temperature	Operating : 0 to 50°C Storage : -20 to 75°C
Humidity	95% RH (non-condensing)
Weight (in gm)	93

SAFETY PRECAUTIONS

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not handled in a manner specified by the manufacturer it might impair the protection provided by the equipment.

CAUTION : Read complete instructions prior to installation and operation of the unit.

WARNING : Risk of electric shock.

WIRING GUIDELINES

WARNING :

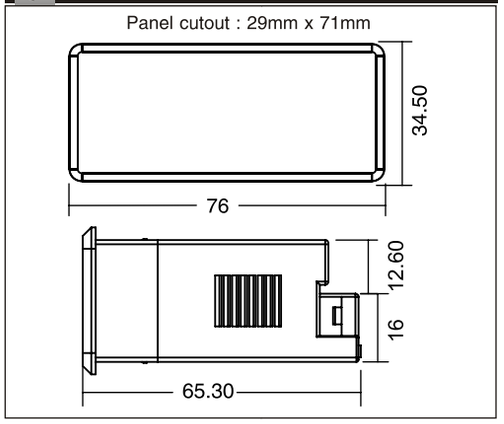
1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement. Use lugged terminals to meet M3 screws.
2. Wiring shall be done strictly according to the terminal Layout with shortest connections. Confirm that all connections are correct.
3. To eliminate electromagnetic interference use of short wire with adequate ratings and twists of the same in equal size shall be made.
4. Cable used for connection to power source, must have a cross section of 1mm² or greater. These wires shall have insulation capacity made of at least 1.5KV.

INSTALLATION GUIDELINES

CAUTION :

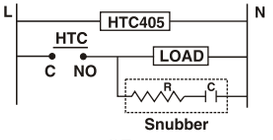
1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after Installation and internal wiring.
2. Conductors must not come in contact with the internal Circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between power source and supply terminals to facilitate power 'ON' or 'OFF' function. However this switch or breaker must be installed in a convenient position normally accessible to the operator.

MECHANICAL INSTALLATION



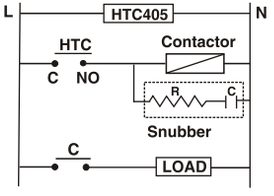
TYPICAL CONNECTIONS FOR LOADS

1) For load current less than 0.5A



OR

2) For bigger loads use interposing relay/contactor



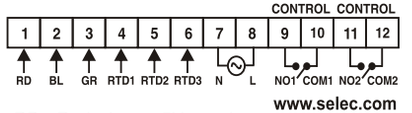
NOTE : Use snubber as shown above to increase life of internal relay of humidity controller.

TERMINAL CONNECTIONS

HTC405

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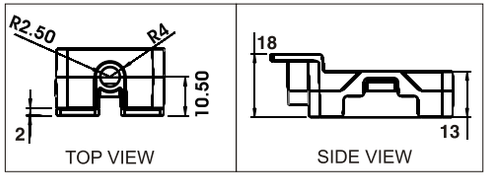
Supply : 90-270V AC / DC, 50/60Hz, 5VA max
RH Control : 7A@250V AC / 30V DC
RTD Control : 7A@250V AC / 30V DC



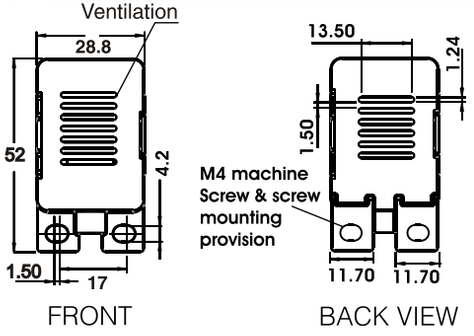
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MADE IN INDIA

RD - Red wire - +5V supply
BL - Black Wire - GND
GR - Green Wire - Signal

SENSOR DIMENSION (TOP & SIDE)

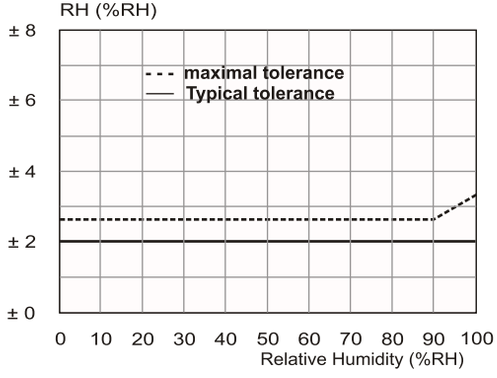


SENSOR DIMENSION (FRONT & BACK)

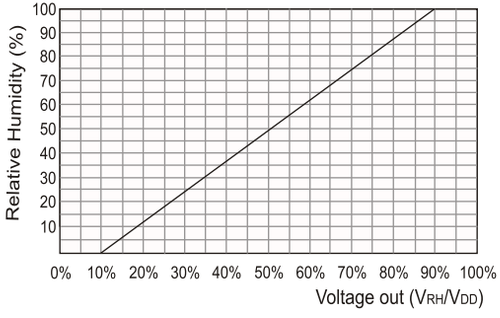


NOTE : Length of the cable can be increased by using compensation cable upto 3 meter. After that accuracy may vary by 1% / Meter.

HUMIDITY SENSOR PERFORMANCE



Tolerance of RH at 25°C

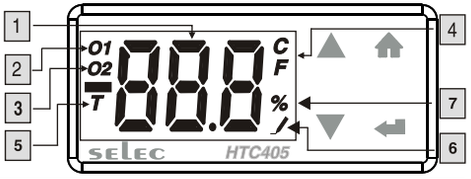


Relation between the ratiometric analog voltage output and measured relative humidity.

RECOMMENDED OPERATING CONDITION

1. The sensor shows best performance when operated within recommended normal humidity range of 20 to 80%RH, respectively.
2. Long term exposure to conditions outside normal range, especially at high humidity, may temporarily offset the RH signal.
3. After returning to normal humidity range the sensor will slowly come back to calibration state by itself.
4. Prolonged exposure to extreme condition may accelerate ageing.

FRONT PANEL DESCRIPTION



1	Process-value/ Parameter display/ Set point display	1) Display process value and its error condition 2) Display parameter symbols in configuration menu for 1 sec and then the parameter values 3) Displays set point value
2	Control output1 indication	The O1 is lit when the RH control output 1 is ON
3	Control output2 indication	The O2 is lit when the RTD control output 2 is ON
4	Temperature Unit	Indication for Temperature unit (°C/°F)
5	Tune	Auto tune (AT) : Fast blinking Self tune (ST) : Slow blinking
6	Edit	Continuos ON = Editable parameter Blinking = Edit mode enabled
7	Humidity Percentage	1) lit when user in level0 or pv showing RH value. 2) lit when user in level1 or pv showing temp value.

INPUT RANGES (Table1)

FOR RTD

INPUT		RANGES
Resolution		1 / 0.1
PT100	°C	-150 to 850
	°F	-238 to 999

ERROR DISPALY (Table2)

When an error has occured, the upper display indicates error codes as given below.

Error	Meaning	Control Output Status
H.bՈ	RH Sensor break / over range condition	OFF
t.bՈ	RTD Sensor break / over range condition	OFF

HTC405

Programming online parameters

RTD Setpoint : **Default : 50.0**

Range : TSL to TSH
Pressing ▲ key will show on display : SEt
After 1 sec display show : <50.0>
Pressing ↵ key to enable edit mode. Display will blink.
Pressing ▲ + ▼ keys to increment / decrement SEt
Pressing ↵ key to exit edit mode.

RH Setpoint : **Default : 40.0**

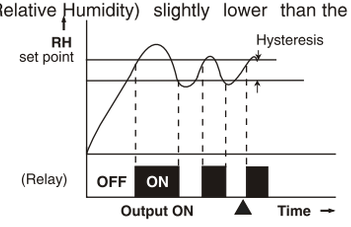
Range : HSL to HSH
Following will be displayed: SEH
After 1 sec display show : < 40.0 >
Pressing ↵ key to enable edit mode. Display will blink.
Pressing ▲ + ▼ keys to increment / decrement SEH
Pressing ↵ key to exit edit mode.

CONFIGURATION INSTRUCTIONS

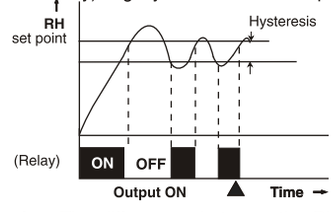
KEY FUNCTIONS	ONLINE	CONFIGURATION MENU	Set point
↵	➢ Press once to view SP ➢ Press for 3 sec to edit SP (Setpoint value blinking)	➢ Press once to start editing current parameter value. (Parameter value blinking) ➢ After editing, press again to store current parameter value.	➢ Press once to exit Setpoint view / edit mode.
▼	➢ Press for 3 sec to enter configuration menu.	➢ To view previous parameter OR decrement parameter value.	———
▲	➢ Press once to acknowledge Alarm.	➢ To view next parameter OR Increment parameter value.	➢ Increment setpoint.
⌂	———	➢ Press for 3 sec to exit configuration menu.	➢ Press 3 Sec to exit Setpoint view / Edit mode.
↵ + ▲ & ↵ + ▼	———	———	➢ Press up or down key to select between RH & Temp Setpoint.

USER GUIDE

1) ON/OFF control action (for Humidity) :
When in dehumidifier mode (DF) the relay is 'OFF' up to the set RH (Relative Humidity) and 'ON' above the set RH (Relative Humidity). As the RH (Relative Humidity) of the system drops, the relay is switched 'OFF' at a RH (Relative Humidity) slightly lower than the set point.



When in Humidifier mode (HF) the relay is 'ON' up to set RH (Relative Humidity) and 'OFF' above the set RH (Relative Humidity). As the RH (Relative Humidity) of the system increases, the relay is switched 'ON' at a RH (Relative Humidity) slightly lower than the set point.



Hysteresis : The difference between the RH (Relative Humidity) at which relay switches 'ON' and at which relay switches 'OFF' is the hysteresis or dead band.

2. Humidity display bias :
This function is used to adjust the display value in cases where it is necessary for display value to agree with another recorder or indicator, or when the sensor cannot be mounted in correct location.

3. Restart time delay :
This parameter is used to protect the compressor from restarting in a short period of time and can be set between 0 to 19.9 minutes.
Example : If this parameter is set at 2 mins, the relay will cut off at the set RH, but will not restart for a minimum of 2 mins, even if the differential is achieved Earlier.

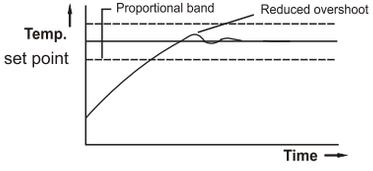
4. Resolution :
When set as 0.1,
PV auto ranges to Resolution 0.1 for -19.9 > PV > 19.9
SP range is limited from -19.9 to 19.9

5. Humidity Set Point High :
This parameter limits the maximum range of SP. SP will never exceed HSH.

6. Humidity Set Point Low :
This parameter limits the minimum range of SP. SP will never decrease below HSL.

7. Self Tune (ST) : It is used where modification of PID parameters is required repeatedly due to frequent change in process condition eg. Setpoint.

- Tune LED blinks at slower rate when Self-tuning is in progress.
- At the completion of self-tuning, Tune LED stop blinking.



Self-tuning is initiated under the following conditions :
1) When setpoint is altered.
2) When tune mode is altered. (TUNE=ST)

- ST will start only if PV < 50% of setpoint.
- ST will work only when TACT=RE.

CALIBRATION CERTIFICATE

Model No : HTC405

Claimed Accuracy :
for RH input:
± 3% for RH 10% to 80%
± 4% for Below 10% & Above 80%
for RTD input:
(20 min of warm up time)
For RTD inputs : 0.1% of FS ±1°C

Standard used for Calibration of product is traceable to NABL

The calibration of this unit has been verified at the following values :

SENSOR SELECTION	VERIFICATION VALUE (°C)
RTD	0.0
	323.5
	800.0
RH	0.0
	2.5
	5.0

Note :-
The verification values are approximate values with ± 1°C range for temperature and ± 3% range for RH.

The RTD & RH curves are linearized in this microprocessor based product; and hence the values interpolated across the input range are also equally accurate ; at every point in the curve.

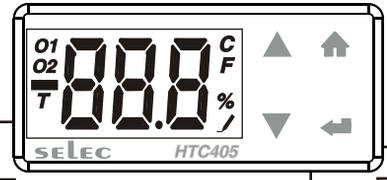
Unit is accepted as accuracy is within the specified limit of claimed accuracy and certificate is valid upto one year from the date of issue.

(Specifications are subject to change, since development is a continuous process.)

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Website : www.selec.com I Email : sales@selec.com

POWER ON



Press ▼ key for 3sec.

LUL0

Press ▼

press ▼ + ▲ key

LUL1

Press ▲

Press ▲ key for 3sec.

Press ▲ + ▼ keys for 3sec.

Humidity Level

Display	Description	Default Value	Range
HPn	Humidity Display Resolution	0.1	0.1 / 1
HSL	Humidity Set point low	0.0	0% to SPH
HSH	Humidity Set point high	100	SPH to 100%
HFt	Humidity Filter time constant	1.0	0.2 to 10.0 sec
HAC	Humidity Control action for RH	dF	DF / HF
HHY	Humidity Hysteresis	0.5	0.1 to 99.9%RH
Hdb	Humidity Display bias	0.0	-19.9 to 19.9%RH
PtL	Restart time delay	0.0	0.0 to 19.9 (Mins.)
HPS	Level 0 Factory default (Reset all)	no	NO / YES

Temperature Level

Display	Description	Default Value	Range
tPn	Temperature Display Resolution	0.1	0.1 / 1
Unt	Temperature unit	°C	°C / °F
tSL	Temperature Set point low	-150	Min range of PT100 to SPT
tSH	Temperature Set point high	850	SPL to max range of Pt100
tFt	Temperature Filter time constant	1.0	0.2 to 10.0 sec
tAC	Temperature control action for RTD	rE	RE / FD
CnL	Control logic	Pid	PID / ONF
tHY	Temperature Hysteresis	0.5	0.1 to 99.9° when CNT=ONF
tdb	Temperature display bias	0.0	-19.9 to 19.9°
APY	Anti-reset windup %	25	1.0 to 100% Not promted for CNT=ONF
tPS	Level 1 Factory default (Reset all)	no	NO / YES

Level 2

Display	Description	Default Value	Range
tUn	Tune	St	ST / AT / OFF
P	Proportional band	10.0	1 to 400°
I	Integral time	2.0	0.0 to 99.9 min
d	Derivative time	30	0 to 999 sec
CYn	Cycle time mode	AUt	AUT / US.F
CYt	Cycle time	15.0	0.1 to 99.9 sec
rnP	Manual reset	0.0	-19.9 to 19.9°

Protection Level

Display	Description	Default Value	Range
SPt	Lock setpoint Temperature	UnLY	UNLK / READ
SPH	Lock Setpoint Humidity	UnLY	UNLK / READ / LOCK
LU0	Lock level 0	UnLY	UNLK / READ / LOCK
LU1	Lock level 1	UnLY	UNLK / READ / LOCK
LU2	Lock level 2	UnLY	UNLK / READ / LOCK

Note

1. Locking parameters will not permit change in the value of respective level parameters.
2. Continuous operation of ■ +▲/▼ keys for SP or other parameters makes update speed faster in 3 stages after 3 sec.