selec **HC404**
Operating Instructions

OP1101-V01

CE **36 x 72**

PARAMETER	SPECIFICATIONS
Display	3 digit, 7 Segment display
Key	4 (Capacitive Touch)
RH Range	0% to 100%
Accuracy	± 3% for RH 10% to 80% ± 4% for Below 10% RH & Above 80% RH
Control action	ON/OFF (with hysteresis programmable)
Display offset	-19.9 to 19.9% RH
Restart time delay	Programmable from 0 to 19.9 minutes
Relay action	a) Humidifier b) Dehumidifier
Alarm Range	HA = Set Point (SP) to 100 LA = 0 to Set Point (SP)
Sensor Break	'Hb.r' indicated on display
OUTPUT	
Control output : **SPDT, 10A@250VAC / 30V DC** **Alarm output :** **SPDT, 5A@250VAC / 30V DC**	
Power supply	90 to 270V AC / DC 50 / 60 Hz
Temperature	Operating : 0 to 50°C Storage : -20 to 75°C
Humidity	95% RH (Non-condensing)
Weight	93 gm
Power consumption	4VA max @230V AC

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
Alarm Indications a) High Alarm : Display alternates between **'HA/PV'** b) Low Alarm : Display alternates between **'LA/PV'**	

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 1mm^2 or greater. These wires shall have insulation capacity made of at least 1.5KV.

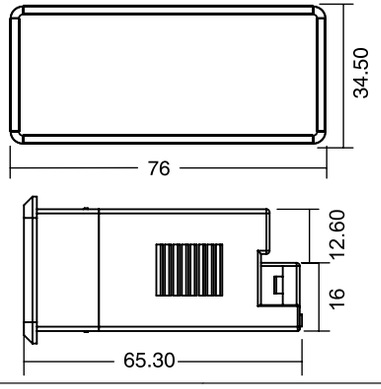
INSTALLATION GUIDELINES

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.

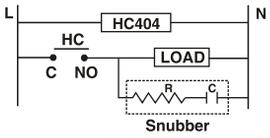
MECHANICAL INSTALLATION

Panel cutout : 29mm x 71mm



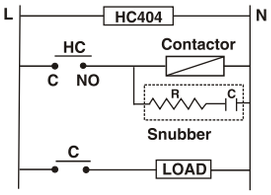
TYPICAL CONNECTIONS FOR LOADS

1) For load current less than 0.5A



OR

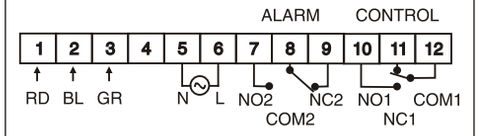
2) For bigger loads use interposing relay/contactor



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

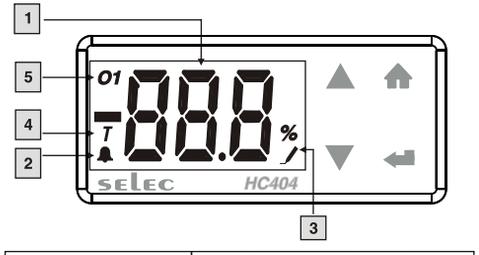
TERMINAL CONNECTIONS

HC404



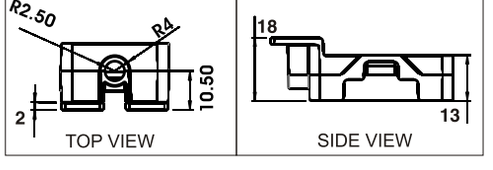
RD - Red wire - +5V supply
BL - Black Wire - GND
GR - Green Wire - Signal

FRONT PANEL DESCRIPTION

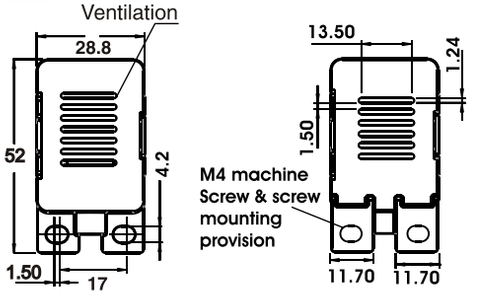


1	Process-value/ Parameter display/ Set point display	1) Display process value and its error condition 2) Display parameter symbols in configuration menu for 1 sec and then the parameter values 3) Displays set point value
2	Alarm	Indicates Alarm condition
3	Edit	Continuos ON = Editable parameter Blinking = Edit mode enabled
4	Restart Timer	Blinks when Restart time delay ON
5	Control output	Indicates control output ON

SENSOR DIMENSION (TOP & SIDE)

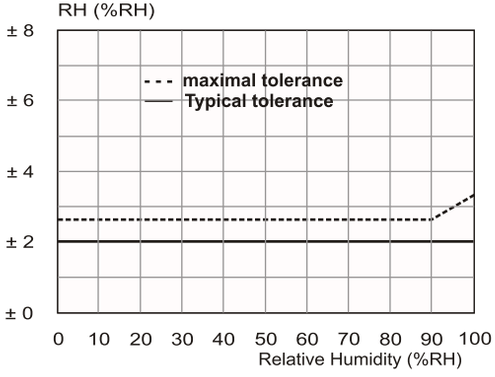


SENSOR DIMENSION (FRONT & BACK)

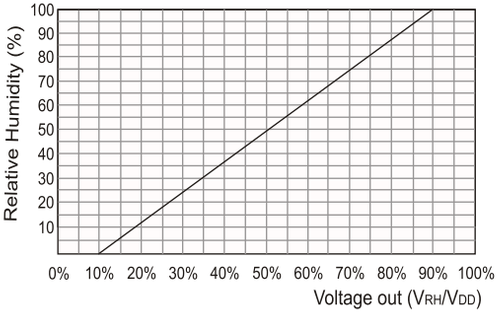


NOTE : Length of the cable can be increased by using compensation cable upto 3 meter. After that accuracy may vary by 1% / Meter.

HUMIDITY SENSOR PERFORMANCE



Tolerance of RH at 25°C



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

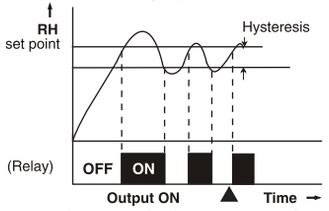
RECOMMENDED OPERATING CONDITION

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.

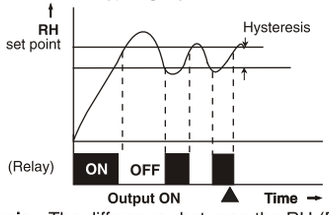
USER GUIDE

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.

5. Alarm acknowledgment :
To acknowledge the alarm, press ▲ key.

6. Lock Parameter :
When set as UNK, Configuration parameters & setpoint are editable
When set as LCK, Configuration parameters & setpoint are read only.

7. Alarm Indicator :
When FN is set as ON, Alarm function is enabled.
HA alarm is generated when PV >= HA, display toggles every 1 sec between PV & HA Value.
LA alarm is generated when PV <= LA, display toggles every 1sec between PV value & LA.

8. 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
(If LA<-19.9 or HA>19.9).

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

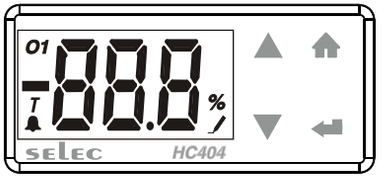
10. Humidity Set Point Low :
This parameter limits the minimum range of SP.
SP will never decrease below HSL.

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.

OPERATIONAL MENU

POWER ON ▷



Display (For 1sec)	Description	Default Value	Range	Condition
HRn	Humidity Resolution	0.1	0.1 / 1	NA
HA	High alarm	100	SP to 100%	NA
LA	Low alarm	0.0	0% to SP	NA
HSL	Humidity Set point low	0.0	0% to SP	NA
HSH	Humidity Set point high	100	SP to 100%	NA
HFt	Humidity Filter time constant	1.0	0.2 to 10.0	NA
HAC	Humidity Control mode	dF	dF / HF	NA
LP	Lock parameter	ULY	ULY/LCY	NA
HHY	Humidity Hysteresis	0.5	0.1 to 99.9	NA
Hdb	Humidity display bias	0.0	-19.9 to 19.9% RH	NA
rtL	Restart time delay	0.0	0.0 to 19.9 min	NA
FN	Alarm Indicator	OFF	ON/OFF	NA
HrS	Humidity Reset	nO	nO/YES	NA

CALIBRATION CERTIFICATE

Model No : HC404

Claimed Accuracy :
for RH input:
± 3% for RH 10% to 80%
± 4% for Below 10% & Above 80%

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)
RH	0.0
	2.5
	5.0

Note :-
The verification values are approximate values with ± 3% range for RH.

The 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.)

Selec Controls Pvt. Ltd., India

Factory Address :
EL-27/1, Electronic Zone, TTC Industrial Area, MIDC, Mahape, Navi Mumbai - 400 710, INDIA.
Tel. No. : +91-22-41 418 452/468 I Fax No. : +91-22-28471733
Toll free : 1800 227 353 (BSNL/MTNL Subscribers only)
Website : www.selec.com I Email : sales@selec.com