1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be
  used as a safety device.
- Check the application limits before proceeding.
- Dixell Srl reserves the right to change the composition of its products, even without notice,
  ensuring the same and unchanged functionality.

1.2 SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding
  sudden temperature changes with high atmospheric humidity to prevent formation of condensation.
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell s.r.l.
  (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from
  each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our MOD. FT1) in
  parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

The XH360L, 38x185 format and the XH360V, 100x64 format, are microprocessor controllers, suitable for
applications on medium or low temperature refrigerating units. They have 6 output relays to control
compressor, heating elements, defrost/extractor fan, fan, de-humidifier/light and humidifier. They have 2
NTC inputs one for thermostat the other one for defrost. It’s also present a 4+20mA input for humidity.
There is one digital input (free contact) configurable by parameter. An output allows the user to
programme the parameter list with the “Hot Key”.

3. TEMPERATURE REGULATION

The temperature regulation is performed through neutral zone using compressor and heater output
relays.

3.1 DEFROST

During defrost the temperature control is disabled.

If the second relay is configured as defrost: oA2=dEF (XH360L terminals 9-10-11, XH360V
terminals 6-7) then two defrost modes are available through the “dEf” parameter: defrost with electrical
heater (tDF=E) or hot gas (tDF=H). The defrost control is interval by means of parameters “EdF”.
(EdF=H) the defrost is made every “tDF” interval, (EdF=5%) the interval “tDF” is calculate through Smart
Defrost algorithm (only when the compressor is ON). At the end of defrost dripping time is started, set
by “dF” parameter.
To disable the defrost set the MDF parameter to zero

If oA2 is different from dEF, defrost is made only by stopping compressor (tDF=E).
To disable defrosts set MDF=0.

Humidity regulation during defrost depends on the Hud parameter.

Hud=0: humidity regulation is disabled.

Hud=1: humidity regulation is performed also during defrost.

4. HUMIDITY REGULATION

The humidity regulation is performed through neutral zone, by humidifying dehumidifying actions.
Humidity control can be disabled setting the SET_RH to "nu" value. In this case only the temperature
control is perform.

4.1 HUMIDIFYING ACTION

The humidifying action is done enabling the humidifier relay when the humidity is lower than the
"SET_RH-dbeh" value.

The relay is switch off when humidity reaches the set values.

4.2 DEHUMIDIFYING ACTION WITHOUT DEHUMIDIFIER RELAY, OAA DIFFERENT FROM DEH

In this case the dehumidifying action is performed by setting the following parameters in this way:

- Hud = CH kind of dehumidifying by means of heating and compressor relays
- oA1 different from deh (XH360L terminals 3-4, XH360V terminals 11-12): The heating and compressor
  outputs are activated together when humidity is higher than SET_RH+beh
- Outputs are disabled when humidity comes back to the SET_RH value.

4.2.1 Relation between cooling, heating and dehumidifying

1. If is simultaneously present a request of cooling (temp>SET_T+dbt) and dehumidifying (RH >
   SET_RH+dbeh) the cooling action has the priority over the dehumidifying action: only
   the compressor relay is energised till the SET_T is reached at this point also the heating relay
   is enabled.

2. If is simultaneously present a request of heating (temp>SET_T-dbeh) and dehumidifying (RH >
   SET_RH+dbeh) the dehumidifying action has the priority over the heating action: both the
   compressor and the heating relays are energised till the humidity set is reached at this point
   only the heating relay is enabled.

4.3 DEHUMIDIFYING ACTION WITH DEHUMIDIFIER RELAY, OA1 = DEH – (XH360L

Terminals 3-4, XH360V terminals 11-12): The configurable relay is used, (XH360L terminals 3-4, XH360V
terminals 11-12) setting the parameter oA1=deh.

NOTE: The LIGHT button is not more available.

Two kinds of de-humidifying are available:

4.3.1 Dehumidifying action with ONLY de-humidifier relay

By setting the parameter Hud = db the de-humidifying action is performed by enabling the de-humidifier
relay when the humidity is higher than SET_RH + dbeh.

The relay is switch off when humidity comes back to the SET_RH value.

4.3.2 Dehumidifying action with de-humidifier and compressor relays

By setting the parameter Hud = ch the de-humidifying action is performed by enabling the de-
humidifier and compressor relays together when the humidity is higher than SET_RH + dbeh.

The relays are switched off when humidity comes back to the SET_RH value.

5. FANS

The fan control mode is selected by means of the “Fnc” parameter:

- FnC=0 fans will switch ON and OFF with the compressor and not run during defrost;
- FnC=1 fans will run continuously, but not during defrost.
- FnC=2 fans will switch ON and OFF with the compressor and run during defrost;
- FnC=3 fans will run continuously also during defrost.

6. EXTRACTOR FAN

6.1 EXTRACTOR FAN CYCLES

The second relay (XH360L terminals 9-10-11, XH360V terminals 6-7) is configured as extractor
fan, oA2= Est, then it is possible to make extraction cycles, both manually and automatically.

Extraction cycle can be activated both manually by pushing the UP key for 3s, and automatically by
the internal time rF. Cycle duration is set by the Fd parameter. The cycle can be stopped also by key.
If rF = 0 only manual cycle can be activated.
If rF = 0 the cycle is stopped only by pushing the key.

7. MATURING CYCLE WITH DRIPPING, RUNNING AND STOPPING PHASE.

The diagrams displays a typical maturing cycle with the starting dripping phase.

- The last phase is configured as defrosting. Without humidity control, temperature set is SETG
- The second phase is configured as cooling. With humidity control, temperature set is SETG
- The third phase is configured as heating. With humidity control, temperature set is SETG

The end of the stopping phase is signaled by the internal buzzer and by the “End” message on the
display.

After the STOPPING PHASE the behavior of the controller depends on the parameter ter, according
to the following settings:
- ter = 0 controller maintains the set points of the running phase
- ter = 1 controller stops the regulation at all
- ter = 2 controller performs the running and stopping phase till is stopped manually.
- ter = 3 the E is enabled at the end of each cycle the End label is displayed and the buzzer is
  switched on.
7.1 HOW TO SET THE DURATION OF THE DRIPPING, RUNNING AND STOPPING PHASES
1. Push the CLOCK key, the display shows on the bottom display the "on" message, while the "hourglass" start flashing.
2. Push again the CLOCK the duration of the dripping phase is shown, hh:mm.
3. To set the duration push the UP and DOWN keys.
4. Push again the CLOCK to confirm the time and pass to the setting of the running phase: the "on" message is displayed.
5. Push the CLOCK key to see its duration and use the UP and DOWN keys to set it.
6. Push again the CLOCK to confirm the time and pass to the setting of the stopping phase: the "off" message is displayed.
7. Push the CLOCK key to see its duration and use the UP and DOWN keys to set it.
8. Confirm the value by pushing again the CLOCK key and pass to the humidity display.

7.2 HOW TO SET THE TARGET HUMIDITY OF THE RUNNING CYCLE
1. Push the SET_RH key, the display shows on the bottom display the "SH1" message, while the "set" icon starts flashing.
2. Push again the SET_RH the humidity set point of the running phase is shown. Set it using the UP and DOWN keys. To disable the humidity control during the freezing phase set it to "nu".
3. Push again the SET_RH key to confirm the value and pass to the humidity display.

7.3 HOW TO SET THE TARGET TEMPERATURE OF THE DRIPPING AND RUNNING PHASES
1. Push the SET_T key, the display shows on the upper display the "SIG" message, while the "set" icon starts flashing.
2. Push again the SET_T the temperature set point of the running phase is shown. Set it using the UP and DOWN keys.
3. Push again the SET_T to confirm the value and pass to the setting of the dripping phase: the "SI" message is displayed.
4. Push the SET_T key to see its value and use the UP and DOWN keys to set it.

7.4 HOW TO START THE CYCLE
Push and release START key: the led  will be turned ON.
The  led flashes during the proving phase.

7.5 END OF THE CYCLE
When the timer has expired, the buzzer starts sounding and the bottom display shows the "End" message.
To mute the buzzer push a key: The display come back to show the humidity and the LED of the START key is turned off.

7.6 HOW TO STOP THE CYCLE MANUALLY
To stop the cycle manually push the ON/OFF key.

7.7 HOW TO MODIFY THE SETTING OF THE CURRENT CYCLE WHILE IT’S RUNNING
To modify the setting of the running cycle temperature (SET_T), humidity (SET_RH) or remaining time (CLOCK):
1. Push twice the corresponding key: the setting value of the current phase (dripping or running) will be displayed.
2. Modify it using the UP and DOWN keys.
3. Confirm the value using the corresponding key: temperature (SET_T), humidity (SET_RH) or remaining time (CLOCK).
NOTE: the changes made will be memorised. So the next cycle will start with the new values.

8. THE DISPLAY
To display and modify target temperature set point, (SET_T) for the running (St1) and the dripping (StG) phase.

To display and modify target humidity set point, (SET_RH) of the running (SH1) phase; in programming mode it selects a parameter or confirm an operation.

In programming mode it browses the parameter codes or increases the displayed value. If oA2=ESt hold it pressed for 3s to start a extraction cycle.
To start a manual defrost: hold it pressed for at least 3s.
In programming mode it browses the parameter codes or decreases the displayed value.

Switch ON and OFF the light, if present (oA1=lig)

Start: to start the cycle
Clock: to set the duration of the dripping (dri), running (on) and stopping (off) phases

Switch ON and OFF the instrument.

KEY COMBINATIONS
+ To lock and unlock the keyboard
+ To enter the programming mode.
+ To exit the programming mode.

8.1 ICONS AND SYMBOLS
Each LED function is described in the following table.

<table>
<thead>
<tr>
<th>LED</th>
<th>MODE</th>
<th>FUNCTION</th>
</tr>
</thead>
</table>
| Led 4 | ON  | - Instrument in standby.
| °C | ON  | - In "Pr2" indicates that the parameter is also present in "Pr1". |
| °F | ON  | °C |
| ♂️ | ON  | The compressor is running |
| ♂️ | FLASHING | - Anti-short cycle delay enabled |
| ♂️ | ON  | The defrost is enabled |
| ♂️ | LED 3 | FLASHING | Dripping in progress |
| ♂️ | LED 3 | FLASHING | Programming Phase (flashing with LEDs) |
| ♂️ | ON  | Healing enabled |
| ♂️ | LED 2 | FLASHING | Temperature Set programming phase |
| ♂️ | ON  | - ALARM signal |
| ♂️ | ON  | Fan is running |
| ♂️ | ON  | RH%
| ♂️ | ON  | Dehumidifying enabled |
| ♂️ | ON  | Humidifying enabled |
| ♂️ | LED 1 | FLASHING | Humidity Set programming phase |
| ♂️ | LED 1 | FLASHING | Dripping or stopping phase is in progress |
| ♂️ | LED 1 | FLASHING | Setting of the duration of the cycle |

8.2 HOW TO SEE AND MODIFY THE SET POINT (TEMPERATURE AND HUMIDITY)
1. Push and immediately release the SET key: the display will show the Set point value and the correspondent set icon starts flashing;
2. To change the Set value push the (↑ or ↓) arrows within 10s.
3. To memorise the new set point value push the SET key again or wait 10s.

8.3 TO START A MANUAL DEFOST
1. Push the DEF key for more than 2 seconds and a manual defrost will start.
8.4 TO START A EXTRACTION CYCLE MANUALLY
Hold pressed the UP key for more than 2 sec.
To stop manually the cycle: when the cycling is running, hold pressed the UP key for more than 2 sec.

8.5 TO ENTER IN PARAMETERS LIST "P1t"
To enter the parameter list “P1t” (user accessible parameters) operate as follows:
1. Enter the Programming mode by pressing the SET RH key for few seconds. (LED2&3 start blinking).
2. The instrument will show the first parameter present in “P1t”.

8.6 TO ENTER IN PARAMETERS LIST "P2t"
To access parameters in “P2t”:
1. Enter the “P1t” level.
2. Select “P2t” parameter and press the “SET RH” key.
3. The “PAS” flashing message is displayed, shortly followed by “0 -0” with a flashing zero.
4. Use or to input the security code in the flashing digit, confirm the figure by pressing “SET RH”.
5. The security code is “321”.
6. If the security code is correct the access to “P2t” is enabled by pressing “SET RH” on the last digit.

Another possibility is the following: after switching ON the instrument the user can push SET RH keys within 30 seconds.

NOTE: each parameter in “P2t” can be removed or put into “P1t” (user level) by pressing SET RH key. When a parameter is present in “P1t” LED 4 is on.

8.7 TO CHANGE PARAMETER VALUES
1. Enter the Programming mode.
2. Select the required parameter with or.
3. Press the “SET RH” key to display its value (LED2&3 start blinking).
4. Use or to change its value.
5. Press “SET RH” key to store the new value and move to the following parameter.

To exit: Press SET RH or UP or wait 15s without pressing a key.

NOTE: the new programming is stored even when the procedure is exited by waiting the time-out.

8.8 HOW TO LOCK THE KEYBOARD
1. Keep the and keys pressed together for more than 3 s the and keys.
2. The “POF” message will be displayed and the keyboard is locked. At this point it is only possible to select the set point or the Max or Min temperature stored and to switch ON and OFF the light, the auxiliary output and the instrument.

TO UNLOCK THE KEYBOARD
Keep the and keys pressed together for more than 3 s.

8.9 ON/OFF FUNCTION
By pushing the ON/OFF key, the instrument shows “OFF” for 5 sec. and the ON/OFF LED is switched ON.
During the OFF status, all the relays are switched OFF and the regulations are stopped; N.B. During the OFF status the LED4 button is lighted.

8.10 PARAMETER LIST

REGULATION

DBt half dead band width for temperature: (0÷25,5°C; 1÷45°F) this band is place below and above the temperature set point (SET T) The compressor is enabled when the temperature increases and reaches the SET T + dbt value. It is turned off when it comes back to the SET T.
The heating output is enabled when temperature is less than SET T - dbt value and disabled when the SET T - dbt value is reached. The heating output is controlled when is less than SET RH - dbt value and disabled when the SET RH + dbt value is reached.

dbHhalf dead band width for humidity: (0÷25,5RH) this band is place below and above the humidity set point (SET RH). The dehumidifying action is enabled when the humidity increases and reaches the SET RH + dbH value and it is turned off when it comes back to the SET RH. The humidity output is turned off when is less than SET RH - dbH value and disabled when the SET RH + dbH value is reached.

LS Minimum temperature set point limit: (0°C;20°F; -80°F; SET) Set the minimum acceptable value for set point.
US Maximum temperature set point limit: (SET+10°C; SET+230°F) Set the maximum acceptable value for set point.
Ods Outputs activation start at delay (≤255 min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter. (Light can work)
AC Anti-short cycle delay: (0÷30 min) interval between the compressor stop and the following restart.
Ku Humidity dehumidifying: db: only with dehumidifier relay (a1H+ deH) cH: with dehumidifier and compressor relay (a1H+ deH) cH: without dehumidifier relay, by means of compressor and heating relays (a1H+ deH).
LSH Minimum humidity set point limit: (Lci ≤ Set H) Set the minimum acceptable value for humidity set point.

trH Max length for the stopping phase the controller gives the “End” message, the buzzer is turned on, and the regulation is stopped.

trCtOL at the end of the stopping phase the controller gives the “End” message, the buzzer is turned on, and the regulation restarts from the running phase.

DEFROST

Idf Defrost type: rE = electrical heater (Compressor OFF)
= hot gas (Compressor and defrost relay ON)
Edf Defrost mode: = interval mode The defrost starts when the time is expired.
Sd = Smart frost mode. The time Idf (interval between defrosts) is increased only when the compressor is running (running consecutively).
Sdf Set point for SMARTFROST: (-30°C -22.86°F) evaporator temperature which allows the Idf counting (interval between defrosts) in SMARTFROST mode.
ed Defrost termination temperature: (-50°C; +10°C; -58°F; +230°F) (Enabled only when the evaporator probe is present) sets the temperature measured by the evaporator probe which causes the end of defrost.
Idf Interval between defrosts: (1÷120h) Determines the time interval between the beginning of two defrost cycles.
Mdf Duration of defrost: (0÷255 min) When P2P = 0, a, no evaporator probe, it sets the defrost duration, when P2P = 1, the defrost end based on temperature, it sets the maximum length for defrost.
Fdf Display during defrost: = real temperature; = temperature reading at the defrost start; Set = set point; = Idf label; = Idf label.
dAf Defrost display time out: (0÷255 min) Sets the maximum time between the end of defrost and the restarting of the real room temperature display.
Dfd Drain down time: (0÷60 min) Time interval between reaching defrost termination temperature and the restoring of the control’s normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
Dpo First defrost after start-up: = immediately; n = after the Idf time
Hud Humidity control during defrost: no: the humidity control is stopped during the defrost; yes the humidity control works also during the defrost.

FANS

FnC Fan operating mode: C = running when a load is on, OFF during the defrost; C=y = running when a load is on, ON during the defrost; C=off = continuous mode, OFF during the defrost; C=off = continuous mode, ON during the defrost.

EXTRACTOR FANS

1F Interval between 2 cycles of change of air (0÷120 ore; 0 = only manual starting)
Ff Duration of change of air cycle: (0÷25min; 0 = only manual stopping)

TEMPERATURE ALARMS

ALC Temperature alarm configuration: rE = High and Low alarms related to Set Point
Ab = High and low alarms related to the absolute temperature.
ALL Low temperature alarm setting: ALC = rE, 0 = 50 °C or 90°F
ALC = Ab, 0 = 50°C or 90°F.
AHL Low temperature alarm setting:
ALC = rE, 0 = 50°C or 90°F
ALC = Ab, 0 = 110°C or 230°F.
AAL Temperature alarm recovery differential: (0÷1,25°C, 1÷45°F) Intervention differential for recovery of temperature alarm.
Ald Temperature alarm delay: (0÷255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.
AldO Delay of temperature alarm at start up: (0min+23sec) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.
EAdA Delay of alarm at the end of defrost: (0÷255 min) Time interval between the detection of the temperature alarm condition at the end of defrost and the alarm signalling.
EAdO Delay of alarm at the end of defrost after closing the door: (0÷255 min) Time delay to signal the temperature alarm condition after closing the door.

HUMIDITY ALARMS

AHU Humidity alarm configuration: rE = High and Low alarms related to humidity Set Point
Ab = High and low alarms related to the “absolute” humidity.
AHL Low humidity alarm setting: (with AHU = rE: 0 = 50; with AHU = Ab: Lci ≤ AHu)
AHL = Ab, 0 = 50°C or 90°F.
AHH Humidity alarm setting: (with AHU = rE: 0 = 50°C; with AHU = Ab: AHL = ucl)
when this humidity is reached and after the AHH delay time the AHH alarm is enabled.
AHUH Humidity alarm setting: (with AHU = rE: 0 = 50°C; with AHU = Ab: AHH = ucl)
when this humidity is reached and after the AHH delay time the AHH alarm is enabled.
AHH Humidity alarm recovery: (0÷255 min) Intervention differential for recovery of humidity alarm.
AHUH Humidity alarm delay: (0÷255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.
AHHO Alarm delay at the end of defrost: (0÷255 min) Time interval between the detection of the humidity alarm condition after the instrument power on and the alarm signalling.
AHHO Alarm delay at the end of defrost after closing the door: (0÷255 min) Time interval between the detection of the humidity alarm condition after the instrument power on and the alarm signalling.

ROSE INPUTS

T Probe calibration: (-12÷0,12°C/-21÷2°F) allows to adjust possible offset of the pressure probe.
E Probe calibration: (-12÷0,12°C/-21÷2°F) allows to adjust possible offsets of the evaporation probe.
H Probe humidity calibration: (-10÷+10 RH) allows to adjust possible offsets of the humidity probe.
P2P Evaporator probe presence: yes: present; no: not present; y: present; e: evaporator probe is present; n: evaporator probe is not present.
Lci Readout with 4 mA: (-999 + 999). Adjustment of read out corresponding to 4mA signal.
LCI Readout with 20 mA: (-999 + 999). Adjustment of read out corresponding to 20mA signal.
1592002810 XH360L-V GB r1.0 10.09.2015

10. DIGITAL INPUT

One digital input is present configurable by user by means of the IF1 parameter according to the following descriptions.

10.1. DOOR SWITCH (IF1 = dor)

It signals the door status and the corresponding relay output status through the "odc" parameter. No = normal (any change); Fan = Fan OFF; OFF = all the loads are switched off.

Since the door is opened, after the delay time set through parameter "doA", the alarm output is enabled and the display shows the message "dA".

The status of loads depends on the "odc" parameter:
- With rdo=no outputs are not affected by the doA alarm;
- With rdo=ES outputs restart with the doA alarm;

The alarm stops as soon as the digital input is deactivated. During this time and then for the delay "dod" and "doH" after closing the door, the temperature and humidity alarms are disabled.

10.2. GENERIC ALARM (IF1 = EAL)

As soon as the digital input is activated the unit will wait for "dil" time delay before signaling the "EAL" alarm message. The outputs status don't change. The alarm stops just after the digital input is deactivated.

10.3. SERIOUS ALARM MODE (IF1 = BAL)

When the digital input is activated, the unit will wait for "dil" delay before signaling the "BAL" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is deactivated.

10.4. PRESSURE SWITCH (IF1 = PAL)

If during the interval time set by "dil" parameter, the pressure switch has reached the number of activation of the "nps" parameter, the "PAL" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is OFF the compressor is always OFF.

If the nps activation in the dil time is reached, switch off and on the instrument to restart normal regulation.

10.5. HEATING RELAY SAFETY (IF1=HRI)

With IF1=HRI as soon as the digital input is activated for "dil" time heating relay is disabled. The alarm will stop as soon as the digital input is deactivated.

10.6. DIGITAL INPUTS POLARITY

The digital input polarity depends on the "IFP" parameters:
- CL : the digital input is activated by closing the contact.
- OP : the digital input is activated by opening the contact.

11. INSTALLATION AND MOUNTING

Instruments X360L shall be mounted on vertical panel, in a 150x31 mm hole, and fixed using two screws ø 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-L). Instrument X360V shall be mounted on vertical panel, in a 72x56 mm hole, and fixed using screws ø 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-V).

The temperature range allowed for correct operation is 0 - 60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let the air circulate by the cooling holes.

11.1. X360L: CUT OUT

12. ELECTRICAL CONNECTIONS

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostatic probe away from air streams to correctly measure the average room temperature.

13. HOW TO USE THE HOT KEY

13.1. HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "Hot key" and push ↓ key; the "uPL" message appears followed by flashing "End".
3. Push "SET" key and the End will stop flashing.
4. Turn OFF the instrument remove the "Hot key", then turn it ON again.

NOTE: The "Err" message is displayed for failed programming. In this case push again ↓ key if you want to restart the upload again or remove the "Hot key" to abort the operation.

13.2. PROBE CONNECTIONS

NOTE: The message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot key" to abort the operation.

14. ALARM SIGNALING

<table>
<thead>
<tr>
<th>Message</th>
<th>Cause</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;P1&quot;</td>
<td>Thermostat probe failure</td>
<td>Compressor and heating outputs off</td>
</tr>
<tr>
<td>&quot;P2&quot;</td>
<td>Evaporator probe failure</td>
<td>Defrost and by time</td>
</tr>
<tr>
<td>&quot;P3&quot;</td>
<td>Humidity probe failure</td>
<td>Humidity regulation off</td>
</tr>
<tr>
<td>&quot;HA&quot;</td>
<td>High temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>&quot;LA&quot;</td>
<td>Low temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>&quot;HHA&quot;</td>
<td>High humidity alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>&quot;HHA&quot;</td>
<td>Low humidity alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>&quot;GA&quot;</td>
<td>Door switch alarm</td>
<td>Outputs depending on the oC parameter</td>
</tr>
<tr>
<td>&quot;EAL&quot;</td>
<td>External alarm</td>
<td>Other outputs unchanged</td>
</tr>
<tr>
<td>&quot;BAL&quot;</td>
<td>Serious external alarm</td>
<td>Outputs OFF</td>
</tr>
<tr>
<td>&quot;PAL&quot;</td>
<td>Pressure switch alarm</td>
<td>Outputs OFF</td>
</tr>
</tbody>
</table>

The alarm message is displayed until the alarm condition recovers. All the alarm messages are showed alternating with the room temperature except for the "P1" which is flashing. To reset the "EE" alarm and restart the normal functioning press any key, the "RB" message is displayed for about 3s.

14.1. SILENCING BUZZER

Once the alarm signal is detected the buzzer, if present, can be silenced by pressing any key.

14.2. ALARM RECOVERY

Probe alarms : "P1" (probe1 faulty), "P2", "P3", they automatically stop 10s after the probe restarts normal operation. Check connections before replacing the probe.

Temperature alarms "HA" and "LA" automatically stop as soon as the thermostat temperature returns to normal values when the defrost starts.

Humidity alarms "HHA" and "HHA" automatically stop as soon as the humidity returns to normal values.

Door switch alarm "dA" stop as soon as the door is closed.

External alarms "EAL", "BAL" stop as soon as the external digital input is disabled.

Pressure switch alarm "PAL" alarm is recovered by switching OFF the instrument.
15. TECHNICAL DATA

Housing: self extinguishing ABS.

Case: XH360L: facia 38x185 mm; depth 76mm; XH360V: facia 100x94 mm; depth 76mm

Mounting: XH360L: panel mounting in a 150x31 mm panel cut-out with two screws. /o 3 x 2mm. Distance between the holes 15mm. XH360V: panel mounting in a 56x72 mm panel cut-out with two screws. /o 3x2mm. Distance between the holes 40mm

Protection: IP20.

Frontal protection: IP65 with optional frontal gasket mod. RG-4L (XH360L), RG4V (XH360V).

Connections: Screw terminal block ± 2.5 mm heat-resistant wiring and 6.3mm Faston

Power supply: 230Vac or 110Vac ± 10%, Power absorption: 7VA max.

Display: double display + icons.

Inputs: 1 NTC probe x 4mA probe

Digital input: 1 free voltage


Other output: alarm buzzer (optional)

Data storage: on the non-volatile memory (EEPROM)

Kind of action: 10. Pollution grade: normal. Software class: A

Operating temperature: 0÷60 °C, Storage temperature: -25÷+60 °C.

Relative humidity: 20÷85% (no condensing)

Measuring and regulation range:

NTC probe: -40÷+110 °C (55÷230°F)

Resolution: 0.1 °C or 1 °C (selectable).

Accuracy (ambient temp. 25°C): ±0.5 °C ±1 digit

Housing: self extinguishing ABS.

16. WIRING CONNECTIONS

16.1 XH360L

Supply 115Vac: 14-15 terminals

16.2 XH360V

Supply 115Vac: 2-3 terminals

17. DEFAULT SETTING VALUES

<table>
<thead>
<tr>
<th>Set temperature</th>
<th>Set humidity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dripping Phase</td>
<td>5.0 °C</td>
<td>-</td>
</tr>
<tr>
<td>Running Phase</td>
<td>5.0 °C</td>
<td>50.0 RH%</td>
</tr>
<tr>
<td>Stopping Phase</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>dbT</td>
<td>Half dead band width for temperature</td>
<td>0.1 °C ± 25 °C ± 0.7°F</td>
</tr>
<tr>
<td>dbH</td>
<td>Half dead band for humidity</td>
<td>± 50</td>
</tr>
<tr>
<td>Ls3</td>
<td>Minimum temperature set point temperature</td>
<td>-60.0°C ~ -99°C = Set L</td>
</tr>
<tr>
<td>uS3</td>
<td>Maximum temperature set point</td>
<td>Set T</td>
</tr>
<tr>
<td>odS</td>
<td>Outputs activation delay at start up</td>
<td>0 ~ 250 min</td>
</tr>
<tr>
<td>Ac</td>
<td>Anti-short cycle delay</td>
<td>0 ~ 30 min</td>
</tr>
<tr>
<td>Hm</td>
<td>Humidity regulation</td>
<td>dB = dehumidifier relay; chu = dehum. comp.; chw = without dehum. relay</td>
</tr>
<tr>
<td>LSh</td>
<td>Minimum humidity set point</td>
<td>Lci = Set H</td>
</tr>
<tr>
<td>uSh</td>
<td>Maximum humidity set point</td>
<td>Set H = uci</td>
</tr>
<tr>
<td>eF</td>
<td>Coefficient of measurement</td>
<td>°C × °F</td>
</tr>
<tr>
<td>eR3</td>
<td>Resolution (°C)</td>
<td>in = integer; de = decimal</td>
</tr>
<tr>
<td>eH</td>
<td>Resolution for RH%</td>
<td>in = integer; H = half digit</td>
</tr>
<tr>
<td>Br</td>
<td>Instrument behaviour at the end of cycle</td>
<td>co = start holding, tstop = stop regulation, cL = restart the first phase of End message, cL = repeat the first phase</td>
</tr>
<tr>
<td>BF</td>
<td>Defect type</td>
<td>eF, tF, in</td>
</tr>
<tr>
<td>Ef</td>
<td>Defect mode</td>
<td>250 °C</td>
</tr>
<tr>
<td>SdF</td>
<td>Set point for TEMP DEFROST</td>
<td>-30 ÷ +30 °C</td>
</tr>
<tr>
<td>dE</td>
<td>Defrost temperature termination</td>
<td>-60.0 °C</td>
</tr>
</tbody>
</table>