

# Electronic regulation

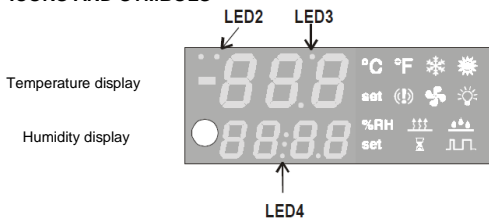
## XH240K (Temperature and humidity controller)



### KEYBOARD

- To display and modify target temperature set point.
- To display and modify target humidity set point; in programming mode it selects a parameter or confirm an operation.
- In programming mode it browses the parameter codes or increases the displayed value.
- In programming mode it browses the parameter codes or decreases the displayed value.
- By holding it pressed for 3s the defrost is started
- Switch ON and OFF the unit.
- By holding them pressed for 3s the user can access to non-protected programming mode (PR1).  
To access to protected parameters (list PR2), introduce the password 321 in PR2 parameter.

### ICONS AND SYMBOLS



LED	MODE	FUNCIÓN
	ON	ALARM signal
LED4	ON	Unit in stand by
	FLASHING	Anti-short cycle delay enabled
°C	ON	Measurement unit
°F	ON	Measurement unit
	ON	The compressor is running
LED 3	ON	The defrost is enabled
	FLASHING	Drip time in progress
LED 3	FLASHING	Drip time in progress
LED2	FLASHING	Programing phase (flashing with LED3)
	ON	Heating enabled
set temp	FLASHING	Temperature set programming phase
set hum	FLASHING	Humidity set programming phase
	ON	Fan is running
%RH	ON	RH%
	ON	Dehumidifying enabled
	FLASHING	Dehumidifying waiting (Unit cooling)
	ON	Humidifying enabled

### ALARM SIGNALLING

Message	Cause	Unit action
P1	Thermostat probe failure	Compressor and heating outputs off
P3	Humidity probe failure	Humidity regulation off
HA	High temperature alarm	Alarm signal
LA	Low temperature alarm	Alarm signal
HHA	High humidity alarm	Alarm signal
LHA	Low humidity alarm	Alarm signal
dA	Door switch alarm	Alarm signal
PAL	Safety chain open <sup>⊗</sup>	Alarm signal. Unit stops.

### PARAMETER LIST

Label	Description	Range	#1	#2	#3	#4	#5	#6	List
Set T	Temperature set point	LS ÷ uS	5°C	12°C	15°C	12°C	12°C	10°C	-
Set H	Humidity set point	LSH ÷ uSH	90%HR	70%HR	70%HR	70%HR	70%HR	70%HR	-
dbt	Half dead band width for temperature	0,1 ÷ 25 °C	2	2	2	2	2	2	Pr1
dbH	Half dead band width for humidity	0,5 ÷ 50 %Hr	5	5	5	5	5	5	Pr1
LS	Minimum temperature set point limit	-50°C ÷ Set T	0°C	5°C	10°C	5°C	5°C	5°C	Pr2
uS	Maximum temperature set point limit	Set T ÷ 110°C	10°C	18°C	20°C	18°C	18°C	18°C	Pr2
odS	Outputs activation delay at start up	0 ÷ 250 min	1	1	1	1	1	1	Pr2
Ac	Anti-short cycle delay	0 ÷ 30 min	4	4	4	4	4	4	Pr1
LSH	Minimum humidity set point limit	Lci ÷ SET H	60	60	60	60	60	60	Pr2
uSH	Maximum humidity set point limit	SET H ÷ uci	100	100	100	100	100	100	Pr2
cF	Measurement unit (°C o °F)	°C - °F	°C	°C	°C	°C	°C	°C	Pr2
rES	Resolution (in:integer, de:decimal)	in, de	de	de	de	de	de	de	Pr2
rEH	Resolution for RH% (in:integer, Hd:half digit)	in, Hd	hd	hd	hd	hd	hd	hd	Pr2
idF	Interval between defrosts	1 ÷ 120 h	3h	4h	4h	4h	4h	4h	Pr1
MdF	Duration of defrost	0 ÷ 255 min	15min	10min	10min	10min	10min	10min	Pr1
dFd	Display during defrost rt=real temp., it=starting defrost temp., Set=temp. set point, dEF= dEF label, dEG= dEG label	rt, it, Set, dEF, dEG	rt	rt	rt	rt	rt	rt	Pr2
dAd	Defrost display time out	0 ÷ 250 min	0	0	0	0	0	0	Pr2
Hud	Humidity control during defrost	n - y	y	y	y	n	y	n	Pr2
Fnc	Fan operating mode: with compressor (C) or continuously (O), and during defrost (y=yes, n=no)	C-n, C-y, O-n, O-y	C-y	C-y	C-y	C-y	C-y	C-y	Pr2
ALc	Temperature alarm configuration ALL y ALu (relative / absolute)	rE - Ab	rE	rE	rE	rE	rE	rE	Pr2
ALL	Low temperature alarm setting	0 ÷ 50 °C	5°C	5°C	5°C	5°C	5°C	5°C	Pr1
ALu	High temperature alarm setting	0 ÷ 50 °C	5°C	5°C	5°C	5°C	5°C	5°C	Pr1
ALH	Temperature alarm recovery differential	0,1 ÷ 25 °C	1°C	1°C	1°C	1°C	1°C	1°C	Pr2
ALd	Temperature alarm delay	0 ÷ 250 min	1min	1min	1min	1min	1min	1min	Pr2
dAO	Delay of temperature alarm at start-up	0 ÷ 23h 50min	20	20	20	20	20	20	Pr2
EdA	Alarm delay at the end of defrost	0 ÷ 250 min	5min	5min	5min	5min	5min	5min	Pr2
dot	Delay of temperature alarm after closing the door	0 - 250 min	0min	0min	0min	0min	0min	0min	Pr2
AHc	Humidity alarm configuration AHL y AHu (relative / absolute)	re - Ab	Ab	Ab	Ab	Ab	Ab	Ab	Pr2
AHL	Low humidity alarm setting	Lci/AHu	50%	50%	50%	50%	50%	50%	Pr1
AHu	High humidity alarm setting	ALH/uci	100%	100%	100%	100%	100%	100%	Pr1
AHH	Humidity alarm recovery differential	0,5 ÷ 25 %	1%	1%	1%	1%	1%	1%	Pr2
AHd	Humidity alarm delay	0 ÷ 250 min	0	0	0	0	0	0	Pr2
dHo	Delay of humidity alarm at start-up	0 ÷ 23h 50min	20	20	20	20	20	20	Pr2
doH	Alarm delay at the end of defrost	0 ÷ 250 min	0	0	0	0	0	0	Pr2
doA	Open door alarm delay	0 ÷ 250 min	0	0	0	0	0	0	Pr2
nPS	Pressure switch number <sup>⊗</sup> during interval "did" before alarm "PAL"	0 ÷ 15	8	8	8	8	8	8	Pr2
ot	Thermostat probe calibration	-12,0 ÷ 12,0°C	0	0	0	0	0	0	Pr1
o3	Humidity probe calibration	-10 ÷ 10%	0	0	0	0	0	0	Pr1
P3P	Humidity probe presence	n - y	y	y	y	n	y	n	Pr2
Lci	Readout with 4 mA	-999 ÷ 999%	0	0	0	0	0	0	Pr2
uci	Readout with 20 mA. To set the humidity probe	-999 ÷ 999%	100	100	100	100	100	100	Pr2
i1P	Digital input polarity (safety chain <sup>⊗</sup> ) CL=open, oP=close.	cL - OP	cL	cL	cL	cL	cL	cL	Pr2
i1F	Digital input configuration	dor, PAL, EAL, BAL, Ht	PAL	PAL	PAL	PAL	Ht	Ht	Pr2
odc	Outputs status when open door; on: normal, Fan, off: all outputs off.	on, Fan, off	on	on	on	on	on	on	Pr2
rrd	Outputs restarting after doA alarm	n - y	y	y	y	y	y	y	Pr2
did	Digital input alarm delay <sup>⊗</sup>	0 - 255 min	60min	60min	60min	60min	0min	0min	Pr2
Adt	Serial address for temperature when connecting to ModBUS system in a RS485 network	1 ÷ 247	1	1	1	1	1	1	Pr2
Adh	Serial address for humidity when connecting to ModBUS system in a RS485 network	1 ÷ 247	1	1	1	1	1	1	Pr2
Ptb	Parameter table	Read only	8	8	8	8	8	8	Pr2
rEL	Software release	Read only	1,2	1,2	1,2	1,2	1,2	1,2	Pr2
Pr2	Access to the protected parameter list		321	321	321	321	321	321	Pr1

- #1 High humidity units → HSH - HSF
- #2 High temperature units → ASH
- #3 Wine cellar units → VCR - VSH - VSF
- #4 High temperature units → ASF (only heating kit KD3)
- #5 Evaporators with dehumidification and heating kit, air defrost → AJD
- #6 Evaporators with heating kit and without humidity control, air defrost → AJD

<sup>⊗</sup> Safety chain. Can be formed of pressure switches, condensed liquid pumps and fans klixon. The components that form the safety chain can vary according to the unit/evaporator. These components are connected in series in the electronic board digital input.

### LOGICAL OPERATION

Modes	Compressor	Fan	Heating resistors	Humidifier	Unit behavior
Refrigeration	ON	ON	OFF	OFF	The unit is cooling up to reach the set point, at the same time the relative humidity decreases.
Dehumidification	ON	ON	ON	OFF	Compressor, fan and resistors work decreasing the relative humidity.
Heating	OFF	ON	ON	OFF	Fan and resistors work heating the air.
Humidification	OFF	ON	OFF	ON	Fan and humidifier work increasing the relative humidity.
Refrigeration and dehumidification	ON	ON	OFF	OFF	The unit is working in refrigeration mode up to reach the set point temperature, after that it works in dehumidification mode.
Refrigeration and humidification	ON	ON	OFF	ON	The unit cools and moisturizes at the same time.
Heating and dehumidification	ON	ON	ON	OFF	The unit is working in dehumidification mode up to reach the humidity set point, after that it works in heating mode.
Heating and humidification	OFF	ON	ON	ON	The unit heats and moisturizes at the same time.

- If the unit needs to cool and dehumidify **simultaneously**, first cool up to reach the temperature set point and then dehumidify.
- If the unit needs to dehumidify and heat **simultaneously**, first dehumidify up to reach the humidity set point and then heat.