HC49

SL 5.0

HANDBOOK

TECHNICAL DATA

Power supply	
Line voltage	220-240Vac
Frequency	50/60Hz
Cabinet	
Material	PVC
Dimensions	144x144x77mm
Weight	KG 1
Protection degree	IP20
Outputs	
Maximum relay contacts load	4A AC1
Serial output	TTL 2400 baud
Inputs	
Probe measuring range	-50.0...+115.0°C
Instrument precision	0.2°C
Temperature probe reading precision	0.2°C
Temperature setting range	-50.0...+115.0°C
Probe connection	2 wire without screen
Humidity probe signal	4-20mA
Temperature range	
Operatibility	-10...+40°C
Storage	-40...+85°C

CE DECLARATION OF CONFORMITY

POLA® declares that your **HC49** model is conform to following European normatives:

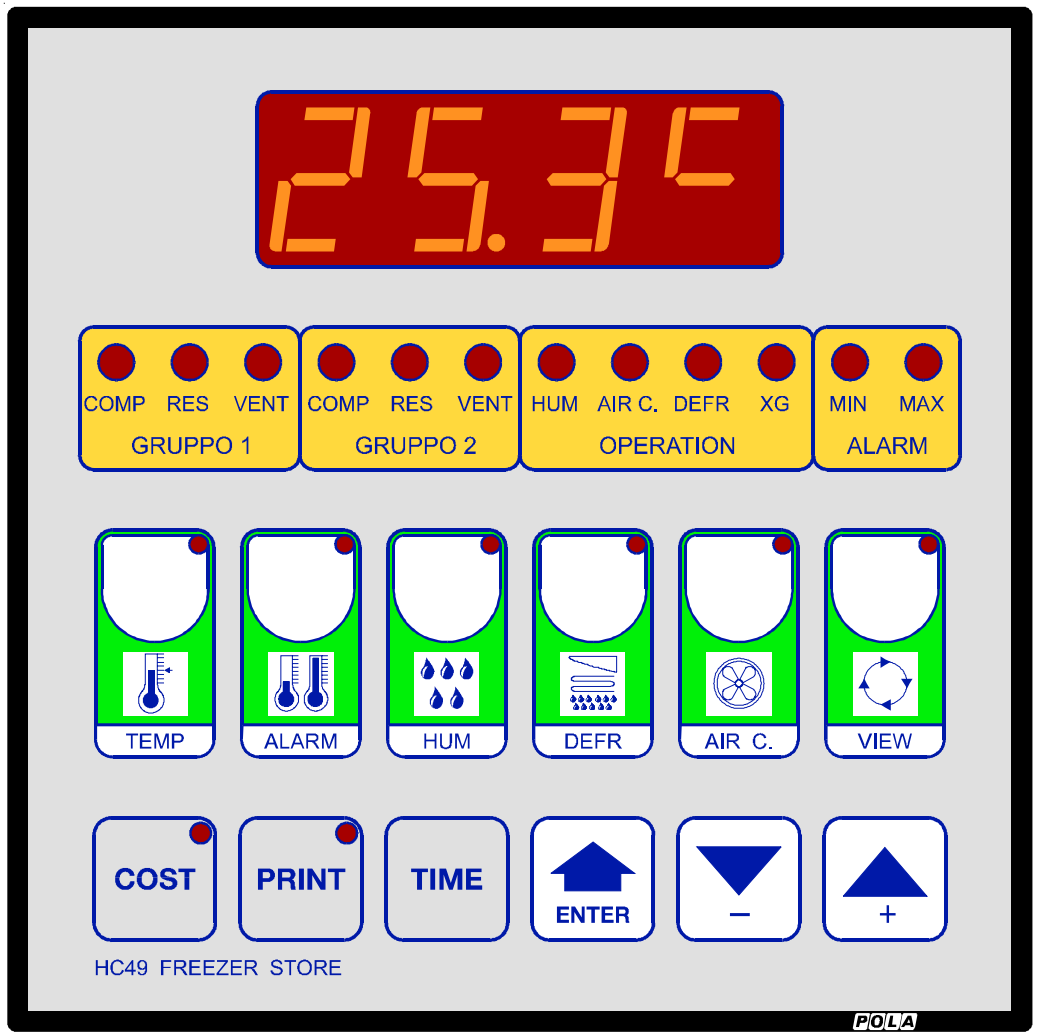
EN 50081-1 (1992) (Emission)

EN 50082-2 (1995) (Immunity)

referred to directive **EE 89/336** and subsequent **92/31** about electro-magnetic compatibility (**EMC**)

and it is conform to directive **EEC 72/23** and subsequent **EEC 93/68** about low voltage safety (**LVD**).

Measure was performed by an
ACCREDITATED COMPETENT BODY.



As it is company policy to continually improve the products the Manufactures reserve the right to make any modifications thereto without prior notice. They cannot be held for any damage due to malfunction.

POLA® CE

19.07.06

INTRODUCTION TO USER PROGRAMMING

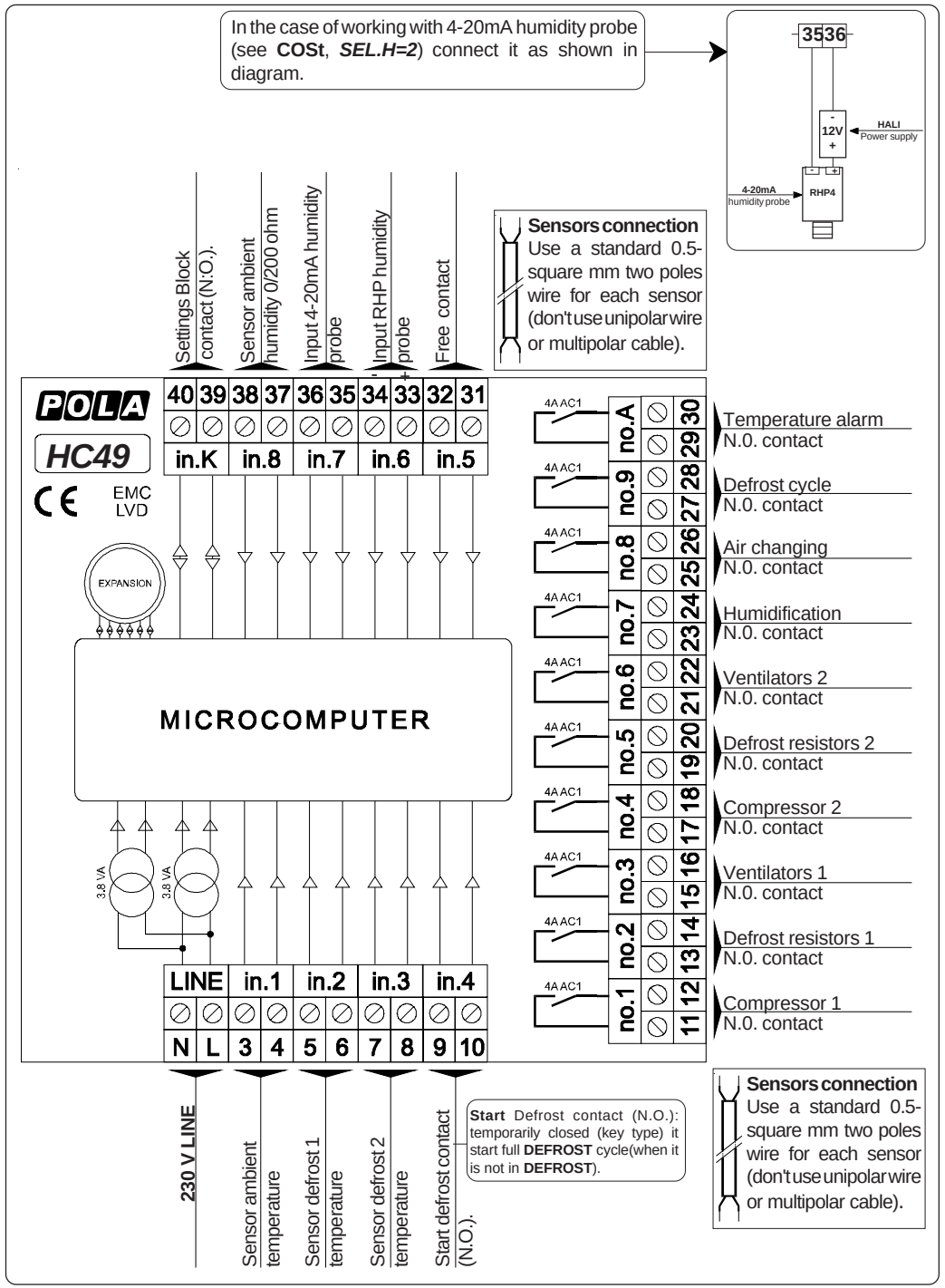
The symbol placed at top of every paragraph indicates:

: Start-up settings to be performed only at plant they determine working mode suited for the kind of plant existent.

: User common settings normally utilized during operation procedures (temperature, settings, humidity settings, etc.).

: View only operations (temperature, humidity, etc.) without changing settings.

WIRING DIAGRAMS



INSTALLATION

HC49 installation.
Place the module in a clean and dry site.
Connect electric wires such as shown in diagram.

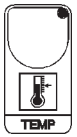
How to connect the power line.
Connect power line on **L-N** terminals; protect supply with adequate fuse.

How to connect the auxiliary contacts:
Connect **11-22.....29-30** terminals on the terminals block (contacts up to **4AMP.AC1**) to the loads as shown in the diagram.
Protect contacts with a **4AMP.F** fuses.

How to connect probes and control signals.
Connect the provided sensors as shown in the diagram: for remote connections use a standard 0,5-square millimetre two-pole wire for each sensor, taking great care over the connection, by insulating and sealing carefully the joints.
In case of strong radio-interference insert a ferrite sleeve in the cable near regulator.

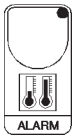
MAIN SETTING (Run Mode)

TEMPERATURE SETTING



Press **TEMP** for at least one second:
this message will be displayed instead of the ° *Set temperature value* .
Press **+** or **-** to modify, press **TEMP** to confirm.

ALARM TEMPERATURE SETTING

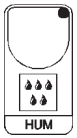


Press **ALARM** for at least one second:
this message will be displayed instead of the ° *Set Minimum alarm temperature value* .
Press **+** or **-** to modify, press **ALARM** to confirm.

At this point this message will be displayed instead of the ° *Set Maximum alarm temperature value* .
Press **+** or **-** to modify, press **ALARM** to confirm.

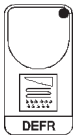
At this point this message will be displayed instead of the *Alarm State:* ***=0 Alarm disable, =1 Alarm able.***
Press **+** or **-** to modify, press **ALARM** to exit [*1].

HUMIDITY SETTING.



Press **HUM** for at least one second:
this message will be displayed instead of the *%RH Set Humidity value* .
Press **+** or **-** to modify, press **HUM** to confirm.

DEFROST PARAMETER SETTING [*2].



Press **DEFR** for at least one second:
this message will be displayed instead of the *Daily number defrost.*
Press **+** or **-** to modify, press **DEFR** to confirm.

At this point this message will be displayed instead of the *Duration defrost (minutes).*
Press **+** or **-** to modify, press **DEFR** to exit.

AIR CHANGE SETTING

Press **AIR C** for at least one second:
this message will be displayed instead of the *Daily number air-change.*
Press **+** or **-** to modify, press **AIR CHANGE** to confirm.

At this point this message will be displayed instead of the *Duration air-change (minutes).*
Press **+** or **-** to modify, press **AIR CHANGE** to exit.

*1 When alarm is disable the lamps Min and Max are flahing.
*2 Statement of Defrost can be attivated externally with the closure of a contact on **9-10** terminals (see *Wiring Diagram*) that insert a complete cycle of Defrost.

VIEW KEY

The main parameters of this processor are displayed whit pressing the relative key and lighting of the relative lamp/key (**TEMPER.** for the FREEZER-STORE temperature, **HUM** for the humidity).
For the other parameters we obtain the displaying through the key **VIEW**.
Press key **VIEW** for more than 1 second:
The parameters will be show in sequential mode on the display oressing on key **VIEW**.

Message	State
t.df.1	Defrost 1 probe temperature
t.df.2	Defrost 2 probe temperature
n.cdn	Start Defrost minutes count down (not in Defrost) End Defrost minutes count down (in Defrost) End Drop minutes count down (in Drop) End Vent minutes count down (in Vent)
ScA.C	Hours Exchange Compressors count down

IMPOSTATION KEY PROTECTION

Closing **39-40** contacts (see Installation) we prevent the programmation of all the setting (external key of protection).
In this condition is possible to display all the setting existens, but if we try to change them with **-** or **+** key on the display appear the messagge ***Prot*** to point out the protection inserted.

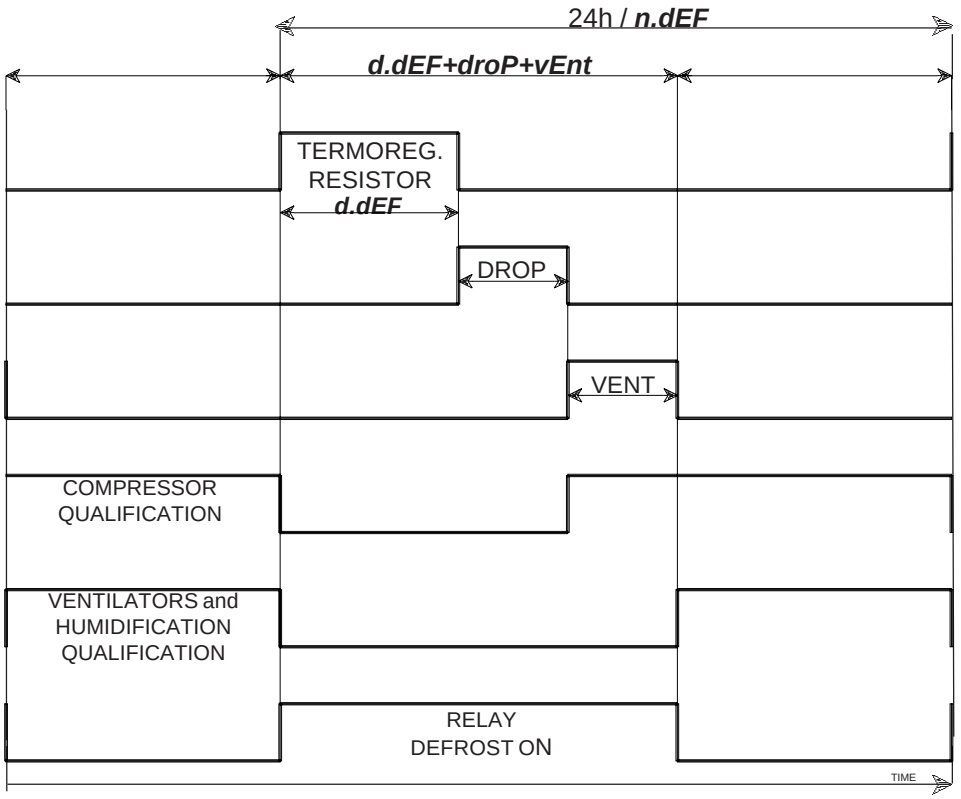
PRESET PROGRAMS

At delivery this processor is ready programmed with the following (variable) settings.
To return to these settings at any time: press **ENTER** / **-** / **+** keys together for at least 1 second ***boot*** message is displayed.

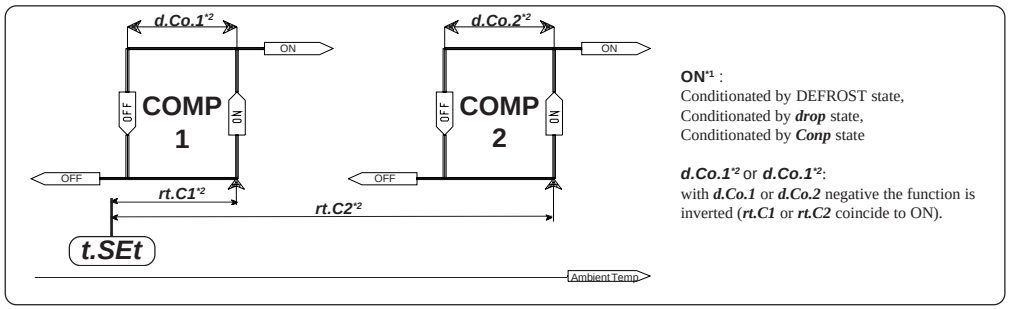
***t.SEt*=10.0° *H.SEt*=80.0% *n.dEF*=4 *d.dEF*=20' *n.ric*=4 *d.ric*=20**
***t.AL_*=-50.0 *t.AL-*=50.0°**

COST value are shown in **COST** paragraph.

OPERATIVE DIAGRAMS

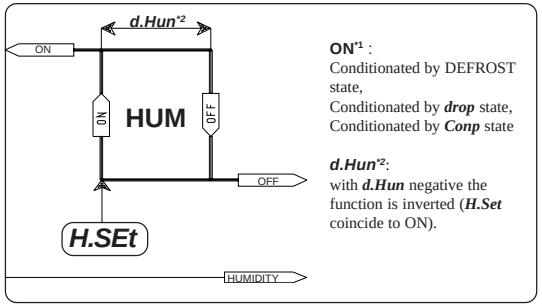


OPERATIVE DIAGRAMS



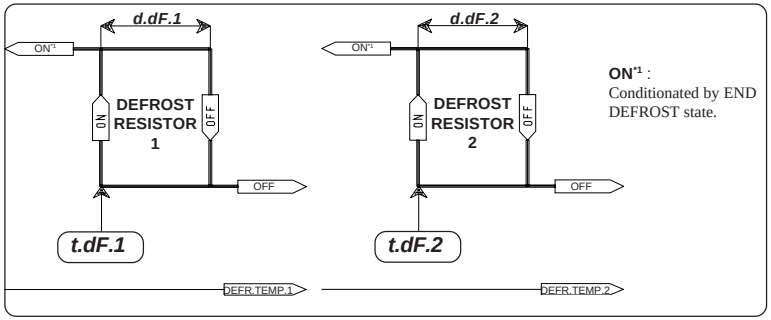
ON*1 :
Conditionated by DEFROST state,
Conditionated by ***drop*** state,
Conditionated by ***Conp*** state

d.Co.1*2 or ***d.Co.1*2***:
with ***d.Co.1*** or ***d.Co.2*** negative the function is inverted (***rt.C1*** or ***rt.C2*** coincide to ON).

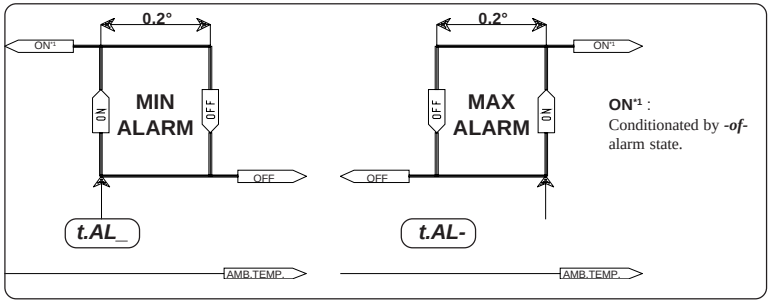


ON*1 :
Conditionated by DEFROST state,
Conditionated by ***drop*** state,
Conditionated by ***Conp*** state

d.Hun*2:
with ***d.Hun*** negative the function is inverted (***H.Set*** coincide to ON).



ON*1 :
Conditionated by END DEFROST state.



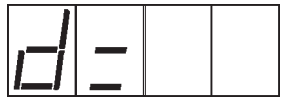
ON*1 :
Conditionated by ***-of-*** alarm state.

TIME (CLOCK SETTING)

TIME ENTER

Press **TIME** together with **ENTER**:
this message will be displayed instead of the *Set the current Hour and minutes.*
Press **+** or **-** to modify, press **ENTER** to exit.

At this point this message will be displayed instead of the *Set the current Day.*
Press **+** or **-** to modify , press **ENTER** to confirm.



At this point this message will be displayed instead of the *Set the current Month.*
Press **+** or **-** to modify , press **ENTER** to confirm.

At this point this message will be displayed instead of the *Set the current Year.*
Press **+** or **-** to modify , press **ENTER** to exit.

Hour, day, month and year right setting is important for various data recording (alarm events, temperature values store, etc.) and for calendar's day change (0:00 A.M.).

Watch clock is maintained for more than 10 years also if power is off.

STATE INDICATION LAMPS

The lights situated at the bottom of the display show the state of the various relay of actioning.

Led	State	N° Relay
COMP 1	Compressor 1 On	1
RES 1	Resistors 1 On	2
VENT 1	Ventilators 1 On	3
COMP 2	Compressor 2 On	4
RES 2	Resistors 2 On	5
VENT 2	Ventilators 2 On	6
HUM	Humidification On	7
AIR C	Change air On	8
DEFR	Defrost cycle On	9
XG	Compressor 1-2 exchange On	
MIN	Minimum alarm On	10
MIN	Maximum alarm On	10

At the end of DEFROST state (see Cost, ***droP*** function) **COMP** and **HUM** lamp (if it request the start) flashing.
At the end of DROP state (see Cost, ***vEnt*** function) **VENT** and **HUM** lamp (if it request the start) flashing.
COMP and **HUM** flashing when it intervenes compressor on delay (see Cost, ***Conp*** function)

HC49 HAND MODE

In some start-up condition may be useful to work in "hand" mode
Press **VIEW** / **-** / **+** keys together for at least one second: ***HAnd*** message will be displayed (release now keys).
Press **+** keys until is displayed number required to be hand (see table below).
Press **ENTER** key to activate the output.
Pressing again **+** to increase relay number previous relay is disactivated.
Press **EXT.T** key to exit and return to the run mode.

Led	State	N° Relay
COMP 1	Compressor 1 On	1
RES 1	Resistors 1 On	2
VENT 1	Ventilators 1 On	3
COMP 2	Compressor 2 On	4
RES 2	Resistors 2 On	5
VENT 2	Ventilators 2 On	6
HUM	Humidification On	7
AIR C	Change air On	8
DEFR	Defrost cycle On	9
XG	Compressor 1-2 exchange On	
MIN	Minimum alarm On	10
MIN	Maximum alarm On	10

COSt PARAMETERS SETTING

Press **COST** together with **ENTER** - the message ***COSt*** will be displayed.
The **COSt** values are displayed in sequence if you press + to go forward or - to go back. When you reach the value required (see table below), press **ENTER** and the value will be displayed.
Press **-** or **+** key to set a new value and then **ENTER** to confirm. The next value will then appear. You can press **COST** at any time to escape and return to the RUN MODE.

Mess.	Value	Meaning	Note
r.t.C1	**0.5°**	° Start Compressor 1 setting referring to t.SEt.	
r.t.C2	**1.0°**	° Start Compressor 2 setting referring to t.SEt.	
t.df.1	**15.0°**	° Set Defrost 1.	
t.df.2	**15.0°**	° Set Defrost 2.	
d.Co.1	**0.5°**	° Compressor 1 differential.	
d.Co.2	**0.5°**	° Compressor 2 differential.	
d.dF.1	**1.0°**	° Defrost 1 differential.	
d.dF.2	**1.0°**	° Defrost 2 differential.	
d.Hun	**1.0%**	%Rh Humidity differential.	
Conp	**2"**	Compressor On delay time (seconds).	
drop	**0'**	Actioning Off delay (minutes) after Defrost.	
vEnt	**1'**	Ventilators On delay minutes to end Drop.	
oPt.d	**0**	Defrost end type.	***1**
ScA.C	**h0**	Hours Compressor 1-2 exchange (0= disabled).	
A.t.In	**0.0°**	° input sensor Ambient temperature correction	
A.Hun	**0.0%**	% Rh input sensor Ambient humidity correction	
SEL.H	**=1**	Humidity probe type	***2**

***1**
Opt.d =0 : Time duration defrost is programmable under **DEFR** key ***(d.dEF)***.
During this time defrost resistors are switch-thermostat to Set temperature value ***(t.df.1*** and ***t.df.2)***.
Opt.d =1 : The defrost ends to the Set of defrost temperature ***(t.df.1*** and ***t.df.2)***.
Always the maximum time defrost duration is that programmated under **DEFR** key ***(d.dEF)***.

***2**
SEL.H =1 : Humidity probe 0-20mA (for example POLA RHP).
SEL.H =2 : Humidity probe 4-20mA (for example POLA RHP4).
SEL.H =3 : Humidity probe 0-200 ohm.