Masterlog4

ENG

User Handbook
Masterlog 4 “Version 2”

(from the 11st march 2008)

FRIGA-BOHN HK® REFRIGERATION

OPERATING INSTRUCTIONS
MASTERLOG 4 “Version 2”

The default parameter settings for the MASTERLOG 4 (bn1) are selected for operation with chilling evaporators equipped with an air defrost system. **For a different operating mode one of the following programs may be selected:**

‘bn1’= chilling with air defrost
‘bn2’= chilling with electrical defrost
‘bn3’= refrigeration with electrical defrost
‘bn4’= ambient chilling with air defrost
‘bn5’=‘bn2’ with 2 evaporators
‘bn6’=‘bn3’ with 2 evaporators
”DO NOT USE ‘bn0’”

Proceed as follows to select one of these programs:

1. Switch off the Masterlog4.
2. **Switch the Masterlog4 back on again while <u>simultaneously</u> pressing the “prg**” button until the value ‘bn0’ appears.
3. Select the program required using the “**up**” and “**down**” keys
4. Press “**set**” to confirm the selection.

”Set” Key 

”prg” Key 

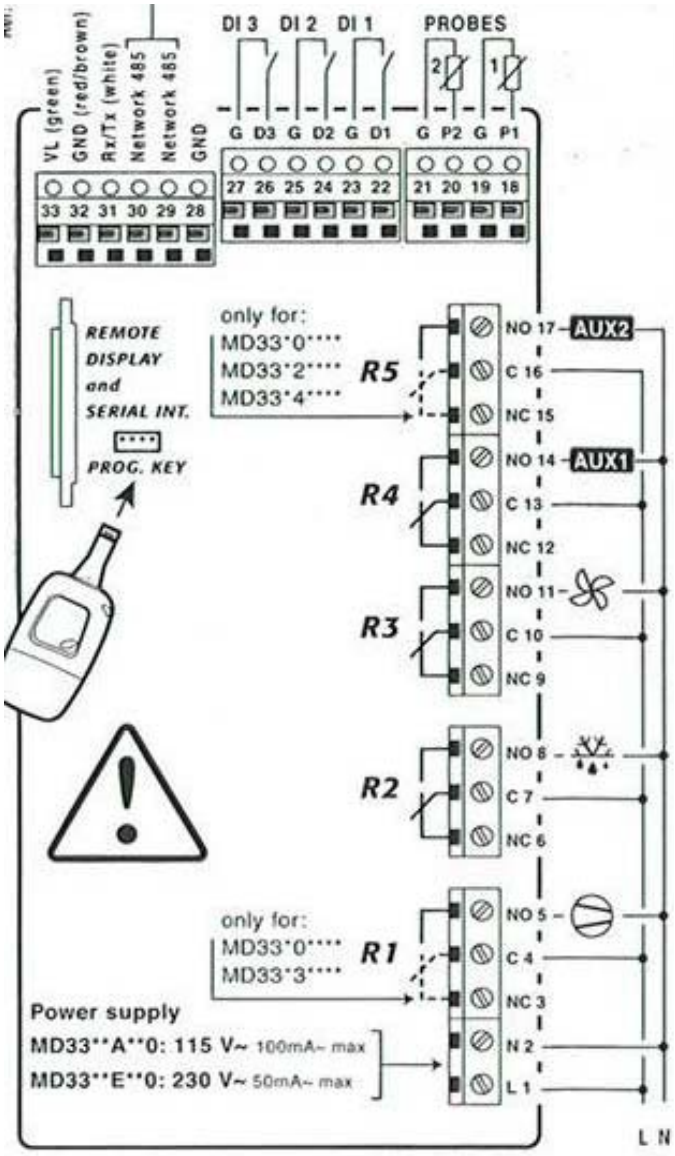
“Up/Down” Keys  

ATTENTION:

- The defrost parameters [‘dI’: interval between 2 defrosts, ‘dT’: temperature at end of defrost (electrical) and ‘dP’: maximum defrost duration] are factory-set values. Depending on use of the cold storage room, these parameters must be modified to ensure correct defrosting of the evaporator.
- **To carry out a manual defrost cycle**, press the “**defrost**” key  for more than 5 sec.
- The MASTERLOG 4 relays are “potential-free” contacts. To supply these contacts, **it is essential to connect terminals 1, 4, 7 and 10** as well as aux. terminals 13 and 16 if necessary (refer to the electrical wiring diagram enclosed with the products).
  - The MASTERLOG 4 possesses three configurable inputs (terminals 22/23, 24/25 et 26/27). Input n°1 (terminals 22 and 23) may be set as an external alarm coming from the unit (parameter A4=1, except application 2 evaporators). Some units are equipped with a standard ‘fault contact’ (refer to wiring diagram). **We recommend you connect this alarm contact to the MASTERLOG 4**.
  - If the keypad is locked, modify the parameter H2 (H2=1).

IMPORTANT: Standard and modified parameters are saved in case of an electrical power failure. When downloading a program, these values are reset in compliance with the basic parameter setting chart.

1 - Wiring



Sensors: **18 - 19 Ambient probe (PROBE 1)**
20 - 21 End of defrost probe (PROBE 2)

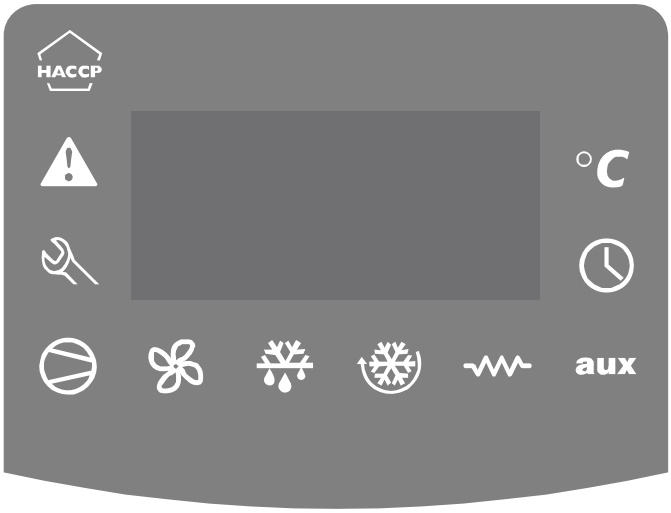
Digital inputs: **22 - 23 Digital input 1 (DI 1) - Parameters A4**
24 - 25 Digital input 2 (DI 2) - Parameters A5
26 - 27 Digital input 3 (DI 3) - Parameters A9

Auxiliary: **13 - 14 AUX 1 – Parameters H1**
16 - 17 AUX 2 – Parameters H5

Wiring RS485: **28 GND**
29 TX/RX+
30 TX/RX-

Relay characteristics: **Refer to chapter 8. Technical characteristics**
R1 =30A
R2=16A
R3=8A
R4=8A
R5=16A

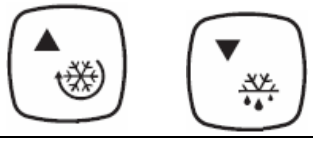
2 - Display

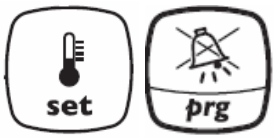
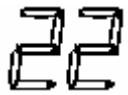


Symbols	*Colour*	*Meaning with the symbol illuminated*	*Meaning with the symbol blinking*
	Amber	Compressor operational	Compressor in standby and ready to start
	Amber	Condenser fan operational	Condenser fan in standby and ready to start
	Amber	Defrost in progress	Condenser fan in standby and ready to start
AUX	Amber	Auxiliary output set as AUX output	Heating element blocking function enabled at start up
(Option)	Yellow	At least 1 defrost is programmed in real time	
	Red	External alarm delayed	Alarm present or alarm on digital input immediate or delayed
	Red		Malfunction (e.g. probe disconnected)
	Amber	Auxiliary output set as heater	Heating element blocking function enabled at start up
	Amber	Activation of a continuous cycle	Continuous cycle cannot be enabled
HACCP **(Option)**	Red	HACCP function enabled	New HACCP alarm memorised

3 - Parameters:

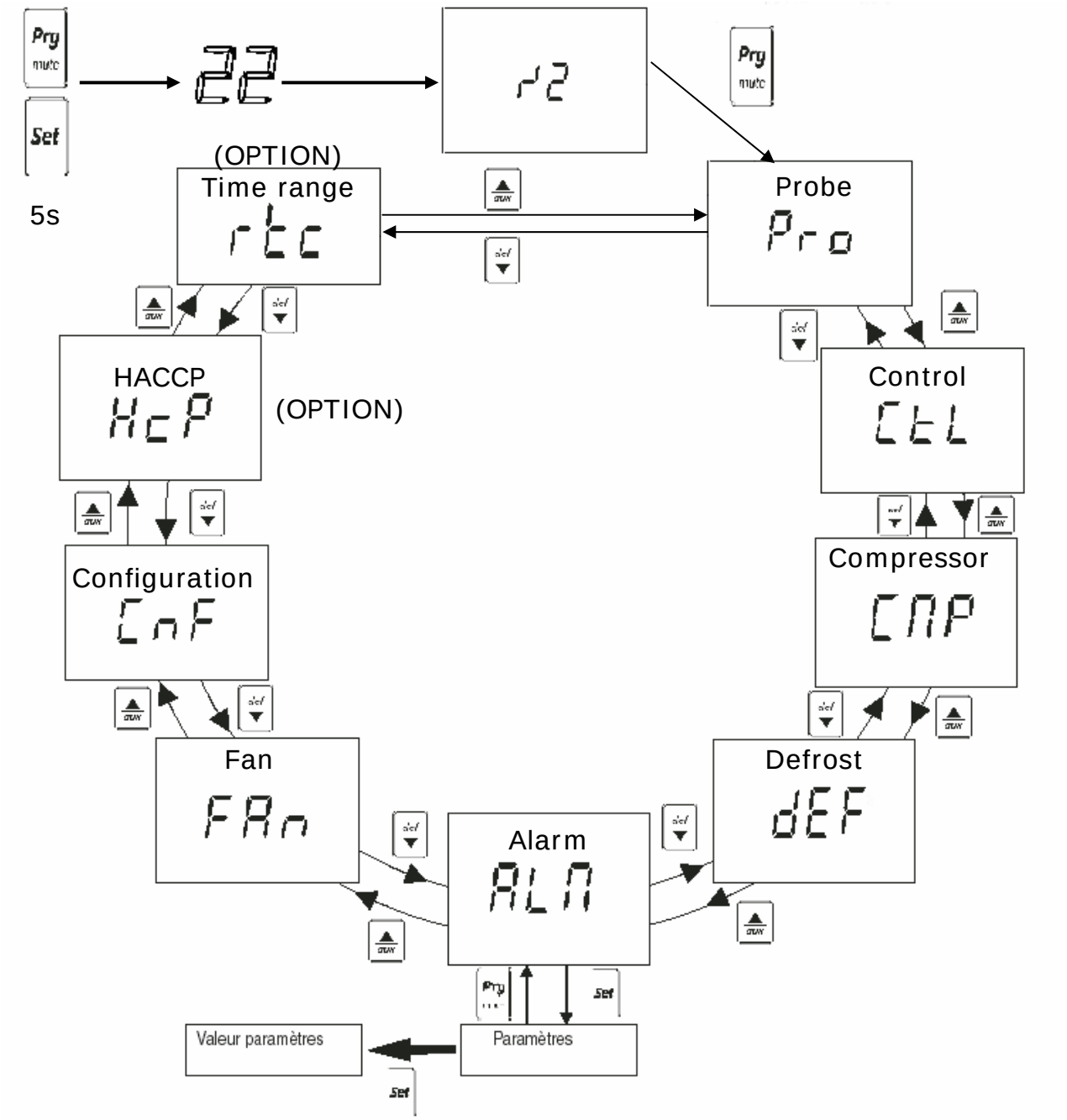
3-1 . Access to parameters:

Modify the set point only		
		
Press and hold SET for 1 second	Use the up and down keys to modify the set point	Press SET to confirm the value

Access to all parameters				
				
Press and hold PRG and SET at the same time for 5 seconds	"00" is displayed	Use the up and down keys to select “22”		Press SET

Save parameters	Do not save parameters	Cancel an alarm	Manual defrost
			
Press and hold PRG for 5 seconds	Do not press any other keys for 60 seconds until the display returns to the temperature value	Press PRG	Press and hold DEF for 5 seconds

3-2 . Rotation of the parameters list menu



'Set'= to access or quit a parameter
'Set'= to access a block
'Prg'= to quit a block

4- List of parameters:

The parameters may vary depending on the model of MD33

/: Probe parameters Pro

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
/2	**Probe measurement delay** 1=immediate response 15=delayed response	-	1	15	4	4	4	4	4	4
/3	**Probe display speed** 0=slow 15=fast	-	0	15	0	0	0	0	0	0
/4	**Virtual probe (between probe 1 and probe 2)** 0=Setting of probe 1 50=average between probe 1 and probe 2 100=Setting of probe 2	-	0	100	0	0	0	0	0	0
/5	**Selection °C or °F** 0=°C 1=°F	Select	0	1	0	0	0	0	0	0
/6	**Display decimal point** 0=Yes 1=No	Select	0	1	0	0	0	0	0	0
/tI	**Selection of probe to be displayed on controller** 1=virtual probe 2=probe 1 3=probe 2 4=probe 3 5=probe 4 6=probe 5 7=set point	-	1	7	2	2	2	2	2	2
tE	**Selection of probe to be displayed on a remote display** 0=no remote display present 1=virtual probe 2=probe 1 3=probe 2 4=probe 3 5=probe 4 6=probe 5	-	0	6	0	0	0	0	0	0
/P	**Selection of probe type** 0=standard NTC (black probe) 1=high-temperature NTC (beige probe) 2=PTC	-	0	2	0	0	0	0	0	0
/A2	**Configuration of probe 2** 0=probe 2 absent or not used 1=product probe (used for display) 2=defrost probe 3=condensation probe 4=anti-frost probe	-	0	4	0	2	2	0	2	2
/A3	**Configuration of probe 3 / digital input 1** Same as probe 2	-	0	4	0	0	0	0	2	2
/A4	**Configuration of probe 4 / digital input 2** Same as probe 2	-	0	4	0	0	0	0	0	0
/A5	**Configuration of probe 5 / digital input 3** Same as probe 2	-	0	4	0	0	0	0	0	0
/c1	**Calibration of probe 1**	°C/°F	-20	20	0	0	0	0	0	0
/c2	**Calibration of probe 2**	°C/°F	-20	20	0	0	0	0	0	0
/c3	**Calibration of probe 3**	°C/°F	-20	20	0	0	0	0	0	0
/c4	**Calibration of probe 4**	°C/°F	-20	20	0	0	0	0	0	0
/c5	**Calibration of probe 5**	°C/°F	-20	20	0	0	0	0	0	0

r: Setting parameters CtL

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
St	**Temperature set point**	°C/°F	r1	r2	4	0	-18	12	0	-18
rd	**Differential**	°C/°F	0.1	20	2	2	2	1	2	2
rn	**Dead zone**	°C/°F	0.0	60	2	2	2	1	2	2
rr	**Hot differential relay (with dead zone)**	°C/°F	0.1	20	2	2	2	1	2	2
r1	**Minimum set point value entered by user**	°C/°F	-50	r2	1	-5	-25	2	-5	-25
r2	**Maximum set point value entered by user**	°C/°F	r1	200	20	8	-5	20	8	-5
r3	**Operating mode** 0=direct thermostat (cold) with defrost 1=direct thermostat (cold) without defrost 2=reverse thermostat (hot)	Select	0	2	0	0	0	0	0	0
r4	**Variation of set point during nocturnal operation (stn=st+r4)**	°C/°F	-20	20	3	3	3	3	3	3
r5	**Authorise recording of min. and max. temperature values** 0=not authorised 1=authorised	Select	0	1	0	0	0	0	0	0
rt	**Interval between temperature recordings**	Time	0	999	-	-	-	-	-	-
rH	**Maximum temperature recorded**	°C/°F	-	-	-	-	-	-	-	-
rL	**Minimum temperature recorded**	°C/°F	-	-	-	-	-	-	-	-

c: Compressor parameters CMP

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
c0	**Delay compressor and fan start up when the controller is switched on**	Min	0	15	1	1	1	1	1	1
c1	**Minimum time between 2 consecutive start ups of the same compressor**	Min	0	15	6	6	6	6	6	6
c2	**Minimum compressor stoppage time**	Min	0	15	0	0	0	0	0	0
c3	**Minimum compressor running time**	Min	0	15	2	2	2	2	2	2
c4	**Compressor running duration in case of probe alarm (continuous cycle)**	Min	0	100	15	15	15	15	15	15
cc	**Continuous cycle duration**	Time	0	15	4	4	4	4	4	4
c6	**Temperature alarm exclusion time after a continuous cycle**	Time	0	15	2	2	2	2	2	2
c7	**Maximum Pump-Down time (vacuum generation)**	Sec	0	900	0	0	0	0	0	0
c8	**Compressor delayed start up after opening the Pump-Down valve**	Sec	0	60	0	0	0	0	0	0
c9	**Authorisation of auto-start function during Pump-Down** 0= when the valve is closed 1= each time the valve is closed + LP pressure switch request when no cooling request is present	Select	0	1	0	0	0	0	0	0
c10	**Pump-Down operation in time or in pressure** 0=Pump-down in pressure with maximum time 1=Pump-down in time	Select	0	1	0	0	0	0	0	0
c11	**Active list of parameters (n° of 'bn')**	Sec	0	250	1	2	3	4	5	6

d: Defrost parameters dEF

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
d0	**Type of defrost** 0=defrost with elec. element ends with temperature or time 1=defrost with hot gas ends with temperature or time 2=defrost with elec. element ends with time 3=defrost with hot gas ends with time 4= defrost with elec. element ends with time or temperature (if defrost ends with time ED1 and ED2 are not displayed)	Select	0	4	2	0	0	2	0	0
dI	**Interval between 2 defrosts**	Time	0	250	8	8	6	12	8	6
dt1	**Temperature at end of evaporator defrost**	°C/°F	-50	200	4	4	4	4	4	4
dt2	**Temperature at end of aux. evaporator defrost**	°C/°F	-50	200	4	4	4	4	4	4
dP1	**Maximum evaporator defrost duration**	Min	1	250	45	45	30	45	45	30
dP2	**Maximum aux. evaporator defrost duration**	Min	1	250	45	45	30	45	45	30
d3	**Delayed defrost activation**	Min	0	250	0	0	0	0	0	0
d4	**Defrost when the controller is switched on** 0=no 1=yes	Select	0	1	0	0	0	0	0	0
d5	**Delay defrost when the controller is switched on**	Min	0	250	120	240	240	120	240	240
d6	**Block display during defrost** 0=alternating display of temperature and DEF 1=display temperature present before defrost 2=always display DEF	-	0	2	2	2	2	2	2	2
dd	**Dripping duration after defrost**	Min	0	15	0	4	4	0	4	4
d8	**High-temperature alarm (AH) exclusion duration after defrost and/or door open**	Time	0	15	1	1	1	1	1	1
d8d	**Alarm timer after door opening (alarm "dor")**	Min	0	250	2	2	2	2	2	2
d9	**Priority defrost for delayed compressor start/stop** 0=respected 1=not respected (priority defrost)	Select	0	1	0	0	0	0	0	0
d/1	**Read defrost probe 1**	°C/°F	-	-	-	-	-	-	-	-
d/2	**Read defrost probe 2**	°C/°F	-	-	-	-	-	-	-	-
dC	**Defrost duration time base** 0=hours/minutes 1=Minutes/seconds	Select	0	1	0	0	0	0	0	0
d10	**Smart defrost: Compressor running time with an evaporator temperature below D11 to start defrost** 0=function disabled >0 =running time	dC	0	250	0	0	0	0	0	0
d11	**Temperature threshold for smart defrost**	°C/°F	-20	20	1	1	1	1	1	1
d12	**Auto-adaptive advanced defrost** 0=skip defrost disconnected, automatic variation disconnected 1=skip defrost disconnected, automatic variation connected 2= skip defrost connected, automatic variation disconnected 3= skip defrost connected, automatic variation connected	-	0	3	0	0	0	0	0	0
dn	**Average defrost duration in percentage in relation to dt1 or dt2**	-	1	100	65	65	65	65	65	65
dH	**Proportional variation factor of dI**	-	0	100	50	50	50	50	50	50

A: Alarm parameters 

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
A0	**Alarms and fans differential**	°C/°F	0.1	20	0.2	0.2	0.2	0.2	0.2	0.2
A1	**Type of alarm threshold: low-temperature (AL) and high-temperature (AH)** 0=AL and AH threshold in relation to set point (factory set) 1=AL and AH absolute values	Select	0	1	0	0	0	0	0	0
AL	**Low-temperature alarm threshold (AL) → differential > 0°C if factory set**	°C/°F	-50	200	5	5	5	6	5	5
AH	**High-temperature alarm threshold (AH) → differential > 0°C if factory set**	°C/°F	-50	200	5	5	5	6	5	5
Ad	**Temperature alarm delay (AL and AH)**	Min	0	250	45	45	45	45	45	45
A4	**Configuration of digital input 1 → terminals 22 & 23** 0=input not used. 1=Instantaneous external alarm (IA) 2=Delayed external alarm (dA) 3=Defrost authorisation (except IR33M) 4=Start defrost with external contact 5=Door contact: Stop compressor and fans 6=Controller remote stoppage 7=Night screen contact (day/night contact) 8=Low pressure switch input for pump-down 9=Stop fans with door contact 10=Direct/reverse operation (hot/cold) 11=Light detector 12=Activation of auxiliary output 13= Door contact without light control: Stop compressor and fans 14= Door contact without light control: Stop fans.	-	0	14	0	0	0	0	0	0
A5	**Configuration of digital input 2 → terminals 24 & 25** Same as digital input 1	-	0	14	0	0	0	0	0	0
A6	**Authorisation to stop the compressor with external alarm** 0=compressor always off 100=compressor always on	Min	0	100	0	0	0	0	0	0
A7	**Alarm timer with contact**	Min	0	250	0	0	0	0	0	0
A8	**Authorisation of alarms Ed1and Ed2 (defrost end with time)** 0=no 1=yes	Select	0	1	0	1	1	0	1	1
A9	**Configuration of digital input 3 → terminals 26 & 27** Same as digital input 1	-	0	14	0	0	0	0	0	0
Ado	**Light control with door contact** 0=off 1=on	Select	0	1	0	0	0	0	0	0
Ac	**Condenser high-temperature alarm threshold (CHT)**	°C/°F	0.0	200	70	70	70	70	70	70
AE	**Condenser high-temperature alarm differential (CHT)**	°C/°F	0.1	20	10	10	10	10	10	10
Acd	**Condenser high-temperature alarm delay (CHT)**	Min	0	250	0	0	0	0	0	0
AF	**Light output switch-off timer with light detector** 0=door detector >0=room detector	Sec	0	250	0	0	0	0	0	0
ALF	**Anti-frost alarm threshold (AFr)**	°C/°F	-50	200	-5	-5	-5	-5	-5	-5
AdF	**Anti-frost alarm delay (AFr)**	Min	0	15	1	1	1	1	1	1

F: Ventilation parameters

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
F0	**Fans control** 0=fan always on except in phases F2, F3, Fd 1=fan thermostat controlled according to difference between controller temperature and evaporator temperature (in relation to F1) 2=fan thermostat controlled according to evaporator temperature (in relation to F1)	Select	0	2	0	0	0	0	0	0
F1	**Fan start up temperature**	°C/°F	-50	200	5	5	5	5	5	5
F2	**Fan control according to compressor** 0=fan on when the compressor is off 1=fan off when the compressor is off	Select	0	1	0	0	0	0	0	0
F3	**Fan operation during defrost** 0=fan on during defrost 1=fan off during defrost	Select	0	1	0	1	1	0	1	1
Fd	**Fans stoppage time after dripping**	Min	0	15	0	2	2	0	2	2
F4	**Condenser fan switch off temperature**	°C/°F	-50	200	40	40	40	40	40	40
F5	**Condenser fans differential**	°C/°F	0.1	20	5	5	5	5	5	5

h: Configuration parameters CnF

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
H0	**Serial address**	-	0	207	1	1	1	1	1	1
H1	**Operating mode of relay 4** 0=relay open in case of alarm 1=relay closed in case of alarm 2=auxiliary output: Open or close relay 4 by pressing the AUX key 3=light output 4=auxiliary evaporator defrost output 5=pump-down valve output 6=condenser fan output 7=output for compressor star/delta start up 8=auxiliary output if the controller is off 9=light output is open if the controller is off 10=no function associated with this output 11=controller reverse (hot) output with dead zone 12=2nd compressor output 13=2nd compressor output with rotation	Select	0	13	1	1	1	1	4	4
H2	**Keypad and/or remote control authorisation** 0=Prohibit SET (modification of parameters type F) and modification of the set point 1 =authorise all 2= Prohibit SET (modification of parameters type F), modification of the set point and modification via remote control 3=Prohibit modification via remote control 4=Prohibit UP/AUX, SET (modification of parameters type F) and DOWN/DEF (defrost) 5= Prohibit UP/AUX, SET (modification of parameters type F), DOWN/DEF (defrost) and modification of set point. 6= Prohibit UP/AUX, SET (modification of parameters type F), DOWN/DEF (defrost) and modification of set point.	Select	0	6	1	1	1	1	1	1
H3	**Remote control parameter access code** 0=access to parameters without code	-	0	255	0	0	0	0	0	0

Display	Parameter and description	Measurement unit	Min	Max	Bn 1	Bn 2	Bn 3	Bn 4	Bn 5	Bn 6
H4	**Buzzer operation** 0=in case of an alarm 1=always off	Select	0	1	0	0	0	0	0	0
H5	**Operating mode of relay 5** 0=relay open in case of alarm 1=relay closed in case of alarm 2=auxiliary output: Open or close relay 4 by pressing the AUX key 3=light output 4=auxiliary evaporator defrost output 5=pump-down valve output 6=condenser fan output 7=output for compressor star/delta start up 8=auxiliary output if the controller is off 9=light output is open if the controller is off 10=no function associated with this output 11=controller reverse (hot) output with dead zone 12=2nd compressor output 13=2nd compressor output with rotation	Select	0	13	10	10	10	11	10	10
H6	**Blocking of keys:** 0=all keys enabled 1=set disabled 2=down key disabled 3=set and down key disabled 4=up key disabled 5=up key and set disabled 6=up and down keys disabled 7=up, down and set keys disabled 8=prg disabled 9=prg and set disabled 10=prg and down key disabled 11=prog, down key and set disabled 12=prg and up key disabled 13=prg, up key and set disabled 14=prg, up and down keys disabled 15=all keys disabled	-	0	255	0	0	0	0	0	0
H8	**Selection of the light or auxiliary output for activation of the time range** 0=time range linked to the light 1=time range linked to the auxiliary output	Select	0	1	0	0	0	0	0	0
H9	**Validation of set point variation with the time range** 0=not enabled (tof set point +r4) 1=enabled (ton set point normal)	Select	0	1	0	0	0	0	0	0
Hdh	**Heating element blocking at start up differential**	°C/°F	-50	200	0	0	0	0	0	0

HA: HACCP alarm parameters (OPTIONAL) HCP

Display	Parameter and description	Measurement unit	Min	Max
HAn	**Number of HA alarm events recorded**	-	0	15
HA	**Time/date of last HA recorded**	-		-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99

HA1	**Time/date of last HA recorded**	-	-	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99
HA2	**Time/date of last HA recorded**	-	-	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99
HFn	**Number of HF alarm events recorded**	-	0	15
HF	**Time/date of last HF recorded**	-	-	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99

Display	Parameter and description	Measurement unit	Min	Max
HF1	**Time/date of last HF recorded**	-	-	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99
HF2	**Time/date of last HF recorded**	-	0	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	7
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
t__	Duration	Duration	0	99
Htd	**HACCP alarm delay** **Htd=0 function disabled**	Min	0	250

td: Defrost time parameters (OPTIONAL) rtC

Display	Parameter and description	Measurement unit	Min	Max
td1	**Defrost 1 time range**	-	-	-
d__	Day 0=disabled 1=Monday 2=Tuesday 3=Wednesday 4=Thursday 5=Friday 6=Saturday 7=Sunday 8=Monday to Friday 9=Monday to Saturday 10=Saturday and Sunday 11=Every day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
td2	**Defrost 2 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59

Display	Parameter and description	Measurement unit	Min	Max
td3	**Defrost 3 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
td4	**Defrost 4 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
td5	**Defrost 5 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
td6	**Defrost 6 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
td7	**Defrost 7 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59

td8	**Defrost 8 time range**	-	-	-
d__	Day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
ton	**Light illumination/auxiliary time range**	-	-	-
d__	Day 0=disabled 1=Monday 2=Tuesday 3=Wednesday 4=Thursday 5=Friday 6=Saturday 7=Sunday 8=Monday to Friday 9=Monday to Saturday 10=Saturday and Sunday 11=Every day	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59

Display	Parameter and description	Measurement unit	Min	Max
tof	**Light/auxiliary off time range**	-	-	-
d__	Day (same as ton)	Day	0	11
h__	Hour	Hour	0	23
n__	Minute	Min	0	59
tc	**Time/date programming**	-	-	-
y__	Year	Year	0	99
M__	Month	Month	1	12
d__	Day	Day	1	31
u__	Day of the week 1=Monday 2=Tuesday 3=Wednesday 4=Thursday 5=Friday 6=Saturday 7=Sunday	Day	1	7
n__	Hour	Hour	0	23
t__	Minute	Min	0	59

5 – List of alarm codes

Code	Description	Display icon	Alarm relay	Buzzer	Reset
	Before any intervention, always check the wiring.				
rE	Controller virtual probe damaged or disconnected	Flashing	On	On	Automatic
E0	Ambient probe S1 damaged or disconnected	Flashing	Off	Off	Automatic
E1	Defrost probe S2 damaged or disconnected	Flashing	Off	Off	Automatic
E2	Probe S3 damaged or disconnected	Flashing	Off	Off	Automatic
E3	Probe S4 damaged or disconnected	Flashing	Off	Off	Automatic
E4	Probe S5 damaged or disconnected	Flashing	Off	Off	Automatic
'---'	Probe not validated	None	Off	Off	Automatic
LO	Low temperature alarm	Flashing	On	On	Automatic
HI	High temperature alarm	Flashing	On	On	Automatic
AFr	Anti-frost alarm	Flashing	On	On	Manual
IA	Instantaneous alarm with external contact	Flashing	On	On	Automatic
dA	Delayed alarm with external contact	Flashing	On	On	Automatic
dEF	Defrost in progress	On	Off	Off	Automatic
Ed1	Defrost on evaporator 1 finished with time	None	Off	Off	Automatic/manual
Ed2	Defrost on evaporator 2 finished with time	None	Off	Off	Automatic/manual
Pd	Maximum pump-down time alarm	Flashing	On	On	Automatic/manual
LP	Low-pressure alarm	Flashing	On	On	Automatic/manual
AtS	Pump-down automatic start up	Flashing	On	On	Automatic/manual
cht	Condenser high temperature pre-warning	None	Off	Off	Automatic/manual
CHT	Condenser high temperature alarm	Flashing	On	On	Manual
dor	Door open too long alarm	Flashing	On	On	Automatic
Etc	Internal clock defective	Flashing	Off	Off	Automatic
EE	Machine parameters Eprom error	Flashing	Off	Off	Automatic
EF	Operating parameters Eprom error	Flashing	Off	Off	Automatic
HA	HACCP alarm type HA	HACCP Flashing	Off	Off	Automatic
HF	HACCP alarm type HF	HACCP Flashing	Off	Off	Automatic
rCt	Controller validated for remote programming	None	Off	Off	Automatic
Add	Automatic address attribution procedure in progress	None	Off	Off	Automatic
Prt	Report print-out in progress	None	Off	Off	Automatic
ccb	Start continuous cycle request	Indication			
ccE	End continuous cycle request	Indication			
dFb	Start defrost request	Indication			
dFE	Stop defrost request	Indication			
On	On	Indication			
Off	Off	Indication			
rES	Reset manual-reset alarms; reset HACCP alarms; reset temperature monitoring	Indication			
n1 - n6	Indicates an alarm on units 1-6 present in the system	Flashing	On	On	Automatic
dnL	Download in progress	Indication			
d1 - d6	Download errors on units 1-6	Flashing	Off	Off	

6 – Spare parts:

*Controller Masterlog 4 with 2 probes (ambient and end of defrost)
→code PDEL01957

*Ambient probe
→code PDEL00490

*End of defrost probe
→code PDEL00455

7 – Miscellaneous:

7 – 1 →Test NTC probe for damage:

Temp. °C	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30
Value KΩ	144	111	86	68	53	42	34	27	22	18	15	12	10	8

7 – 2 →Set lighting parameters:

- Use AUX 2 (relay 5)
- Parameter: H5=3
- Bulb connected between terminals **17** & **2**

Note: the key must be pressed and held for **2s** to switch the lighting on or off.

7 – 3 → Connection of the defrost element:

- Connect “Element” contactor coil between terminals **8** and **2**

7 – 4 → Connection of heating element for wine cellars:

- Connect “Element” contactor coil between terminals **17** and **2**

7 – 5 → Operation with 2 Masterlog4 → 1 master and 1 slave:

Master **Slave**

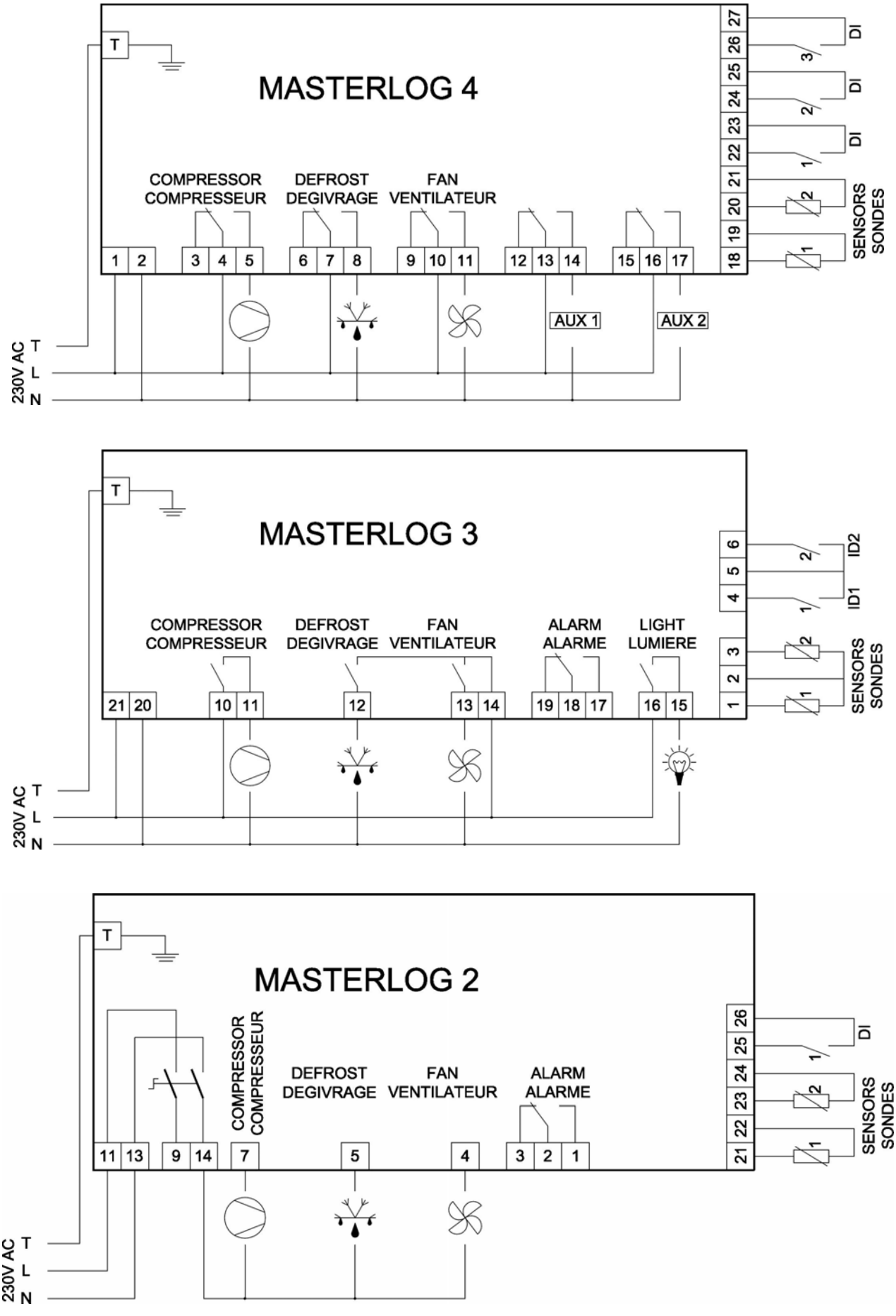
PF contact “NO” →→ connection to →→
of element contactor

Digital input available:
if terminals 22 &23 → A4=4
if terminals 24 &25 → A5=4
if terminals 26 &27 → A9=4

Interval between 2 defrosts:
Parameter ‘’dI’’=6 hours

Interval between 2 defrosts:
Parameter ‘’dI’’=8 hours

Note: When using an external defrost timer, the configuration is identical to above except that the master is replaced by a timer.


MASTERLOG 4
COMPRESSOR
COMPRESSEUR
DEFROST
DEGIVRAGE
FAN
VENTILATEUR
AUX 1
AUX 2
DI
SENSORS
SONDES
230V AC
T
L
N
MASTERLOG 3
ALARM
ALARME
LIGHT
LUMIERE
ID1
ID2
MASTERLOG 2

8. TECHNICAL CHARACTERISTICS

Power Supply: Model E= Voltage: 230 V~, 50/60 Hz; Power: 11.3 VA, 50 mA~ max.
Model A= Voltage: 115 V~, 50/60 Hz; Power: 11.3 VA, 100 mA~ max.
Model H= Voltage: 115...230 V~, 50/60 Hz; Power: 12 VA, 110 mA~ max.

Insulation: guaranteed by the p. supply:
Model E,A,H= Insulation from very low voltage parts: reinforced; 6 mm in air, 8 mm on surface; 3750 V insulation.
Insulation from relay outputs: primary; 3 mm in air, 4 mm on surface; 1250 V insulation.

Input: S1: NTC or PTC, depending on the model
S2: NTC or PTC, depending on the model
D11, S3: voltage-free contact, contact resistance < 10 Ω, closing current 6 mA NTC or PTC, depending on the model
D12, S4: voltage-free contact, contact resistance < 10 □, closing current 6 mA NTC or PTC, depending on the model
D13, S5: voltage-free contact, contact resistance < 10 □, closing current 6 mA NTC or PTC, depending on the model.
Maximum distance from probes and digital inputs less than 10 m.
Note: in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.

Probe type: NTC std. CAREL= 10 kΩ at 25 °C, range from –50T90 °C; measurement error: 1 °C in the range from –50T50 °C; 3°C in the range from +50T90 °C
NTC high temperature= 50 kΩ at 25 °C, range from –40 T150 °C; measurement error 1.5 °C in the range from –20T115 °C; 4 °C in the range outside of –40T150 °C
PTC std. CAREL (specifi c model)= 985 Ω at 25 °C, range from –50T150 °C; measurement error: 2 °C in the range –50T50 °C; 4°C in the range +50T150 °C

Relay outputs: according to the model

EN60730-1 (250 V~)		UL 873 (250 V~)
8A	8 (4) A on N.O.; 6 (4) A on N.C.; 2 (2) A on N.C. and N.O. (100000 cycles)	8 A resistive 2 FLA 12 LRA C 300 (30000 cycles)
16 A	10 (4) A up to 60 °C on N.O.; 12 (2) A on N.O. and N.C. (100000 cycles)	12 A resistive 5 FLA 30 LRA C 300 (30000 cycles)
2 Hp	10 (10) A (100000 cycles)	12 A resistive, 12FLA, 72 LRA (30000 cycles)
30 A	12 (10) A (100000 cycles)	12 A resistive, 2HP, 12 FLA (30000 cycles)

• insulation from the very low voltage parts: reinforced; 6 mm in air, 8 on surface; 3750 V insulation
• insulation between the independent relay outputs: basic; 3 mm in air, 4 on surface; 1250 V insulation

Connections: Type of connection= fixed screw, plug-in for screw blocks or spade with crimped contact; Cross-section= for cables from 0.5 a 2.5 mm^2
Type of connection= wire cross-section for probes and digital inputs; Cross-section= from 0.5 to 2.5 mm^2 (from 20 to 13 AWG)
Type of connection= wire cross-section for power supply and loads; Cross-section= from 1.5 to 2.5 mm^2 (from 15 to 13 AWG)
Notes: The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105 °C.

Case: plastic: dimensions 200 x 240 x 93 mm; bare board and front panel: base dimensions 178 x 86 x 40 mm: front dimensions 100 x 90 x 12 mm

Assembly: wall mounting (with plastic case): using fastening screws (spacing 162.5 x 218.5); panel (with plastic front panel): using fastening screws (spacing 159.5 x 197.5); panel (bare board): using fastening screws for base board and using fastening screws for front board.
The controller must be protected against accidental contact to prevent electric shock.

Display: digits: 3 digit LED; display: from -99 to 999; operating status: indicated with LEDs and graphic icons made in the polycarbonate label applied to the plastic case.

Keypad: 8 mechanical buttons, keypad made in the polycarbonate label applied to the plastic case.

Infrared receiver: available according to the model.

Clock with backup battery: available according to the model.

Buzzer: available on all models.

Clock: error at 25 °C: ± 10 ppm (±5.3 min/year); error in the temperature range –10T60°C: - 50 ppm (-27 min/year); ageing: < ±5 ppm (±2.7min/year);

Discharge time: typically 6 months (8 months maximum); recharge time: typically 5 hours (<8 hours maximum).

Operating conditions: Bare board= -10T65°C; <90% rH non-condensing.
With plastic case= -10T50°C; <90% rH non-condensing.
Current= Relay 1 12 A; Relay 2 0 A; Relay 3 4 A; Relay 4 4 A; Relay 5 4 A; Relay 1 0 A; Relay 2 12 A; Relay 3 4 A; Relay 4 4 A; Relay 5 4 A.
The currents indicated above are reduced according to the relays used.

Storage conditions: -20T70°C; <90% r.H. non-condensing.

Panel installation: with plastic case: IP65 without disconnecting switch; IP54 with disconnecting switch; panel: IP54 with disconnecting switch.

Environmental pollution: 2 (normal situation).

PTI of insulating materials: printed circuits 250, plastic and insulating materials 175.

Period of stress across the insulating parts: long.

Category of resistance to fire: category D and category B (UL 94-V0).

Class of protection against the voltage surges: category 1.

Type of action and disconnection: relay contacts 1B (micro-disconnection).

Construction of the control device: incorporated electronic control device.

Classification according to protection against electric shock: Class II when appropriately incorporated.

Device designed to be hand-held or incorporated into equipment designed to be hand-held: no.

Software class and structure: Class A.

Cleaning the front panel of the instrument: only use neutral detergents and water.

Serial interface per CAREL network: Internal, available on all models, upon request.

Interface for repeater display: Internal, available in all models, upon request.

Maximum distance between interface and repeater display: 10 m.

Power supply disconnecting switch: available upon request on all models with plastic case .

Programming key: available on all models.

LENNOX
EMEA

42 rue Roger Salengro - BP 205
69741 GENAS CEDEX - FRANCE
Tél. : + 33 4 72 47 13 00 - Fax : + 33 4 72 47 13 96
Internet : www.heatcrafteurope.com