HTWL SERVICE MANUAL

The HTWL temperature and humidity controllers are made up of a **Keyboard** and a **Remote module.** The connection between the keyboard and the remote module should be made using a two conductor cable making sure that you respect the polarity L max=10 m. crossection .5-1mm2

Installing the probe
Install the regulation probe **S1** in a zone that is not subject to air flows. For units with electric defrosting or with cycle inversion fasten the probe **S2** to the **beginning** of the circuit in contact with the evaporator unit pipes by bending the aluminium fins around the probe bulb itself. For hot gas units fasten the probe to the circuit **outlet**. If you are using the condenser probe **S3**, consult the fridge manufacturer for information regarding its positioning. The probe **S4** is used as a PFC digital input (potential free contact). Install the humidity probe **L1** making sure that the correct type is fitted: 4/20 mA->ISP load=0; 3/18 mA->ISP load=128.

Installing loads
Connect the 230 Vac power supply to the fastons **N(eutral)** and **L(ive)** respecting the positions. Relay U1 is a potential free contact and must never be connected to the neutral or live contacts. The fastons marked N are in parallel and connected to the neutral fastons. Relay U2 has an exchange contact; run the live wire to U2A at rest and to U2B when the contact is activated. The fastons U3-U4-U5-U6 carry the live load when their relays are activated.

Relay configuration
Associating the action number with the parameters PU1 to PU6, relative to each relay, this will then be set to the chosen action as follows: **Actions**: 01=Cooling; 02=Defrost; 03=Evaporator fan; 04=Condenser fan; 05= Light; 06=Auxiliary load; 07=Remote alarm; 08= Dehumidification; 09=Humidification; 10=Anti freeze; 11=Condensate discharge; 12=Heating; 13= Compressor delay; 14= Cooling 2nd zone; 15=Defrost 2nd zone; 16=Printer relay; 17=Active loads

MENU SERVICE (from s1 to s13)
Press the menu key, use the left-hand keys to select menu m7, press OK to confirm: if the Password value is not zero you will be asked to input a password. Use the left-hand keys to select the correct value and press OK to confirm. If the input value is wrong WRONG PASSWORD will appear on the display and the controller will return to the main window. If the password is not known press the menu key when starting up until you enter the Service Menu.

Select the sub menus using the left-hand keys, and press OK to confirm; select the individual fields using the left-hand keys.

STATUS LIST **s1** – Example:

KEYPAD ON 00032	Nr. Of keypad start ups
POWER ON 00089	KNr. Of mains power start ups
RESET 00035d:07h	dd:hh reset function
HTWL 00054d:08h	dd:hh refrigerator function
COMP 00039d:14h	dd:hh compressor function
COMP% 1h=45%	% compressor during the last hour
COMP% 24h=36%	% compressor during the last 24hrs
COMP ON 04'35''	Average compressor on time
COMP OFF 08'01''	Average compressor off time
Min Evap -35,5°C	Minimum evaporation
Max Evap -24,5°C	Maximum evaporation
dT Cond 08,5°C	Average condenser thermal
S/n 00.00.00	Controller serial number

DEFROST LIST **s2**

Example: **DEF01 M01 d=30'**

DEF01 = nr. of defrosts stored; **M01** = defrost code; **d**=30' duration in minutes. If the RTCL module is installed the date/time is shown by pressing the **OK** button.
Defrost codes: M1=manual; M2=serial; M3=time interval; M4=compressor time; M5=hourly; M6= infotest; M7=calibration; M8=minimum evaporation; M9= maximum evaporation; M10, M11, M12=protection; M20=Off&Clean

FAILURE LIST **s3**

Example: **F09 PROBE S1**

F09=number of stored failures; **PROBE S1**=type of failure. If the RTCL module is installed the date/time is shown by pressing **OK**

DOOR OPENINGS **s4**
The controller displays the total number of times the door has been opened since the last memory reset expressed in hours/days. In models with an RTCL module installed when you press **OK**, the total number of times the doors has been opened over the last 32 days will be shown.

Example: **n = 02 / 12 d= 145'**
n=02/12: nr. of openings >DOO min/nr. Total openings
d=145': overall time in which the door has been open

For the *Defrost list*, *Failure list* and *Opening list* the controller indicates up to 255 events while the last 32 are accompanied by the relative data.

PARAMETERS **s5**
The controller has 74 setting parameters (see parameter table). Confirm by pressing **OK**: The display shows the first parameter, the value and the unit of measurement and flashes the progressive number. The parameters are selected using the left-hand button. Press **OK** to modify the value: The display will flash the value of the parameter to be modified using the left-hand buttons. The value can be stored by pressing **OK** key.
After the last parameter; the parameter administrator editing options appear (these are functions for the fridge manufacturer).

TEST START **s6**
The InfoTest function, started up from sub menu **s6** runs a fridge function test in 5 stages as well a san initial stabilizing test.
Ph1=cycles, **Ph2**=defrost, **Ph3**=recovery, **Ph4**=pull up, **Ph5**=pull down. The parameters linked to the Infotest function are as follows:
STA=nr. of stabilizing cycles, CYC=nr. of thermost cycles, ETT= upward cycle end temperature: downward cycle start.

INFOTEST DATA **s7**
Once the test has finished menu s7 contains the following report:

PH 1 ON 01'50''	Compressor ON time	min/sec
PH 1 OFF 02'23''	Compressor OFF time	min/sec
PH 2 DEF 03'45''	Defrost duration	minutes
PH 3 REC 02'55''	Recovery duration	minute
PH 4 UP 00105s/°C	Temperature loss	sec/°C
PH 5 DW 00055s/°C	Temperature recovery	sec/°C

If the RDPS printer is present the report data can be printed from MENU SERVICE/INFOTEST DATA/PRINT INFODATA.

MEMORY RESET **s8**
Confirm by pressing **OK**, the controller will cancel all memory content with the exception of the controller and show the message **MEMORY ERASING;** then it will return to the normal operating mode.

PARAM.RESTORE **s9**
Once confirmed the controller will reset to the default parameters (see the chapter PARAMETERS) if the parameters have been input by the keyboard or using an electronic key. The controller will restart with the new settings.

PASSWORD **s10**
Press the **OK** button and the password to enter the service menu will be shown. Using the left-hand buttons the value can be modified between **00** (password excluded) and **255**. To confirm the new password press **OK** key.

LANGUAGE **s11**
Press the **OK** button and the current language will be displayed. Using the left-hand buttons you may choose the language from the 5 available possibilities.

INPUT-OUTPUT **s12**
Press the **OK** button and the value read by the probe S1 will be shown. Using the left-hand buttons you can read the temperature and humidity values for the installed probes. The last strings refers to the activated status of the output relay (0=at rest; 1=activated).

PARAMETER TABLE

P01	ADR	Serial address	01	flag
P02	ALL	Lower alarm limit relative to setpoint	05	°C
P03	ALH	Upper alarm limit relative to setpoint	10	°C
P04	PTD	Clogged condenser threshold	00	°C
P05	ALD	Alarm delay	60	min
P06	ADD	Alarm delay on start up	90	min
P07	VOP	Display options: see super parameters	62	flag
P08	MES	Program label disabled=0; running>0	00	sec
P09	ISP	Input options: see super parameters	00	flag
P10	OSP	Output options: see super parameters	00	flag
P11	DIN	Door micro switch options	00	flag
P12	DOO	Door opening time limit	04	min
P13	CAL	Probe S1 calibration	00	°C
P14	HYS	Differential action cold	00	°C
P15	HYC	Differential action hot	00	°C
P16	SLL	Lower setpoint limit	- 30	°C
P17	SLH	Upper setpoint limit	+ 30	°C
P18	ADL	Compressor anti-surge (up-down)	01	min
P19	ADS	Compressor start delay	15	sec
P20	CCD	Compressor cut in/cut out delay	08	sec
P21	CON	Time ON for probe failure	05	min
P22	COF	Time OFF for probe failure	03	min
P23	DRP	Drip time	60	sec
P24	DCM	0=electric;1=inversion; >1 hot gas	00	flag
P25	CPH	Max % compressor in 24 hours	99	%
P26	ADC	Auxiliary compressor delay	00	sec
P26	DOP	Defrost options: see super parameters	00	flag
P28	ITD	Interval between defrost cycles	08	ore
P29	DTO	Maximum defrost duration	30	min
P30	DTE	Defrost end(50=S2 disabled)	50	°C
P31	DEO	Extra defrost time	00	min
P32	SDT	Evaporator icing sensitivity	1,0	°C
P33	DCD	Condensate discharge time	05	min
P34	FOP	Fan operations: see super parameters	00	flag
P35	FAD	Evaporator fan delay	60	sec
P36	FAS	Fan setpoint during evaporation	05	°C
P37	FSD	Fan setpoint during defrost	00	°C
P38	HYW	Warm Air Lock hysterisis	0,5	°C
P39	LET	Minimum evaporation (S2)	- 25	°C
P40	FCE	Set condenser fan. (50=S3 disabled)	50	°C
P41	MCT	Maximum condensation (S3)	58	°C
P42	CYC	Nr. of Infotest thermostatical cycles	02	flag
P43	STA	Nr. of Infotest stabilization cycles	02	flag
P44	ETT	Maximum Infotest temperature	10	°C
P45	LOG	Save options	01	flag
P46	SPT	Saving interval	05	min
P47	PRT	Print mode	00	flag
P48	AD1	1° daily defrost time	24	hh
P49	AD2	2° daily defrost time	24	hh
P50	AD4	3° daily defrost time	24	hh
P51	AD4	4° daily defrost time	24	hh
P52	HES	Alternative differential setpoint	02	°C
P53	ESS	Alternative setpoint start time	24	hh
P54	ESD	Duration with alternative setpoint	00	o
P55	AES	Nr. of Energy Saving hours	02	ore
P56	CPE	Compressor cut in % energy Saving	50	%
P57	SPX	Door frame setpoint	- 05	°C
P58	HPO	Humidity probe calibration	00	Rh
P59	HRH	Dehumidification hysterisis	00	Rh
P60	HRL	Humidification hysterisis	00	Rh
P61	URM	Indip. Rh control=0; in dead band=1	00	flag
P62	PMT	Max nr. of pressure switch interventions	03	flag
P63	TBP	Pressure switch time count	30	min
P64	OCT	Ventilation duration Off&Clean	00	min
P65	SL2	Lower setpoint limit 2^ zone	- 30	°C
P66	SH2	Upper setpoint limit 2^ zone	30	°C
P67	HY2	Hysterisis 2^ zone	00	°C
P68	AS2	Compressor delay 2 starting up	30	sec
P69	IT2	Defrost interval 2^ zone	12	ore
P70	DT2	Maximum defrost time 2^ zone	40	min
P71	PU1	Relay event U1	00	flag
P72	PU2	Relay event U2	00	flag
P73	PU3	Relay event U3	00	flag
P74	PU4	Relay event U4	00	flag
P75	PU5	Relay event U5	00	flag
P76	PU6	Relay event U6	00	flag

NOTE: For the printer options consult the manual RDPS.

SUPERPARAMETERS: Final value = sum of weights

P	**VOP** with weight = P	with weight = 0
1	Show in °F	Show in °C
2	Backlight always lit	Backlight switch off after 4'
4	Backlight off 0h >06h	Backlight without control
8	Buzzer enabled	Buzzer disabled
16	Buzzer off 0h >06h	Buzzer without control
32	Alarm warning active	No alarm warning
64	Display block during defrost	Display during defrost
128	Door block display	Door shows ° cell

P	**DOP** with weight = P	with weight = 0
1	Manual defrost	No manual defrost
2	Defrost every ITD hours	No defrost every ITD hours
4	Each ITD hour compressor.	No each ITD compressor
8	Defrost 1h from start	Defrost ITD from start
16	Defrost schedule	No defrost schedule
32	HACCP defrost	No HACCP defrost
64	Defrost if S2 <LET	No defrost protection
128	Automatic defrost	No automatic defrost

P	(*) **FOP** with weight = P	with weight = 0
1	VE enabled	VE disabled
2	VE on in defrost	VE off in defrost
4	VE with compressor	VE independent
8	VE with control Rh%	VE without control Rh%
16	VC modulated during defrost	VC independent during defrost
32	VC on during defrost	VC off during defrost
64	VE modulated in defrost	VE independent in defrost
128	Warm air lock enabled	Warm air lock disabled

P	**ISP** with weight = P	with weight = 0
1	Door switch n.o.	Door switch n.c.
2	Pressure switch n.o.	Pressure switch n.c.
4	Pressure switch enabled	Pressure switch disabled
8	Digital Energy Saving on	Digital Energy Saving off
16	2° evaporator enabled	2° evaporator disabled
32	*not used*	*not used*
64	Frame control by S3	Frame control by S1
128	Humidity sensor 3-18 mA	Humidity sensor 4-20 mA

P	**OSP** with weight = P	with weight = 0
1	Light key enabled	Light key disabled
2	Auxiliary key enabled	Auxiliary key disabled
4	Alarm contact n.c.	Alarm contact n.o.
8	Deep Freeze enabled	Deep Freeze disabled
16	*not used*	*not used*
32	Load menu active in OFF	Load menu active in ON
64	Loads also active in OFF	Loads also active in ON
128	Loads switched off by OFF	Loads unchanged by OFF

WIZARD KEY s13

Insert the program key connection in the connector on the remote card with the controller not receiving mains power. When the key is inserted at start up the controller automatically enters program menu s13: The display shows **LOADING k1**; press the OK button again :the display will show **LOADING FROM >00** Using the left-hand keys choose one of the 32 memory positions (from 00 to 31) in which to send the parameters into the controller; Press OK: after the message EXIT/CONFERM choose the option and wait for the data to be loaded into the controller.

(*) VE= Evaporator fan; **VC=** Condenser fan