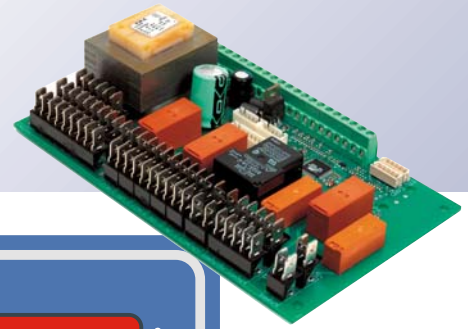


IWP 750-760 (LX)

electronic controllers for “forced air” refrigeration units



The device consists of two units:

- an IWK keyboard, available in 3 formats (see paragraph Models);
- an IWP power module.

USER INTERFACE

(example of a standard 6-key open-board).

The user has a keyboard featuring a display and four primary + two secondary keys for controlling status and programming of the instrument.

example of polycarbonate enclosure



“UP/Def.” key
see par. H31

“DOWN” Key
see par. H32

“on-off” key
(function 2)
see par. H35

“esc” key
see par. H33
OSP/ECONOMY ENABLED

“set” key

“LIGHT” Key
(function 1)
see par. H34

KEYS AND MENU

“primary” keys

UP Key



WIDE keyboard

Scrolls menu entries
Increases values
Can be set by parameter*
(see H31 parameter: by default activates manual DEFROST)
in WIDE keyboard UP & “def” keys are separate

DOWN Key



Scrolls menu entries

Decreases values
Can be set by parameter*
(see H32 parameter)

esc Key



WIDE keyboard

ESC function (exit)
Can be set by parameter*
(see H33 parameter)
****Activates the functions (see paragraph entitled OSP FUNCTIONS FOLDER) in WIDE keyboard ESC key have the “def” symbol”**

set key

(press once)



MACHINE STATUS MENU

- Accesses the Setpoint
- Displays the alarms (if active)
- Displays Pb1, Pb2 and Pb3 (see (hold down))
- Accesses the Parameter programming menus



UP Key+esc Key pressed simultaneously

(press for 2 seconds)

- Keyboard locking/unlocking

“secondary” keys or function keys

“ON-OFF” KEY



(hold down, see par. H02)
(function 2)
Turns the instrument On/Off
Can be set by parameter*
(see H35 parameter)

“LIGHT” Key



(function 1)
Turns on the light
Can be set by parameter*
(see H34 parameter)

*NOTE:

a) The “primary” keys can be set using parameters H31...H33 (see).
In the standard configuration, the keys are set by default as follows:

- “UP” key; par. H31=1; activates manual defrosting
- “DOWN” key; par. H32=0 no associated function (disabled)
- “esc” key; par. H33=3 activates the reduced set function
- “set” key; cannot be set.

a) The “secondary” keys or “function keys” can be set using parameters H34...H35 (see).
In the standard configuration, the keys are set by default as follows:

- “UP” key; par. H34=6; activates the light
- “DOWN” key; par. H35=7 activates the “ON-OFF”function (also known as STAND-BY).

LED

“Display” LEDs

The display is red in color; the display LEDs (from left to right) are green (3) and red (Alarm LED).

Compressor LED (green)



- ON for compressor on;
- blinking in case of delay, protection, or blocked enabling

Defrosting LED (green)



- ON when defrosting;
- blinking for manual or digital input activation

Fan LED (green)



- ON when fan is on;
- blinking for manual fan forcing or D.I. (Digital Input)* activation

*(%RH function, humidity reduction if par. H11=13)

Alarm LED (red)



- ON for alarm active;
- blinking when alarm is silenced

“Key” LEDs

3 LEDs are associated with the 3 set, “on-off” and “LIGHT” keys of the sample keyboard.

“set” LED (yellow)



- ON for programming level 2 parameters;
- blinking when reduced set is on OSP

“on-off” LED (yellow)



- ON for instrument “turned off” (on STAND-BY);
- OFF for instrument turned on;

“light” LED (green)



- ON for open output (%RH / light depending on the model and/or default settings);
- ON for open output also from D.I.**

NOTE: the LEDs are turned off (“OFF”) in all other cases not described

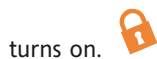
PLEASE NOTE - WIDE & 32X74 KEYBOARDS: ALL LEDS ARE RED

IWK KEYBOARD LOCKING

• IWK “OPEN”

The instrument includes a facility for disabling the IWK keyboard, by:

- key:
 - keyboard **IWK OPEN**:
UP Key+esc Key pressed simultaneously for 2 seconds lock/unlock the keyboard
 - keyboard **IWK wide/32x74**:
UP Key+DOWN Key pressed simultaneously for 2 seconds lock/unlock the keyboard
- NOTE: To indicate the keyboard has been locked, the Lock LED



turns on.

- programming the “LOC” parameter (see folder with “diS” label).

NOTE: If the keyboard is locked you can access the “Programming” Menu by pressing the “set” key. The Setpoint can also be viewed.

ENABLING DEFROST CYCLE MANUALLY

To manually activate the defrosting cycle, press the “UP/Def” key (if configured =1) for H02 seconds.

If the conditions for defrosting are not present, (for example, the evaporator probe temperature is higher than the defrost end temperature), or if parameter OdO<>0, the display will blink three (3) times, to indicate that the operation will not be performed.

ACCESSING AND USING MENUS

The instrument has two main menus: the “Machine Status” and “Programming” menu.

Resources are arranged in a menu, which can be accessed:

- by pressing and quickly releasing the “set” key (“Machine Status” menu) or
 - by pressing the “set” key for more than 5 seconds (“Programming” menu) or
 - by pressing the “UP” and “DOWN” keys simultaneously for more than 3 seconds (“Local keyboard Programming” menu)
- To access the contents of each folder, indicated by the relevant label, just press the “set” key once. You can now scroll through the contents of each folder, modify it or use its functions. If you do not use the keyboard for over 15 seconds (time-out) or if you press the “fnc” key once, the last value shown on the display is confirmed and you return to the previous screen mask.

FUNCTIONS FOLDER FnC Within the FnC folder (last folder visible from the Programming Menu, level 1), the following functions are available, which can be activated using the “set” key:

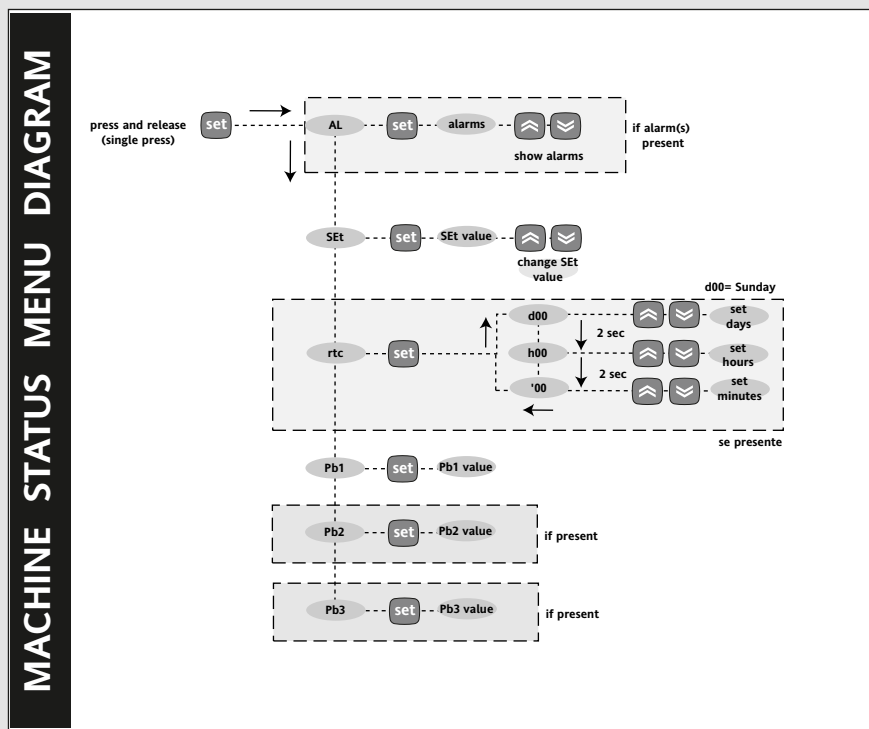
If the instrument is switched off, the functions labels will go back to their default status.

MACHINE STATUS MENU

(See Machine Status Menu Diagram)

To access the “Machine Status” menu, press and quickly release the “set” key. If alarms are not present, the label “SEt” appears. By using the “UP” and “DOWN” keys you can scroll through the other folders in the menu:

- AL: alarm folder (if alarms present, except for faulty probes/probe errors;
- SEt: Setpoint setting folder.
- rtc: real time clock folder.
- Pb1: probe 1 value folder;
- Pb2: probe 2 value folder;
- Pb3: probe 3 value folder (if present);



PASSWORD 1) PROGRAMMING MENU

The passwords “PA1” and “PA2” allow access respectively to level 1 and level 2 parameters. In the standard configuration passwords are not present. To enable and assign them (value ≠ 0) the desired value, access the “Programming” menu, within the folder with the “diS” label. If passwords are enabled, they will be requested:

- PA1 at the entrance of the “Programming” menu (see the “Programming Menu” section);
- PA2 within the folder with the “Cnf” label containing level 1 parameters.

2) LOCAL KEYBOARD

password “PA3” allows access to the local keyboard parameters. There is no password in the standard configuration. To enable and assign them (value <>0) the desired value, access the “Local Keyboard Programming” menu, within the folder with the “PLO” label. If a password is enabled, it will be requested:

- PA3 at the entrance of the “PLO” menu

USING THE COPY CARD

The Copy Card is an accessory connected to the TTL serial port which allows for the quick programming of the instrument parameters (upload and download parameter’s map). The operation is performed as follows:

Format

This command allows copy card formatting, an operation **necessary** in the event of first instrument use or to copy maps with different models.

WARNING: after the copy card has been programmed, all the data entered is erased by using the “Fr” parameter. This operation cannot be cancelled.

Upload

This operation loads the programming parameters from the instrument.

Download

This operation downloads to the instrument the programming parameters.

(go to page 4)

PROGRAMMING MENU
(See Programming Menu Diagram)

1) Level 1 Parameters

To access the “Programming” menu, press the “set” key for more than 5 seconds. If specified, the level 1 access PASSWORD will be requested (see parameter “PA1”) and (if the password is correct) the label of the first folder will follow. If the password is wrong, the display will show the PA1 label again. To scroll other folders, use the “UP” and “DOWN” keys; **the folders contain only the level 1 parameters.**

NOTE: at this point level 2 parameters are NOT visible, even if they aren’t protected by password.

2) Level 2 Parameters

In the Programming Menu go into the “CnF” folder, scroll all the parameter until you reach the PA2 label. By pressing and releasing the “set” button you will enter all level 2 parameters only and the label of the first folder in the programming menu will follow.

The level 2 parameters may be protected by a second password (see “PA2” parameter inside “diS” folder, not to be confused with PA2 label inside “CnF” folder). If specified, level 2 parameters are hidden from the user; accessing the “CnF” folder the level 2 access PASSWORD will be requested and (if the correct password is entered) the label of the first folder in the programming menu will follow.

NOTE: At this point you will see only level 2 parameters. Level 1 parameters will therefore NOT be visible; to reach them you must exit the Programming Menu and repeat step 1).

To enter the folder, press “set”. The label of the first visible parameter appears. To scroll through the other parameters, use the “UP” and “DOWN” keys; to change the parameter, press and release “set”, then set the desired value using the “UP” and “DOWN” keys, and confirm with the “set” key. Move to the next parameter.

3) “easy map” programming of the base

Within the folder CnF, a level 2, the parameter H60 can be viewed (called “Parameter map selector” or “Vector Number”) which allows for the programming (from 1 to 6) of a subset of parameters depending on the type of system required. This will obtain a list of “generic” parameters and a list of “characteristic” parameters of the system. Depending on the value of H60, a “vector” of characteristic parameters is assigned, which can however be changed by the use, just like the other parameters.

It is always possible to reprogram the controller with other “characteristic” parameters, by modifying the “vector”.

NOTE: It is strongly recommended that the instrument be switched off and back on again every time parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

LOCAL KEYBOARD PROGRAMMING MENU

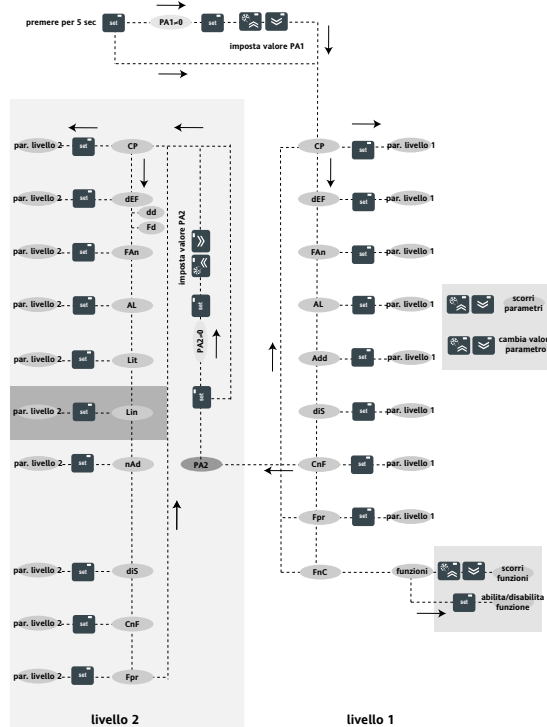
To enter the “Local Keyboard Programming” menu, press the “UP” and “DOWN” keys simultaneously for at least 3 seconds.

If specified, the access PASSWORD will be requested (see parameter “PA3”) and (if the password is correct) the label PLO (Local Parameters) that represents the folder of local keyboard parameters (see Local Keyboard Parameter table) will follow. If the password is wrong, the display will show the PA3 label again.

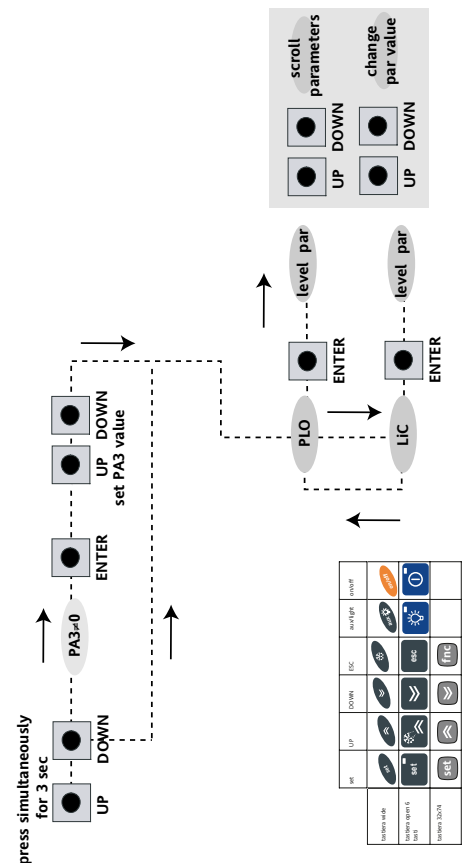
NOTE: the folder may NOT be visible; in this case, you CANNOT enter the local keyboard programming)

To enter the folder, press “set”. The label of the first visible parameter appears. To scroll through the other parameters, use the “UP” and “DOWN” keys; to change the parameter, press and release “set”, then set the desired value using the “UP” and “DOWN” keys, and confirm with the “set” key. Move to the next parameter.

MACHINE PROGRAMMING MENU DIAGRAM1



LOCAL KEYBOARD PARAMETER MENU DIAGRAMS



NOTE:

- **UPLOAD: instrument** → **Copy Card**
- **DOWNLOAD: Copy Card** → **instrument**.

The operations are performed accessing the folder identified by the "FPr" label and selecting, according to the case, "UL", "dL" or "Fr" commands; the operation is confirmed by pressing the "set" key. If the operation is successful, a "y" is displayed, on the contrary, if it fails an "n" will be displayed.

Download "from reset"

Connect the copy card with the instrument OFF. When the instrument is switched on the programming parameters will be downloaded into the instrument; after the lamp-test the display will show for about 5 seconds:

- label dLY if copy operation successful
- label DLn if not

NOTE:

- after the download operation the instrument will immediately work with the new parameters map setting.

DISTANCE-MANAGED SYSTEMS (ONLY LX MODELS)

The connection to the TELevis distance-managed systems may occur:

- using a TTL serial port (see connection diagram, TTL serial)

In this case, it is necessary to use a TTL- RS 485 BUS ADAPTER 130 interface module.

- using an RS 485 serial (see base terminals 1-2-3 connection diagram)

In this case, it is necessary to use the plug-in Televis module available as an optional (TTL - RS 485 converter).

To configure the instrument for this purpose you need to access to the folder (**only present in LX models**) identified by the "Add" label and to use the "dEA" and "FAA" parameters.

MECHANICAL ASSEMBLY

The instrument is designed:

- IWK keyboard:
 - 32x74 (4 buttons) IWK key board: panel mounted. Drill a 29x71 mm hole, insert the unit and fix it in place using the brackets supplied.
 - IWK wide keyboard: panel mounted. Drill a 150x31 mm hole, insert the unit and fix it on the front using the special screws supplied.
 - IWK "open" (6 buttons): open board
- IWP power module, open board 92x121mm for open installation. Do not mount the instrument in humid and/or dirty places; it is suitable for use in ordinary polluted places.

Always make sure that the area next to the cooling openings of the instrument is adequately ventilated.

ELECTRICAL CONNECTIONS

Warning! Never work on electrical connections when the machine is switched on.

The instrument is fitted with:

- **IWP power base:** FASTON connectors and screw connectors for connection of electrical cables with a diameter of 2.5 mm² (one conductor only per terminal for power connections): for the capacity of the terminals, see the label on the instrument.

- **IWK keyboard:** screw connectors for connection of electrical cables with a diameter of 2.5 mm² (one conductor only per terminal for power connections): for the capacity of the terminals, see the label on the instrument.

The relay contacts are voltage free.

Do not exceed the maximum current allowed; in case of higher loads, use an appropriate contactor.

Make sure that power supply voltage meets the instrument voltage. Probes have no connection polarity and can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to the wiring).

Probe cables, power supply cables and the TTL serial cables should be distant from power cables.

IWP 750-760 (LX) BASE TECHNICAL DATA

Container: open board. Dimensions:

- IWP 760 (LX) model: 108x168 mm.
- IWP 750 (LX) model: 108x160 mm.

Mounting: can be adapted to containers featuring dimensions which observe DIN standards (assembled on DIN guide)

Usage temperature: -5...55 °C.

Storage temperature: -30...85 °C.

Usage environment humidity: 10...90 % RH (non-condensing).

Storage environment humidity: 10...90% RH (non-condensing).

View range: -50...110 (NTC); -55...140 (PTC) °C without decimal point (set by parameter), on a 3 digits display and a plus sign.

Analog inputs: three PTC or NTC inputs (set by parameter H00).

Digital inputs: 4 voltage-free digital inputs that can be set by parameter.

Serial Outputs (**see also table of Serial Outputs**):

TTL Serial Outputs (standard 5-way connectors):

- TTL for Copy Card connection.
- TTL input for connection to the Televis

system (**ONLY LX MODELS**).

Note: In this case, it is necessary to use a TTL- RS 485 BUS ADAPTER 130 interface module.

485 Serial Output for connection to the TelevisSystem (ONLY LX MODELS):

- 485 Serial for connection to the Televis System.

Note: In this case, it is necessary to use an optional plug-in module.

Serial Outputs for keyboard-base connection:

- "Powered" serial connection (also referred to as SHORT DISTANCE) using the lines +12V (only for keyboard-base connection), GND and DATA for: a) simple connection between base and keyboard*; b) multiple connection between several modules in the network (up to a max. of 5 modules)**

Note: 1) the modules can be bases or keyboards.

2) the distance between two contiguous modules must be less than 10 m while the distance between the two furthest modules should be less than 50 m.

- "Link" serial connection (also referred to as LONG DISTANCE) using the lines GND (optional for multiple connection), + and - for:

a) simple connection between base and keyboard*

b) multiple connection between several modules in the network (up to a max. of 10 modules)**

NOTE:

1) the modules can be bases or keyboards;

2) *in this case, an optional plug-in module (vertical) and an optional plug-in module (90°) is necessary for the keyboard.

3)in this case, optional vertical plug-in modules and optional (90°) plug-in modules are necessary, where: n= no. of bases; Warning! n≤5; m= no. of keyboards. Warning! m≤5; (See network example).**

4) the distance between one module and the next must be less than 10 m in a simple connection; whereas the distance between one module and the next must be less than 2,000 m for a network connection.

Digital outputs:

- IWP 760 model: 6 outputs on relay
- IWP 750 model: 5 outputs on relay configurable:

ALL MODELS

- first output (A) 20A SPST 2 Hp 250V~; (alternatively 16 A SPST 1 Hp 250V~);
- second output (B) 16 A SPDT 1 Hp 250V~;
- third output SPST (C) 20A SPST 2 Hp 250V~; (alternatively 8(3)A SPST 1/2 Hp 250V~);
- fourth output (C) 8(3)A SPST 1/2 Hp 250V~;
- fifth output (E) 16 A SPDT 1 Hp 250V~; (**ONLY IWP 760 MODEL**)

- sixth output (F) 8(3)A SPST 1/2 Hp 250V~;
- Measurement range: from -55 to 140 °C.
Accuracy: better by 0.5% than the end of scale +1 digit. Resolution: 1 or 0.1 °C.
Consumption: 8 VA.
Power supply: 230 V~/~ ±10% 50/60 Hz

Attention: check the power supply indicated on the label of the instrument; for any information about the relay current carrying capacity and the power supply, contact the trade office.

IWK KEYBOARD TECHNICAL DATA

Front protection: IP65.
Container: **see Models table**
Dimensions: **see Models table**
Usage temperature: -5...55 °C.
Storage temperature: -30...85 °C.
Usage environment humidity: 10...90 % RH (non-condensing).
Storage environment humidity: 10...90% RH (non-condensing).
View range: 50...110 (NTC); -55...140 (PTC) °C without decimal point (set by parameter), on a 3 digits display and a plus sign.
Measurement range: from -50 to 140 °C.
Accuracy: better by 0.5% than the end of scale +1 digit.
Resolution: 1 or 0.1 °C.
Serial terminals: see IWP760 Technical data
Consumption: **see IWP760 Technical data**
Power supply: from the IWP power module.

NOTE: The technical specifications included in this document, concerning the measurement (range, accuracy, resolution, etc.) refer to the instrument in the strict sense, and not to any accessories provided, such as the probes. This means, for example, that the error introduced by the probe is in addition to any errors on the part of the instrument itself.

MODELS

Model	Characteristics
IWK keyboard	
IWK std 6 keys	open board keyboard 68x124mm (Lxh)
IWK 32x74 4 keys	keyboard std Eliwell 32x74x30mm (LxhxD)
IWK wide 6 (max 8) keys	"IWC" style keyboard 180x37x45mm (LxhxD)
IWP power module	
IWP 750 (LX)	base module with 5 relays f.to 108x160mm (Lxh)
IWP 760 (LX)	base module with 6 relays f.to 108x168mm (Lxh)

ALARMS

Table of alarms

DISPLAY	ALARM
AH1	High temperature alarm (referred to the thermostat probe or probe 1)
AL1	Low temperature alarm (referred to thermostat probe or probe 1)
AH3	High temperature alarm (referred to probe 3)
AL3	Low temperature alarm (referred to probe 3)
Ad2	Defrost end due to time-out
EA	External alarm
Opd	Open door alarm
E7	Master-Slave communication failed
E10	Clock battery alarm
PA	Generic pressure switch alarm
LPA	Minimum pressure switch alarm
HPA	Maximum pressure switch alarm

To silence the alarm, press any key. In this case the LED will blink.

Probe faults table

DISPLAY	FAULT
E1	Faulty probe 1 (thermostat) Faulty
E2	probe 2 (evaporator)
E3	Faulty probe 3 (display)

If simultaneous, they will be shown on the display alternately, every 2 seconds

In the event of E1 or E2 on the Master, (see LINK Network) if the viewing is deployed, the slaves will always view the Master display: to understand which unit is in alarm mode, refer to the alarm LED of each instrument.

ADVANCED FUNCTIONS

%RH FUNCTION

Press the key configured as %RH to enable the %RH function (enabling the humidity reduction control). **if the parameter H31-32-34=9 has been set.**

The %RH function can also be enabled by D.I. **if par. H11=13.**

In the event that this control is enabled, the fans operate continuously (always on). During defrosting the fans are controlled according to the defrosting parameters, in particular during the dripping cycle, they will be turned off even if RH% is enabled.

NOTE: RH% status takes priority over any other parameter.

In the event of a power failure or when the machine has been turned off, the RH% status will be restored as soon as the mains power supply returns/the machine is turned on.

Table of IWP Serial Outputs (see also keyboard connections)

Type	Usage	Lines	Accessories (on the IWK keyboard)
Powered serial connection (SHORT DISTANCE)	Single	GND, DATA,	90° plug-in module
	Base-Keyboard connection	VDD	
Optic insulated serial connection (LONG DISTANCE)	Single	VDD, GND,	90° plug-in module (open keyboard) from semi-finished hardware for wide & 32x74
	Base-Keyboard connection	+, -	
	Multiple Base-Keyboard connection (see below)		

Table of IWP Serial Outputs (see also network connections)

Type	Usage	Lines	Accessories (on IWP base)
TTL	Copy Card	TTL	-
	Connection to Televis	TTL	BUS ADAPTER 130
Powered serial connection (SHORT DISTANCE)	Single Base-Keyboard connection	GND, DATA, 12V	-
	Multiple Base-Keyboard connection	GND, DATA 12V not connect.	-
Optic insulated serial connection (LONG DISTANCE)	Single Base-Keyboard connection	VDD, GND, +, -	plug-in module
	Multiple Base-Keyboard connection	VDD, +, - GND optional	plug-in module

Tab. 1 SETPOINT, parameters table and FUNCTIONS

****NOTE: At level 1 the folders will show only level 1 parameters. At level 2 the folders will show only level 2 parameters.**

SET	DESCRIPTION	RANGE	DEFAULT*	U.M.		
SEt	Setpoint The SEtpoint can be viewed from the machine status menu and not from the programming menu. The range is determined by parameters LSE and HSE.	-LSE...HSE	0.0	°C/°F		
PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
diF	COMPRESSOR CONTROL (folder with "CP" label) differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at a temperature value equal to the Setpoint plus the value of the differential. Note: the value 0 cannot be assumed.	0.1...30.0	2.0	1	1	°C/°F
HSE	Higher SEt. Maximum possible setpoint value.	LSE...302	50.0	1	1	°C/°F
LSE	Lower SEt. Minimum possible setpoint value. NOTE: The two sets are interdependent: HSE (maximum set) cannot be less than LSe (minimum set) and vice versa	-55.0...HSE	-50.0	1	1	°C/°F
OSP	Offset SetPoint. Temperature value to be added algebraically to the setpoint in the case of reduced set enabled (Economy function). The reduced set can be enabled by a key, or by Digital Input, configured especially for this purpose.	-30.0...30.0	0	2	2	°C/°F
Cit	Compressor min on time. Minimum compressor activation time before any possible disabling. If set to 0, it is not active.	0...250	0	2	2	min
CAt	Compressor mAx on time. Maximum compressor activation time before any possible disabling. If set to 0, it is not active.	0...250	0	2	2	min
Ont (1)	COMPRESSOR PROTECTIONS (folder with "CP" label) On time (compressor). Compressor activation time in the event of a faulty probe. If set to "1" with OFt set to "0", the compressor is always on, while with OFt >0, it operates in duty cycle mode. See Duty Cycle diagram.	0...250	0	1	1	min
OFt (1)	OFF time (compressor). Compressor off time in the event of a faulty probe. If set to "1" with Ont at "0", the compressor is always off, while with Ont >0, it operates in duty cycle mode. See Duty Cycle diagram.	0...250	1	1	1	min
dOn	delay (at) On compressor. Delay time in activating the compressor relay after switch-on of instrument.	0...250	0	1	1	sec
dOF	delay (after power) OFF. Delay after switch off; the indicated time must elapse between switch-off of the compressor relay and the successive switch-on.	0...250	0	1	1	min
dbi	delay between power-on. Delay between switch-ons; the indicated time must elapse between two subsequent switch-ons of the compressor.	0...250	0	1	1	min
OdO (!)	delay Output (from power) On. Delay time in activating the outputs after switch-on of the instrument or after a power failure. 0= not active.	0...250	0	1	1	min
dSC	VISIBLE ONLY ON MODELS WITH 2nd COMPRESSOR delay (at) Second Compressor On. Delay time in activating the second compressor relay respect to 1st compressor relay activation. If 1st compressor is disabled during this period the 2nd compressor will not be activated.	0...250	0	1	1	sec
dtY	DEFROSTING REGULATOR (folder with "dEF" label) (6) defrost type. Type of defrosting. 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrost (compressor disabling).	0/1/2	0	1	1	num
dit	defrost interval time. Interval between the start of two subsequent defrosting operations. 0= the function is disabled (defrosting is NEVER performed)	0...250	6h	1	1	hours/min/sec (see dt1)
dt1	defrost time 1. Measure unit for defrosting intervals ("dit" parameter). 0 = "dit" parameter in hours. 1 = "dit" parameter in minutes. 2 = "dit" parameter in seconds.	0/1/2	0	2	2	num
dt2	defrost time 2. Measure unit for defrosting duration ("dEt" parameter). 0 = "dEt" parameter in hours. 1 = "dEt" parameter in minutes. 2 = "dEt" parameter in seconds.	0/1/2	1	2	2	num
dCt	defrost Counting type. Selection of count mode for the defrosting interval. 0 = compressor hour of operation (DIGIFROST® method); Defrosting active ONLY with the compressor on. NOTE: compressor time of operation is counted regardless of the evaporator probe (counting is active if evaporator probe is absent or faulty). The value is ignored if RTC is enabled. 1 = Real Time - hours of appliance operation; Defrost counting is always active when the machine is on and starts at each power-on. 2 = compressor stop. Every time the compressor stops a defrost cycle is performed according to the dtY 3 = parameter with RTC. Defrostings at times set by d1...d87, F1...F8 parameters	0/1/2/3 0=df 1=rt 2=SC 3=RTC	1	1	1	num
"dd"	d1...d8 daily defrost start time 1...8. Range 0...23, 24= off (default)	0...23/0...59	24	1	1	hours/min
"Fd"	F1...F8 festive defrost start time 1...8. Range 0...23, 24= off (default) WARNING: d1...d8, F1...F8 parameters are visible only if dit=0, dCt=3 with clock option present. They are included in the dd and Fd folders	0...23/0...59	24	1	1	hours/min
dOH	defrost Offset Hour. Start-of-defrosting delay time from start up of instrument.	0...59	0	1	1	min
dEt	defrost Endurance time. Defrosting time-out; determines the maximum duration of defrosting.	1...250	30min	1	1	hours/min/sec (see dt2)
dSt	defrost Stop temperature. Defrosting end temperature (determined by the evaporator probe).	-50.0... 150	8.0	1	1	°C/°F
dPO	defrost (at) Power On. Determines if at start-up the instrument must enter defrosting (if the temperature measured by the evaporator allows this operation). y = yes, starts defrost at start-up; n = no, doesn't start defrost.	n/y	n	1	1	flag
tcd	time compressor for defrost. Minimum time for compressor On or OFF before defrost If >0 (positive value), the compressor stays ON for tcd minutes; If <0 (negative value), the compressor stays OFF for tcd minutes; If =0, the parameter is ignored.	-31...31	0	2	2	min
Cod	Compressor off (before) defrost. Time for compressor OFF in proximity of the defrost cycle. If a defrost cycle is set within the programmed time for this parameter, the compressor is not started up. If =0 function is stopped.	0...60	0	2	2	min

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL***	U.M.
	FAN CONTROL (folder with "FAn" label)	0/1	0		2	flag
FpT	Fan Parameter type. Characterizes the "FSt" parameter, which can be expressed as temperature absolute value or as a value related to the Setpoint. 0 = absolute; 1 = relative.					
FSt	Fan Stop temperature. Fan lock temperature; a value, read by the evaporator probe higher than the set value causes the fans to stop. The value is positive or negative and, depending on parameter FpT, could represent the temperature in absolute value or relative to the Setpoint.	-50.0..150.0	2.0		1	°C/°F
Fot	Fan on-start temperature. Fan start temperature; if the temperature read by the evaporator is lower than the value set for this parameter, the fans stay still. The value is positive or negative and, depending on parameter FpT, could represent the temperature in absolute value or relative to the Setpoint.	-50.0..150.0	-50.0		2	°C/°F
FAd	FAn differential. Fan activation intervention differential (see par. "FSt" and "Fot").	1.0...50.0	2.0		1	°C/°F
Fdt	Fan delay time. Delay time at fan activation after a defrosting cycle.	0...250	0		1	min
dt	drainage time. Dripping time.	0...250	0		1	min
dFd	defrost Fan disable. It allows for the evaporator fans to be excluded or not during defrosting. y = yes; n = no.	n/y	y		1	flag
FCO	Fan Compressor OFF. It allows selection or not of the fan lock when compressor is OFF (switched off). y = fans active (with thermostat; depending on the value read by the defrosting probe, see "FSt" parameter); n = fans off; dc = duty cycle (through "Fon" and "FoF" parameters).	n/y/dc	y		1	num
Fod	Fan open door open. Allows to select the fans stop when door is open, and the fan re-start when door is shut (if they we active). n=fans stop; y=fans unchanged	n/y	n		2	flag
FdC	Fan delay Compressor off. Fan switch off delay time after compressor stop. In minutes. 0= function excluded	0..99	0		2	min
Fon	Fan on (in duty cycle). Time the fans are ON in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 ((evaporator) probe 2 present)	0..99	0		2	min
FoF	Fan off (in duty cycle). Time the fans are OFF in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 ((evaporator) 2 probe present)	0..99	0		2	min
	ALARMS (folder with "AL" label)					
Att	Alarm type. Parameter "HAL" and "LAL" modes, as temperature absolute value or as differential compared to the Setpoint. 0 = absolute value; 1 = relative value.	0/1	0		2	flag
AFd	Alarm Fan differential. Alarm differential.	1.0...50.0	2.0		1	°C/°F
HAL (2)	Higher ALarm. Maximum temperature alarm. Temperature value (understood as distance from the Setpoint, or as an absolute value based on Att) which if exceeded in an upward direction triggers the activation of the alarm signal. See Max/Min. Alarm Diagram.	LAL...150.0	50.0		1	°C/°F
LAL (2)	Lower ALarm. Minimum temperature alarm. Temperature value (understood as distance from the Setpoint, or as an absolute value based on Att) which if exceeded in a downward direction triggers the activation of the alarm signal. See Max/Min. Alarm Diagram.	-50.0...HAL	-50.0		1	°C/°F
PAO (1) (3)	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.	0...10	0		1	hours
dAO	defrost Alarm Override. Alarm exclusion time after defrost.	0..999	0		1	min
OAO	Alarm signaling delay after digital input disabling (door open). Alarm is only for high-low temperature alarms.	0...10	0		2	hours
tdO	time out door Open. Time out after alarm signal following digital input disabling (door open)	0...250	0		2	min
tAO (3)	temperature Alarm Override. Temperature alarm signal delay dime.	0...250	n		1	flag
dAt	defrost Alarm time. Alarm signal for defrosting end due to time-out. n = activates alarm; y = does not activate alarm.	n/y	0		2	min
EAL	External Alarm Lock. External alarm to lock controls (n= does not lock, y= locks)..	n/y	n		2	flag
AOP	Alarm Output Polarity. Polarity of alarm output. 0 = alarm active and output disabled; 1 = alarm active and output enabled.	0/1	1		2	flag
PbA	Configuring temperature alarm on probe 1 and/or 3. 0 = alarm on probe 1 (thermostating); 1 = alarm on probe 3 (display) ; 2 = alarm on probes 1 and 3 (both thermostating and display). 3 = alarm on probes 1 and 3 (both thermostating and display) on external threshold; Probe 3 alarm	0...3	0		2	min
SA3	Set-Point (display)	-50.0...150.0	0		2	°C/°F
dA3	Probe 3 alarm differential (display)	-30.0...30.0	2.0		2	°C/°F
tA3	Probe 3 alarm delay (display)	0...59	0		2	min
	LIGHT AND DIGITAL INPUTS (folder with "Lit" label)					
dSd	Enabling light relay by door switch. n = door open, the light does not turn on; y = door open, the light turns on (if it was off).	n/y	y		2	flag
dLt	Light relay disabling (switch off) delay (cell light). The cell light will remain on for dLt minutes after shutting the door if dSd parameter is set for this.	0...31	0		2	min
OFL	The light key always disables the light relay. Enables the switching off through the cell light switch even if it is enabled the delay after closing the door set by dLt	n/y	n		2	flag
dOd	Door switch switches off loads . On digital input command, programmed as door-switch, allows to stop all the loads when opening the door and re-starting them when the door is shut (respecting any timings in progress).	n/y	n		2	flag
dAd	Digital input enabling delay.	0...255	0		2	min

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
LINK CONTROL (folder with "Lin" label)						
L00	Master, Slave, Keyboard Selection It allows selection of the instrument as Master (0), Slave (from 1 to 7), Echo(0, in this case the Echo is a repetitor of the Master also if connected to a Slave). Number of Slaves in the Network Referred to the Master only.	0...7	0		2	num
L01	Number of Slaves in the network (from 0 to 7). For Slaves/Echo leave the value =0	0...7	0		2	num
L03	Refers to Master and Slave. Defrosting Simultaneous/sequential. Master: n=sequential; y = simultaneous Slave: n=ignore; y=accept.	n/y	n		2	flag
L04	Distributed Display Referred to Slave only. Deployed view. n = the Slave shows local values; y = the Slave shows the display of the Master	n/y	y		2	flag
L05	Network Command Enabled Referred both to the Master and the Slave. Master: n = does not request Slaves to activate remote functions; y = requests Slaves to activate remote functions. Slave: n = ignores remote functions activation originating from the Master; y = accepts remote functions activation originating from the Master.	n/y	n		2	flag
L06	Resources Lock At End Of Defrost Locks resources (compressors/fans, etc.) at the end of defrosting. n=no; y=yes NOTE: related to Ldd parameter which has over L06 (see)	n/y	y		2	flag
L07	Alarm Relay with slave Alarm Enabling of alarm relay in the event of a slave alarm	n/y	n		2	num
L08	Network Command Enabled from Slave Enabling of network functions from slave base	n/y	n		2	num
L09	Control Probe Sharing					
NIGHT/DAY CONTROL (night and day) (folder with "nad" label)						
SEE USER MANUAL Event table (NIGHT AND DAY) for day0, day1, day2, day3, day4, day5, day6, and every day						
NIGHT/DAY CONTROL (night and day) (folder with label "nad")						
E00	Functions disabled during events: 0 = management disabled; 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off Event start	0...4	0		2	num
E01	hours/minutes. Sets the event start time. The "NIGHT" mode starts at this time. The length is determined by E02.	0...23/0...59	0		2	hours/min
E02	First event duration. Sets the duration of the event.	0...99	0		2	hours
E03	Blocking/unblocking daily or festive defrosting. NOTE: doesn't affect the defrosting at intervals like Every Day event.	0/1	0		2	flag
COMMUNICATION: FOLDER PRESENT ONLY FOR LX MODELS						
COMMUNICATION (folder with "Add" label)						
dEA (!)	dEA= device number within the family (valid values: from 0 to 14)	0...14	0		1	num
FAA (!)	FAA= device family (valid values: from 0 to 14) The value couple FAA and dEA represents the network address of the device and it is indicated in the following way: "FF.DD" (where FF=FAA and DD=dEA).	0...14	0		1	num
DISPLAY (folder with "dis" label)						
LOC	(keyboard) LOCK. Keyboard locking. It is still possible to enter parameter programming and modify them, including the status of this parameter, in order to allow keyboard unlocking. y = yes (keyboard locked); n = no.	n/y	n		1	flag
PA1	PAssword 1. When enabled (value different from 0) it represents the access key for level 1 parameters.	0...250	0		1	num
PA2***	PAssword 2. When enabled (value different from 0) it represents the access key for level 2 parameters.	0...255	0		2	num
ndt	number display type. View with decimal point. y = yes (view with decimal point) ; n = no (only integers).	n/y	n		1	flag
CA1	CAlibration 1. Positive or negative temperature value added to the value read by probe 1, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA2	CAlibration 2. Positive or negative temperature value added to the value read by probe 2, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA3	CAlibration 3. Positive or negative temperature value added to the value read by probe 3, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA	CAlibration Intervention. Intervention on view offset, thermostat offset or both. 0 = modifies the temperature displayed only; 1 = adds to the temperature used by regulators, not to the temperature displayed, which stays unchanged; 2 = adds to the temperature displayed that is also used by regulators.	0/1/2	2		2	num
ldL	Low display Label. Minimum value the instrument is able to display.	-55.0...302	-50.0		2	°C/°F
HdL	High display Label. Maximum value the instrument is able to display.	-55.0...302	140.0		2	°C/°F
ddL	defrost display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the thermostat probe; 1 = locks the reading on the temperature value read by thermostat probe when defrosting starts, and until the next time the Setpoint value is reached; 2 = displays the label "def" during defrosting, and until the next time the Setpoint value is reached.	0/1/2	1		1	num
Ldd	Lock defrost disable. Time-out value for delock display (dEF label) if reaching the setpoint is too long during defrosting, or if the Master-Slave Link communication fails (E7 error)	0...255	0		1	min
dro (*)	display read-out. Select °C or °F for displaying the temperature read by the probe. 0 = °C, 1 = °F. PLEASE NOTE: the switch between °C and °F DOES NOT modify the setpoint, differential, etc. (for example set=10°C become 10°F).	0/1	0		1	flag
ddd	Selection of the value type to be shown on the display. 0 = Setpoint; 1 = probe 1(thermostat); 2 = probe 2(evaporator); 3 = probe 3 (display).	0/1/2/3	1		2	num
(*) parameter dro:						
The mathematical conversion for temperature is °F=(9/5)* °C+32. for example: 32°F=0°C; 50°F=10°C. with the change from °C to °F and vice versa, the mathematical conversion is NOT carried out and the setpoint values, differential, etc. are NOT changed. It will therefore be necessary to review all the temperature values set, e.g. with a setpoint set to 10°C, when changing the value to °F, the setpoint will become 10°F=G=F and not 50°F! (according to the conversion table):						

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
CONFIGURATION (folder with "CnF" label)						
H00	(!) Probe type selection, PTC or NTC. 0 = PTC; 1 = NTC.	0/1	1		1	flag
H02	Time to enable keys, if these are configured for a second function. For the ESC, Up and DOWN keys configured with a second function (defrost, aux, etc.), the time for the rapid enabling of the same is set. Aux is an exception, which has a fixed time of 1 second	0...15	5		2	sec
H06	Key/input aux/light-door switch active when instrument is off (but powered)	n/y	y		2	flag
H08	Stand-by operating mode. 0=display switch off only; 1= display on and controls locked; 2= display off and controls locked; 2= display shows 'OFF' and controls locked;	0/1/2	2		2	num
H11 (4)	Configuring digital inputs/polarity. 0= disabled; 1 = defrosting; 2 = reduced set; 3 = auxiliary; 4 = door switch; 5 = external alarm *6 = disables storing of HACCP alarms (*only in HACCP models) not used 7 = stand-by (ON-OFF) 8 = maintenance request (only LX models) 9 = minimum pressure switch 10 = maximum pressure switch 11 = generic pressure switch 12 = preheating 13 = evaporator fan forcing	-13...13	4		2	num
H12 (4)	Digital inputs/polarity configuration. The same as H11	-13...13	2		2	num
H13 (4)	Digital inputs/polarity configuration. The same as H11	-13...13	12		2	num
H14 (4)	Digital inputs/polarity configuration. The same as H11. (4) WARNING! positive or negative values change polarity	-13...13	11		2	num
H21 (!)	Digital output 1 configurability. (A) 0 = disabled; 1 = compressor; 2 = defrosting; 3 = fans; 4 = alarm; 5 = auxiliary. 6 = stand-by 7 = light 8 = buzzer 9 = 2nd evaporator 10 = 2nd compressor - ONLY ON SPECIFIC MODELS -	0...10	1		2	num
H22 (!)	Digital output 2 configurability. (B) The same as H21.	0...10	2		2	num
H23 (!)	Digital output 3 configurability. (C) The same as H21.	0...10	3		2	num
H24 (!)	Digital output 4 configurability. (D) The same as H21.	0...10	4		2	num
H25 (!)	Digital output 5 configurability 5. (E) The same as H21.	0...10	7		2	num
H26 (!)	Digital output 6 configurability. (F) The same as H21.	0...10	6		2	num
H31 (!)	Configurability UP key. 0 = disabled; 1 = defrosting; (default) 2 = auxiliary; 3 = reduced set; *4 = HACCP alarm reset (*only in HACCP models); not used *5 = disables HACCP alarms (*only in HACCP models); not used 6 = light; 7 = stand-by; 8 = maintenance request (only LX models) 9 = not used	0...9	1		2	num
H32 (!)	DOWN key configurability . Same as H31. (0= disabled; default)	0..9	0		2	num
H33 (!)	ESC key configurability. Same as H31. 0 = disabled; default)	0..9	3		2	num
H34 (!)	Function 1 key configurability. default LIGHT .	0..9	6		2	num
H35 (!)	Function 2 key configurability. default on-off .	0..9	7		2	num
H41	Control probe presence. n= not present; y= present.	n/y	y		2	flag
H42	Evaporator probe presence. n= not present; y= present.	n/y	y		1	flag
H43	Display probe configuration. n= not present; y= present (display probe);	n/y	n		1	
H60	Selection Map Parameters Vector Number	1...6	-		-	num
PEI	Number of errors allowed per maximum/minimum pressure switch input	0...15	10		-	num
Pen	Pressure switch error count interval	0...99	60		-	min
reL	reLease firmware. Device version: read only parameter.	/	/		1	/
tAb	tAbLe of parameters. Reserved: read only parameter.	/	/		1	/
COPY CARD (folder with "Fpr" label)						
UL	Up load. Programming parameter transfer from instrument to Copy Card. Down load.	/	/		1	/
dL	Programming parameter transfer from Copy Card to instrument.	/	/		1	/
Fr	Format. Erasing all parameters in the copy card .	/	/		2	/
parameter Fr PLEASE NOTE: using the "Fr" parameter (copy card formatting) the data within the same will be lost permanently. The operation cannot be cancelled.						

Label PA2

Inside CnF folder, you can access all level 2 parameters only from label PA2 by pressing the "set" button
SEE paragraph 2) Viewing level 2 parameters

Table of parameters: NOTES

(1) see Duty Cycle diagram.

(2) See Max/Min. Alarm Diagram.

(3) Referred exclusively to high and low temperature alarms

(4) WARNING! positive or negative values change polarity. Positive values: active input when the contact is closed; negative values: Active input when the contact is open.

Within the deF folder, there are two folders: “dd” (daily defrost) and “Fd” (Festive Defrost); the first folder includes d1...d8 parameters (working day defrost start); the second folder, instead includes F1...F8 parameters (Festive defrost start). The two folders are visible only if dit =3 and RTC is present.

* VALUE column: to be filled manually, with custom settings (if different from the default value).

** LEVEL column: indicates the level of visibility for parameters that can be accessed by a PASSWORD (see relevant paragraph)

**** PA2 is visible (it will be requested, if specified) at level 1 in **CnF folder** and can be set (it can be modified) at level 2 in **diS folder**

(!) WARNING!

• If one or more parameters marked with (!) are modified, the controller must be switched off after the modification and then switched back on

•NOTE: It is strongly recommended, anyway to switch the instrument off and back on again anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

KEYBOARD LOCAL PARAMETERS

PARAMETER	DESCRIPTION	RANGE	DEFAULT*	U.M.
ECO	ECO (folder with “PLO” label) Type of keyboard 0= Master keyboard 1= ECO keyboard	0...1	0	num
adb	address base. Base address Keyboard	0...4	0	num
PA3	PAssword. When enabled (value other than 0) it constitutes the access key for the local keyboard parameters.	0...255	0	num
rEL	reLease firmware. Device version: read only parameter.	0...999	0	num
toA	time-out Address. Timeout of the tbA address.	0...250	10	sec
Li1	LiC (folder with “LiC” label) Broadcast communication n= the keyboard communicates with the adb address base (see par.) (in this case there are several bases); y = the keyboard communicates with the broadcast address base (in this case there must only be one base).	n/y	n	num
tbA	Temporary navigation address base. Temporary address for network navigation	0...4	0	num

* DEFAULT column: The term default identifies the standard factory-set configuration;

(!) WARNING!
•It is strongly recommended, anyway to switch the instrument off and back on again anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

NOTE : BASE UNIT/KEYBOARD CONNECTION/PROGRAMMING.

1 — THE BASE UNIT/KEYBOARD PROGRAMMING/CONFIGURATION CANNOT BE CARRIED OUT IF THE DEVICES ARE CONNECTED TO THE LINK NETWORK. THEREFORE, IT IS FIRST NECESSARY TO CONFIGURE THE MASTER AND SLAVE DEVICES (WITH RELATED KEYBOARDS) AND THEN CONNECT THEM TO THE LINK NETWORK.

2 — “FLICKERING” OF THE DISPLAYS ON THE KEYBOARD INDICATES THAT THE CONNECTED UNITS ALL HAVE THE SAME ADDRESS: DISCONNECT THE LINK NETWORK AND PROGRAM EACH UNIT AS DESCRIBED ABOVE.

CONDITIONS OF USE

PERMITTED USE

For safety reasons, the instrument must be installed and used according to the instructions provided and in particular, under normal conditions, parts bearing dangerous voltage levels must not be accessible.

The device must be adequately protected from water and dust as per the application and must also only be accessible via the use of tools (with the exception of the front panel).

The device is ideally suited for use on household appliances and/or similar refrigeration equipment and has been tested with regard to the aspects concerning European reference standards on safety.

It is classified as follows:

- according to its manufacture: as an automatic electronic control device to be incorporated by independent mounting;
- according to its automatic operating features: as a 1B-type operated control type;
- as a Class A device in relation to the category and structure of the software.

UNPERMITTED USE

The use of the unit for applications other than those described is forbidden. It should be noted that the relay contacts provided are of a practical type and therefore subject to fault.

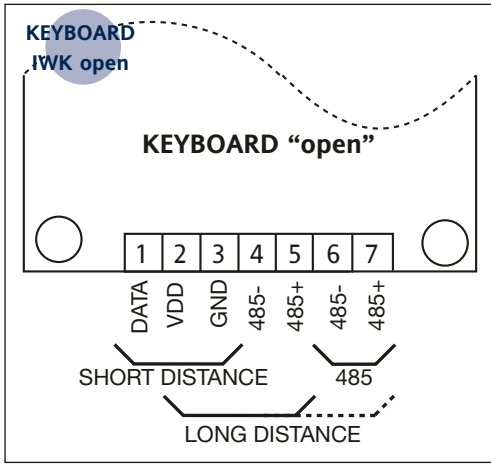
Any protection devices required by product standards or dictated by common sense due to obvious safety reasons should be applied externally.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell Controls srl shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, which does not comply with safety standards anticipated by regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust under the conditions of assembly applied;
- use on boards which allow access to dangerous parts without the use of tools;
- tampering with and/or alteration of the product;
- installation/use on boards that do not comply with the standards and regulations in force.

KEYBOARD CONNECTIONS / KEYBOARD-BASE / NETWORK



TERMINALS

"powered" or SHORT DISTANCE SERIAL CONNECTION

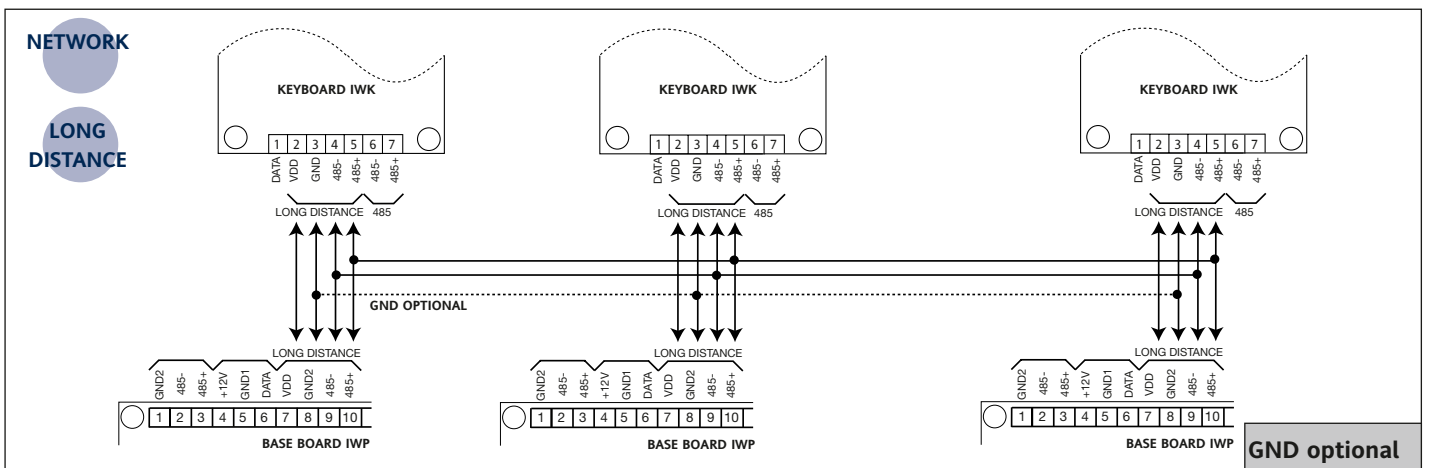
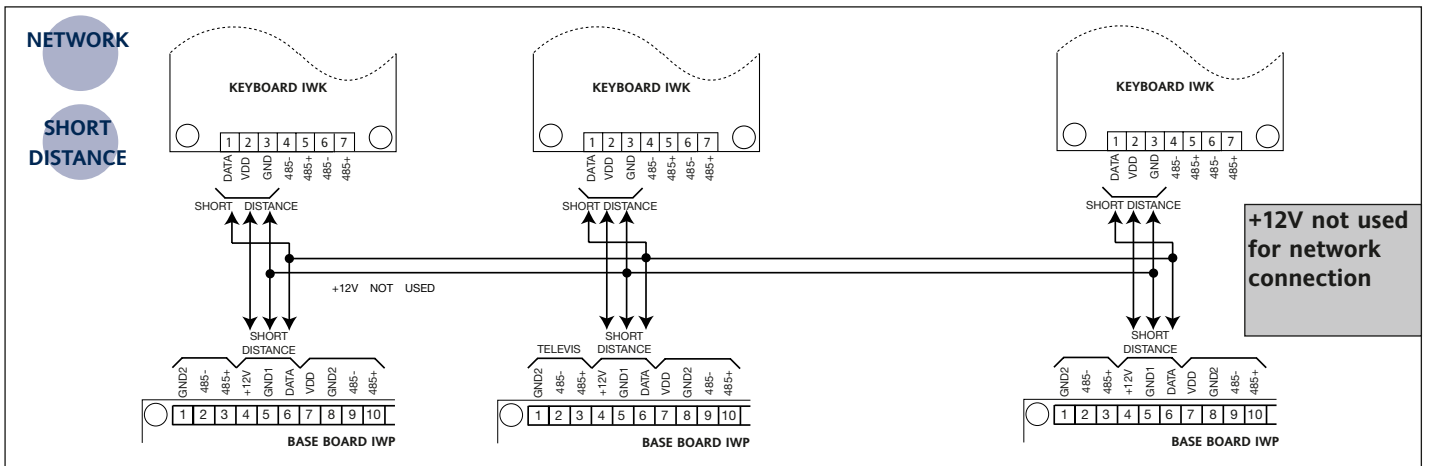
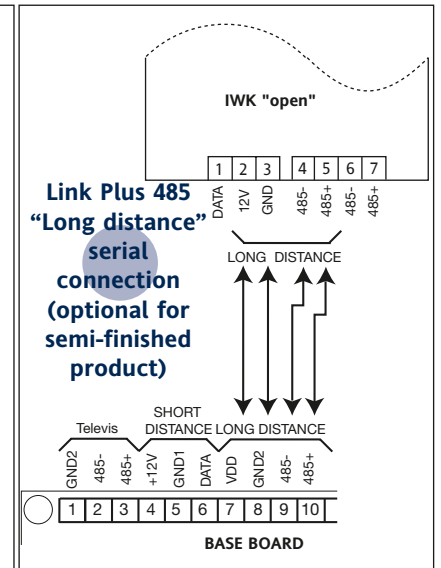
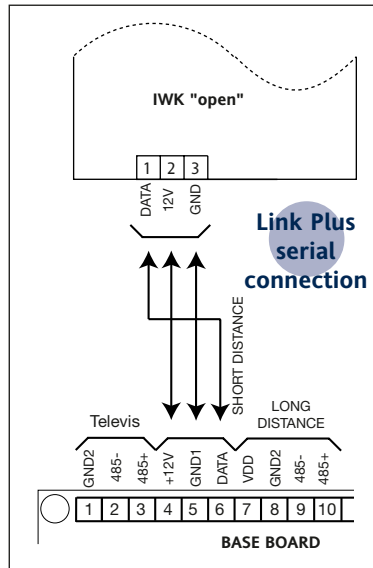
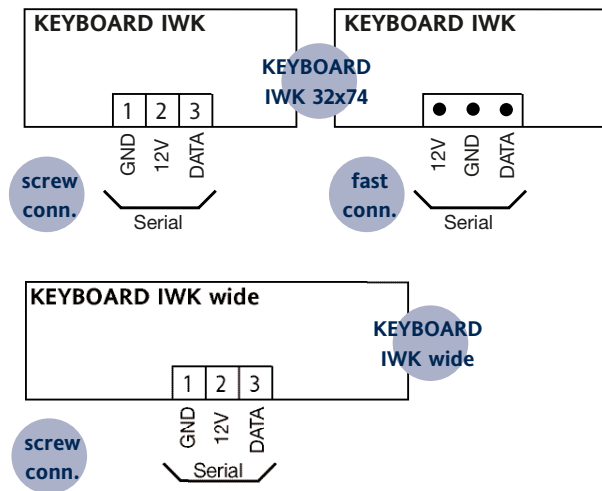
	open	wide/32x74	32x74 (fast conn)
1	DATA	GND	12V
2	VDD (+12V on the base)	12V	GND
3	GND	DATA	DATA

"LINK" or LONG DISTANCE SERIAL CONNECTION

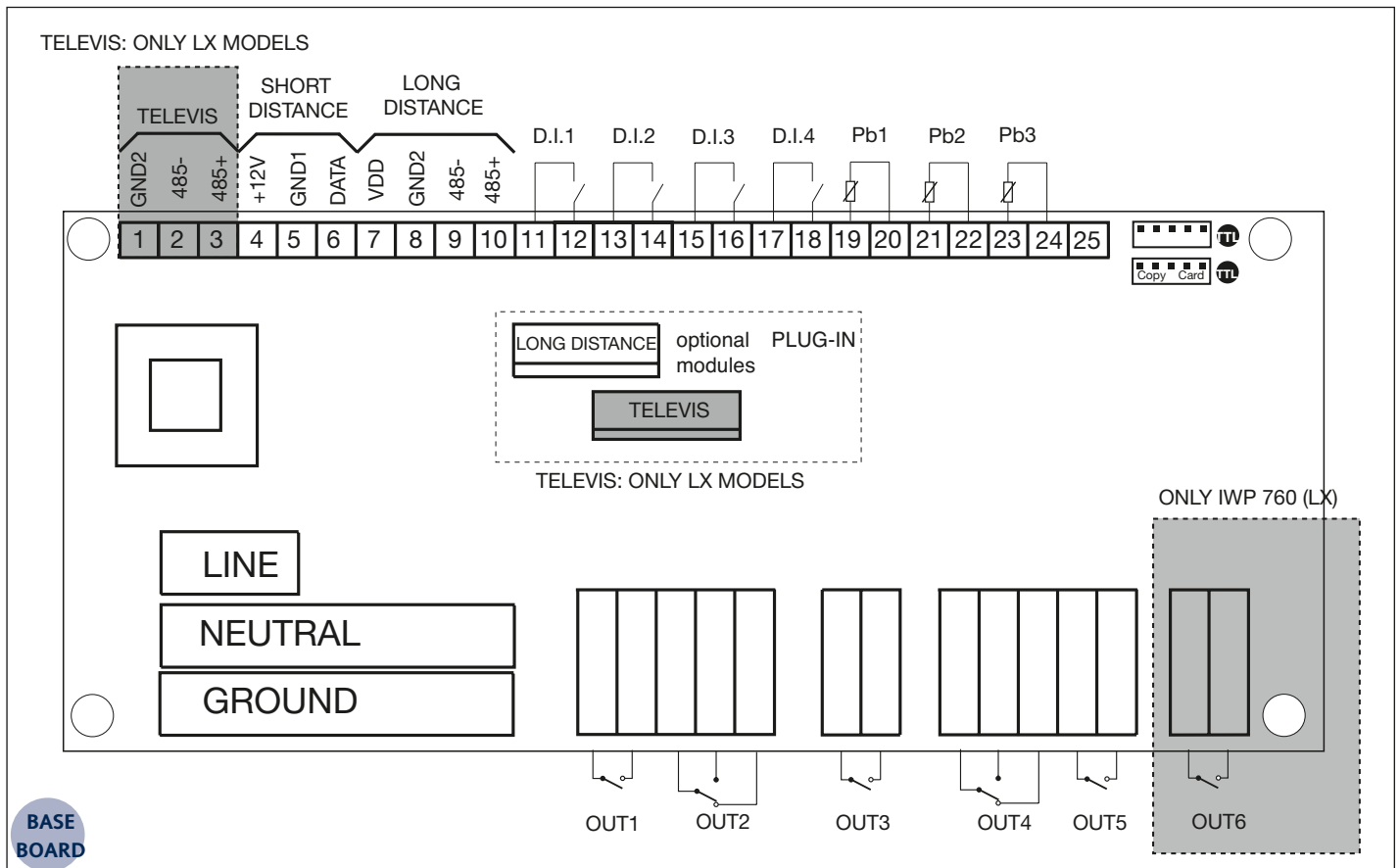
2	VDD	-	-
3	GND	-	-
4	485-	-	-
5	485+	-	-

SERIAL 485

6	485+	-	-
7	485-	-	-



IWP 750-760 (LX) BASE CONNECTIONS



NOTE

The dimensions of the bases featuring IWP 750 and IWP 760 powers are different.

The layout of the bases, illustrated in the connection diagram, does not include the mechanical dimensions to scale, but is purely an indication of the position of the terminals and modules.

DISCLAIMER

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cod. 9IS23029



TERMINALS

ALL MODELS

4 - 5 - 6	"Powered" SHORT DISTANCE Serial connection
7 - 8 - 9- 10	LONG DISTANCE Serial
11 - 12	Digital input 1; programmable (see par. H11)
13 - 14	Digital input 2; programmable (see par. H12)
15 - 16	Digital input 3; programmable (see par. H13)
17 - 18	Digital input 4; programmable (see par. H14)
19 - 20	Probe 1 (thermostat) input
21 - 22	Probe 2 (evaporator) input
23 - 24	Probe 3 (display) input
(25	Not Used)
OUT 1 (A)	N.O. relay output (A) see par. H21 (default 1)
OUT 2 (B)	relay output (B) see par. H22 (default 2)
OUT 3 (C)	N.O. relay output (C) see par. H23 (default 3)
OUT 4 (D)	relay output (D) see par. H24 (default 4)
OUT 5 (E)	N.O. relay output (E) see par. H25 (default 7)
TTL Copy Card	TTL input for Copy Card

optional modules

LONG DISTANCE optional plug-in module for the base-keyboard connection using **LONG DISTANCE** Serial

ONLY FOR IWP 760 (LX) MODEL

OUT 6 (E) N.O. relay output (F) see par. H26 (default 6)

ONLY FOR LX MODELS

1 - 2 - 3 Serial 485 for TELEVIS
TTL TTL input for connection to the **TelevisSystem**

optional modules

TELEVIS optional plug-in module for the connection to the **TelevisSystem** using Serial 485