



User Manual

Eproms

PHA - PHE L1/L2

Powerface

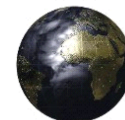
Hiromatic E

English
HPAC - Code 272985 Revision 16.09.05



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1 Introduction

1.1 Foreword

This User Manual describes the Powerface Control System. It contains information concerning the architectures of the control systems as well as the settings required to obtain the desired behaviour of the Unit. The Powerface Control System will effectively manage all the different functions of HPS air conditioning units.

In the following sections first the Hardware, and later the Software (Firmware) are explained in detail.

2 Hardware

2.1 Powerface

The Powerface is a microprocessor-based electronic card, which is able to manage the devices and the sensors installed in the unit.

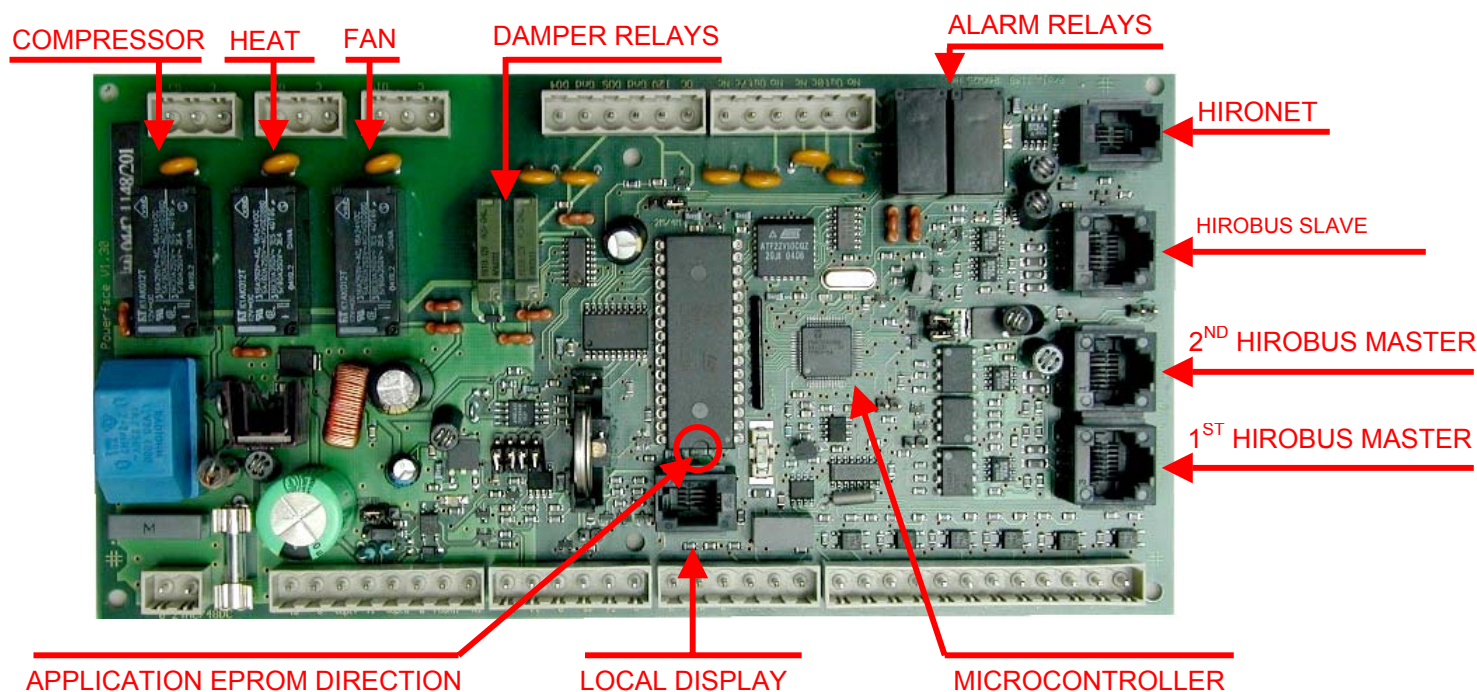
Powerface is installed in the electrical panel of indoor-units and can be installed together with a User-interface module ("LCD Display"), which allows to read/set/reset values, parameters and alarms.

In outdoor- or ceiling mounted units the LCD Display can be mounted in a box with extension cable, which allows placing it on a reachable position.

Access to the Powerface connections and Jumpers can be easily achieved.



Take care not to pull out the connecting cable when removing the LCD Display!





2.1.1 Powerface layout

As the Powerface is the “Heart” of the System, which controls all functions of the Unit, some Jumpers have to be set in order to set-up the control board according to the requested functions. Most of these Jumpers are already correctly set in the factory, only the Jumpers for the unit’s address has to be set in the field, during start-up of the Unit.



Never add / remove Jumpers when Powerface is under power!

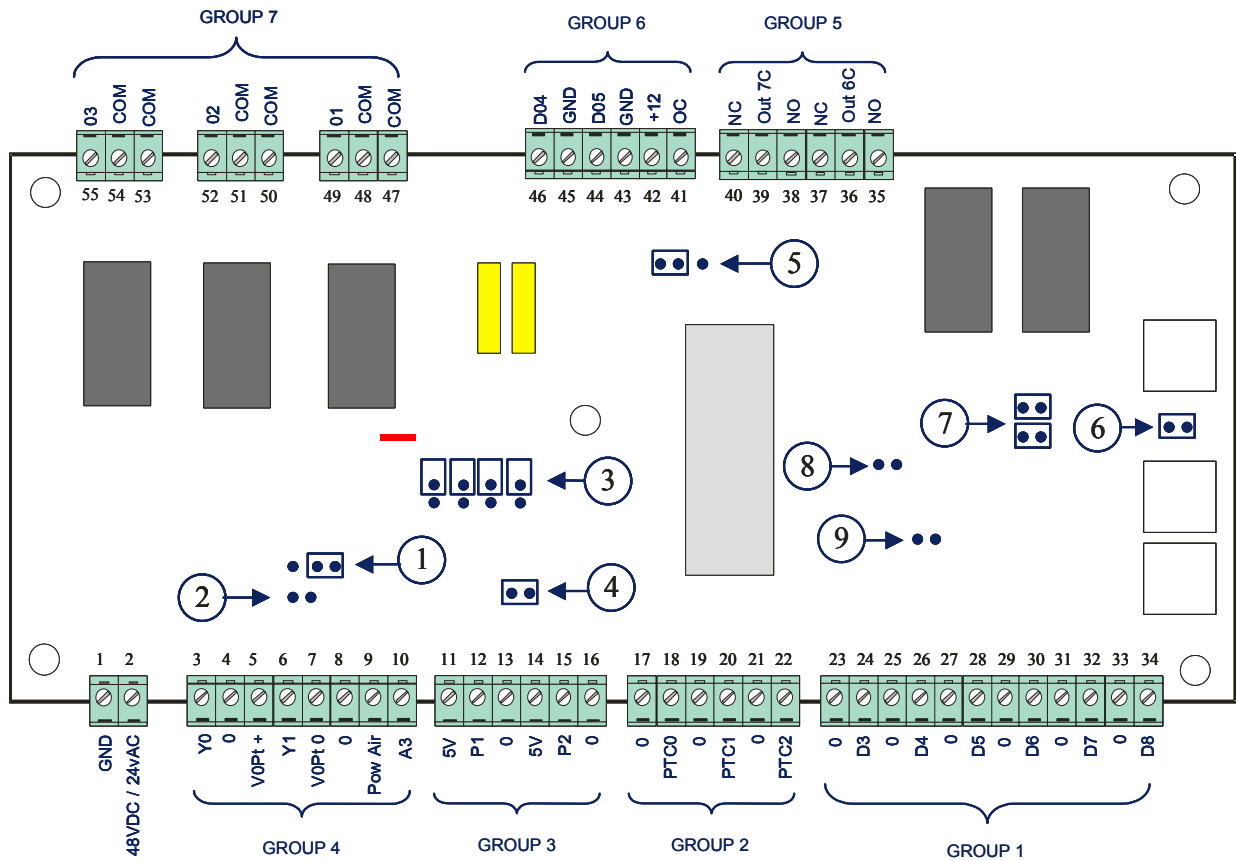


Figure 1



2.1.2 Pin Description

PIN IN	DESCRIPTION	NAME ON BOARD (SILK)
1	GND reference	0
2	Voltage supply	24AC/48DC
3	analog output1	Y0
4	Ref	0
5	Ext. Supply for optical coupled output Y1	Vopt+
6	analog output2	Y1
7	Reference fot optical coupled output Y1	Vopt0
8	Ref	0
9	Airflow sensor supply	Vopt0
10	Airflow sensor input	A3
11	Transducer supply	5V
12	Analog input 1	P1
13	Ref	0
14	Transducer supply	5V
15	Analog input 2	P2
16	Ref	0
17	Ref	0
18	PTC Supply temperature	PTC0
19	Ref	0
20	PTC Outdoor temperature	PTC1
21	Ref	0
22	PTC Return temperature	PTC2
23	Ref	0
24	Digital input	D3
25	Ref	0
26	Digital input	D4
27	Ref	0
28	Digital input	D5
29	Ref	0
30	Digital input	D6
31	Ref	0
32	Digital input	D7
33	Ref	0
34	Digital input	D8
35	Normally open Alarm1 relay	No
36	Com Alarm1 relay	Out0c
37	Normally close Alarm1 relay	Nc
38	Normally open Alarm2 relay	No
39	Com Alarm2 relay	Out7c
40	Normally close Alarm2 relay	Nc
41	Open collector output	OC
42	+12Vdc for open collector output	12V
43	Ref	Gnd
44	Damper out1	D05
45	Ref	Gnd
46	Damper out2	D04
47	Ev Fan COM	C
48	Ev Fan COM	
49	Normally open Fan out relay	
50	Heater COM	C
51	Heater COM	
52	Normally open Heter out relay	
53	Compressor COM	C
54	Compressor COM	C
55	Normally open Compressor out relay	



2.1.3 Jumper setting

See figure 1 for cross-references.

1- Opto Out (P450)

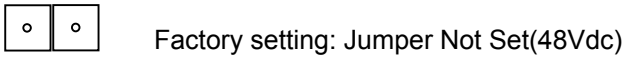
This Jumper set the possibility to use the Output Y0 as standard or Opto-Coupled



- Jumper between 1-2: use Y0 as standard Output
- Jumper between 2-3: use Y0 as Opto-Coupled Output

2- 24/48Vdc with Opto (P451)

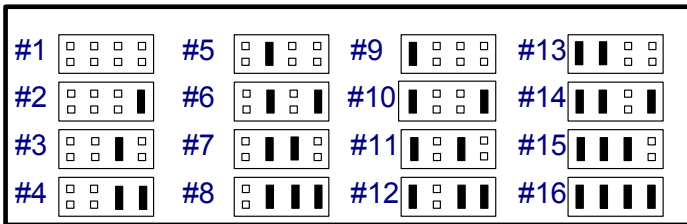
This jumper set the external voltage for the Opto-Coupled Y0



- Without jumper: use 48 Vdc as external voltage
- With jumper: use 24 Vdc as exsternal voltage

3- HB - Hirobus Address (J101, J502, J503, J504)

This jumpers defines the Hirobus Address of the powerface board



4- Set A3 purpose (J301)

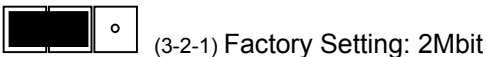
Set Analogue Input 3 (A3) as digital or analogue (normally used for airflow)



- Without jumper: use A3 as digital input
- With jumper: use A3 as analogue input

5- Memory Size (J107)

This jumper is used to define the memory of size 2Mbit or 4Mbit



- Jumper between 2-3: 2Mbit Eprom
- Jumper between 1-2: 4Mbit Flash

6- Connector Power (P607)

This jumper applies Hirobus Power to 2nd Hirobus connector; if set the connector became a MASTER connector which is normally used to power the Hirobus opto-coupled connectors of the other Powerface for Lan connection (see also HIROBUS LAN chapter)



7- Hirobus Power (P604, 605)

These jumpers are always set on the Powerface with ID#1, it allows to supply the Hirobus MASTER connector normally used for Hiromatic E connection; the 2nd Hirobus connector is powered only if the jumper P607 is set



8- M3 (J601) Not Used

9- BWE (J610) Not used



2.1.4 HIROBUS LAN connection

Powerface is equipped with 2 HIROBUS 8 poles connectors which are used to realize a system (Units connected via HIROBUS LAN).

To realize a HIROBUS LAN correctly the following steps needs to be observed:

- identify each single Powerface with its own ID# number
- remove the jumpers P604 and P605 on all powerfaces but not on Powerface with ID#1
- check if the jumper P607 is set on all Powerface
- realize the HIROBUS connection using the HIROBUS 8 poles screened cable (see the figure 2)

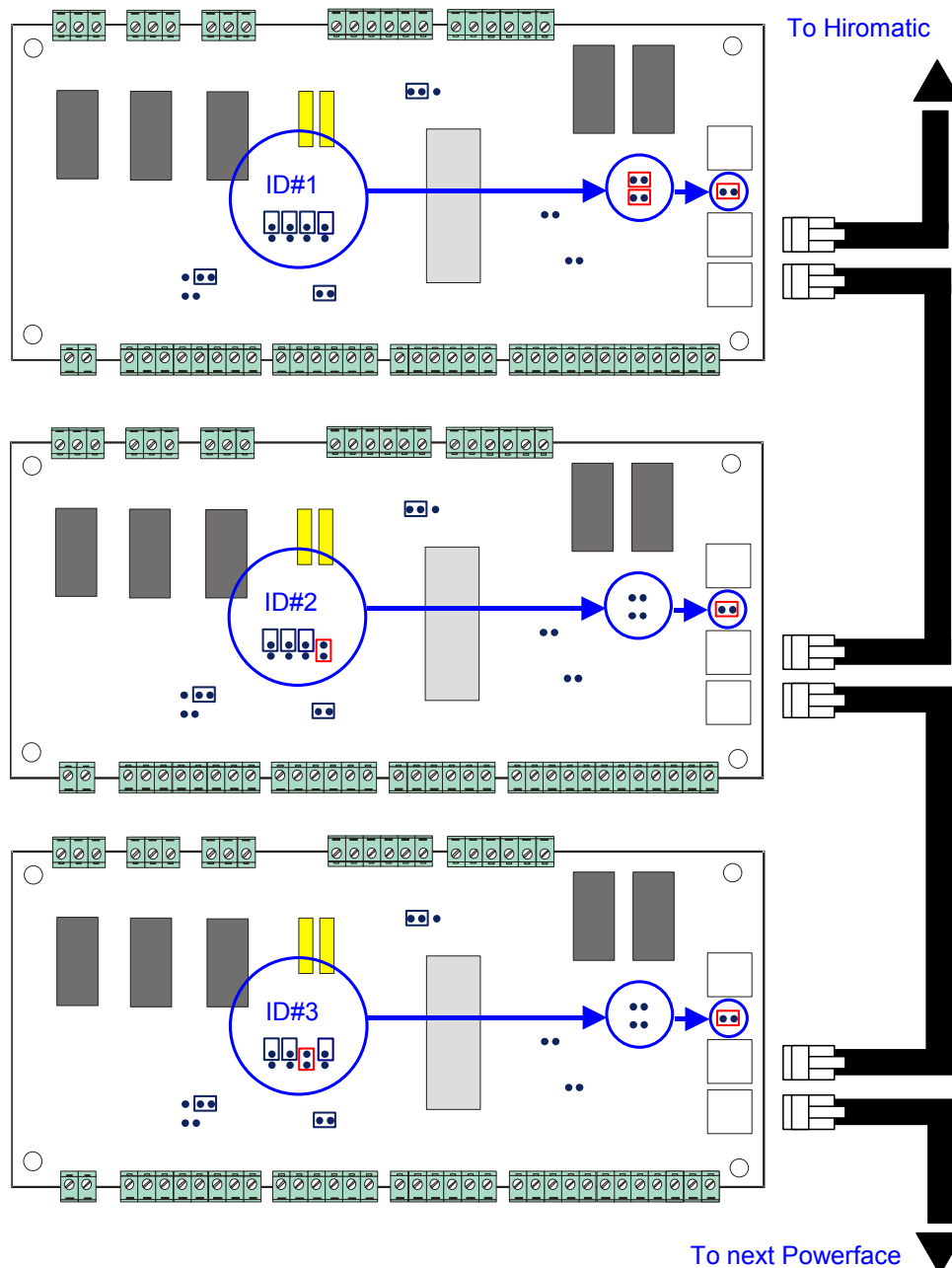


Figure 2: The maximum of units allowed to build a system is 6 (six) and remove the power from the units before to do any things

Please read the HIROBUS CABLES chapter also



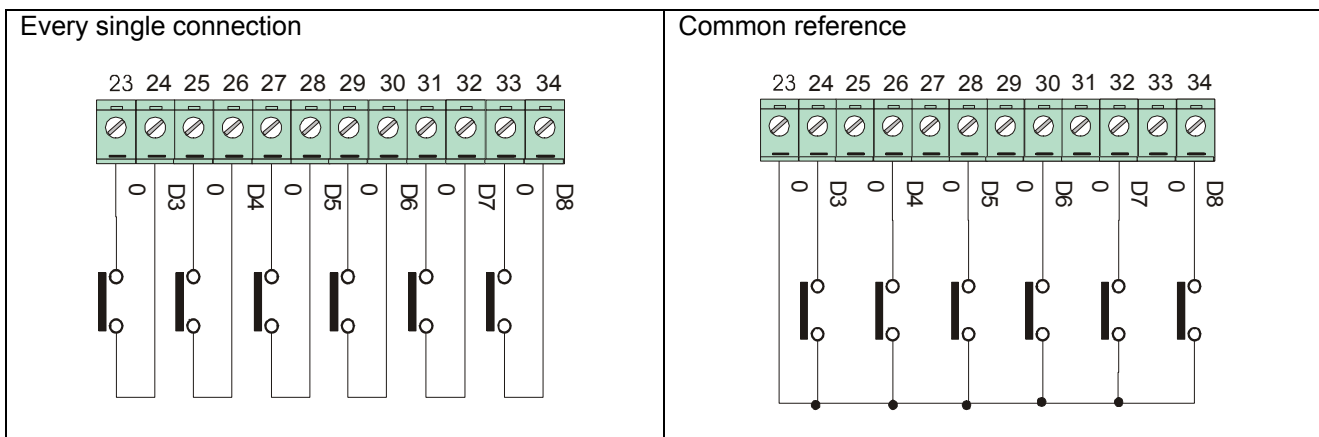
3 Connection Guide

The following gives Information about the Inputs and Outputs of the Powerface. It is not an electrical drawing, but general information about how the Inputs and Outputs have to be used. For detailed information please refer to the electric diagram of the unit

INPUT	
PTC ø	Supply Temperature
PTC 1	Outdoor Temperature
PTC 2	Return Temperature
D3	High Pressure
D4	User Input
D5	Cloged Filter
D6	Remote ON/OFF
D7	Over Heating
D8	Low Pressure
P1	HP Transducer
P2	LP Transducer/Liquidstat
A3	Airflow/Tachimetric
OUTPUT	
O1	Evaporator FAN
O2	Heater
O3	Compressor
DO4	Damper Open
DO5	Damper Close
OUT6	General Warning
OUT7	General Alarm
OC	Not used
Y ø	SELECTABLE Analog output
Y1	SELECTABLE Analog output

3.1.1.1 Digital inputs:

Digital inputs are located as per group 1 in the layout picture. Uses that can be foreseen are the followings:



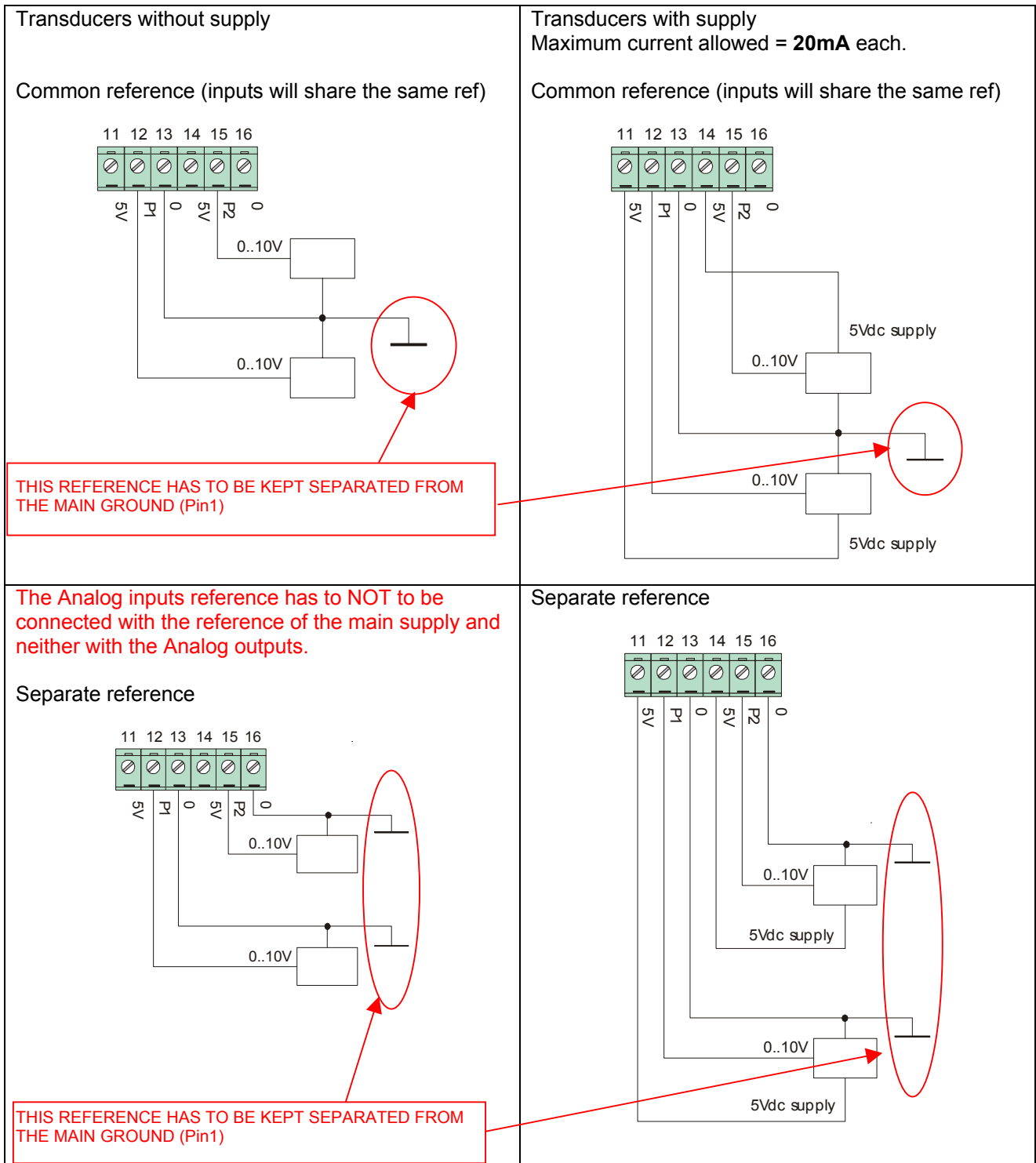


3.1.1.2 PTCs:

Resistive PTCs are located as per group 2 in the layout picture.

3.1.1.3 Analogue inputs:

Analogue inputs are located as per group 3 in the layout picture.
Uses that can be foreseen are the followings:



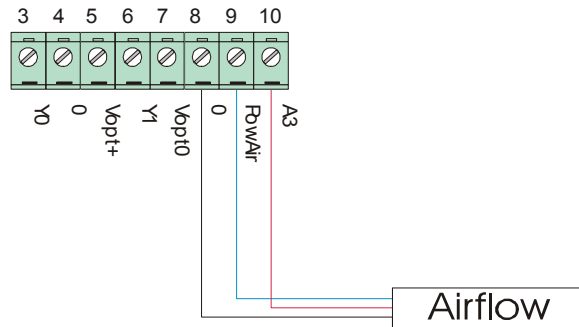


IT IS NOT FORESEEN TO USE SAME REFERENCE FOR DIGITAL INPUTS AND ANALOG INPUTS

3.1.1.4 Airflow sensor:

Airflow sensor input is located in-group 4 in the layout picture. The probe that has to be used is the Liebert-Hiross code 275184.

Configuration foreseen for the airflow sensor:



Jumper J301 shall be set (jumper present) prior to use Airflow sensor probe.

Blue cable for supply.

Black cable for GND.

Red cable for output voltage.

Length of sensor cable: ca. 200 cm

In condition of still air and an ambient temperature of 25°C, the sensor output has approximately 2.4 VDC. An increasing air current causes a higher voltage at the output.

IMPORTANT: DO NOT CONNECT AIRFLOW GND INPUT (PIN8) WITH OTHER GND INPUTS



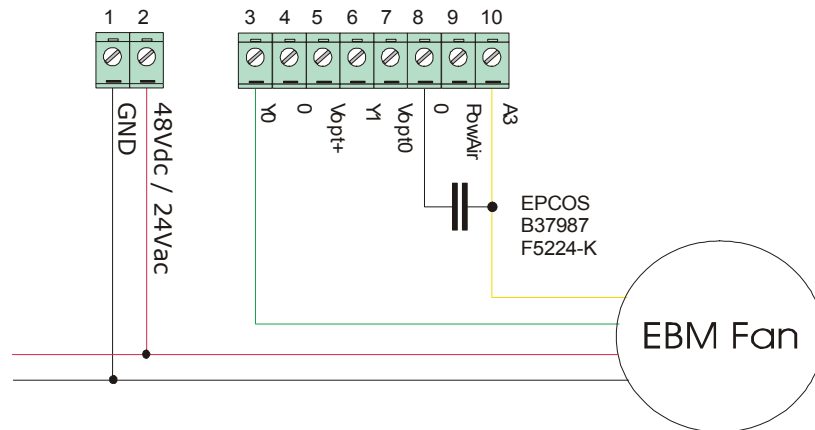
3.1.1.5 Tachometric input:

Tachometric input is located in-group 4 in the layout picture.

This input can be used alternatively to airflow sensor to check Fan running by detection of the pulses. Use of this input can be foreseen only with EBM fans.

Any other brand has to be approved by I&C prior to use.

EBM Fan configuration with Tachimetric input enabled



Jumper J301 has to be **removed** prior to use the Tachimetric input feature.
Analogue output 1 (Y0) has to be used to drive the Fan speed.

Between A3 and 0 (pin8 as in the picture above) there is the need to connect a Capacitor 220nF **EPCOS B37987-F5224-K**.

CAUTION:

Do not use any other reference (0) input except **Pin8** as in the picture above.

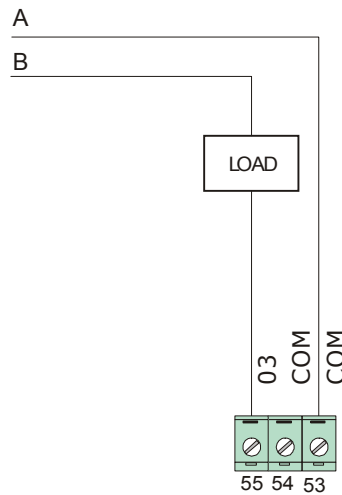


3.1.1.6 Digital outputs:

There are three groups of digital outputs that have to be considered in PowerFace, they are marked in the layout picture with numbers 5,6 and 7.

Group 7 is related to Power contacts, there are three power contacts switched by relay.

Connection foreseen to power outputs

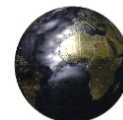


COMs are already bridged inside the board for cabling convenience.
 A and B can be every kind of voltage: 230Vac, 48Vdc, 24Vdc or 24Vac.
 Relays are SINGLE switch.

Maximum powers that can be managed are the following (for every contact):

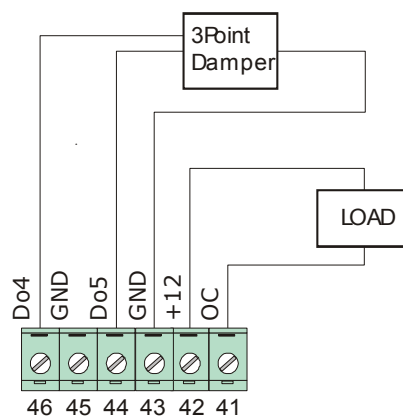
- Inductive load: 400W @ 230Vac single contact
- Resistive load: 2.5kW @ 230Vac single contact
- Dc current: 160W @ 48Vdc single contact

Therefore it is possible to manage directly Fan and heaters from the on-board relays.



Group 6 is for DAMPER and Open collector output possibility. Three points damper can be driven directly from the board without any external voltage needed.

Damper connection and OC contact cabling



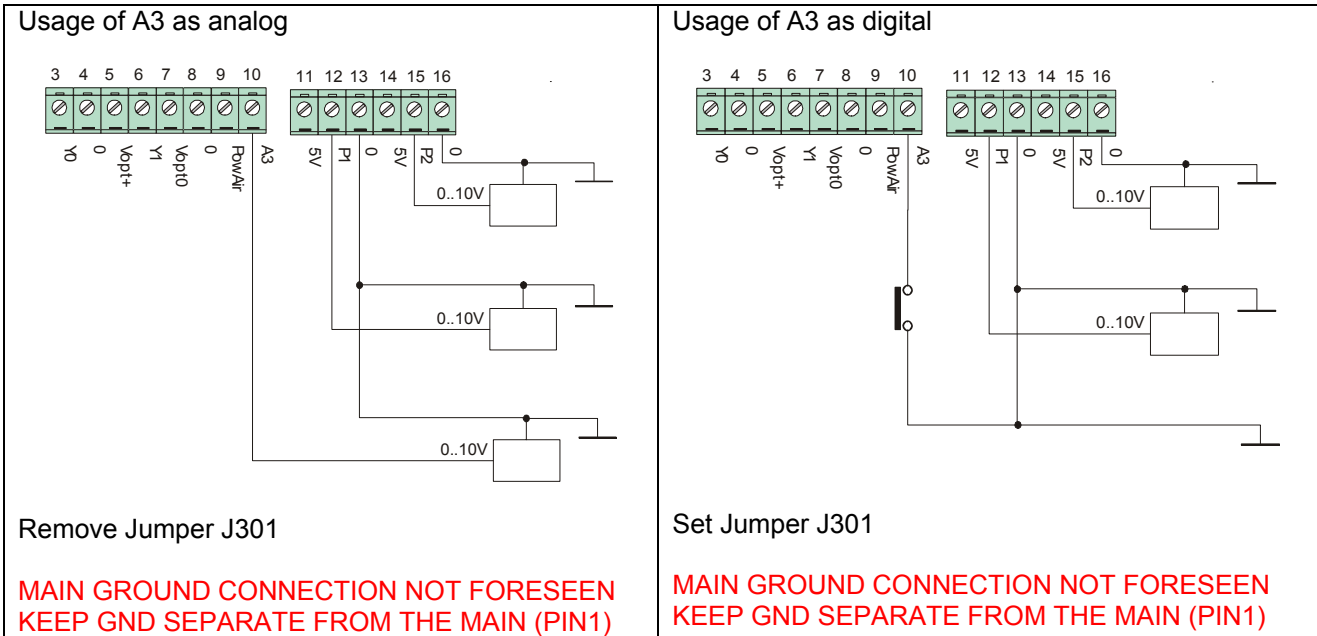
WARNING: Damper voltage will share the same voltage of the board supply. Therefore if the board will be supplied to 48/24Vdc a related suitable damper shall be used.
 Maximum current absorption shall be less than 2A for Damper loading.
 Maximum sink current for OC output is 100mA.

Group 5 is for warning/critical alarm. Contacts are double exchange relays able to drive up to 3A at 48Vdc.
IT IS NOT FORESEEN SWITCH 230Vac LOADS WITH THESE OUTPUTS.



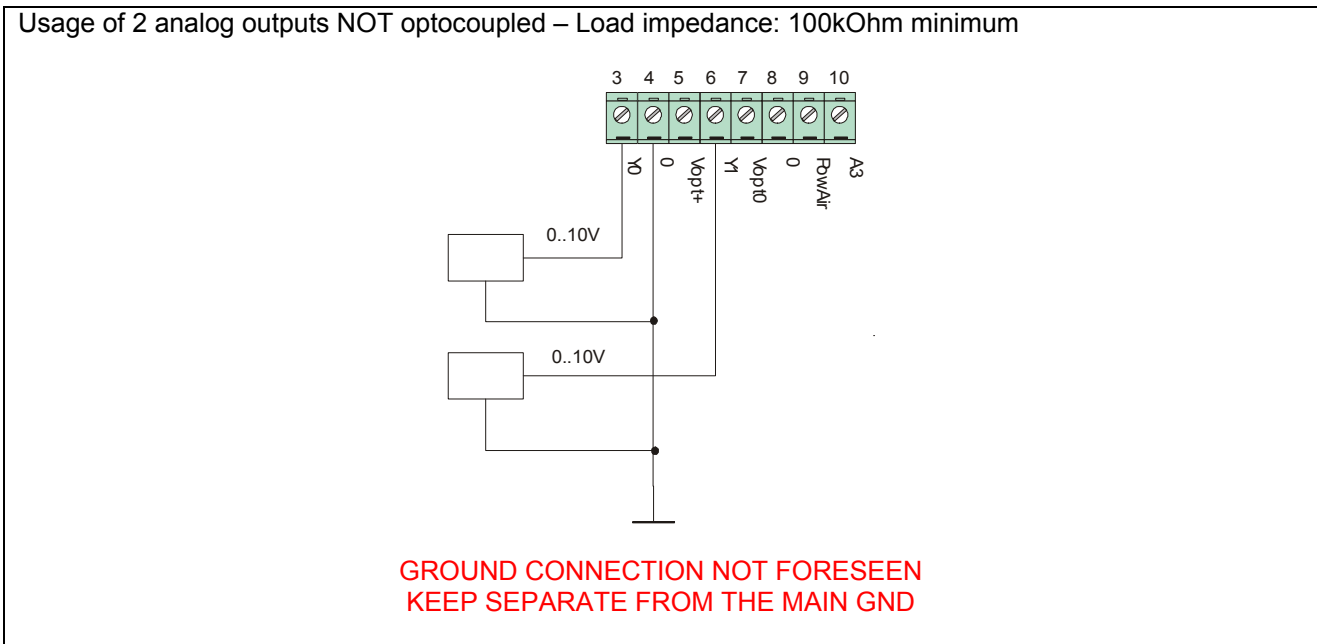
3.1.1.7 ANALOG INPUT 3

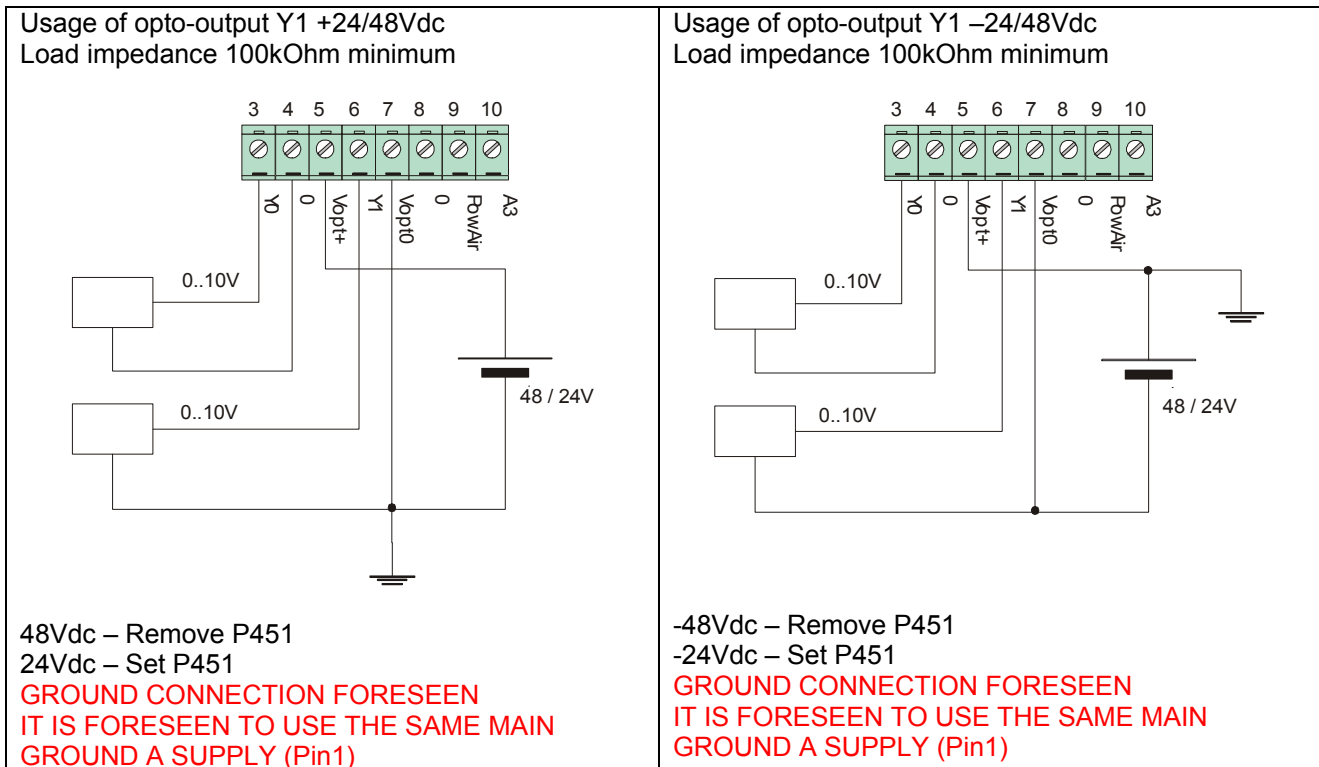
In case of not using airflow sensor probe and neither tachometric input mode, the A3 input can be used as a standard analogue input or a further digital input.



3.1.1.8 Analogue outputs:

Analog outputs are in the group 4 of the layout-picture. Y1 can be used also as opto-coupled output with external voltage supply. External voltage can be 24Vdc or 48Vdc, other voltages are not foreseen for the purpose.



**IMPORTANT:**

IT IS NOT FORESEEN TO MIX THE REFERENCE CONNECTION BETWEEN INPUTS AND OUTPUTS



3.2 LCD Display

There are two different Displays available:
 "Local" Display
 "Remote" Display

Both Displays have the same Front-View:

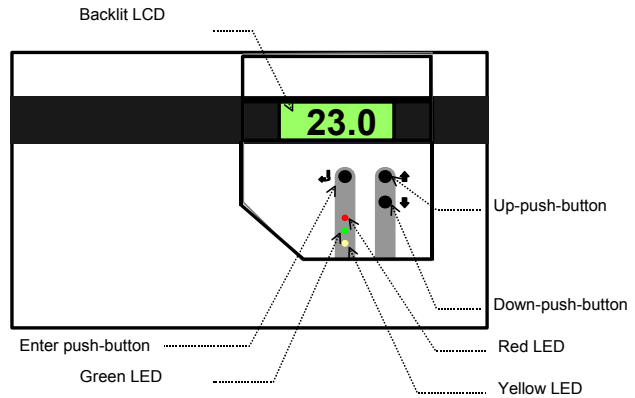


Figure 1 – LCD Display Front View (with plastic cover)

Just the backside connections are different, because of the different connection types to the Powerface E: Local or Remote Display.

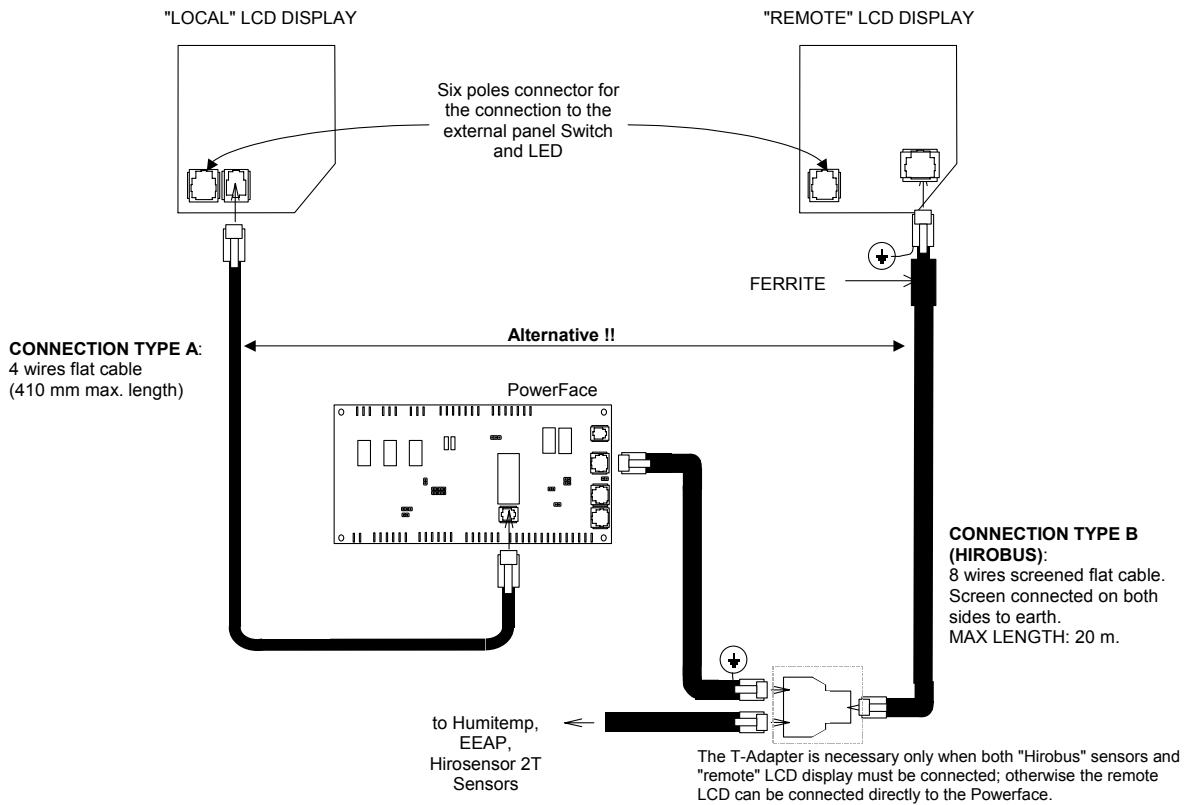
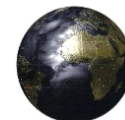


Figure 2 – Local and Remote Display Backside



Never use cables longer than 410 mm (Local Display) or longer than 20m (Remote Display)!



3.3 Humitemp and Humitemp Evolution

The Humitemp is a combined Temperature / Humidity Sensor. If connected, the Powerface will use the values of the Humitemp for control. It is connected to the Powerface through Hirobus-Cable (max. length: 25 m).

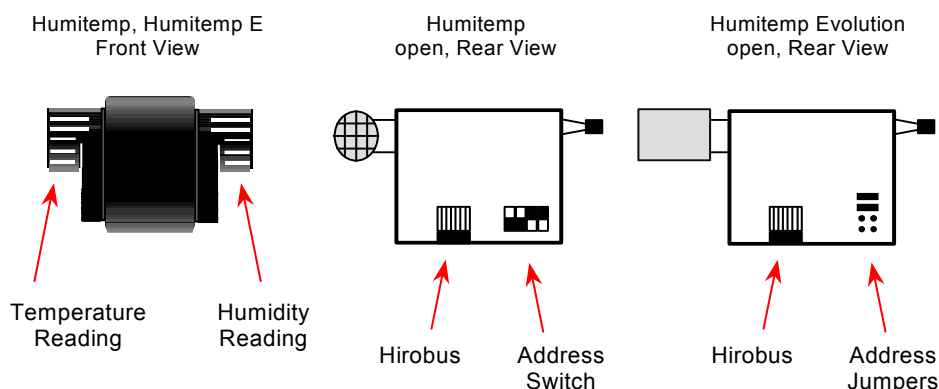


Figure 3 – Humitemp

The Address-Switches / Jumpers inside the Humitemp allows setting different Functions to the Sensor:

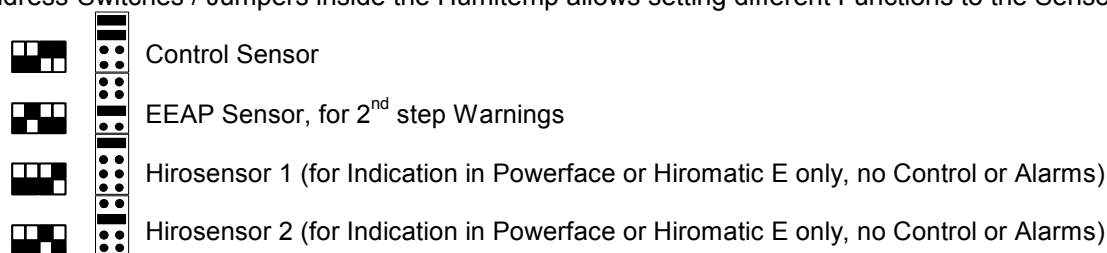


Figure 4 – Address switches / jumpers

These address switches / jumpers are also present in the EEAP and Hirosensor 2T sensors.

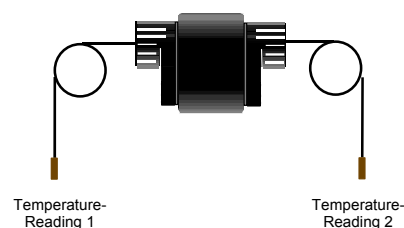
3.4 EEAP

The EEAP has the same Hardware as the Humitemp. The EEAP function can be activated by simply changing the Address-Switches to the EEAP function.

3.5 Hirosensor 2T

The Hirosensor 2T is a double temperature sensor; it allows (according to the Software installed in the Powerface) to show 2 more temperatures (without any Warning Levels or Control Functions) in the Control. Both temperature sensors have a cable length of 2 meters.

Figure 5 – Hirosensor 2T



3.6 PTC Temperature Sensor

There are different Types and lengths available: please refer to Chapter 3.12 Spare Parts List.

PTC Sensors are temperature-sensors, changing the resistance according to the temperature (positive temperature coefficient). The connection is 2 poles. The length of the cable for the sensor ranges from 2 to 10 meters.

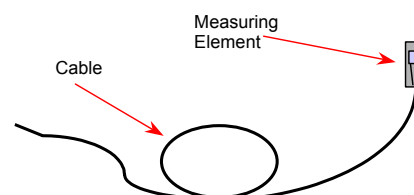


Figure 6 – PTC Sensor



3.7 PTC Airflow Sensor

The PTC Airflow Sensor measures the Airspeed. The System used is the one used also for Airflow-Anemometers. There is an automated Setup-Procedure in the PHA Software, which helps making the right settings. The PTC Airflow has to be supplied with 24V, and gives back a Signal of 0-10VDC, according the airspeed measured. It has to be connected to an analogue input. The connection is 3 poles. The length of the cable for the sensor is 2 meters.

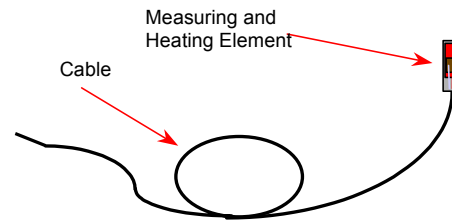


Figure 7 – PTC Airflow

3.8 Hiromatic E

Hiromatic E is a microprocessor-based electronic device, which makes it possible to control the functions of one or more Powerface devices. Hiromatic E offers numerous advantages of programming the units as well as to optimise their operation using various features, see chapter 4, Software.

Hiromatic can be fixed on the front panel of the unit, simply connecting the HIROBUS cable as shown in Figure 8

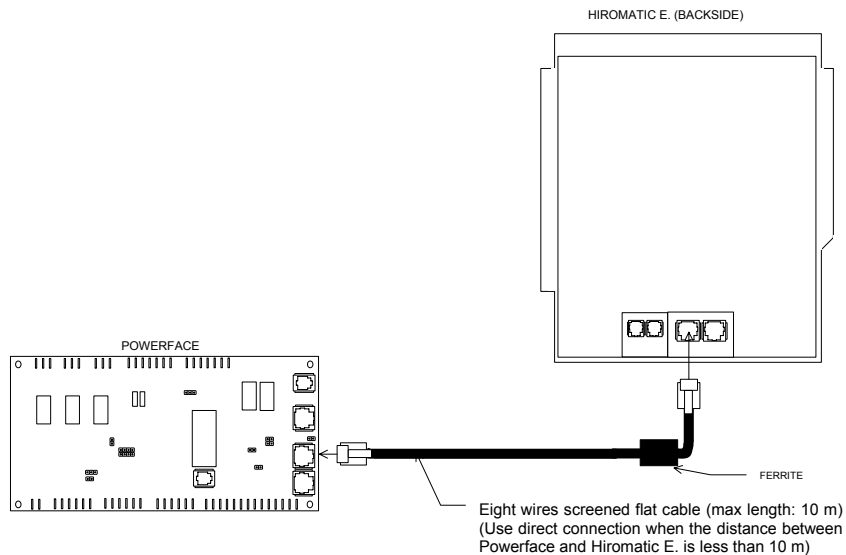


Figure 8 – direct Connection between Powerface and Hiromatic

3.8.1 Hiromatic Evolution Backside View, Jumpers and Eprom Position

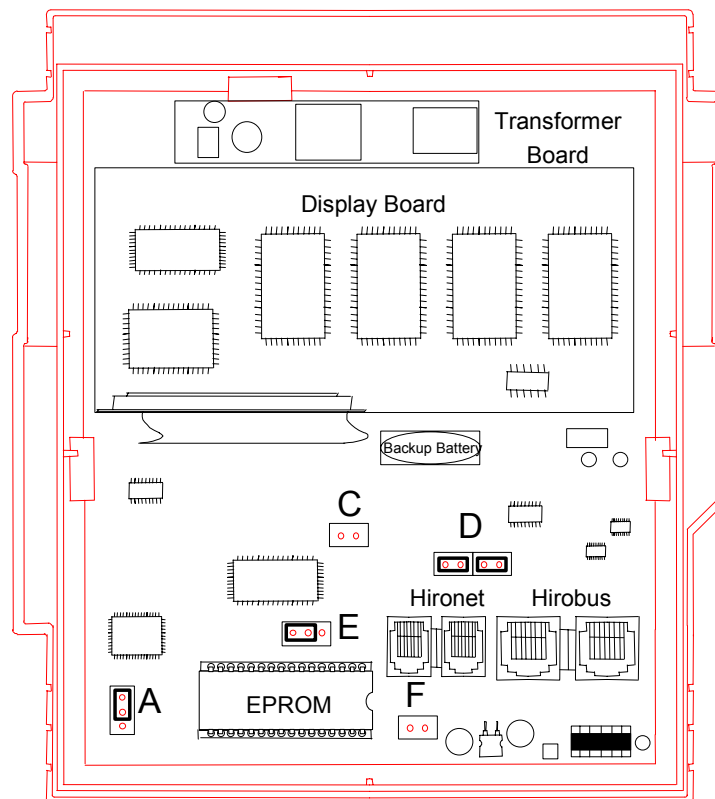


Figure 9– Hiromatic Evolution Backside

Description of the Jumpers:

- | | | |
|----|-------------------------------|---|
| A: | Eprom (2M) / Flash Size (4M): | Middle + Upper Jumper: 2 or 4 MBit (std. setting)
Middle + Lower Jumper: not used. |
| C: | Write Disabling: | do not set this Jumper |
| D: | Interface Selection: | both Jumpers as indicated in Drawing: RS 485 (std. setting)
No Jumpers set: RS 422 |
| E: | Contrast Selection: | Middle + Left Jumper: Variable Contrast
Middle + Right Jumper: Fixed Contrast |
| F: | Flash download: | not supported yet. Do not set this Jumper |



Please take special care about the Jumpers when installing a new (Spare Part) Hiromatic!



3.9 Power Supply Module for Hiromatic (24V only)

Hiromatic E can be supplied mounted in an independent electrical panel containing a power supply module as well (PSM Power Supply Module), if the Distance to the Powerface is more than 10 meters. The PSM Module itself needs a power of 24V AC or 24V DC.

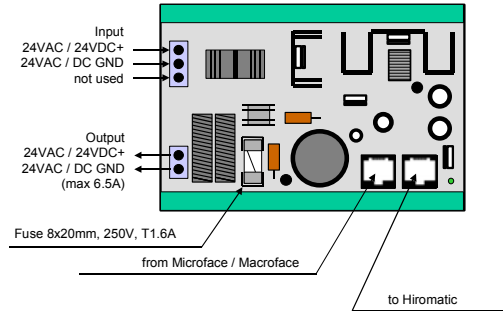


Figure 10 – PSM Module

The connection between Hiromatic E and the PSM is carried out in the factory by means of an eight wires HIROBUS cable. The PSM should be connected to Powerface through a six wires screened HIROBUS cable; the screen needs to be grounded in both terminals.

When the system consists of more than one unit, Hiromatic can be connected to any unit where Powerface has a free HIROBUS connector (usually either the first or the last one of the Powerface chain).

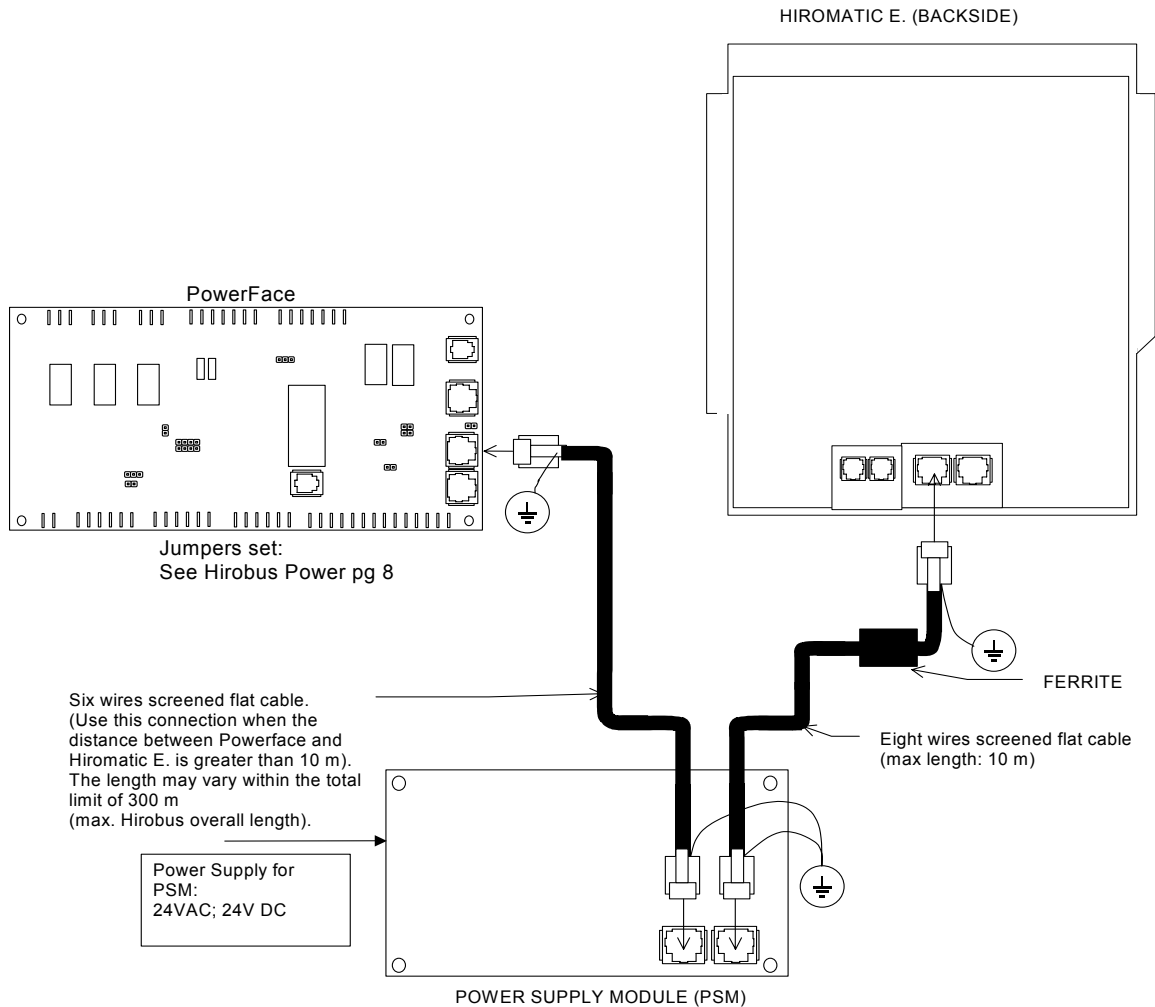


Figure 11 Connection of Powerface LAN to Hiromatic Evolution with PSM.



3.10 Hiromatic Cables and other Connection Cables

The connections between various Powerfaces, Hiromatic, display and sensors are carried out with cables having a different number of wires and different connectors. Following you can find how these cables have to be done. For the type of cable and connectors refer to the spare part list included in this manual.



Please note that a wrong connection could cause serious problems to the electronic devices (Powerface and Hiromatic); for this reason we strongly recommend to use only first quality products or to buy the cables directly from your sales reps..

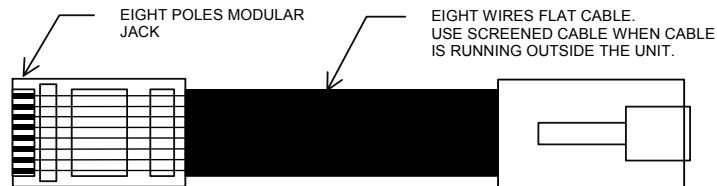


Figure 12 Eight-wires; eight poles connector HIROBUS cable, for Hiromatic or Humitemp connections; for connection between Powerface and the remote LCD Display.

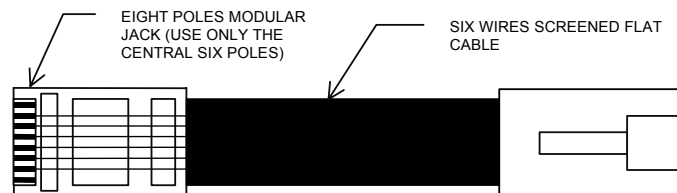


Figure 13 Six-wires (Pin 1 and 8 not connected) HIROBUS cable, for Powerface connections, eight poles connectors. This cable must be screened.

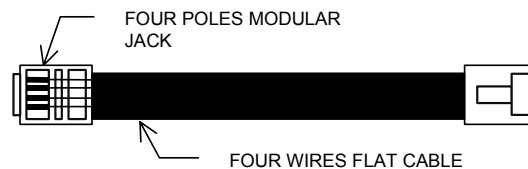
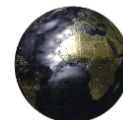


Figure 14 4 wires flat cable for local LCD Display, four poles connectors.

3.11 Hardware, Technical Specification

POWERFACE TECHNICAL SPECIFICATION:	
Vdc Power Supply (not INSULATED)	20÷57Vdc Upper limit according ETSI 300 132-2 par. 4.2
Vac Power Supply (not INSULATED)	24Vac +/-10%
Power Digital Out (Relay)	3 Maximum ratings power switchable: Inductive load: 400W @ 230Vac single contact Resistive load: 2.5kW @ 230Vac single contact Dc current: 160W @ 48Vdc single contact
Digital Out for Damper (Relay)	2 Output voltage given by the damper relay is according power supply of the board (24/48) Max current=2A
Digital Alarm Out	2 Maximum voltage switching foreseen: 48Vdc on clean contact, 3A Max.
Open collector output	1 @12Vdc
Analogue Out (0-10V)	2 Analogue output n.2 can be also opto-coupled 100k Ohm load
Analogue In (PTC)	3
Analogue In (resistive/0-10VDC)	2
Analogue AirFlow sensor for 24Vac units Tachometric input for DC units Analogue In (resistive/0-10Vdc) Digital input NOT opto-coupled	1 These inputs has to be used only alternatively
Digital Inputs (Opto-coupled)	6
Hirobus opto-coupled connection (RJ45)	2 x HB Master (opto) / 1 x HB Slave
Hironet connection (RJ9)	1 x RS485 Hironet network is not foreseen in this release: only peer-to-peer connection.
Local display connection (RJ9)	1 Local display is on request only and is not supplied with the board
Storage Temperature range	-10 (not condensation) to +65°C
Operating Temperature range	0 (not condensation) to +55°C Classification of the device according to the: ETSI 300 019-2-3 (1998) CEI EN60068-2-30 (2000)



Humitemp, EEAP	
Power Supply	10VDC (from Hirobus)
Temperature range	0 to 50°C
Humidity range	20 to 90%
Minimum airspeed required	0,5 m/s
Temperature precision	± 0,5°C
Humidity precision (@25°C)	40 to 65%: ±2 %r.H. 20 to 90%: ±4 %r.H.
Hirosensor 2T	
Power Supply	10VDC (from Hirobus)
Temperature range	-28 to 100°C
Length of sensor elements	2 m (each)
PTC Temperature sensor	
Cable length	1,5 m and 10m
Temperature range	-28 to 100°C
Point of calibration	2000Ω at 25.0°C
Hiromatic E	
Power Supply	10VDC (from Hirobus)
Graphic Display	Backlit, 200 x 64 pixels
Mounting hole	175 x 150mm
Power Supply Module (PSM)	
Power supply	24VAC, ± 10%; 24VDC, ± 20%
Output	10VDC (Hirobus, stabilised); 24VAC, ± 10%; 24VDC, ± 20% (filtered)



3.12 Spare Parts List

DESCRIPTION	CODE
Useful for	
Swich + Led	255029
Local LCD display for Powerface	275098
Remote LCD display for Powerface	275662
Probe temperature PTC	275183
Probe PTC 2 kohm L = 10 m	275155
Probe Temp. + Hum. Humitemp	275181
Probe airflow PTC	275184
EPROM Powerface PHA - 160***	276137
EPROM Hiromatic PHEL1 - 160***	276138
EPROM Hiromatic PHEL2 - 160***	276139
Hiromatic Evolution	275691
Kit EEAP	372201
Hirosensor 2T	275193
LWD (Leakage Water Detector)	275353
Flat cable 8 way M-M L = 1 m	275607
Flat cable 8 way M-M L = 10 m	275610
Flat cable 8 way screened (specify length)	275626
Module PSM 24/24-10 for Hiromatic	275316
"T" adapter for HIROBUS	275652
Hirobus / Hironet Cable Tester	480061
Hirobus / Hironet Interface Tester	480060
User Manual	272985
Powerface	276504
Plastic Pin For Powerface	271136
Navigator card	274010
Kit Navigator card	480115

4 Software

4.1 The LCD Display

The interface module consists of a backlit LCD and of three push buttons that permit an easy access to the unit parameters (see Figure 15). Writing access is protected by a password.

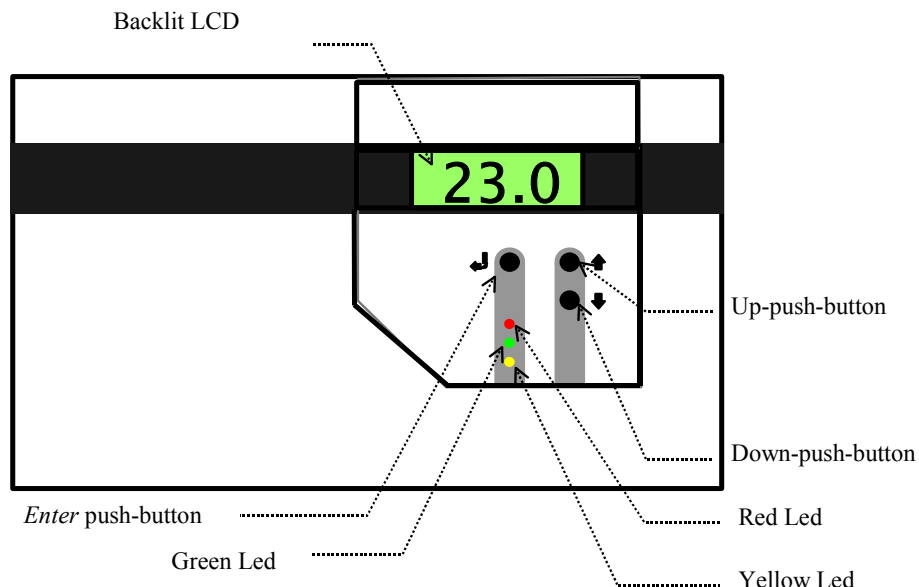






Figure 15 Interface module between Powerface and operator (front view).

There are three LED's: the yellow Led to indicate the unit is power supplied, the green one lights up when the unit is in operation and the red one signals either an alarm or a warning condition. On the LCD the following symbols will be displayed (see Figure 16):



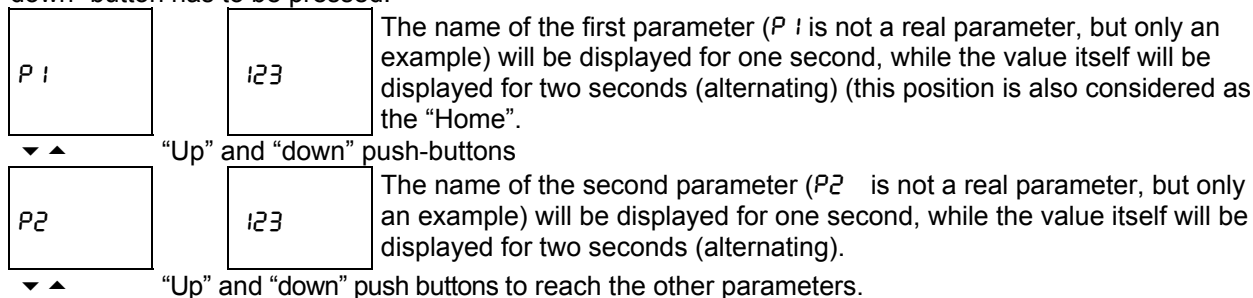
Figure 16; LCD Layout

-  The snow symbol is active when the unit is in cooling operating mode.
 -  The fan symbol is active when the unit is running, that means that the fan(s) / (pump) is (are) operating.
 -  The sun symbol is active when the unit is in heating mode (AC only)
 -  The alarm triangle is ON when either a warning or an alarm is active.
- STANDBY The „STANDBY“ string will be displayed when the unit is in the stand-by mode (not running). Attention: There is a 3 minutes after-running time when changing from ON to STANDBY. Therefore the Unit displays STANDBY with fans still on for a time of 3 minutes.
- SET The 'SET' string will be displayed after the correct password is entered; the presence of this string on the display confirms the full access to the displayed parameters.
- RH % The „RH“ and “%” strings appear when relative humidity is displayed on the LCD.
- °C The „°C“ string appears when temperature is displayed on the LCD.



4.1.1 How to move through the Values/Parameters of the LCD Display

All Values and Parameters are listed up just one after the other. To jump the next parameter, simply the “down” button has to be pressed.



4.1.2 How to enter the Password (PIN)

Without password or by entering the wrong password, read only access is given, without the possibility to change values.

To enter a *password* in Powerface, select the “Pin” parameter by pressing the “down” push-button as often as necessary. When pressing “Enter” (↵), a 0 will be displayed as first digit on the left and will be followed by two dashes (a password is made of 3 digits). Change the numeric value by pressing the “up” or “down” push buttons. After having obtained the required numeric value, press “Enter” (↵) to go to the following digit.

Pressing “Enter” (↵) after having selected the last *password* digit, the parameter (“Pin”) name will be displayed again. If the correct *Password* is entered, the desired modifications can be made. Reaching the next changeable Parameter, the LCD Display will show a “SET” string, which is the confirmation, that the PIN was entered correctly.

Different Password-Levels give different “Rights”:

	Access
Level 0	Read only
Level 1	Customer Level
Level 2	Service Low Level
Level 3	Not used
Level 4	Sensor Calibration
Level 5	Service High Level



The password is stored, until the first parameter / value (“Home”) of the list is displayed again. Never leave the Unit without jumping back to “home” (pressing “Enter” and “UP” together).

4.1.3 How to change Parameters

To change the value of a parameter (possible only when the Password “PIN” has been correctly inserted), scroll the list using the “up” and “down” push-buttons until the desired parameter is displayed and press “Enter” (↵). By pressing the “up” and “down” push buttons, it is possible to change the corresponding value; after having obtained the required value, press enter (↵) again. The display will show again the name of the parameter alternating with the new value.

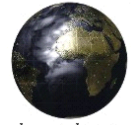
4.1.4 How to reset Alarms or Warnings

When an alarm is triggered, the red alarm LED is lit on the LCD Display Module and the corresponding symbol is shown in the Display.

The Alarm section can be reached by pressing the “up” push-button when the first parameter is on the display; alarms are pointed out according to their code order.

After having entered the alarm section, the alarm code is displayed and every second the code is replaced by the coded description.

Pressing the “Enter” key (↵), when an alarm code is displayed on the LCD, all the active alarms will be reset. After the reset operation, all the still active alarms will be shown again. If there are no more active alarms, the first parameter / value of the list will be displayed again.



4.1.5 Tricks

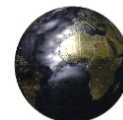
To quickly reach the parameter at the bottom of the list, press “Enter” (↵) together with the “down” push-button. To quickly reach the parameter at the top of the list, press “Enter” (↵) together with the “up” push-button.



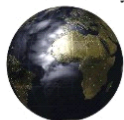
4.2 The LCD Parameters

See chapter 4.1.1 how to move through the Menu and how to enter the Password. The order of the following table is according the menu-layout of the LCD.

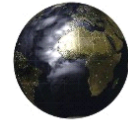
LCD Code	Parameter Name	Description	User Setting
t1	Return Temperature	The value shown here is the average of the Return Air Sensors Sensors of all units which have the Fan ON (With or without Teamwork activated) If the whole System is stopped, it is showing the Average of all Units.	
h1	Return Humidity	The value shown here is the average of the Return Air Sensors Sensors of all units which have the Fan ON (With or without Teamwork activated) If the whole System is stopped, it is showing the Average of all Units. This field remains blank if there is no Humidity Sensor connected to any Unit of the System. If just one Unit of the System has the Humidity Sensor, also Units without can perform Humidity Control (in Teamwork 1 only).	
t2	Supply Temperature	A read only value. It is the temperature of the air delivery of the unit Available only when the corresponding sensor is installed. This Value could influence the Control, if SUPPLY LIMIT is set.	
t3	Outdoor Temperature	The value shown here is the average of the Outdoor Sensors of all units connected in the System. This Value is used for FC-Changeover from all Units in the Network. (With or without Teamwork activated)	
CoP	Actual Pressure	The value shown is the actual Condenser Pressure value	
CoFS	Actual Fan Speed	The value shown is the actual Condenser Fan Speed	
Act	Actual Temp. Set Point	This Value shows the actual Temperature Set Point	
ACH	Actual Hum. Set Point	This Value shows the actual Humidity Set Point	
EEt EEh	EEAP	The Temperature and relative Humidity measured by the optional EEAP Sensor (Electronic Environment Alarm Package) if installed. This Sensor allows to set second step Temp. and Hum. Warnings	
H1L H1r H2L H2r	Hirosensor 1 Hirosensor 2	The temperatures (two values) measured by Hirosensor sensor number 1 (2).These values are not used for regulation or Alarm / Warning generation.	
P in	Password	Powerface has 5 levels of password, please ask your local dealer to get it	
nEt	Number of Units	The number of air conditioning units connected together in the Bus-Network. The user must set it properly depending on the actual Network configuration. All the units in the network must have different addresses (starting from 1).	
SHP	Teamwork Mode	Possible settings: NO, 1, 2. NO : The Units work in stand-alone, using its own sensors for regulation. This setting must be used in Multi Room Installations. Set to 1: if the units shall operate as one System. For Control the average T+H of all units in operation is used. All Units together are working like one big Unit. Not to be set in Multi-Zone Rooms. Set to 2: if the units shall operate in stand-alone, but with restrictions from the Average T+H. The Averages decide, if Cooling or Heating, Hum or Dehum has to be performed, the units itself decide about according their own Sensors Teamwork setting 2 is a stand-alone mode operation, but 'mastered' from the Average T+H, to avoid competition between the Units To be set in Multi-Zone or un-balanced Rooms.	
id	Identification Number	A number that uniquely identify a Powerface connected on a Hironet network, it must be different for each Poerface connected in the network.	



LCD Code	Parameter Name	Description	User Setting
CE _n	Communication	Set 'READ' if the Hiromatic will transmit Data to the Hirolink, without accepting commands from Hirolink Set 'READ/WRITE' if also commands (Setpoint changes etc.) shall be accepted from Hirolink.	
Aut	Autorestart	The time delay, in seconds, between the power on and the start of the unit. NOTE: Each Unit multiplies the time with its Powerface ID Number.	
rE	HM ON/OFF Enabled	To enable the ON/OFF button of Hiromatic E to switch ON/OFF the air conditioning units on the HIROBUS network.	
SP _t	Temperature Setpoint	The temperature of the air desired in the room. It is the reference value used by Powerface, together with Return Air temperature, Temp. Proportional Band and Temp. Integration Factor to decide the cooling or heating status	
SP _H	Humidity Setpoint	The humidity of the air desired in the room. It is the reference value used by Powerface, together with Return Air Humidity, Humidity Proportional Band and Humidity Integration Factor to decide to DEHUM	
Hco	Humidity Compensation	If enabled, the Control respects the psychometric relation between Temperature and Humidity. Reading the actual Temperature the relative Humidity Setpoint will be recalculated.	
SUP	Supply Limit	A low limit for the Supply Air Temperature. The air conditioning unit will try to always keep the Supply Air Temperature greater than the value set in this parameter. If set to a value different from NO a PTC sensor must be installed inside the unit (or near it) in the supply air flow path. To decide its cooling status the lower between: <ul style="list-style-type: none"> a) the deviation of Return Air Temperature from Temperature Setpoint and b) the deviation of Supply Temperature from Supply Air Setpoint. Note: Supply Limit is capable to reduce the opening of Dampers of Valves, but will never stop a compressor.	
SP ₂	Temperature Setpoint 2	A second setpoint value for the air temperature of the room. It is used when at least one User Input is set as 2ndSETP (Second Setpoint) and the switch on the corresponding input of Powerface is open.	
F55	Fan Speed Standard	The parameter used by Powerface to regulate the speed of the fan during normal operation when an Analog Output of Powerface is used to drive the fan. (The corresponding Analogue Output must be assigned to Fanspeed).	
F5d	Fan Speed Dehumidification	The parameter used by Powerface to regulate the speed of the fan during Dehum operation when an Analog Output of Powerface is used to drive the fan (The corresponding Analogue Output must be assigned to Fanspeed).	
F5P	Fan Speed No-Power	The parameter used by Powerface to regulate the speed of the fan during Dehum operation when an Analog Output of Powerface is used to drive the fan (The corresponding Analogue Output must be assigned to Fanspeed).	
Stb	Number of Standby Units	STBY Units normally are halted and will start only in case of an alarm of another Unit in the Network. This parameter defines how many units will be in standby mode.	
rot	Rotation Frequency	Defines the frequency at which the automatic rotation of standby units will be performed. Selectable: No, Daily.	



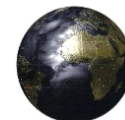
LCD Code	Parameter Name	Description	User Setting
CRS	Enable cascade	Setting this parameter will let the standby unit(s) to start not only when an alarm appears on an active unit but also in case of increasing and/or de-creasing of temperature and/or humidity to co-operate with active unit(s). NOTE: Cascade settings force Teamw. 1! Possible Settings: no: cascade function not active YES: active with both temperature (cooling/heating) and humidity (de-humification) Yt.: active only for temperature (cooling/heating) Ytc: active only for cooling	
rob	Rotate By	Allows to perform a group units rotation	
roo	Rotate once	When set to 'YES' the system is forced to perform one rotation of the standby units. Working only when 'Rotation Frequency' is not set to 'NO'.	
Ht Lt Hh Lh	High Temperature Low Temperature High Humidity Low Humidity	These Warnings are generated from the Standard Return Sensor of each Unit, if the thresholds are over- / under ridden. The Warnings are delayed for a time of 30 Minutes after Unit start.	
HtA LtA HhA LhA	EEAP Warnings: High Temperature Low Temperature High Humidity Low Humidity	These Warnings are generated from the optional EEAP Sensor, if the thresholds are over- / under ridden. The Warnings are delayed for a time of 30 Minutes after Unit start.	
Eco	EEAP connected	This parameter changes automatically to YES is a EEAP is connected.	
US 1	User Input 1	According to the value set for this parameter Powerface will take some actions when the switch connected to the corresponding input of Powerface is open : nC:the compressor is disabled ALP: a Warning is generated (the unit continue its operations) AhP: an alarm is generated (the unit stops its operations) SEt: the reference value for Return Air Temperature regulation switches to Temp.Setpoint 2 noP: everything is stopped except Fans and Freecooling function no: Powerface will not take any action on User Input opening	
noc tFc	Unit Type: Comp. Unit Type: FC	These parameters define the operating mode of the unit. 1 = Single Compressor, Air = FC by opening AIR-DAMPER	
Std	Standard Settings	If set to YES all parameters of the selected unit will be changed automatically to pre-defined values. To be used after Powerface or Eprom update only. NOTE: YES jumps back to NO (it behaves as a push button)	
Pbt if	Temp. Prop. Band Temp. Int. Factor	Normally best results will be reached if the 'AUTOSET' is enabled. Proportional Band is divided in two equal parts, one part for Cooling, one part for Heating (Hysteresis). Inside this Hysteresis there are the different Components (Compressors, Heaters), which share the width of the Hysteresis. If Teamwork Mode 1 is selected, the P-Band belongs to the whole System. NOTE: Too small P-Band will cause the bad Control Quality (Hunting). Integration Factor: If set to any value, the PI control is enabled. The integration factor doubles the actual, real deviation from the setpoint within the selected time. This will force cooling/heating to add more steps to reach the setpoint. To be used if P-Band must be wide because of bigger number of units connected, and working in Teamwork 1.	



LCD Code	Parameter Name	Description	User Setting
<i>PbH</i> <i>iFH</i>	Hum. Prop. Band Hum. Int. Factor	Normally best results will be reached if the 'AUTOSSET' is enabled. Proportional Band is divided in two equal parts, one part for Dehum. , one part for Hum. (Hysteresis). Inside this Hysteresis there are the different Components (Humidifier etc.), which share the width of the Hysteresis. If Teamwork Mode 1 is selected, the P-Band belongs to the whole System. NOTE: Too small P-Band will cause the bad Control Quality (Hunting). Integration Factor:: If set to any value, the PI control is enabled. The integration factor doubles the actual, real deviation from the setpoint within the selected time. This will force Hum / Dehum to add more steps to reach the setpoint. To be used if P-Band must be wide because of bigger number of units connected, and working in Teamwork 1.	
<i>ASE</i>	Auto Set Enable	Enables the permanent Calculation and Self-Setting of the best Control Parameters for the actual Situation It is recommended to run the System always with AUTSET ON.	
<i>EHS</i>	Heating step	Number of Heating Steps. 0 or 1. If NO Heater is present, the output might be used for ALARMS / WARNINGS Indication: LQT: Water Alarm (LWD) FCF: Compressor Fail (HP/LP/TH) LTA: Low Temperature HTA: High Temperature	
<i>HdE</i>	Heating Dead band	The Heater shall start later, it means that the Heaters is shifted with the Dead band Value to lower Temperatures.	
<i>rE</i>	3P. Act. Run Time	Actuators is a motor, that drive the Freecooling Damper. This parameter is the information for the time necessary from completely closed to completely open position.	
<i>RoP</i>	3P. Act. Min. open	This Parameter guarantees a permanent opening of the selected percentage, as long as the Unit is in operation, even if the Control would like to close the 3P-Actuator completely.	
<i>dEH</i>	Dehumidification Enable	Enables / Disables the Dehumidification Operation. NOTE: Setting this Parameter to YES makes the Control looking for a Humidity Sensor. If not present, a Warning will occur. It can be set as: <i>no</i> : No Dehum performed <i>YES</i> : Dehum performed if required. <i>5Fc</i> : Instead to start the Compressor for Dehum, the FC Damper will be closed to avoid incoming Outdoor Humidity.	
<i>ELr</i>	El. Reheat Enable	During Dehum Operation it could be necessary to reheat. If it is no problem from the Power consumption, put to 'YES', If Compressor and Heater may not operate at the same time, put it to 'NO'	
<i>dHh</i>	Dehumidification Hysteresis	Defines the Return Air Humidity value at which the dehumidification will be stopped. It is expressed as percentage of the full Humidity Proportional Band. (50% means that dehumidification will be stopped at Room Humidity Setpoint).	
<i>ddb</i>	Dead Band	The Value the Dehumidification shall start 'later'. Means the the Dehum- Starting point is shifted with the Deadband Value to higher Humidity.	
<i>dEC</i>	Dehumidification relay as	Allows using the digital output of dehumidification for other purposes, if the dehumidification mode is not required: <i>dEH</i> : Dehumidification relay used for Dehumidification (Standard) <i>R I</i> : Relay used as General Warning Contact (splits WA and AL on two Rel.) <i>Poo</i> : Relay changes its status if the unit switches to 'NO POWER' mode.	



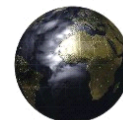
LCD Code	Parameter Name	Description	User Setting
L5t L9	Water Leak Detector	Enables or disables the sensor. When enabled can be set: R1: Warning (Message only) R2: Alarm (stops Unit in case of Water detection). Value: actual Indication from LWD. Should be between 1.4 and 1.6 if OK	
dt1	DT Room / Outdoor	The value of the difference between the Return Air Temperature and the Outdoor Temp. over which (with a hysteresis of +/-1,5 C) the unit will enable Free Cooling mode (if there are not other conditions that disable the FreeCooling operation). The Free Cooling mode will be activated when also the condition on DT Room-Glycol is fulfilled. If set to 'CON', the Control expects to get a command with a switch instead of a Temperature Sensor. If set to 'EFC' the unit will not go in Freecooling mode during normal Operation, but only in case of NO POWER' Operation or Compressor Failure, if the Delta is 3 deg C. (Emergency Freecooling only).	
dt3	Stop Fc at set +	The Free Cooling mode will be stopped when the Return Temp. will be greater than Room Temp. Setpoint plus Stop FC at Room Set +.If Free Cooling is stopped for this reason, it will be disabled for at least one hour.	
Rn1 Rn2	Analog Output 1 Analog Output 2	Both the 0 - 10Vdc outputs may be used for several purposes: 3P1: Position of first 3 Point Actuator (Feedback) H33: Signal increases to 10V within the first step of Heaters. 5Lc: Fan speed regulation in relation to supply air temperature ELH: For Units which have additional Heater Board for Heaters. HtH: Humidity Signal (0%rH - 100%rH = 0V - 10V) PtC: Supply Temp. Signal (0C - 50C = 0V - 10V) HtL: Return Temp. Signal (0C - 50C = 0V - 10V) F5: Fanspeed Control HEr: Signal increases to 10V within the Heaters Part of P-Band Co: Signal increases to 10V within the Cooling Part of P-Band. Co1: Signal incr. to 10V within the Compressor 1 Hysteresis. RL1: Signal for Alarm Board	
FLo	Low Airflow At	Use 'AUTOSET AIRFLOW' to set. Depending on the value assigned to this Para, Powerface will give Warning or Alarm when the voltage generated by airflow sensor is lower than the threshold set. If a differential pressure switch is used, 'SWI' has to be set.	
ASR	Autoset Airflow	Stop Unit first. Set Parameter to 'YES' Unit will start the Fan for 30 secs, and then wait 30 secs with Fan off. After that the Value will be set. If a Warning appears, there was no reaction from the Airflow device.	
FLo	Airflow Value	Read only analogue value (percentage) that informs about the airflow speed inside the unit. This value can be taken into account when setting the Low Airflow At parameter	
FF	Fan Failure	Depending on the value assigned to this Parameter, Powerface will stop Humidity Control and heating only (Warning) or will completely stop the Unit (Alarm), When the Airflow Value is lower than the threshold setting.	
LPd	Low Pressure Alarm delay	The time delay (in minutes) after a start of the compressor(s) in which the occurrence of a low pressure alarm is ignored. After this time the low pressure alarm is delayed of approximately 10 seconds	
tC	Tachimetric Enable	Enable the use of the Tachimetric device: if set to YES the Airflow rate value (Shown on FLo parameter) has be not considered because in this case the airflow signal is supply by the fan directly and it can be not visualized	



LCD Code	Parameter Name	Description	User Setting
SPC	Condenser Set Point	It defines the pressure set point value considered by the control when the condensation of the refrigerant is performed through the I-Variex function	
PCb	Condenser Band	It defines the range of pressure values considered by the control to increases or decreases the signal of fan condenser speed control; the band is centred on Condenser Set Point	
Edb	Condenser Dead Band	It defines the range of pressure values where the signal of fan condenser speed control is not influenced; the band is centred on Condenser Set Point	
PCO	Cut Off	It defines the low limit pressure value; below this value the signal of fan condenser speed control is forced to 0	
PCh	Reset Cut Off At +	It defines the hysteresis considered by the control before to re-activate the signal of fan condenser speed control; the hysteresis is applied over the PCO value	
ELt	Low Ext. Temp. Limit	It defines the low external Temperature Limit. This value is used by the control to define the speed of the condenser fan at each compressor start: <ul style="list-style-type: none"> if the external temperature is higher then the limit set the starting speed is calculated in a range of 0-35°C considering the Min. and Max. condenser signal set values. The calculated speed will be hold by the control for a time of 20 seconds, after this time the speed will be modified according to the pressure trend if the external temperature is lower then the limit set the starting speed is calculated in a range of 0-35°C considering the Mix. Condenser signal and 5 volts. The calculated speed will be hold by the control for a time of 20 seconds. After this time the speed of the fan will be modified according to the pressure trend. NOTE: the fan speed signal will be supplied only when the pressure is higher then the PCO + PCh value 	
PR1	High Pressure Warning	It defines the first pressure limit; if this value is reached the speed of the condenser fan will be forced to maximum value. The speed will switch under condenser control function as soon as the value drops 1 bar below the limit (see also 091 HPS and 092 HPH messages)	
PR2	High Pressure Alarm	It defines the second pressure limit; if this limit is reached the related HP alarm is activated and the compressor will be stopped. The speed of condenser fan will be forced to 0 as soon as the pressure drops below 15 bars	
SP1	Min. Condenser Signal	It defines the minimum fan speed condenser signal	
SP2	Max. Condenser Signal	It defines the maximum fan speed condenser signal	
FA	Filter Higher 10°C	It defines the filter applied on condenser control when the external temperature is higher then 10°C	
FL	Filter Lower 10°C	It defines the filter applied on condenser control when the external temperature is lower then 10°C	
Ion	I-Variex Active	Activates the condenser control if set to YES	



LCD Code	Parameter Name	Description	User Setting
CA1 CA2 CA3 CA4 CA5 CA6 CA7 CA8 CA9 C10 C11	Sensor calibration	Allows the User the adaptation of the Temperature Sensor-Values, using the Offset Values. The Actual Value contains already also the Offset.	
C12	Press. Sensor Off-Set 0V	Allows the User the adaptation of the Pressure Transducer Sensor Value. NOTE: the value set is normally used for the 0-30 Bar (4-20 ma) Keller transducer.	
C13	Press. Sensor Off-Set 10V	Allows the User the adaptation of the Pressure Transducer Sensor Value. NOTE: the value set is normally used for the 0-30 Bar (4-20 ma) Keller transducer.	
t5t	Auto test	If set to Yes, the unit automatically runs the following test cycle: Fan On After 1 minute compressor On After 6 minutes Compressor Off, Electrical Haters On After 1 minute Heater Off, Fc damper 50% After reaching 50% Alarm relay On After 1 minute Alarm relay Off, Warning relay On After 1 minute end of test	



4.3 The Powerface E LCD Display Warnings / Alarms

001	HP1	COMP. 1 HIGH PRESSURE	ALARM
002	LP1	COMPRESSOR 1 LOW PRESSURE	ALARM
005	EHO	ELECTRICAL HEATERS OVERHEATED	WARNING
006	AF	FAN FAILURE	WARNING
007	AF	FAN FAILURE	ALARM
008	CF	CLOGGED FILTERS	WARNING
009	LE	WATER LEAKEGE	WARNING
010	LE	WATER LEAKEGE	ALARM
011	UI1	USER IMPUT 1 TRIGGERED	WARNING
012	UI1	USER IMPUT 1 TRIGGERED	ALARM
018	Hrt	HIGH ROOM TEMPERATURE	WARNING
019	Lrt	LOW ROOM TEMPERATURE	WARNING
020	Hrt	HIGH ROOM HUMIDITY	WARNING
021	LrtH	LOW ROOM HUMIDITY	WARNING
022	HtE	HIGH ROOM TEMPERATURE	WARNING
023	LtE	LOW ROOM TEMPERATURE	WARNING
024	HHE	HIGH ROOM HUMIDITY	WARNING
025	LHE	LOW ROOM HUMIDITY	WARNING
026	HE	CONDITIONER WORKING HOURS EXCEEDED	WARNING
027	HC1	COMPRESSOR 1 WORKING HOURS EXCEEDED	WARNING
029	PtC	PTC SENSOR FAILURE	WARNING
030	rSF	ROOM SENSOR FAILURE	WARNING
031	rSF	ROOM SENSOR FAILURE	ALARM
032	ESF	EEAP SENSOR FAILURE	WARNING
033	SF	WATER PRESENCE SENSOR FAILURE	WARNING
034	nEt	NETWORK FAILURE	WARNING
035	or	OUT OF MEMORY	WARNING
060	HP5	MAX. CONDENSER FAN SPEED SET	MESSAGE
061	Owt	OUTDOOR TENP. SENSOR	WARNING
070	ELY	NO CONNECTION TO UNIT 1	WARNING
076	HPr	MAX. CONDENSER FAN SPEED RE-SET	MESSAGE
077	nEt	NETWORK PING	WARNING
078	Hb	SUBGROUP-ID NOT UNIQUE	WARNING
079	Sid	SUBGROUP-UNIT 1 NOT CONNECTED	WARNING
081	SU1	SHARE ROOM SENSOR FAILURE	WARNING
082	rSF	SHARE ROOM SENSOR FEAILURE	ALARM
083	Owt	SHARE OUTDOOR TEMP. SENSOR	WARNING
090	AFd	AIRFLOW DEVICE NOT READY. PLS. CHECK	WARNING



the evolution

4.3.1 Hiromatic E Layout

The front panel of Hiromatic E for HPS units consists of a backlit graphic LCD, of eight push buttons that permit input function and of two LED.

Cursor Buttons: to move inside the Menu; Left or Right: To go up to the Main Window or back to the previous window

Push-button to start/stop the system and the units (if enabled).

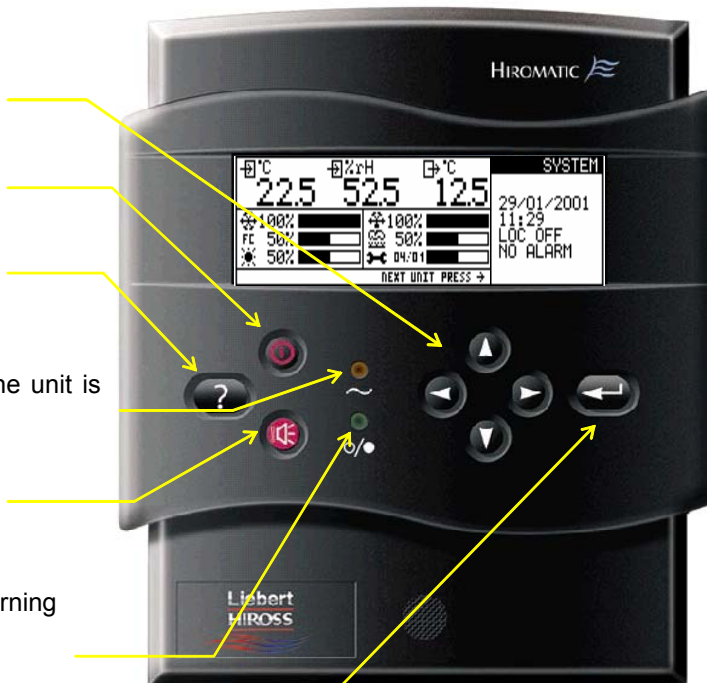
Help Key: opens Online-Help for the selected Parameter

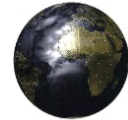
This LED (orange) will be ON when the unit is power supplied

Alarms and warnings reset.















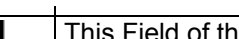

GREEN when the Unit is in Operation,
YELLOW if the Units is in Warning condition,
RED if the Unit is in Alarm condition

ENTER Button, to set Parameters



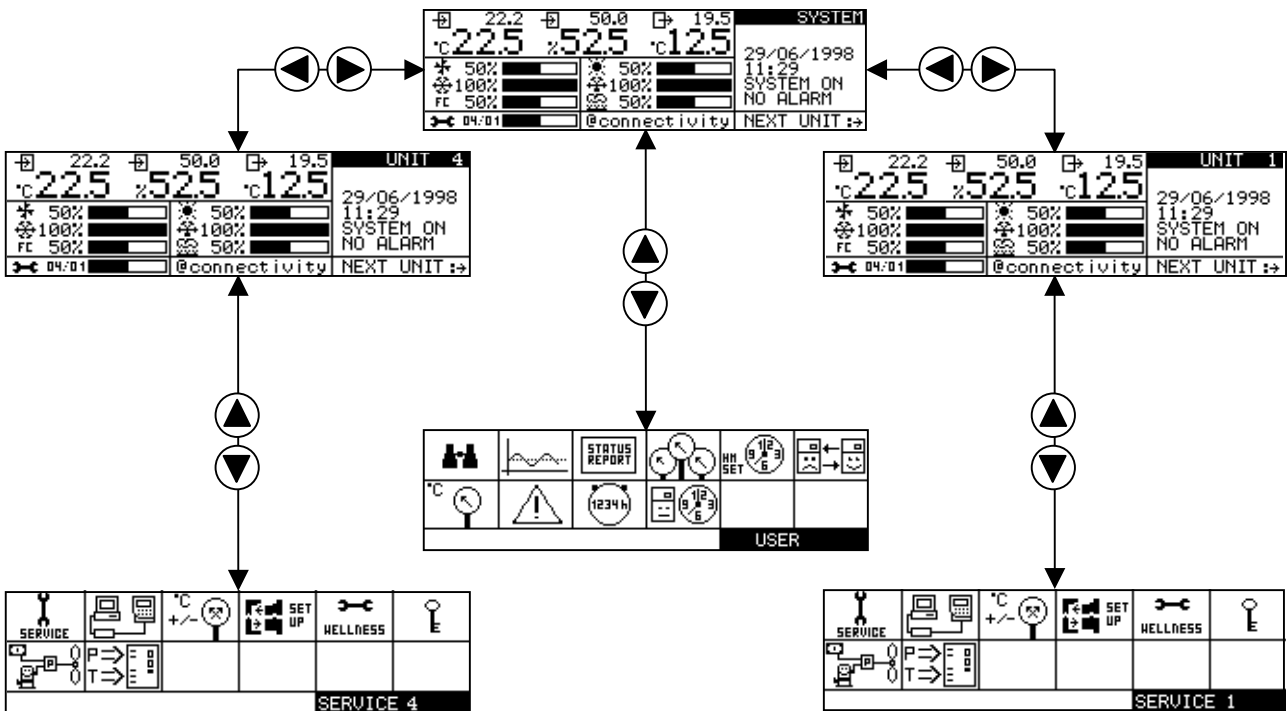


4.3.1.1 Meaning of the different Symbols in the Main Window

 °C 22.5	<p>Return Air Temperature (if on the top-right SYSTEM is indicated, it is the average of all units with system on. If UNIT x is indicated, it is the return air temperature of the specific unit. This is valid for all indications in Hiromatic Display.</p>
 %rH 52.5	<p>Return Air Humidity of the System / the Unit.</p>
 °C 12.5	<p>Supply Air Temperature of the System / the Unit.</p>
 100% 	<p>This Bargraph gives Information about the actual used Cooling-recourses in Operation, either for the System or for a specific Unit. NOTE: Compressors stopped with failure are excluded from this Bargraph, so that the information is about the actual available compressors.</p>
 50% 	<p>This Bargraph gives Information about the actual used Freecooling-recourses in Operation, either for the System or for a specific Unit.</p>
 0% 	<p>This Bargraph gives Information about the actual used Heating-recourses in Operation, either for the System or for a specific Unit.</p>
 0% 	<p>This Bargraph gives Information about the actual used Dehumidification-recourses in Operation, either for the System or for a specific Unit.</p>
 0% 	<p>Not Used</p>
 09:01 	<p>This Bargraph gives Information about the next Maintenance time (mm-yy).</p>
 UNIT 1 29/06/1998 11:29 LOC OFF NO ALARM	<p>This Field of the Window informs about time, date, the status of the System / Unit.</p>



4.3.2 How to Move in the Hiromatic Windows



There are two ways to enter the menus: with or without Password. Entering without Password allows to read the values (except Password Menu and Calibration Menu); entering with Password allows also to change Parameters.

Without Password: Press ENTER or DOWN; press DOWN once more, and then ENTER.

With Password: Press ENTER or DOWN; ENTER to select first digit of Password; select with UP or DOWN, press RIGHT for the next Digit; UP or DOWN to select, etc. After having selected the correct Password, press ENTER.

Press DOWN to select the Enter-String, and press ENTER to jump into the Menu-Icons. Depending on the Password Level some of the Menus will be read/write, some of the read only.

Select the Window with LEFT-RIGHT-DOWN, Press ENTER to select the first Icon, Press LEFT-RIGHT-UP-DOWN to select the Icon (The Menu), and press ENTER to get in.



4.3.3 The Menu

The Software gives some Icon – Menus:

- The **System Menu**, see Chapter 4.3.3.1 on page 39
- The **Unit Menu for User**, see Chapter 4.3.3.2 on page 42
- The **Unit Menus for Service and Setup**.

4.3.3.1 User Menus



This Window contains the following Menu (from top left to bottom right):

	Readable w/o Password	Write Access Level
Status Overview	Yes	
Graphic Data Records	Yes	
Status Report	Yes	
Unit Overview	Yes	
System Settings	Yes	
Standby Settings	Yes	
Control Parameters	Yes	
Warnings / Alarms	Yes	
Working Hours	Yes	
Sleep Mode (TimerMode)	Yes	

Status Overview

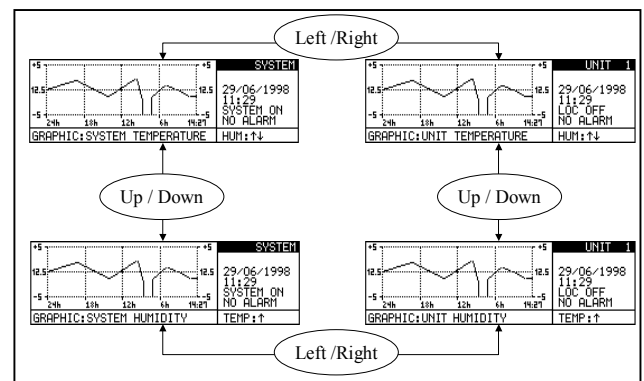
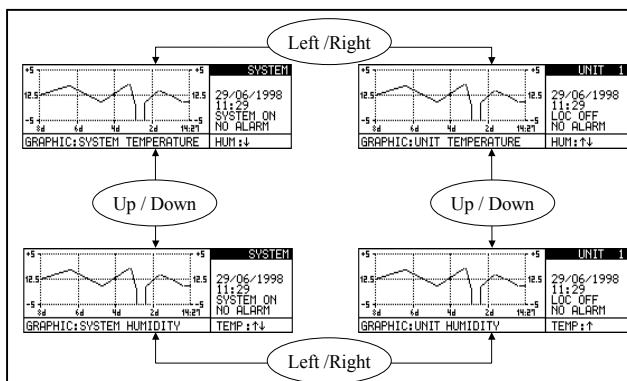
UNIT	1	SYS OFF	9
UNIT	2	SYS OFF	10
UNIT	3	SYS OFF	11
UNIT	4	SYS ON	12
UNIT	5	SYS ON	13
UNIT	6	SYS ON	14
UNIT	7	SYS ON	15
	8		16

This Window gives Information about the number of connected units and the status of each unit.

The String “UNIT” appears only for those Units, which are configured in the Parameter: “Number of Units”. If beside the “UNIT” String no Status appears, it means that the unit was disconnected from the Hirobus.

Graphic Data Records

For the System, as well as for each single unit an 8-days Graphic Data Record as well as a 24-hours Record for both Temperature and Humidity are available. The temperature/humidity scale can be adjusted (Enter-UP/DOWN). The Records are stored also after power off.



**Status Report**

The Status Report contains the last 200 events in order of appearance, which occurred to the System, as well as to each single unit. From the System-Status-Report (a collection of events of all units) it is possible to reach the Unit-Status-Report (a collection of events for the selected unit only) of the single units by pressing the RIGHT key.

Status Report Page	
(01) 21.02.2001 20:10 GENERAL ALARM	RESET
(01) 21.02.2001 20:10 GENERAL ALARM	ACKNOWLEDGE
(01) 21.02.2001 20:10 HIGH ROOM TEMPERATURE	WARNING

**Unit Overview**

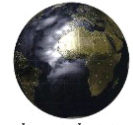
Unit overview	
PASSOWORD (LEVEL 0)	
EEAP	
HIROSENSOR 1	
HIROSENSOR 2	
OUTDOOR TEMP.	
SUPPLY TEMP.	
FC STATUS	

**System Settings**

Hiromatic setting	
001	PASSOWORD (LEVEL 0)
002	LANGUAGE OFF/0.5
003	TIME ENGLISH
004	DATE 22:10
005	CONTRAST TH 22/02/2001
006	TEMP. INDICATION 74
007	BUZZER FREQUENCY C

**Standby Settings**

Standby settings	
011	PASSOWORD (LEVEL 0)
012	NUMBER OF STB. UNITS 0
013	ROTATION FREQUENCY DAILY
014	ROT. PERFORMED AT 10:00
015	ENABLE CASCADE COOL
016	ROTATE ONCE NO
017	ROTATE BY 1/NO

**Control Parameters**

110 Control parameters 1/2	
111	PASSOWORD (LEVEL 0)
112	TEMP. SETPOINT 23.6 C
113	HUMIDITY SETPOINT 50.0% rH
114	HUM. COMPENSATION YES
115	SUPPLY LIMIT 10 °C
116	TEMP. SEPOINT 2 NO
117	

120 Control parameters 2/2	
121	PASSOWORD (LEVEL 0)
122	FANSPEED DX 90%
123	FANSPEED FC 80%
124	FANSPEED NO POWER 60%
125	
126	
127	

**Warnings / Alarms**

130 Std. Sensor warnings	
131	PASSOWORD (LEVEL 0)
132	HIGH TEMPERATURE 28 °C
133	LOW TEMPERATURE 17 °C
134	HIGH HUMIDITY 65 %rH
135	LOW HUMIDITY 22 %rH
136	USER IMPUT 1
137	

140 EEAP warning page	
141	PASSOWORD (LEVEL 0)
142	EEAP HIGH TEMPERATURE 32°C
143	EEAP LOW TEMPERATURE 12°C
144	EEAP HIGH HUMIDITY 85 %rH
145	LOW HUMIDITY 10 %rH
146	EEAP CONNECTED YES
147	

**Working Hours**

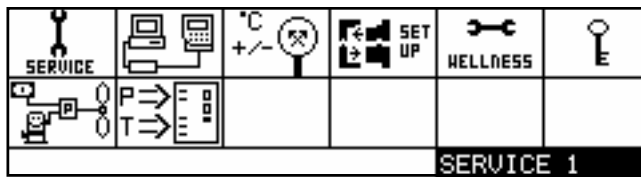
160 Working hours				
161	PASSOWORD (LEVEL 0)			
162	HOURS	LIMIT	START	WF
163	FAN 500	32000	1	0
164	COMP 150	32000	8	0
165	HEAT 100	32000	5	0
166	FC 80	32000	4	0
167				



Sleep Mode (Timer Mode)

180	Sleep Mode setting		
181	PASSOWORD (LEVEL 0)		
182	INTERVAL 1	19:00	6:00
183	INTERVAL 2	00:00	00:00
184	DAYS		MO
185	MODE		AUTO
186	RESET		YES
187			

4.3.3.2 Service Menus



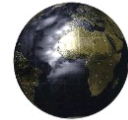
This Window contains the following Menus (from top left to bottom right):

	Readable w/o Password	Write Access Level
Graphic Data Record	Yes	
System Setup	Yes	
Sensor Calibration	Yes	
Unit Setup - Window 1/5	Yes	
Unit Setup – Window 2/5	Yes	
Unit Setup – Window 3/5	Yes	
Unit Setup – Window 4/5	Yes	
Unit Setup – Window 5/5	Yes	
General Maintenance Settings	Yes	
Maintenance Settings for Components	Yes	
Service	Yes	
Condence Control	Yes	
Refrigerant	Yes	



Graphic Data Record

See Graphic Data Records.

**System Setup**

020 System network setup	
021	PASSOWORD (LEVEL 0)
022	NUMBER OF UNITS 4
023	TEAMWORK MODE 2
024	HM ID NUMBER 1
025	BAUDRATE 19200
026	COMMUNICATION READ/WHITE
027	HM. EPROM V. PHE 160xxx

**Sensor Calibration**

310 Calibration 1/3	
311	PASSOWORD (LEVEL 0)
312	ACTUAL OFFSET
131	HT TEMP. 20.0 °C 0.0 K
314	HT HUM. 21.0 %rh +1.1 %rH
315	PTC RET. 22.0 °C 0.0 K
316	PTC AMB. 23.0 °C -2.2 K
317	PTC SUPP. 34.7 °C 0.0 K

320 Calibration 2/3	
321	PASSOWORD (LEVEL 0)
322	ACTUAL OFFSET
323	HIROS. 1L 20.0 °C 0.0 K
324	HIROS. 1R 21.0 °C +1.1 %rH
325	HIROS. 2L 22.0 °C 0.0 K
326	HIROS. 2R 2.3 °C -2.2 K
327	

330 Calibration 3/3	
331	PASSOWORD (LEVEL 0)
332	ACTUAL OFFSET
333	EEAP T. 23.0 °C 0.0 K
334	EEAP H. 50.0 °C 0.0 %rH
335	
336	
337	

**Unit Setup - Window 1/5**

250 Unit configuration 1/5	
251	PASSOWORD (LEVEL 0)
252	UNIT TYPE COMPRESSOR 1
253	UNIT TYPE: FC A/R
254	STD. SETTING NO
255	
256	AUTORESTAR 5
257	HM. ON/OFF ENABLED YES


 **Unit Setup – Window 2/5**

260 Unit configuration 2/5	
261	PASSOWORD (LEVEL 0)
262	TEMP. PROP. /INT. 2.0 K / NO
263	HUM. PROP. /INT 6% / NO
264	AUTOSET ENABLED NO
265	HEATING STEPS 1
266	HEATING DEAD BAND 0.0 K
267	3P. ACT. MIN. OP. /RUNT. 0% / 90 sec

 **Unit Setup – Window 3/5**

280 Unit configuration 3/5	
281	PASSOWORD (LEVEL 0)
282	DEHUM. ENABLE STOP FC
283	EL. REHEAT. ENABLE NO
284	DEHUM. HYSTERESIS 30%
285	DEAD BAND 0.0%
286	DEHUM RELAY AS DEHUM
287	LWD / LWD INPUT NO/0.0V

 **Unit Setup – Window 4/5**

290 Unit configuration 4/5	
291	PASSOWORD (LEVEL 0)
292	DT ROOM / OTUDOOR 10 K
293	
294	STOP FC AT SET. + 5 K
295	
296	ANALOG OUTPUT 1 FAN SPEED
297	ANALOG OUTPUT 2 I-VARIEK

 **Unit Setup – Window 5/5**

300 Unit configuration 5/5	
301	PASSOWORD (LEVEL 0)
302	LOW AIRFLOW AT 40%
303	AUTOSET AIRFLOW NO
304	AIRFLOW VALUE 44%
305	FAN FAILURE WARNING
306	LOW PRES. AL. DELAY 5 min
307	TACHIMETRIC IMPUT ENABLE NO



HELLNESS

General Maintenance Settings

900	General maintenance		
901	PASSOWORD (LEVEL 0)		
902	MAINT. FREQUENCY	1	PA
903	MAX. BONUS		3M
904	MAX. PENALTY		3M
905	LAST MAINTENANCE		07.04
906	BY:SERVICE SPA / RESET		NO
907	CALC. NEXT MAINTENANCE		07.05



HELLNESS

Maintenance Settings for Components

910	Fan settings / Diagnostic		
911	PASSOWORD (LEVEL 0)		
912	NUMBER OF STARTS		123
913	WORKING HOURS		1234
914	AV. WORKING TIME		123
915	STARTS / DAY / OPT./ WOR		12/200
916	NUMBER OF ALARMS		4
917	ACTUAL BONUS		2M

920	C. 1 Settings / Diagnostic		
921	PASSOWORD (LEVEL 0)		
922	NUMBER OF STARTS		123
923	WORKING HOURS		1234
924	AV. WORKING TIME		123
925	STARTS / DAY / OPT./ WOR		12/200
926	NUMBER OF HP / LP		1/1
927	ACTUAL BONUS		2M

930	H / 1 Settings / Diagnostic		
931	PASSOWORD (LEVEL 0)		
932	NUMBER OF STARTS		123
933	WORKING HOURS		1234
934	AV. WORKING TIME		123
935	STARTS / DAY / OPT./ WOR		12/200
936	NUMBER OF ALARMS		1
937	ACTUAL BONUS		2M

**Service**

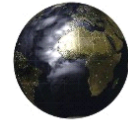
190 Manual operation 1/2				
191	PASSWORD (LEVEL 0)			
192	MANUAL:	OFF	DAMPER FC	0%
193	FAN	OFF	DOOR FC	0%
194	COMP.1	OFF	ANA OUT.1	0%
195	HEAT.1	OFF	ANA OUT.2	0%
196	DEHUM.	OFF		
197	AL. REL.	OFF		

210 Inputs Information 2/2				
211	REMOTE	○—○	OK	19
212	LP1	○—○	OK	1232
213	HP1	○—○	OK	1232
214	FILTER	○—○	OK	19
215	USER INPUT 1	○—○	OK	19
216	DT1	○—○	OK	
217	HEATERS OH.	○—○	OK	19

**Condenser Control**

410 Condenser control 1/2		
411	PASSWORD (LEVEL 0)	
412	CONDENSER SET POINT	18.0 bar
413	CONDENSER BAND	6.0 bar
414	CONDENSER DEAD BAND	50%
415	CUT-OFF	12.0 bar
416	RESET CUT-OFF AT +	0.5 bar
417	LOE EXT. TEMP. LIMIT	7.0°C

420 Condenser control 2/2		
421	HIGH PRES. WARNING/ALARM	25.0 / 27.0 bar
422	MIN. MAX. CONDENSER SIGNAL	2.5 / 8.0 V
423	FILTER HIGHER/LOWER 10°C	1.0 / 0.7 %
424	CONDENSER CONTROL	AUTO
425	I-VARIEX ACTIVE	YES
426	PRES. SENSORS OFFSET	-6.0 / +30.0 bar
427	ACTUAL PRES./SPEED	xx.x bar / xxx %



Refrigerant

In the REFRIGERANT section some parameters are available which allow management of the logging of the refrigerant pressures and suction, discharge, condenser temperatures of the refrigerant circuit. The logging is possible only through the NAVIGATOR CARD (see connection guide and manual code 272599)

470 Circ. 1 refrigerant Diagn.			
471	PASSWORD (LEVEL 0)		
472	COND. TEMP.	18.7 bar	50.2 °C
473	EVAP. TEMP.	4.5 bar	5,2 °C
474	DISCH. TEMP		70.5 °C
475	SUCT. TEMP		6.4 °C
476	LIQU. TEMP		53.5 °C
477	SUPERH. / SUBC.	1.2 K	3.3 K

CIRC. 1 REFRIGERANT DIAGNOSTIC

- COND. TEMP = condenser pressure value and temperature calculated
- EVAP. TEMP = evaporating pressure value and temperature calculated
- DISCH. TEMP = discharge thermometric temperature value
- SUCT. TEMP = suction thermometric temperature value
- LIQU. TEMP. = liquid thermometric temperature value
- SUPERH/SUBC. = superheating and sub cooling values calculated

490 Refrigerant C1 setup			
491	PASSWORD (LEVEL 0)		
492	REFRIGERANT	R 407 C	
493	HP1	0.0V = -7.5 bar	10.00V = 31.0 bar
494	LP1	0.0V = -2.5 bar	10.00V = 10.5 bar
495	H1 / L1	10.0V = xx.x bar	10.00V = xx.x bar
496			
497			

500 Logging setup			
501	PASSWORD (LEVEL 0)		
502	LOGGING TIME		22h
503	LOG. INTERVAL		1 sec.
504	LOGGING ACTIVE		YES
505	COND. / EVAP. PR.		YES / YES
506	DISCH. / SUCT. T.		YES / YES
507	LIQUID TEMP.		YES

REFRIGERANT C1 SETUP

- HP1 / LP1 = offset for the pressure transducer of compressor 1: the standard value (shown in the picture) have been defined to obtain the best pressure transducer sensor reading value actually used by Liebert-HIROSS (Keller 4-20 ma/0-10 bar & 0-30bar)

LOGGING SETUP

- LOGGING TIME = logging time of pressures and temperatures saved on the NAVIGATOR BOARD
- LOG. INTERVAL = defines the logging interval
- LOGGING ACTIVE = enables / disables the logging
- COND. EVAP. = enables / disables the logging of the items in subject
- DISCH./SUC T. = enables / disables the logging of the items in subject
- LIQUID TEMP. = enables / disables the logging of the items in subject



510 Critical operation	
511	PASSOWORD (LEVEL 0)
512	SET IST.
513	HP HIGHER 22.0 / 2.0 bar
514	LP LOWER 2.5 / 2.0 bar
515	OUTD. HIGHER 30.0 / 2.0 °C
516	DISCH. HIGHER 80.0 / 9.0 °C
517	ROOM HIGHER 30.0 / 5.0 °C

520 Sensor Offset calibration	
521	PASSOWORD (LEVEL 0) READ / OFFSET
522	C1 DISCH. TEMP. 70.0 / +0.0 °C
523	C1 SUCT. TEMP. 5.0 / + 0.0 °C
524	C1 LIQU. TEMP. 50.0 / +0.0 °C
525	
526	
527	

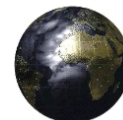
CRITICAL OPERATING AT

- HP HIGHER = defines the condenser pressure limit, if the value exceeds the limit the logging is forced to 1 sample per second. The logging goes to normal as soon as the value comes below the limit minus the hysteresis defined. In case of high pressure alarm the logging is forced to 1 sample per second for 5 minutes, then the logging is stopped. It will be reactivated as soon as the alarm is restored.
- LP LOWER = defines the evaporator pressure limit, if the value exceeds the limit the logging is forced to 1 sample per second. The logging goes to normal as soon as the value comes over the limit plus the hysteresis defined. In case of low pressure alarm the logging is forced to 1 sample per second for 5 minutes, then the logging is stopped. It will be reactivated as soon as the alarm is restored.
- OUTD. HIGHER = defines the outdoor air temperature (detected by Powerface) limit, if the value exceeds the limit the logging is forced to 1 sample per second. The logging goes to normal as soon as the value comes below the limit plus the hysteresis defined.
- ROOM HIGHER = defines the return air temperature (detected by Powerface) limit, if the value exceeds the limit the logging is forced to 1 sample per second. The logging goes to normal as soon as the value comes below plus the hysteresis defined.

SENSOR OFFSET CALIBRATION

Offset PTC sensor calibration.

NOTE: the right offset must be performed when the compressor is working for a minimum time of 5 minutes



4.4 Hiromatic Parameter List

The parameters on the “std. set” column are indicative. The parameters can be varied in order to have the unit’s correct operation in relation to the installation type. We advised to transcribe the unit configuration parameters into the “Setting” column and keep the manual inside the unit.

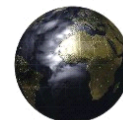
	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
	Unit overview					
	PASSOWORD (LEVEL 0)					
	EEAP T.	R	- 28 – 100 (°C)	0,1	--	
	EEAP H.	R	0 – 100 (%rH)	0,5	--	
	HIROSENSOR 1 L.	R	- 28 – 100 (°C)	0,1	--	
	HIROSENSOR 1 R.	R	- 28 – 100 (°C)	0,1	--	
	HIROSENSOR 2 R.	R	- 28 – 100 (°C)	0,1	--	
	HIROSENSOR 2 R.	R	- 28 – 100 (°C)	0,1	--	
	OUTDOOR TEMP.	R	- 28 – 100 (°C)	0,1	--	
	SUPPLY TEMP.	R	- 28 – 100 (°C)	0,1	--	
	FC STATUS					
000	Hiromatic setting					
001	PASSOWORD (LEVEL 0)					
002	LANGUAGE	W	L1 = English, Deutsch, Italiano, Espanol, Portugues, Swedish, Nederland, French, L2 = English, Polski, Hungarian, Czech, Turkish, Russian, French, Greek	-	English	
003	TIME	W	Mm:hh	-	-	
004	DATE	W	Dd:mm:yy	-	-	
005	CONTRAST	W	0 – 127	1	220	
006	TEMP. INDICATION	W	°C	-	°C	
007	FREQUENCY	W		0,1		
007	PIEZO	W	ON / OFF	-	OFF	
010	Standby settings					
011	PASSOWORD (LEVEL 0)					
012	NUMBER OF STB. UNITS	W	0 – 16	1	0	
013	ROTATION FREQUENCY	W	Daily, Mon, Tue, Wed, Thu, Fri, Sat, Sun	-	No	
014	ROT. PERFORMED AT	W	Hh:mm	-	00:00	
015	ENABLE CASCADE	W	No, Yes, Cool, Temp.	-	No	
016	ROTATE ONCE	W	Yes, No	-	No	
017	ROTATE BY	W	1 – 8	-	1	
110	Control parameters 1/2					
111	PASSOWORD (LEVEL 0)					
112	TEMP. SETPOINT	W	15, 0 – 40,0 (°C)	0,1	27.0	
113	HUMIDITY SETPOINT	W	No, 20 – 80 (%rh)	1	No	
114	HUM. COMPENSATION	W	No, Yes	-	No	
115	SUPPLY LIMIT	W	No, 5 – 25	1	10	
116	TEMP. SEPOINT 2	W	No, 15 – 40 (°C)	1	No	

120	Control parameters 2/2					
------------	-------------------------------	--	--	--	--	--



	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
121	PASSOWORD (LEVEL 0)					
122	FANSPEED DX	W	No, 30 – 100 (%)	1	100	
123	FANSPEED FC	W	No, 30 – 100 (%)	1	80	
124	FANSPEED NO POWER	W	No, 30 – 100 (%)	1	65	
130	Std. Sensor warnings					
131	PASSOWORD (LEVEL 0)					
132	HIGH TEMPERATURE	W	No, 1 – 99 (°C)	1	No	
133	LOW TEMPERATURE	W	No, 1 – 99 (°C)	1	No	
134	HIGH HUMIDITY	W	No, 1 – 99 (%rh)	1	No	
135	LOW HUMIDITY	W	No, 1 – 99 (%rh)	1	No	
136	USER INPUT 1	W	Warning, Alarm, nComp, 2ndSetpoint, NoPower, Not used, STB on, Stop SM	-	No Power	
137						
140	EEAP warning page					
141	PASSOWORD (LEVEL 0)					
142	EEAP HIGH TEMPERATURE	W	No, 1 – 99 (°C)	1	No	
143	EEAP LOW TEMPERATURE	W	No, 1 – 99 (°C)	1	No	
144	EEAP HIGH HUMIDITY	W	No, 1 – 99 (%rh)	1	No	
145	EEAP LOW HUMIDITY	W	No, 1 – 99 (%rh)	1	No	
146	EEAP CONNECTED	R	Yes, No	1	No	
160	Working hours					
161	PASSOWORD (LEVEL 0)					
162						
163	FAN	W	0 – 32000 (Hrs)	1	--	
163	LIMIT	W	0 – 32000 (Hrs)	100	32000	
163	START	W	0 – 32000 (Hrs)	1	--	
163	WS	W	-	1	--	
164	CO1	W	0 – 32000 (Hrs)	1	--	
164	LIMIT	W	0 – 32000 (Hrs)	100	32000	
164	START	W	0 – 32000 (Hrs)	1	--	
164	WS	W	-	1	--	
165	HEAT 1	W	0 – 32000 (Hrs)	1	--	
165	START	W	0 – 32000 (Hrs)	1	--	
165	WS	W	-	1	--	
166	FC	W	0 – 32000 (Hrs)	1	--	
166	LIMIT	W				
180	Sleep Mode setting					
181	PASSOWORD (LEVEL 0)					
182	INTERVAL 1	W	Hh:mm	00.00	00:00	
182	INTERVAL 1	W	Hh:mm	00.00	00:00	
183	INTERVAL 2	W	Hh:mm	00.00	00:00	
183	INTERVAL 2	W	Hh:mm	00.00	00:00	
184	DAYS	W	Mo, Tu, We, Th, Fr, Sa, Su	-	--	
185	MODE	W	Sys off, 2 – 15	-	Sys off	
186	RESET	W	No, Yes, Auto	-	Auto	

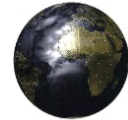
190	Manual operation 1/2					
191	PASSOWORD (LEVEL 0)	W				



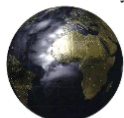
	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
192	MANUAL:	W				
193	FAN	W				
194	COMP.1	W				
195	HEAT.1	W				
196	DEHUM.	W				
197	AL. REL.	W				
210	Inputs Information 2/2					
211	REMOTE	R				
212	LP1	R				
213	HP1	R				
214	FILTER	R				
215	USER INPUT 1	R				
216	DT1	R				
217	HEATERS OH.	R				
020	System network setup					
021	PASSOWORD (LEVEL 0)	W				
022	NUMBER OF UNITS	W	1 – 16	-	1	
023	TEAMWORK MODE	W	No, 1. 2	-	1	
024	HM ID NUMBER	W	1 – 99	-	1	
025	BAUDRATE	R	19200	-	19200	
026	COMMUNICATION	W	Read, Read/Write	-	Read / Write	
027	HM. EPROM V. PHE 160xxx	R	-	-	PHExxxx xx	
310	Calibration 1/3					
311	PASSOWORD (LEVEL 0)	W				
312						
313	HT TEMP.	W	-9.9 - +9.9 (°C)	0.1	-	
314	HT HUM.	W	-9.9 - +9.9 (%rh)	0.1	-	
315	PTC RET.	W	-9.9 - +9.9 (°C)	0.1	-	
316	PTC AMB.	W	-9.9 - +9.9 (°C)	0.1	-	
317	PTC SUP.	W	-9.9 - +9.9 (°C)	0.1	-	
320	Calibration 2/3					
321	PASSOWORD (LEVEL 0)	W				
322						
323	HIROS. 1L	W	-9.9 - +9.9 (°C)	0.1	-	
324	HIROS. 1R	W	-9.9 - +9.9 (°C)	0.1	-	
325	HIROS. 2L	W	-9.9 - +9.9 (°C)	0.1	-	
326	HIROS. 2R	W	-9.9 - +9.9 (°C)	0.1	-	
330	Calibration 3/3					
331	PASSOWORD (LEVEL 0)	W				
332						
333	EEAP T.	W	-9.9 - +9.9 (°C)	0.1	-	
334	EEAP H.	W	-9.9 - +9.9 (%rh)	0.1	-	
250	Unit configuration 1/5					
251	PASSOWORD (LEVEL 0)	W				
252	UNIT TYPE COMPRESSOR	R	1	-	1	
253	UNIT TYPE: FC	R	Air	-	Air	
254	STD. SETTING	W	Yes, No	-	-	
255						
256	AUTORESTART	W	0 – 999 (sec.)	1	5	
257	HM. ON/OFF ENABLED	W	Yes, No	-	Yes	
260	Unit configuration 2/5					
261	PASSOWORD (LEVEL 0)	W				



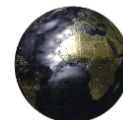
	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
262	TEMP. PROP. /INT.	W	1.0 – 30.0 (°K)	1.0	5.0	
262	TEMP. PROP. /INT.	W	No, 5 – 15 (min)	-	No	
263	HUM. PROP. /INT.	W	2 – 60 (%rh)	1	10	
263	HUM. PROP. /INT.	W	No, 5 – 15 (min)	-	No	
264	AUTOSET ENABLED	W	Yes, no	-	No	
265	HEATING STEPS	W	0, 1, lqt, Fcf, Lta, Hta	-	0	
266	HEATING DEAD BAND	W	0.0 – 30.0 (°K)	0.1	0.0	
267	3P. ACT. MIN. OP. /RUNT.	W	0 – 50 (%)	1	0	
280	Unit configuration 3/5					
281	PASSOWORD (LEVEL 0)	W				
282	DEHUM. ENABLE	W	Yes, Stop Fc, No	-	No	
283	EL. REHEAT. ENABLE	W	Yes, no	-	No	
284	DEHUM. HYSTERESIS	W	25 50 (%)	1	50	
285	DEAD BAND	W	0 50 (°K)	1	0	
286	DEHUM RELAY AS	W	Dehum, Nopower, Warning	-	Warning	
287	LWD / LWD IMPUT	W	No, Warning, Alarm	-	No	
287	LWD / LWD IMPUT	R	0 –2.50	0.01	-	
290	Unit configuration 4/5					
291	PASSOWORD (LEVEL 0)	W				
292	DT ROOM / OTUDOOR	W	No, Con, Efc, 3 – 25 (°K)	1	10	
293						
294	STOP FC AT SET. +	W	No, 1 – 25 (°K)	1	5	
295						
296	ANALOG OUTPUT 1	W	Cooling, Heating, Alarm B, Cooling1, Fanspeed, Ret Temp, Sup Temp, Ht Humi, HeaterB, Sup Cont, Heat 33%, I-Variex 3P. Act1	-	Fanspeed	
297	ANALOG OUTPUT 2	W	Cooling, Heating, Alarm B, Cooling1, Fanspeed, Ret Temp, Sup Temp, Ht Humi, HeaterB, Sup Cont, Heat 33%, I-Variex 3P. Act1	-	I-Variex	
300	Unit configuration 5/5					
301	PASSOWORD (LEVEL 0)	W				
302	LOW AIRFLOW AT	W	0 – 100 Swi (%)	1	40	
303	AUTOSET AIRFLOW	W	Yes, No	-	No	
304	AIRFLOW VALUE	R	0 –100 (%)	1	-	
305	FAN FAILURE	W	Warning, Alarm	-	Alarm	
306	LOW PRES. AL. DELAY	W	0 – 5 (min)	1	5	
307	TACHIMETRIC INPUT ENABLE	W	No, Yes	-	No	
900	General maintenance					
901	PASSOWORD (LEVEL 0)	W				



	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
902	MAINT. FREQUENCY	W	No, 1 – 4	1	No	
903	MAX. BONUS	W	0 – 12	1	0	
904	MAX. PENALTY	W	0 – 12	1	0	
905	LAST MAINTENANCE	R	Mm:yy	-	-	
906	BY:SERVICE SPA / RESET	W	Editable text / Yes, No	-	-	
907	CALC. NEXT MAINTENANCE	R	Mm:yy	-	-	
910	Fan settings / Diagnostic					
911	PASSOWORD (LEVEL 0)	W				
912	NUMBER OF STARTS	R	0 – 32000	-	-	
913	WORKING HOURS	R	0 – 32000	-	-	
914	AV. WORKING TIME	R	0 – 32000	-	-	
915	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	1	
915	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	24	
916	NUMBER OF ALARMS	R	0 – 32000	-	-	
917	ACTUAL BONUS	R	-24	-	-	
920	C. 1 Settings / Diagnostic					
921	PASSOWORD (LEVEL 0)	W				
922	NUMBER OF STARTS	R	0 – 32000	-	-	
923	WORKING HOURS	R	0 – 32000	-	-	
924	AV. WORKING TIME	R	0 – 32000	-	-	
925	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	1	
925	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	24	
926	NUMBER OF HP / LP	R	0 – 32000	-	-	
927	ACTUAL BONUS	R	-24	-	-	
930	H / 1 Settings / Diagnostic					
931	PASSOWORD (LEVEL 0)	W				
932	NUMBER OF STARTS	R	0 – 32000	-	-	
933	WORKING HOURS	R	0 – 32000	-	-	
934	AV. WORKING TIME	R	0 – 32000	-	-	
935	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	1	
935	STARTS / DAY / OPT./ WOR	W	No, 1 – 240	1	24	
936	NUMBER OF ALARMS	R	0 – 32000	-	-	
937	ACTUAL BONUS	R	-24	-	-	
410	Condenser control 1/2					
411	PASSOWORD (LEVEL 0)	W				
412	CONDENSER SETPOINT	W	15.0 – 30.0 (bar)	0.1	18.0	
413	CONDENSER BAND	W	1.0 – 20.0 (bar)	0.1	6.0	
414	CONDENSER DEAD BAND	W	0 – 80 (%)	1	50	
415	CUT OFF	W	5.0 – 15.0 (bar)	0.1	12.0	
416	RESET CUT OFF AT +	W	0 – 5.0 (bar)	0.1	0.5	
417	LOW EXT. TEMP LIMIT	W	0 – 15.0 (°C)	0.1	7.0	
420	Condenser control 2/2					
421	HIGH PRESS. WARNING	W	10.0 – 30.0 (bar)	0.1	25.0	
421	HIGH PRESS ALARM	W	10.0 – 30.0 (bar)	0.1	27.0	
422	MIN. CONDENSER SIGNAL	W	0 – 5.0 (V)	0.1	2.5	
422	MAX. CONDENSER SIGNAL	W	5.0 – 10.0 (V)	0.1	8.0	
423	FILTER HIGHER 10°C	W	0.2 – 10.0	0.1	1.0	
423	FILTER LOWER 10°C	W	0.1 – 10.0	0.1	0.7	
424	CONDENSER CONTROL	W	Manual, Auto	-	Auto	
425	I-VARIEX ACTIVE	W	No, Yes	-	No	
426	PRES. SENSOR OFFSET	W	-10.0 – 50.0 (bar)	0.1	-6.0	
426	PRES. SENSOR OFFSET	W	-10.0 – 50.0 (bar)	0.1	30.0	
427	ACTUAL PRES./SPEED	R	Bar / %	-	-	
470	Circ. 1 refrigerant Diagn.					
471	PASSOWORD (LEVEL 0)	W				



	HIROMATIC PARAMETER	Read Write	RANGE VALUES	Res.	STD.	SETTING
472	COND. TEMP.	R	-25 – 99 / 0 – 40 (°C / bar)		-	
473	EVAP. TEMP.	R	-25 – 99 / 0 – 40 (°C / bar)		-	
474	DISCH. TEMP	R	-25 – 99 / 0 – 40 (°C / bar)		-	
475	SUCT. TEMP	R	-25 – 99 (°C)		-	
476	LIQU. TEMP	R	-25 – 99 (°C)		-	
477	SUPERH. / SUBC.	R	-25 – 99 (°C)		-	
490	Refrigerant C1 setup					
491	PASSOWORD (LEVEL 0)	W				
492	REFRIGERANT R 407 C	W	R22, R407C	-	R407C	
493	HP1	W	-10 – 50.0 (bar)	-	0.0V=-7.5 10.0V=31.0	
494	LP1	W	-10 – 50.0 (bar)	-	0.0V=-2.5 10.0V=10.5	
495	H1 / L1	R	Actual value	-	-	
500	Logging setup					
501	PASSOWORD (LEVEL 0)	W				
502	LOGGING TIME	R		-	-	
503	LOG. INTERVAL	W	1 – 765 (sec)	-	-	
504	LOGGING ACTIVE	W	Yes, No	-	Yes	
505	COND. / EVAP. PR.	W	Yes, No	-	Yes	
506	DISCH. / SUCT. T.	W	Yes, No	-	Yes	
507	LIQUID TEMP.	W	Yes, No	-	Yes	
510	Critical operation					
511	PASSOWORD (LEVEL 0)	W				
512						
513	HP HIGHER	W	10.0 – 40.0 / 0.0 – 20.0 (bar)	-	24.0 / 2.0	
514	LP LOWER	W	0.0 – 20.0 / 0.0 – 20.0 (bar)	-	2.5 / 2.0	
515	OUTD. HIGHER	W	10.0 – 40.0 / 0.0 – 20.0 (°C)	-	30.0 / 2.0	
516	DISCH. HIGHER	W	10.0 – 40.0 / 0.0 – 20.0 (°C)	-	85.0 / 5.0	
517	ROOM HIGHER	W	10.0 – 40.0 / 0.0 – 20.0 (°C)	-	30.0 / 5.0	
520	Sensor Offset calibratio					
521	PASSOWORD (LEVEL 0)	W				
522	C1 DISCH. TEMP.	W	-9.9 - +9.9 (°C)	-	-	
523	C1 SUCT. TEMP.	W	-9.9 - +9.9 (°C)	-	-	
524	C1 LIQU. TEMP.	W	-9.9 - +9.9 (°C)	-	-	



4.5 Hiromatic Messages / Warnings / Alarms

EVENT	DESCRIPTION	TYPE
0	GENERAL ALARM	RESET, ACKNOWLEDGE
1	COMP. 1 HIGH PRESSURE	ALARM
2	COMPRESSOR 1 LOW PRESSURE	ALARM
5	ELECTRICAL HEATERS OVERHEATED	WARNING
6	FAN FAILURE	WARNING
7	FAN FAILURE	ALARM
8	CLOGGED FILTERS	WARNING
9	WATER LEAKEGE	WARNING
10	WATER LEAKEGE	ALARM
11	USER IMPUT 1 TRIGGERED	WARNING
12	USER IMPUT 1 TRIGGERED	ALARM
18	HIGH ROOM TEMPERATURE	WARNING
19	HIGH ROOM TEMPERATURE	WARNING
20	HIGH ROOM HUMIDITY	WARNING
21	HIGH ROOM HUMIDITY	WARNING
22	HIGH ROOM TEMPERATURE	WARNING
23	LOW ROOM TEMPERATURE	WARNING
24	HIGH ROOM HUMIDITY	WARNING
25	LOW ROOM HUMIDITY	WARNING
26	CONDITIONER WORKING HOURS EXCEEDED	WARNING
27	COMPRESSOR 1 WORKING HOURS EXCEEDED	WARNING
29	PTC SENSOR FAILURE	WARNING
30	ROOM SENSOR FAILURE	WARNING
31	ROOM SENSOR FAILURE	ALARM
32	EEAP SENSOR FAILURE	WARNING
33	WATER PRESENCE SENSOR FAILURE	WARNING
34	NETWORK FAILURE	WARNING
35	OUT OF MEMORY	WARNING
36	UNIT ON	MESSAGE
37	UNIT OFF	MESSAGE
38	SLEEP MODE	MESSAGE
39	STANDBY MODE	MESSAGE
40	POWER ON UNIT LOGIN	MESSAGE
41	POWER OFF	MESSAGE
42	Unit 1 disconnected	WARNING
43	Unit 2 disconnected	WARNING
44	Unit 3 disconnected	WARNING
45	Unit 4 disconnected	WARNING
46	Unit 5 disconnected	WARNING
47	Unit 6 disconnected	WARNING
48	Unit 7 disconnected	WARNING
49	Unit 8 disconnected	WARNING
50	Unit 9 disconnected	WARNING
51	Unit 10 disconnected	WARNING
52	Unit 11 disconnected	WARNING
53	Unit 12 disconnected	WARNING
54	Unit 13 disconnected	WARNING
55	Unit 14 disconnected	WARNING
56	Unit 15 disconnected	WARNING
57	Unit 16 disconnected	WARNING
60	MAX. CONDENSER FAN SPEED SET	MESSAGE
61	OUTDOOR TENP. SENSOR	WARNING
62	SUPPLY TEMP. SENSOR	WARNING
63	FREECOOLING STOPPED FOR 1 HOUR	MESSAGE



EVENT	DESCRIPTION	TYPE
64	ON-OFF BY HIROMATIC NOT ENABLED	MESSAGE
66	NO POWER (USER IMPUT)	MESSAGE
67	POWER ON (USER IMPUT)	MESSAGE
70	NO CONNECTION TO UNIT 1	WARNING
74	OUT OF MAMORY	WARNING
76	MAX. CONDENSER FAN SPEED RE-SET	MESSAGE
77	NETWORK PING	WARNING
78	SUBGROUP-ID NOT UNIQUE	WARNING
79	SUBGROUP-UNIT 1 NOT CONNECTED	WARNING
81	SHARE ROOM SENSOR FAILURE	WARNING
82	SHARE ROOM SENSOR FEAILURE	ALARM
83	SHARE OUTDOOR TEMP. SENSOR	WARNING
85	UNIT SYNCHRONISATION	MESSAGE
88	HEATER 1 WORKING HOURS EXCEEDED	WARNING
89	FREECOOLING WORKING HOURS EXCEEDED	WARNING
90	AIRFLOW DEVICE NOT READY. PLS. CHECK	WARNING

