Connectivity

The evolution

Microface E for IGMnet
with
OpenComms NIC for SNMP and HTTP

Service Manual

English

Code 272647 - 04/03/02 - Release 1.02

CONTENTS

1. Introduction

With the perspective of integrating Liebert HIROSS HPAC units (with Microface) with Liebert protocols (such as IGMnet), in order to realize some common supervision platform, the development of "Microface Evolution for IGMnet" is one of the main projects.

Microface Evolution for IGMnet can be requested as a special.

Thanks to Microface Evolution for IGMnet, HPAC units can become intelligent managed nodes enabling communication with an NMS – Network Management System – over Ethernet.

To realize such a supervision network, there is the need of an interfacing card called OpenComms NIC (Network Interface Card) which can dialogue with SNMP or HTTP protocols[1].

With the SNMP protocol, applications such as HPOpenview, Novell NMS and IBMNetView can view variables, parameters and active alarms of the HPAC units.

With the HTTP protocol, the Internet browser (Internet Explorer 5 or Netscape Navigator 4 or higher) can view temperature and humidity values (together with their set-points and tolerance), unit status and the active alarms of the HPAC units.

The target of this manual is to describe the network, the connections and the configuration of the system with the NIC as well as to give a description of its functioning.

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[1] Such NIC is the same used for the Liebert units (UPS and HPAC units) with IGMnet protocol to interface with SNMP or HTTP protocols

2. Network

The network configuration consist of an:

?? Microface E for IGMnet   allows to control all the devices (compressors, fans, humidifier, etc.) and the sensors installed in an air conditioning unit. It has an LCD display connected with the Microface E for IGMnet which visualizes all the parameters.

?? OpenComms NIC   supportes the SNMP[2] and the HTTP[3] protocols.
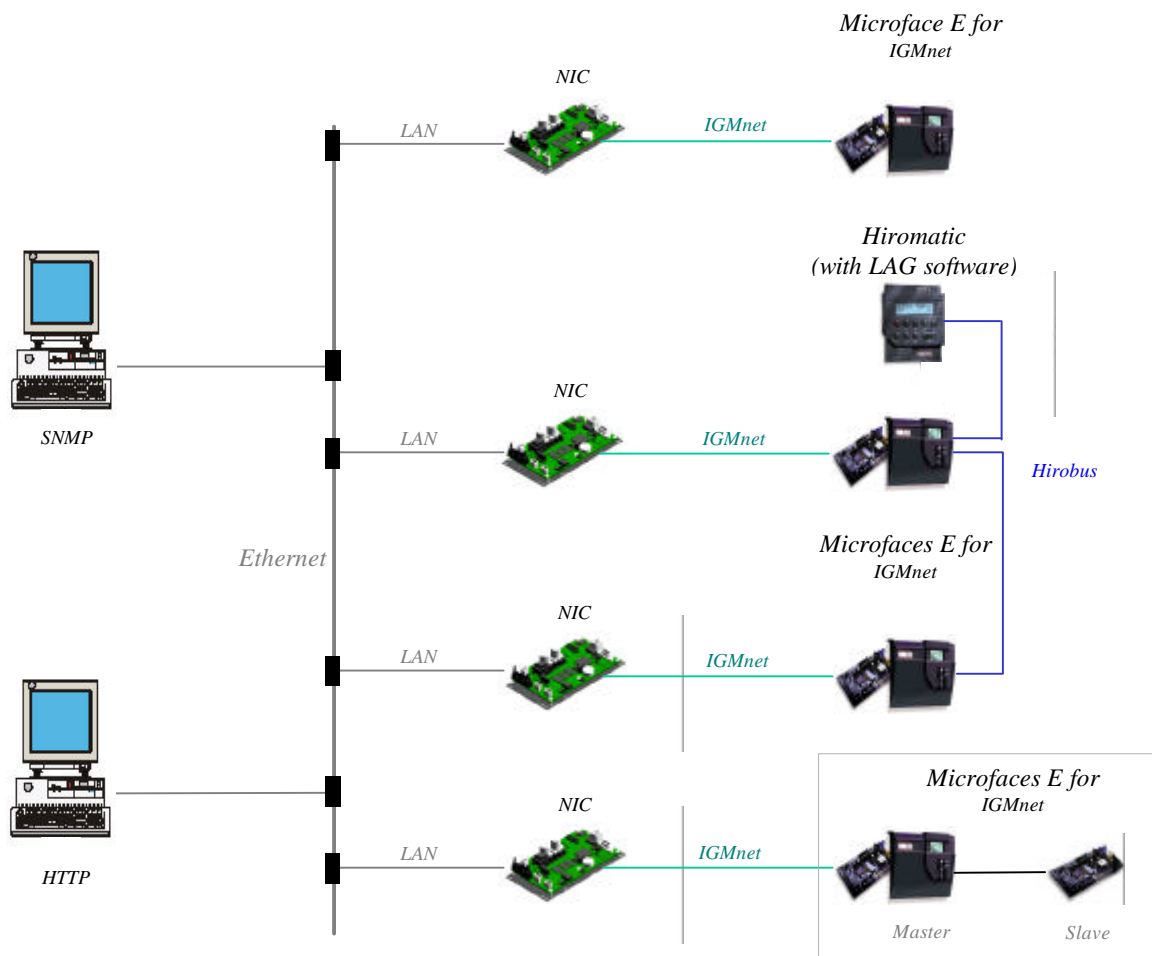In the following pages it is referred to as NIC.

Fig. 1: Example of system configuration

3. Compatibility

HPAC units with Microface for IGMnet will have to run the software type LAM 1.01 (the software type in the Hiromatic G is LAG 1.01).

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[2] versions : 1.0 and 2c
[3] version 1.1

4. Cooling Configurations Supported

The cooling configurations supported are:

?? Single DX
?? Single FC/DF
?? Twin DX
?? Twin FC/DF

5. Installation Procedure

5.1 OpenComms NIC Power connection

The power requirements are:

Voltage: 18 VAC to 24 VAC, 50/60 Hz, Single Phase
                  12 VDC to 36 VDC

Power: 6 VA maximun

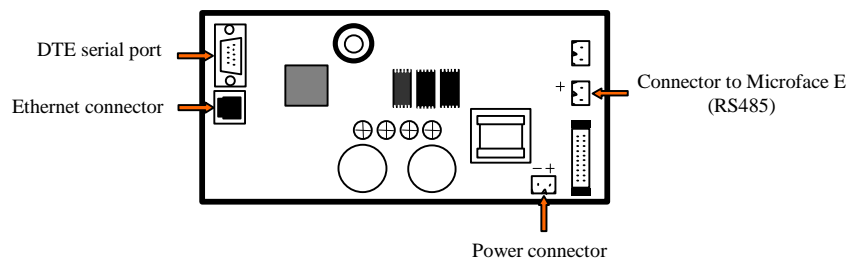The OpenComms NIC power connector is visible in the following picture:

Fig. 2: Power, serials and Ethernet connectors in the NIC.

5.2 OpenComms NIC address configuration

To configure the NIC you need a serial cable (DB9F-DB9F, see next chapter for more details) to connect the DTE Serial Port (see fig.2) in the NIC with the serial port on the PC (this cable must be disconnected when configuration is completed).
The "terminal emulation application"[4] must be configured with the following parameters:

?? 9600 Baud
?? no parity
?? 8 data bits
?? 1 stop bit

Details on how to configure configuration of the NIC are available in the "OpenComms NIC – Network Interface Card – Installation & User Manual" (this manual is available for download on the web site www.connectivity.it in the User Manuals section).

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[4] Hyperterminal and Procomm are examples of terminal emulation applications running under Microsoft Windows operating systems

5.3 Cabling

5.3.1   NIC Programming cable

The cable used to configure the NIC is RS 232, DB9F-DB9F[5] cable.
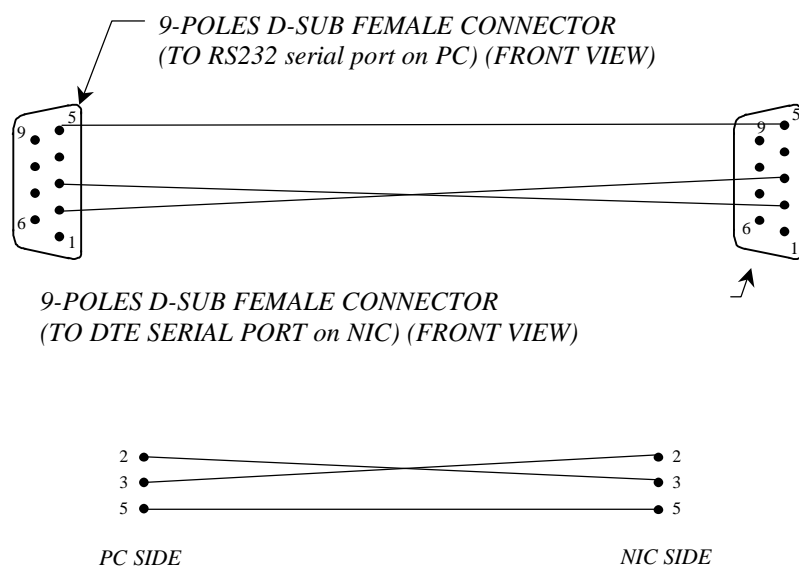Please, disconnect this serial connection when configuration is completed.

9-POLES D-SUB FEMALE CONNECTOR
(TO RS232 serial port on PC) (FRONT VIEW)

9-POLES D-SUB FEMALE CONNECTOR
(TO DTE SERIAL PORT on NIC) (FRONT VIEW)

PC SIDE   *NIC SIDE*

Fig. 3: Schematic of the cable between serial port on PC and DTE serial port on NIC.("NIC configuration serial cable" code 254112).

5.3.2 Cable for Microface E for IGMnet connection to NIC

4 poles screened cable between NIC and Microface E for IGMnet.
The Connector into the Microface E to be used is the serial (RS485) RJ9 connector located over the Humitemp RJ45 connector.

R_X-
R_X+
T_X-
T_X+

NIC card connector

+

-

1

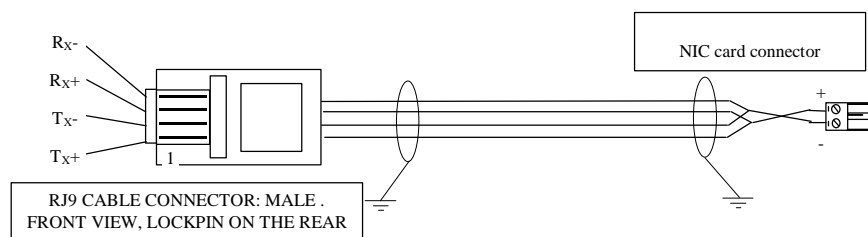RJ9 CABLE CONNECTOR: MALE .
FRONT VIEW, LOCKPIN ON THE REAR

Fig. 4: Schematic of the communication cable between NIC and Microface E for IGMnet (this cable is available into the "Kit cable: serial and power" code 254357).

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[5] DB9F-DB9F is a standard connection composed by two cables type D, 9 poles, female.

5.3.3 Ethernet network cable
The Ethernet cable must be inserted into the NIC with the ferrite core whitch is present in the kit.
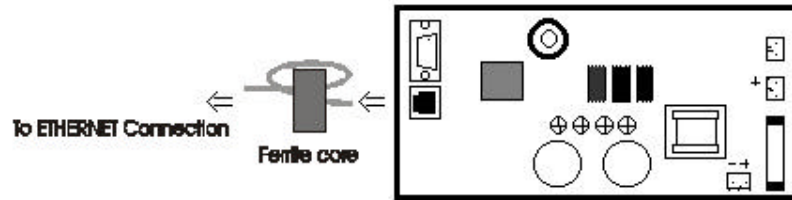
5.4 Microface E set up
The microface must be set for the IGMnet protocol. To do that, select the 'Prt' parameter on the Microface E for IGMnet display and set it to 'inE' (password 666 must be entered before into the "PIN" parameter).

Power the unit and verify the lighting of led DS8 and led DS13 on the NIC CARD to be sure that the communication is on as showed by the following picture.
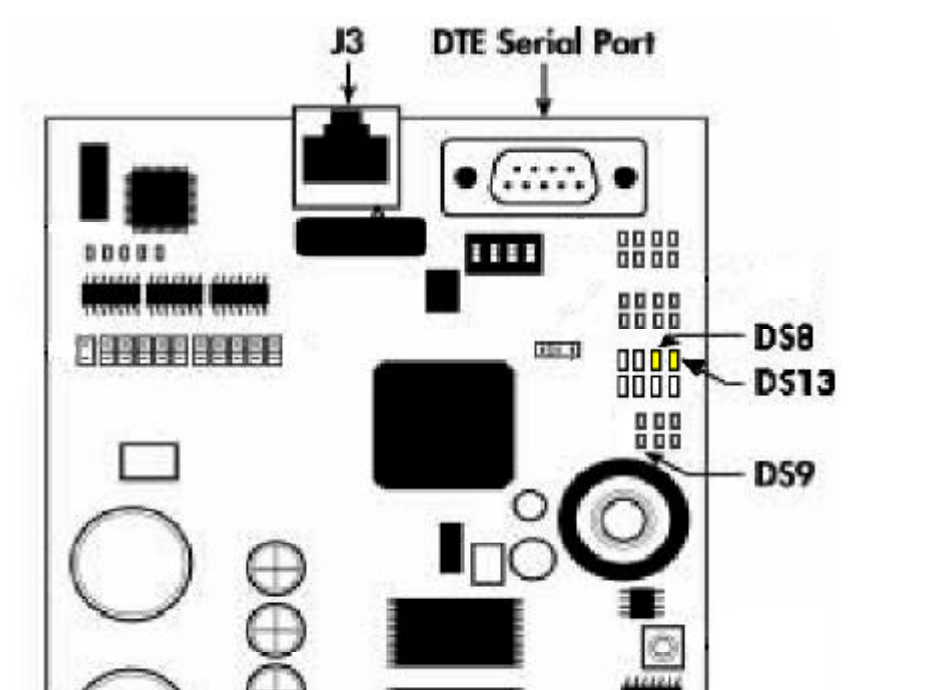

Fig. 5: Indication of the LED DS8 and DS13 to be checked in the NIC card PCB.

6. SNMP

The Simple Management Protocol (SNMP) is the Internet standard protocol to exchange management information between management consoles that use tools such as HPOpenview, Novell NMS, IBM NetView and managed entities (such as in our case Microface E for IGMnet via NIC).
The Microface E for IGMnet connected with the NIC, in the SNMP supports the follows packets : "get", "getnext", "response" and "trap". Therefore with the NIC you are allowed to see the parameter and the alarms coming from the HPAC units.

6.1 MIB

The NIC supports MIB-II, RCF1628 (for UPS) and Liebert Global Products MIBs (for Environmental)[6].
See the "OpenComms NIC – Network Interface Card – Installation & User Manual" – rev. December 2000 for more information about the SNMP protocol.
This manual and the MIB files for the NIC are available for download on the web site www.connectivity.it in the User Manuals section (the MIB files are present in the zip-file named 'Envmibs2.zip').
The table below is the mapping table among the MIB items and the Microface E for IGMNET points.

Unit Description: Advanced Microprocessor (LAM / LAG)			
Point Description	**LGP MIB Alias**	**Notes**	**Mapping point for Microface E application**
Status Points (View Only)			
Temperature	*lgpEnvTemperatureMeasurementDegC*		*ACTUAL TEMPERATURE*
Humidity	*lgpEnvHumidityMeasurementRel*		*ACTUAL HUMIDITY*
Heating State	*lgpEnvStateHeating*	1 = On; 0 = Off	*COOL/HEAT STATUS*
Cooling State	*lgpEnvStateCooling*	1 = On; 0 = Off	*COOL/HEAT STATUS*
Humidifying State	*lgpEnvStateHumidifying*	1 = On; 0 = Off	*HUMIDIFIER STATUS*
Dehumidifying State	*lgpEnvStateDehumidifying*	1 = On; 0 = Off	*DEHUMIDIFIER STATUS*
Econ-O-Cycle State	*lgpEnvStateEconocycle*	1 = On; 0 = Off	*FC STATUS*
Unit Status	*lgpEnvStateSystem*	1 = On; 0 = Off	*ON/OFF STATUS*

Setpoints (View Only)			
Temperature Setpoint	*lgpEnvTemperatureSettingDegC*		*TEMPERATURE SETPOINT*
Temperature Tolerance	*lgpEnvTemperatureTolerance*		*TEMPERATURE P-BAND*
Humidity Setpoint	*lgpEnvHumiditySettingRel*		*HUMIDITY SETPOINT*
Humidity Tolerance	*lgpEnvHumidityToleranceRel*		*HUMIDITY P-BAND*
High	*lgpEnvTemperatureHighThresholdDegC*		*HIGH TEMPERATURE*

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[6] The MIB files are the necessary files required to read (via SNMP protocol) the parameter from the units.

Temperature Alarm SP			*WARNING*
Low Temperature Alarm SP	*IgpEnvTemperatureLowThresholdDegC*		*LOW TEMPERATURE WARNING*
High Humidity Alarm SP	*IgpEnvHumidityHighThresholdRel*		*HIGH HUMIDITY WARNING*
Low Humidity Alarm SP	*IgpEnvHumidityLowThresholdRel*		*LOW HUMIDITY WARNING*

Alarms			
Communications Loss	*IgpAgentDeviceCommunicationLost*		
High Head Pressure Comp.1	*IgpConditionCompressor1HighHeadPressure*		*HIGH HEAD PRESSURE COMPR. 1*
High Head Pressure Comp.2	*IgpConditionCompressor2HighHeadPressure*		*HIGH HEAD PRESSURE COMPR. 2*
Loss of Airflow	*IgpConditionLossOfAirflow*		*LOSS OF AIRFLOW*
Standby Glycool Pump On	*IgpConditionStandbyGlycoolPumpOn*		
Water Under Floor	*IgpConditionWaterUnderFloor*		*WATER UNDER FLOOR (LIQUID DETECTED)*
Change Filters	*IgpConditionChangeFilters*		*CLOGGED FILTERS*
High Temperature	*IgpConditionHighTemperature*		*HIGH TEMPERATURE*
Low Temperature	*IgpConditionLowTemperature*		*LOW TEMPERATURE*
High Humidity	*IgpConditionHighHumidity*		*HIGH HUMIDITY*
Low Humidity	*IgpConditionLowHumidity*		*LOW HUMIDITY*
Humidifier Abnormal	*IgpConditionHumidifierProblem*		*HUMIDIFIER OVERFLOW (3XM ONLY)*
No Water Humidifier Pan	*IgpConditionHumidifierProblem*		*HUMIDIFIER FAILURE*
Compressor 1 Overload	*IgpConditionCompressor1Overload*		*COMPRESSOR 1 MOTOR PROTECTION*
Compressor 2 Overload	*IgpConditionCompressor2Overload*		*COMPRESSOR 2 MOTOR PROTECTION*
Main Fan Overload	*IgpConditionMainFanOverload*		*FAN FAILURE*
Manual Override	*IgpConditionManualOverride*		
Smoke Detected	*IgpConditionSmokeDetected*		*SMOKE ALARM*
Loss of Water Flow	*IgpConditionLowWaterFlow*		*LOW CHILLED WATER FLOW*
Standby Unit On	*IgpConditionStandbyUnitOn*		*STAND BY UNIT ON*

|			
Low Suction Pressure	*IgpConditionCompressorLowSuctionPressure*		
Short Cycle	*IgpConditionCompressorShortCycle*		
Loss of Power	*IgpConditionLostPower*		*POWER ON*
Local Alarm 1	*IgpConditionLocalAlarm1*		
Local Alarm 2	*IgpConditionLocalAlarm2*		
Local Alarm 3	*IgpConditionLocalAlarm3*		
Local Alarm 4	*IgpConditionLocalAlarm4*		

7. HTTP

With the NIC, status and alarm information can be queried by WEB browser via HTTP.
The data shown in an intuitive graphical format.
The following picture shows an example of data visible in the HTTP page.
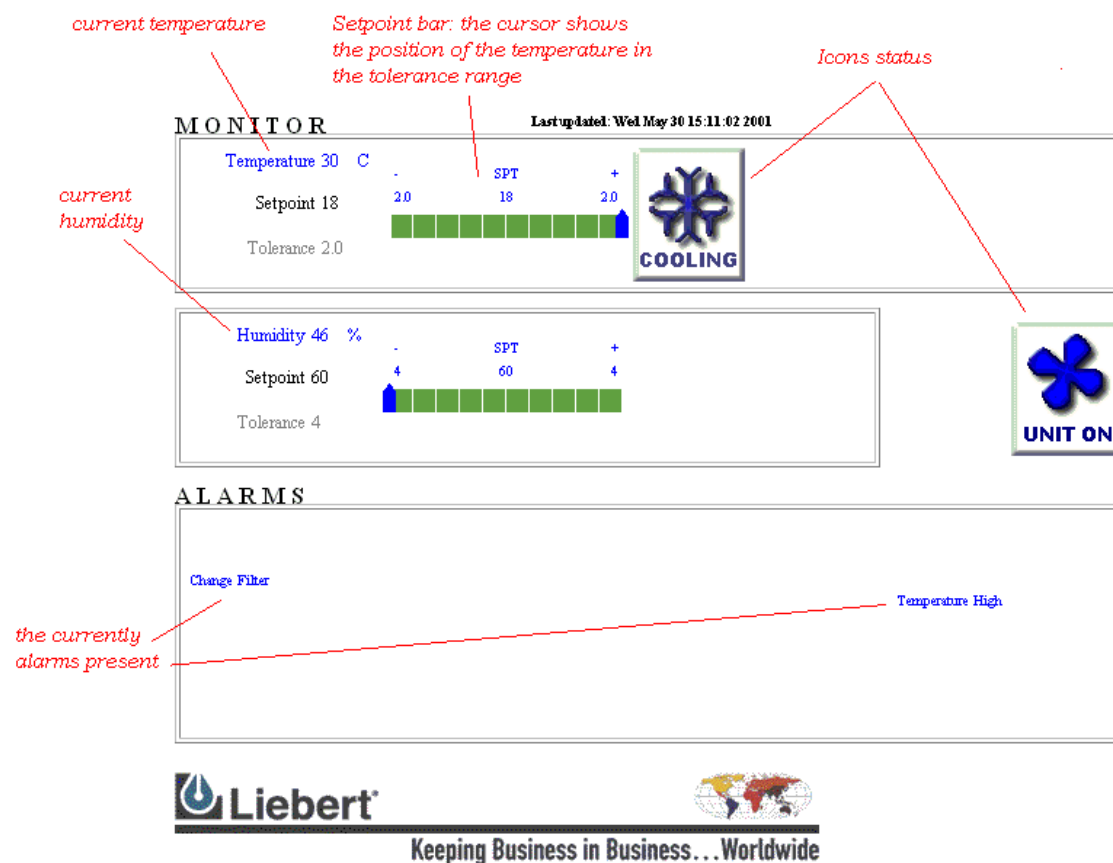
In one simple page it is possible to read the main data from the addressed unit:

Values

- ✍ Current Temperature
- ✍ Temperature Setpoint
- ✍ Temperature Tolerance (corresponding to half of the Proportional band visible in the Microface E display)
- ✍ Humidity (if Humitemp sensor is present)[7]
- ✍ Humidity Setpoint
- ✍ Humidity Tolerance (corresponding to half of the Proportional band visible in the Microface E display)

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[7] if the Humitemp sensor is not present the humidity shows a value equal to '90%' .

Unit status

The follows icons represent the principal unit status
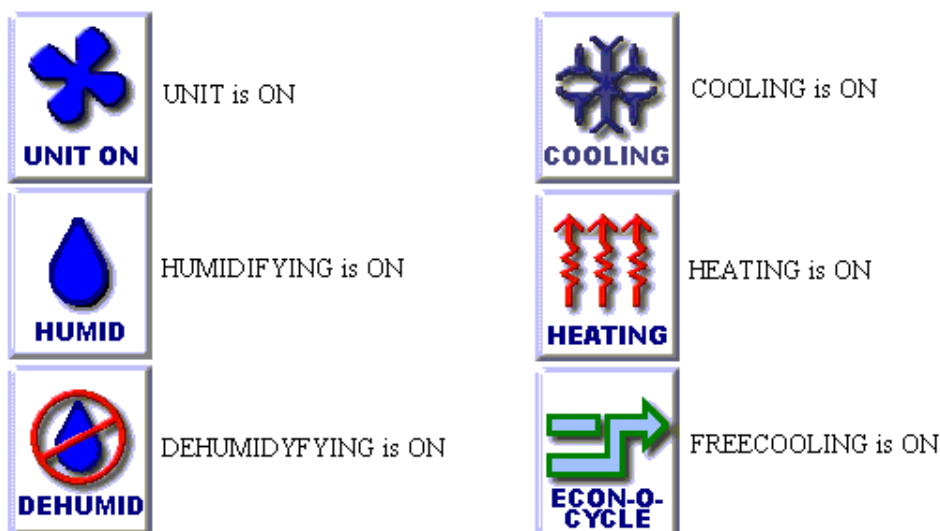
Note: the Heating status icon shows when the unit is not in cooling and the temperature is in the tolerance range.

Alarms

The following alarms are showed (when appear) in the lowest square, named "Alarms":

Showed in the HTTP page	Named in the HPAC units
High Head Pressure Compressor 1	High Head Pressure Compressor 1
High Head Pressure Compressor 2	High Head Pressure Compressor 2
Loss of Airflow	Loss of Airflow
Water Under Floor (Liquid Detected)	Water Under Floor (Liquid Detected)
Change Filter	Clogged Filter
High Temperature	High Temperature
Low Temperature	Low Temperature
High Humidity	High Humidity
Low Humidity	Low Humidity
High Water in Humidifier Pan	Humidifier Overflow
No Water in Humidifier Pan	Humidifier Failure
Compressor 1 Overload	Compressor 1 Motor Protection
Compressor 2 Overload	Compressor 2 Motor Protection
Main Fan Overload	Fan Failure
Smoke Detected	Smoke Alarm
Loss of Water Flow	Low Chilled Water Flow
Standby Unit On	Standby Unit On
Loss of Power Alarm	Power On

8. Spare parts list

Description	code
Microface E AC for IGMnet	275860
Microface E DC for IGMnet	275861
LAM special eprom for Microface E for IGMnet	275779
LAG special eprom for Hiromatic	275780
Kit NIC card:	480052
OpenComms NIC Network Interface Card	275682
Kit cable: serial and power	254357
NIC configuration serial cable	254112
Ferrite for Ethernet connection	254770