Digital controller with defrost and fans management

LEAD/LAG APPLICATION Dixell *IPRO*

1. GENERAL WARNING

This manual should be considered a part of the control and thus should be kept with the equipment that it is installed on. Please refer to the Installing and Operating Instruction manual.

2. GENERAL DESCRIPTION

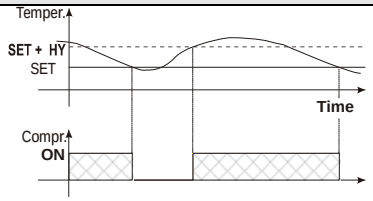
The LEAD/LAG application, based on the *iPro* programmable controllers, is suitable for applications in medium or low temperature ventilated refrigerating units. It is designed to control two sub systems which are named system A and system B, and can be set to work in Normal operation mode or Multi-System operation mode. It has four configurable relay outputs for each sub system to control compressor, fan, defrost, and alarm/light/auxiliary. The defrost cycle can be either electric heater or reverse cycle (hot gas). The control is provided with a Real Time Clock which allows programming for up to 3 daily energy saving cycles for one week, or defrost cycle scheduling. It is also provided with up to three configurable NTC or PTC probe inputs for each sub system, the first one for temperature control. The second one, to be located in the evaporator to control the defrost termination temperature and to managed the fan. The third one is used to signal a condenser temperature alarm or to display a temperature using a product simulator. There are up to eleven digital inputs provided for alarm detecting and controlling. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or Wizmate.

3. CONTROLLING LOADS

The control of loads should always be the same for systems A and B. Compressor, defrost heater (reversing valve), fans and alarm/ light/ auxiliary.

3.1 COMPRESSOR

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.



In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters COna and COFa.

3.2 DEFROST

Two defrost modes are available through the tdFa parameter: defrost through electrical heater (tdFa = EL) and hot gas defrost (tdFa = in). Other parameters are used to control the interval between defrost cycles (IdFa), its maximum length (MdFa) and two defrost modes: timed or controlled by the evaporator's probe (P2Pa).
At the end of defrost dripping time is started, its length is set in the Fdta parameter. With Fdta =0 the dripping time is disabled.

3.3 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the FnCa parameter:
FnCa = C_n: fans will switch ON and OFF with the compressor and not run during defrost;
FnCa = o_n fans will run even if the compressor is off, and not run during defrost;
After defrost, there is a timed fan delay allowing for drip time, set by means of the Fnda parameter.
FnCa = C_Y fans will switch ON and OFF with the compressor and run during defrost;
FnCa = o_Y fans will run continuously also during defrost

An additional parameter FSta provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. This is used to make sure circulation of air only if his temperature is lower than set in FSta.

3.3.1 Forced activation of fans

This function managed by the Fcta parameter is designed to avoid short cycles of fans, that could happen when the controller is switched on or after a defrost, when the room air warms the evaporator. Functioning: If the difference of temperature between the evaporator and the room probes is more than the value of the Fcta parameter, the fans are switched on. With Fcta=0 the function is disabled.

3.3.2 Cyclical activation of the fans with compressor off

When Fnca = c-n or c-Y (fans in parallel to the compressor), by means of the Fona and FoFa parameters the fans can carry out on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the Fona time. With Fona =0 the fans remain always off, when the compressor is off.

4. SYSTEMS SCHEDULING

The instrument can be set to work in Normal operation mode or Multi-System operation mode through mod parameter. The systems scheduling will be different in these two modes.

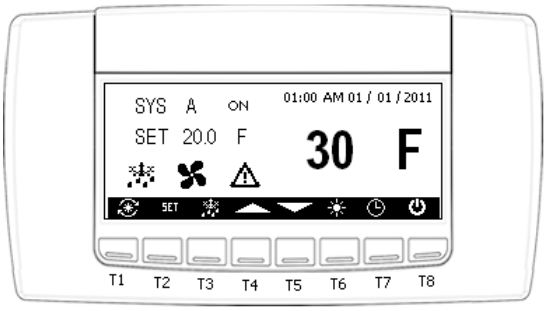
4.1 NORMAL OPERATION MODE

In Normal operation mode, each system will run for a set period of time (tis). Once this set period of time has been met, the systems will change over at the conclusion of the next defrost cycle. tis parameter allows for the systems to alternate maintaining equal run times.
If the High Temperature Alarm occurs, the 1st system will be shut off and the 2nd system will come on line. A parameter mal maintains that if the 1st system happens to alarm over that set number of occurrences in ada period, that system will be locked out of operation entirely until unlocked by the service command in hidden menu.

4.2 MULTI-SYSTEM OPERATION MODE

In Multi-System operation mode, if the 1st system is running and it cannot pull down the temperature to the Seta + Hya in a set period of time AiM, a high temperature alarm will switch the 2nd system on whereupon both will run until conditions are met. The program will also change the status of the two from primary to secondary so that the same system is not always used at startup. There is a parameter ert to select the system alternation sequence. FIX: switching system according to fix sequence; BAL: switching system according to the total run time of the compressor. Parameter syd is used to select simultaneous defrost when in the Multi-System operation mode.

5. USER INTERFACE OF VISOGRAPH



USE OF KEYS:

: To switch the continuous cycle on and off. If continuous cycle is enabled, the icon will invert colors.

: To active input value.

: To start a manual defrost. If manual defrost is started, the icon will invert colors.

: To increase the value.

: To decreases the value.

: To force alarm relay silence. If alarm relay silencing is enabled, the icon will invert colors.

: To adjust the Real Time Clock.

: To switch the instrument on and off. If the instrument is on, the icon will invert colors.

: To enable the energy saving mode. If energy saving mode is enabled, the icon will invert colors.

KEY COMBINATIONS:

+ To lock the keyboard.

+ To enter in MAX & MIN temperature memorization stage.

+ To enter in service menu.

+ To enter in energy saving configuration stage.

ICONS:

ICONS	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring

TEMPERATURE DISPLAY

Temperature displayed is selected by Lod parameter, and "DEF" will be displayed in defrost.

REAL TIME CLOCK DISPLAY

Real Time Clock is displayed in American style on the top right corner of the LCD.

6. MAIN FUNCTIONS OF VISOGRAPH

6.1 HOW TO SET THE CURRENT TIME AND DAY

When the instrument is switched on, it's necessary to program the time and day.

1. Enter the "System Clock" menu, by pressing the key for 3s.
2. The Real Time Clock is displayed.
3. Press the key and set current month by the and keys, and press key to confirm the value.
4. Repeat the same operations on the day, year, hour and minute setting.

To exit: Press EXIT key.

6.2 HOW TO SELECT THE SYSTEM FOR DISPLAY

1. The system displayed currently is indicated by label SYS "A" or "B" in the main user interface followed by the system work status. "ON"=system enabled; "OFF"=system disabled.
2. Move the cursor to the SYS "A" or "B" label by pressing or key. Press the key will switch the display between system A and system B.

6.3 HOW TO CHANGE THE SETPOINT

1. The set point value of the selected system will be displayed followed "SET" message in the main user interface.
2. Move the cursor to the set point by pressing or key. Press the key and set the value of set point by the and keys, and press key to confirm the value.

6.4 HOW TO CHANGE THE TEMPERATURE MEASUREMENT UNIT

1. Temperature measurement unit (C/F) will be displayed followed set point in the main user interface.
2. Move the cursor to the temperature measurement unit by pressing or key. Press the key and set the temperature measurement unit by the and keys, and press key to confirm the value.

6.5 HOW TO SEE THE MIN & MAX TEMPERATURE

1. Hold press the + keys for more than 3s, the "Max & Min Temperature" menu of the selected system is entered.
2. The "Max Temperature" and "Min Temperature" message will be displayed followed by the maximum and minimum temperature recorded.
3. By pressing the key the normal display will be restored.

6.6 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

Hold press the RESET key for more than 3s in the "Max & Min Temperature" menu of the selected system, the maximum and minimum temperature recorded will be updated to current temperature.

6.7 HOW TO SEE THE ALARMS

1. Icon will be displayed in the main user interface when an alarm of the selected system is occurring.
2. Move the cursor to the icon by pressing or key. Press the key and all the alarms status will be displayed.

To exit: Press EXIT key.

6.8 HOW TO SET THE ENERGY SAVING SCHEDULE

1. Hold press the + keys for more than 3s, the "Energy Saving Schedule" menu is entered.
2. Three Schedule Events of Monday will be displayed followed by their starting time (ON) and ending time (OFF). Use or and key to select and modify the time.
3. Press or key to switch the configuration of days in one week.

NOTE: The energy saving schedule will be active only if "Schedule Enable" is set to YES.

To exit: Press EXIT key.

6.9 HOW TO FORCE ALARM RELAY SILENCE

With "oA3a(oA3b) = ALr" and "tbAa(tbAb) = Y", pressing the key, alarm relay silencing of the selected system is enabled. To stop the alarm relay silencing press again the key for 3s.

6.10 HOW TO START A MANUAL DEFROST

Press the key for more than 3s and a manual defrost will start. In Normal operation mode, only the system active will response to this command. In Multi-System operation mode, both systems will response to this command.

6.11 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by holding the key pressed for about 3s. The compressor operates to maintain the CCsa(CCsb) set point for the time set through the CCta(CCtb) parameter. The cycle can be terminated before the end of the set time using the same activation key for 3s. In Normal operation mode, only the system active will response to this command. In Multi-System operation mode, both systems will response to this command.

6.12 THE ENERGY SAVING FUNCTION

With "onF = ES", pressing the key for 3s, energy saving cycle is enabled: this function allows to change the set point value as the result of the SETa+ HESa(SETb+ HESb) .
To stop the energy saving press again the key for 3s.

6.13 THE ON/OFF FUNCTION

With "onF = oFF", pressing the key, the instrument is switched off. To switch the instrument on, press again the key for 3s.

6.14 THE SERVICE MENU

The service menu includes all the parameters of the instrument, system status and system control commands. It must be cautious to modify.
Pressing the + keys for 3s. NOW YOU ARE IN THE SERIVCE MENU.

6.14.1 HOW TO SEE SYSTEM STATUS

1. Move the cursor to the "System Status" label by pressing or key in Service stage. Press the key to enter System Status menu.
2. Now you are in the System Status menu, all the status of the system will be displayed, include general status, system A status and system B status.

To exit: Press EXIT key.

6.14.2 HOW TO CHANGE PARAMETER VALUE

1. Move the cursor to the "System Configuration" label by pressing or key in Service stage. Press the key to enter System Configuration menu.
2. Now you are in the System Configuration menu, all the parameters of the system will be displayed in four groups. You can select one group using or key and enter in by pressing key.
3. Select the required parameter by pressing or and key.
4. Use or to change its value.
5. Press key to store the new value and move to the following parameter.

To exit: Press EXIT key.

6.14.3 SYSTEM CONTROL

1. Move the cursor to the "System Control" label by pressing or key in Service stage. Press the key to enter System Control menu.
2. Now you are in the System Control menu. You can unlock the system A or B, change the Mod Bus Address and disable the .conf file updating with USB flash drive.
3. Keep pressed for more than 3 s the key will update the application program of VISOGRAPH.

To exit: Press EXIT key.

6.15 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the + keys.
2. The "Keyboard is locked." message will be displayed for 5s and the keyboard will be locked. At this point it will be possible only to see the Real Time Clock, set point and the MAX and Min temperature stored.
3. If a key is pressed more than 3s the "Keyboard is locked." message will be displayed.

6.16 HOW TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the and keys, till the "Keyboard is unlocked." message displayed.

7. PARAMETERS

REGULATION OF SYSTEM A

Seta Set Point of system A: (LSa to USa) Set Point of system A.
Hya Differential of system A: (0,1 to 25,5°C / 1 to 255 °F) Intervention differential for set point. Compressor Cut IN is Set Point + differential (Hya). Compressor Cut OUT is when the temperature reaches the set point.
LSa Minimum set point of system A: (- 50°C to Seta/-58°F to Seta): Sets the minimum value for the set point.
USa Maximum set point of system A: (Seta to 110°C/ Seta to 230°F): Sets the maximum value for the set point.
Ota Thermostat probe calibration of system A: (-12.0 to 12.0°C; -120 to 120°F). Allows to adjust possible offset of the thermostat probe.
P2Pa Evaporator probe presence of system A: N= not present: the defrost stops by time; Y= present: the defrost stops by temperature.
OEa Evaporator probe calibration of system A: (-12.0 to 12.0°C; -120 to 120°F).Allows to adjust possible offset of the evaporator probe.
P3Pa Third probe presence (P3) of system A: (N = Not present; Y = present).
O3a Third probe calibration (P3) of system A: (-12.0 to 12.0°C; -120 to 120°F).Allows to adjust possible offset of the third probe.
ACa Anti-short cycle delay of system A: (0 to 50 min) Minimum interval between the compressor stop and the following restart.
rtra Percentage of the second and first probe for regulation of system A (0 to 100; 100 = P1, 0 = P2): It allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).
CCta Compressor ON time during continuous cycle of system A: (0.0 to 24.0h; res. 10min).Allows to set the length of the continuous cycle, compressor stays on without interruption for the CCta time. It can be used, for instance, when the room is filled with new products.
CCSa Set point for continuous cycle of system A: (-50 to 150°C). It sets the set point used during the continuous cycle.
COna Compressor ON time with faulty probe of system A: (0 to 255 min) Time during which the compressor is active in case of faulty thermostat probe. With COna=0 compressor is always OFF.
COFa Compressor OFF time with faulty probe of system A: (0 to 255 min) Time during which the compressor is OFF in case of faulty thermostat probe. With COFa=0 compressor is always active.

DEFROST OF SYSTEM A

dFPa Probe selection for defrost termination of system A: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.
tdFa Defrost type: EL = electrical heater; in = hot gas
dtEa Defrost termination temperature of system A: (-50 to 50 °C/ -58 to 122°F) (Enabled only when dFPa=Pb)Sets the temperature measured by the evaporator probe, which causes the end of defrost.
IdFa Interval between defrost cycles of system A: (0 to 120h) Determines the time interval between the beginnings of two defrost cycles.
MdFa (Maximum) length for defrost of system A: (0 to 255min) When P2Pa = N, (not evaporator probe: timed defrost) it sets the defrost duration, when P2Pa = Y (defrost end based on temperature) it sets the maximum length for defrost.
dSda Start defrost delay of system A: (0 to 99min) This is useful when different defrost start times are necessary to avoid overloading the plant.
dAda MAX display delay after defrost of system A: (0 to 255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.
Fdta Drip time of system A: (0 to 120 min) Time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
dPoa First defrost after start-up of system A: (Y = immediately; N = after the IdFa time)
dAFa Defrost delay after continuous cycle of system A: (0 to 23.5h) Time interval between the end of the fast freezing cycle and the following defrost related to it.

FANS OF SYSTEM A

FnCa Fans operating mode of system A: C-n= runs with the compressor, OFF during defrost;
o-n = continuous mode, OFF during defrost;
C-Y = runs with the compressor, ON during defrost;
o-Y = continuous mode, ON during defrost;

Fnda Fans delay after defrost of system A: (0 to 255min) Interval between end of defrosts and evaporator fans start.

Fcta Temperature differential avoiding short cycles of fans of system A: (0 to 59°C; Fcta=0 function disabled). If the difference of temperature between the evaporator and the room probes is more than the value of the Fcta parameter, the fans are switched on.

FSta Fans stop temperature of system A: (-50 to 50°C/122°F) Setting of temperature, detected by evaporator probe, above which fans are always OFF.

Fona Fan ON time of system A: (0 to 15 min) With Fnca = C_n or C_y, (fan activated in parallel with compressor). it sets the evaporator fan ON cycling time when the compressor is off. With Fon a=0 and FoFa ≠ 0 the fan are always off, with Fona=0 and FoFa =0 the fan are always off.

FoFa Fan OFF time of system A: (0 to 15 min) With Fnca = C_n or C_y, (fan activated in parallel with compressor). it sets the evaporator fan off cycling time when the compressor is off. With Fona =0 and FoFa ≠ 0 the fan are always off, with Fona=0 and FoFa =0 the fan are always off.

FAPa Probe selection for fan management of system A: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.

ALARMS OF SYSTEM A

ALCa Temperature alarms configuration of system A: (Ab; rE)
Ab= absolute temperature: alarm temperature is given by the ALLa or ALUa values. rE = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the Seta+ALUa or Seta-ALLa values.

ALUa MAXIMUM temperature alarm of system A: (Seta to 110°C; Seta to 230°F) When this temperature is reached the alarm is enabled, after the ALda delay time.

ALLa Minimum temperature alarm of system A: (-50.0 to Seta°C; -58 to Seta°F) When this temperature is reached the alarm is enabled, after the ALda delay time.

AFHa Differential for temperature alarm/ fan recovery of system A: (0.1 to 25.5°C; 1 to 45°F) Intervention differential for recovery of temperature alarm. It's also used for the restart of the fan when the FSta temperature is reached.

ALda Temperature alarm delay of system A: (0 to 255 min) Time interval between the detection of an alarm condition and alarm signalling.

dAOa Exclusion of temperature alarm at startup of system A: (from 0.0 min to 23.5h) Time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM OF SYSTEM A

AP2a Probe selection for temperature alarm of condenser of system A: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.

AL2a Low temperature alarm of condenser of system A: (-55 to 150°C) When this temperature is reached the AL2a an alarm is signalled, possibly after the Ad2a delay.

AU2a High temperature alarm of condenser of system A: (-55 to 150°C) When this temperature is reached the AU2a an alarm is signalled, possibly after the Ad2a delay.

AH2a Differential for temperature condenser alarm recovery of system A: (0.1 to 25.5°C; 1 to 45°F)

Ad2a Condenser temperature alarm delay of system A: (0 to 255 min) Time interval between the detection of the condenser alarm condition and alarm signalling.

dA2a Condenser temperature alarm exclusion at start up of system A: (from 0.0 min to 23.5h, res. 10min)

bLLa Compressor off with low temperature alarm of condenser of system A: N = no: compressor keeps on working; Y = yes; compressor is switched off till the alarm is present, in any case regulation restarts after ACa time at minimum.

AC2a Compressor off with high temperature alarm of condenser of system A: N = no: compressor keeps on working; Y = yes; compressor is switched off till the alarm is present, in any case regulation restarts after ACa time at minimum.

FOURTH RELAY OF SYSTEM A

tbAa Alarm relay silencing of system A (with oA3a=ALr):
N= silencing disabled: alarm relay stays on till alarm condition lasts,
Y =silencing enabled: alarm relay is switched OFF by pressing a key during an alarm

oA3a Fourth relay configuration of system A: ALr: alarm; Lig: do not select it; AuS: do not select it; onF: always on with instrument on; db: = do not select it; dEF: do not select it; FAn: do not select it; dF2: do not select it.

AoPa Alarm relay polarity of system A: It set if the alarm relay is open or closed when an alarm happens. cl= terminals 1-2 closed during an alarm; op = terminals 1-2 open during an alarm.

CoPa Compressor relay polarity of system A: It set if the compressor relay is open or closed when compressor is switch on. cl= compressor relay closed during compressor on; op = compressor relay open during compressor on.

FoPa Fan relay polarity of system A: It set if the fan relay is open or closed when fan is switch on. cl= fan relay closed during fan on; op = fan relay open during fan on.

DoPa Defrost relay polarity of system A: It set if the defrost relay is open or closed when defrost is switch on. cl= defrost relay closed during defrost on; op = defrost relay open during defrost on.

DIGITAL INPUT OF SYSTEM A

dida Digital input alarm delay of system A: (0 to 255 min). Delay between the detection of the external alarm condition and its signalling.
for door: door open signalling delay.
for PAL: time for pressure switch function: Time interval to calculate the number of the pressure switch activation.

Npsa Pressure switch number of system A: (0 to15) Number of activation of the pressure switch, during the "dida" interval, before signalling the alarm event.
If the Npsa activation in the dida time is reached, switch off and on the instrument to restart normal regulation.

odca Compressor and fan status when open door of system A: no = normal; Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF.

rrda Outputs restart after doA alarm of system A: N = outputs not affected by the doA alarm; Y = outputs restart with the doA alarm.

HESa Temperature increase during the Energy Saving cycle of system A: (-30.0°C to 30.0°C/-22 to 86°F) It sets the increasing value of the set point during the Energy Saving cycle.

REGULATION OF SYSTEM B

Setb Set Point of system B: (LSb to USb) Set Point of system B.

Hyb Differential: (0.1 to 25.5°C / 1 to 255 °F) Intervention differential for set point. Compressor Cut IN is Set Point b + differential (Hyb). Compressor Cut OUT is when the temperature reaches the set point.

LSb Minimum set point of system B: (- 50°C to Setb/-58°F to Setb): Sets the minimum value for the set point.

USb Maximum set point of system B: (Setb to 110°C/ Setb to 230°F). Set the maximum value for set point.

Otb Thermostat probe calibration of system B: (-12.0 to 12.0°C; -120 to 120°F) Allows to adjust possible offset of the thermostat probe.

P2Pb Evaporator probe presence of system B: N= not present: the defrost stops by time; Y= present: the defrost stops by temperature.

OEb Evaporator probe calibration of system B: (-12.0 to 12.0°C; -120 to 120°F).Allows to adjust possible offset of the evaporator probe.

P3Pb Third probe presence (P3) of system B: (N = Not present; Y = present).

O3b Third probe calibration (P3) of system B: (-12.0 to 12.0°C; -120 to 120°F).Allows to adjust possible offset of the third probe.

ACb Anti-short cycle delay of system B: (0 to 50 min) Minimum interval between the compressor stop and the following restart.

rtrb Percentage of the second and first probe for regulation of system B (0 to 100; 100 = P1, 0 = P2): It allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).

CCtb Compressor ON time during continuous cycle of system B: (0.0 to 24.0h; res. 10min).Allows to set the length of the continuous cycle: compressor stays on without interruption for the CCtb time. It can be used, for instance, when the room is filled with new products.

CCSb Set point for continuous cycle of system B: (-50 to 150°C) It sets the set point used during the continuous cycle.

COnb Compressor ON time with faulty probe of system B: (0 to 255 min) Time during which the compressor is active in case of faulty thermostat probe. With COnb=0 compressor is always OFF.

COFb Compressor OFF time with faulty probe of system B: (0 to 255 min) Time during which the compressor is OFF in case of faulty thermostat probe. With COFb=0 compressor is always active.

DEFROST OF SYSTEM B

dFPb Probe selection for defrost termination of system B: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.

tdFb Defrost type of system B: EL = electrical heater; in = hot gas

dtEb Defrost termination temperature of system B: (-50 to 50 °C/ -58 to 122°F) (Enabled only when dFPb=Pb)Sets the temperature measured by the evaporator probe, which causes the end of defrost.

IdFb Interval between defrost cycles of system B: (0 to 120h) Determines the time interval between the start of two defrost cycles.

MdFb (Maximum) length for defrost of system B: (0 to 255min) When P2Pb = N, (not evaporator probe: timed defrost) it sets the defrost duration, when P2Pb = Y (defrost end based on temperature) it sets the maximum length for defrost.

dSdb Start defrost delay of system B: (0 to 99min) This is useful when different defrost start times are necessary to avoid overloading the plant.

dAdb MAX display delay after defrost of system B: (0 to 255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

Fdtb Drip time of system B: (0 to 120 min) Time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.

dPob First defrost after start-up of system B: (Y = immediately; N = after the IdFb time)

dAFb Defrost delay after continuous cycle of system B: (0 to 23.5h) Time interval between the end of the fast freezing cycle and the following defrost related to it.

FANS OF SYSTEM B

FnCb Fans operating mode of system B: C-n= runs with the compressor, OFF during defrost;
o-n = continuous mode, OFF during defrost;
C-Y = runs with the compressor, ON during defrost;

o-Y = continuous mode, ON during defrost;

Fndb Fans delay after defrost of system B: (0 to 255min) Interval between end of defrosts and evaporator fans start.

Fctb Temperature differential avoiding short cycles of fans of system B: (0 to 59°C; Fctb=0 function disabled). If the difference of temperature between the evaporator and the room probes is more than the value of the Fctb parameter, the fans are switched on.

FStb Fans stop temperature of system B: (-50 to 50°C/122°F) Setting of temperature, detected by evaporator probe, above which fans are always OFF.

Fonb Fan ON time of system B: (0 to 15 min) With FnCb = C_n or C_y, (fan activated in parallel with compressor). It sets the evaporator fan ON cycling time when the compressor is off. With Fon b=0 and FoFb ≠ 0 the fan are always off, with Fonb=0 and FoFb =0 the fan are always off.

FoFb Fan OFF time of system B: (0 to 15 min) With FnCb = C_n or C_y, (fan activated in parallel with compressor). It sets the evaporator fan off cycling time when the compressor is off. With Fonb =0 and FoFb ≠ 0 the fan are always off, with Fonb=0 and FoFb =0 the fan are always off.

FAPb Probe selection for fan management of system B: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.

ALARMS OF SYSTEM B

ALCb Temperature alarms configuration of system B: (Ab; rE)
Ab= absolute temperature: alarm temperature is given by the ALLb or ALUb values. rE = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the "Setb+ALUb" or "Setb-ALLb" values.

ALUb MAXIMUM temperature alarm of system B: (Setb to 110°C; Setb to 230°F) When this temperature is reached the alarm is enabled, after the "ALdb" delay time.

ALLb Minimum temperature alarm of system B: (-50.0 to Setb°C; -58 to Setb°F) When this temperature is reached the alarm is enabled, after the "ALdb" delay time.

AFHb Differential for temperature alarm/ fan recovery of system B: (0.1 to 25.5°C; 1 to 45°F) Intervention differential for recovery of temperature alarm. It's also used for the restart of the fan when the FStb temperature is reached.

ALdb Temperature alarm delay of system B: (0 to 255 min) Time interval between the detection of an alarm condition and alarm signalling.

dAOb Exclusion of temperature alarm at startup of system B: (from 0.0 min to 23.5h) Time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM OF SYSTEM B

AP2b Probe selection for temperature alarm of condenser of system B: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; na = not available.

AL2b Low temperature alarm of condenser of system B: (-55 to 150°C) When this temperature is reached the AL2b, an alarm is signalled, possibly after the Ad2b delay.

AU2b High temperature alarm of condenser of system B: (-55 to 150°C) When this temperature is reached the AU2b alarm is signalled, possibly after the Ad2b delay.

AH2b Differential for temperature condenser alarm recovery of system B: (0.1 to 25.5°C; 1 to 45°F)

Ad2b Condenser temperature alarm delay of system B: (0 to 255 min) Time interval between the detection of the condenser alarm condition and alarm signalling.

dA2b Condenser temperature alarm exclusion at start up of system B: (from 0.0 min to 23.5h, res. 10min).

bLLb Compressor off with low temperature alarm of condenser of system B: N = no: compressor keeps on working; Y = yes: compressor is switched off till the alarm is present, in any case regulation restarts after ACb time at minimum.

AC2b Compressor off with high temperature alarm of condenser of system B: N = no: compressor keeps on working; Y = yes: compressor is switched off till the alarm is present, in any case regulation restarts after ACb time at minimum.

FOURTH RELAY OF SYSTEM B

tbAb Alarm relay silencing of system B (with oA3b=ALr):
N= silencing disabled: alarm relay stays on till alarm condition lasts.
Y =silencing enabled: alarm relay is switched OFF by pressing a key during an alarm.

oA3b Fourth relay configuration of system B: ALr: alarm; Lig: do not select it; AuS: do not select it; onF: always on with instrument on; db: = do not select it; dEF: do not select it; FAn: do not select it; dF2: do not select it.

AoPb Alarm relay polarity of system B: It set if the alarm relay is open or closed when an alarm happens. cl= terminals 1-2 closed during an alarm; op = terminals 1-2 open during an alarm.

CoPb Compressor relay polarity of system B: It set if the compressor relay is open or closed when compressor is switch on. cl= compressor relay closed during compressor on; op = compressor relay open during compressor on.

FoPb Fan relay polarity of system B: It set if the fan relay is open or closed when fan is switch on. cl= fan relay closed during fan on; op = fan relay open during fan on.

DoPb Defrost relay polarity of system B: It set if the defrost relay is open or closed when defrost is switch on. cl= defrost relay closed during defrost on; op = defrost relay open during defrost on.

DIGITAL INPUT OF SYSTEM B

didb Digital input alarm delay of system B: (0 to 255 min). Delay between the detection of the external alarm condition and its signalling.
for door: door open signalling delay.
for PAL: time for pressure switch function: Time interval to calculate the number of the pressure switch activation.

Npsb Pressure switch number of system B: (0 to 15) Number of activation of the pressure switch, during the "didb" interval, before signalling the alarm event.
If the Npsb activation in the didb time is reached, switch off and on the instrument to restart normal regulation.

odcb Compressor and fan status when open door of system B: no = normal; Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF.

rrdb Outputs restart after doA alarm of system B: no = outputs not affected by the doA alarm; yES = outputs restart with the doA alarm.

HESb Temperature increase during the Energy Saving cycle of system B: (-30.0°C÷30.0°C/-22 to 86°F) It sets the increasing value of the set point during the Energy Saving cycle.

I/O CONFIGURATION

AI01-AI06 Analog input configuration: (0 to 8) nu = Not configured; pb1sa =Thermostat probe of system A; pb2sa = Evaporator probe of system A; pb3sa =Third probe of system A; na = not available; pb1sb =Thermostat probe of system B; pb2sb = Evaporator probe of system B; pb3sb =Third probe of system B; na = not available.

DI01-DI11 Digital input configuration: (0 to 9) nu = Not configured; dor =Door status; Ga = Generic alarm; Sa =Serious alarm; Ps1 =Pressure switch of system A; Ps2 = Pressure switch of system B; htr = kind of action inversion (cooling – heating); ES =Energy saving; Gl1 =Gsa leak detector of system A.; Gl2 =Gsa leak detector of system B.

DO01-DO08 Digital output configuration: (0 to 8) nu = Not configured; Ca =Compressor control of system A; fa = Fan control of system A; da =Defrost control of system A; aa =Alarm output of system A; Cb =Compressor control of system B; fb = Fan control of system B; db =Defrost control of system B; ab =Alarm output of system B.

INTEGRATION

Adr Serial address: (1 to 244): Identifies the instrument address when connected to a ModBUS compatible monitoring system.

OdS Outputs activation delay at start up: (0 to 255min).This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.

Dsp Door switch polarity: (0 to 1): oP: the door switch is activated by opening the contact; CL: the door switch is activated by closing the contact.

Gap Generic alarm polarity: (0 to 1): oP: the generic alarm is activated by opening the contact; CL: the generic alarm is activated by closing the contact.

Sap Serious alarm polarity: (0 to 1): oP: the serious alarm is activated by opening the contact; CL: the serious alarm is activated by closing the contact.

Psp1 Pressure switch polarity of system A: (0 to 1): oP: the pressure switch of system A is activated by opening the contact; CL: the pressure switch of system A is activated by closing the contact.

Psp2 Pressure switch polarity of system B: (0 to 1): oP: the pressure switch of system B is activated by opening the contact; CL: the pressure switch of system B is activated by closing the contact.

Iap Inversion of the kind of action (cooling-heating) polarity: (0 to 1): oP: the kind of action is activated by opening the contact; CL: the kind of action is activated by closing the contact.

Esp Energy saving input polarity: (0 to 1): oP: the energy saving input is activated by opening the contact; CL: the energy saving input is activated by closing the contact.

Gs1p Gas leak detector of system A: (0 to 1): oP: the gas leak detector of system A is activated by opening the contact; CL: the gas leak detector of system A is activated by closing the contact.

Gs2p Gas leak detector of system B: (0 to 1): oP: the gas leak detector of system B is activated by opening the contact; CL: the gas leak detector of system B is activated by closing the contact.

rtr Percentage of the first probe of system A and system B for Multi-System operation mode (0 to 100; 100 = P1s1, 0 = P1s2): It allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1s1-P1s2)/100 + P1s2).

mod Mode selection: (0 to 1): Normal: set the system work to in Normal operation mode; MULTI-SYSTEM: set the system to work in Multi-System operation mode.

tis Time interval for two system switching: (1 to 255h): In Normal operation mode, once tis has been met, the systems will change over at the conclusion of the next defrost cycle. This parameter allows for the systems to alternate maintaining equal run times. (In Normal operation mode).

mal Max alarm number to lock the system: (0 to 15) Number of activation of the High temperature alarm, during the ada interval, before locking the system. (in Normal operation mode).
If the mal activation in the ada time is reached, the 1st system will be automatically shut off and the 2nd system will come on line.

ada Alarm delay to avoid non-system alarm: (0 to 255min): During the ada interval, accumulate the number of activation of the High temperature alarm.(in Normal operation mode).

AiM High temp detecting delay: (0 ÷255min): If system A is running and it cannot pull down the temperature to the set point in AiM time, it will switch system B on whereupon both will run until conditions are met.(in Normal operation mode).

syd Simultaneous defrost: (0 to 1): N: not simultaneous defrost; Y: simultaneous defrost. (in Multi-System operation mode).

PbC Type of probe: It allows to set the kind of probe used by the instrument: Ptc = PTC probe, ntc = NTC probe.

onF on/off key enabling: nu = disabled; oFF = not set it; ES = enabled.

OnOn Minimum time between 2 following switching on of the same compressor: (0 to 255min): If compressor is switching on now, it can be switched on again at least OnOn time later. (in Multi-System operation mode).

Don Minimum time between 2 following switching on of 2 compressors: (0 to 255min): If compressor A is switching on now, compressor B can be switched on at least Don time later.(in Multi-System operation mode).

DoF Minimum time between 2 following switching off of 2 compressors: (0 to 255min): If compressor A is switching off now, compressor B can be switched off at least DoF time later. (in Multi-System operation mode).

Sgla Shut down system when gas leak occur: (0 to 1): N: not shut down system when gas leak occur; Y: shut down system when gas leak occur.

ert Equal run times/ Fix sequence: (0 ÷1): FIX: switching system according to fix sequence; BAL: switching system according to the total run time of the compressor, it will switch on the system which has less compressor run time first. (in Multi-System operation mode).

pdt pump down time: (0 to 255 sec): Pump down time before defrost. It is the time that evaporator fan will run after the liquid line solenoid is off right before defrost. During pdt time, fan must be ON and compressor must be OFF.

DISPLAY

CF Temperature measurement unit: °C=Celsius; °F=Fahrenheit. WARNING: When the measurement unit is changed the set point and the values of the parameters Hya, LSa, USa, Ota, ALUa, ALLa, Hyb, LSb, USb, Otb, ALUb and ALLb have to be checked and modified if necessary).

rES Resolution (for °C): (in = 1°C; dE = 0.1 °C) Allows decimal point display.

Lod Instrument display: (P1; P2, P3, na, SET, dtr): It selects which probe is displayed by the instrument: P1 = Thermostat probe; P2 = Evaporator probe; P3 = Third probe(only for model with this option enabled); na = not available, SET = set point; dtr = percentage of visualization.

dLy Display delay: (0 to 20.0m; risul. 10s) When the temperature increases, the display is updated of 1 °C/1°F after this time.

dtr Percentage of the second and first probe for visualization when Lod = dtr (0 to 100; 100 = P1, 0 = P2): If Lod = dtr it allows to set the visualization according to the percentage of the first and second probe, as for the following formula (dtr(P1-P2)/100 + P2).

TO SET ENERGY SAVING SCHEDULE

MS1 First Energy Saving cycle starting time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

MS2 First Energy Saving cycle ending time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MS1.

MS3 Second Energy Saving cycle starting time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MS2.

MS4 Second Energy Saving cycle ending time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MS3.

MS5 Third Energy Saving cycle starting time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MS4.

MS6 Third Energy Saving cycle ending time on Sunday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MS5.

MM1 First Energy Saving cycle starting time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

MM2 First Energy Saving cycle ending time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MM1.

MM3 Second Energy Saving cycle starting time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MM2.

MM4 Second Energy Saving cycle ending time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MM3.

MM5 Third Energy Saving cycle starting time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MM4.

MM6 Third Energy Saving cycle ending time on Monday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MM5.

MT1 First Energy Saving cycle starting time on Tuesday: (0 to 23h 50 min.) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

MT2 First Energy Saving cycle ending time on Tuesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MT1.

MT3 Second Energy Saving cycle starting time on Tuesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MT2.

MT4 Second Energy Saving cycle ending time on Tuesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MT3.

MT5 Third Energy Saving cycle starting time on Tuesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MT4.

MT6 Third Energy Saving cycle ending time on Tuesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MT5.

MW1 First Energy Saving cycle starting time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

MW2 First Energy Saving cycle ending time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MW1.

MW3 Second Energy Saving cycle starting time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MW2.

MW4 Second Energy Saving cycle ending time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MW3.

MW5 Third Energy Saving cycle starting time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MW4.

MW6 Third Energy Saving cycle ending time on Wednesday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MW5.

TM1 First Energy Saving cycle starting time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

TM2 First Energy Saving cycle ending time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to TM1.

TM3 Second Energy Saving cycle starting time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to TM2.

TM4 Second Energy Saving cycle ending time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to TM3.

TM5 Third Energy Saving cycle starting time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to TM4.

TM6 Third Energy Saving cycle ending time on Thursday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to TM5.

MF1 First Energy Saving cycle starting time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

MF2 First Energy Saving cycle ending time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MF1.

MF3 Second Energy Saving cycle starting time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MF2.

MF4 Second Energy Saving cycle ending time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MF3.

MF5 Third Energy Saving cycle starting time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MF4.

MF6 Third Energy Saving cycle ending time on Friday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to MF5.

SM1 First Energy Saving cycle starting time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES.

SM2 First Energy Saving cycle ending time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to SM1.

SM3 Second Energy Saving cycle starting time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to SM2.

SM4 Second Energy Saving cycle ending time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to SM3.

SM5 Third Energy Saving cycle starting time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to SM4.

SM6 Third Energy Saving cycle ending time on Saturday: (0 to 24h) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SETa(b)+ HES. It must be later than or equal to SM5.

ESS Energy Saving schedule enable: (0 to 1) NO: Energy Saving schedule is not enable; YES: Energy Saving schedule is enable.

8. DIGITAL INPUT

The digital input configuration of system A and system B should both be the same.

8.1 DOOR SWITCH INPUT

It signals the door status and the corresponding relay output status through the odca parameter: no = normal (any change); Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF.
Since the door is opened, after the delay time set through parameter dida, the door alarm is enabled, the regulation restarts is rrda = YES. The alarm stops as soon as the external digital input is disabled again.
With the door open, the high and low temperature alarms are disabled.

8.2 GENERIC ALARM

As soon as the digital input is activated the unit will wait for dida time delay before signalling the "GenA" alarm message. The outputs statuses don't change. The alarm stops just after the digital input is de-activated.

8.3 SERIOUS ALARM

When the digital input is activated, the unit will wait for dida delay before signalling the SerA alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

8.4 PRESSURE SWITCH

If during the interval time set by dida parameter, the pressure switch has reached the number of activation of the Npsa parameter, the "PreA" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is ON the compressor is always OFF. If the Npsa activation in the dida time is reached, switch off and on the instrument to restart normal regulation.
NOTE: Each system (A/B) has its own digital input for pressure switch detecting.

8.5 INVERSION OF THE KIND OF ACTION: HEATING-COOLING

This function allows inverting the regulation of the controller: from cooling to heating and viceversa.

8.6 ENERGY SAVING

The Energy Saving function allows to change the set point value as the result of the SETa(b)+ HES (parameter) sum. This function is enabled until the digital input is activated.

8.7 GAS LEAK

When the digital input is activated, the unit will wait for dida delay before signalling the GasA alarm message. If Sgla parameter is Y, switch off the instrument when gas leak alarm signalled. The alarm will stop as soon as the digital input is de-activated.
NOTE: Each system (A/B) has its own digital input for gas leak detecting.

8.8 DIGITAL INPUTS POLARITY

The door switch digital input polarity depends on the Dsp parameter.
Dsp =cl: the input is activated by closing the contact.
Dsp =op: the input is activated by opening the contact.
The generic alarm digital input polarity depends on the Gap parameter.
Gap =cl: the input is activated by closing the contact.
Gap =op: the input is activated by opening the contact.
The serious alarm digital input polarity depends on the Sap parameter.
Sap =cl: the input is activated by closing the contact.
Sap =op: the input is activated by opening the contact.
The pressure switch digital input polarity of system A depends on the Psp1 parameter.
Psp1 =cl: the input is activated by closing the contact.
Psp1 =op: the input is activated by opening the contact.
The pressure switch digital input polarity of system B depends on the Psp2 parameter.
Psp2 =cl: the input is activated by closing the contact.
Psp2 =op: the input is activated by opening the contact.
The Inversion of the kind of action digital input polarity depends on the Iap parameter.
Iap =cl: the input is activated by closing the contact.
Iap =op: the input is activated by opening the contact.
The energy saving digital input polarity depends on the Esp parameter.
Esp =cl: the input is activated by closing the contact.
Esp =op: the input is activated by opening the contact.
The gas leak digital input polarity of system A depends on the Gs1p parameter.
Gs1p =cl: the input is activated by closing the contact.
Gs1p =op: the input is activated by opening the contact.
The gas leak digital input polarity of system B depends on the Gs2p parameter.
Gs2p =cl: the input is activated by closing the contact.
Gs2p =op: the input is activated by opening the contact.
Chgp=cl: the input is activated by closing the contact.
Chgp=op: the input is activated by opening the contact.

9. RS485 SERIAL PORT FOR MONITORING SYSTEMS

The RS485 serial port allows connection to a monitoring system ModBUS-RTU compatible (XWEB devices).

10. ALARM SIGNALS

Message	Cause	Outputs
"Pb1E"	Room probe failure	Compressor output acc. to par. COna(b) and COFa(b).
"Pb2E"	Evaporator probe failure	Defrost end is timed.
"Pb3E"	Third probe failure	Outputs unchanged.
"HAlr"	Maximum temperature alarm	Outputs unchanged.
"LAlr"	Minimum temperature alarm	Outputs unchanged.
"CoHA"	Condenser high temperature	It depends on the Ac2a(b) parameter.
"CoLA"	Condenser low temperature	It depends on the bLLa(b) parameter.
"dorA"	Door open	Compressor and fans restarts.
"GenA"	External alarm	Output unchanged.
"SerA"	Serious external alarm	All outputs OFF.
"PreA"	Pressure switch alarm	All outputs OFF.
"GasA"	Gas leak alarm	It depends on the "Sgla" parameter.

10.1 ALARM RECOVERY

Probe alarms "Pb1E", "Pb2E" and "Pb3E" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "HAlr", "LAlr" "CoHA" and "CoLA" automatically stop as soon as the temperature returns to normal values.
Alarms "dorA","GenA",and "GasA" recover as soon as the digital input is disabled.
Alarm "SerA" "PreA" recovers only by switching off and on the instrument.

10.2 OTHER MESSAGES

Pon	Keyboard unlocked.
PoF	Keyboard locked.

11. DEFAULT SETTING VALUES

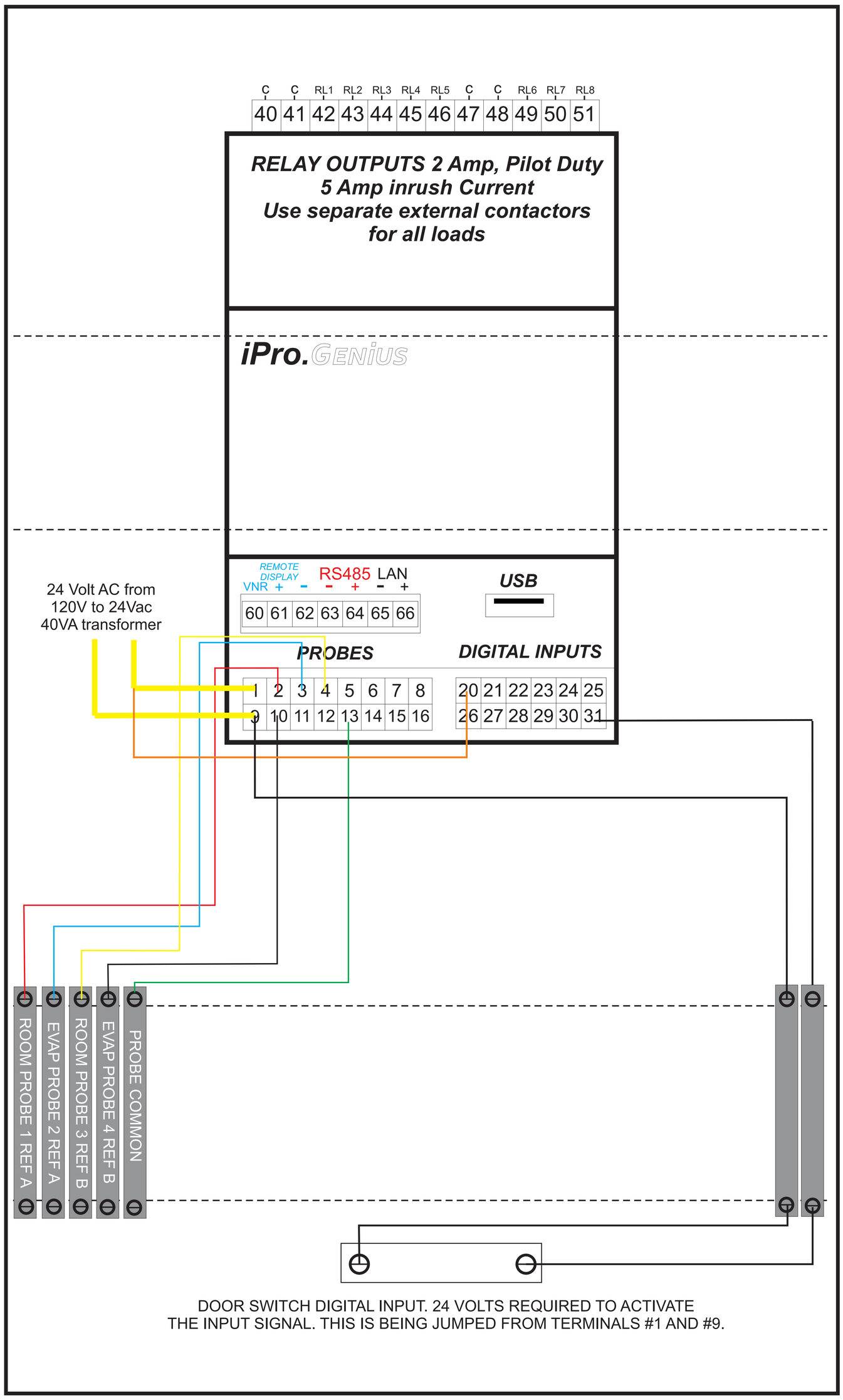
Label	Name	Range	Value (C)	Value (F)	Level
Seta	Set point of system A	LSa to USa	-18	0	Pr1
Hya	Differential of system A	0.1 to 25.5°C/ 1 to 255°F	1	4	Pr2
LSa	Minimum set point of system A	-50°C÷SETa/-58°F÷SETa	-50	-58	Pr2
USa	Maximum set point of system A	SETa÷110°C/ SETa ÷ 230°F	110	230	Pr2
Ota	Thermostat probe calibration of system A	-12÷12°C /-120÷120°F	0.0	0	Pr2
P2Pa	Evaporator probe presence of system A	N=not present; Y=pres.	Y	Y	Pr2
OEa	Evaporator probe calibration of system A	-12÷12°C /-120÷120°F	0.0	0	Pr2
P3Pa	Third probe presence of system A	N=not present; Y=pres.	N	N	Pr2
O3a	Third probe calibration of system A	-12÷12°C /-120÷120°F	0	0	Pr2
ACa	Anti-short cycle delay of system A	0 ÷ 50 min	1	1	Pr2
rtra	P1-P2 percentage for regulation of system A	0 to 100 (100=P1 , 0=P2)	100	100	Pr2
CCta	Continuos cycle duration of system A	0.0 to 24.0h	0.0	0.0	Pr2
CCSa	Set point for continuous cycle of system A	(-55.0 to 150,0°C) (-67 to 302°F)	0	0	Pr2
COna	Compressor ON time with faulty probe of system A	0 ÷ 255 min	15	15	Pr2
COFa	Compressor OFF time with faulty probe of system A	0 ÷ 255 min	30	30	Pr2
tdFa	Defrost type of system A	EL=el. heater; in= hot gas	EL	EL	Pr2
dFPa	Probe selection for defrost termination of system A	nP; P1; P2; P3; na	P2	P2	Pr2
dtEa	Defrost termination temperature of system A	-50 ÷ 50 °C	8	46	Pr2
IdFa	Interval between defrost cycles of system A	1 ÷ 120 ore	6	6	Pr2
MdFa	(Maximum) length for defrost of system A	0 ÷ 255 min	30	30	Pr2
dSda	Start defrost delay of system A	0 to 99min	0	0	Pr2
dAda	MAX display delay after defrost of system A	0 to 255 min	30	30	Pr2
Fdta	Draining time of system A	0 to 120 min	0	0	Pr2
dPoa	First defrost after startup of system A	N=after IdFa; Y=immed.	N	n	Pr2
dAFa	Defrost delay after fast freezing of system A	0 to 23h e 50'	0.0	0.0	Pr2
Fnca	Fan operating mode of system A	C-n, o-n, C-y, o-Y	O-N	o-n	Pr2
Fnda	Fan delay after defrost of system A	0 to 255min	10	10	Pr2
Fcta	Differential of temperature for forced activation of fans of system A	0 to 50°C	2	20	Pr2
FSta	Fan stop temperature of system A	-50 to 50°C/-58 to 122°F	1	36	Pr2
Fona	Fan on time with compressor off of system A	0 to 15 (min.)	0	0	Pr2
FoFa	Fan off time with compressor off of system A	0 to 15 (min.)	0	0	Pr2
FAPa	Probe selection for fan management of system A	nP; P1; P2; P3; na	P2	P2	Pr2
ALca	Temperat. alarms configuration of system A	rE= related to seta; Ab = absolute	Ab	Ab	Pr2
ALUa	MAXIMUM temperature alarm of system A	Seta÷110.0°C; Seta to 230°F	110	230	Pr2
ALLa	Minimum temperature alarm of system A	-50.0°C÷Seta/ -58°F÷Seta	-50	-58	Pr2
AFHa	Differential for temperat. alarm recovery of system A	(0.1°C to 25.5°C) (1°F to 45°F)	1	2	Pr2
ALda	Temperature alarm delay of system A	0 ÷ 255 min	15	15	Pr2
dAOa	Delay of temperature alarm at start up of system A	0 ÷ 23h e 50'	1.3	1.3	Pr2
AP2a	Probe for temperat. alarm of condenser of system A	nP; P1; P2; P3; na	nP	Np	Pr2
AL2a	Condenser for low temperat. alarm of system A	(-55 to 150°C) (-67 to 302°F)	-50	-40	Pr2
AU2a	Condenser for high temperat. alarm of system A	(-55 to 150°C) (-67 to 302°F)	150	230	Pr2
AH2a	Differ. for condenser temp. alar. recovery of system A	[0.1°C to 25,5°C] [1°F to 45°F]	1	10	Pr2
Ad2a	Condenser temperature alarm delay of system A	0 to 254 (min.) , 255=nU	15	15	Pr2
dA2a	Delay of cond. temper. alarm at start up of system A	0.0 to 23h 50'	1.3	1,3	Pr2
bLLa	Compr. off for condenser low temperature alarm of system A	N(0) - Y(1)	N	N	Pr2
AC2a	Compr. off for condenser high temperature alarm of system A	N(0) - Y(1)	N	N	Pr2
tbAa	Alarm relay disabling of system A	N=no; Y=yes	Y	Y	Pr2
oA3a	Fourth relay configuration of system A	ALr = alarm; dEF = do not select it; Lig = do not select it; AUS = do not select it; onF=always on; Fan= do not select it; db = do not select it; dF2 = do not select it	ALr	ALr	Pr2
AoPa	Alarm relay polarity (oA3a=ALr) of system A	op; cl	cl	cl	Pr2
CoPa	Compressor relay polarity of system A	op; cl	cl	cl	Pr2
FoPa	Fan relay polarity of system A	op; cl	cl	cl	Pr2
DoPa	Defrost relay polarity of system A	op; cl	Cl	cl	Pr2
dida	Digital input alarm delay of system A	0 to 255min	15	15	Pr2
Npsa	Number of activation of pressure switch of system A	0 to 15	15	15	Pr2
odca	Compress and fan status when open door of system A	no; Fan; CPr; F_C	No	No	Pr2
rrda	Regulation restart with door open alarm of system A	N (0)– Y(1)	Y	Y	Pr2
HESa	Differential for Energy Saving of system A	(-30°C to 30°C) (-54°F to 54°F)	0	0	Pr2
Setb	Set point of system B	LSb to USb	0	0	Pr1
Hyb	Differential of system B	0.1 to 25.5°C/ 1 to 255°F	4	4	Pr2
LSb	Minimum set point of system B	-50°C to SETb/-58°F to SETb	-50	-58	Pr2
USb	Maximum set point of system B	SETb to 110°C/ SETb to 230°F	110	230	Pr2
Otb	Thermostat probe calibration of system B	-12 to 12°C /-120 to 120°F	0.0	0	Pr2
P2Pb	Evaporator probe presence of system B	N=not present; Y=pres.	Y	Y	Pr2
OEb	Evaporator probe calibration of system B	-12 to 12°C /-120 to 120°F	0.0	0	Pr2
P3Pb	Third probe presence of system B	N=not present; Y=pres.	N	N	Pr2
O3b	Third probe calibration of system B	-12 to 12°C /-120 to 120°F	0	0	Pr2
ACb	Anti-short cycle delay of system B	0 to 50 min	1	1	Pr2
rtrb	P1-P2 percentage for regulation of system B	0 to 100 (100=P1 , 0=P2)	100	100	Pr2
CCtb	Continuos cycle duration of system B	0.0 to 24.0h	0.0	0.0	Pr2
CCSb	Set point for continuous cycle of system B	(-55.0 to 150,0°C) (-67 to 302°F)	0	0	Pr2
COnb	Compressor ON time with faulty probe of system B	0 to 255 min	15	15	Pr2
COFb	Compressor OFF time with faulty probe of system B	0 to 255 min	30	30	Pr2
tdFb	Defrost type of system B	EL=el. heater; in= hot gas	EL	EL	Pr2
dFPb	Probe selection for defrost termination of system B	nP; P1; P2; P3; na	P2	P2	Pr2
dtEb	Defrost termination temperature of system B	-50 to 50 °C	8	46	Pr2
IdFb	Interval between defrost cycles of system B	1 to 120 ore	6	6	Pr2

Label	Name	Range	Value (C)	Value (F)	Level
MdFb	(Maximum) length for defrost of system B	0 to 255 min	30	30	Pr2
dSdb	Start defrost delay of system B	0 to 99min	0	0	Pr2
dAdb	MAX display delay after defrost of system B	0 to 255 min	30	30	Pr2
Fdtb	Draining time of system B	0 to 120 min	0	0	Pr2
dPob	First defrost after startup of system B	N=after IdFb; Y=immed.	N	N	Pr2
dAFb	Defrost delay after fast freezing of system B	0 to 23h e 50'	0.0	0.0	Pr2
Fncb	Fan operating mode of system B	C-n, o-n, C-y, o-Y	o-Y	o-Y	Pr2
Fndb	Fan delay after defrost of system B	0 to 255min	0	0	Pr2
Fctb	Differential of temperature for forced activation of fans of system B	0 to 50°C	2	20	Pr2
FStb	Fan stop temperature of system B	-50 to 50°C/-58 to 122°F	2	36	Pr2
Fonb	Fan on time with compressor off of system B	0 to 15 (min.)	0	0	Pr2
FoFb	Fan off time with compressor off of system B	0 to 15 (min.)	0	0	Pr2
FAPb	Probe selection for fan management of system B	nP; P1; P2; P3; na	P2	P2	Pr2
ALcb	Temperat. alarms configuration of system B	rE= related to setb; Ab = absolute	Ab	Ab	Pr2
ALUb	MAXIMUM temperature alarm of system B	Setb÷110.0°C; Setb to 230°F	110	230	Pr2
ALLb	Minimum temperature alarm of system B	-50.0°C÷Setb/ -58°F÷Setb	-50	-58	Pr2
AFHb	Differential for temperat. alarm recovery of system B	(0,1°C to 25,5°C) (1°F to 45°F)	1	2	Pr2
ALdb	Temperature alarm delay of system B	0 to 255 min	15	15	Pr2
dAOb	Delay of temperature alarm at start up of system B	0 to 23h e 50'	1.3	1.3	Pr2
AP2b	Probe for temperat. alarm of condenser of system B	nP; P1; P2; P3;na	nP	nP	Pr2
AL2b	Condenser for low temperat. alarm of system B	(-55 to 150°C) (-67 to 302°F)	-50	-40	Pr2
AU2b	Condenser for high temperat. alarm of system B	(-55 to 150°C) (-67 to 302°F)	110	230	Pr2
AH2b	Differ. for condenser temp. alar. recovery of system B	[0.1°C to 25.5°C] [1°F to 45°F]	1	10	Pr2
Ad2b	Condenser temperature alarm delay of system B	0 to 254 (min.) , 255=nU	15	15	Pr2
dA2b	Delay of cond. temper. alarm at start up of system B	0.0 to 23h 50'	1.3	1.3	Pr2
bLLb	Compr. off for condenser low temperature alarm of system B	N(0) - Y(1)	N	N	Pr2
AC2b	Compr. off for condenser high temperature alarm of system B	N(0) - Y(1)	N	N	Pr2
tbAb	Alarm relay disabling of system B	N=no; Y=yes	Y	Y	Pr2
oA3b	Fourth relay configuration of system B	ALr = alarm; dEF = do not select it; Lig = do not select it; AUS = do not select it; onF=always on; Fan= do not select it; db = do not select it; dF2 = do not select it	Alr	ALr	Pr2
AoPb	Alarm relay polarity (oA3b=ALr) of system B	op; cl	cL	cl	Pr2
CoPb	Compressor relay polarity of system B	op; cl	cL	cl	Pr2
FoPb	Fan relay polarity of system B	op; cl	cL	cl	Pr2
DoPb	Defrost relay polarity of system B	op; cl	cL	cl	Pr2
didb	Digital input alarm delay of system B	0 to 255min	15	15	Pr2
Npsb	Number of activation of pressure switch of system B	0 to 15	15	15	Pr2
odcb	Compress and fan status when open door of system B	no; Fan; CPr; F_C	No	No	Pr2
rrdb	Regulation restart with door open alarm of system B	N(0) – Y(1)	Y	Y	Pr2
HESb	Differential for Energy Saving of system B	(-30°C to 30°C) (-54°F to 54°F)	0	0	Pr2
AI01	Analog input 01 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	Pb1sa	pb1sa	Pr2
AI02	Analog input 02 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	pb2sa	pb2sa	Pr2
AI03	Analog input 03 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	Nu	nu	Pr2
AI04	Analog input 04 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	pb1sb	pb1sb	Pr2
AI05	Analog input 05 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	pb2sb	pb2sb	Pr2
AI06	Analog input 06 configuration	nu; pb1sa; pb2sa; pb3sa; na; pb1sb; pb2sb; pb3sb;na	Nu	nu	Pr2
DI01	Digital input 01 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	Ga	Pr2
DI02	Digital input 02 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI03	Digital input 03 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI04	Digital input 04 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI05	Digital input 05 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI06	Digital input 06 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI07	Digital input 07 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI08	Digital input 08 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI09	Digital input 09 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI10	Digital input 10 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DI11	Digital input 11 configuration	nu; Ga; Sa; Ps1; Ps2; htr; ES; Gl1; Gl2; Chg	Nu	nu	Pr2
DO01	Digital output 01 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Ca	Ca	Pr2
DO02	Digital output 02 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Fa	fa	Pr2
DO03	Digital output 03 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Da	da	Pr2
DO04	Digital output 04 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Aa	aa	Pr2
DO05	Digital output 05 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Cb	Cb	Pr2
DO06	Digital output 06 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Fb	fb	Pr2
DO07	Digital output 07 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Db	db	Pr2
DO08	Digital output 08 configuration	nu; Ca; fa; da; aa; Cb; fb; db; ab	Ab	ab	Pr2
Adr	Serrial address	1 to 247	1	1	Pr2
OdS	Outputs delay at start up	0 to 255 min	0	0	Pr2
Dsp	Door switch polarity	op; cl	Cl	cl	Pr2
Gap	Generic switch polarity	op; cl	Cl	cl	Pr2
Sap	Serious alarm polarity	op; cl	Cl	cl	Pr2
Psp1	Pressure switch polarity of system A	op; cl	Cl	cl	Pr2
Psp2	Pressure switch polarity of system B	op; cl	Cl	cl	Pr2
Iap	Inversion of the kind of action (cooling-heating) polarity	op; cl	Cl	cl	Pr2
Esp	Energy saving input polarity	op; cl	Cl	cl	Pr2
Gs1p	Gas leak detector of system A	op; cl	Cl	cl	Pr2
Gs2p	Gas leak detector of system B	op; cl	Cl	cl	Pr2
rtr	Percentage of the first probe of system A and system B for Multi-System operation mode	0 to 100 (100=P1s1 , 0=P1s2)	50	50	Pr2
mod	Mode selection	Normal; MULTI-SYSTEM	Normal	Normal	Pr2
tis	Time interval for two system switching	1 to 255 h	12	12	Pr2
mal	Max alarm number to lock the system	0 to 15	10	10	Pr2
ada	Alarm delay to avoid non-system alarm	0 to 255min	180	180	Pr2
AiM	High temp detecting delay	0 to 255min	30	30	Pr2
syd	Simultaneous defrost	N(0) - Y(1)	Y	Y	Pr2

Label	Name	Range	Value (C)	Value (F)	Level
PbC	Kind of probe	Ptc; ntc	Ntc	ntc	Pr2
onF	on/off key enabling	nu, oFF; ES	Es	ES	Pr2
OnOn	Minimum time between 2 following switching on of 2 compressors	0 to 255min	0	0	Pr2
Don	Minimum time between 2 following switching on of 2 compressors	0 to 255min	0	0	Pr2
DoF	Minimum time between 2 following switching off of 2 compressors	0 to 255min	0	0	Pr2
Sgla	Shut down system when gas leak occur	N(0) - Y(1)	N	N	Pr2
ert	Equal run times/ Fix sequence	FIX; BAL	Fix	FIX	Pr2
pdt	Pump down time	0 to 255sec	10	10	Pr2
CF	Temperature measurement unit	°C to °F	°F	°F	Pr1
rES	Resolution	in=integer; dE= dec.point	In	in	Pr2
Lod	Probe displayed	P1;P2;P3;na;SET;dtr	P1	P1	Pr2
dLy	Display temperature delay	0 to 20.0 min (10 sec.)	0	0	Pr2
dtr	P1-P2 percentage for disply	1 to 99	50	50	Pr2
MS1	First Energy Saving cycle starting time on Sunday	0 to 24h	0	0	Pr1
MS2	First Energy Saving cycle ending time on Sunday	0 to 24h	0	0	Pr1
MS3	Second Energy Saving cycle starting time on Sunday	0 to 24h	0	0	Pr1
MS4	Second Energy Saving cycle ending time on Sunday	0 to 24h	0	0	Pr1
MS5	Third Energy Saving cycle starting time on Sunday	0 to 24h	0	0	Pr1
MS6	Third Energy Saving cycle ending time on Sunday	0 to 24h	0	0	Pr1
MM1	First Energy Saving cycle starting time on Monday	0 to 24h	0	0	Pr1
MM2	First Energy Saving cycle ending time on Monday	0 to 24h	0	0	Pr1
MM3	Second Energy Saving cycle starting time on Monday	0 to 24h	0	0	Pr1
MM4	Second Energy Saving cycle ending time on Monday	0 to 24h	0	0	Pr1
MM5	Third Energy Saving cycle starting time on Monday	0 to 24h	0	0	Pr1
MM6	Third Energy Saving cycle ending time on Monday	0 to 24h	0	0	Pr1
MT1	First Energy Saving cycle starting time on Tuesday	0 to 24h	0	0	Pr1
MT2	First Energy Saving cycle ending time on Tuesday	0 to 24h	0	0	Pr1
MT3	Second Energy Saving cycle starting time on Tuesday	0 to 24h	0	0	Pr1
MT4	Second Energy Saving cycle ending time on Tuesday	0 to 24h	0	0	Pr1
MT5	Third Energy Saving cycle starting time on Tuesday	0 to 24h	0	0	Pr1
MT6	Third Energy Saving cycle ending time on Tuesday	0 to 24h	0	0	Pr1
MW1	First Energy Saving cycle starting time on Wednesday	0 to 24h	0	0	Pr1
MW2	First Energy Saving cycle ending time on Wednesday	0 to 24h	0	0	Pr1
MW3	Second Energy Saving cycle starting time on Wednesday	0 to 24h	0	0	Pr1
MW4	Second Energy Saving cycle ending time on Wednesday	0 to 24h	0	0	Pr1
MW5	Third Energy Saving cycle starting time on Wednesday	0 to 24h	0	0	Pr1
MW6	Third Energy Saving cycle ending time on Wednesday	0 to 24h	0	0	Pr1
TM1	First Energy Saving cycle starting time on Thursday	0 to 24h	0	0	Pr1
TM2	First Energy Saving cycle ending time on Thursday	0 to 24h	0	0	Pr1
TM3	Second Energy Saving cycle starting time on Thursday	0 to 24h	0	0	Pr1
TM4	Second Energy Saving cycle ending time on Thursday	0 to 24h	0	0	Pr1
TM5	Third Energy Saving cycle starting time on Thursday	0 to 24h	0	0	Pr1
TM6	Third Energy Saving cycle ending time on Thursday	0 to 24h	0	0	Pr1
MF1	First Energy Saving cycle starting time on Friday	0 to 24h	0	0	Pr1
MF2	First Energy Saving cycle ending time on Friday	0 to 24h	0	0	Pr1
MF3	Second Energy Saving cycle starting time on Friday	0 to 24h	0	0	Pr1
MF4	Second Energy Saving cycle ending time on Friday	0 to 24h	0	0	Pr1
MF5	Third Energy Saving cycle starting time on Friday	0 to 24h	0	0	Pr1
MF6	Third Energy Saving cycle ending time on Friday	0 to 24h	0	0	Pr1
SM1	First Energy Saving cycle starting time on Saturday	0 to 24h	0	0	Pr1
SM2	First Energy Saving cycle ending time on Saturday	0 to 24h	0	0	Pr1
SM3	Second Energy Saving cycle starting time on Saturday	0 to 24h	0	0	Pr1
SM4	Second Energy Saving cycle ending time on Saturday	0 to 24h	0	0	Pr1
SM5	Third Energy Saving cycle starting time on Saturday	0 to 24h	0	0	Pr1
SM6	Third Energy Saving cycle ending time on Saturday	0 to 24h	0	0	Pr1
ESS	Energy Saving schedule enable	NO - YES	No	NO	Pr1

NOTE: In Multi-System operation mode, parameters of system B: Setb, Hyb, LSb, USb, rtrb, CCtb, CCsb, tdFb, IdFb, didb and HESb will be set to the same value as system A.

Weiss Instruments, Inc.
905 Waverly Ave.
Holtsville, NY 11742
sales@weissinstruments.com www.weissinstruments.com



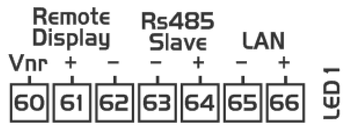
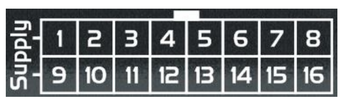
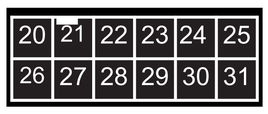
DOOR SWITCH DIGITAL INPUT. 24 VOLTS REQUIRED TO ACTIVATE
THE INPUT SIGNAL. THIS IS BEING JUMPED FROM TERMINALS #1 AND #9.

THE RELAYS ONBOARD THE iPro CONTROL ARE RATED FOR A 2 AMP PILOT DUTY WITH A 5 AMP INRUSH. SO THE USE OF SEPARATE RELAYS/ CONTACTORS IS REQUIRED.

THE COIL SHOULD BE POWERED BY 24Vac/Vdc AND THE COMMON (TERMINALS 40,41AND 47, 48 NEED TO BE USED)

Terminal #	Relay Designation
40	{C} Common for relays 1,2,3 and 4
41	{C} Common for relays 1,2,3 and 4
42	RL1 Relay 1 normally open contact
43	RL2 Relay 2 normally open contact
44	RL3 Relay 3 normally open contact
45	RL4 Relay 4 normally open contact
46	RL5 Relay 5 normally open contact
47	{C} Common for relays 5, 6, 7 & 8
48	{C} Common for relays 5, 6, 7 & 8
49	RL6 Relay 6 normally open contact
50	RL7 Relay 7 normally open contact
51	RL8 Relay 8 normally open contact

PROBE AND DIGITAL INPUTS

	Connector for the VisoGraph RS485 for communications with XWEB LAN for connection of master or slave IPro modules (i.e. IPro Link)
	Terminals 1 & 9 are for 24Vac/dc power supply. Analog Inputs (Pb1-Pb5, and PbC) can be configured as Digital Inputs. Additional power output (+5Vdc,+12Vdc,GNG)
	Digital Inputs (DI1-DI11 and the Ground or Common) 24 Volts needs to be supplied over the switch to create a closed circuit.

RELAY ASSIGNMENTS

TERMINAL NUMBER	LOAD	PARAMETER LABEL
40/41, 42	COMPRESSOR A	DO01
40/41, 43	FAN A	DO02
40/41, 44	DEFROST A	DO03
40/41, 45	ALARM A	DO04
47/48, 46	COMPRESSOR B	DO05
47/48, 49	FAN B	DO06
47/48, 50	DEFROST B	DO07
47/48, 51	ALARM B	DO08