Technical Support
Bulletin No. 23 – Try ColdFace!

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Introduction

A number of regulation options available in the ColdFace family will be explained; these options are in addition to the "basic" regulations and algorithms that Eliwell refrigeration controllers are well-known for.

Did you know that?

1. If **E1,** an environmental probe error, occurs you can decide to enable/disable the compressor relay at set times: **Ont** (**On t**ime compressor) and **OFt** (**OFF t**ime compressor). For example, if they are set to 10 and 5 respectively, for **E1** the compressor relay will switch on for 10 minutes and switch off for 5 minutes until the error is resolved.

2. If **E2** and **E3 occur (when Pb3 is used as evaporator 2 probe),** defrosts will still be run but will always stop in accordance with the programmable timeout only.

3. A second setpoint, either higher or lower than the regulation setpoint, can be programmed using parameter **OSP** (**O**ffset **S**et **P**oint)**.** This allows you to set a different temperature and achieve energy savings.

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4. Parameter **H48** (Presence RTC) allows you to disable the clock and stop the **E10** error from being signalled in the event of a clock failure.

5. Parameter **tcd** allows you to optimize defrost execution: if **tcd>0,** the compressor must have been running for or at least time **tcd** (**t**ime **c**ompressor for **d**efrost) before the defrost can start. This can be used with inversion defrosts for example. If **tcd<0,** the compressor must have been off for at least **tcd** before the defrost can start. This can be used with electrical defrosting for example.

6. Parameter **Cod** (**C**ompressor **o**ff before **d**efrost) enables you to stop the compressor from switching on again within a given time interval before the electrical defrost starts. For example, if **Cod** is set to 10, in the 10 minutes prior to the defrost starting, the compressor will not be switched on even when requested (it would be stopped by the defrost anyway!).
The **ColdFace** regulator can manage **a simple deep cooling cycle** by setting parameters **dSC** (**d**eep **C**ooling Cycle **S**etPoint), **dCS, tdC** (**t**ime **C**ooling Cycle), **and dCC** (**d**elay **C**ooling **C**ycle).

7. The **nAd** menu (**n**ight **A**nd **d**ay) allows you to manage a daily event automatically, plus one event happening every day of the week. At the occurrence of the event, you can activate the reduced set, switch off the light, switch off the device, etc.

8. You can create a list of defrost times for weekdays and one for holidays/weekends (distinguishing the different system load conditions). The controller can distinguish which list to use.

9. The onboard clock enables you to set the time, day of the week and month.

10. HACCP alarms are recorded with details of the date and time they occurred.

11. Digital inputs can be configured to manage "man in cold room" alarms or panic alarms. By connecting a button or switch to this digital input, you can also activate an alarm signal.

12. On accessing programming at the **USr** (**US**er) level, only the main parameters, i.e. basic operational parameters of the controller, will be visible. If you go to the **InS** (**InS**taller) menu, you will be able to see the full list of parameters as indicated on the technical data sheet, including all new functions.

13. With parameter **H60** (select parameter vector) you can select one of the six lists of preconfigured parameters in the controller. In a single step, you can then program more than one parameter at the same time.

14. **ColdFace** can be programmed via a PC using the **ParamManager** program that allows you to customise controllers in accordance with requirements.

15. Temperature can also be regulated on the basis of the difference in values of two probes (**Pb1** and **Pb3**), located for example at the air inlet and recirculation points.

16. The **SV** display can display the parameter value of the setpoint or clock (during display phase and not programming).

17. **ColdFace** can be integrated into monitoring systems using the Modbus protocol: indeed, there is a parameter that allows you to set the communication protocol as either Eliwell or Modbus.

18. If you program the controller via a **CopyCard,** the parameters contained on the card can be downloaded in one easy step: connect the **CopyCard** to the device when switched off. Switch it back on and wait! You don't need to open the programming function.

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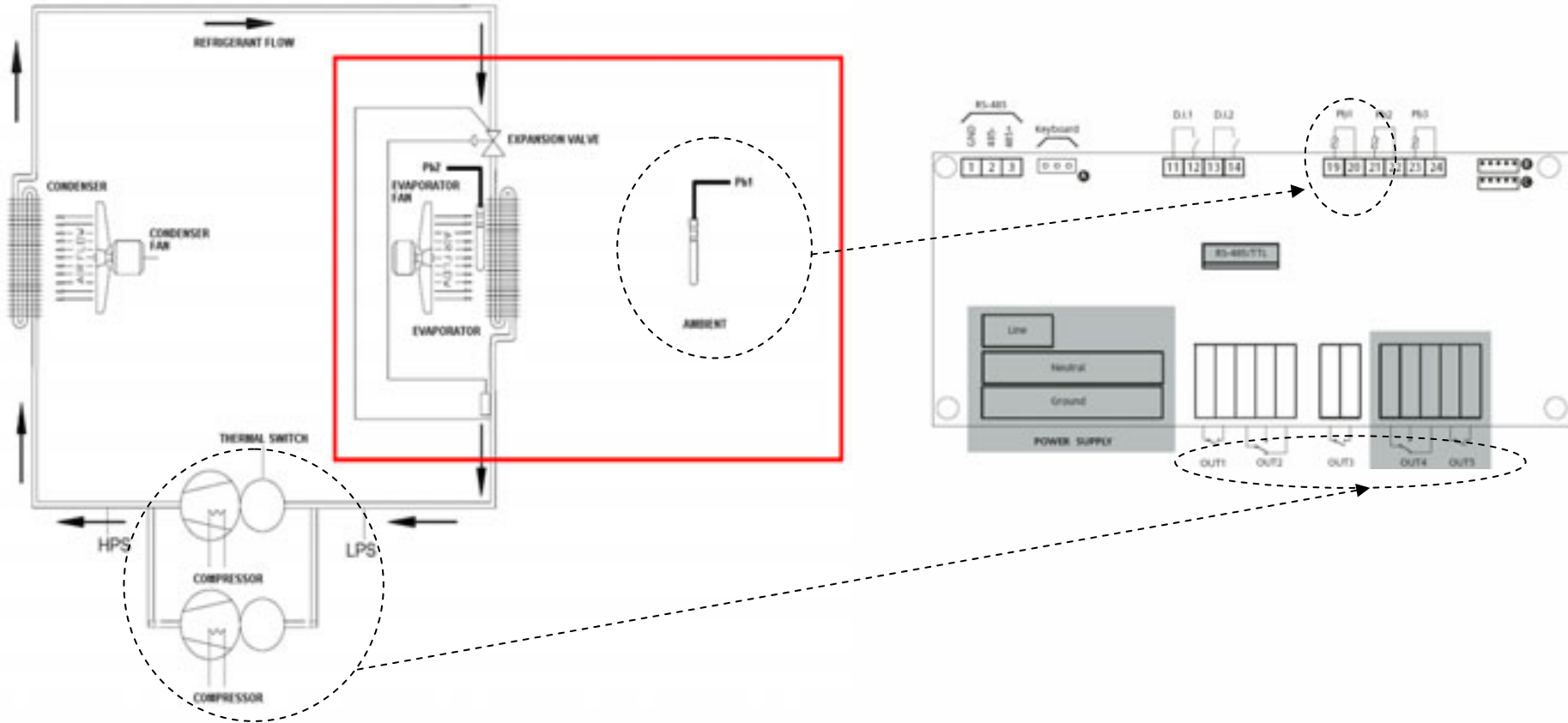
1. Temperature read by Pb1
2. The controller enables/disables compressor 1 in accordance with this rule:
   - ONPb1>SEt+diF
   - OFF Pb1<Set
3. The controller can enable/disable a second compressor with a delay after the first one.

Main parameters:
H21...H25: configuration compressor 1 output (value 1) and compressor 2 output (value 10)
dSC: delay before activation of compressor 2

Control of defrosting of two evaporators
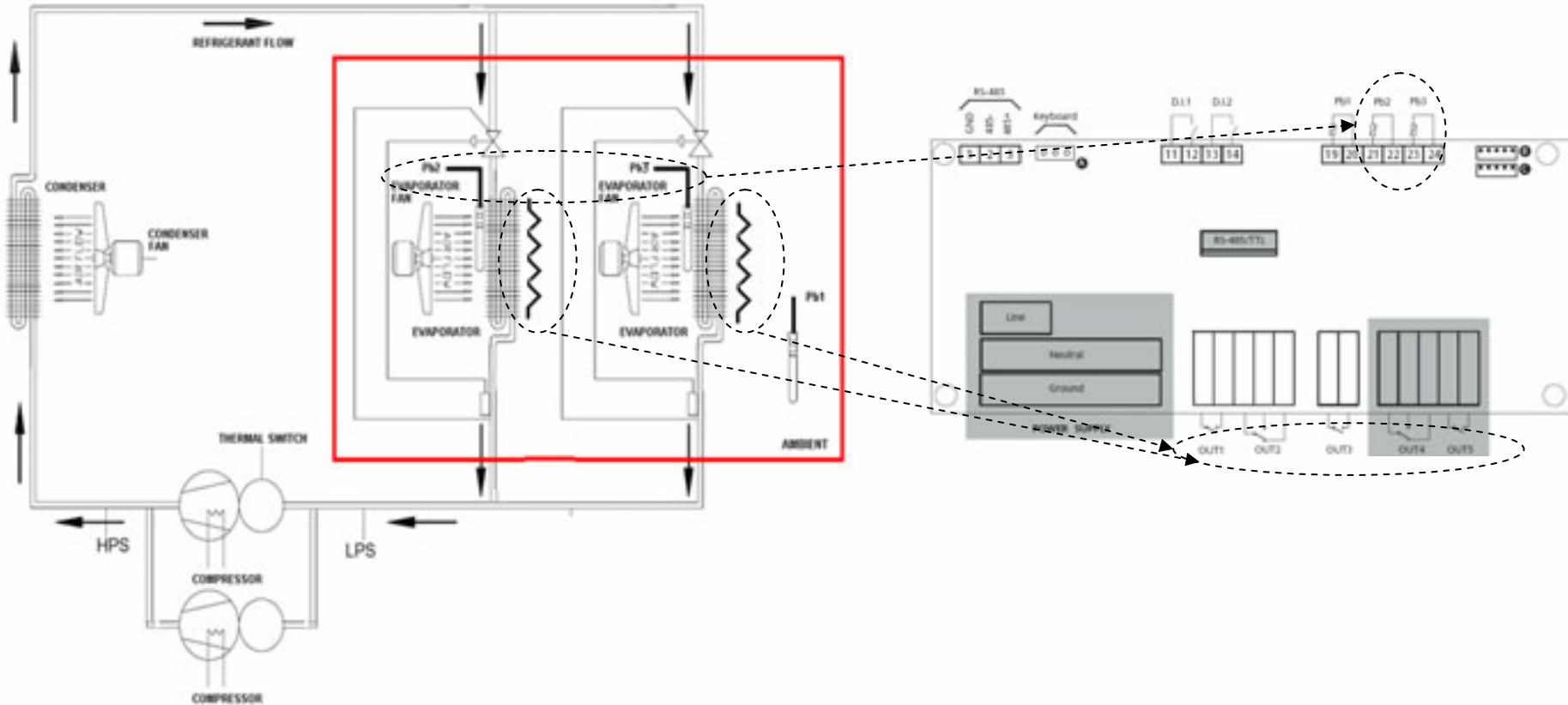
1. Defrosts are activated together.
2. The defrosts end independently depending on the temperatures read by each evaporator probe (Pb2 evaporator 1, Pb3 evaporator 2), or at the end of the defrost timeout.
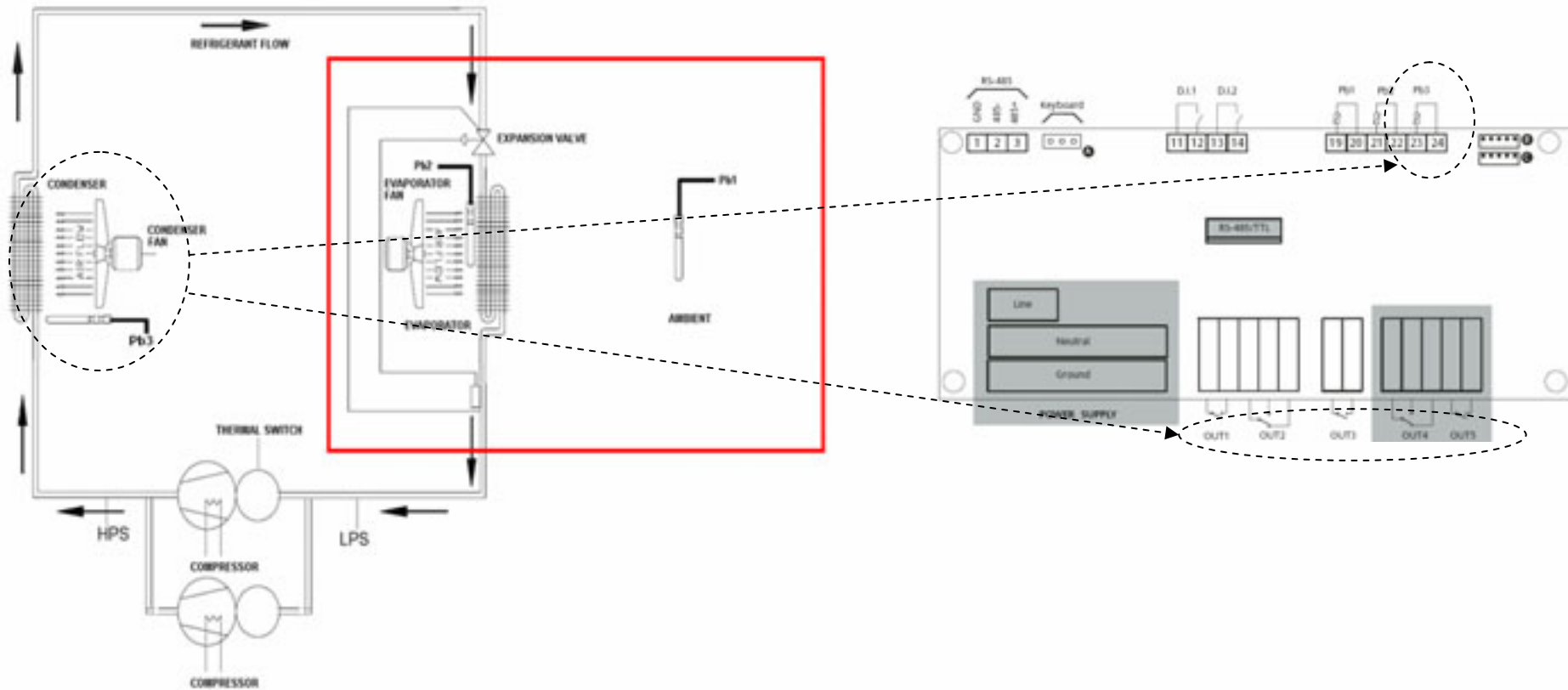
Main parameters:
H21...H25: configuration of output for defrost evaporator 1 (value) and evaporator 2 (value 9)
dEt and dE2: timeout defrost 1 and 2
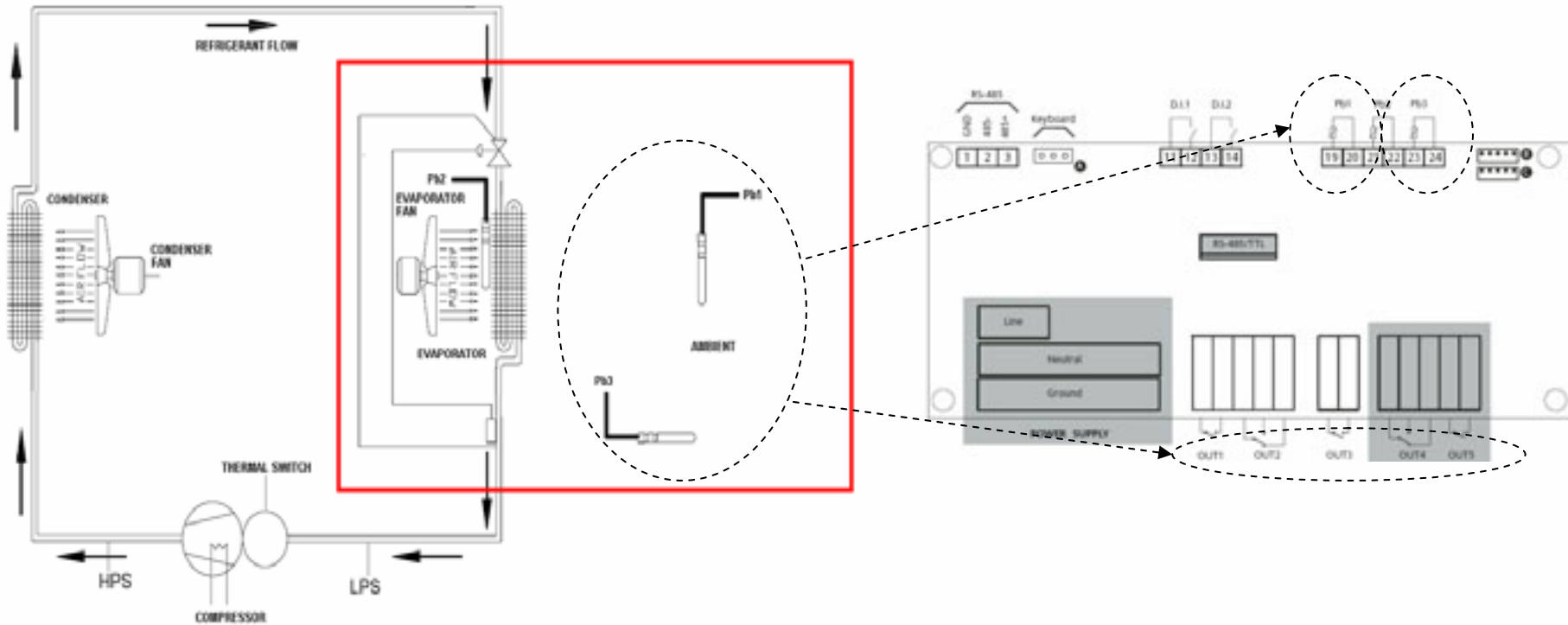**dSt and dS2**: end of defrost temperature evaporator 1 and 2

eliwell

1. Temperature read by Pb3
2. The controller enables/disables the condenser fan in accordance with this rule:
   - ON Pb3>SCF
   - OFF Pb3<SCF-dCF

Main parameters:
H21...H25: configuration of condenser 1 fan output (value 9)
SCF and dCF: condenser fan setpoint and differential

1.   Temperature read by Pb1or Pb3, or by Pb1 and Pb3
2.   The controller signals high or low temperature alarms detected by:
   ● environmental probe Pb1 only
   ● probe Pb3 only, which can be considered a product probe
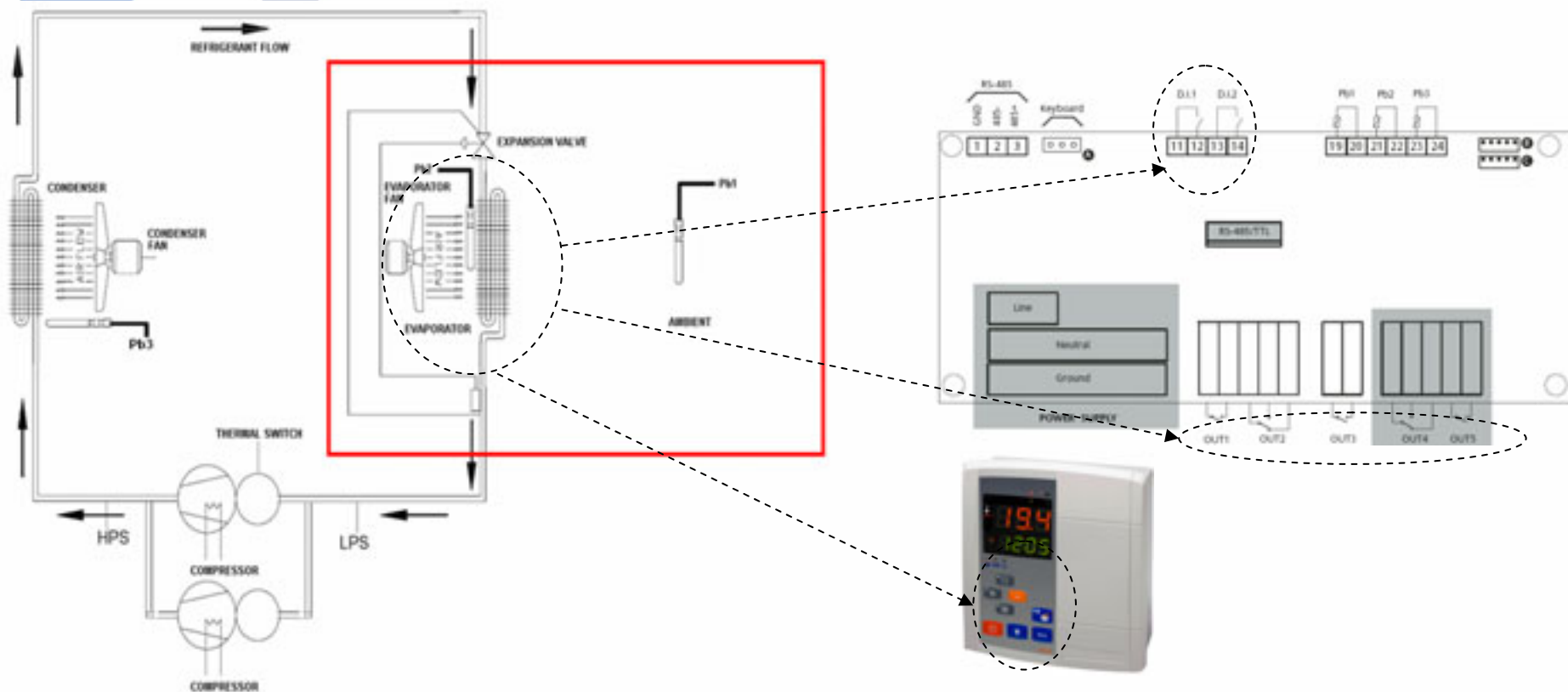   ● environmental probe Pb1 and environmental probe Pb3 at the same time

Main parameters:
H21...H25: configuration of alarm output (value 4)
PbA: select probe for alarm signalling
HAL, LAL, SA3: alarm thresholds based on the configuration of PbA

Forcing of evaporator fan

By means of a manual command from the keyboard or digital input, this allows you to force the evaporator fan on.
It can be used to switch from static to ventilated manually, or to reduce the humidity level by forcing air recirculation.
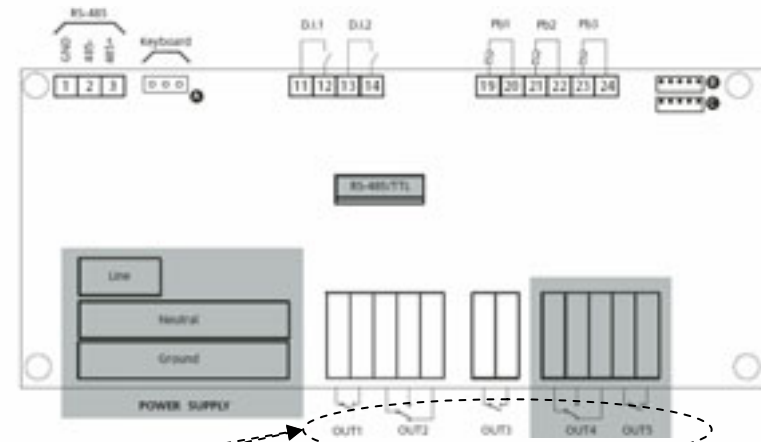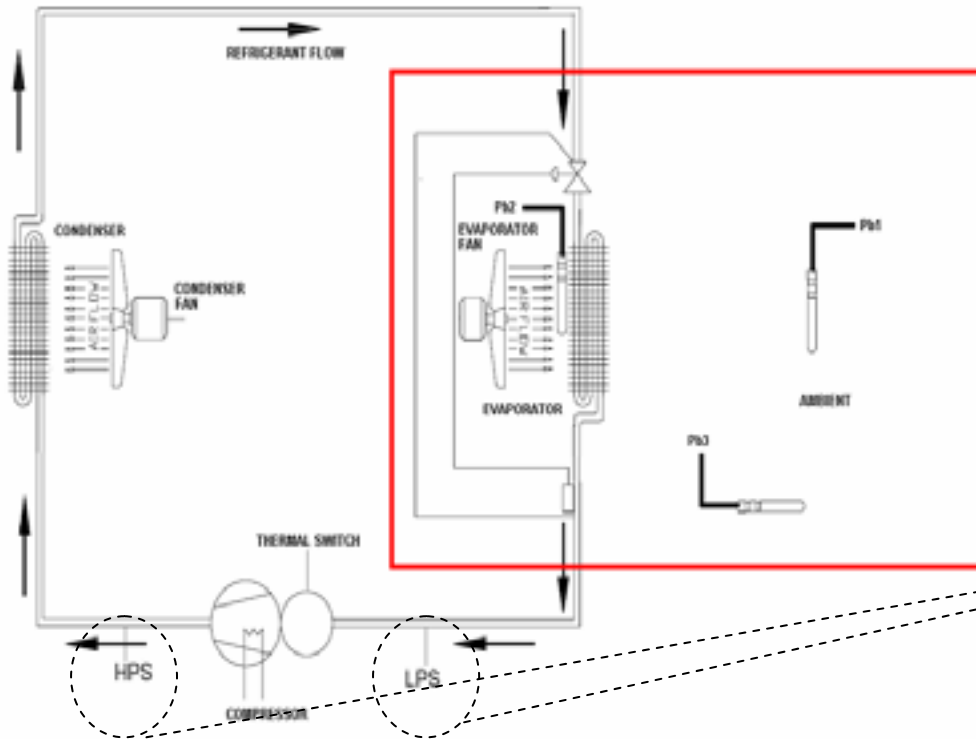
Main parameters:
H21...H25: configuration of evaporator 1 fan (value 3)
H11...H12: configuration of digital input to force the fan on
H31...H36: configuration of key to force fan on

By means of specific programming, the intervention of the following can be detected:
- High pressure switch
- Low pressure switch
- General pressure switch

The compressor will be stopped to prevent any further or potential faults.
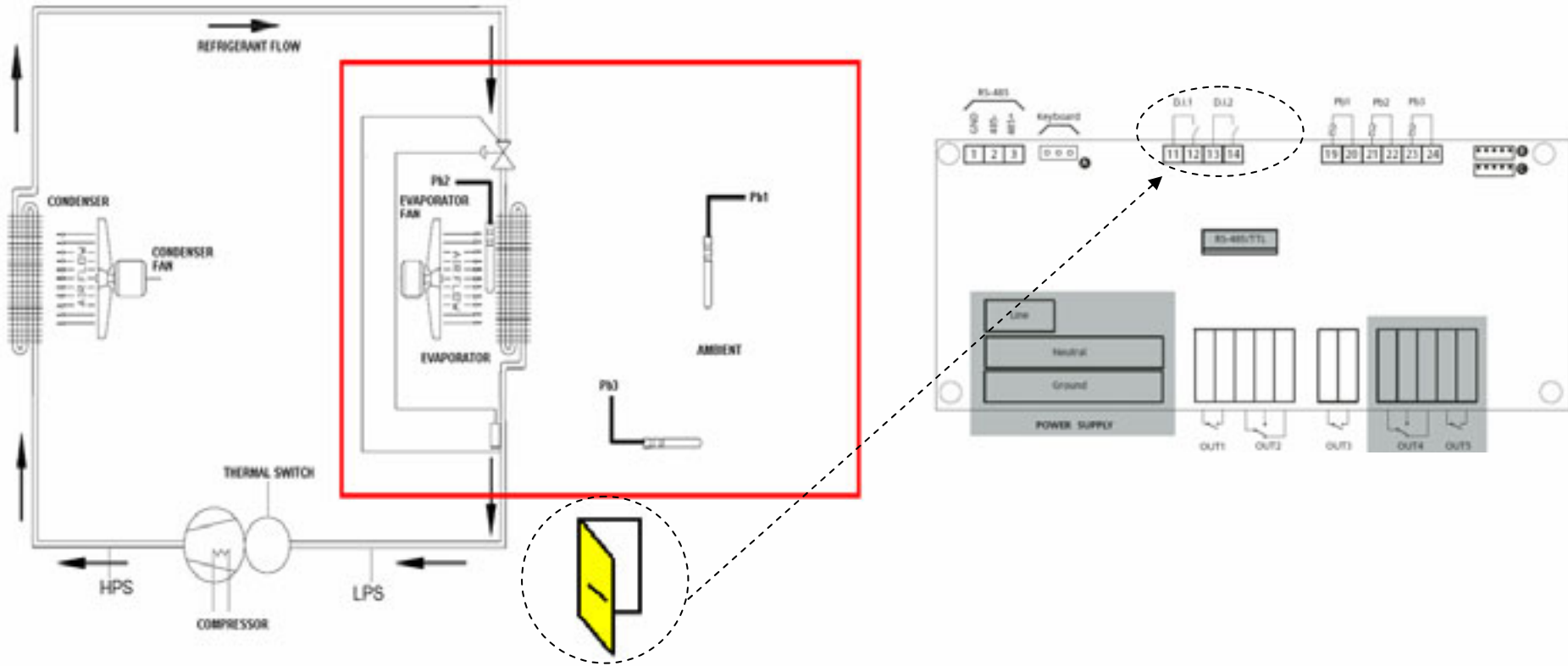
Main parameters:
H11...H12: configuration of high, low or general pressure digital input (10, 9, 11)
PEn: number of interventions per hour (for the manual acknowledgment of the alarm)
PEni: time interval in which to count PEn

By means of specific programming, you can:
● disable the compressor/fan
● switch the light on/off
● restart the compressor/fan a given time after the door is opened: this is useful when the door is closed over but
the door microswitch is still active. Or doors opened in cold rooms with special air curtains that prevent the cold from escaping
and for which temperature control can be restarted.

Main parameters:
H11...H12: configuration of door microswitch digital input (value 4)
dCO: delay before restarting compressor (after door opened)
dFO: delay before restarting fan (after door opened)