# *Dixell XC1000D*
## *Compressor Rack Controllers*

**18 April 2011**

# XC1000D SERIES


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# XC1000D SERIES

## CONTROLLERS for MEDIUM and BIG COMPRESSOR RACKS
## UP TO 15 COMPRESSOR/FAN OUTPUT APPLICATIONS

### MAIN FEATURES

- compressors and condensing fans monitoring and management of medium-large compressor racks
- 2 analogue outputs for frequency compressors and 2 analogue outputs for inverter for fans
- great versatility and extensive customization opportunities
- reduced and dynamic set point for energy saving management
- proportional band or dead band control
- standard communication protocol ModBUS-RTU

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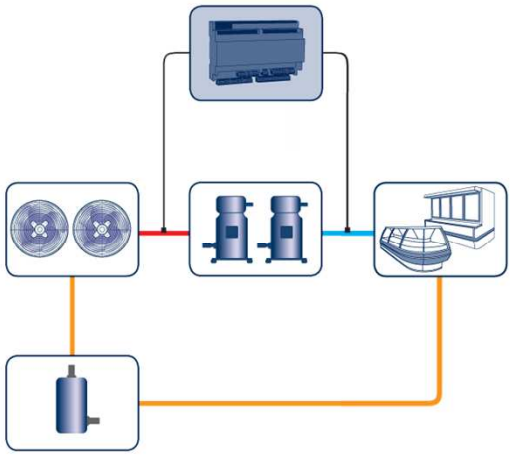
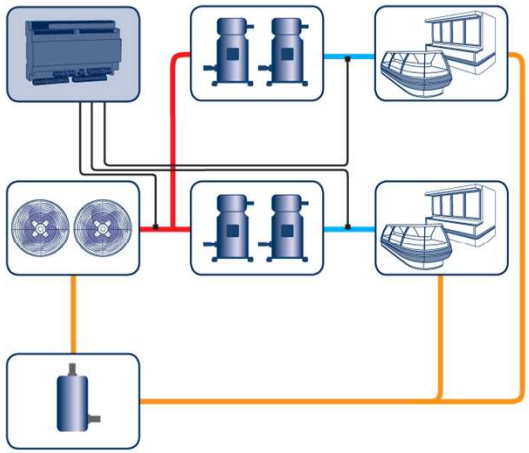
**1 suction circuit**

**1 condensation circuit**



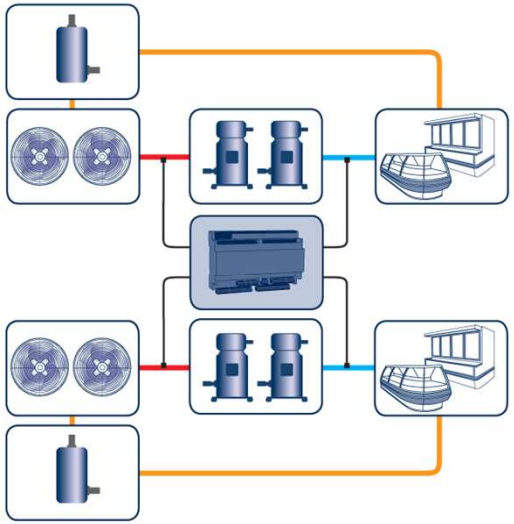
**2 suction circuits**

**1 condensation circuit**



**2 suction circuits**

**2 condensation circuits**



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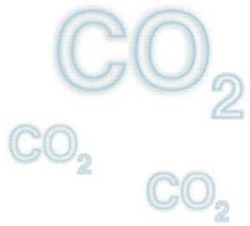


**New**

**Version 1.6**

**PLUS**

- **subcritical $CO_2$ regulation**
- **compressor unloading in case of high condensing pressure alarm**
- **suction superheat calculation with alarm management and possible stop of compressors**
- **liquid injection valve activation to increase superheat**
- **alarm management with absolute and relative pressure**
- **electronic pressure-switch management**

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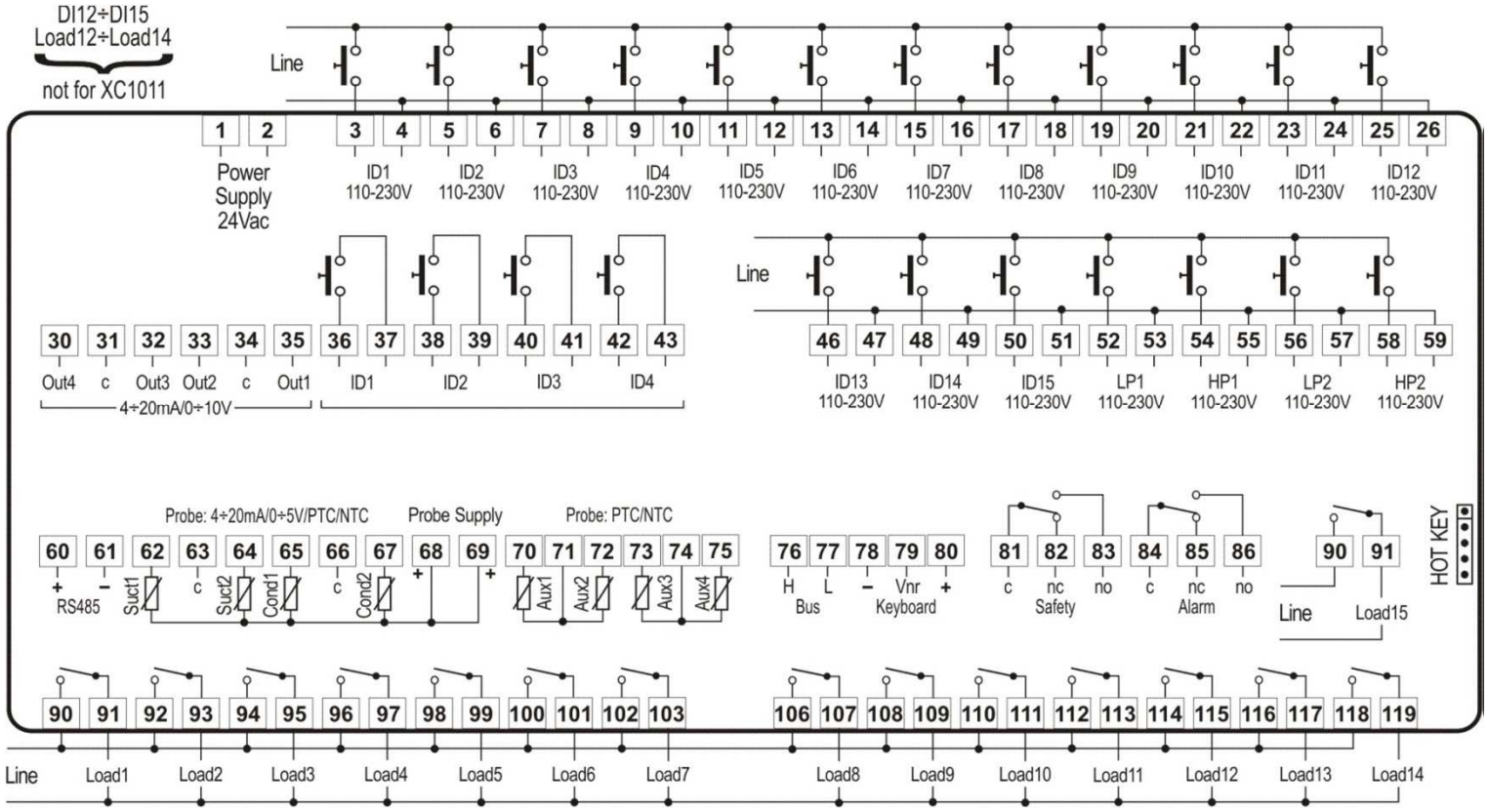
## CONNECTIONS

### XC1015D



# XC1000D SERIES

- DIN RAIL format (10 modules)
- Powerful HW with up to 15 output relays, 4 input probes, 4 auxiliary probes, able to drive inverters
- Innovative graphic keyboard Visograph
- Optimized management of:
  - Dynamic set point for condenser
  - Dynamic set point for suction
  - compressors off in case of high condenser pressure alarm
- Sub-cooling management
- Auxiliary thermostat management
- Internal RTC for energy saving

- Up to 8 configurable probe inputs
- Up to 15 relay outputs
- 4 analog outputs (4-20mA or 0-10V for inverters)
- 4 configurable digital inputs (en. saving; liquid level alarm)
- 19 line voltage inputs for safety (compressors, fans, HP, LP)
- Neutral zone or Proportional band
- Up to 4 inverters management both for compressors and fans
- Balance of compressors running hours

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- **Sub-cooling Management**
- **Dinamic Set Point Management**
  - **Condenser dynamic set point**
  - **Evaporation dynamic st point**
- **Inverter Control of the Compressor Refrigeration Power**

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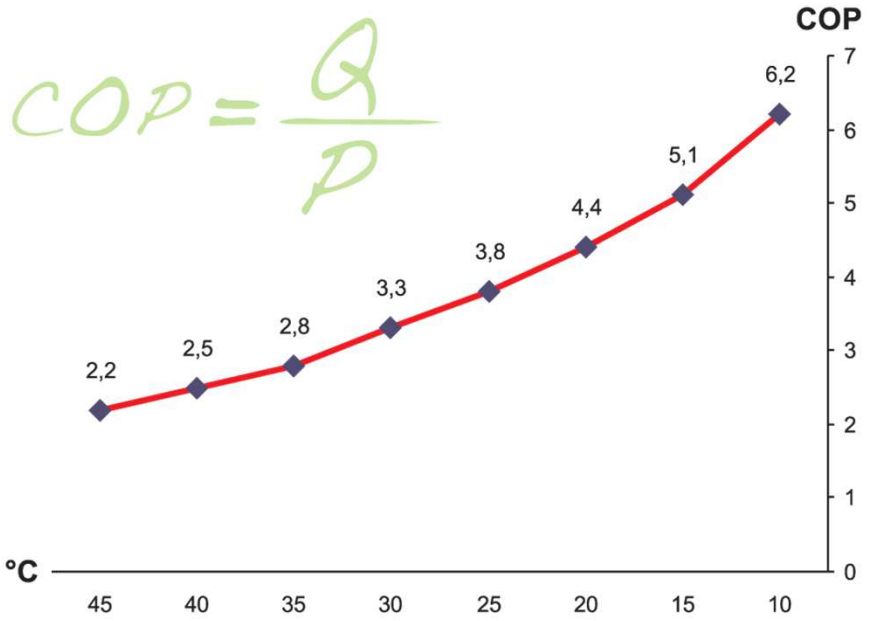
## Dynamic Set Point

**CONDENSING/EVAPORATION temperature control is fundamental for the compressor rack saving.**

**Thanks to “intelligent” and self-adaptive algorithms, the XC1000D series can manage dynamic set point in the best possible way.**




The graph shows, for a single compressor, how with a decreases of the external temperature, the COP coefficient increases, that is the refrigeration effect (Q) compared to the energy consumption (P)

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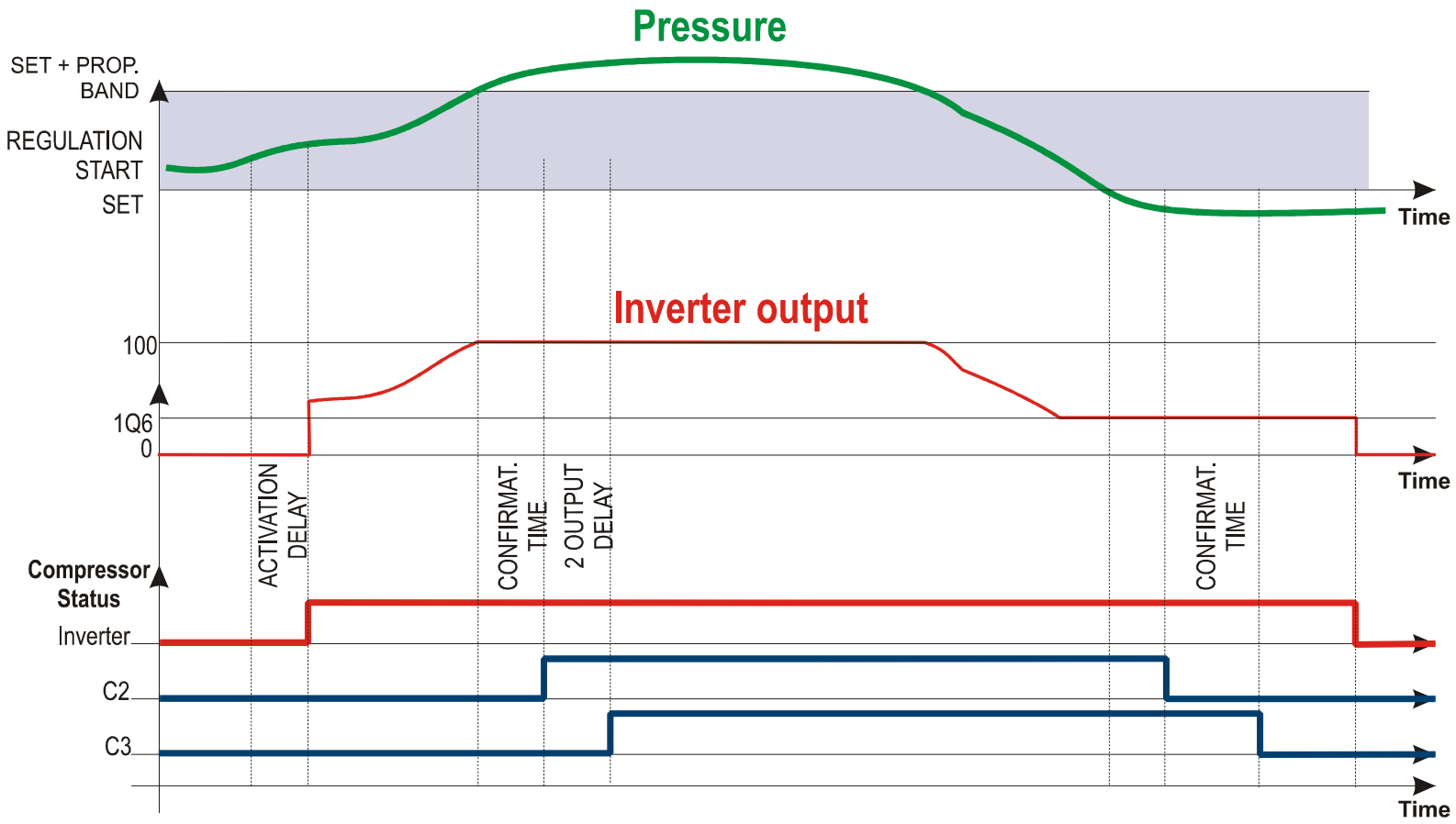
## Proportional regulation - basic example



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**Inverter – Safety against insufficient lubrication at low operating frequencies**
If the frequency compressor operates for a long time under a fixed frequency, it is forced at 100% for an defined interval to restore the right lubrication.
**Booster function**
It's used in dual circuit plants (NT + LT), where the delivery of the LT is sent into the NT suction.
In this configuration, before starting a LT compressor a NT compressor is started to "prepare" the NT circuit to suct the gas coming from the LT circuit.
**Additional functions**
The dynamic set point (including CRO and Energy saving) can be enabled/disabled via digital input. Application: constant delivery pressure is required during a hot gas defrost
Linear inverter (for fans)
Applications: condensers where all the fans are connected to one or more inverters.
A pure proportional regulation is used.
The fan set point can be changed by the main screen without entering programming mode.
Furthermore it's necessary to configure the same number of relays as the fans present in the plant. In this way is possible to connect the thermal overload of the fans to the safety digital inputs of the XC1000D and monitor the fan status.
The overload activation doesn't affect the regulation, but signal a fan malfunctioning to the XC1000D and to the possible monitoring system connected to the XC1000D.
**Screw compressors-** step regulation a step
Now is possible to manage screw compressor.
A step regulation with neutral zone is performed.
The regulation is designed for compressor type Bitzer, Fu Sheng, Hanbell and Frascold.
Furtehrmore the economizer management has been added
**Extendes gas range**
The range of gases available in the XC1000D now includes:
- carbon dioxide (CO2 -R744), both for subcritical and transcritical applications
- R410C
- R22
- R404A
- R507
- R134
- Ammonia (R717)