JOHNSON
CONTROLS

Platform Catalogue
Catalogue Section **1**
Product Bulletin **FX05**
Issue **04 2001**

FX05 Controller

*I*ntroduction

The FX05 is a high performance controller specifically designed for single (scroll and semi-hermetic) compressor chillers and heat pumps. It includes all the functions usually provided by additional devices such as timers, end-of-defrost thermostats, etc. Now they all are in a single device and this implies very easy wiring and limited cost of installation.

Moreover the controller is fully customisable, thanks to a configuration software, and can virtually adapt to any application, provided the right number of inputs and outputs is available.

Optionally the FX05 can be fitted with a serial communication card to be compatible with the LONMARK™ and N2Open worlds.

A Real Time Clock card is also available for energy saving and better management of the application.

FX05 Controller

Features and Benefits	
❑ **Protocol independent**	Adapted to virtually any Building Automation Systems (BAS)
❑ **LONWORKS™ and N2Open™ cards (option)**	Compatible with standard BAS protocols
❑ **Freely configurable**	Adaptable to any application
❑ **NTC K10 or A99 analogue input**	Wide range of sensor inputs available
❑ **Real Time Clock (option)**	Real Time Scheduling of Control activities
❑ **Built-in LED User Interface**	User friendliness

*A*pplication Overview

Input/Output

- 4 analogue inputs (AI)
- 5 digital inputs (DI)
- 6 relays (DO)
- 1 analogue output 0…10Vdc (AO)

Built-in User Interface

Easy to use display, device that can be used to monitor the application. The features included are:

- 3x7 segments red LEDs
- 3 Status LEDs
- 4 Keys
- Easy to navigate Menu
- Display of status information
- Display and modification of Set-points
- Display of configuration parameters
- Display of active alarms

Communication Interface (option)

The FX05 can be integrated in supervisory systems thanks to plug-in communication cards. Several cards are available depending on the supported protocol: LONMARK™ and N2Open™.

Real Time Clock (option)

This Plug-in card allows introducing functions based on a weekly time schedule.

Software and configuration

The FX05 is fully configurable. The configuration is object oriented and free from any language of programmation. A library of objects is available to quickly customise an application.

*A*ccessories

Different accessories are available for the FX05

Item Code	Description
LP-RTC05-000C	Real Time Clock plug-in card
LP-NET051-000C	N2Open communication card
LP-NET052-000C	Echelon™ communication card on-field commissioning
LP-NET052-002C	Echelon™ communication card Chiller/HP profile
U215LR-9110	Condenser fan speed controller single-phase, 3Amps

*S*ensors

Item Code	Description
A99 series	Recalibrated PTC temperature sensor -40…+100°C
TS-9104 series TE-9100-8502	NTC (K10) temperature sensor –10…+100°C

⚠ WARNING

Shock Hazard

When servicing make sure that:

- The electrical supply to the controller is switched off to avoid possible damage to the equipment, personal injury or shock.

- You do not touch or attempt to connect or disconnect wires when electric power is on.

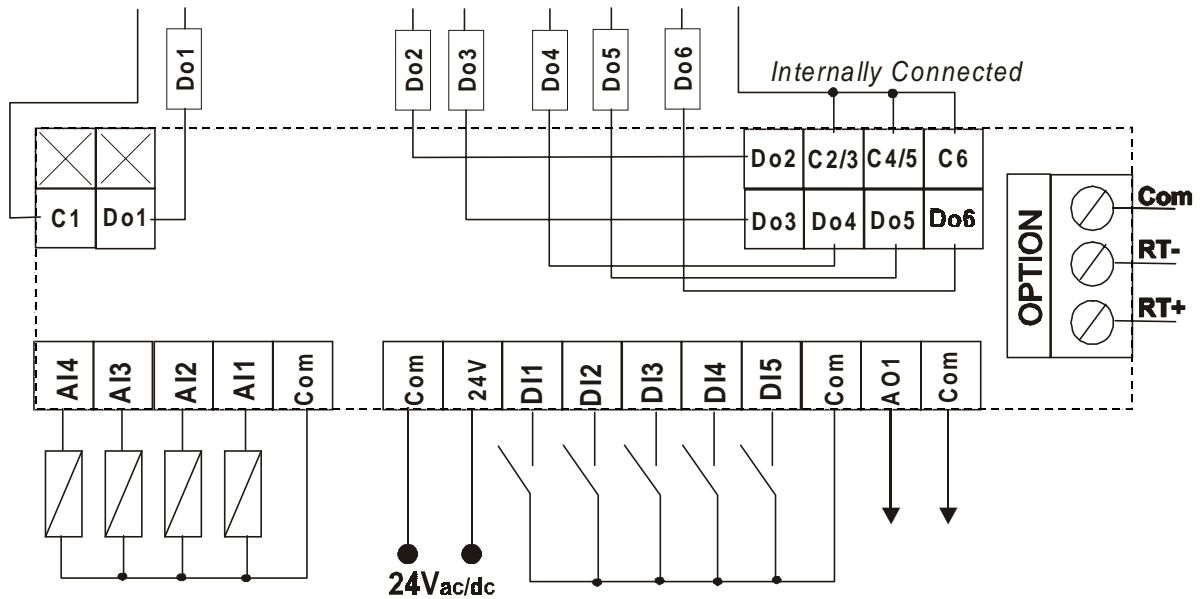# *O*rdering data

LP-FX05P ☐☐ - ☐☐☐ C

Software application

000	Configurable model
050	Air/water chiller
051	Air/water chiller/HP
052	Water/water chiller
053	Water/water chiller/HP

Inputs

01	all A99 inputs - 8 bit microprocessor

*G*eneral wiring diagram

AI: Analog Input; **AO**: Analog Output; **DI**: Digital Input; **DO**: Digital Output

*S*oftware *O*bjects

Each object performs a basic function

Inputs/Outputs

- Analog Input
- Digital Input
- Analog Output
- On/Off Output
- Hermetic Compressor

Control/Alarm Functions

- On/Off Controller
- General Setpoint
- Manual Reset
- Binary Alarm
- Analog Alarm

Numeric/Logic Functions

- Calculation
- Integrator
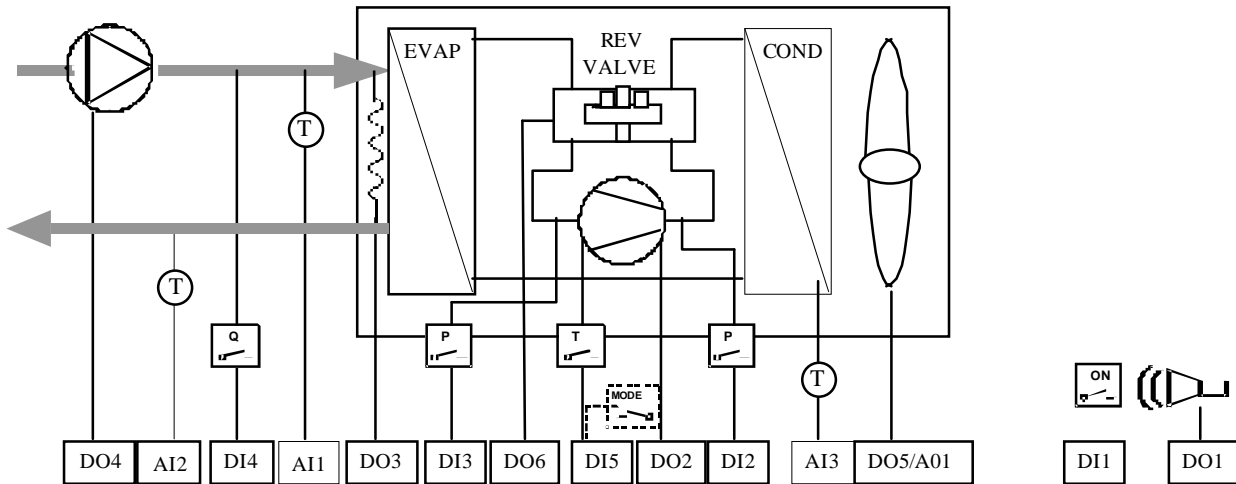- Selector
- Span
- Timer
- And
- Or
- PLC

Unit Conversion

- Convert
- Enumeration to logic
- Chiller Status
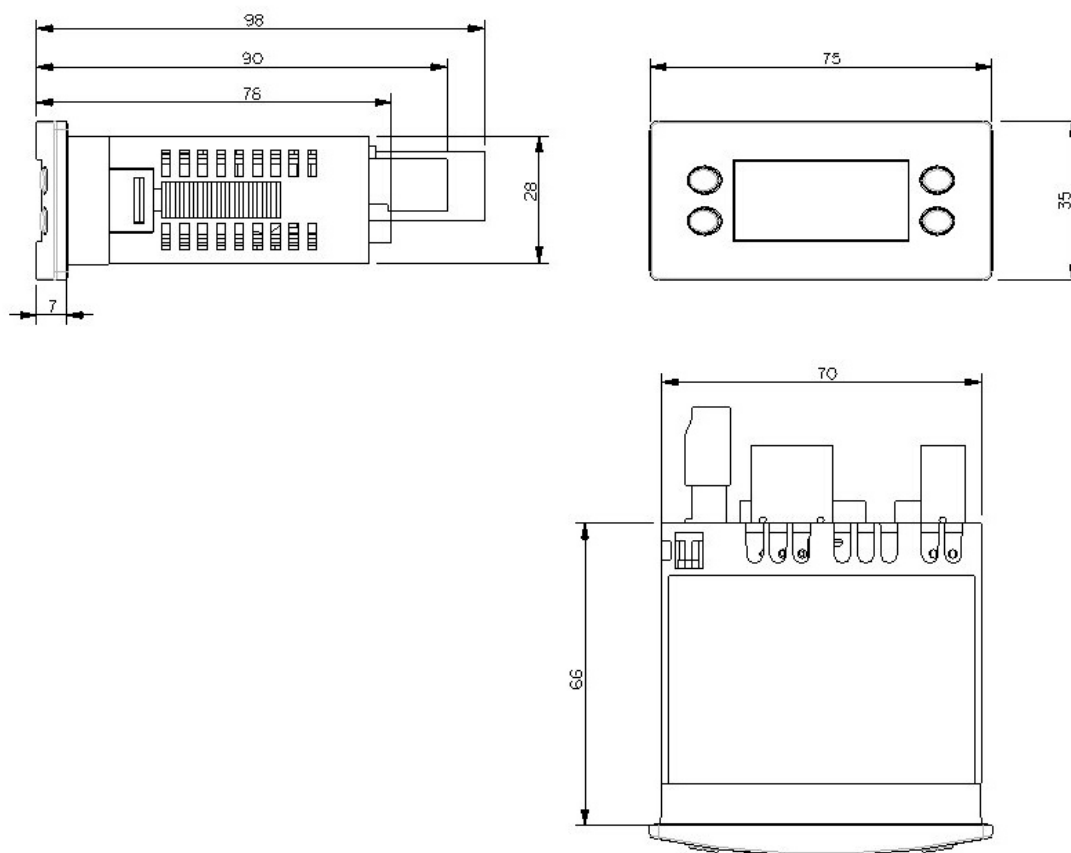- Switch to logic

Others

- System Resources
- Time Schedular

*A*pplication *E*xample

051 - Air/Water Chiller/HP Application

Input /Output

ANALOG INPUT		DIGITAL INPUT		DIGITAL OUTPUT		ANALOG OUTPUT	
AI1	Entering water temperature	**DI1**	Remote ON/OFF	**DO1**	Alarm	**AO1**	Condenser fan speed control
AI2	Leaving water temperature	**DI2**	High Pressure Switch	**DO2**	Compressor		
AI3	Condenser temperature	**DI3**	Low Pressure Switch	**DO3**	Evaporator Heater		
		DI4	Flow Switch	**DO4**	Pump		
		DI5	Motor Protection or Heat/Cool selection	**DO5**	Condenser ON/OFF fan		
				DO6	Reverse Valve		

*D*imensions *(in mm)*

Specifications

Power Supply	24 Vac/dc ±15%, 50/60Hz		
Power Consumption	6 VA		
Protection Class	Front plate IP 54 Rear IP 20		
Insulation	Class II		
Ambient Operating Conditions	-20°C to 55°C 10 to 95 % RH (non condensing)		
Ambient Storage Conditions	-30° to +80°C 10 to 95 % RH (non condensing)		
Control Accuracy	± 0,3°C (sensor not included)		
Display Resolution	± 0.1°C, between −9.9 to +99.9		
I/O ratings	Digital inputs	Voltage free contacts, 3k3 pull-up resistors, not insulated	
	Analog inputs	A99 JCI temperature sensor or NTC 10KΩ at 25°C (factory configurable)	
	Analog Outputs	0…10Vdc, 5mA, not insulated	
	Relay Outputs	DO1	SPST 5(1)A, 250Vac
		DO2 *	SPST 4(1)A, 250Vac
		DO3 *	SPST 4(1)A, 250Vac
		DO4 **	SPST 4(1)A, 250Vac
		DO5 **	SPST 4(1)A, 250Vac
		DO6	SPST 4(1)A, 250Vac
		Relays of the group DO2 … DO6 must be at the same voltage. Insulation between DO1 and the group DO2 … DO6: **double** * : max 4 Amps on C2/3 ** : max 4 Amps on C4/5	
		Dielectric test voltage at open contact:	1000 Vac rms
		Maximum switching rate at nominal load:	6 operations / min
Connections	Molex® connectors		
	Relay outputs, Mini-Fit family:	Series 5569 94V-2 mates with 5557 dual row receptacle terminals series 5556 cables AWG18	
	Low voltage I/Os:	Series 5268-NA mates with 5264-N terminal housing terminals series 5263 cables AWG22	
Dimensions (H x W x D)	35 x 75 x 90		
C€ **Compliance**	Low voltage: EN 60730 73/23 EEC EMC: EN 50081-1 EN 50082-2 89/336 EEC		

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office or representative. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.