



BY JOHNSON CONTROLS

QUANTUM™LX CONTROL PANEL

The most technologically advanced screw compressor control center in the world.

HARDWARE

The *Quantum™LX* Control Panel incorporates hardware features & technology proven in millions of applications.

The high-speed, PC-based processor provides speed and processing capability far surpassing competitive microprocessor offerings. The 10.4" Active Color VGA Graphics Display, similar in design to those used on laptop computers, offers a high contrast, crisp clear display of compressor information and status with a superior viewing angle.

Additional Input/Output can be easily installed in the field. This provides flexibility for future engine room upgrades and changes. No longer will you be constrained by the manufacturer's limited I/O capability.

Three field-selectable serial communication ports allow you to choose from a combination of RS-422, RS-485, or RS-232 port configurations for external communications. Ethernet port allows Ethernet and Internet communications.

Additional Features

- **Circuit Breaker Protection for Main Power.**
- **UL, cUL, CE, and ISO 9001 Certifications**
- **Flexible Analog Inputs.** Setup is easily changed in the field to accept 0-5 volt, 1-5 volt, 4-20 mA or ICTD sensors and transmitters.
- **Long-Life, Easily Replaceable, Lithium Coin Cell Battery** for power backup to the time/date clock.
- **Communication Activity and Diagnostic Lamps** simplify troubleshooting and provide visual indication of proper component operation. Code readouts also appear on the display if an internal component problem is detected.
- **FLASH Setpoint Memory.** All setpoints are stored in FLASH memory which requires no battery backup. Setpoints can be field programmed within Johnson Controls defined limits. A notice is displayed if setpoints are entered outside of the defined ranges.
- **Replaceable Input and Output Modules** with individual, replaceable fuses, on-board tester, and spare fuse.

SOFTWARE

- **Intuitive Operator Interface.** All of the *Quantum™LX* control panel screens are user friendly, menu driven and easy to use and understand. Help screens and prompts are available should you experience difficulties in setup or monitoring of system information. Operation instruction can be accessed on-screen via the Help menu.

Form 090.020-SPC (AUG 2008)

SPECIFICATIONS

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- **Software Diagnostics.** Numerous diagnostic features have been incorporated to ease troubleshooting and identify component malfunctions. Diagnostic features include: sensor short/open, setpoint input out of sensing range, DC and AC power monitoring, and memory error sensing.
- **Multiple Capacity Controllers** provide application flexibility for auto setback control and control reset for changes in modes of operation.
- **Override Controls.** All safety and controller functions can be programmed to unload the compressor within maximum safety and control parameters.
- **On-screen Calibrations** for sensors, motor current, slide valve and slide stop with easy to understand graphics. Potentiometer tuning has been eliminated.
- **Shutdown Notification.** Display backlight flashes on shutdown to attract attention in noisy engine rooms.
- **Foreign Language Displays**
- **Selectable Pressure and Temperature Units**
- **Programmed Compressor Sequencing**
- **Optional Condenser Control**
- **Industry Standard Communication Protocols**
- **Real-Time and Historical x-y trending.** Selected data and selected time periods can be viewed in either an x-y trending chart or a tabular chart.
- **Ability to add analog inputs.** Can add any 0-5Vdc, 1-5Vdc, or 4-20mA sensor. A name and unit description can be entered to identify the input. The inputs have high and low alarm and shutdown setpoints.
- **Ability to add digital inputs.** A name can be entered to identify the input. Either an alarm or shutdown can be selected to occur when the input is de-energized. A selection can be made whether to monitor the input continuously or only when the compressor is running.

CONTROL PANEL SPECIFICATIONS

PANEL

Size	18" (45.72 cm) W x 22" (55.88 cm) H x 10" (25.4) D
Weight	75 lb (65.77 kg) (with all options installed)
Design	NEMA 4 (Type 4)
Material	Painted steel
Finish	Frick "sea blue" epoxy paint

ENVIRONMENTAL

	Operating	Storage
Ambient Temperature	-40°F to 122°F* -40°C to 50°C*	-13°F to 140°F -25°C to 60°C
Humidity (noncondensing)	0% to 90%	0% to 90%
Vibration	15 g's (14.7 m/s ²)	15 g's (14.7 m/s)
RFI field strength immunity	10v/m (20 MHz to 1ghz)	
EMI	complies with CE EMC directive	

*Ambient temperatures down to -40°F (-40°C) require heater(s).

CERTIFICATIONS

UL/ cUL 508A
ISO9001
CE (Europe)

POWER

USA voltage	100 to 125 volts AC 47-63 Hz
International voltage*	185 to 254 volts AC 47-63 Hz
Power loss	16 millisecond maximum (1 cycle)

* Requires change-out of plug-in relays and AC input modules to 230 volts AC type.

DISPLAY

Format	640 x 480 pixels VGA
Type	Color active matrix TFT (Thin Film Transistor) LCD (Liquid Crystal Display)
Colors	256 simultaneous colors from 256,000 color palette
Size	10.4" (26.42 cm) diagonal display area
Luminance	60 minimum, 70 typical cd/m ²
Backlight	CCFT (Cold Cathode Fluorescent Tube) 10,000 hour on time.

KEYPAD

Material	Lexan
Switches	24.69 oz (700 gram) trip force stainless steel snap domes
Misc.	RFI protected, UV protected, Scratch resistant

INPUT/OUTPUT MODULES

Input	USA voltage	IACM-5	90 to 140 volts AC
Input	International voltage	IACM-5A	180 to 280 volts AC
Output	USA & International voltage	OACM-5	24 to 280 volts AC

ANALOG INPUT CHANNELS

CHANNEL	INPUT
Channels 1 through 13	0-5 volt DC 1-5 volt DC 4-20 ma. ICTD (Integrated Circuit Temperature Device) AD590
Channels 14 & 15	0-5 volt DC 1-5 volt DC 4-20 ma. ICTD (Integrated Circuit Temperature Device) AD590 0 to 1,000 ohm potentiometer
Channel 16	0-5 volt DC 1-5 volt DC 4-20 ma. ICTD (Integrated Circuit Temperature Device) AD590 0-50 ma. AC or DC

ANALOG OUTPUT CHANNELS

CHANNEL	OUTPUT
Channels 1 through 8	4-20 ma., 0-20 ma.

TEMPERATURE SENSOR (ICTD)

Device	AD590J
Range	-67°F to 302°F (-55°C to 150°C)
Output	1 uA/ °Kelvin
Excitation Voltage	4 to 30 volts DC
Accuracy	+/- 5.0°C over specified temperature range.

PRESSURE SENSOR

Device	Signal-conditioned silicon strain gauge
Material	100% stainless steel welded parts.
Physical	2X over pressure (200 PSI device) 1.5X over pressure (500 PSI device) 10X burst pressure (200 PSI device) 5X burst pressure (500 PSI device)
Suction pressure	200 PSIA range: 29.9" hg to 185.7 PSI
Discharge pressure	500 PSIA range: 29.9" hg to 485.7 PSI
Oil pressure	
Oil filter pressure	
Output (all)	1-5 volt DC
Compensated temperature range	30° F to 185°F (-1°C to 85°C)
Operating temperature range	-40°F to 185°F (-40°C to 85°C)
Excitation voltage	9 to 30 volts DC
Accuracy	+/- 0.8% FS

POWER SUPPLY

Input power (Auto detect)	90 to 125 volts AC 185 to 264 volts AC	47-63 Hz 47-63 Hz
Output power	75 watts continuous, 110 watts peak	
DC Supplies	+5 volt DC 8 amp max. +12 volt DC 2.5 amp max. -12 volt DC 1 amp max. +24 volt DC 2.5 amp max.	(V1) (V4) (V3) (V2)
Other	AC line quality monitoring and reporting.	
Type	Switching	

POWER SUPPLY SETTINGS:

Supply	Minimum setting	Recommended Setting	Maximum setting
+5 volts DC (V1) adjustable	5.00 volts DC	5.10 volts DC	5.25 volts DC
+12 volts DC (V4) fixed	11.76 volts DC	12.00 Volts DC	12.24 volts DC
-12 volts DC (V3) fixed	-11.64 volts DC	-12.00 volts DC	-12.36 volts DC
+24 volts DC (V2) fixed	22.80 volts DC	24.00 volts DC	26.40 volts DC

COMMUNICATIONS INTERFACE

Port	Type	Protocol / Usage
Com-1 *	RS-485	Frick #, \$ Allen-Bradley® DF1
Com-2 *	RS-422	MODBUS ASCII
Com-3 *	RS-232	MODBUS RTU Status Communication
Ethernet	RJ-45	MODBUS TCP, HTTP, E-mail, Compressor Sequencing

*May require additional hardware.

MISC.

Relay	Plug-in type; 120 volt AC; 3-pole; 10 amp contacts
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FIELD WIRING

AC wiring (40 volts and above)	All AC wiring must enter on the right hand side of the enclosure or bottom right side. Top entry is not permitted. Predrilled conduit holes are provided.
DC wiring (40 volts and below)	All DC wiring must enter on the left hand side of the enclosure or bottom left side. Top entry is not permitted. Predrilled conduit holes are provided.

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