

SPECIFICATIONS

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QUANTUM™ HD UNITY COMPRESSOR CONTROL PANEL

The most technologically advanced screw compressor control center in the world

HARDWARE

The **Quantum™ HD Unity** Control Panel incorporates hardware features and technology used in millions of applications.

The high-speed, PC-based processor provides speed and processing capability far surpassing competitive microprocessor offerings. The high contrast touch display offers a crisp clear 15 in. 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 are you 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 or RS-485 port configurations for external communications. Ethernet port allows Ethernet and Internet communications.

Additional Features:

- **Circuit Breaker Protection for Main Power**
- **UL, cUL, and ISO 9001 Certifications**
- **Flexible Analog Inputs**
Setup is easily changed in the field to accept 0-5 V, 1-5 V, 0-10 V, 2-10 V, 4-20 mA, 0-20 mA, or ICTD sensors and transmitters.
- **Long-Life, Easily Replaceable, Lithium Coin Cell Battery**
Power backup to the time/date clock only.
- **Communication Activity and Diagnostic LEDs**
Simplify troubleshooting and provide visual indication of proper component operation. Code readouts are also displayed if an internal component problem is detected.
- **Flash Setpoint Memory**
All setpoints are stored in Flash memory which requires no battery backup. You can field program setpoints within Johnson Controls defined limits. A notice appears if setpoints are entered outside of the defined ranges.
- **Replaceable Input and Output Modules**
Individual, replaceable fuses, on-board fuse tester, and spare fuse.



SOFTWARE

- **Intuitive Operator Interface**
All of the **Quantum™ HD Unity** control panel screens are user friendly, with a straight-forward menu design which is easy to use and understand.
- **Software Diagnostics**
Numerous diagnostic features are 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**
You can program all safety and controller functions 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**
Warning and Shutdown notifications appear along with individual warning and shutdown digital outputs to energize external audible or visual devices.
- **Selectable Pressure and Temperature Units**
- **Programmed Compressor Sequencing**
- **Condenser Control**
- **Industry Standard Communication Protocols**
- **Real-Time and Historical x-y trending**
View selected data and selected time periods in either an x-y trending chart format, or download a complete System Data in Excel format to a USB device.
- **Ability to add analog inputs**
Add 0-5 VDC, 1-5 VDC, 0-10 VDC, 2-10 VDC, 4-20mA/0-20 mA, or ICTD sensor. You can enter a name and unit description to identify the input. The inputs have high and low alarm and shutdown setpoints if required.
- **Ability to add digital inputs**
You can enter a name to identify the input. Select either an alarm or shutdown 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	22 in. (55.88 cm) W x 24 in. (60.96 cm) H x 10 in. (25.40) D
Weight	78 lb (35.38 kg) (with all options installed)
Enclosure	Type 4
Material	Painted steel
Finish	TGIC Powder Coat

Q6 processor	
CPU	Freescale i.MX6Q
Core Speed	4 Cores at 1.0 GHz
Memory Type	DDR3 SDRAM 800 MHz
Memory Capacity	4.0 GB

Display	
Format	1024 x 768 pixels, XGA
Type	Color active matrix TFT (Thin Film Transistor) LCD (Liquid Crystal Display)
Colors	256 simultaneous colors from 256,000 color palette
Size	15 in. (38.10 cm) diagonal display area
Luminance	60 minimum, 70 typical cd/m ²
Backlight	LED 50,000 hour on time.
Touchscreen Overlay	
Material	Poly Carbonate
Misc.	UV protected, Scratch resistant

Input/output modules			
Input	USA voltage	70M-IAC5	90 VAC to 140 VAC
Input	International voltage	70M-IAC5A	180 VAC to 280 VAC
Output	USA and Int'l voltage	70YY21116	24 VAC to 280 VAC

Analog input channels	
Channel	Input
Channels 1 through 24	0 VDC - 5 VDC
	1 VDC - 5 VDC
	0 VDC - 10 VDC
	2 VDC - 10 VDC
	0 mA - 20 mA
	4 mA - 20 mA
	ICTD (Integrated Circuit Temp. Device) AD590

Analog output channels	
Channel	Output
Channels 1 through 8	4-20 mA, 0-20 mA

Power supply	
Input power (Auto detect)	90 VAC to 125 VAC, 47-63 Hz 185 VAC to 264 VAC, 47-63 Hz
DC Supplies	+5 VDC 5 A max. 25 W
	+12 VDC 4 A max. 72 W
	+24 VDC 2.1 A max. 27 W
Other	AC line quality monitoring and reporting
Type	Switching

Power	
USA voltage	90 VAC - 140 VAC, 47 Hz - 63 Hz
International voltage*	180 VAC - 264 VAC, 47 Hz - 63 Hz
Power loss	16 millisecond max. (1 cycle)
KAIC Rating**	5 kA

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

** Higher ratings available upon request.

Power supply settings			
Supply	Minimum setting	Recommended Setting	Maximum setting
+5 VDC adjustable	5.00 VDC	5.20 VDC	5.25 VDC
+12 VDC adjustable	12.00 VDC	12.12 VDC	12.24 VDC
+24 VDC adjustable	23.50 VDC	24.50 VDC	26.40 VDC

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 Range	0 psia to 200 psia (30.0 in. hg to 185.3 psig)
Discharge, Oil, and Oil Filter Pressure	0 psia to 500 psia (30.0 in. hg to 485.3 psi)
Output (all)	1 VDC to 5 VDC
Compensated Temp. Range	30°F to 185°F (-1°C to 85°C)
Operating Temp. Range	-40°F to 185°F (-40°C to 85°C)
Excitation Voltage	9 VDC to 30 VDC
Accuracy	+/- 0.8% FS

Environmental		
	Operating	Storage
Ambient Temperature	32°F to 149°F* 0°C to 65°C*	-13°F to 140°F -25°C to 60°C
Humidity (noncondensing)	0% to 90%	0% to 90%
Vibration	15 g's (147.2 m/s ²)	15 g's (147.2 m/s ²)
RFI field strength immunity	10v/m (20 MHz to 1 GHz)	
EMI	Complies with CE EMC Directive	

*Requires heaters and special design, please contact the factory for more information.

Supported web browsers
Google Chrome (current version)
Firefox (current version)
Internet Explorer (current version)
Safari (current version)

Temperature sensor (ICTD)	
Device	AD590J
Range	-67°F to 302°F (-55°C to 150°C)
Output	1 uA / °Kelvin
Excitation Voltage	4 VDC to 30 VDC
Accuracy	+/- 5.0°C over specified temp. range

Certifications
UL / cUL 508A
ISO9001

Miscellaneous	
Relay	Plug-in type; 120 VAC; 3-pole; 10 A contacts

Communications interface		
Port	Type	Protocol / Usage
Com-1	RS - 422	Frick #, \$ Allen-Bradley® DF1 (applicable to Com-1, Com-2, and Com-3)
Com-2	RS - 485	MODBUS ASCII (applicable to Com-1, Com-2, and Com-3)
Com-3	RS - 485	MODBUS RTU (applicable to Com-1, Com-2, and Com-3)
Ethernet	RJ-45	MODBUS TCP, Allen-Bradley Ethernet I/P, HTTP, Compressor Sequencing

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

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