insight technical services, inc.

Product Specification Sheet

COMPRESSOR-Pack™

Features

- **Based on 32 Bit SCADAPack32™ PLC.**
- **Designed for virtually any Compressor Package.**
- **Class 1 Div 2 Hazardous Area Rating.**
- **First-out Shutdown Capture and Recording.**
- **10 Record Compressor Shutdown History.**
- **Operator Configurable Alarm Setpoints.**
- **Operator Configurable Shutdown Setpoints.**
- **PLC Programming experience not needed to Setup.**
- **Environmental Specification from -40 to 158 degrees.**
- **3 Year Warranty on SCADAPack32 PLC.**
- **3 RS-232, 1 RS-232/485, 1 Ethernet port.**
- **Modbus Communications Ready.**
- **SCADA Screens Available for Wonderware and CygNet.**
- **Can Provide Custody Transfer Gas Flow Measurement.**

The Insight Technical Services, Inc. (**itsi**) Compressor-Pack is a Wellhead and Lateral Compressor Control Panel that is customizable to fit your needs, whatever they are. The Compressor-Pack was designed by **itsi** using the Control Microsystems SCADAPack32® PLC as our foundation. We have started with the SCADAPack32®, added our custom programming, and packaged the Compressor-Pack to be an off-the-shelf solution for your compressor automation needs.

The base Compressor-Pack is equipped with 8 analog inputs, 16 Digital Inputs, and 12 Digital Outputs, and four thermocouple inputs. The base unit includes a full feature Cimrex Control Display, for local Operator interfacing. It also includes on front buttons for starting, stopping, and resetting the compressor, as well as an Emergency Shutdown (ESD) button. The Compressor-Pack can be expanded as needed to fit any compressor type and size.

Since the Compressor-Pack uses the SCADAPack32® processor, it has the ability to do flow measurement for up to four meter runs. With the RealFLO feature added to the Compressor-Pack this unit can provide compressor control, as well as measure the fuel gas, and station discharge flows. This eliminates the need to purchase, install, and setup other automation equipment at your field locations. The RealFLO flow measurement supports all current AGA standards for custody transfer.

The Compressor-Pack is the one unit that can handle all of your Compressor monitoring and control needs.

Compressor-Pack Setup

The Initial PLC Setup determines the makeup of the Compressor Panel. A table is provided that defines the I/O of a compressor as it is initially configured. This table is then used by the PLC to setup the proper program configuration for the type of compressor in use, whether it is gas or electric powered, and whether it is a Screw, Liquid Ring, or Reciprocal Compressor.

By using the setup table it is not necessary for each Compressor to be programmed by a PLC programmer. Instead a simple configuration routine can setup the compressor panel and ready it for operation. What does this mean to you? Consistency of field devices within your field. One program can handle many different compressor packages. Ease of installation and setup, adding up to an overall cost savings.

	Analog Inputs			Analog Input Shutdowns			Analog Input Alarms		
2	H46.00	☑	Use Suction Pressure CfgBit	H32.00	☑	Suction Pressure Lo SD_enable	H35.00	☑	Suction Pressure Lo Alarm_enable
3				H32.01	☑	Suction Pressure Hi SD_enable	H35.01	☑	Suction Pressure Hi Alarm_enable
4	H46.01	☐	Use First Interstage Pressure CfgBit	H32.02	☐	First Interstage Pressure Lo SD_enable	H35.02	☐	First Interstage Pressure Lo Alarm_enable
5				H32.03	☐	First Interstage Pressure Hi SD_enable	H35.03	☐	First Interstage Pressure Hi Alarm_enable
6	H46.02	☐	Use Second Interstage Pressure CfgBit	H32.04	☐	Second Interstage Pressure Lo SD_enable	H35.04	☐	Second Interstage Pressure Lo Alarm_enable
7				H32.05	☐	Second Interstage Pressure Hi SD_enable	H35.05	☐	Second Interstage Pressure Hi Alarm_enable
8	H46.03	☑	Use Discharge Pressure CfgBit	H32.06	☐	Discharge Pressure Lo SD_enable	H35.06	☑	Discharge Pressure Lo Alarm_enable
9				H32.07	☑	Discharge Pressure Hi SD_enable	H35.07	☑	Discharge Pressure Hi Alarm_enable
10	H46.04	☐	Use Pre-Filter Oil Pressure CfgBit	H32.08	☐	Pre-Filter Oil Pressure Lo SD_enable	H35.08	☐	Pre-Filter Oil Pressure Lo Alarm_enable
11				H32.09	☐	Pre-Filter Oil Pressure Hi SD_enable	H35.09	☐	Pre-Filter Oil Pressure Hi Alarm_enable
12	H46.05	☐	Use Post-Filter Oil Pressure CfgBit	H32.10	☐	Post-Filter Oil Pressure Lo SD_enable	H35.10	☐	Post-Filter Oil Pressure Lo Alarm_enable
13				H32.11	☐	Post-Filter Oil Pressure Hi SD_enable	H35.11	☐	Post-Filter Oil Pressure Hi Alarm_enable
14	H46.06	☐	Use Compressor Oil Differential Pressure CfgBit	H32.12	☐	Compressor Oil Pressure Differential Lo SD_enable	H35.12	☐	Compressor Oil Pressure Differential Lo Alarm_enable
15				H32.13	☐	Compressor Oil Pressure Differential Hi SD_enable	H35.13	☐	Compressor Oil Pressure Differential Hi Alarm_enable
16	H46.07	☑	Use Compressor Oil Pressure CfgBit	H32.14	☐	Compressor Oil Pressure Lo SD_enable	H35.14	☑	Compressor Oil Pressure Lo Alarm_enable
17				H32.15	☐	Compressor Oil Pressure Hi SD_enable	H35.15	☑	Compressor Oil Pressure Hi Alarm_enable
18	H46.08	☑	Use Engine Oil Pressure CfgBit	H33.00	☑	Engine Oil Pressure Lo SD_enable	H36.00	☑	Engine Oil Pressure Lo Alarm_enable
19				H33.01	☐	Engine Oil Pressure Hi SD_enable	H36.01	☑	Engine Oil Pressure Hi Alarm_enable
20	H46.09	☑	Use Compressor Oil/Gas Discharge Temperature CfgBit	H33.02	☐	Compressor Oil/Gas Discharge Temperature Lo SD_enable	H36.02	☐	Compressor Oil/Gas Discharge Temperature Lo Alarm_enable
21				H33.03	☑	Compressor Oil/Gas Discharge Temperature Hi SD_enable	H36.03	☑	Compressor Oil/Gas Discharge Temperature Hi Alarm_enable
22	H46.10	☑	Use Compressor Oil After Cooler Temperature CfgBit	H33.04	☐	Compressor Oil After Cooler Temperature Lo SD_enable	H36.04	☐	Compressor Oil After Cooler Temperature Lo Alarm_enable
23				H33.05	☑	Compressor Oil After Cooler Temperature Hi SD_enable	H36.05	☑	Compressor Oil After Cooler Temperature Hi Alarm_enable
24	H46.11	☑	Use Gas After/Cooler Temperature CfgBit	H33.06	☐	Gas After Cooler Temperature Lo SD_enable	H36.06	☐	Gas After Cooler Temperature Lo Alarm_enable
25				H33.07	☑	Gas After Cooler Temperature Hi SD_enable	H36.07	☑	Gas After Cooler Temperature Hi Alarm_enable
26	H46.12	☐	Use Compressor Water Temperature CfgBit	H33.08	☐	Compressor Water Temperature Lo SD_enable	H36.08	☐	Compressor Water Temperature Lo Alarm_enable
27				H33.09	☐	Compressor Water Temperature Hi SD_enable	H36.09	☐	Compressor Water Temperature Hi Alarm_enable
28	H46.13	☑	Use Engine Water Temperature CfgBit	H33.10	☐	Engine Water Temperature Lo SD_enable	H36.10	☑	Engine Water Temperature Lo Alarm_enable
29				H33.11	☐	Engine Water Temperature Hi SD_enable	H36.11	☑	Engine Water Temperature Hi Alarm_enable
30	H46.14	☐	Use Suction Scrubber Differential Pressure CfgBit	H33.12	☐	Suction Scrubber Differential Pressure Lo SD_enable	H36.12	☐	Suction Scrubber Differential Pressure Lo Alarm_enable
31				H33.13	☐	Suction Scrubber Differential Pressure Hi SD_enable	H36.13	☐	Suction Scrubber Differential Pressure Hi Alarm_enable
32	H46.15	☐	Use Discharge Scrubber Differential Pressure CfgBit	H33.14	☐	Discharge Scrubber Differential Pressure Lo SD_enable	H36.14	☐	Discharge Scrubber Differential Pressure Lo Alarm_enable
33				H33.15	☐	Discharge Scrubber Differential Pressure Hi SD_enable	H36.15	☐	Discharge Scrubber Differential Pressure Hi Alarm_enable
34	H47.00	☑	Use Compressor Front Bearing Temperature CfgBit	H34.00	☐	Compressor Front Bearing Temperature Lo SD_enable	H37.00	☑	Compressor Front Bearing Temperature Lo Alarm_enable
35				H34.01	☐	Compressor Front Bearing Temperature Hi SD_enable	H37.01	☑	Compressor Front Bearing Temperature Hi Alarm_enable
36	H47.01	☑	Use Compressor Rear Bearing Temperature CfgBit	H34.02	☐	Compressor Rear Bearing Temperature Lo SD_enable	H37.02	☑	Compressor Rear Bearing Temperature Lo Alarm_enable
37				H34.03	☐	Compressor Rear Bearing Temperature Hi SD_enable	H37.03	☑	Compressor Rear Bearing Temperature Hi Alarm_enable
38	H47.02	☑	Use Pre-Cooler Discharge Pressure CfgBit	H34.04	☐	Pre-Cooler Discharge Pressure SD Low_enable	H37.04	☑	Pre-Cooler Discharge Pressure Alarm Low_enable
39				H34.05	☐	Pre-Cooler Discharge Pressure SD High_enable	H37.05	☑	Pre-Cooler Discharge Pressure Alarm High_enable
40	H47.03	☐	Use Compressor Phase A Motor Amps CfgBit	H34.06	☐	Phase A Motor Amps Lo SD_enable	H37.06	☐	Phase A Motor Amps Lo Alarm_enable
41				H34.07	☐	Phase A Motor Amps Hi SD_enable	H37.07	☐	Phase A Motor Amps Hi Alarm_enable
42	H47.04	☐	Use Compressor Phase B Motor Amps CfgBit	H34.08	☐	Phase B Motor Amps Lo SD_enable	H37.08	☐	Phase B Motor Amps Lo Alarm_enable
43				H34.09	☐	Phase B Motor Amps Hi SD_enable	H37.09	☐	Phase B Motor Amps Hi Alarm_enable
44	H47.05	☐	Use Compressor Phase C Motor Amps CfgBit	H34.10	☐	Phase C Motor Amps Lo SD_enable	H37.10	☐	Phase C Motor Amps Lo Alarm_enable
45				H34.11	☐	Phase C Motor Amps Hi SD_enable	H37.11	☐	Phase C Motor Amps Hi Alarm_enable
46	H47.06	☐	Use Suction Header Pressure CfgBit	H39.00	☐	Suction Header Pressure Lo SD_enable	H40.00	☐	Suction Header Pressure Lo Alarm_enable
47				H39.01	☐	Suction Header Pressure Hi SD_enable	H40.01	☐	Suction Header Pressure Hi Alarm_enable
48	H47.07	☐	Use Suction Scrubber Pressure CfgBit	H39.02	☐	Suction Scrubber Pressure Lo SD_enable	H40.02	☐	Suction Scrubber Pressure Lo Alarm_enable
49				H39.03	☐	Suction Scrubber Pressure Hi SD_enable	H40.03	☐	Suction Scrubber Pressure Hi Alarm_enable
50	H47.08	☐	Use Discharge Scrubber Pressure CfgBit	H39.04	☐	Discharge Scrubber Pressure Lo SD_enable	H40.04	☐	Discharge Scrubber Pressure Lo Alarm_enable
51				H39.05	☐	Discharge Scrubber Pressure Hi SD_enable	H40.05	☐	Discharge Scrubber Pressure Hi Alarm_enable
52	H47.09	☐	Use Scrubber Fuel Pressure CfgBit	H39.06	☐	Fuel Scrubber Pressure Lo SD_enable	H40.06	☐	Fuel Scrubber Pressure Lo Alarm_enable
53				H39.07	☐	Fuel Scrubber Pressure Hi SD_enable	H40.07	☐	Fuel Scrubber Pressure Hi Alarm_enable
54	H47.10	☐	Use Engine Manifold Pressure CfgBit	H39.08	☐	Engine Manifold Pressure Lo SD_enable	H40.08	☐	Engine Manifold Pressure Lo Alarm_enable
55				H39.09	☐	Engine Manifold Pressure Hi SD_enable	H40.09	☐	Engine Manifold Pressure Hi Alarm_enable
56	H47.11	☑	Use Engine Speed - RPM CfgBit	H39.10	☐	Engine Speed - RPM Lo SD_enable	H40.10	☐	Engine Speed - RPM Lo Alarm_enable
57				H39.11	☑	Engine Speed - RPM Hi SD_enable	H40.11	☐	Engine Speed - RPM Hi Alarm_enable
58	H47.12	☐	Use Tank 1 Level CfgBit	H39.12	☐	Tank 1 Level Lo SD_enable	H40.12	☐	Tank 1 Level Lo Alarm_enable
59				H39.13	☐	Tank 1 Level Hi SD_enable	H40.13	☐	Tank 1 Level Hi Alarm_enable
60	H47.13	☐	Use Tank 2 Level CfgBit	H39.14	☐	Tank 2 Level Lo SD_enable	H40.14	☐	Tank 2 Level Lo Alarm_enable
61				H39.15	☐	Tank 2 Level Hi SD_enable	H40.15	☐	Tank 2 Level Hi Alarm_enable

Compressor-Pack

The Compressor-Pack is user configurable to conform to the setup of any compressor type. In a typical unit there are 32 Analog Data Points available. Each analog typically has four alarm setpoints; a HiHi Shutdown, High Alarm, Low Alarm, and a LoLo Alarm. All of these points are Operator configurable from the Cimrex Control Display, or through your SCADA System.

Additionally the Compressor-Pack has a number of Discrete Inputs for discrete based alarms, such as vibration, levels, and pump statuses.

The Compressor-Pack features a first-out shutdown notification, which notifies Operators of the reason a Compressor was stopped. It also stores the last ten shutdowns locally, and this data can be sent to your SCADA system.

Analog Inputs

Suction Pressure
1st Stage Interstage Pressure
2nd Stage Interstage Pressure
Discharge Pressure
Prefilter Oil Pressure
Postfilter Oil Pressure
Compressor Oil Pressure Diff
Compressor Oil Pressure
Engine Oil Pressure
Oil/Gas Discharge Temp
Oil After Cooler Temperature
Gas After Cooler Temperature
Compressor Water Temperature
Engine Water Temperature
Suction Scrubber Differential
Discharge Separator Differential
Front Compressor Bearing Temperature
Rear Compressor Bearing Temp
Phase A Motor Amperage
Phase B Motor Amperage
Phase C Motor Amperage
Motor Runtime
Yesterdays Motor Downtime
Header Suction Pressure
Scrubber Suction Pressure
Scrubber Discharge Pressure
Scrubber Fuel Pressure
Manifold Pressure
Engine RPM
Tank Level #1
Tank Level #2

Shutdown Listing

Shutdown at RTU Panel
Shutdown by SCADA System
Shutdown by Skid ESD
Shut-in for Allowables
Suction Scrubber High Level
2nd Stage Scrubber High Level
Discharge Scrubber High Level
Lubricator No Flow
Compressor Vibration
Engine Vibration
Cooler Vibration
Pre-Lube Pump Fail
Engine Coolant Level
Engine Oil Level
AC Power Failure
Contactor Failure
Separator Liquid Level
Excess Starts in 1 Hour
Down for Remedial Work
Load Shed Shutdown
Analog Failure
LoLo Suction Pressure SD
HiHi Suction Pressure SD
LoLo 1st Stage Discharge SD
HiHi 1st Stage Discharge SD
LoLo 2nd Stage Discharge SD
HiHi 2nd Stage Discharge SD
LoLo Discharge Pressure SD
HiHi Discharge Pressure SD
LoLo Prefilter Pressure SD
HiHi Prefilter Pressure SD
LoLo Postfilter Pressure SD
HiHi Postfilter Pressure SD
LoLo Oil Pressure Diff Pres SD
HiHi Oil Pressure Diff Pres SD
LoLo Oil Pressure SD
HiHi Oil Pressure SD
LoLo Engine Oil Pressure SD
HiHi Engine Oil Pressure SD
LoLo Oil/Gas Disch Temp SD
HiHi Oil/Gas Disch Temp SD
LoLo Oil Aftercooler Temp SD
HiHi Oil Aftercooler Temp SD
LoLo Gas Aftercooler Temp SD
HiHi Gas Aftercooler Temp SD
LoLo Compressor Water Temp SD
HiHi Compressor Water Temp SD
LoLo Engine Water Temp SD
HiHi Engine Water Temp SD
LoLo Scrubber Diff SD
HiHi Scrubber Diff SD
LoLo Disch Scrubber Diff SD
HiHi Disch Scrubber Diff SD
LoLo Front Comp Bearing Temp SD
HiHi Front Comp Bearing Temp SD
LoLo Rear Comp Bearing Temp SD
HiHi Rear Comp Bearing Temp SD
LoLo Phase A SD
HiHi Phase A SD
LoLo Phase B SD
HiHi Phase B SD
LoLo Phase C SD
HiHi Phase C SD
Low Header Suction Pres SD
High Header Suction Pres SD
Low Suction Scrub Pres SD
High Suction Scrub Pres SD
Low Disc Scrub Pres SD
High Disc Scrub Pres SD
Low Fuel Scrub Pres SD
High Fuel Scrub Pres SD
Manifold Pressure Lo SD
Manifold Pressure Hi SD
Eng RPM Lo SD
Eng RPM Hi SD
Low Tank 1 Pres SD
High Tank 1 Pres SD
Low Tank 2 Pres SD
High Tank 2 Pres SD

Specifications

Compressor-Pack Specifications

Compressor Support	Any Liquid Ring, Screw, or Reciprocal Compressor
Alarms	Operator Configurable Alarm Setpoints
Shutdowns	Operator Configurable Shutdown Setpoints
Shutdown Capture	First-Out Shutdown Capture, 10 Shutdown History
Bypass Timers	Configurable Short Timer and Long Timer Bypass Timers
Cooler Control	Dual Cooler Control based on Gas and/or Oil Temperature
Flow Measurement	Can do Custody Transfer Gas Measurement for up to 4 Meter Runs
Setup	No PLC Experience needed to install and setup unit
Documentation	Schematics and Wiring Instructions Included with each unit
SCADA Enabled	Pre-Configured SCADA Screens available for Wonderware and CygNet
Expandable	Compressor-Pack can be expanded as needed
Communications	Modbus Ready, 3 RS232, 1 RS232/485 Configurable, 1 Ethernet Port
Enclosure	NEMA 4X Hoffman Enclosure
Panel Wiring	Ready Wired for Field Installation. Field Connections Isolated from Internal wiring.
Terminals	Weidmuller Terminals and Fuse Blocks used internally.

SCADAPack32 Controller

Processor	32 Bit CMOS 120 MHz clock
Memory	8Mb SDRAM, 4MB Flash , 1Mb CMOS RAM
Battery Backup	Lithium Battery retains contents for 2 years with no power
Analog Inputs	8 Analog Inputs (base), expandable to 64
Analog Outputs	Available with expansion unit
Digital Inputs	16 Digital Inputs (base), expandable to 128
Digital Outputs	8 Digital Outputs (base), expandable to 32
Communication Ports	3 RS232, 1 RS232/485 Configurable, 1 Ethernet Port Standard
Baud Rates	Configurable from 300 to 115,200 Baud.
Power	11-30 VDC
Electrical Rating	Class 1 Div 2 Hazardous Area Rating
Environment	Rated for -40 to 158 degrees Fahrenheit

Cimrex Control Display

Display Size	4 Line by 20 Character Display
Display Type	Liquid Crystal Diode (LCD)
Function Keys	5 Programmable Function Keys
Protocol Support	Modbus RTU
Backlight Life	50,000 Hours

insight technical services, inc.
P.O. Box 1395
Berthoud, CO 80513
(970) 532-7781
www.itsinc.us