24519472
Revision B
October 2013

Compressor Control System

Model X^{e}- 145M SSR

Instruction Manual

- EN Instruction Manual
- BG Ръководство за употреба
- CS Návod k obsluze
- DA Instruktionsmanual
- NL Instructiehandleiding
- ET Kasutusjuhend
- FI Käyttöopas
- FR Manuel d'instructions
- DE Anleitungshandbuch
- EL Εγχειρίδιο Οδηγιών
- HU Kezelői kézikönyv
- IT Manuale di istruzioni
- LV Ekspluatācijas rokasgrāmata
- LT Instrukcijų vadovas
- NO Instruksjonsmanual
- PL Instrukcja obsługi
- PT Manual de Instruções
- RO Manual de utilizare
- RU Инструкция по эксплуатации
- SK Návod na použitie
- SL Priročnik z navodili
- ES Manual de instrucciones
- SV Instruktionsmanual
- TU Kullanım Kılavuzu
- ZH 说明手册

Save These Instructions

CONTENTS

CONTENTS (CONTD..)

Only allow **Ingersoll Rand** trained technicians to perform maintenance on these products. For additional information contact **Ingersoll Rand** or nearest Distributor.

The use of other than genuine **Ingersoll Rand** replacement parts may result in safety hazards, decreased performance, and increased maintenance and will invalidate all warranties.

"**Original instructions** are in English. Other languages are a **translation of the original instructions**."

Refer all communications to the nearest **Ingersoll Rand** Office or Distributor.

SAFETY INFORMATION

EXPLANATION OF SAFETY SIGNAL WORDS

Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. The following signal words are used to identify the level of potential hazard.

DANGER — Indicates an imminently hazardous situation which, if not avoided, will resulting death or serious injury.

WARNING — Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION — Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

NOTICE — Indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

Note: Important Information

GENERAL WORKPLACE SAFETY

- The information presented in this manual should be used in conjunction with your workplace safety program.
- It is the responsibility of each individual to ensure that they work in a safe manner and in compliance with any local law or site regulations.
- Keep the work area clear of hazards.
- Assess hazards, make a list, and discuss with appropriate personnel.
- Know how to quickly contact emergency assistance.

DOCUMENTATION, DECALS & TAGS

- Read and understand this manual before handling and installing this product.
- Locate, read and understand all hazard alert symbols, text decals and tags which point out items of extreme importance to personal safety.
- It is your responsibility to make this information available to others.
- Failure to observe these safety guidelines could expose personnel to potentially hazardous situations which, if not avoided, could result in death or serious injury.
- If you have any questions about safety or procedures not included in this manual, ask your supervisor or contact any **Ingersoll Rand** office or qualified **Ingersoll Rand** distributor.

PERSONAL PROTECTIVE EQUIPMENT & ATTIRE

- Wear personal protective equipment that is appropriate for the task (i.e. safety glasses with side shields, respirator, hearing protection, cut resistant gloves and safety shoes) at all times.
- Long hair must be tied back or otherwise secured.
- Clothing must be close-fitting.
- Do not wear jewelry.

OPERATION

- This product must only be operated by trained (or qualified) personnel.
- Never remove or tamper with safety devices, guards or insulation materials fitted to the unit.
- The product must only be operated at the supply voltage and frequency for which it is designed.
- If the user employs an operating procedure, an item of equipment, or a method of working which is not specifically recommended, the user must ensure the product will not be damaged or made unsafe and that there is no risk to persons or property.
- When the main power is switched on, lethal voltages are present in the electrical circuits and extreme caution must be exercised whenever it is necessary to carry out any work on the unit.
- Do not open access panels or touch electrical components while voltage is applied unless it is necessary for measurements, tests or adjustments. This work must only be carried out by a qualified electrician or technician equipped with the correct tools and appropriate protection against electrical hazards.

SAFETY INFORMATION

SERVICE, MAINTENANCE, AND REPAIR

- Repairs should be made only by authorized trained personnel. Consult your nearest **Ingersoll Rand** authorized service provider.
- Lethal voltages are used within the product. Use extreme caution when carrying out electrical checks. Isolate the power supply before starting any maintenance work.
- If replacement parts are required, use only genuine **Ingersoll Rand** parts.
- Ensure that all instructions concerning operation and maintenance are strictly followed and that the complete product, with all accessories and safety devices, is kept in good working order.
- The accuracy of sensing devices must be checked on a regular basis. They must be calibrated or replaced when acceptable tolerances are exceeded. Always ensure any pressure within a compressed air system is safely vented to atmosphere before attempting to remove or install a sensing device.
- The product must only be cleaned with a damp cloth, using mild detergents if necessary. Avoid the use of any substances containing corrosive acids or alkalis.
- Do not paint any of the X^e-145M modules or obscure any indicators, instructions, warnings, or data labels.
- Battery may explode if mistreated. Do not recharge, disassemble, or subject to fire.
- The battery used in controller model X^e-145M must be replaced at an **Ingersoll Rand** service center or by an authorized **Ingersoll Rand** service technician.

INTERFACE DATA & KEYS

Xe-145M

The standard user interface configuration of the controller consists of the membrane and the LCD display. The membrane consists of five command keys (Start, Stop, Load, Unload, and Reset), four navigation keys (Up, Right, Left and Down), and an Edit mode selection key (Enter). These keys, in conjunction with the color graphics display and the LED icons, make up the user interface to the compressor.

Figure : Xe-145M

LED STATUS ICONS

Three LED icons are used to indicate the current status of the control system from a distance and are located on the upper left side of the user interface.

Icon	Name	Function
	**OK**	Illuminates when no Warnings or Trips are sensed. Can be in a Ready or Not Ready state. This icon will flash when the machine is Running Unloaded
	**Alert**	Illuminates when an Warning (flashes) or Trip (constant on) is sensed. Can be in a Ready (Warning) or Tripped state.
	**Auto**	Illuminates when the compressor stops in auto restart.

COMMAND KEYS

These keys command the controller to perform actions as specified in the following table. When any of these keys are pressed the action below will be initiated and logged in the event log.

Key	Name	Function
	---	None
	**Load**	Puts the compressor into the selected mode of operation. Unit will load if the pressure conditions are right.
	**Unload**	Puts the compressor into an unloaded state. Unit will run unloaded indefinitely.
	**Reset**	Clears Warnings and Trips once the condition is corrected.
	**Start**	Starts the compressor.
	**Stop**	Stops the compressor. This button should be pressed instead of the E-Stop for normal stopping operation.
	**Enter**	Toggles the display between the Navigation mode and the Edit mode.

Xe-145M Command Keys

INTERFACE DATA & KEYS

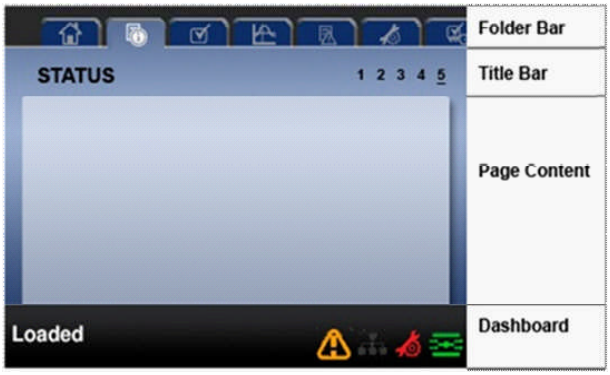
NAVIGATION KEYS

There are four navigation keys (UP, RIGHT, DOWN and LEFT). While the ENTER key is not considered a navigation key, it is used in conjunction with the navigation keys to make or confirm a selection.

Xe-145M's Navigation Keys

The navigation keys roll over. Pressing one of the navigation keys will lead the user down a navigation path. Each time the key is pressed, another step in the path is taken. Once the end of a navigation path is reached, pressing the key one more time will bring the user back to the beginning of the path. Pressing the opposite key will move the user through the navigation path in the opposite direction. Once the beginning is reached, pressing the opposite key will take the user to the end of the path.

DISPLAY LAYOUT



Xe-145M's Display Layout

Folder Bar: Uses tabs to graphically identify each folder.

Title Bar: Identifies current folder and page (underlined).

Page Content: Content of the current page.

Dashboard: Displays system status.

• FOLDER NAVIGATION & ICONS

To move among the tabbed folders shown on the LCD display, press the RIGHT and LEFT keys. The navigation rolls over from the last to the first folder and vice-versa.

Folder Name	Icon	Description
Home		System performance and status main information. The first page of this folder is the default page when the controller first powers up.
Operator Settings		System options and configuration settings.
Events		System events log.
Trip History		Details on the most recent trips.
Graphing		On-board graphing of system data. (Xe-145M Only)
Maintenance		Status and notification setup for compressor maintenance items.
General Settings		General settings such as Language, Time, and Units of Measure.
Integral Sequencing		Intergral Sequencing communication status and configuration.
Status		Measurements or status from/of all analog and digital I/O.
Factory Settings		Compressor tuning parameters. Also displays hardware and software versions.

Folder Bar Icons

• PAGE NAVIGATION

Once the desired folder is selected, press the DOWN key to move to the page selection area and then use the RIGHT and LEFT keys to select the desired page. Use the UP key to get back to the folder tabs.

Icon	Description
	Start of the page selection area.
	Indicates that there are more pages available by navigating right.
	Indicates that there are more pages available by navigating left.

Title Bar Page Icons

INTERFACE DATA & KEYS

• ACCESSING PARAMETERS

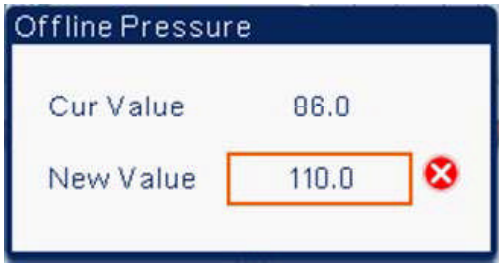
After the desired page is selected, the page's parameters can be selected by using the DOWN key. The cursor will move to the next parameter each time the DOWN key is pressed. Use the UP key to go back to the previous one.

The cursor rolls over, so once the last parameter is selected, pressing the DOWN key will navigate the cursor to the Folder Bar. If the first parameter is selected, pressing the UP key will move the cursor to the page selection area.

Once selected, access parameters by pressing the ENTER key. Make changes using the NAVIGATION keys and then enter the setting by pressing the ENTER key again. After a parameter is accessed, pressing the ENTER key will enter the current setting into the control program and navigate the cursor back to the selected parameter on the page.

When the cursor is on a parameter that has an enabled/ disabled box, pressing the ENTER key will cause the setting to toggle.

The icon appears on numeric entry windows (see figure below). Placing the cursor on it and then pressing the ENTER key will cancel the entry and any changes that were made.



Not all pages have adjustable parameters. Some just have read-only information.

• DASHBOARD ICONS

The dashboard is intended to be a quick at-a-glance view of system status. The following table lists standard dashboard icons and their definition. Note that the color of these icons changes based on the state set by the application while running.

Name	Icon	Description
Remote Control		Remote control is enabled. This can be Remote Start/Stop, COM Control, Integral Sequencing or Web Control.
Service Required		A service reminder is nearing or has expired (i.e.: an air or oil filter needs to be changed).
Unloaded or Loaded	 	Compressor is in the unloaded state. Compressor is in the loaded state.

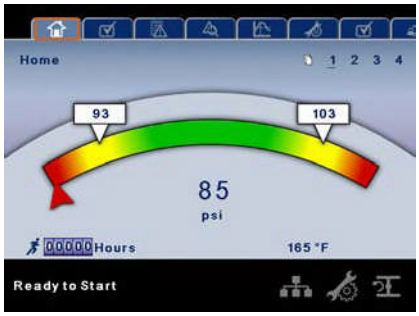
X^{e}-145M's Dashboard Icons

• DASHBOARD STATUS MESSAGES

The dashboard also displays the current operating state of the compressor. The following states can be encountered during machine operation:

- **Ready to Start** - – The compressor currently has no trip or start inhibit conditions present. The machine can be started by pressing the start button at any time
- **Starting** – A start command has been given to the compressor and the start sequence is being performed. The time period for this state can vary depending on the starter type of the machine.
- **Load Delay** – The compressor is waiting for a small period of time after starting before allowing the machine to load. This ensures the machine is at operating conditions before loading
- **Running Loaded** – The compressor is operating and producing air. The inlet valve is open and the blowoff valve is closed.
- **Running Unloaded** – The compressor is operating, but not producing air. The inlet valve is closed and the blowoff valve is open.
- **Auto-Restart** – The compressor has stopped due to pressure rising above the offline or auto-stop setpoints and auto-restart being enabled. The compressor will automatically restart when pressure falls to the online or target pressure setpoint.
- **Stopping** – The compressor has received a stop command and the stop sequence is being performed.
- **Blowdown** – The compressor must wait for a brief period of time after stopping its motor before it is allowed to start again.
- **Not Ready** – The compressor has detected a condition that will not allow the compressor to start. The condition must be cleared before a start is allowed, but does not need to be acknowledged.
- **Tripped** – The compressor has detected an abnormal operational condition that has stopped the machine. A trip must be acknowledged by hitting the reset button before the compressor can start.
- **Processor Init** – The controller is being initialized.

HOME FOLDER



- **PAGE 1 – SYSTEM OVERVIEW**

This is the factory default display after powering up the system.

Load Pressure - indicated in the white box and by the white arrow, which is always left of center on the gauge. The compressor will load when package discharge pressure falls below this value.

Unload Pressure - indicated in the white box and by the white arrow, which is always right of center on the gauge. The compressor will unload when package discharge pressure rises above this value.

Package Discharge Pressure - indicated by the large numbers centred below the gauge and by the red arrow. This is the air pressure that the compressor is supplying to the plant.

Pressure Unit of Measure - indicated below the Package Discharge Pressure. This is selectable from the GENERAL SETTINGS folder.

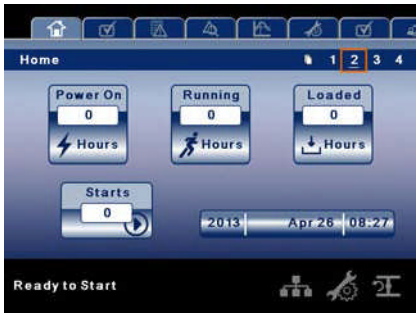
Airend Discharge Temperature - indicated by the numbers in the lower left of the display. This is the temperature of the air/oil mixture at the discharge of the compression module.

Temperature Unit of Measure - indicated to the right of the Airend Discharge Temperature. This is selectable from the GENERAL SETTINGS folder.

Run Hours indicate the number of hours the compressor has been running.

All information on this page is read only.

- **PAGE 2 - COUNTERS**



Hour Meters - Indicates the hours that: the controller has been powered up, the compressor has been running, and the compressor has running loaded.

Starts - Indicates the number of times a start is attempted on the compressor.

Date & Time – Indicates the current date and time. This is adjustable and configurable in the GENERAL SETTINGS folder.

All information on this page is read only.

- **PAGES 3 THRU 4 – ANALOG INPUTS**

Pressure is indicated by this icon.

Temperature is indicated by this icon.

Any sensor that is not installed or is reporting a failure will show an X symbol.

All information on these pages is read only.

The following analog inputs are displayed in this section.

Package Discharge Pressure – The pressure the compressor is delivering to the plant.

Sump Pressure – The compressor's internal pressure at the sump tank.

Airend Discharge Temperature – The temperature of the air/oil mixture at the discharge of the compression module.

Injected Coolant Temperature – The temperature of the oil as it is injected into the compression module.

Package Discharge Temperature – The temperature of the air after passing through the After-cooler.

Separator Pressure Drop – The pressure drop across the separator element.

Inlet Vacuum – Vacuum reading at the inlet valve.

Remote Pressure (optional) – An optional pressure sensor that reads pressure at a point outside of the compressor package. Usually this would be on a common tank.

Percent Load – Displays the current operating load percentage of the compressor based on the inlet valve position if it is in a modulation mode. While modulating, the minimum value will be 60% If running in online/offline mode, this value will be 100% (Loaded) or 0% (Unloaded).

SSR COMPRESSOR

OPERATOR SETTINGS FOLDER

- **PAGE 1 OPERATOR SETTINGS**

The below values are all setpoints.

Offline Pressure – The compressor will unload when package discharge pressure rises above this value. Range (in PSI): 75 to Rated Pressure + 3

Online Pressure – The compressor will load when the package discharge pressure falls below this value Range (in PSI): 65 to Offline Pressure - 10

Lead/Lag – When this box is checked the compressor is operating as a lead machine. Unchecking the box causes the machine to run as a lag machine.

Lag Offset – If the machine is running as a lag compressor, the lag offset will be subtracted from the online and offline setpoints.

Range (in PSI): 0 – 45, depending on the online and offline setpoints. The Lag Offset will never allow you to exceed the minimum or maximum values of the online and offline setpoints.

Mode of Operation – Selections are Online/Offline, Modulation/ACS, and Modulation only – determines how the compressor will try to maintain a specific pressure.

- **Online/Offline –** The compressor will load the machine by energizing a solenoid that opens the inlet valve and closes the blowdown valve when package discharge pressure falls below the load pressure. The compressor will unload the machine by de-energizing the solenoid when pressure rises above the unload pressure.
- **Modulation –** The compressor will still load and unload as in online/offline, but will change the position of the inlet valve using a stepper motor to adjust the compressor capacity between 60% and 100% of normal. When the package discharge pressure is between the load and unload pressures the compressor will adjust the inlet valve in order to achieve a stable output pressure. The output pressure target l is determined by the maximum modulation pressure setpoint.
- **Mod/ACS –** The compressor will initially start out in online offline mode. If the compressor goes through 3 load/unload cycles within 3 minutes, it will switch over into Modulation mode. It will remain in modulation until the stop button is pressed or 3 minutes pass between an unload and load command.

Maximum Modulation Pressure – When the compressor is in a modulating mode, this is the pressure value at which the compressor will unload. The compressor will start to modulate its output 10 psi (.7 bar) below this value and reach 60% of load by the time this setting is reached. This setting can be changed independently of the offline pressure setpoint.

Unloaded Stop Time – Time period that the machine must run unloaded before the motor is allowed to stop after a stop command is received.
Range (in seconds): 10 - 30.

Starter Time – Time period that the compressor needs in order to come up to operating speed after a start command before being able to produce air.
Range (in seconds): 5 - 30.

The parameters on these pages are adjustable any time

- **PAGES 2-4 OPERATOR OPTIONS**

The below values are all setpoints

Enable Auto-Restart – Enabling this will allow the compressor to stop if it has been running unloaded for a period of time, and the motor has exceeded its minimum running time (10 minute in most cases).

Auto-Restart Time – The time period the compressor must run unloaded before stopping in auto-restart. This time period begins the moment that package discharge pressure rises above the offline setpoint. Both this time period and the minimum motor run timer (10 minutes) must be satisfied before the compressor will stop in auto restart.
Range (in seconds) 120 - 3600

Auto-Restart Delay – The time period after the package discharge pressure has fallen below the online setpoint before the compressor can automatically restart
Range (in seconds): 0 - 60

COM Control – Enabling this setpoint allows the compressor to be controlled by a serial or Ethernet device, such as an X8I. This is equivalent to the "Sequencer" option on older Intellisys controllers.

Remote Start/Stop – Enabling this setpoint allows the compressor to be started and stopped using the digital inputs on the controller.

Enable PORO – Enabling this setpoint will allow the compressor to automatically restart after a power outage has been restored if the compressor was running loaded at the time of the outage. PORO is an option and the option module must be purchased and installed before this feature can be turned on.

PORO Time – Time after the controller power has been restored and controller has finished booting before the compressor will perform a PORO start. During this time the PORO Horn will sound.
Range (in seconds): 10 - 600

Low Ambient Temp – Temperature below which the low ambient option will come into effect.
Range (in degF): 30 - 60

Scheduled Start Day – Day (or days) of the week for which a scheduled start will be performed. The compressor will start when its onboard clock matches the day, hour, and minute of the scheduled start setpoints. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Scheduled Start Hour – Hour of the day for which a scheduled start will be performed. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Scheduled Start Minute – Minute of the hour for which a scheduled start will be performed. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Scheduled Stop Day – Day (or days) of the week for which a scheduled stop will be performed. The compressor will stop when its onboard clock matches the day, hour, and minute of the scheduled stop setpoints. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Scheduled Stop Hour – Hour of the day for which a scheduled stop will be performed. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Scheduled Stop Minute – Minute of the hour for which a scheduled stop will be performed. Scheduled Start/Stop is an option and the option module must be purchased and installed before this feature can be turned on.

Enable High Dust Filter – Enabling this when a high dust filter is installed will adjust the change inlet filter warning and high inlet vacuum trip thresholds to a higher value.

Enable VSD - Enabling this setpoint allows the controller to start and stop an aftermarket VSD which has been installed in the compressor.

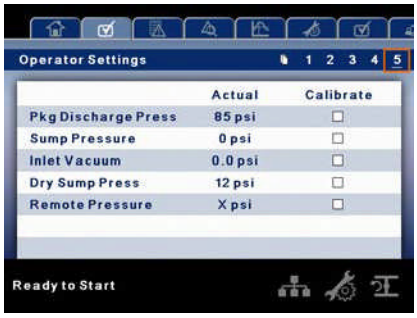
Enable Remote Pressure Sensor – Enabling this allows the compressor to load and unload based off a sensor reading installed in a remote location.

Please note that in order to disable Scheduled Start/Stop, the Scheduled Start and Stop days, hours, and minutes must match exactly.

* The low ambient temperature is only adjustable if the low ambient factory set point is on.

** A value of 0 will disable the lead/lag cycle time feature.

- ## PAGES 5 CALIBRATE SENSORS



Sensor calibration can only take place when the machine is stopped and there is no pressure on the sensor. Calibration only needs to take place after a sensor is replaced, the controller is replaced, the controller software is upgraded, or the operator suspects the sensor reading is in error. Calibrate a sensor by selecting the checkbox beside the sensor name.

Each of the sensors listed below can be calibrated.

- Inlet Vacuum (1AVPT)
- Sump Pressure (3APT)
- Package Discharge Pressure (4APT)
- Dry Side Sump Pressure – Only on units with the dry side sump pressure option
- Remote Pressure (10APT) – Only on units with the remote sensor option

Please note that if a sensor is currently reading a value that is +/- 10% of its range from zero, the sensor will not be able to be calibrated and an warning will be logged in the event log. Please make sure the sensor is being exposed to atmosphere before attempting calibration.

EVENTS FOLDER

- **PAGES 1 TO A MAX OF 50**

The pages in the Events folder document up to the last 250 events that the controller has experienced, with the time and date of the occurrence. The events are recorded in sequence, with number one being the newest and 250 being the oldest. When a new event occurs, it becomes number one and all others are shifted up in number.

The page numbers in the Title Bar are used to scroll through the events, with each page displaying up to seven. Page one displays events one through five, page two displays six through ten, and so on.

The following items will generate an event

- Power On
- Power Off
- Press the Start Key
- Press the Stop Key
- Press the Load Key
- Press the Unload Key
- Starting the compressor remotely
- Stopping the compressor remotely
- Warning
- Trip
- Start Inhibit

Active Warnings will be highlighted in amber while acknowledged Warnings will have amber text.

Active Trips will be highlighted in red while acknowledged Trips will have red text.

Active Start Inhibits will be listed in the Event log, but not highlighted. The display will indicate the compressor is not ready to start if a start inhibit is active.

Warning Events List

- **Change Inlet Filter**

On-Screen Text: Change Inlet Filter

Will occur if 1AVPT is greater than 0.7 psi vacuum for units rated in horsepower, or 1 psi for units rated in kilowatts (1.3 psi vacuum for all units if the high dust filter option is enabled) the unit has been loaded for at least 8 seconds and the inlet valve is on the open limit switch. This condition must exist for 3 seconds before the warning is issued.

- **Change Coolant Filter**

On-Screen Text: Change Coolant Filter

This will occur if the coolant filter switch closes while the unit has been loaded for at least 7 seconds and the injected coolant temperature is over 120 degF. The condition must exist for 3 seconds before the warning is issued.

- **Sensor Failure**

On-Screen Text: 4ATT Failure, 6APT Failure

This will occur whenever sensors 4ATT, or 6APT are recognized as missing or broken. The sensor failure message shall follow the following format: 4ATT FAILURE. This condition must exist for 3 seconds before the warning is issued.

- **Change Separator Element**

On-Screen Text: Change Sep Element

Will occur if the unit is loaded for at least 8 seconds, the package discharge pressure (4APT) is at least 90 psi, is warmed up (injected coolant temperature greater than 120 degF), and the separator pressure drop is greater than 12 psi. This condition must exist for 3 seconds before the warning is issued.

- **High Airend Discharge Temperature**

On-Screen Text: High A/E Disch T

Will occur if the unit is running and 2ATT is greater than 221 degF (97% of 228) and the unit is running. This condition must exist for 3 seconds before the warning is issued.

- **High Sump/Line Differential**

On-Screen Text: High Sump/Line Dif

Will occur if the unit is loaded, has been loaded for at least 7 seconds, the injected coolant temperature is over 120 degF, the package discharge pressure is greater than 90 psi, the sump pressure is greater than the rated pressure of the unit,, and the sump pressure is 25 psi or more above the package discharge pressure. This condition must exist for 3 seconds before the warning is issued.

- **Auxiliary 1**

On-Screen Text: Auxiliary 1

This will occur if auxiliary input 1 closes. The contact must be closed for at least 3 seconds before the warning will occur.

- **Auxiliary 2**

On-Screen Text: Auxiliary 2

This will occur if auxiliary input 2 closes. The contact must be closed for at least 3 seconds before the warning will occur.

Service

Service warnings occur when the unit has operated a certain number of hours, based on the total hours. Service warnings can have multiple levels, depending on the service level selection. A service level selection of 0 disables service warnings.

- **Service Level 1**

On-Screen Text: SVC Required

If service level 1 has been selected for the unit, a "SERVICE REQUIRED" warning will be issued on hour intervals equal to the service time period set point. This warning can be reset the same as any other warning.

- **Service Level 2**

On-Screen Text: 100 hours to Svc, SVC Required, Service Alarm

If service level 2 has been selected for the unit, the service complete factory set point will be used to clear a level 2 service warning and reset the service time or date. The service complete can be reset before a service warning occurs.

The initial "SERVICE REQUIRED" warning will occur at total hour intervals equal to the service time period set point. However, 100 hours before this a "100 HOURS TO SERVICE" warning will occur. This warning can be reset the same as any other warning. One hundred hours later the "SERVICE REQUIRED" warning will occur. This warning can be reset the same as any other warning, however this warning will return in 24 hours if the service complete factory set point has not be set. If the service complete has not been set, 100 hours later, the "ALARM – SERVICE REQUIRED" warning will be issued. This warning can only be cleared by the service complete factory set point. Once the service complete factory set point is set, indicating the service is completed, the time for the next "SERVICE REQUIRED" warning will be calculated by adding the service time period to the total hours value, with the "100 HOURS TO SERVICE" warning occurring 100 hours before and the "ALARM – SERVICE REQUIRED" warning occurring 100 hours after that time.

- **Check Inlet Control System 1 (or 2)**

On-Screen Text: Check Inlet Ctl 1, Check Inlet Ctl 2

Will occur if the controller tries to move the inlet valve to either the open limit switch or the closed limit switch and the inlet valve does not reach the limit switch it was moving toward. A 1 indicates the inlet valve was trying to close and a 2 indicates the valve was trying to open.

- **Sensor Failure 10APT – Remote Sensor**

On-Screen Text: 10APT Failure

This will occur if the remote sensor option is on and the remote sensor is recognized as missing or broken. If this occurs, the unit will automatically start using 4APT for loading and unloading the compressor. Units equipped with an integrated dryer cannot have a remote pressure sensor. This condition must exist for 3 seconds before the warning is issued.

- **High Discharge Pressure**

On-Screen Text: High Disch Pres

Will occur if the unit is using a remote sensor or is under the control of an external device, such as an X8I, is loaded, and the discharge pressure (4APT) is greater than the maximum offline pressure. This condition must exist for 3 seconds before the warning is issued. If this condition occurs, the compressor will automatically unload. The unit will be available to reload once the discharge pressure falls to the rated pressure value.

- **Invalid Calibration**

On-Screen Text: Invalid Cal

Will occur if the sensor zero value is +/- 10% of its scale. See Sensor Calibration.

- **Check SD Card**

On-Screen Text: Check SD Card

The controller has detected a problem with the SD card during the last boot cycle and is using files from internal memory. The controller will function normally, but web page access may not work properly.

Trip Events List

- **Check Inlet Control System**

On-Screen Text: Check Inlet Ctl

This will occur if the unit is running unloaded and 1AVPT (inlet vacuum) is less than 3 psi vacuum. Also, the unit must have completed the start sequence, the inlet valve must be on the closed limit switch, and the unit must have been unloaded for a period of time at least equal to the stop delay time. This trip will also be ignored if the unit has an aftermarket VSD.

- **Low Unloaded Sump Pressure**

On-Screen Text: Low Unload Sump

Will occur if the unit is running unloaded or loaded and 3APT is less than 15 psi for 15 seconds. This trip will cause the unloaded inlet vacuum to be reset to 0. This will force the controller to get a new unloaded inlet vacuum value the next time the unit unloads

- **Low Sump Air Pressure**

On-Screen Text: Low Sump Air Press

Will occur if the unit is running loaded, the inlet valve is on open limit switch, and 3APT (sump pressure) is less than 20 psi. This trip is ignored for the first 7 seconds after loading.

- **High Airend Discharge Temperature**

On-Screen Text: High A/E Disch T

This will occur if 2ATT is greater than 228 degF and the unit is running.

- **Check Motor Rotation**

On-Screen Text: Check Motor Rot

Will occur if 1AVPT (inlet vacuum) is less than 0.5 psi vacuum, 2 seconds after starting (6 seconds if the unit is equipped with a soft starter or VSD). This condition can be caused by the motor running in reverse. Once correct motor rotation is established, this trip will not be checked again unless power is removed from the controller. However, if correct motor rotation is not established, this fault will be checked after each start until correct motor rotation is established. Correct motor rotation is established when the controller reads a sump pressure of 1 psi or more within 3 seconds of starting.

- **Starter Fault 1SL (2SL)**

On-Screen Text: Starter Fault 1SL, Starter Fault 2SL

Will occur if the unit tries to start and either of the starter auxiliary contacts are already closed.

- **Main Motor Overload**

On-Screen Text: Main Motor OL

This will occur if the motor overload relay opens. The contact must be open for at least 3 seconds before the trip will occur.

- **Fan Motor Overload**

On-Screen Text: Fan Motor OL

Will occur if a fan motor overload relay contact opens. The contact must be open for at least 3 seconds before the trip will occur.

- **Remote Stop Failure**

On-Screen Text: Rem Stop Fail

Will occur if the remote start/stop option is enabled, the remote stop button remains open and either start button is pressed.

- **Remote Start Failure**

On-Screen Text: Rem Start Fail

Will occur if the remote start/stop option is enabled, the unit is started by the remote start button, and the button stays closed for 7 seconds after the unit starts.

- **Stepper Limit Switch**

On-Screen Text: Stepper Limit Switch

This will occur if the controller reads both the open and closed limit switches as being made at the same time.

- **Sensor Failure**

On-Screen Text: 1AVPT Failure, 3APT Failure, 4APT Failure, 2CTT Failure, 2ATT Failure, 3CTT Failure

This will occur when a sensor is recognized as missing or broken. The sensors affected by this trip are 1AVPT, 3APT, 4APT, 2CTT, 3CTT, and 2ATT. The sensor should be displayed along with the sensor failure message. The sensor failure message shall follow the following format: 1AVPT Failure.

- **Emergency Stop**

On-Screen Text: Emergency Stop

This will occur when the EMERGENCY STOP button is engaged.

- **High Inlet Vacuum**

On-Screen Text: On-Screen Text: High Inlet Vac

This will occur if the unit has running loaded for at least 8 seconds, the open limit switch is closed and the inlet vacuum is greater than 1.8 psi. If the unit has a high dust filter, the trip threshold for inlet vacuum is 2.4 psi.

- **Start Inhibit List**

High Airend Discharge Temperature

On-Screen Text: High A/E Disch T

This will occur if 2ATT is greater than 95% of 228 degF.

TRIP HISTORY

- **PAGES 1 TO A MAX OF 3**

The pages in the Trips History folder document up to the last 15 trips that the controller has experienced, and time stamps each. The trips are recorded in sequence, with number one being the newest and 15 being the oldest. When a new trip occurs, it becomes number one and all others are shifted up in number.

The page numbers in the Title Bar are used to scroll through the events, with each page displaying up to seven. Page one displays events one through five, page two displays six through ten, and so on.

The following items will generate an entry in the trip history.

- Trips

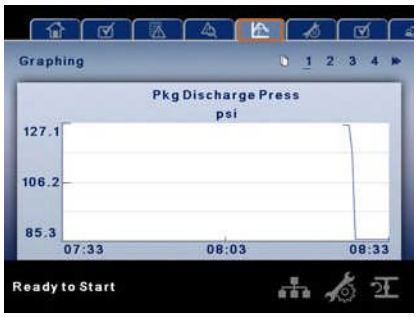
Active Trips will be highlighted in red while cleared Trips will have red text.

The trip history also records compressor data at the time of the trip to assist in diagnostics and troubleshooting. Navigating to the trip entry and hitting the enter button will bring up the trip history dialog box.

While the dialog box is active, press the left and right keys in order to scroll through the displayed data. The name of the trip will always be shown in the title bar of the dialog box. Press enter when finished viewing the data to return to the trip history screen

GRAPHING FOLDER

- **PAGES 1 THRU 5 – INDIVIDUAL GRAPHS**



Variable (Read Only) Each page graphs one variable, displaying the variable name and unit of measure in the top center of the page. The variables that will be graphed on each of the five pages are selectable from page six. The units of measure are selectable from the GENERAL SETTINGS folder.

Y-Axis (Read Only) is auto-scaling.

X-Axis (Read Only - The time duration is selectable from page six. The sample rate varies, based on the selected duration.

The graph plots a minimum of 255 readings

- **PAGE 6 – GRAPHING SELECTIONS**

The selections for page one through five are organized sequentially in rows. The top row has page one selections and the bottom row has page five selections.

Variables - include all analog inputs as well as some calculated variables. The amount of variables will vary depending on the compressor type and the options it has.

Duration - selectable from the following five times

- 10 minutes
- 30 minutes
- 60 minutes
- 12 hours
- 24 hours

These times are fixed and cannot be changed.

SSR COMPRESSOR

MAINTENANCE FOLDER

- **PAGE 1 – FILTER STATUS**

This page displays the status of the filters. The filter status will either be "OK" or "Change" depending on the compressor's diagnostic readings. If a filter reaches the "change' status, a warning will be issued and the service indicator will light up yellow to notify the user. Please note that the compressor must be in a "Running Loaded" state to check these maintenance items. If the compressor is not in a running state – the status will display "Load," unless a maintenance indicator has been issued when the machine was running and has not yet been reset.

The following filters are displayed:

- Coolant Filter
- Separator Element
- Inlet Filter

- **PAGE 2 – MAINTENANCE STATUS**

This page displays the time until the unit should be serviced. The service meter will deplete as the hours count down closer to a service appointment. Once the counter reaches the yellow zone, the service indicator will light up yellow. Once the counter reaches the red zone the service indicator will light up red and maintenance must be performed.

- **PAGE 3 - MAINTENANCE CONFIGURATION**

This page allows the user to set the service interval and to reset the counter after the service has been performed. The service interval may be set to any value between 1000 and 8000 hours, but must be set in accordance with the factory maintenance schedule. After maintenance has been performed, the user can reset the counter by navigating to the Reset button and pressing the enter key.

GENERAL SETTINGS FOLDER

All parameters in the general settings folder are adjustable.

- **PAGE 1 – LANGUAGE SELECTION**

Language (< >) is selectable from the following 30 selections:

English (default)	Finish	Latvian	Slovak
Bulgarian	French	Lithuanian	Slovenian
Chinese, simplified	German	Maltese	Spanish
Croatian	Greek	Norwegian	Swedish
Czech	Hungarian	Polish	Thai
Danish	Italian	Portuguese	Turkish
Dutch	Indonesian	Romanian	
Estonian	Korean	Russian	

The controller will display all screens in the selected language and only one language can be selected at a time.

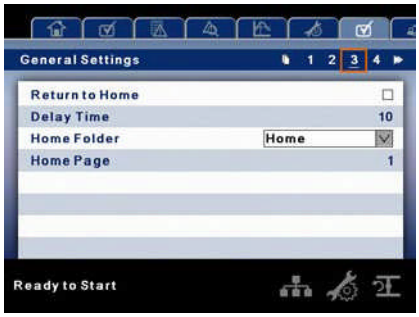
Each language appears in its native translation.

- **PAGE 2 – UNITS OF MEASURE SETTINGS**

Temperature is selectable between °F and °C.

Pressure is selectable between psi, kpa, bar, kg/cm^2.

- **PAGE 3 – HOME PAGE SELECTION**



Auto Return to Home enables the controller to return the display back to the selected Home Page if there is no user activity for the Delay Time shown. This is only enabled when an "x" appears in the checkbox.

Delay Time determines how many seconds of inactivity it will take before the controller will return to the Home Page.

Select Home Folder is used to select the Home Folder.

Select Home Page is used to select the Home Page within the selected Home Folder.

- **PAGE 4 – TIME & DATE SETTINGS**

All items are adjustable.

Hours allows the current hour to be set. The hours format is fixed on 24-hour.

Minutes allows current minutes to be set.

Seconds allows current seconds to be set.

Year allows current year to be set.

Month allows current month to be set.

Day allows current day to be set.

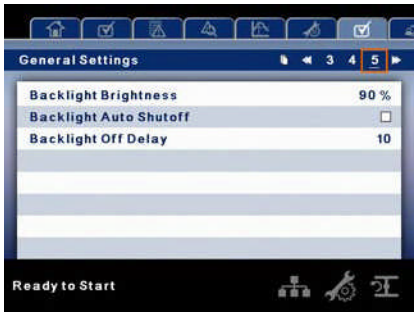
Date Format is selectable between dd/mm/yyyy (default) and mm/dd/yyyy.

Confirm New Time and Date is used to verify that changes to selections are desired. An "x" must appear in the checkbox before any changes will take affect.

The controller will continue to display any changes, even when the selections have not been confirmed and the user exits the page, then returns. Cycling of the power returns all selections to their current settings.

The controller does not support Daylight Savings Time

- **PAGE 5 – BACKLIGHT SETTINGS**



Backlight Brightness adjusts the brightness of the display.

Enable Backlight Auto-Off enables the controller to shut-off the backlight if there is no user activity for the delay time shown.

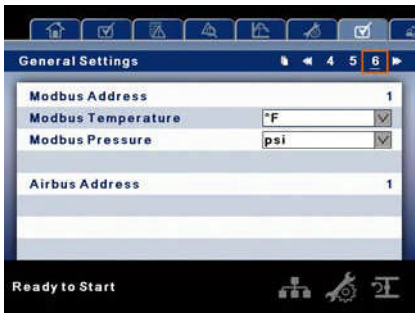
Backlight Auto-Off Delay Time determines how many seconds of inactivity it will take before the controller will shut-off the backlight.

The backlight will be switched on whenever any of the controller's keys are pressed.

NOTICE

THE START, STOP, LOAD, UNLOAD, RESET, AND ACKNOWLEDGE KEYS ON THE X^e-145M REMAIN FUNCTIONAL WHILE THE BACKLIGHT IS SWITCHED OFF. IT IS RECOMMENDED TO PRESS THE ENTER KEY OR ONE OF THE NAVIGATION KEYS IN ORDER TO SWITCH THE BACKLIGHT ON.

• PAGE 6 - SERIAL PORT ADDRESS SETTINGS



This page allows the user to set up the network addresses for the RS-485 networks the controller is capable of communicating with.

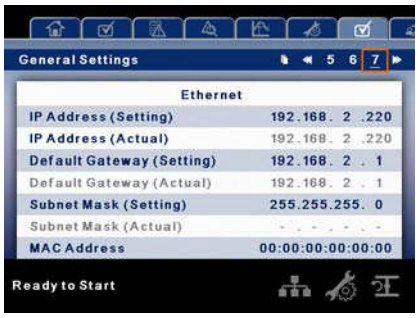
MODBUS Address – Sets the modbus node ID for the controller to communicate with a Modbus capable device, this can be any value between 1 and 247.

MODBUS Pressure - Sets the unit type for pressure data read out via the Modbus connection

MODBUS Temperature – Sets the unit type for temperature read out via the Modbus connection

Airbus Address - Sets the airbus address that allows the controller to communicate over Integral Sequencing or an X-Series system controller network.

• PAGES 7 AND 8 – ETHERNET SETTINGS



IP Address Setting – When DHCP is not enabled, this setpoint sets the IP address of the controller.

IP Address Actual – This will match the IP address setting when DHCP is not enabled. If DHCP is enabled this will display the address assigned to the controller by the DHCP server.

Default Gateway Setting – Setpoint for the default gateway.

Default Gateway Actual – Current reading/setting for the default gateway.

Subnet Mask Setting – Setpoint for the subnet mask.

Subnet Mask Actual – Current reading/setting for the subnet mask

MAC Address – This is the unique hardware MAC address for the controller. This can not be changed.

Enable DHCP – Allow the controller to automatically receive an IP address from the Local Area Network (LAN)

Apply – After editing the desired setpoint navigate to the accept setting and press enter in order for the values in the setting variables to be confirmed by the controller.

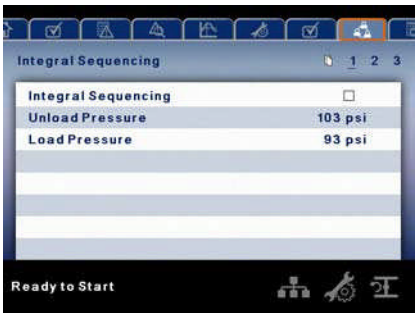
Cancel – Discard any changes made to the Ethernet settings.

• PAGES 9 AND 10 OPTION MODULE INFORMATION

The option module information screen allows the user to see which software options have been installed in the controller. An option module that is installed will show up with an "X" in the appropriate box. The option part number is displayed with the option name.

If no options are installed, this screen will not appear on the controller.

INTEGRAL SEQUENCING FOLDER



Integral Sequencing allows the compressor to be networked with up to three other compressors (fixed or variable speed) to maintain a stable system pressure by loading and unloading compressors as needed. Integral sequencing requires no additional hardware other than a serial two wire connection daisy chained between all compressors in the system.

Please note that the compressor's address in the integral sequencing system is defined by the airbus address that is set on the general settings folder. Also note that the pressure signal used to determine when to load or unload another compressor is based on the pressure reading from the compressor at address 1 in the system.

Integral Sequencing – Enabling Integral Sequencing selects this compressor to be the leader of the integral sequencing system. It is important that only one compressor in the sequence be selected as the lead compressor

Unload Pressure – Determines the pressure at which a compressor will be unloaded by the system

Load Pressure – Determines the pressure at which a compressor will be loaded by the system.

Start Delay Interval – Determines the amount of time between loading compressors. This prevents all compressors from loading at once.

Damping – The pressure control "Damping" setting which is used to tune how quickly the system responds to pressure deviations. The default is 10 and should not normally be changed.

Tolerance - The pressure control "Tolerance" setting, which is used to tell the system how to respond to changes in pressure above and below the load/unload pressures. The default is 3.0 psi and should not normally be changed.

Number of Compressors – Defines how many compressors are in the system. There is a maximum of 4.

Sequence – Displays the current load/unload order of the system. Each compressor in the system is assigned a letter, with "A" being the compressor to load first and unload last, and "D" being the compressor to load last and unload first.

Priority – Each compressor can be assigned a priority level. Compressors will only rotate positions with other compressors of the same priority level.

Rotate Now – Selecting this setpoint will cause the sequence to shift according to the priorities, regardless of the rotation interval setpoint.

Rotation Interval – Determines the time period between sequence rotations.

Time Left – Counts down the time until the sequence rotation will occur.

System Pressure – Shows the current pressure reading that the system is using for control. This is typically compressor 1's package discharge pressure reading.

STATUS FOLDER

All information on these pages is read only.

Some values may only be visible when the factory settings password is entered.

- **PAGES 1 AND 2 – ANALOG INPUTS**

Analog Inputs:

The following analog inputs are displayed in this section:

- Package Discharge Pressure – The pressure the compressor is delivering to the plant
- Sump Pressure – The compressor's internal pressure at the wet side (upstream) of the separator element.
- Dry Side Sump Pressure – Compressor's internal pressure at the dry side (downstream) of the separator element
- Airend Discharge Temperature – The temperature of the air/oil mixture at the discharge of the compression module.
- Injected Coolant Temperature – The temperature of the oil as it is injected into the compression module
- Package Discharge Temperature – The temperature of the air after passing through the compressor discharge
- Separator Pressure Drop – The pressure drop across the separator element
- Inlet Vacuum – Vacuum reading at the inlet valve.
- Remote Pressure (optional) – An optional pressure sensor that reads pressure at a point outside of the compressor package. Usually this would be on a common tank.
- Unloaded Inlet Vacuum – The target inlet vacuum for unloaded operation. The compressor will try to maintain this inlet vacuum value when running unloaded.

- **PAGE 3 – COMPRESSOR DATA**

Compressor Data:

- Power On Hours – The number of hours the controller has been powered up
- Running Hours – The number of hours the compressor's motor has been running
- Loaded Hours - The number of hours the compressor has been producing air
- Real Time Clock - Current time of day

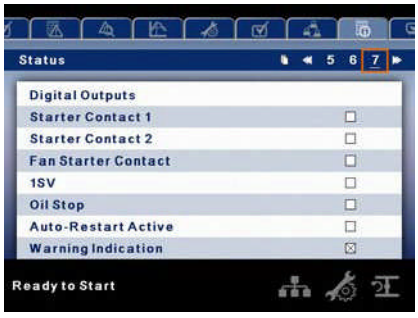
- **PAGES 4 THRU 6 – DIGITAL INPUTS**

Digital Inputs:

An "x" in the checkbox beside a digital input indicates that the input is in its TRUE state. For example, Starter Feedback is TRUE when its input is in the high state, where as, Emergency Stop is TRUE when its input is at 0Vdc. A password is required to view these pages.

- Closed Limit Switch
- Open Limit Switch
- Starter Contact 1SL
- Starter Contact 2SL
- Main Motor Overload
- Fan Motor Overload
- Coolant Filter Condition
- Emergency Stop
- Remote Stop
- Remote Start
- Remote Lead/Lag
- Remote Load Enable
- Remote Load/Unload
- Auxiliary Input 1
- Auxiliary Input 2

- **PAGES 7 AND 8 – DIGITAL OUTPUTS**



Digital Outputs:

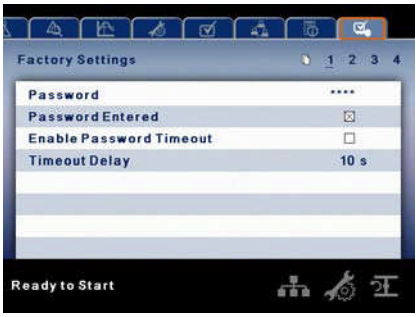
An "x" in the checkbox beside a digital output indicates that it is energized. A password is required to view these pages.

- Starter Contact 1
- Starter Contact 2
- Fan Starter Contact
- Blowdown Solenoid
- Oil Stop Solenoid
- Stopped in Auto-Restart
- Warning Output
- PORO Horn
- Trip Relay
- Warning Relay
- Stepper Motor Clock
- Stepper Motor Direction

FACTORY SETTINGS FOLDER

This folder is for **Ingersoll Rand** factory and service personnel. A password must be entered on page one in order to adjust values in this folder. This folder is used for setting parameters that are specific to that compressor and displaying software information for the controller.

- **PAGE 1 – PASSWORD**



Password:

Provides access to enter a valid password to gain access to password protected parameters. The password is entered by scrolling down to the password value and pressing the return key.

Password entered:

This checkbox will indicate a valid password has been entered. If this checkbox is blank, a valid password has not been entered or it has timed out. This is read only.

Password timeout enable:

Checking this box will enable the password time feature.

Password timeout:

This timeout along with the password timeout enable allows the user to set an adjustable amount of time to require a valid password to be re-entered. Once this timeout is reached re-entry of a valid password is required. The timeout counter is reset after any button press.

• PAGES 2 THRU 3 – FACTORY SETTINGS

These pages are used for setting parameters that are specific to the compressor. All of the factory settings that are adjustable are listed below. All settings on these pages are password protected.

Rated Pressure – This is the nominal pressure that the compressor can provide. This setpoint is adjustable from 100 – 200 psi (6.9 – 13.8 bar) and defaults to 100 psi.

hp/kW – This listbox setting selects the power rating for the compressor.

Starter Type (Star-delta, Remote Starter, Soft Starter) – Choose the starter type installed in the compressor. If this is not set correctly, the compressor may not start.

Service Level (0, 1, or 2) – Set the service level reminders for the compressor.

- **Service Level 0 –** Disables all service reminders
- **Service Level 1 –** A service warning will be issued when the service time period has been expired. This warning can be reset by any user.
- **Service Level 2 –** A service warning will be issued 100 hours prior to the service time period expiring. This 100 hour warning can be reset by any user. At the expiration of the service time interval the service warning will again occur. This warning can be reset by any user but will recur every 24 hours until the service complete factory setpoint has been set (Password Required).

Enable Low Ambient (On/Off) – Enable this setpoint to activate low ambient control. When low ambient is enabled, the compressor will always start, but will run unloaded until the airend discharge temperature reaches the low ambient temperature set point.

Separator DeltaP Sensor (On/Off) – Enable this setpoint when the dry side sump pressure sensor is installed. This allows for direct measurement of the pressure drop across the separator element.

Running Hours (adjustable) – Used to adjust the running hours counter on the compressor.

Loaded Hours (adjustable) – Used to adjust the loaded hours on the compressor

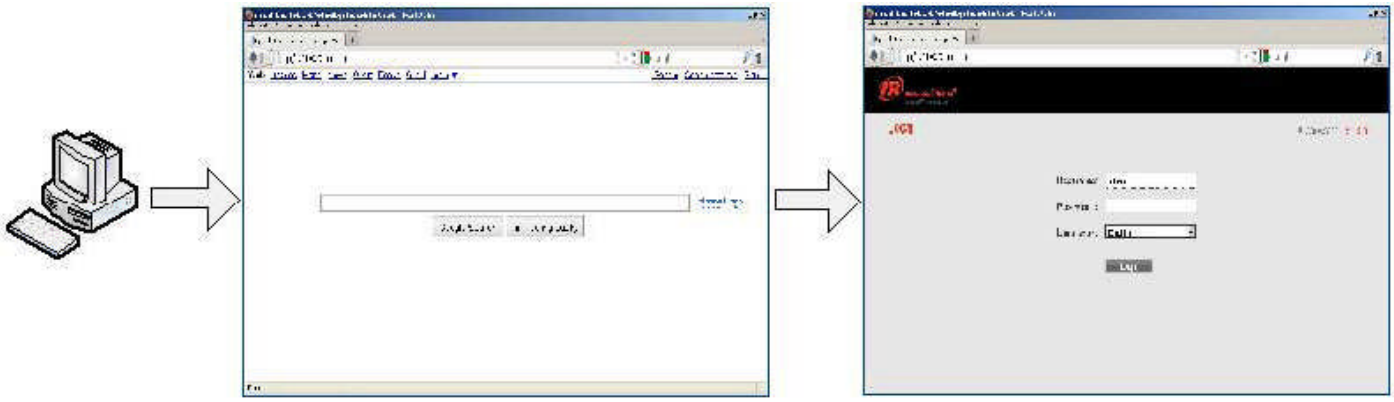
Power On Hours (Read Only)

• PAGES 4 – FACTORY SETTINGS

These pages are used for displaying software information for the controller. All items are read only.

WEB ACCESS

Ingersoll Rand X^{e}-145M web pages are a visualization application which offers a window using a web browser on your PC. The web pages allows the user to monitor air system at a glance or take a more detailed look into system operation, equipment status and setup through an intuitive web-page based user interface. To access this application running on the controller, simply connect via a Web Browser from any PC using an Ethernet connection. The PC can be local stand alone or part of a LAN.



The system administrator can assign a user one of three levels of access (view only, user, and administrator) which will determine which functions will be available to that user. For example, only users with administrator access will be able to make new accounts and to view or modify the configuration overview parameters. See section Account Management.

The X^{e}-145M functions as a web server for the compressor. The web server offers the following through the interface:

- Display of current operating state of the compressor
- Compressor Information – model number, serial number, rated capacity and other details
- Start, Stop, Reset Alarm, Load and Unload buttons
- Adjust operating parameters
- Display of analog signals
- Display of hour meters
- Display of Event log
- Graphing (X^{e}-145M Only)
- Display of maintenance timers
- Edit and display of maintenance log
- Notification of alarm/trip events via email

COMMISSIONING PROCEDURES

There are certain parameters that must be configured in order for the controller to properly communicate to the LAN and to the network. Outlined below is a list of steps that must be completed before the visualization software can be fully utilized. Please be sure that you have ADMIN rights before attempting to configure the controller.

If you will only be connecting to the controller to a single PC, go to step 1. If you will be using a static IP or DHCP assigned IP address on your company's LAN please go to step 2.

1. Connect the controller to a PC – Follow the procedure outlined in section "CONNECTING TO A PC". Please go to step 3.
2. Configure the controller Ethernet settings – Obtain a static IP address from your IT department or have an assigned domain name for DHCP access. Follow the procedures in "ETHERNET CONFIGURATION".
3. Login to the web pages – Follow the procedure in section "LOGIN PROCESS".
4. Configure compressor information – Follow the procedures in section "COMPRESSOR INFORMATION". Make sure you have the compressor nameplate data available.
5. Set up user accounts – Follow the procedures in section "ACCOUNT MANAGEMENT".

WEB ACCESS

CONNECTING TO A PC

In order to configure your computer to communicate point-to-point with the X^{e}-145M controller, you must first set the IP address range of your computer to the default IP address range of the controller. To do this, please follow the instructions listed below to configure the computer IP address. These settings are accessible using Windows XP by selecting:

Using Classic View:

Select Start

Select Settings

Select Network Connections

Using XP Start View:

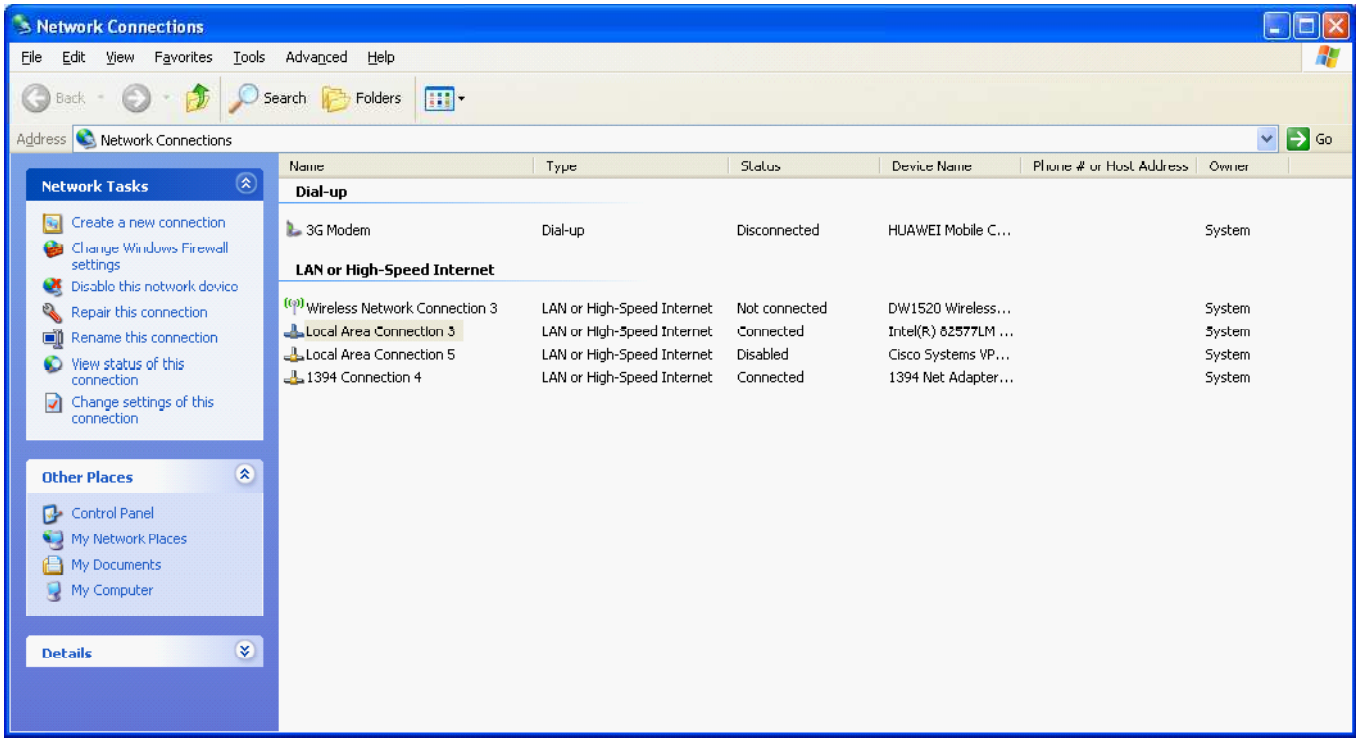
Select Start

Select Control Panel

Select Network Connections

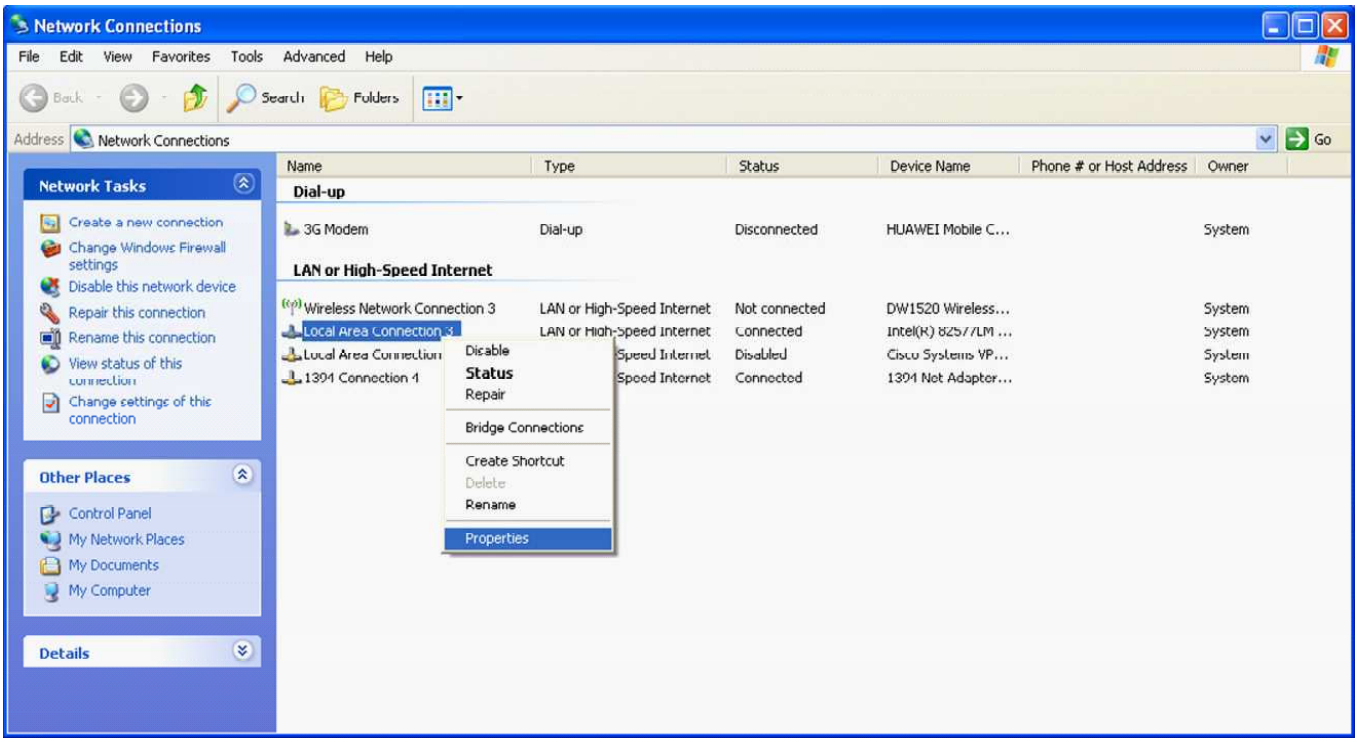
Please note that the controller ships with a default IP address of 192.168.2.220

1. Select "Local Area Connection" from the list

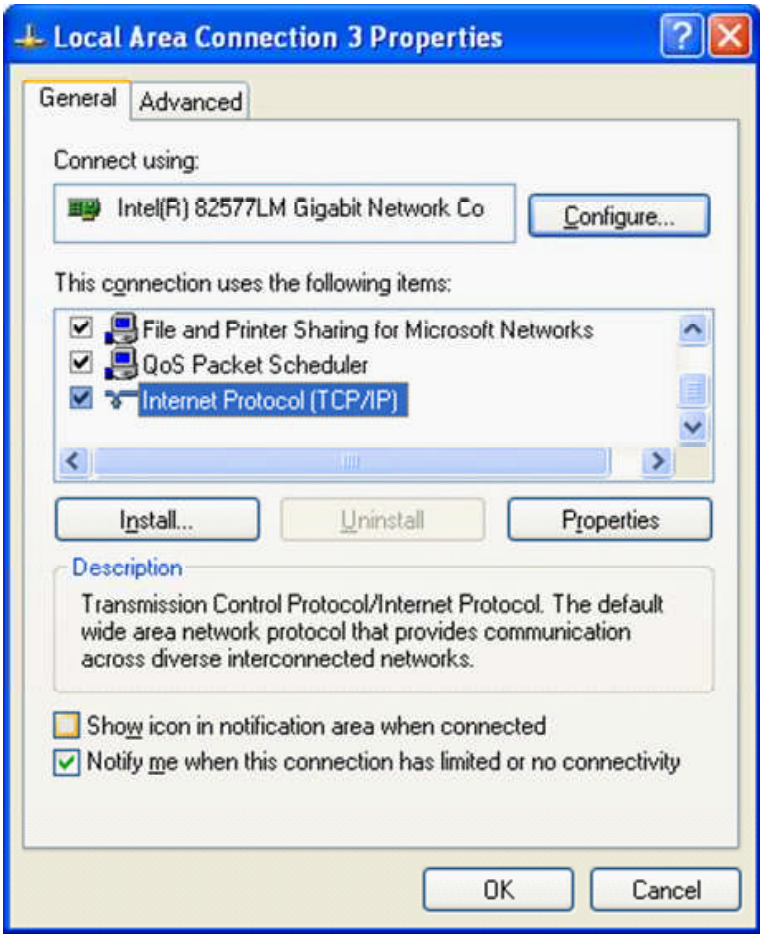


WEB ACCESS

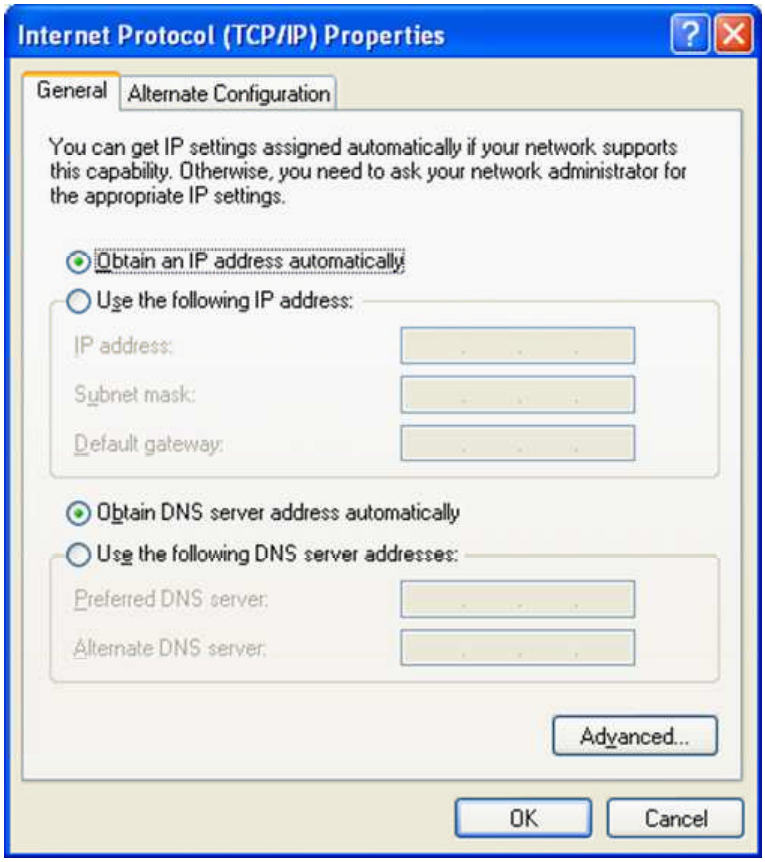
2. Right click on the "Local Area Connection" and select "Properties".



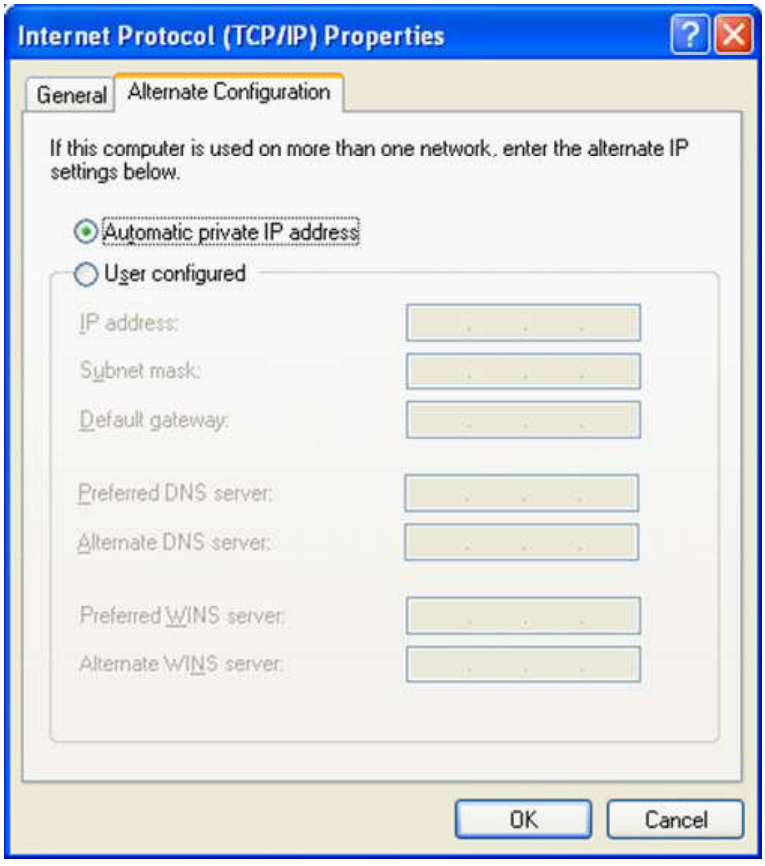
3. Scroll down the connection list to find the "Internet Protocol (TCP/IP)". Select the "Internet Protocol (TCP/IP)" and click on "Properties".



4. Click on the "Alternative Configuration" tab.

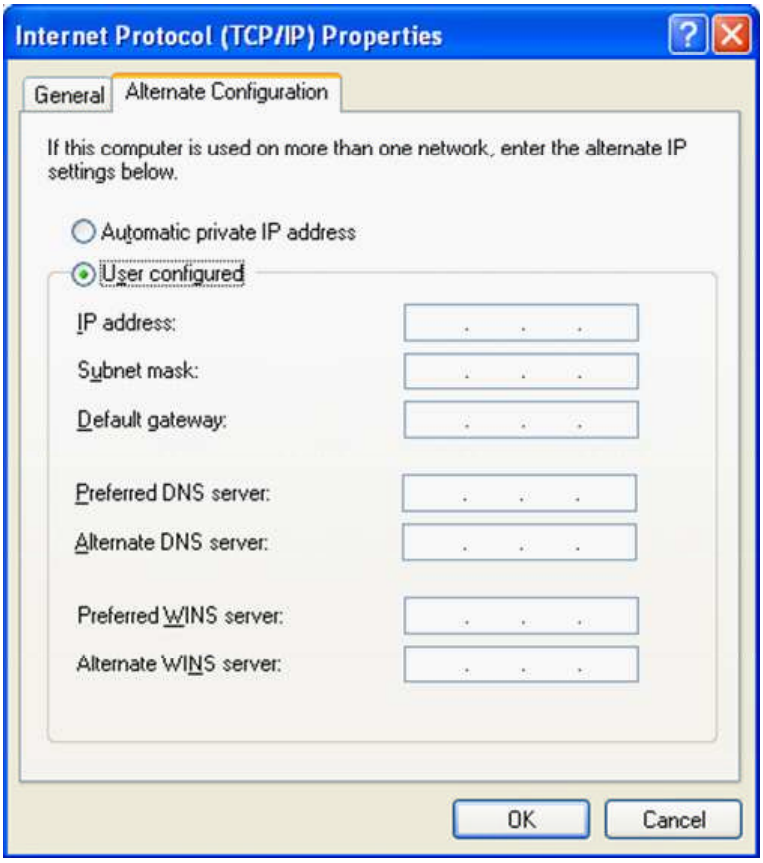


5. Click on "User Configured" Button.

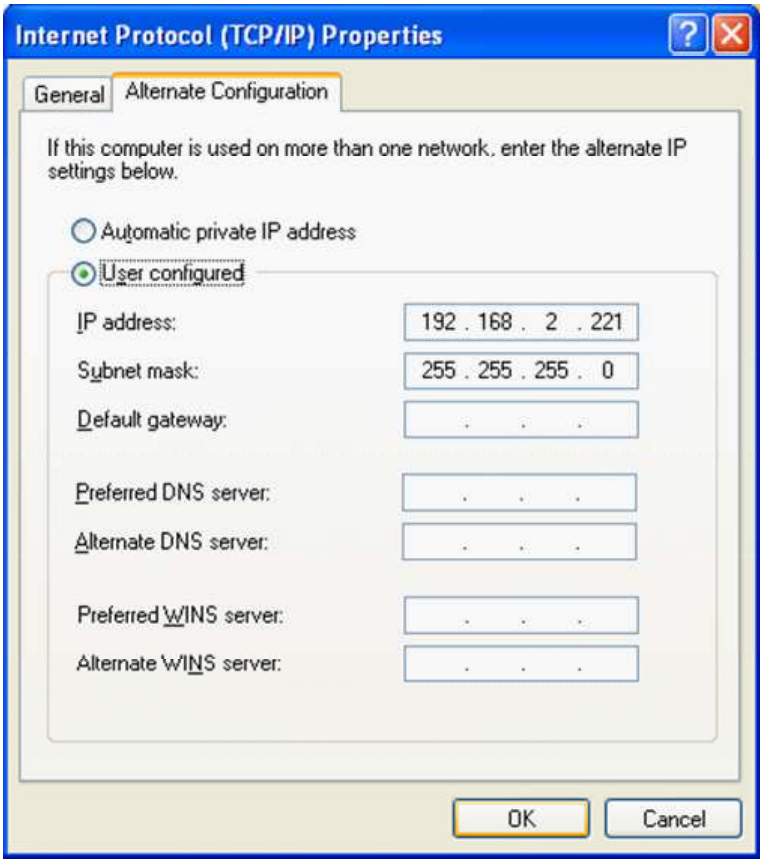


WEB ACCESS

6. Enter IP address for the computer (192.168.2.221), Enter the Subnet mask for the computer (255.255.255.0) and leave all other field boxes blank.



7. Click on "OK" button when it is complete.

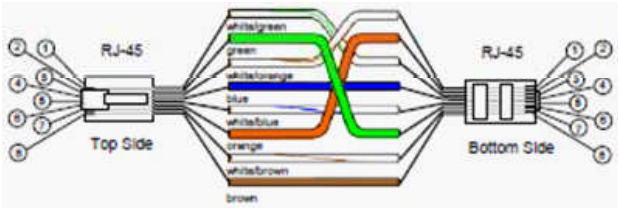


WEB ACCESS

8. Connect an Ethernet cable to your computer and to the controller. Within a minute, the computer will make a connection to the controller. Once connected, you will be able to log into and configure the controller.

ETHERNET WIRES

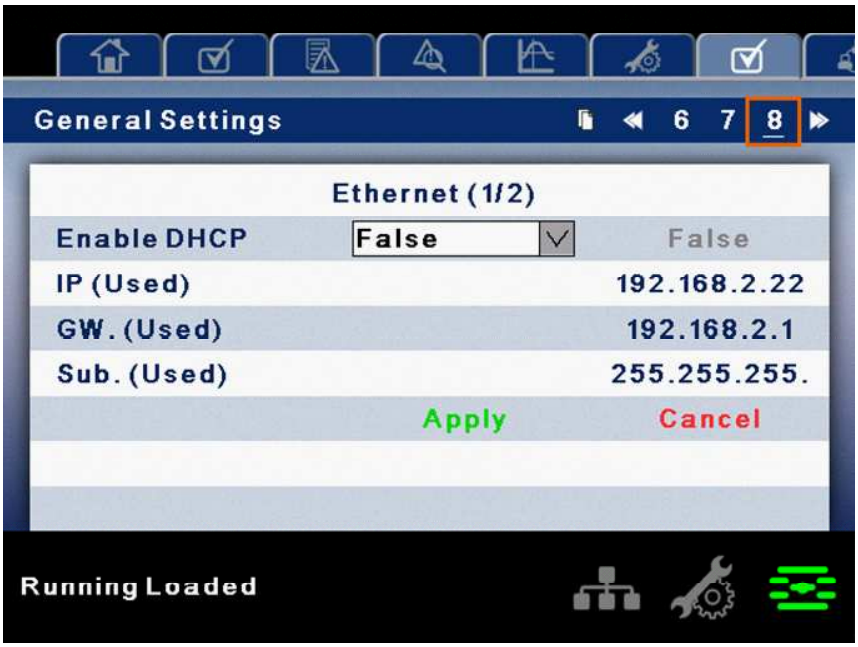
Wiring the network is accomplished by connecting the user computer to the controller using Category 5 (or better) cables. The connection point on the user computer is a RJ-45 port located on the Network Interface card.



The Ethernet cables are terminated with CAT 5 RJ-45 (RJ means "Registered Jack") modular plugs. RJ-45 plugs are similar to those seen on the end of a telephone cable except they have eight versus four or six contacts on the end of the plug and they are about twice as big

ETHERNET CONFIGURATION

The Ethernet configuration allows the user to select how the controller will be connected to the LAN.



The controller ships with a default IP address of 192.168.2.220. If "Enable DHCP" option is true in the "General Settings" [screen# 8] of the controller, then it will obtain an IP address via DHCP. Refer R55 - 160 kW Instruction manual for more information.

Once the user changes the "DHCP Enable" option to true, the "Assigned IP" address (e.g. 10.40.193.73) will appear below this selection in few seconds. The users connected with the local area network can use this new assigned IP to login to the web pages. Please note that depending on the LAN architecture, not all users will be able to view the web pages from their PC.

⚠ CAUTION

Changing the Ethernet configuration of the controller may cause the web pages to become unresponsive and require IT or other support to return the web pages to an operational condition. Be certain all Ethernet settings are correct before saving changes.

WEB ACCESS

LOGIN PROCESS

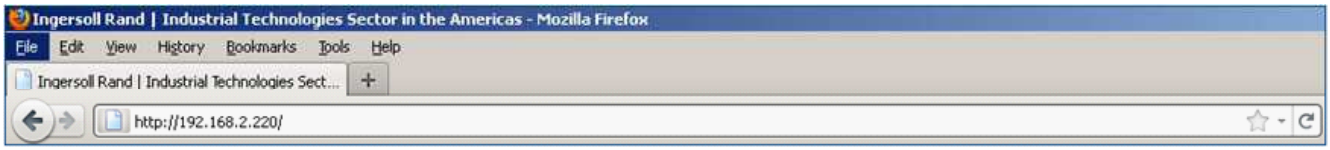
The server is accessed either by host name or by IP. Accessing by name requires that a router be in the network. During the installation and commissioning process a network address was assigned to the CONTROLLER by your IT department.

This address may be a static IP (e.g. http://192.168.2.220, recommended) or a DHCP assigned domain name address (e.g. http://fenixsim.com). A domain name address is a web page address chosen by the user to represent the controller. The domain name must be approved by your IT department but can generally be any text label you wish. You must have this address before you can log in to the web pages. See section – Ethernet Configuration.

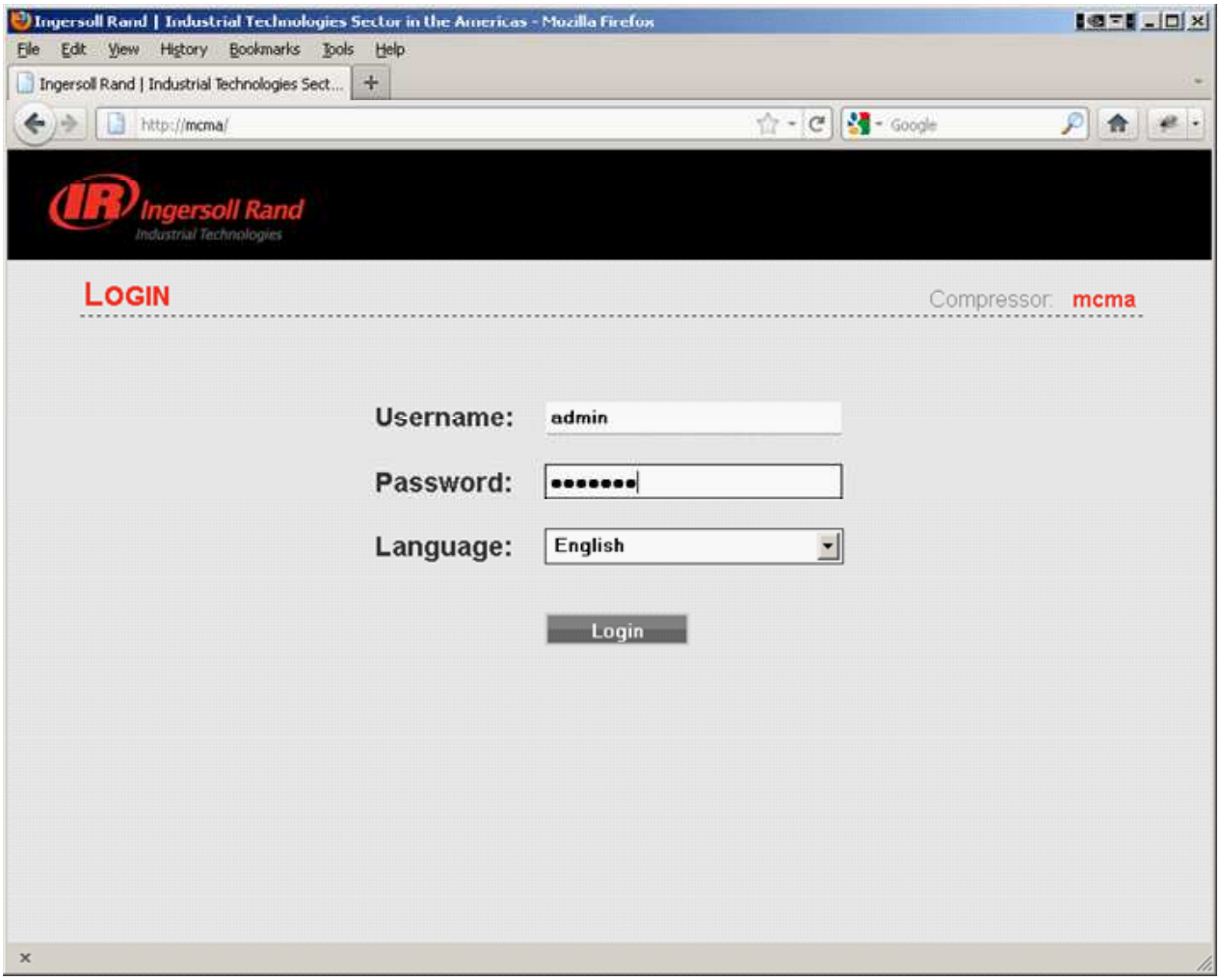
Please note that Web Pages requires Internet Explorer 8 (or newer) or Mozilla Firefox 5 (or newer). Certain functions may not behave correctly when using older browser software.

To log in to the web pages you must first type the address into your browser and then press the enter button. For example, with a DHCP enabled controller you might type this:

While with a static IP address you might type this:



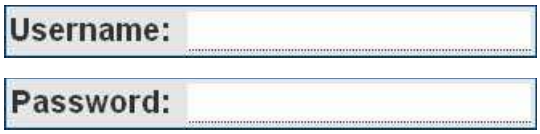
If the controller is configured correctly you will then see the web pages in your browser. This may take a few seconds depending on your network connection speed.



WEB ACCESS

The login screen requires the user to enter their username, password and select the language for the web pages. This login screen will authenticate the user against the type of account. After log in the user can view/modify the data as per the available access to the user account.

Enter the username & password for log into system and access the web pages.



Type in your user name (case sensitive)

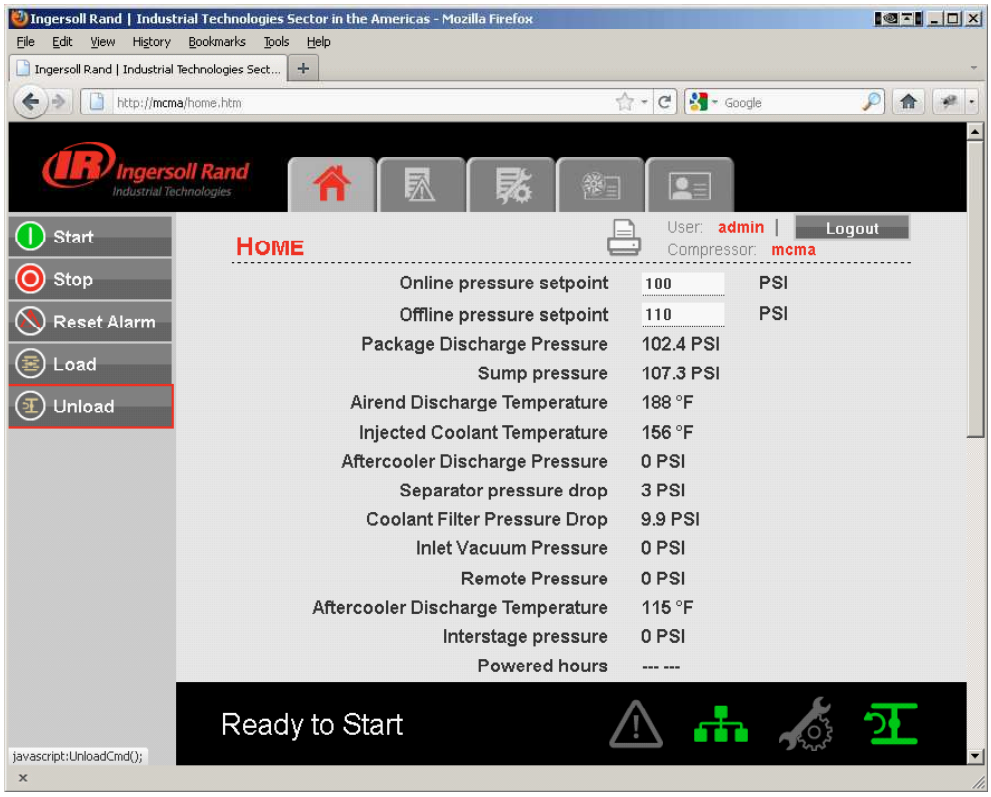
Type in your password (case sensitive)

If the user name or password are incorrect the login page will show a message "Unknown combination of username and password".

Click on the dropdown control and select the "Language" from language dropdown control. The full list of languages for the X^{e}-145M controller is supported by the web interface. The user may select one language from this list. This selection will be the language for the web interface after the login is successful.

Select your language from the dropdown list

Click on "Login" button to continue. Upon successfully logging in you will see the system HOME screen.



Only 5 users can concurrently login to the controller at a time. If another user attempts to login, an error message will be displayed. "The limit on the number of concurrent users has been reached. Please wait for a user to logoff before trying again."

Please see below section for default account information, and section "ACCOUNT MANAGEMENT" for more detailed information about the account management process.

WEB ACCESS

DEFAULT ACCOUNTS

The web page software comes with default administrator account. The system administrator can assign users one of three levels of access (view only, user and administrator) which will determine which functions will be available. For example, only users with administrator access will be able to create a new user account and view or modify the configuration overview parameters.

It is highly advised that the administrator change these accounts as soon as feasible to prevent unauthorized access to the Visualization software. The three level of access rights are as follows:

1. **VIEW :** The user is able to view information on all the screens. The user is unable to change any set points or access to the configuration overview screens.
2. **USER :** The user has all rights available to the VIEW access level as well as being able to change setpoints on the HOME screen and working duration of the maintenance counter. The user is able to manually start, stop, load and unload the compressors, as well as reset the alarm.
3. **ADMIN :** The user has all rights of the VIEW and USER access levels as well as full access to the configuration overview screens and the account management utility.

Please note that there can be as many as five (5) maximum users logged into the system at one time, and only one administrator logged in at one time. Only a user with ADMIN rights will be able to modify these default accounts.

The default account is:

Login	:	admin
Password	:	password
Rights	:	ADMIN

WEB ACCESS

NAVIGATION

Each of the main segments is represented by a tab on the top of web pages. Clicking on the tab will bring you to the screen for that particular segment.

TAB NAVIGATION

The components of the tab navigation are as follows:

	**Home**	Clicking this tab will bring the user to the HOME page. See section HOME PAGE
	**Event Log**	Clicking this tab will bring the user to the EVENT LOG. See section EVENT LOG UTILITY
	**Performance Log (Xe-145 Only)**	Clicking this tab will bring the user to the PERFORMANCE LOG. See section PERFORMANCE LOG UTILITY
	**Graphing (Xe-145 Only)**	Clicking this tab will bring the user to the GRAPHING page. See section GRAPHING UTILITY
	**Maintenance**	Clicking this tab will bring the user to the MAINTENANCE page. See section MAINTENANCE UTILITY
	**Inspection Log (Xe-145 Only)**	Clicking this tab will bring the user to the INSPECTION LOG. See section INSPECTION LOG UTILITY
	**Compressor Information**	Clicking this tab will bring the user to the COMPRESSOR INFORMATION page. See section COMPRESSOR INFORMATION
	**Account**	Clicking this tab will bring the user to the ACCOUNT page. See section ACCOUNT MANAGEMENT

COMMAND BUTTONS

All pages show five command buttons (Start, Stop, Reset Alarm, Load and Unload), five dash board icons and current status of the compressor.

If the current user's account type does not have the necessary access rights to control the compressor via the web interface, remote control from the web interface will be disabled at the controller.

"Command Keys" on the web pages command the compressor to perform actions as specified in the following table.

Key	Name	Function
	**Start**	Start the Compressor
	**Stop**	Stops the compressor. This button should be pressed instead of the E-Stop for normal stopping operation.
	**Reset Alarm**	Clears Warnings and Trips once the condition is corrected.
	**Load**	Loads the compressor
	**Unload**	Unloads the compressor

Remote starting and stopping can be accomplished through the Ethernet Port. Panel power must be on, all utilities must be running and permissive functions satisfied in order for the start-up from the web page.

WEB ACCESS

DASHBOARD ICONS

"Dashboard Icons" are intended to be a quick at-a-glance view of system status. These icons are always visible regardless of the folder/page selected.

The following table lists standard dashboard icons and their definition. Note that the color of these icons changes based on the state set by the application while running.

Icons	Name	Description
	**Alert**	Illuminates when a Warning (flashes) or Trip (constant on) is sensed.
	**Remote Control**	Remote control is enabled.
	**Service Required**	A Service reminder is nearing or has expired (i.e. an air or oil filter needs to be changed)
	**Unloaded**	Compressor is in the unloaded state
	**Loaded**	Compressor is in the loaded state

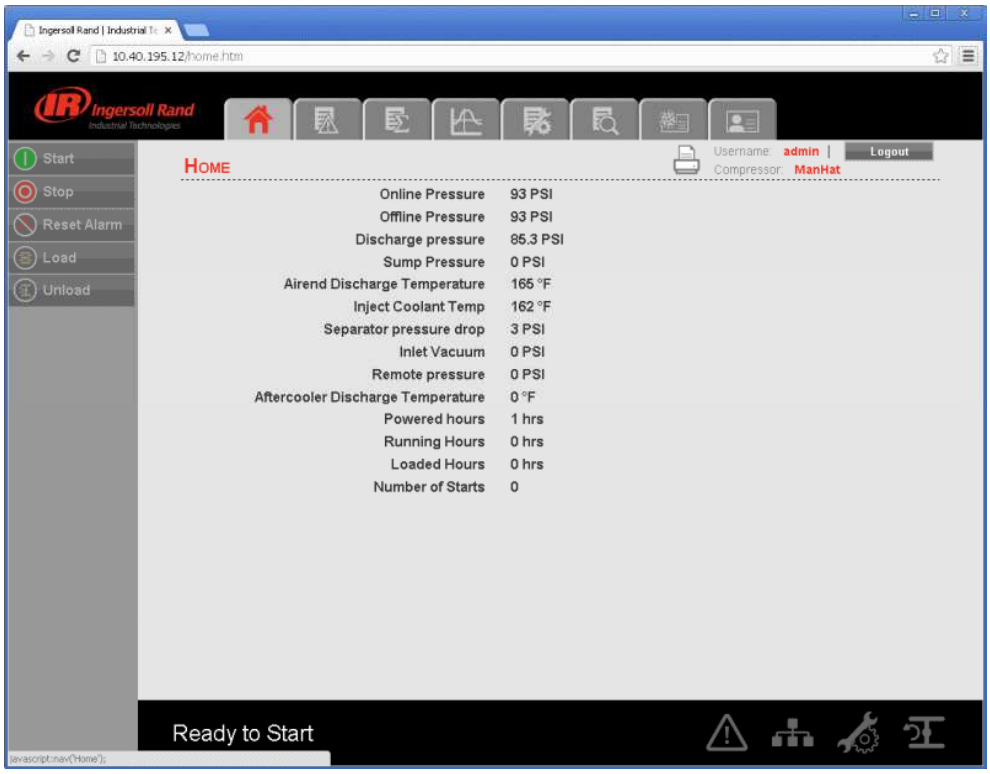
Compressor Name, User Name, Print Button and Log Out button are always visible on the right side top of the page, regardless of the tab selected.

Compressor Name		The user can set the "Compressor Name" from the "Compressor Information" tab. The user can use this host name as a browser address for the web pages. A "Compressor Name" is a domain address to log in the CONTROLLER web pages.
Logged in User		Currently logged in user is shown on the right side top in each web page.
Print Button		Click on "Print" button, to print the content on existing web page
Log Out Button		Click on "Logout" button to terminate the current session. Clicking this button will log out the current user and return to the web page login screen.

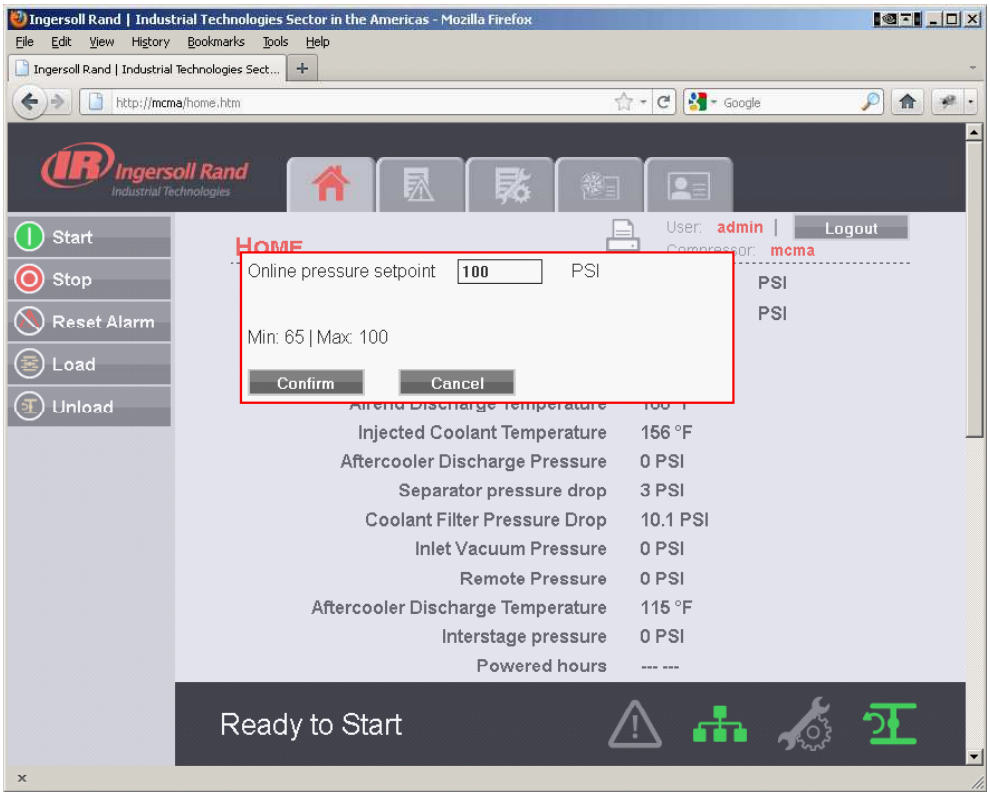
WEB ACCESS

HOME PAGE

The "HOME" tab shows information about the compressor operating parameters, total power consumption, running hours, loaded hours, number of starts, etc



Click on the pressure set point value in the white box, to change the "Pressure Set Point" value. Enter the new pressure set point value and click on "Confirm" button. "Pressure Set Point" is only editable parameter for the "Admin" and "User" type accounts. The user with "View" type account can't change these system parameters.

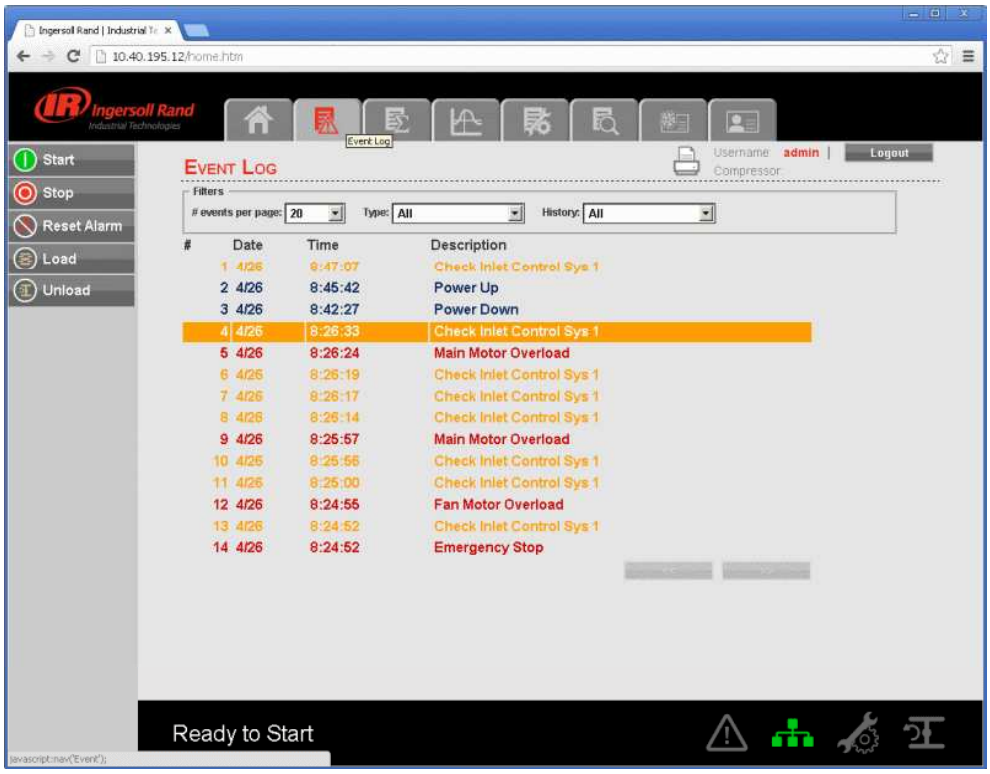


WEB ACCESS

EVENT LOG UTILITY

The "EVENT LOG" tab shows the event log from the controller. This tab contains the event log details for the system events, warnings and trips that have occurred and provides first-out indication. It also provides controls for filtering the list of events as shown. Any time an event occurs, the system will send the display to the first event log page

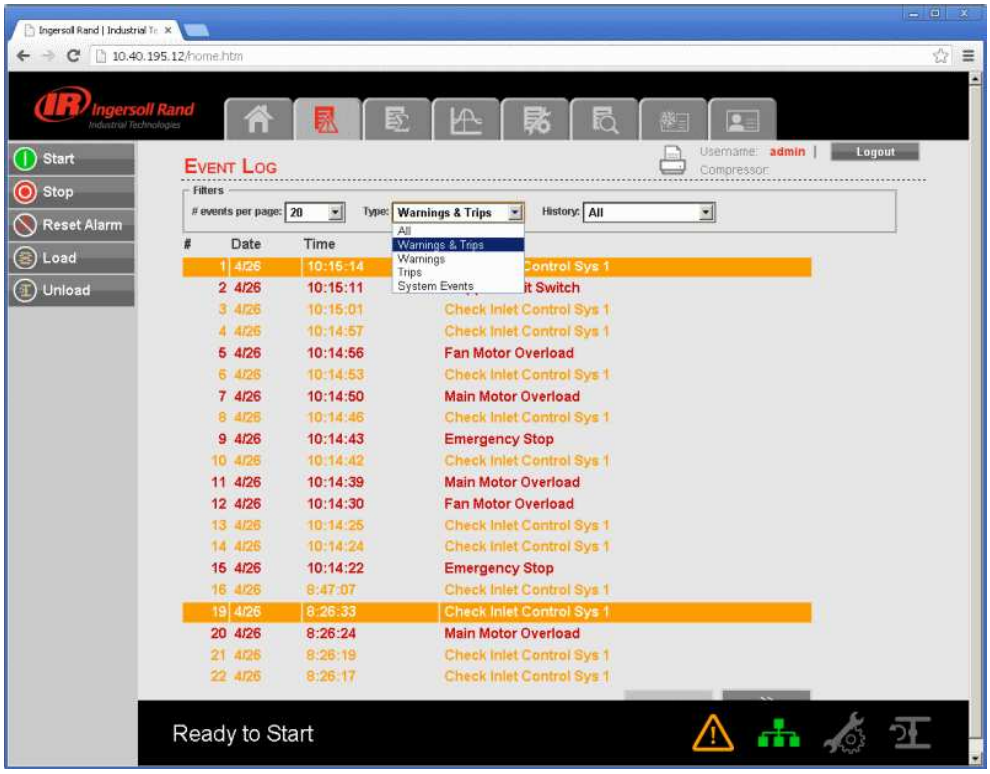
Each event is added into "EVENT LOG" with a date (mm/dd), time (hh:mm:ss) and the event value. This is the value that triggered the event. The event labeled as "1" is the newest event.



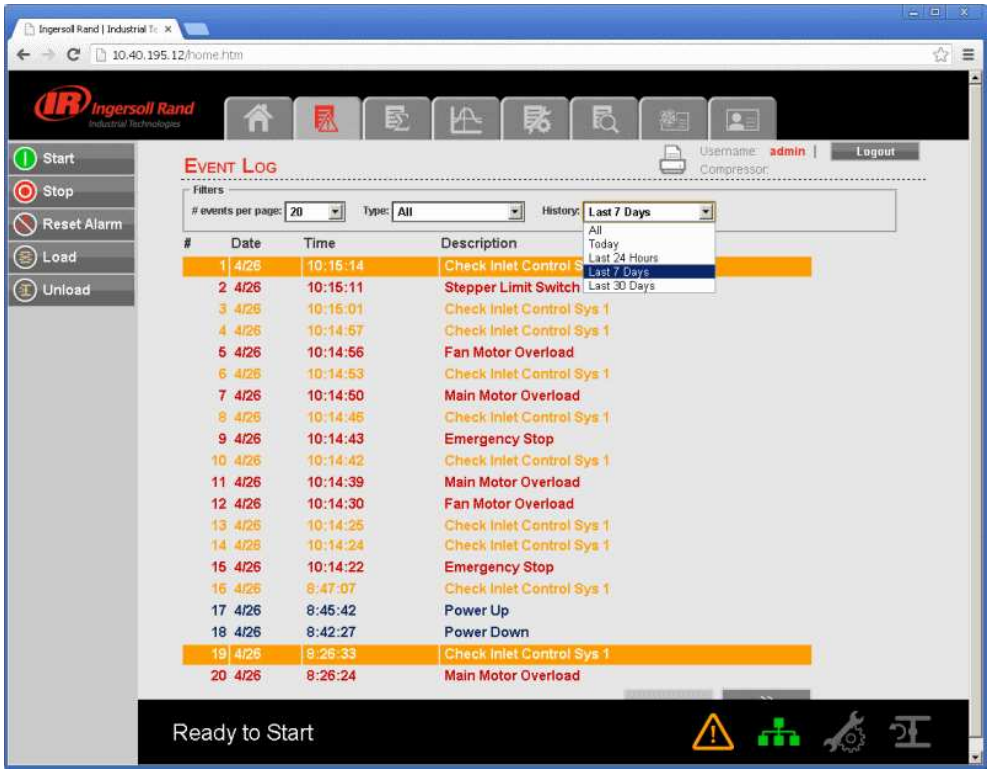
Click on the dropdown control and select the number of events per page. If the events per page are 20, then previous events will be available in the next page. Click on the "Next" button will display the previous twenty events.

WEB ACCESS

The “Event Type” dropdown allows the user to filter the list of events by event type. The user can select the type of event from the list by clicking the dropdown control. The events recorded and placed into one of three categories: Warnings, Trips/ Shutdowns, and System Events. “EVENT LOG” page highlights all the trips in red text, warnings in yellow text and system events in the blue text.



The “History” dropdown allows the user to select the option to see the event log history for a selected time period. Click on the dropdown command and select option “Last 7 Days” to see the event log of last 7 days.

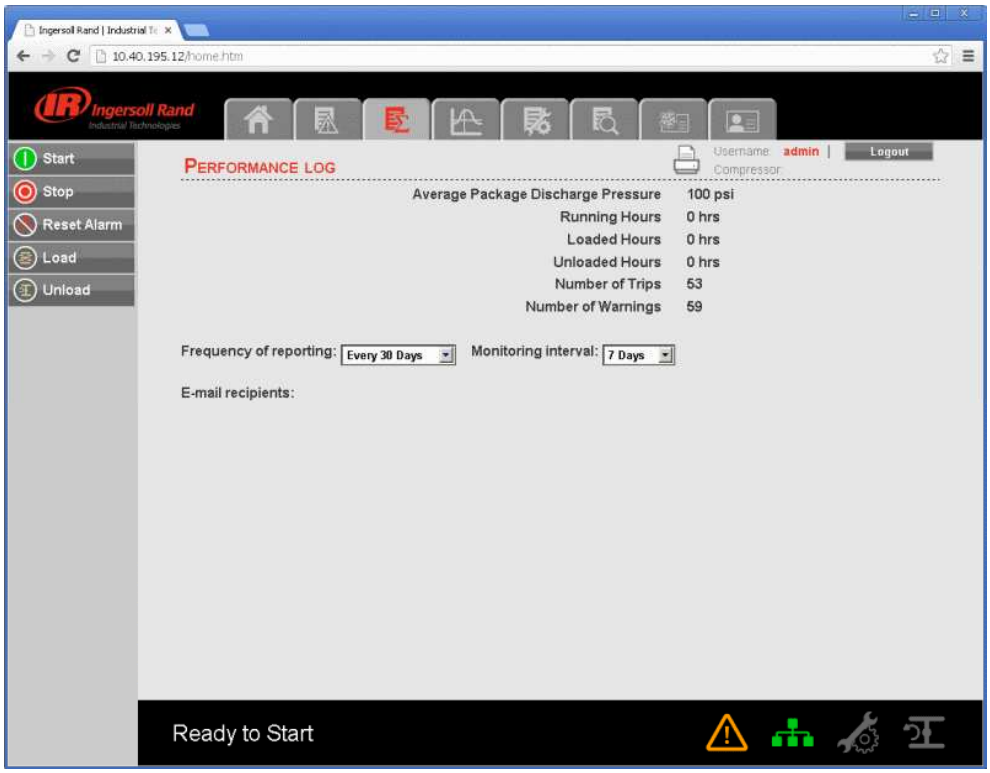


The EVENT LOG will record the last 500 events. Once this 500 event limit has been reached the oldest events will be cleared and the newest events will appear at the top of the event log.

WEB ACCESS

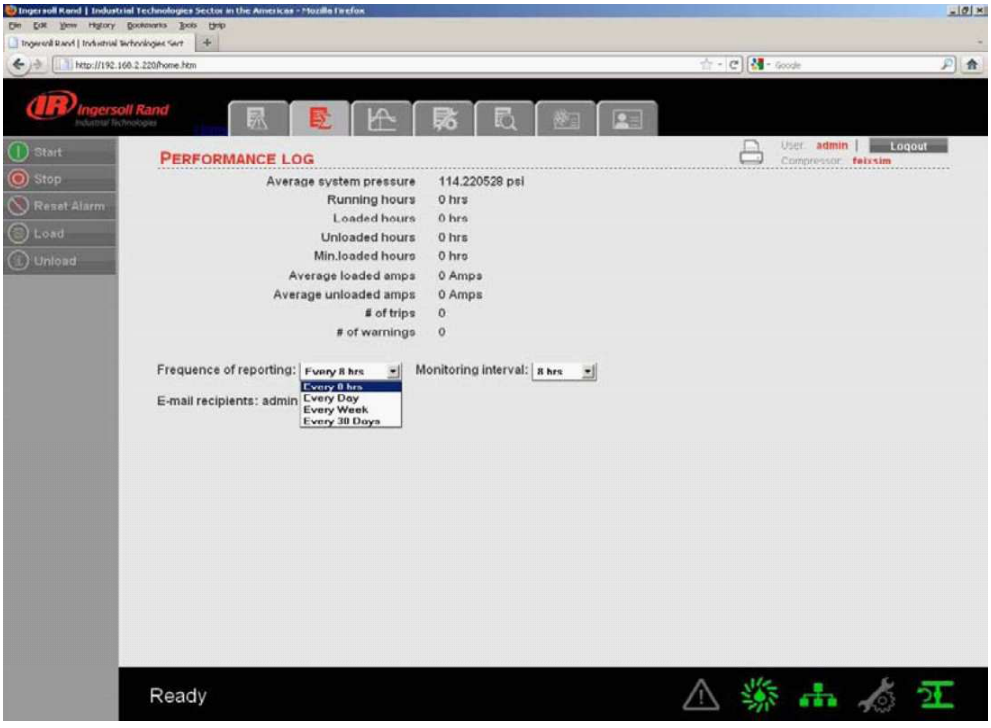
PERFORMANCE LOG UTILITY

The "PERFORMANCE LOG" tab shows the performance details and system data for the compressor including Average system pressure, hour meters, number of trips and warnings. The Performance log report provides a summary of the compressed air system's performance for the selected time period.



The "PERFORMANCE LOG" page is divided into two major sections. The top section displays the parameter values. The bottom section contains the controls for the Performance log.

The "Running Hours" are the amount of time that the compressor has been operating between all start and stop sequence. The "Loaded Hours" is the amount of time that the compressor has been running and not running unloaded. The "Unloaded Hours" is the amount of time that the compressor has been running unloaded.

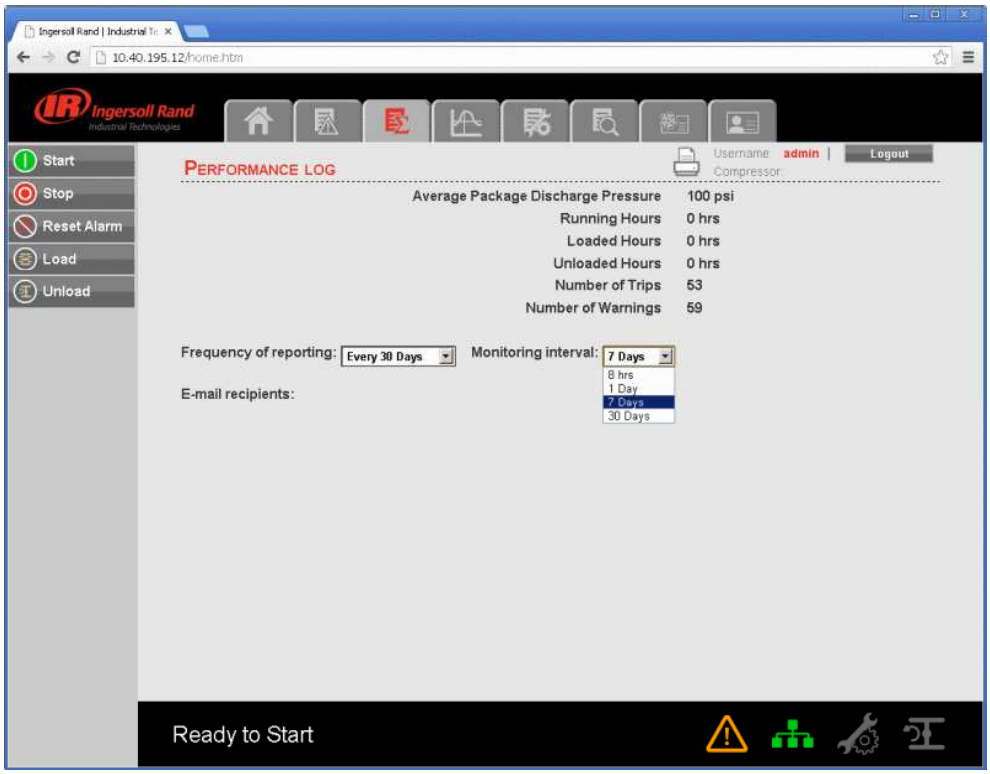


WEB ACCESS

The "PERFORMANCE LOG" provides two dropdown controls that allow the user to select sampling of reporting and reporting settings. The user can change the frequency of reporting and monitoring interval by clicking on the dropdown controls.

The time period of the performance report is selected based on the "Frequency of Reporting". Click on the dropdown control and select the "Frequency of Reporting" at which performance log will be emailed to the users that request it via the email notification section of the "ACCOUNT" page. The default frequency of reporting is "Every 8 hours". In this case after every 8 hours, the web page application will send the performance log to the user at a specified email account.

The sampling rate of the data capture can be set by the user selection of the "Monitoring Interval". The "Monitoring Interval" dropdown control determines the time interval after which parameters will be updated in to the "PERFORMANCE LOG". All parameters are stored in a rolling FIFO manner.

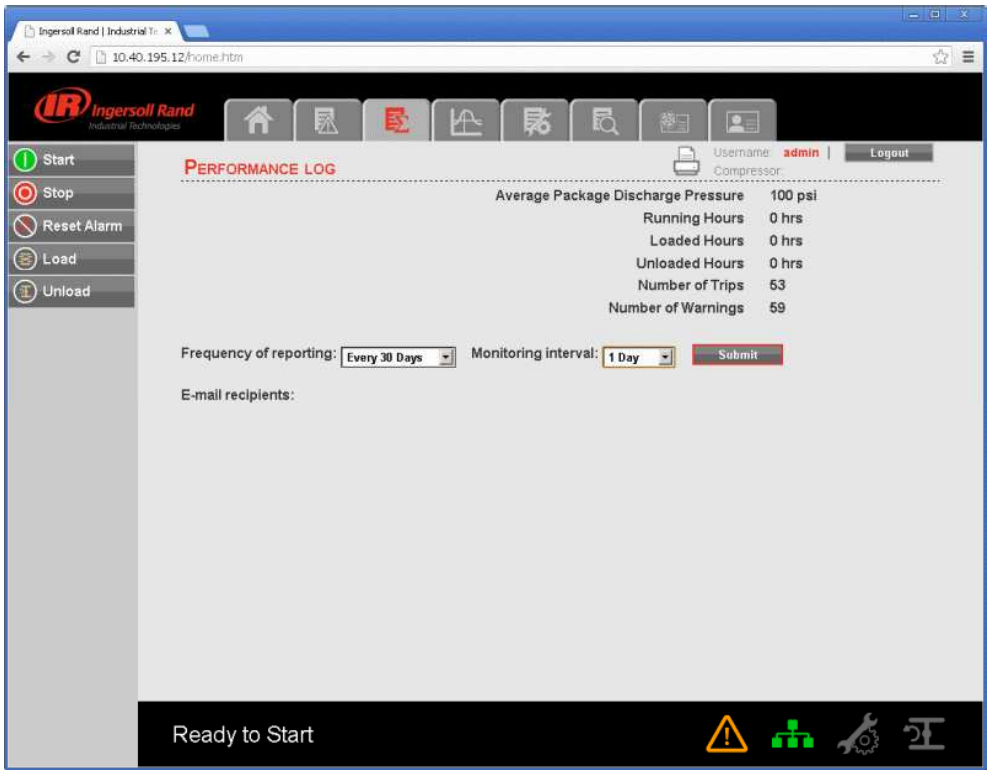


User names will be displayed as "E-mail recipients" in the "PERFORMANCE LOG", if the check box for the same is checked in the Email notification section of the "ACCOUNT" page.

Refer E-mail notification section of the "ACCOUNT MANAGEMENT" page to change the E-mail address

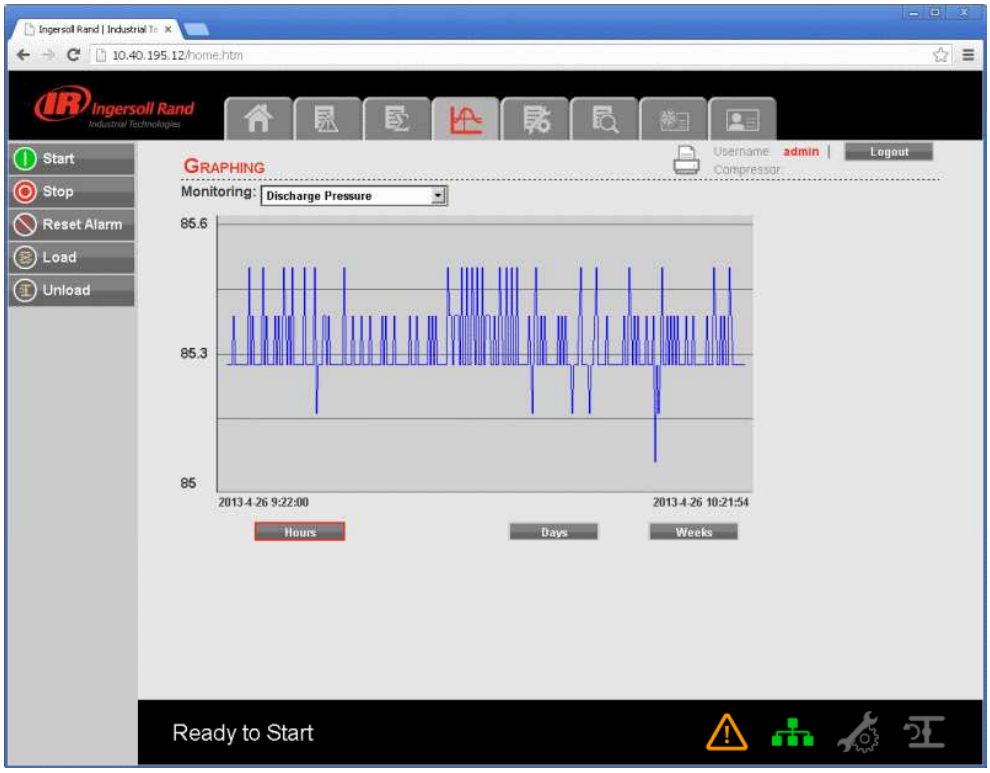
WEB ACCESS

Whenever the user changes the "Frequency of reporting" and/or "Monitoring Interval", a "Submit" button will appear on the screen. Click on "Submit" button to save the changes.



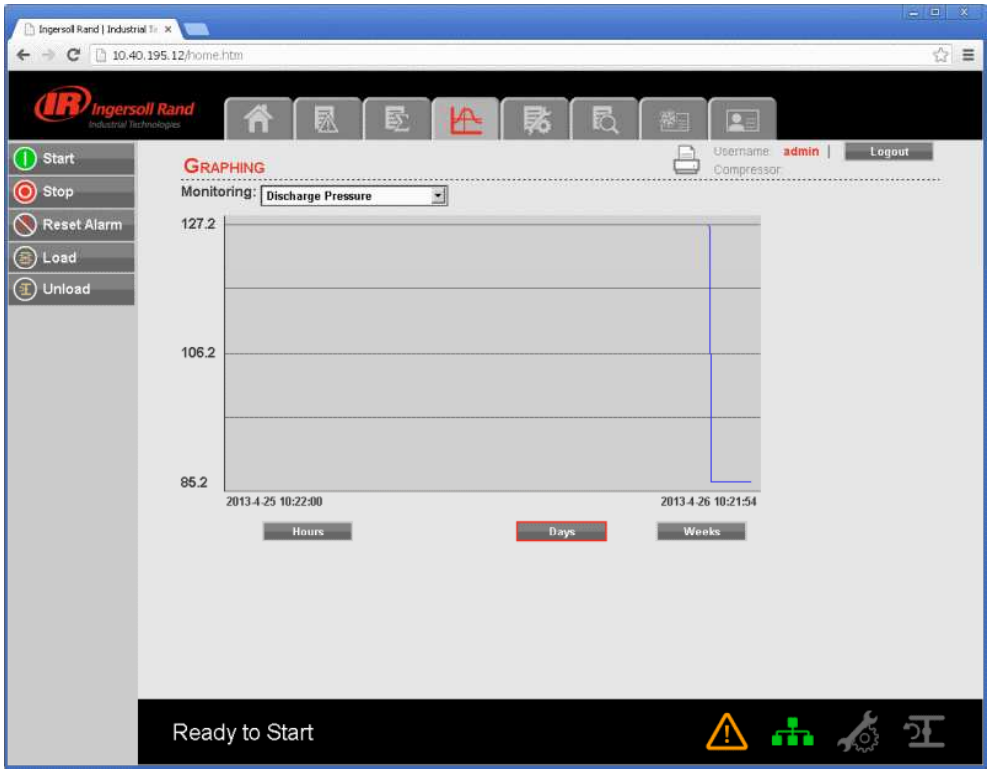
GRAPHING UTILITY

Click on "GRAPHING" tab to view the data in a graphical format for the selected analog input variable and time duration. The GRAPHING UTILITY allows the user to plot a graph on hour, day or week basis. The default option is Hours. Activation of a button will deselect any other button previously selected. When "Hours" has been selected, the X axis will be scaled such that the span on graph represents duration of 1 hour.

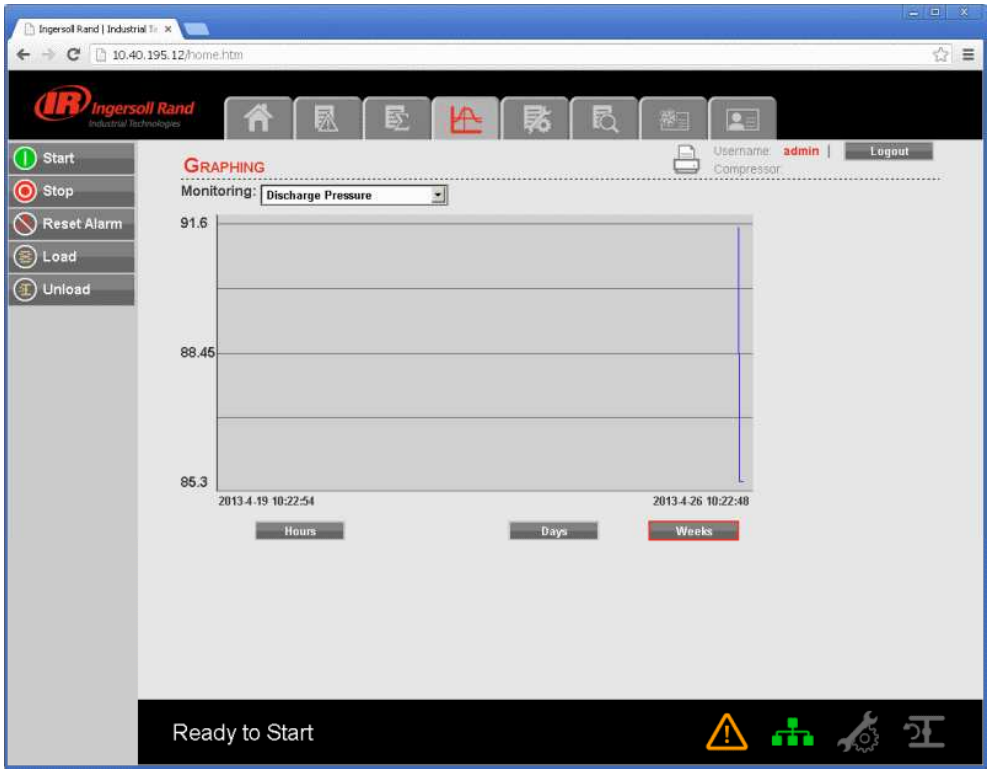


When "Days" has been selected, the X axis will be scaled such that the span on graph represents duration of 1 day.

WEB ACCESS

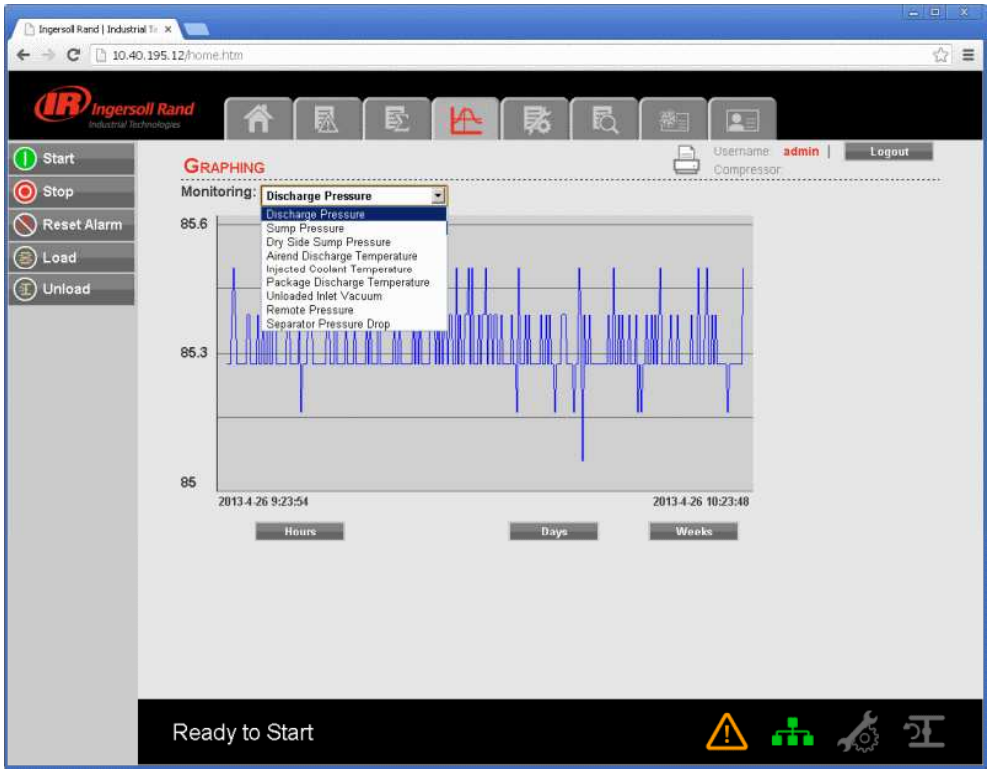


When "Weeks" has been selected, the X axis will be scaled such that the span on graph represents duration of 1 week.



The drop down menu allows the user to choose a variable to view data on the graph. Click on the dropdown menu and select the variable to monitor on the graph. Variables include all analog inputs as well as some calculated variables. The amount of variables will vary depending on the compressor type and the available options.

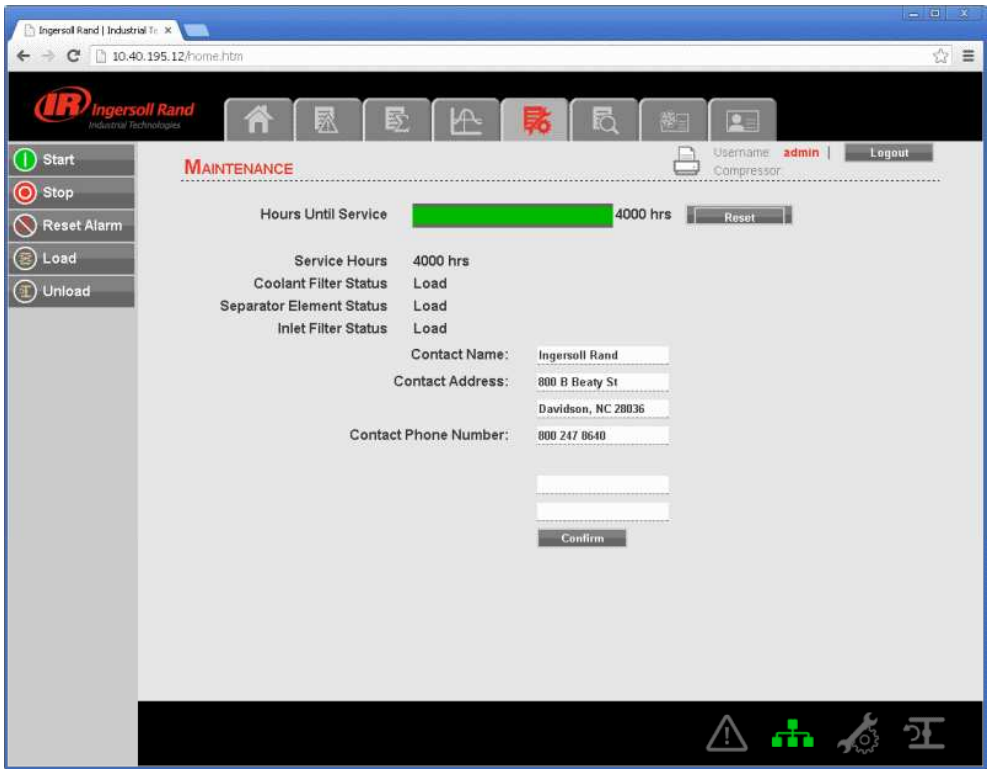
WEB ACCESS



By moving the mouse over graph will display the determined value at the position of cursor with the date and time. Due to performance requirements the data on the real time chart cannot be interacted with directly so this allows the user to determine the approximate value of any data point.

MAINTENANCE UTILITY

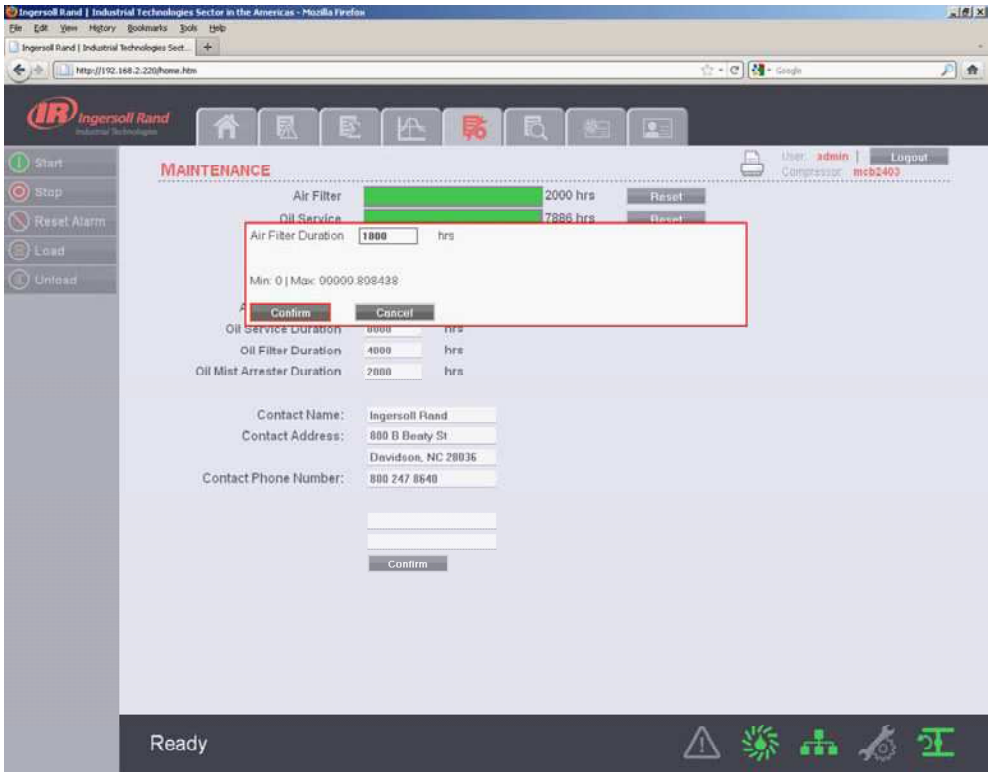
"MAINTENANCE" tab contains the service schedule hours same as shown on the "MAINTENANCE" folder of controller.



This tab provides a service scheduler so that periodic maintenance reminders may be scheduled for consumable parts.

WEB ACCESS

The user can change the working hours of maintenance counter after maintenance. Double click on values in the white box to reset the timer and slide bar.



Click on the service scheduled hours in the white box, to change the maintenance counter. Enter the new value of working duration and click on "Confirm" button.

Maintenance counter for the consumable parts is only editable for the "Admin" and "User" type accounts. The user with "View" type account can't change these system parameters.

After changing the working hours of maintenance counter, click on the "Reset Button" of the selected variable to reset the slide bar position.

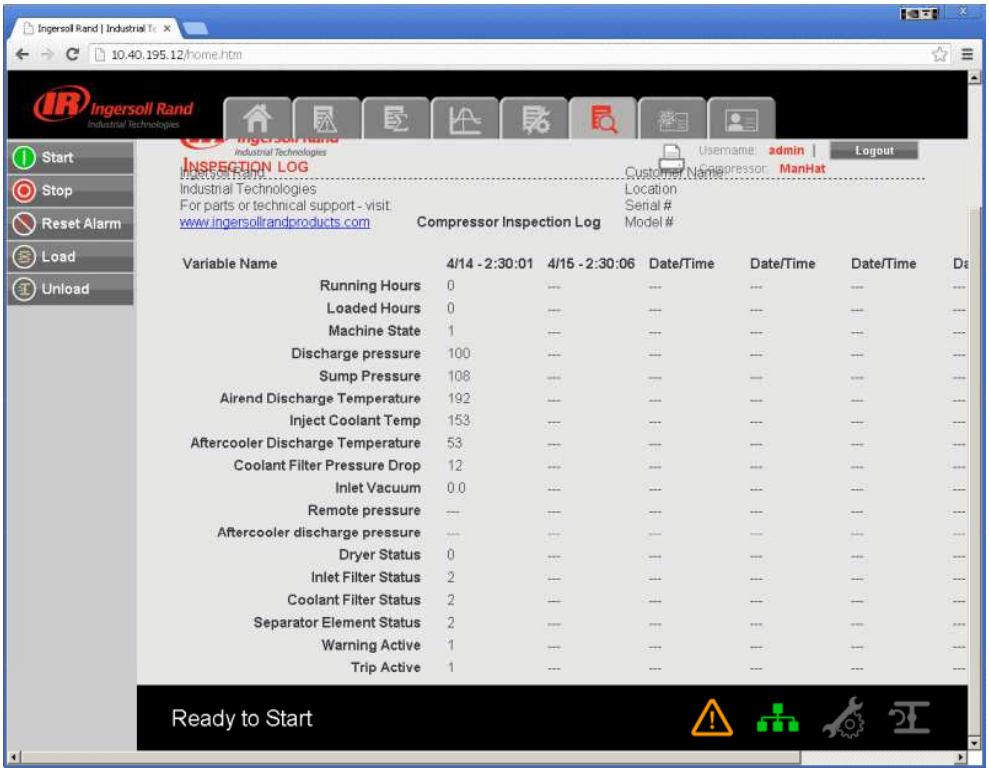
The user can also change the contact address & contact number to call for parts or service. This is the number of the local **Ingersoll Rand** representative. Click on "Confirm" button to save the changes.

"Admin" and "User" type accounts can only have an access to change the working duration of the maintenance counter and Contact details. The "View" type account can't have an access to change these parameters.

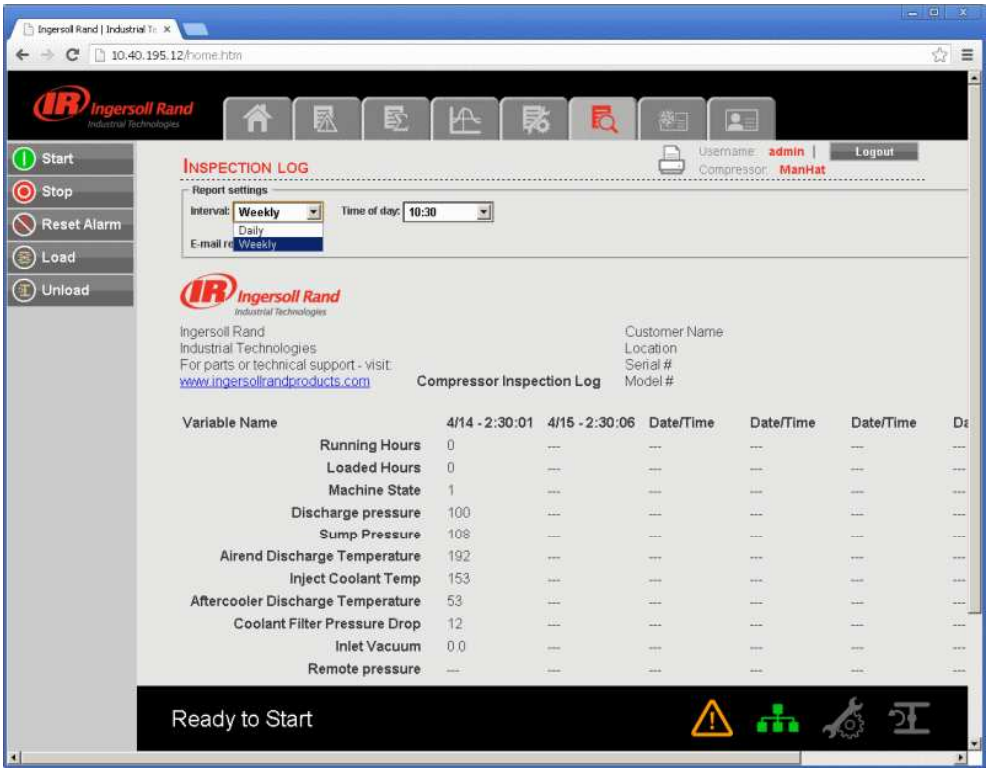
WEB ACCESS

INSPECTION LOG UTILITY

The "INSPECTION LOG" tab is intended to record machine data over a fixed period of time and a fixed rate. Inspection log contains the controller logged data for the variables at the time of download. The controls section of the "INSPECTION LOG" shows the user name currently set to receive inspection logs via email, as per the specified time interval and time of the day for instantaneous data.

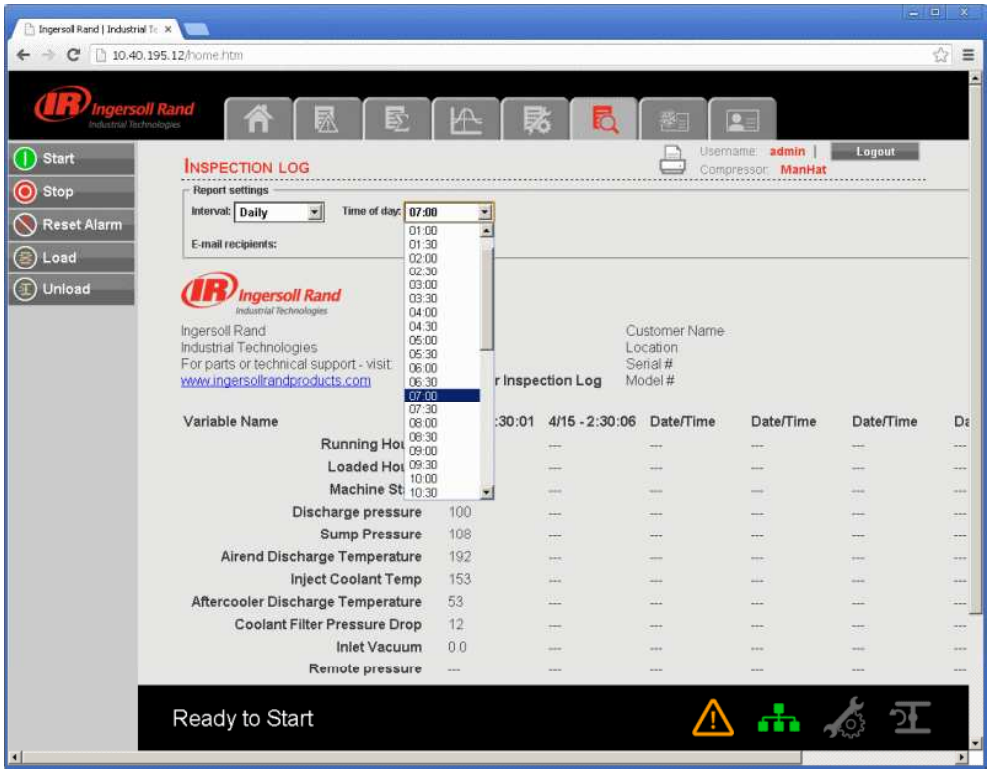


Click on the dropdown control and select the "Interval". The default time interval is "Daily". If the time interval is "Weekly", then the web page application will send the inspection log to the user at a specified email address on weekly basis.

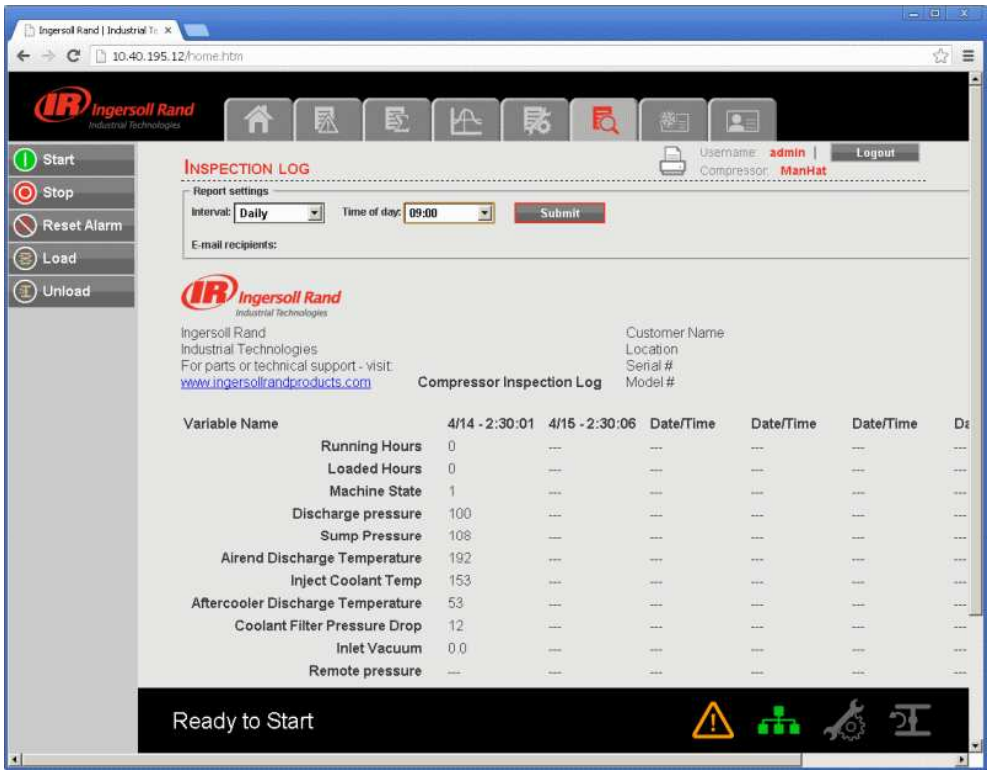


Click on the dropdown control and select the "Time of day". It is shown in a 24 hours clock format.

WEB ACCESS



Click on the "Submit" button to save the changes into the report settings. The user will receive the INSPECTION LOG as per the selected time interval and time of the day. If the interval is "Daily" and time of day is "09:00" then the web page application will send inspection logs via email, everyday at 9:00 AM.



The user name will be displayed as "E-mail recipients" in the "INSPECTION LOG", if the check box for the same is checked in the Email notification section of the "ACCOUNT" page.

Refer E-mail notification section of the "ACCOUNT" page to change the E-mail address

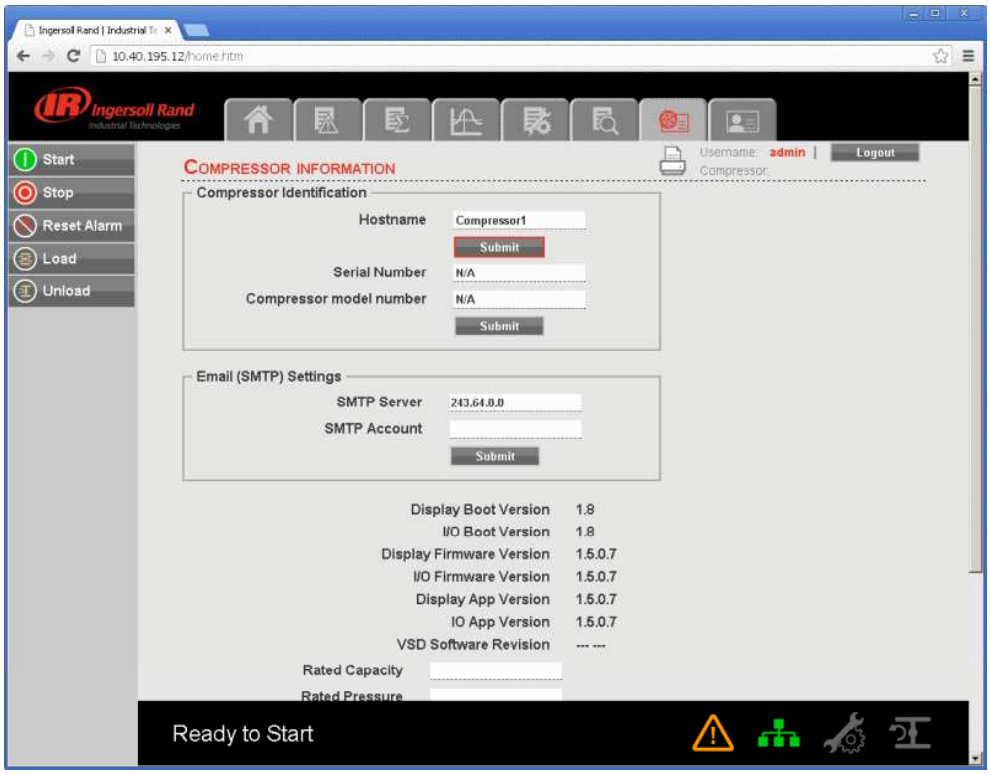
WEB ACCESS

COMPRESSOR INFORMATION

The "COMPRESSOR INFORMATION" tab contains the compressor name, compressor model number, compressor serial number, rated capacity, rated pressure, rated voltage, running current, starting current, power requirement, motor service factor, measuring units and Email (SMTP) settings.

COMPRESSOR IDENTIFICATION

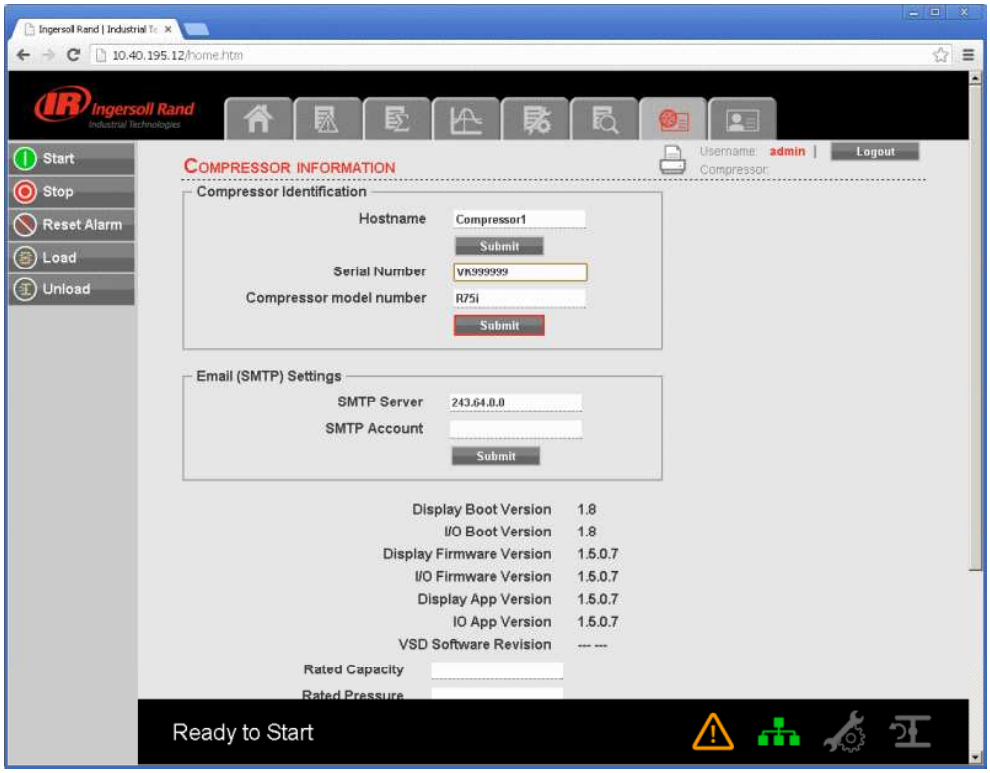
The "Host Name" is shown as a "Compressor Name" on the right side top of each web page. The user can use this domain name as a web page browser address to access the web pages. To change the existing host name, enter the new hostname in the white box and click on "Submit" button.



Once the user will submit the new host name, the compressor name will be changed automatically on the next login.

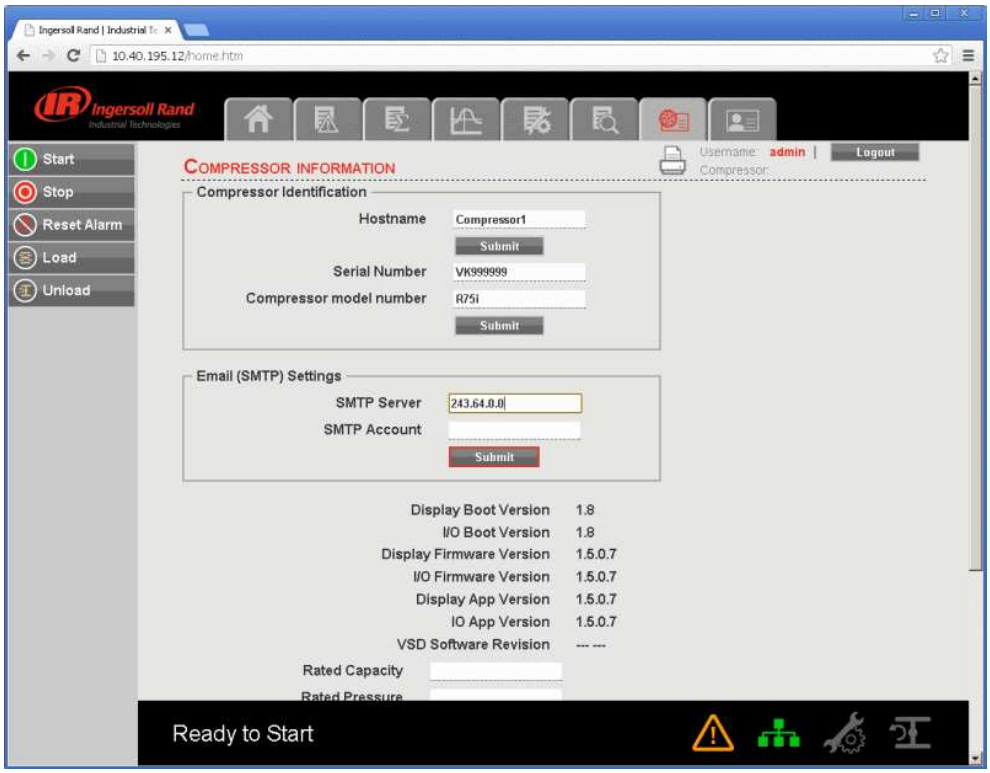
Enter the "Serial Number" and "Model Number" as per the compressor nameplate, and click on "Submit" button to save these compressor details.

WEB ACCESS



EMAIL (SMTP) SETTINGS

If email notifications are to be used, the SMTP server settings must be obtained from IT and entered in this location. Enter the "SMTP Server" & "SMTP Account" and then click on "Submit" button to save the SMTP settings.



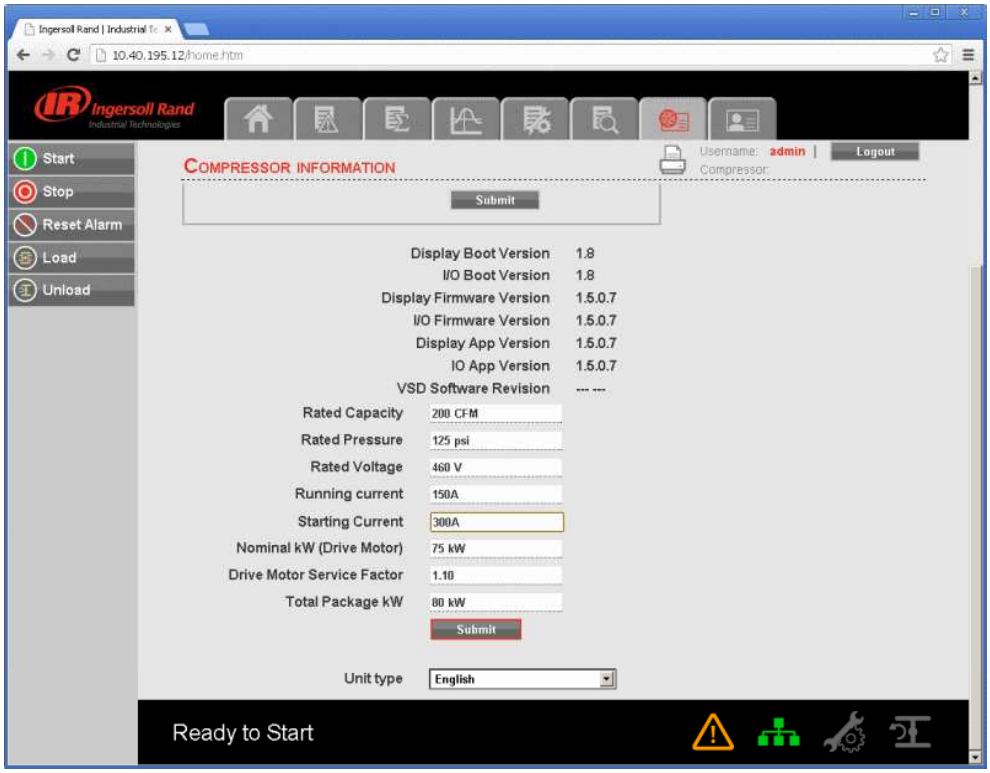
User account with access level "Admin" can only have an access to change the parameters in "Compressor Identification" and "Email (SMTP) Settings" blocks. User account with access level "User" and "VIEW" cannot have an access to change these parameters.

WEB ACCESS

COMPRESSOR DETAILS

Enter the rated capacity, rated pressure, rated voltage, running current, starting current, nominal power in kW and main motor service factor as per the data available in the compressor datasheet.

Click on the "Submit" button to save the compressor details.



UNIT TYPE

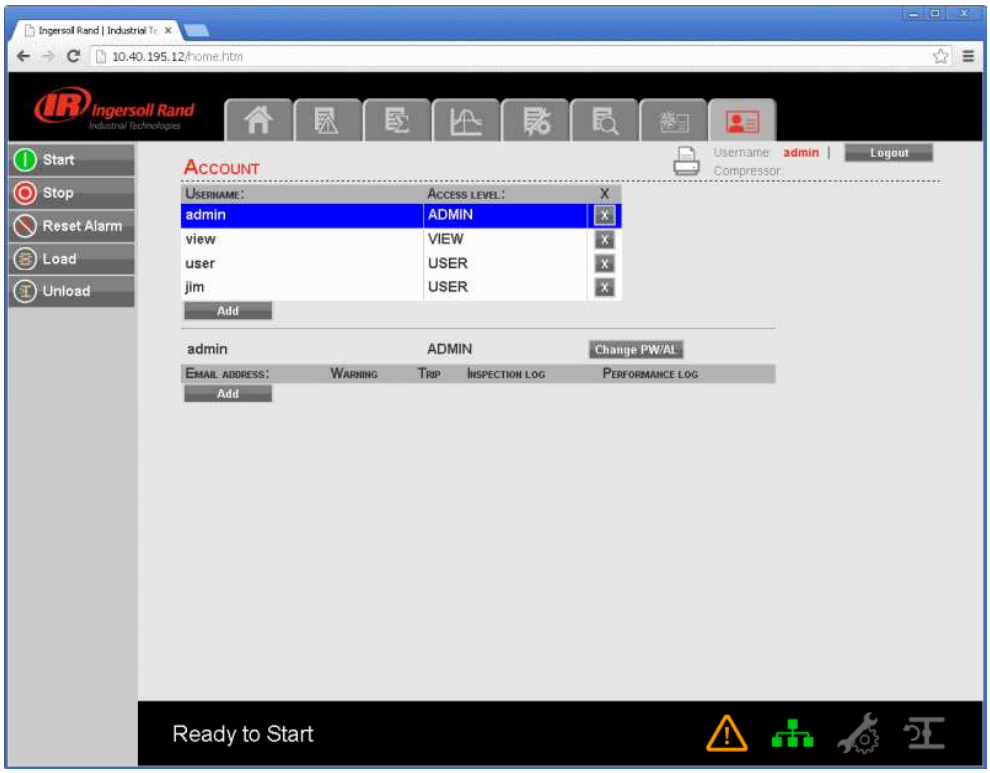
Click on the dropdown control and select the measurement unit type for the compressor parameters. Default unit type is "English".

User account with access level "Admin" and "User" can only have an access to change these compressor parameters. User account with access level "VIEW" can only monitor the data and the user can not have an access to change these parameters.

WEB ACCESS

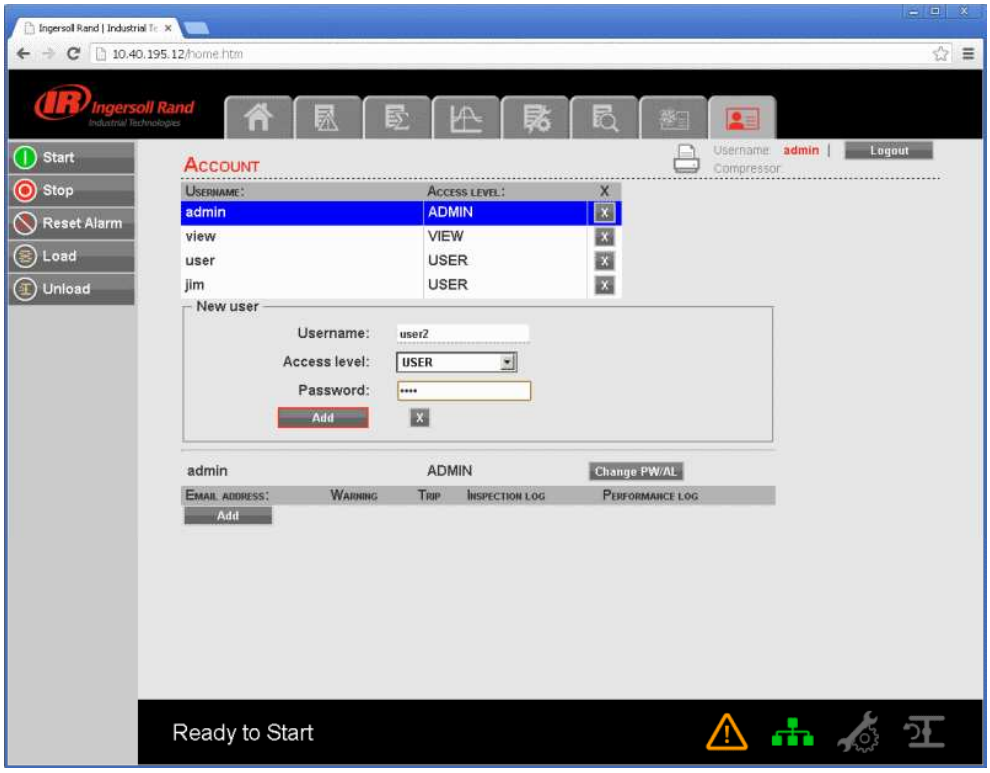
ACCOUNT MANAGEMENT

The administrator can create any number of users desired and assign each user one of three levels of access, as well as assigning email notifications to various events that may occur.



ADD ACCOUNT

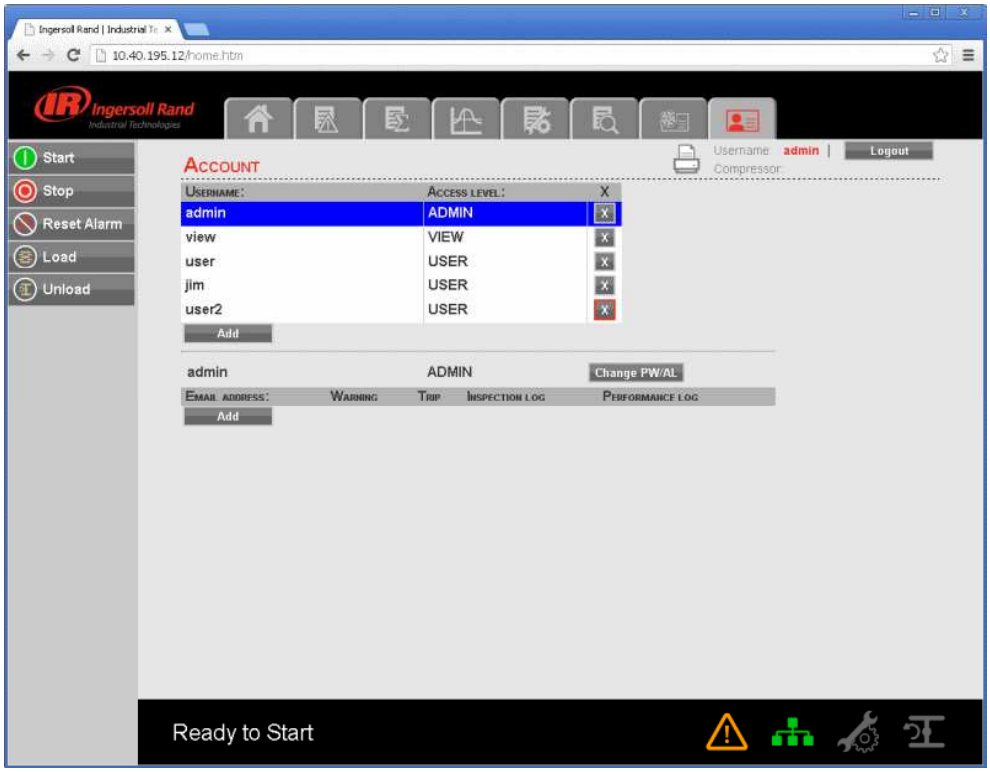
The "ACCOUNT" tab shows the list of accounts that currently exist which are listed by user name and access rights. Clicking on an account will highlight that account in blue color. Click on "ADD" button to add an account with a specified access level for the web page application. Enter the ADMIN password to proceed.



WEB ACCESS

To generate a new user account; enter the unique username, password and select the user access rights. Click on “Add Account” button will add the new user account into the list of user accounts. Only a user with “ADMIN” rights will be able to make a new account or remove the existing accounts.

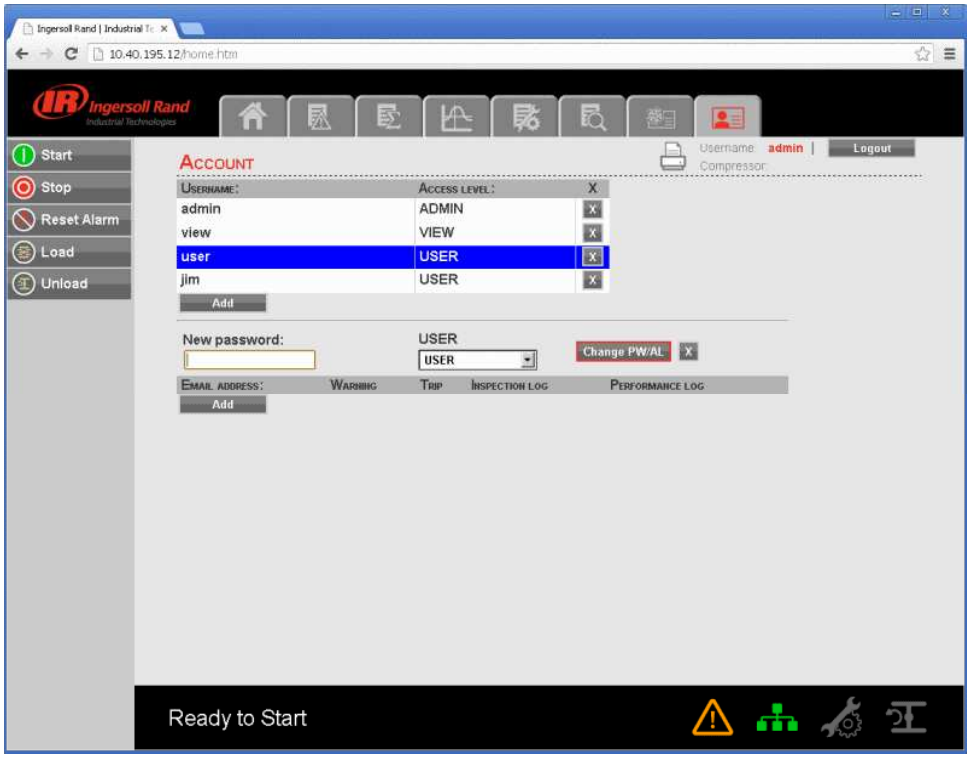
Select the user account from the list and click on “X” button to delete the selected user account.



WEB ACCESS

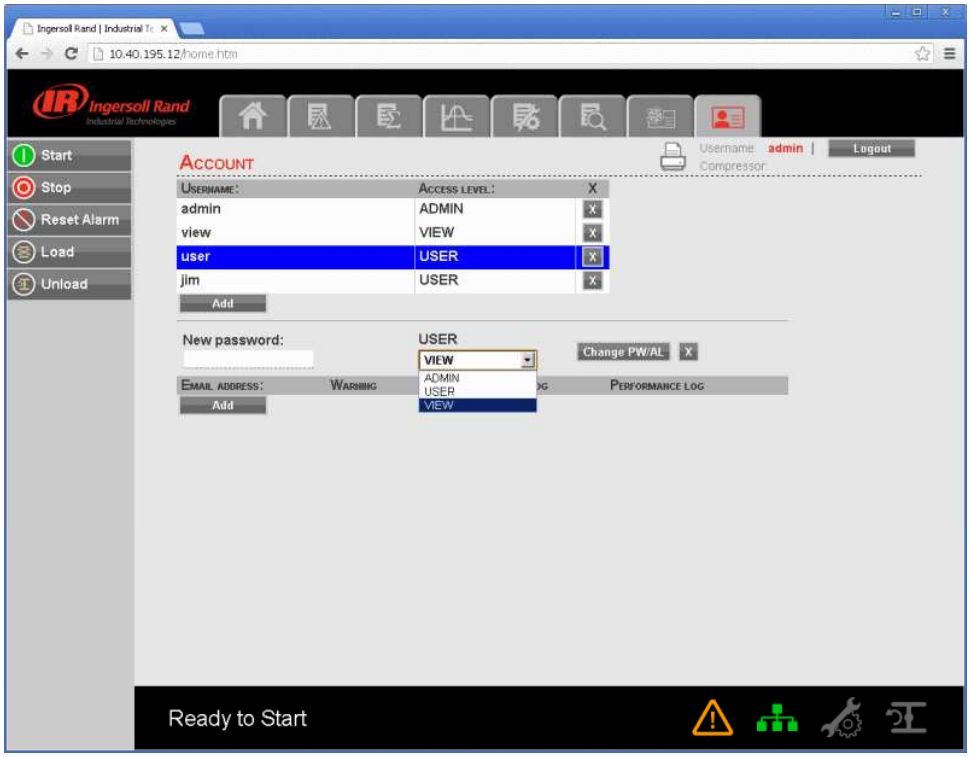
MODIFY THE ACCESS LEVEL

User account with access level "ADMIN" can also change the access level of existing user accounts. To change the access level or password of an existing user account, select the user account from the list and click the Change PW/AL button.

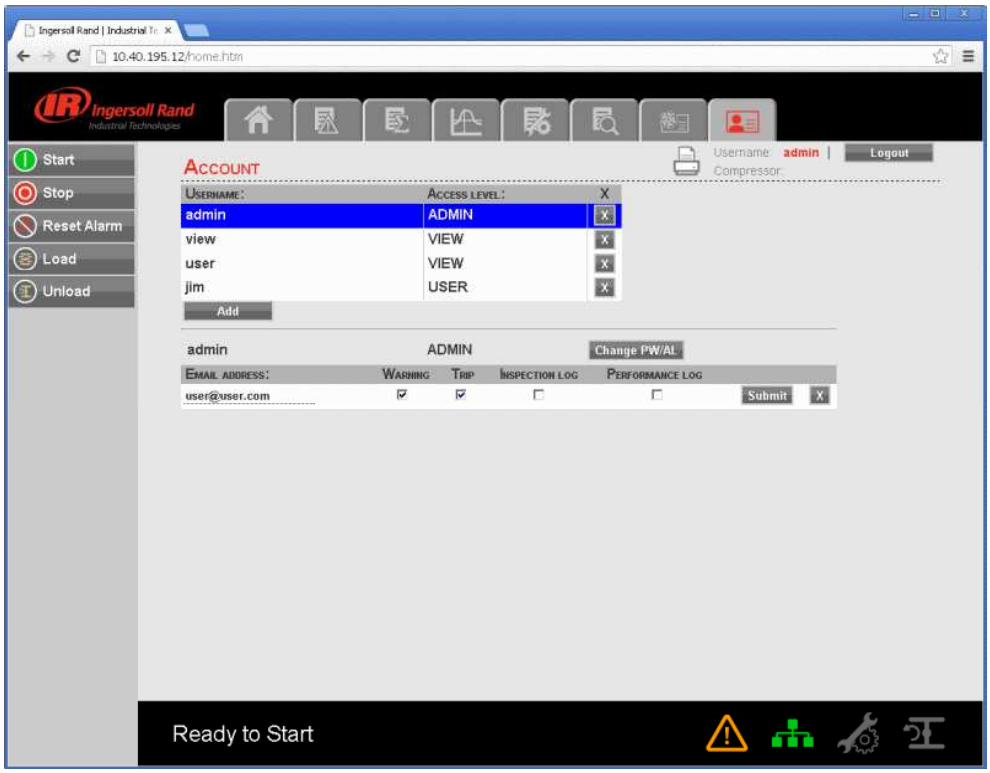


Click on the dropdown control and choose the new access level for selected user account. Again, click on "Change PW/AL" button to save the changes in access level or password for selected user account.

Set the email address settings for the user by clicking on the "Add" button in the email list. Then type in the email address and check the boxes for the type of alerts the user should receive. When finished, press the "Submit" button.



WEB ACCESS



User account with access level "Admin" can only have an access to make a new account or modify the access level of these accounts. User account with access level "User" and "VIEW" can't have an access to make a new account or modify the user accounts.

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Октомври 2013 г.

Контролна система на компресор

Модел X^{e}- 145M SSR

Ръководство за употреба

- EN Instruction Manual
- BG Ръководство за употреба
- CS Návod k obsluze
- DA Instruktionsmanual
- NL Instructiehandleiding
- ET Kasutusjuhend
- FI Käyttöopas
- FR Manuel d'instructions
- DE Anleitungshandbuch
- EL Εγχειρίδιο Οδηγιών
- HU Kezelői kézikönyv
- IT Manuale di istruzioni
- LV Ekspluatācijas rokasgrāmata
- LT Instrukcijų vadovas
- NO Instruksjonsmanual
- PL Instrukcja obsługi
- PT Manual de Instruções
- RO Manual de utilizare
- RU Инструкция по эксплуатации
- SK Návod na použitie
- SL Priročnik z navodili
- ES Manual de instrucciones
- SV Instruktionsmanual
- TU Kullanım Kılavuzu
- ZH 说明手册

Запазете тези инструкции

BG

СЪДЪРЖАНИЕ

СЪДЪРЖАНИЕ (ПРОДЪЛЖ.)