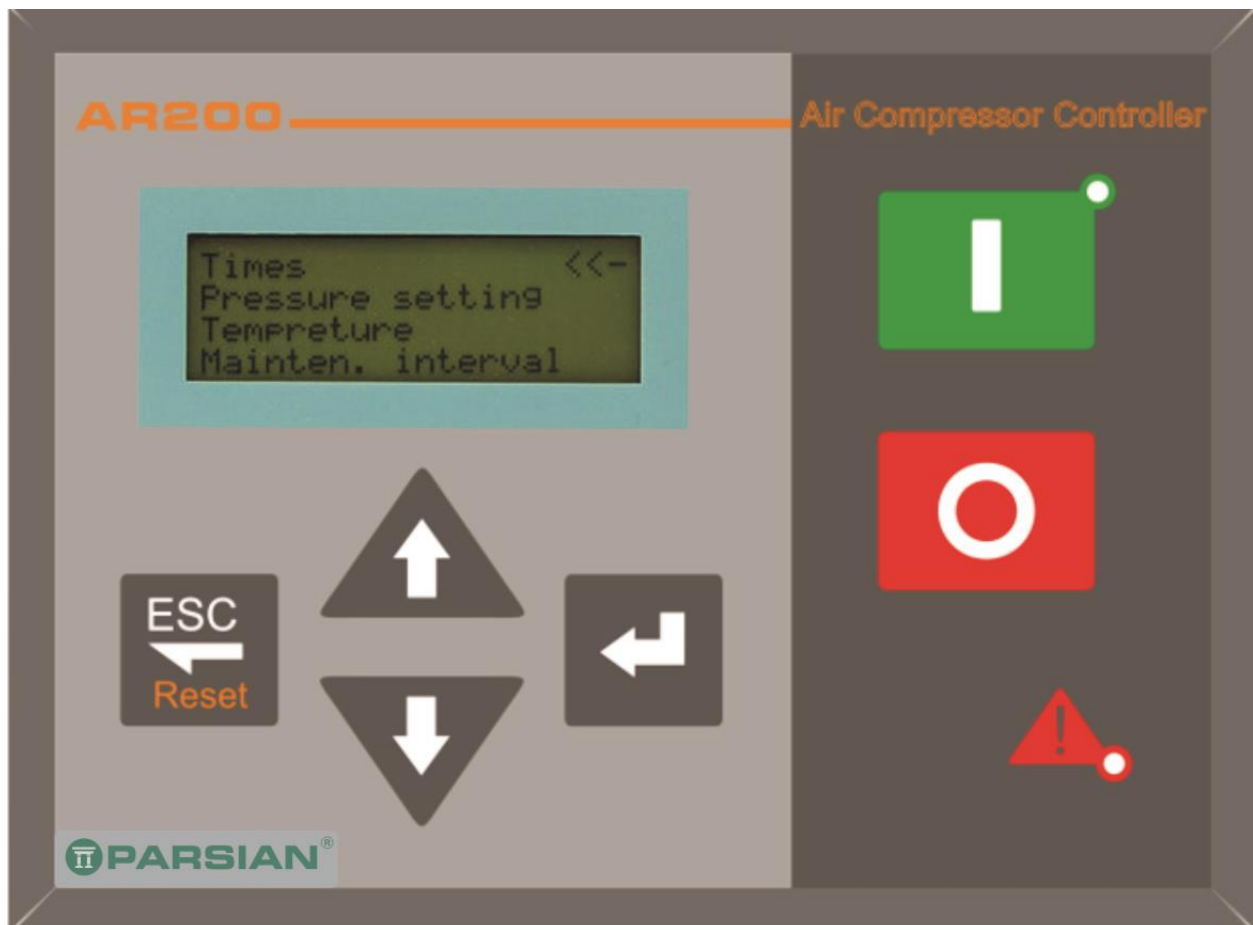


Air Compressor Controller Unit AR200 USER'S MANUAL



CAUTION

For proper and safe use of the compressor, please follow all instructions and safety precautions as identified in this manual, along with general safety regulations and practices. Before installing and starting the compressor, read and understand this manual.

Air Compressor Controller Unit

AR200 USER'S MANUAL

Table of Contents

1. General Safety Warnings	3
2. Technical specifications	5
3. Operation	6
3.1. Compressor start-up.....	6
3.2. Display panel.....	8
3.3. Panel Buttons.....	9
4. Controller installation.....	10
4.1. Wiring and I/O Connections.....	10
4.2. parameter in brief	12

List of Tables

Table 1: Controller Display Panel	8
Table 2: Input/Output Terminals	11

List of Figures

Figure 1: Compressor Start/Stop Sequences	7
Figure 2: Controller Back Cover	10

Air Compressor Controller Unit

AR200 USER'S MANUAL

1. General Safety Warnings

Note! The instructions provided in this manual have been written to assist the operator throughout the use and maintenance of the compressor and its controller (AR200).

Important instructions for the safe use of the compressor warning: the inappropriate use and poor maintenance of the compressor and its controller may cause physical injury to the user. You are recommended to carefully follow the instructions provided hereafter to avoid such risks.

- ◆ Do not touch moving parts. Never put your hands, fingers or other parts of the body near moving parts of the compressor.
- ◆ Never use the compressor without the safety guards fitted. Never use the compressor without all the safety guards fitted perfectly in their correct place (i.e. panelling, belt guard, safety valve). If these parts are to be removed for maintenance or servicing purposes, ensure that they are put back in their original place perfectly before using the compressor again.
- ◆ Always wear safety goggles. Always wear goggles or equivalent eye protection means. Never direct compressed air towards any part of your body or that of others.
- ◆ Protect yourself against electric shocks. Avoid accidentally touching the metal parts of the compressor with your body, such as pipes, the tank or metal parts connected to earth. Never use the compressor where there is water or in damp rooms.
- ◆ Disconnect the compressor. Disconnect the compressor from the electric power supply and completely discharge the pressure from the tank before carrying out any service, inspection, maintenance, cleaning, replacing or inspection jobs of each part.
- ◆ Never move the compressor while it is connected to the electrical power supply or when the tank is pressurized. Ensure that the main switch is turned off before connecting the compressor to the electrical power supply.
- ◆ Store the compressor and its controller appropriately. When the compressor is not in use, it must be stored in a dry room away from atmospheric agents.
- ◆ Keep the work area clean and remove any tools that are not required. Keep the work area sufficiently ventilated. Never use the compressor in the presence of flammable liquids or gas. The compressor may produce sparks while running. Do not use the compressor where there may be paints, gasoline, chemical compounds, glues and any other flammable or explosive material.
- ◆ Do not wear unsuitable clothing, ties or jewellery as these may get caught up in moving parts. Wear caps to cover your hair if necessary.

Air Compressor Controller Unit

AR200 USER'S MANUAL

- ◆ Do not disconnect the power supply plug by pulling on the cable. Keep the cable away from heat, oil and sharp edges. Do not stand on the electrical cable or squash it under heavy weights.
- ◆ Follow the maintenance instructions. Inspect the power supply cable on a periodic basis and if damaged it must be repaired or replaced by an authorised service centre. Visually check the outside appearance of the compressor, ensuring that there are no visual anomalies. Contact your nearest service centre if necessary.
- ◆ Pay attention to everything you do. Use your common sense.
- ◆ Do not use the compressor if you are tired. The compressor must never be used if you are under the effect of alcohol, drugs or medicines, which could make you tired.
- ◆ Use the compressor and its controller exclusively for the applications specified in this instruction manual.
- ◆ Operate the compressor in compliance with the instructions provided in this manual. Do not allow children to use the compressor or those who are not familiar with it.
- ◆ Ensure that each screw, bolt and guard is firmly secured in place.
- ◆ Keep the in-take grids clean. Keep the motor ventilation grids clean. Regularly clean these grids if the work area is particularly dirty.
- ◆ Operate the compressor at the rated voltage. Operate the compressor at the voltage specified on the electric data plate. You could damage or burn-out the motor and other electric components if the compressor is operated at a higher or lower voltage than its rated voltage.
- ◆ Never use the compressor if it is faulty. If the compressor is noisy or vibrates excessively when running or it seems to be faulty, stop it immediately and check its efficiency or contact your nearest authorised service centre.
- ◆ Do not clean plastic parts using solvents. Solvents such as gasoline, thinners, gas oil or other compounds that contain hydrocarbons may damage the plastic parts. Clean them with a soft cloth and soapy water or other suitable liquids.
- ◆ Turn the compressor off when it is not in use. When the compressor is not in use turn the main on/off switch off.
- ◆ Keep this instruction manual carefully and give them to personnel wishing to use the compressor!
- ◆ We reserve the right to make modifications where necessary without notice.

Air Compressor Controller Unit

AR200 USER'S MANUAL

2. Technical specifications

Input Power	AC 12...15 Vac 50/60Hz
Power Consumption	Max. 4 VA
CPU	ATmega64,16MHz
LCD	2X20 Alphanumeric , LED Backlight

Installation Conditions:

- Installation Place Indoor
- Operating Temperature -10 ~ +60°C
- Storage Temperature -30 ~ +80°C
- Operating Humidity 5 ~ 95% (Non- condensable)
- Dimensions 175 x130 x 40 mm (Width x Height x Depth)

Digital Inputs:

- Input Type Opto-Isolation
- Number of Inputs 8 Points (1 Common)
- Signal Power 12VDC

Digital Outputs:

- Output Type Relay Contact
- Number of Output 7 Points (1 Common)
- Relay Contact Type 250VAC, 7 Ampere

Analog Inputs:

- Temp. Sensor PT1000
- Pressure Transmitter 4~20mA
- Internal Sensor Power 12V
- Deviation Correction Software

Inverter Output:

- Analog output 0-10 Vdc
- Relay Enable 5 Amp

Air Compressor Controller Unit

AR200 USER'S MANUAL

3. Operation

3.1. Compressor start-up

In normal operation, the detected delivery pressure controls regulation of the compressor once the compressor has been started by pushing the start button, or by a remote start command if enabled. The controller will perform safety checks and start the compressor if no inhibiting conditions are detected.

If a start inhibiting condition exists the compressor will not enter the started condition and a start inhibit message is displayed. If a run inhibiting condition exists the compressor will enter the started condition but a main motor start is inhibited; the compressor will remain in the standby condition and a run inhibit message is displayed. If a load request is present, in accordance with internal pressure settings or by remote command, the main motor is started in a star/delta sequence. When running in delta configuration, after the star/delta time (adjustable) has expired, the load delay time (adjustable) prevents loading for a period to allow motor speed to stabilize. The load delay time can be set to one second if required. When the load delay time has expired the load valve output is energized and the compressor will load. If the unload pressure setting is reached, or a remote unload command is received, the load valve output is de-energized and the compressor will run offload for the standby run on time (adjustable) before the main motor stops and the compressor enters Standby mode. The compressor will load again if pressure falls below the load setting before the standby run on time expires. If in Standby mode, a motor start sequence followed by the load delay time is executed before loading.

In the event of a motor stop, initiated by a stop command or when entering standby mode, a blow down timer (adjustable) is started. If a start request is made during the blow down time the compressor will enter standby mode until the blow down time expires. If already in standby mode and a load request is present, the compressor will remain in standby mode until the blow down time has expired. For units with internal pressure detection enabled, a minimum internal re-start pressure can also be set to prevent a motor start sequence before internal pressure is vented. In the event internal pressure fails to fall below the set minimum re-start pressure within two minutes after the set blow down time has expired, a blow down fault is generated and the compressor will shutdown. After an unload event a re-load timer (adjustable) is initiated that will prevent reloading, this time can be adjusted to a minimum of one second if required. Normal

Air Compressor Controller Unit

AR200 USER'S MANUAL

automated operation is ended by pushing the stop button, a remote stop command or in the event of a shutdown fault.

When stopped manually, or by a remote command, the load value is de-energized and the main motor allowed to run-on for the stop run on time (adjustable). This time can be adjusted to a minimum of one second if required. Safety checks are made continuously, if there is a condition detected that presents a hazardous or damaging situation an immediate stop is performed and the reason displayed as a shutdown error message. If a warning condition is detected an Alarm message is displayed and normal operation continues.

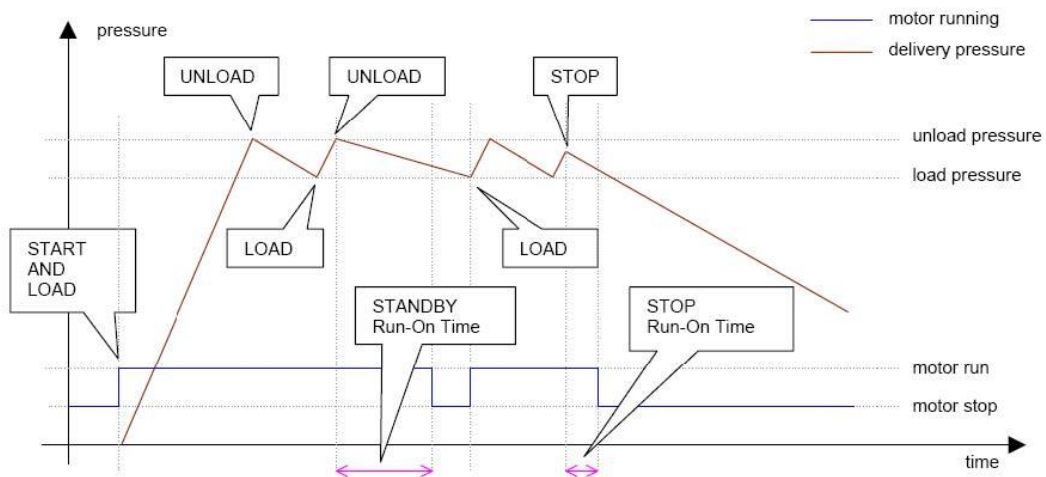


Figure 1: Compressor Start/Stop Sequences

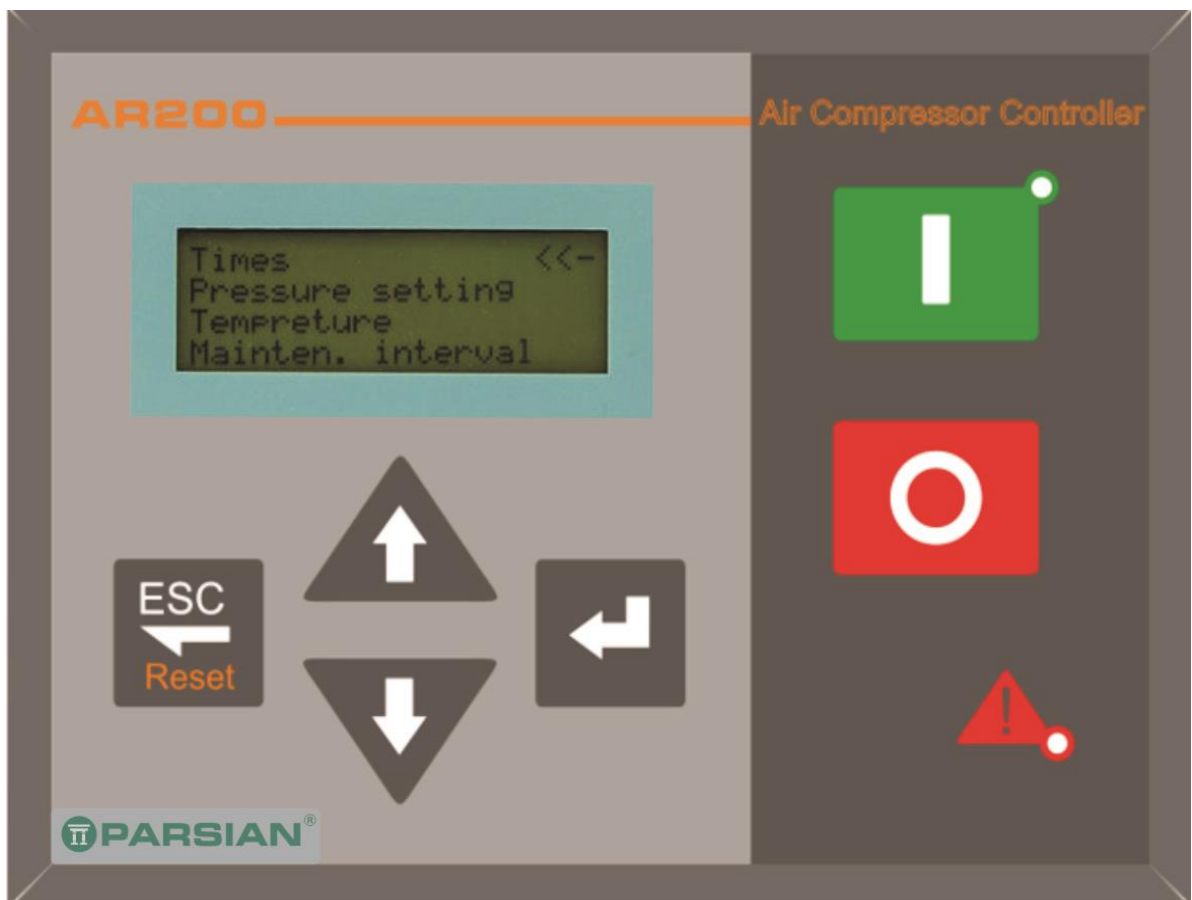
Air Compressor Controller Unit

AR200 USER'S MANUAL

3.2. Display panel

The following information is shown on controller display panel.







Table 1: Controller Display Panel



Air Compressor Controller Unit

AR200 USER'S MANUAL

3.3. Panel Buttons

Start		The equipment starts when pushing start button.
Stop		The equipment stops when pushing stop button.
Reset/ESC		Reset when trip (the trip reset automatically doesn't need to push reset button)
Enter		Entering to programming / enter to next menu
Up		Increase / Decrease Selected Value
Down		Exit from current menu

Air Compressor Controller Unit

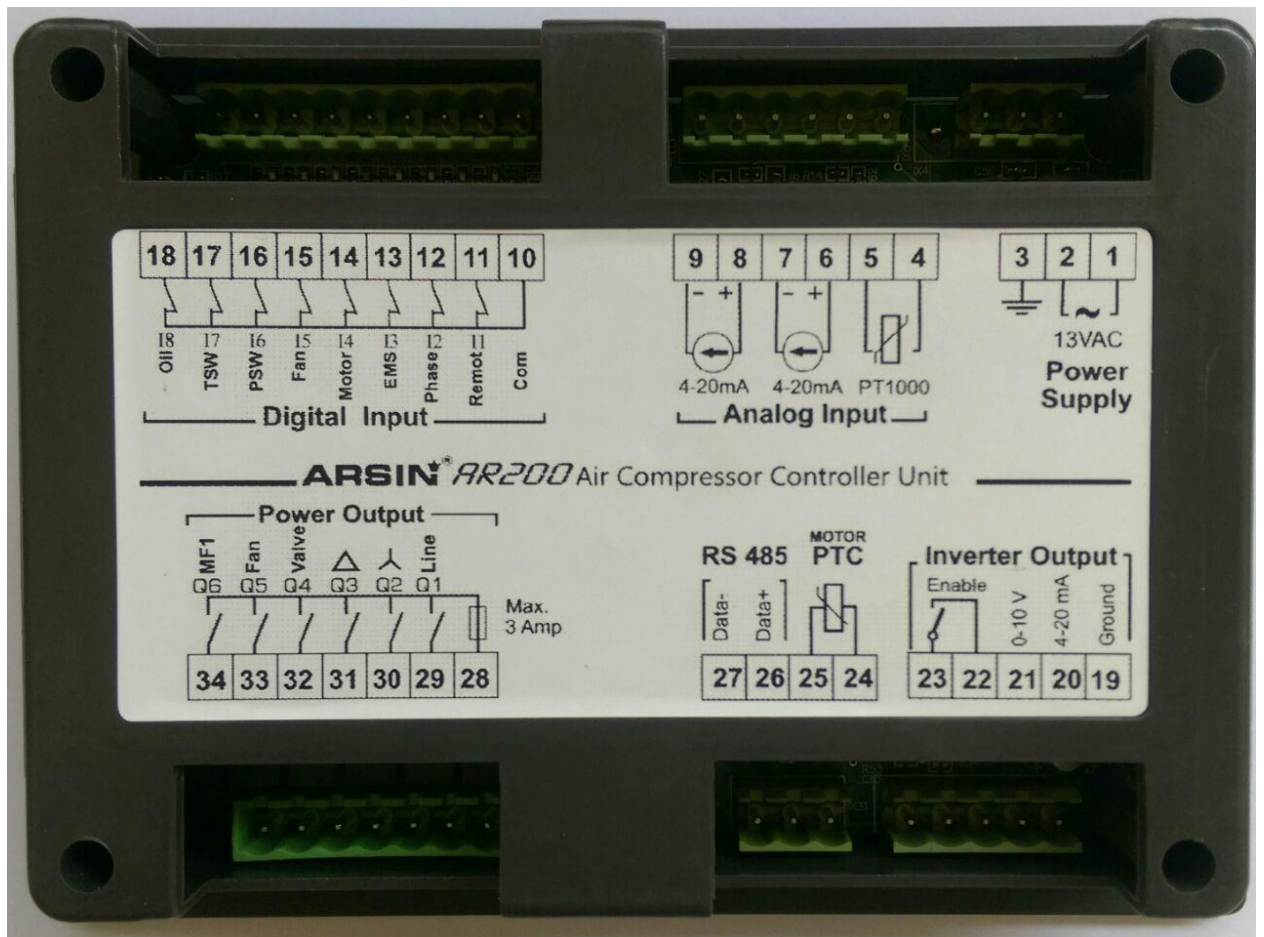
AR200 USER'S MANUAL

4. Controller installation

4.1. Wiring and I/O Connections

The following figure shows controller back-cover. The I/O connections are categorized and numerated as shown in below table.

Figure 2: Controller Back Cover



Air Compressor Controller Unit

AR200 USER'S MANUAL

Table 2: Input/Output Terminals

Cat.	Pin	Name	Function	Type	Active state / Range
Power Supply	1 & 2	Power Supply	Main Power Supply		12---15 VAC
	4 & 5	Temp	Temperature Sensor	Pt1000	-50 ~ +150 °C
Analog Inputs	6 & 7	TD#2	Oil Pressure Transducer	4 ~ 20 mA	0~16 Bar
	8 & 9	TD#1	Air Pressure Transducer	4 ~ 20 mA	0~16 Bar
	10	Com	Input Common Terminal	Output	12-15 Vdc
Digital Inputs	11	Remote	Temperature Switch Signal	Input	Remote (close)
	12	Phase	Phase monitor Fault Signal	Input	Alarm (close)
	16	EMS	Emergency Stop Signal	Input	Alarm (close)
	12	Motor	Motor Bimetal Fault Signal	Input	Alarm (close)
	14	Fan	Fan Bimetal Fault Signal	Input	Alarm (close)
	13	PSW	Pressure Switch Signal	Input	Alarm (close)
	17	TSW	Motor Thermo switch Fault	Input	Alarm (close)
	18	Oil	Oil switch fault	Input	Alarm (close)

Power Common Terminal

Cat.	Pin	Name	Function	Type	Active state / Range
	28	Com	Power Common Terminal		220 Vac
Power Outputs	29	Line	Normal Contactor Output		Output (NO)
	30	Y	Star Contactor Output		Output (NO)
	31	Δ	Delta Contactor Output		Output (NO)
	32	Valve	Solenoid Valve Output		Output (NO)
	33	Fan	Fan Motor Output		Output (NO)
	34	MF 1	Multi function output Relay		Output (NO)

Air Compressor Controller Unit

AR200 USER'S MANUAL

Parameters in Brief

Menu Item	Set-pointRange
1.1. Maximum Temperature	+90 ~ +120 °C
1.2. Start Time	01 ~ 60 Sec.
1.3. Star-Delta Time	02 ~ 20 Sec.
1.4. Load Time	01 ~ 60 Sec.
1.5. Stop Time	01 ~ 60 Sec.
1.6. Fault Delay	00 ~ 10 Sec.
1.7. Standby Time	01 ~ 60 Min.
1.8. Fan Turn-on Temperature	+55 ~ +80 °C
1.9. Fan Turn-off Temperature	+20 ~ +50 °C
1.10. Minimum Start Temperature	-10 ~ +10 °C
1.11. Auto Restart	Yes / No
1.12. Temperature Offset	-25 ~ +25 °C
1.13. Change Password	4 digit
1.14. Temperature Sensor Type	PT1000
1.15. Reset Service	Yes / No
1.16. Buzzer Active	Yes / No