INFOLOGIC Connect Instruction book

Oil-injected screw compressors

Controller

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1 Controller functions

Figure 1: Controller

Introduction

The Connect controller has the following functions:

- Controlling the unit
- Protecting the unit
- Monitoring components subject to service
- Automatic restart after voltage failure (ARAVF)
- Integrated connectivity (Bluetooth 4.2, Wi-Fi 802.11 b/g/n or Ethernet RJ45)

Automatic control of the unit

The controller maintains the net pressure between programmable limits by automatically loading and unloading the unit.

A number of programmable settings, e.g. the unloading and loading pressures, the minimum stop time and the maximum number of motor starts are taken into account.

The controller stops the unit whenever possible to reduce the power consumption and restarts it automatically when the net pressure decreases. If the expected unloading period is too short, the unit is kept running to prevent too short standstill periods.

Warning:

A number of time based automatic start/stop commands may be programmed. Take into account that a start command will be executed (if programmed and activated), even after manually stopping the unit.

Protecting the unit

Shutdown

If the outlet element temperature exceeds the programmed shutdown level, the unit will be stopped. This will be indicated on the display of the controller.

The unit will also be stopped in case of overload of the drive motor.

Air-cooled units will also be stopped in the event of overload of the fan motor

Warning:

Before remedying, consult the safety precautions.

Before resetting a warning or shutdown message, an authorized technician should solve the problem. If a warning or alarm persists to occur, consult your supplier. Frequently resetting these messages without remedying may damage the unit.

Warning

A warning level is a level below the shutdown level.

If one of the measurements exceeds the programmed warning level, a message will appear on the display and the general alarm LED will light up to warn the operator before the shutdown level is reached.

The message disappears as soon as the warning condition disappears.

Service warning

If the service timer exceeds a programmed value, this will be indicated on the display to warn the operator to carry out the service actions.

Warning:

Ignoring this service warning could severely damage your machine in the long term. The supplier is not liable for failures caused by neglecting service interval timings.

Automatic restart after voltage failure (ARAVF)

The machine is designed to not lead to hazardous situations after a power voltage failure (according to safety standards). However, if required, the ARAVF function can be activated in the Smartphone App (see section **Connectivity-Smartphone App**).

This function, when enabled, will automatically restart the unit when the voltage is restored after voltage failure. This function is deactivated in the unit before leaving the factory.

The activation of ARAVF function at customer side, will automatically release C.ARIA.C s.r.l. from any legal responsibility related to damages or injuries related to things and persons related to its activation and use. For this reason due to the safety implications of this function it will be required that, before activating it, every responsible of the machine signs a declaration, which exempts C.ARIA.C s.r.l. from every liability. The danger is due to the fact that the machine is remote controlled and could start running without any notice. This could lead to eventual damage of the electrical plant and personal damage.

Please make sure to teach adequately, the personnel in charge of the unit start up, in order to be sure that before starting the unit, nobody is working close to the machine. And if maintenance is necessary that the proper Lock out, tag out (LOTO) procedure is followed.

Warning:
If the function is activated and provided the regulator was in the automatic operation mode, the unit will automatically restart if the supply voltage to the module is restored. The ARAVF label shall be attached near to the controller.

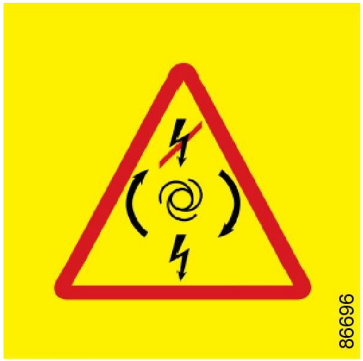


Figure 2: ARAVF label

The ARAVF label is attached on the side panel, next to the controller, with the goal of warning users of the risks linked to the function.

Integrated connectivity

Integrated connectivity allows you to monitor and control the unit by using just your smartphone. Use the application to check the real-time performance indicator like pressure, temperature, running hours and operation mode. Receive real time notification of warnings and shutdown.

Control the unit remotely with following functions:

- Start and stop the unit
- Set unload and load pressure
- Select your required pressure bands to enhance performance and save energy
- Set up your week timer

Warning:
As a further safeguard, persons switching on or off remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment. See section **Service mode**.

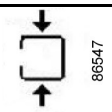
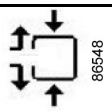
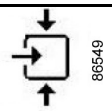
2 Control panel

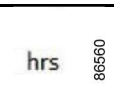
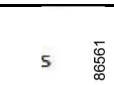
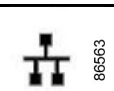
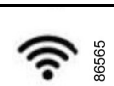
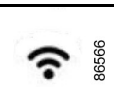
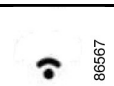
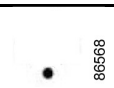
Figure 3: Control panel

Reference	Designation	Function
1	Display	Shows the unit operating condition and a number of icons to navigate through the menu.
2	Warning sign	Flashes in case of a shutdown, is lit in case of a warning condition.
3	Service sign	Is lit when service is needed and flashing when the unit is in service mode.
4	Operation sign	Is lit when the unit is running in automatic operation.
5	Voltage sign	Indicates that the voltage is switched on.
6	Up button	Use these buttons to scroll through the menu.
7	Start/stop button	This button starts the unit. The operation sign (4) lights up. The controller is operative. This button also stops the unit at next pressing.
8	Down button	Use these buttons to scroll through the menu.
9	Enter button	Use this button to confirm the last action or reset the alarm.

3 Icons used

Status icons

Icon	Description
	Motor stopped
	Running unloaded
	Running loaded
	Remote Machine Control Mode, active
	Automatic Restart After Voltage Failure, active
	Emergency stop
	Main motor
	Element outlet temperature
	Units of pressure, outlet
	Units of temperature, outlet
	Dryer
	Units of dryer LAT temperature (Low ambient temperature)

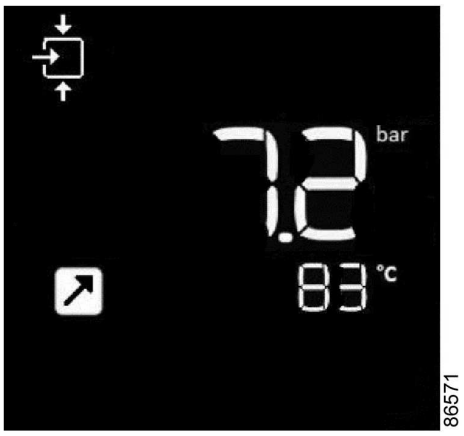
Icon	Description
 86559	Multiply value x1000
 86560	Value in hours
 86561	Value in seconds
 86562	Fixed: Week timer, active Blinking: Waiting
 86563	LAN cable connected
 86564	Bluetooth connection
 86565	Wi-Fi signal 100%
 86566	Wi-Fi signal 75%
 86567	Wi-Fi signal 50%
 86568	Wi-Fi signal 25%
 86569	Cloud connected
 86570	Fixed: Over-the-air (OTA) update available Blinking: Over-the-air (OTA) update in progress

Note:

This chapter gives a general survey of available icons. Not all icons mentioned in this chapter are applicable to every machine.

4 Main screen

When the voltage is switched on, the first screen is a test screen. The next screen is the Main screen, shown automatically:



The Main screen shows:

- The unit status by means of pictographs
- The air outlet pressure
- The element outlet temperature

The screen backlight stays on for 2 minutes (default setting), to turn on the backlight again, press any key on the controller.

In case of warning or shutdown the backlight will light up automatically.

5 Warning

Description

A Warning will appear in the event of:

- Too high temperature at the outlet of the compressor’s element (TT90)
- Too low temperature at the outlet of the compressor’s element (TT90)

Compressor element outlet temperature (TT90)

If the outlet temperature of the compressor's element exceeds the warning level warning (factory setting 110°C / 230°F) LED (2) will light up:

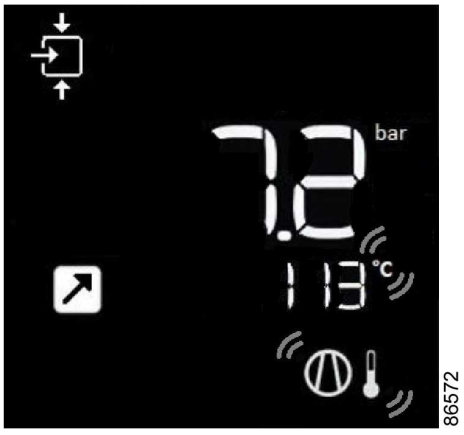


Figure 4: Main screen with temperature outlet warning

The related pictograph

will appear flashing with temperature unit °C / °F icon. It remains possible to scroll through other screens, using the Scroll buttons up and down (6-7) to check the actual status of other parameters. Press button (7) to stop the compressor and wait until the compressor has stopped. Switch off the voltage, inspect the compressor and remedy. Before remedying, consult the **Safety precautions**. The warning message will disappear as soon as the warning condition disappears.

6 Shutdown

Description

The unit will be shutdown in case of:

- Outlet temperature exceeds the shutdown level, detected by temperature sensor (TT90) or temperature switches (TSHH11- TSHH21)
- Error of the outlet pressure (PT20) /temperature sensor (TT90)
- Outlet pressure too high
- Overload of the main motor/fan motor

Compressor element outlet temperature (TT90)

If the outlet temperature of the compressor element exceeds the shutdown level (factory setting 115 ˚C / 239 ˚F) the compressor will be shutdown, alarm LED (2) will flash, automatic operation LED (4) will go out and the following screen will appear:

Figure 6: Main screen with temperature outlet shutdown

The related pictograph

will appear flashing with temperature unit °C / °F icon.

Press Scroll buttons (6-8) until the actual compressor element temperature appears.

The screen shows that the temperature at the outlet of the compressor element is 117 ˚C.

- Switch off the voltage and remedy the trouble. Before remedying, consult the section **Safety precautions**.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the unit.

Compressor element outlet temperature by temperature switch (TSHH11 / TSHH21)

If the outlet temperature of the compressor element triggers for temperature switch the compressor will be shutdown, alarm LED (2) will flash, automatic operation LED (4) will go out and the following screen will appear:

Figure 7: Main screen with temperature switch shutdown

The related pictograph

will appear flashing.

Error pressure/temperature sensor

In case of error of the outlet pressure sensor (PT20) or temperature sensor (TT90), compressor will be shutdown. The following screen will appear:

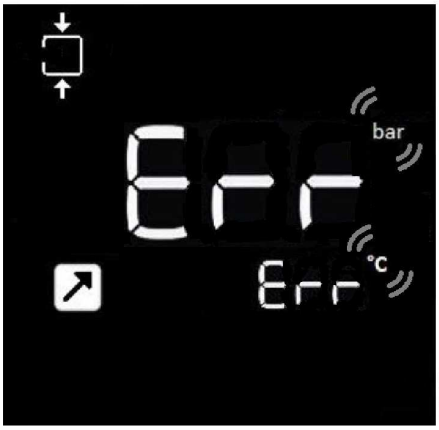


Figure 8: Error on pressure and temperature sensor

Compressor outlet pressure too high

If the outlet pressure of the compressor exceeds the shutdown level (factory setting 1.5bar / 22psi over the maximum pressure of compressor) the compressor will be shutdown, alarm LED (2) will flash, automatic operation LED (4) will go out and the following screen will appear:

Figure 9: High outlet pressure

The unit of pressure bar/psi/MPa will appear flashing.

- Switch off the voltage and remedy the trouble. Before remedying, consult the section **Safety precautions**.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the unit.

Motor overload

In the event of motor overload, the compressor will be shutdown, alarm LED (2) will flash, automatic operation LED (4) will go out and the following screen will appear:

Figure 10: Main screen with shutdown indication, motor overload

- Switch off the voltage and remedy the trouble. Before remedying, consult the **Safety precautions**.
- After remedying and when the shutdown condition has disappeared, switch on the voltage and restart the unit.

7 Service warning

A service warning will appear when the service timer has reached the programmed time interval. If the service timer exceeds the programmed time interval, alarm LED (3) will light up.

- Stop the unit, switch off the voltage and carry out the required service actions. See section **Preventive Maintenance**.
- **Warning:**

  The longer interval service actions must also include the shorter interval actions. In the example above, carry out all service operations belonging to the 8000 running hours interval as well as those belonging to the 4000 running hours interval. The setting of the service timer can be changed in function of the operating conditions. See section **Preventive maintenance schedule**.
- After servicing, reset the service timer. See section **Calling up/resetting the service timer**.

8 Remote control

The unit can be commanded via external switches, this function is always activated. The unit can be commanded to start/stop via digital inputs.

Note:
Have the modifications checked by your supplier. Stop the unit and switch off the voltage before connecting external equipment. Only potential-free contacts are allowed.

Warning:
Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.

9 Scrolling through screens

Scroll buttons (6-8) can be used to scroll through all screens. For most screens, the unit of measurement and the related pictograph are shown together with the screen number.

Example:

The screen shows the screen number **P.SEt**, the unit used **bar** and the related symbol for pressure unit.

Press Enter key (9) to call up the actual running hours.

Controller screens	Designation	Function
Main screen	Main with element outlet temperature	
Main screen	Main with dewpoint temperature	See section **Calling up/ modifying main screen**
P.SEt	Pressure settings	See section **Calling up/ modifying pressure band settings**
HoUr	Running hours	See section **Calling-up running hours**
SoFt	Software relase version	See section **Calling Software release**
PAIr	Bluetooth pairing	See section **Calling-up Bluetooth pairing/ Discovery mode**

10 Calling up/ modifying pressure band settings

Starting from the Main screen:

- Press Scroll button (6-8) until **P.SEt** is shown on the display.

Figure 13: Pressure setting screen

- Press Enter button (9) to modify.

Figure 14: Starting/loading pressure changing

- The pictograph
  
  shows starting/loading pressure and the value starts blinking.
- Press Scroll button (6-8) to modify the starting/loading pressure and press enter button (9) to confirm.

  The unloading pressure on secondary row will update in consequence to have optimal pressure range.

Figure 15: Stopping/unloading pressure changing

- The pictograph
  
  shows stopping/unloading pressure and the value starts blinking.
- Press Scroll button (6-8) to modify the stopping/unloading pressure and press enter button (9) to confirm.

11 Calling up running hours

Starting from the Main screen:

- Press Scroll button (6-8) until **HoUr** is shown on the display.

Figure 16: Running hours screen

- Press Enter button (9).

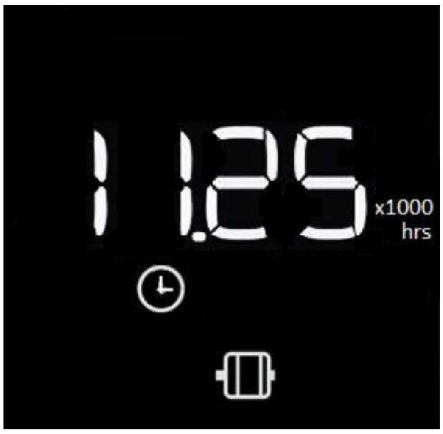


Figure 17: Running hours value

The screen shows the unit used (x1000 hrs) and the value (11.25): the running hours of the unit are 11250 hours.

12 Calling up Software release

Starting from the Main screen:

- Press Scroll button (6-8) until **SoFt** is shown on the display.

Figure 18: Software release screen

- Press Enter button (9) to show the software release version.

13 Calling up Bluetooth pairing/ discovery mode

For Bluetooth connectivity a paring with the device is necessary, see section **Connectivity**. This function is also a way to select the pair to the correct unit when multiple units are in the proximity. During the Bluetooth pairing, the controller generates and stores a random code. This code is displayed on the controller screen and the app user must enter this code in the AirLink app. The user enters this code to connect for the first time, after this the application allow automatic Bluetooth connection when the unit is in the range.

Starting from the Main screen:

- Press Scroll button (6-8) until **PAIr** is shown on the display.

Figure 19: Bluetooth pairing screen/ discovery mode

- Press Enter button (9) to show Bluetooth PIN code. Attention, PIN code is composed by 6 sliding numbers.
- To exit from pairing, press Enter button (9) again.

14 Advanced menu

To enter inside the advanced menu Press buttons (6) and (8) together.

Advanced menu consists by following functions:

Controller screens	Designation	Function
SEru	Service mode	See section **Calling-up Service mode**
tESt	Screen Test	See section **Calling-up Screen Test**
FACt	Factory reset	See section **Calling-up Factory reset**

15 Service mode

Service mode can be only enabled/disabled physically on the controller, this function will allow to notify the customer on the App that the service has been started on the machine and when it will be finished. It will also prevent remote start/stop when a service technician is working on a machine.

Once Service mode is active, it will not be possible to use any of the remote control functionalities like:

- Remote control with digital input
- Start/stop from application
- Timer Schedule
- Controller firmware over-the-air (OTA) updates

When service mode is active, the service icon (3) is blinking. The only available command during Service Mode is from start/stop button (7) to start the unit.

Starting from the Main screen:

- Press buttons (6) and (8) together to enter inside advanced menu
- **SEru** is shown on the display.
- Press enter button (9) to change status.
- Use scroll button (6-8) to set “on” or “off”.
- Use enter button (9) to confirm the status.

16 Screen test

Starting from the Main screen:

- Press buttons (6) and (8) together to enter inside advanced menu.
- Press Scroll button (6-8) until **tESt** is shown on the display.
- Use enter button (9) to confirm the screen test.

The display now shows all icons that can be displayed:

Figure 20: Test screen

17 Calling up factory reset

This function restores the controller to original machine settings for pressure settings/units/starting. This parameter can only be modified after entering a password. Consult your supplier to use this function.

Starting from the Main screen:

- Press buttons (6) and (8) together to enter inside advanced menu
- Press Scroll button (6-8) until **FACt** is shown on the display.
- Press Scroll button (6-8) to enter a password.

18 Connectivity-Smartphone App

The controller has been designed as a standalone Internet of Things (IoT) solution. As such it includes integrated connectivity, which allows you to monitor and control your unit by using just your smartphone.

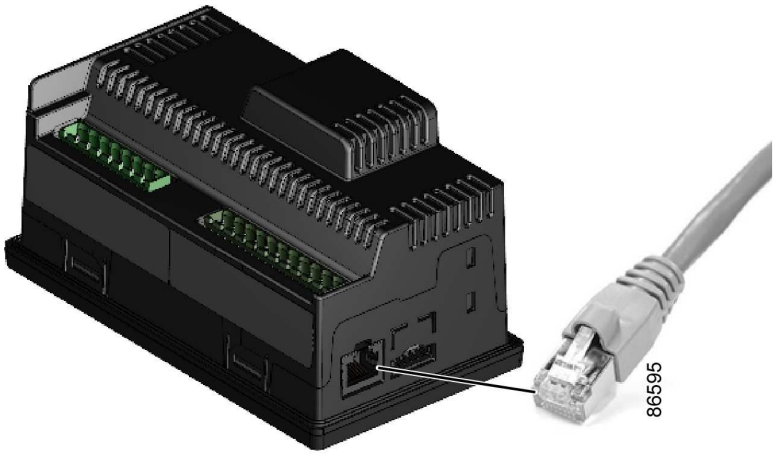
To enable this you just need the ICONS application and an internet connection for your unit.

Download the ICONS application from the Play Store and App Store to get the full functionality of the unit.

In order to have an overview of all the features available in the App we refer to the APP guidelines document which can be found in the media section of the App.

Unit configuration and control are made possible by Bluetooth communication with digital signature. To connect the unit to the cloud for monitoring purposes, a Wi-Fi connection or alternatively an Ethernet network with access to Internet is required.

The network settings can also be changed after the Wizard, the change is only available with a Bluetooth connection. Wi-Fi 802.11 b/g/n 2.4Ghz connection supported. For the Ethernet, use a UTP cable (CAT 5e) to connect the controller, the position of RJ45 connector is in the bottom side of the controller inside the electrical cubicle.



Note:
Have the modifications checked by your supplier. Stop the unit and switch off the voltage before connecting external equipment. Only potential-free contacts are allowed.

In the App you will be able to change the settings of “**Wi-Fi**” or “**Ethernet**”, see App guidelines document.

When the unit is connected to the Wi-Fi network, the following icon

lights up on the controller. Otherwise for Ethernet, when the cable is plugged the following icon

lights up. If the internet is active and the unit is connected to the cloud, then the following icon

is on.

Machine events and notification

The smartphone application sends real time push notifications in case of alarms or shutdown. This allows you to always be up to date on the status of the machine. In case you want more information, you can always press on the pop-up message in your Smartphone and you will redirected to the App.

Please look at the App guidelines document for a detailed explanation of this feature

OTA firmware update

Over-the-air (OTA) firmware updates are remote updates that do not require a direct connection to the unit. These are only possible if the controller of the machine is connected to the internet, so make sure to connect your machine to be able to use this feature. The benefits of this feature are to keep a product updated with the latest software to ensure optimal functionality, add the ability to receive new firmware to support additional features. Reduces time response to errors, bugs and security update without the need to physically service the unit.

When a firmware update is available, the following icon

appears on the unit's screen and a message is shown in your App

- Before starting the update, press the emergency stop button on the controller.
- Open your App tot start the update procedure.
- Follow the instructions in the application.
- At the start of the update the following icon on the controller screen starts blinking

Warning:
Do not turn the power off the unit during the firmware update or interrupt this procedure. During the update the machine will be stopped; THE SCREEN AND LEDS WILL BE OFF.

- The firmware update loads the new firmware on your Compressor. This process can take a few minutes. Once the firmware update is complete, the controller will reboot.
- Reset the emergency stop alarm and manual start is required after the update.

Pressure settings

Changing pressure settings is one of the useful features only available in the App, when the smartphone is connected via Bluetooth to the unit.

Please look at the App guidelines document for a detailed explanation of this feature.

Warning:
If the unit is in standby and the loading pressure is set above the current pressure shown on the controller, the unit will start.

Timer schedule

With a timer schedule, you will not need to go every day to your unit to start and stop it. You will just need to specify a start and stop hour in the App. To active the function and set the timers you will need a Bluetooth connection with the unit, this is needed to send the information from the phone to the controller. Then the information will be stored in the controller itself.

Please look at the App guidelines document for a detailed explanation of this feature.

When the Timer schedule is active, the related pictograph

will be shown on the controller display.

Figure 21: Main screen with timer schedule active

Safety precautions for the connectivity module

It is important to follow all regulations regarding the use of radio equipment, in particular regarding the possibility of radio frequency (RF) interference. Please follow the safety advice given below carefully.
• Respect restrictions on the use of radio equipment in fuel depots, chemical plants or other explosive environments.
• Avoid operation close to inadequately protected personal medical devices such as hearing aids and pacemakers. Consult the manufacturers of the medical device to determine if it is adequately protected.
• Avoid operation close to other electronic equipment which may also cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturer recommendations.
• Respect a distance from the human body of at least 20 cm (8 inch) during operation.

Electrical diagram

2205019700 → Service diagram, IEC 3-5.5HP DOL
2205019750 → Service diagram, IEC 5.5-10HP YD
2205036300 → Service diagram, cULus 3-10HP
2205036350 → Service diagram, cCSAus 3-10HP
The complete electrical diagram can be found in the technical documentation supplied with the machine.