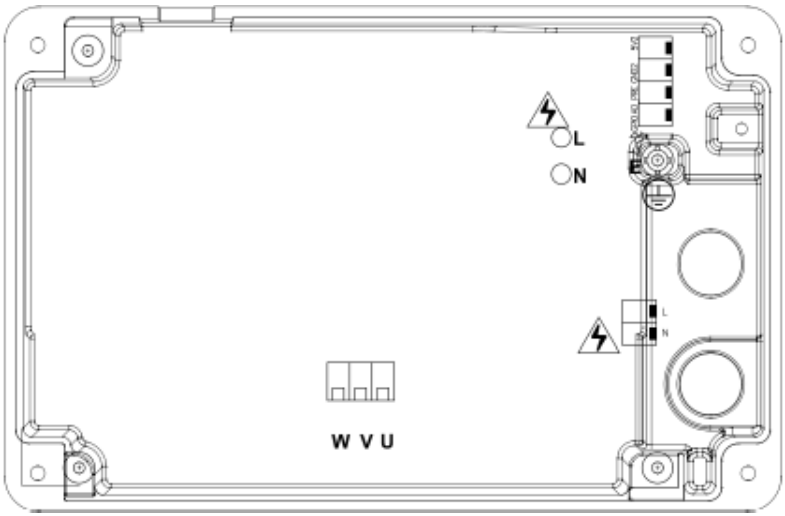


Air Compressor Control Panel

Original Instructions

Iss: 11/2026

EN

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Introduction

⚠ IMPORTANT!

READ THIS INSTRUCTION BOOKLET THOROUGHLY BEFORE USING THE MACHINE. Keep it for future reference and pass it on if the machine is loaned or sold to another user.

Please read and understand these instructions before you install, operate or change the settings of the controller. Failure to do this may result in personal injury or damage to the product.

Using this manual:

- **Short press** means press and release a button straight away.
- **Long press** means press and hold a button for about 2 seonds.

The information contained in this manual was accurate at the time of production. We reserve the right to amend this document and the product without prior warning. Always use the latest version of the product manual.

Electrical Safety

⚠ IMPORTANT!

This controller is connected to mains voltage (220–240V). Always disconnect the power supply before opening the controller or touching any wiring.

- Wiring and installation must only be carried out by a qualified, competent person
- Make sure the earth (ground) terminal is properly connected before switching on.
- Check all cables and connectors for damage before use. Never use the controller with damaged cables.
- Only connect a motor that matches the controller model (rated 220V permanent magnet synchronous motor). A mismatched motor can cause faults and damage.
- Make sure all plugs and terminals are fully pushed home and secure. Loose connections can cause faults.
- Never touch the controller with wet hands.

Operating Environment

⚠ IMPORTANT!

The controller is for INDOOR use only

- Do not install in direct sunlight.
- Keep the controller away from dust, corrosive gas, flammable gas, oil mist, steam, dripping water and salt.
- Operating temperature: –15°C to +60°C. Between 50°C and 60°C the controller must be run at reduced output (derated).
- Humidity must be below 95% RH with no condensation.
- Above 1000 m altitude, reduce the output by 10% for every additional 1000 m.
- Install in an open, well-ventilated position so the controller can stay cool.

Advanced Settings

- Only change the Advanced Settings (F0 parameters) if you understand what each setting does. Incorrect settings can cause faults or damage the motor.
- Note the current value before you change a setting, so you can change it back.

Intended Use

The A220-1200W and A220-2200W are motor controllers for single-phase, piston-type air compressors fitted with a rated 220V permanent magnet synchronous motor.

They control the starting, stopping and speed of the motor according to the air pressure measured by the pressure sensor. Any other use is not intended.

Do not use the controller with other motor types, outside the stated voltage range, or outdoors.

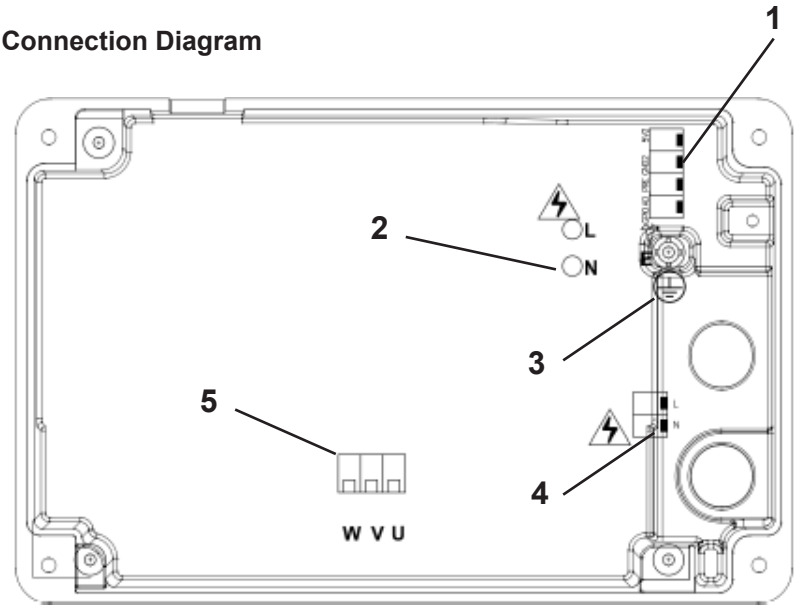
TECHNICAL DATA

Input	
Rated voltage / frequency	Single phase 200–240V, 50 / 60 Hz
Allowable operating range	Single phase 180–260V, frequency ±5%
Input power	1300 W max (A220-1200W) / 2300 max (A220-2200W
Output	
Output Voltage	0 to rated input voltage
Motor Control	
Motor Type	Permanent magnet synchronous motor
Control Mode	Sensorless vector control
Rated Power (hp)	2-3
Carrier Frequency	5 kHz
Maximum Speed	3200rpm
Speed Setting Steps	10rpm
Speed Accuracy	±1%
Acceleration / Deceleration	Linear, adjustable from 3 to 20 seconds
Display & Buttons	
Display	5-digit LED display
Button	Single and combined key presses to prevent accidental operation
Environment	
Location	Indoor; out of direct sunlight; free from dust, corrosive or flammable gas, oil mist, steam, dripping wate and salt
Altitude	Derate by 10% for every 1000 m above 1000 m
Ambient Temperature	–15°C to +60°C (derate between 50°C and 60°C
Humidity	Below 95% RH, non-condensing
Storage temperature	–20°C to +60°C

Wiring & Connection

⚠ WARNING! Disconnect the power supply before making or changing any connection. Wiring must only be carried out by a qualified, competent person.

Connection Diagram

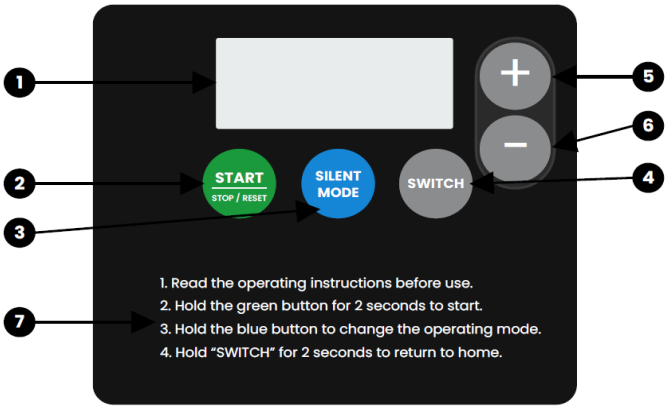


	Connection	Description
1	**Pressure sensor plug** (5V2 / GND2 / PRE / GPIO AD)	Plug the pressure sensor lead into this 4-pin socket. The controller reads the air pressure from here.
2	**Controller power lead** (L / N)	Mains power input to the controller: Live (L) and Neutral (N).
3	**Earth (ground) terminal**	Connect the earth wire here. The controller must always be earthed.
4	**Solenoid valve connection** (L / N)	Connect the compressor's solenoid valve wires here.
5	**Motor connection** (W / V / U)	Plug the three motor wires into the W, V and U terminals.

NOTE: After wiring, check every plug and terminal is fully pushed in and secure before switching on. Loose motor or sensor connections are a common cause of fault codes E01, E14 and E63.

Panel Layout

NOTE: Use the control panel to start and stop the compressor, check how it is running and change its settings.



1. LED Display
2. Start / Stop / Reset Button (Green)
3. Silent Mode Button (Blue)
4. Switch Button (Grey)
5. Plus (+) Button
6. Minus (-) Button
7. Quick-Start Instructions

Buttons

Button	Name	Description
START STOP / RESET	**Start / Stop / Reset**	Long press (2s): start the compressor. Short press: stop the compressor. Short press when a fault is shown: clear the fault (controller returns to stopped).
SILENT MODE	**Silent Mode**	Press: switch to Silent Mode. The silent speed flashes on the display (default 1800 rpm) and can be adjusted with + / –. Long press while in Silent Mode: return to Constant Pressure Mode.
SWITCH	**Switch**	Short press: step through the display screens (see page 7). Long press (2s): return to the live pressure (home) screen.
+	**Plus (+)**	Short press: increase the value being set. Long press (2s) on the home screen: go straight to the target pressure setting (or the silent speed setting if in Silent Mode).
–	**Minus (–)**	Short press: decrease the value being set. Long press (2s) on the home screen: same as Plus – go straight to the setting for the current mode.
+ –	**+ and – together**	Long press both (2s) while stopped: open the Advanced Settings menu (see page 10).

The Display

Reading the Display

The display has 5 digits. The **first digit is a letter that** tells you what is being shown. The **last four digits show the value.**

When switched on, the display shows the **live air pressure** (home screen). If you leave a setting screen for 10 seconds without pressing a button, the display returns to the home screen.

Letter	Screen	What it shows
 steady	**Live pressure** (home screen) **Target pressure** setting	The live air pressure measured by the pressure sensor. On the setting screen it shows the target pressure for Constant Pressure Mode. Adjust with a short press of + or –.
 flashing	**Silent Mode**	Shows the Silent Mode speed. Adjust with a short press of + or –.
	**Load (cut-in) pressure**	The pressure at which the compressor starts (MPa).
	**Unload (cut-out) Pressure**	The pressure at which the compressor stops (MPa).
	**Output Voltage**	Voltage supplied to the motor (V).
	**Output Current**	Current supplied to the motor (A).
	**Motor Speed**	Motor speed (rpm).
	**Running Time**	Total accumulated motor running time.
	**Fault code**	The most recent fault code (see Troubleshooting, page 11).

Changing Screens

Short press the **Switch** button to move to the next screen, in this order:

P Target pressure › L Load pressure › H Unload pressure › U Voltage › A Current › n Speed › t Running time › E Last fault

Long press **Switch** for 2 seconds at any time to return to the live pressure (home) screen.

Operation

⚠ WARNING! The compressor may start AUTOMATICALLY when the air pressure falls. Never work on the compressor while the controller is powered.

⚠ WARNING! Before starting, make sure all wiring is complete and secure, and the controller is properly earthed.

Starting

When power is first switched on, the controller is always in the **stopped** state.

Step 1 : Switch on the power supply to the controller. The display shows the live pressure.
Step 2 : Press and hold the green Start / Stop / Reset button for 2 seconds.
Step 3 : If the air pressure is below the unload (cut-out) pressure, the motor starts.

Automatic Starting

Once started, the controller keeps watching the air pressure:

- **Pressure start:** if the pressure drops below the load (cut-in) pressure, the controller automatically starts the motor again.
- **Fault auto-restart:** after a fault the controller can be set to reset itself and restart automatically. This is OFF by default. To turn it on, set the number of automatic resets in Advanced Settings (F0-11, page 10).

Stopping

The motor stops in any of these three ways:

Type of Stop	What happens
Manual Stop	Short press the green **Start /Stop/ Reset** button. The motor stops.
Pressure Stop	When the air pressure rises above the unload (cut-out) pressure, the controller automatically stops the motor. It will restart by itself when the pressure falls to the load presure.
Fault Stop	If the controller detects a fault, it stops the motor immediately and shows a fault code (E__). By default it will not restart by itself – see Trouble shooting, page 11.

NOTE: Stopping the motor does not isolate the power. Always switch off and disconnect the power supply before any maintenance or wiring work.

Operating Modes

The controller has two operating modes:

Mode	How it Works
Constant Pressure Mode (Normal Mode)	The controller checks the air pressure continuously and speeds the motor up or slows it down to hold the pressure at the **target pressure** you set.
Silent Mode	The motor runs at a lower, quieter **maximum speed** that you set. Ideal when noise needs to be kept down.

Setting the Target Pressure (Constant Pressure Mode)

Step 1 : From the home screen, press and hold + or – for 2 seconds. The target pressure is shown.
Step 2 : Short press + to increase or – to decrease the value.
Step 3 : Leave the buttons alone for 10 seconds. The new setting is kept and the display returns to the home screen.

Switching to Silent Mode

Step 1 : Press the blue Silent Mode button. The display flashes and shows the silent speed (default 1800 rpm).
Step 2 : Short press + or – to adjust the silent speed if required.
Step 3 : Leave the buttons alone for 10 seconds to return to the home screen. The compressor now runs in Silent Mode.

TIP: While in Silent Mode you can also change the silent speed at any time by holding **+** or **–** for 2 seconds on the home screen.

Returning to Constant Pressure Mode

Step 1 : While in Silent Mode, press and hold the blue Silent Mode button.
Step 2 : The controller returns to Constant Pressure Mode.

Advanced Settings

⚠ WARNING! Only change these settings if you understand what they do. Incorrect settings can cause faults or damage the motor. Note down the existing value before making any change.

Opening the Advanced Settings Menu

Step 1 : Make sure the compressor is stopped.
Step 2 : Press and hold + and – together for 2 seconds.
Step 3 : The F0 parameters can now be viewed and adjusted.

Parameter Table

Code	Setting	Range	Factory default	Notes
F0-00	Reset settings	0 – 100	0	21 = reset user settings 23 = restore factory settings
F0-01	Maximum input power	1200W: 500 – 1300 2200W: 500 – 2300	1200W: 1200 2200W: 2300	Watts (W)
F0-02	Maximum motor speed	2500 – 3200	3000	rpm
F0-03	Minimum motor speed	1800 – 2500	1800	rpm
F0-04	Acceleration time	3 – 20	5	Seconds
F0-05	Deceleration time	3 – 20	5	Seconds
F0-06	Maximum unload (cut-out) pressure	800 – 1020	800	Units of 0.001 MPa (800 = 0.80 MPa = 8.0 bar)
F0-07	Constant pressure control – proportional gain	1 – 20	10	How strongly the speed responds to pressure changes
F0-08	Constant pressure control – integral gain	1 – 20	10	How quickly the speed corrects to the target
F0-09	Pressure sensor calibration – zero (output at 0 MPa)	100 – 1000	500	Millivolts (mV)
F0-10	Pressure sensor calibration – span (output at 0.8 MPa)	2000 – 4000	3120	Millivolts (mV)
F0-11	Number of automatic fault resets	0 – 5	0	0 = auto-restart after a fault is OFF
F0-12	Controller model	–	–	Display only
F0-13	Software version	–	–	Display only
F0-14	Controller temperature	–	–	Display only

Troubleshooting

⚠ Faults which cannot be put right with the help of the following table should be repaired by a qualified technician. Always disconnect the power before checking any wiring.

Resetting a Fault

Step 1 : When a fault occurs the motor stops and the display shows **E01** (or another code).

Step 2 : Find the code in the table below and carry out the checks.

Step 3 : Short press the green Start / Stop / Reset button to clear the fault. The controller returns to the stopped state.

Step 4 : Long press the green button (2s) to start again.

Fault Code Table

Code	Fault	Possible Cause(s)	Corrective Action(s)
E01	System fault	• Motor failed to start • Motor stopped while running • Motor out of step • Abnormal motor speed	• Check the motor matches the controller model • Check the motor bearing and impeller are not seized or damaged • Check the one-way (check) valve works and the motor load is normal • Check the controller-to-motor wiring is secure; measure the resistance between each pair of motor wires
E07	Over-current	• Short circuit on the controller output • Controller drive or power module fault • Acceleration / deceleration time too short • Motor does not match the controller • Input voltage too low • Motor started while still turning	• Check the motor matches the controller model • Check the controller-to-motor connections • Disconnect the motor cable and try to start. If E07 still shows, the controller is damaged • Increase the acceleration / deceleration time (F0-04 / F0-05) • Wait for the motor to stop completely before restarting
E09	Voltage fault	• Supply voltage too low (below AC 160V) • Supply voltage too high (above AC 270V) • Acceleration / deceleration time too short	• Make sure the supply voltage is within the normal range • Increase the acceleration / deceleration time (F0-04 / F0-05)
E10	Controller overheating	• Temperature sensor lead not connected properly • Temperature sensor faulty • Ambient temperature too high	• Check the controller's temperature sensor is properly connected • Reduce the ambient temperature • Install in an open, well-ventilated position

Fault Code Table (Continued)

Code	Fault	Possible Cause(s)	Corrective Action(s)
E14	Output phase loss	• Motor not connected properly to the controller • Controller main board damaged	• Check the motor and controller connection terminals • Contact technical support
E16	Display communication fault	• Communication between the main board and the display panel has failed	• Switch the power off and on again • Contact technical support
E21	Controller overload	• Load too high or motor jammed • Motor out of step • Motor does not match the controller	• Check the motor matches the controller model • Reduce the load and check the motor and compressor for mechanical problems
E25	Motor overload		
E63	Pressure sensor fault	• Poor contact on the pressure sensor lead • Pressure sensor faulty	• Check the pressure sensor plug and terminals • Replace the pressure sensor

Quick Checks

Symptom	What to check
Display is blank	Check the power supply is switched on and the L / N power lead is connected.
Motor does not start when the green button is held	Check whether the pressure is already above the unload pressure – the motor will not start until pressure drops. Check the display for a fault code.
Compressor is too noisy	Switch to Silent Mode and reduce the silent speed.
Display does not change when buttons are pressed	Check whether a short press or long press (2s) is needed – see page 6.

WARRANTY STATEMENT

Proof of purchase will be required before you make a warranty claim. Full warranty terms and conditions are available from your local distributor, they can be found on the JCB Tools website:

www.jcb-tools.com

FOR ANY MACHINE SOLD OUTSIDE THE UK, PLEASE CONTACT THE VENDOR FROM WHOM YOU PURCHASED THE MACHINE, AND/OR YOUR LOCAL JCB TOOLS DISTRIBUTOR

RETURNING YOUR PRODUCT

If you are returning your product, please contact the dealer for their returns policy.