

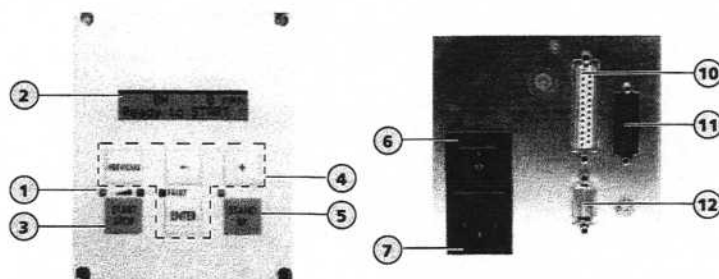


ACT 200 TH / ACT 202 TH
 Controllers for ATH200, ATP80/100, MDP5011 pumps

Condensed manual



Interface description



Ref	Description	Function
1	Indicator light	4 indicator lights to display the pump running status.
2	LCD display	Display time counter, messages.
3	Start/Stop button	Pump control button.
4	Setting buttons	Setting parameter access.
5	Standby button	Standby speed control button.
6	Power switch.	
7	Power supply connector.	
10	Input/Output connector (I/O)	Wiring characteristics, voir B430 . - inputs for the remote control of START, STOP, STANDBY, MODE REMOTE, RUNNING-IN functions, - outputs for the pump monitoring parameters available in form of dry contacts (running-in mode, pump operating, copy of start command, standby mode, fault, at speed).
11	Pump connector.	
12	RS 232/485 connector	Wiring characteristics, voir B450 . The RS 232 serial link is used to control and monitor the pump using a computer. The RS 485 serial link allows the installation of several pumps in network.

More information with Operating instructions.

Safety instructions

WARNING

Do not operate the pump until it is securely fixed. If the pump seizes, the stored energy of the rotor can cause rapid movement of the pump, which may cause further damage and injury to people. It is mandatory to respect installation instructions described in the pump operating instructions. The constructor declines any responsibility if the pump installation is not made in accordance with the installation specifications.

Do not expose any part of the human body to vacuum. The product is supplied with the inlet and exhaust sealed. Remove these blanking plates when you are ready to connect the product on your vacuum system. As well as, don't operate the product unless the inlet and exhaust are connected to a vacuum and exhaust pumping line.

Electric shock hazard. Some components have capacitors charged to over 60VDC, or motor operating as generator. When power is switched off, they keep their charge for a time. Take precautions concerning the access to the connector pins. Wait that the turbo-pump rotation is stopped plus 5 minutes before commencing any work on the product.

Ensure that the product is connected to an electrical installation:
 - in compliance with the local and national safety requirements,
 - equipped with electrical protection (fuses, circuit breaker, ...) which has a suitable earth (ground) point, properly connected.

The user and /or OEM are ultimately responsible for operating the equipment in a safe manner. The manufacturer has no control over the types of gases exposed to this pump. This is the user and/or the OEM's responsibility to follow the necessary safety requirements. Frequently process gases are toxic, flammable, corrosive, explosive and/or otherwise reactive.

Toxic gases can cause serious injury or death. Operators and users must take the appropriate safety recommendations to prevent injury. Consult the responsible department for instructions and safety information.

Hazardous gases through the pump can cause serious injury or death. It's mandatory by regulations to connect the turbo-molecular pump's exhaust to a rough pumping line compatible with the process gases. Check that pump is correctly connected to the equipment (B310).

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Safety instructions

CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in property damage.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury. It may also be used to alert against unsafe practices.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or severe injury.
⚠ DANGER	Indicates an imminently hazardous situation that, if not avoided, will result in death or severe injury (extreme situations).

Overview

Before switching on the appliance, study the operating instructions and make sure you follow the safety instructions it gives. You can recognise these by the 'Caution', 'Warning' and 'Danger' symbols. Good practice tips and manufacturer's recommendations are in a blue box.

The performance and operational safety of this product are guaranteed provided it is used normally in the operating conditions defined in this manual.

It is the customer's task to:

- train operators to use the product if they do not speak the language the manual is written in,
- ensure operators know the safe practices to apply when using the product.

We took care to provide you with a clean appliance. To keep it in this condition, unpack it only in its final place of use.

Make sure the equipment shows no sign of transport damage. If it has been damaged, take the necessary steps to record this with the carrier and inform the manufacturer. In all cases, we recommend keeping the packaging (reusable materials) for further transport of the equipment or for prolonged storage.

Safety instructions

For emergencies

For emergencies and breakdowns, contact the manager of your local service center (see addresses on the web site).

Smoke hazard due to the presence of electrical components. The smoke hazard is low due to the use of approved components and the containment smoke in the pump cover.

CAUTION

■ The units containing control circuits are designed to guarantee normal safety conditions taking their normal operating environment into account (use in rack). In specific cases of use on tables, make sure that no objects enter the ventilation openings or block the openings when handling the units.

■ Do not install water fittings above electrical components: there is a risk of electrical discharge in case of a leak at the water fitting connection.

■ Fire protection:
The pump is not intended to be installed on process containing flammable materials or in hazardous atmosphere. The pump body is made of aluminium. The main part enclosure and the majority of the non-metallic parts (mainly electrical components) have a fire rating of UL94V0 and/or are UL approved.

⚠ CAUTION

■ Our products are designed to comply with current EEC regulations. Users making their own modifications to the product are liable to break its compliance with these regulations, degrade its EMC (electromagnetic compatibility) rating, and make it unsafe to use. The manufacturer declines all liability for the consequences of such operations.

■ The product's EMC rating is obtained on the understanding that it is installed in compliance with EMC rules.
Of special note: in environments that are prone to emit interference, use shielded cables and connections on interfaces.

Safety instructions

⚠ WARNING	Risk of electrical shock. The turbo-pump and the controller must only be disconnected from each other when the turbo-pump is completely at rest and the controller disconnected from the power supply. Beside, don't unplug the pump by disconnecting the main cable. Only the authorized and trained technicians can perform intervention on the product
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⚠ DANGER	<ul style="list-style-type: none"> ■ Pump connection to the installation: It is strongly recommended to secure the turbo-pump installation to prevent any safety hazard to the user in standard operating conditions: refer to B20. ■ Risk of cut The access to the rotor of a turbo-molecular pump with an unconnected inlet port is dangerous. In the meantime, if the pump is not switched on, it may be driven by another pump in operation. Always connect the pump inlet port before starting the pump. ■ Risk of injury by cutting The inlet of the pump must not be disconnected as long as the rotor is moving and without having disconnected the power line cable. Contact with the pump rotor cell may cause cuts. Alternatively, protective gloves may be worn when servicing the product. ■ Auto-restart When the pump is stopped with an over temperature issue, it will restart automatically when the temperature has decreased until the restart value. It is the responsibility of the user to take all the measures required to prevent risks resulting from this type of operation. The user must provide a device (integrated in the equipment/host tool) to warn or to avoid this restart.
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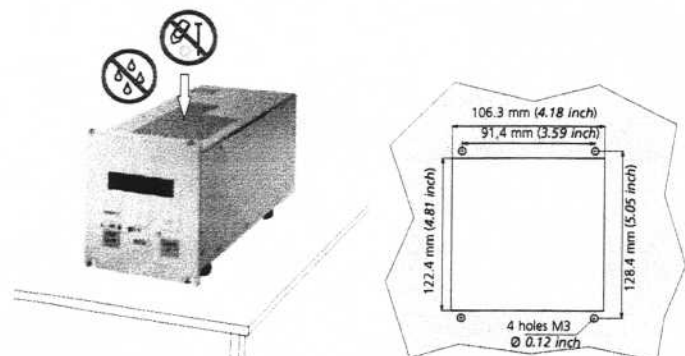
Installation

This condensed manual includes the using instructions of the controller with an adixen turbomolecular pump. Refer to the pump operating instructions to install the pump in the equipment (chapter B).

The controller can be placed on a bench or mounted in a 19" rack.

Rack mounting

To optimize the space, the controller can be rack mounted or integrated into a control panel. For this, the following cut-out is required:



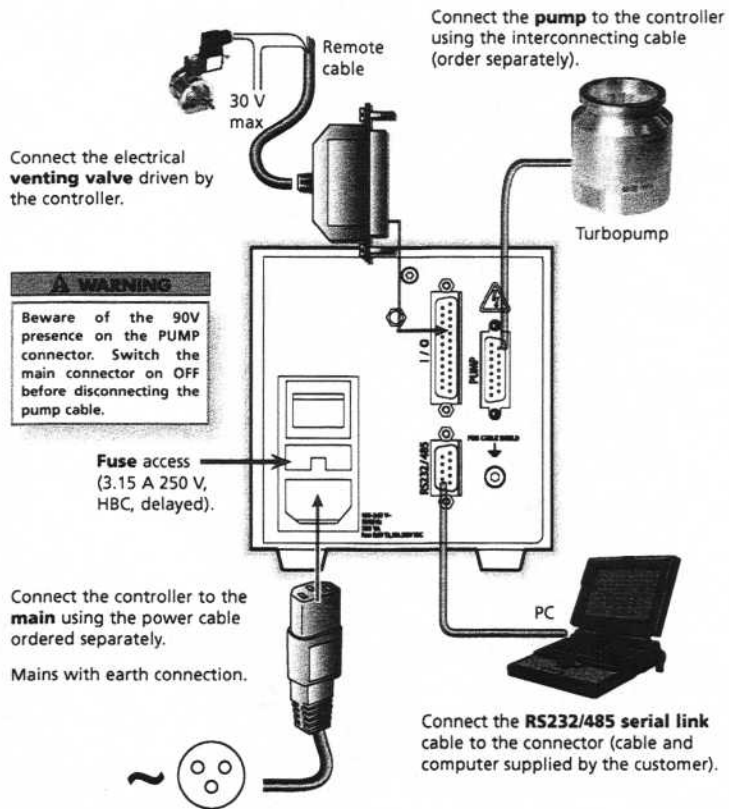
CAUTION

Controller ventilation
Internal components can be deteriorated through overheating if there is inadequate ventilation. Do not block the ventilation holes. To avoid this leave 50 mm (2 inch) free space above and below the controller and 15 mm (0.6 inch) along the sides.

CAUTION

Protection against foreign bodies.
Controller can be deteriorated when any objects...

Electrical connections



CAUTION

If the access to the main connector is restricted, an additional isolation device should be incorporated which will be easily accessible by an operator.

Technical characteristics

Characteristics	Unit	ACT 20X TH
Single-phase voltage	V	100 - 240
- voltage	Hz	50/60
- frequency	VA	250
- power max.	kg (lbs)	2.8 (6.2)
Weight	mA	< 10
Maximum leakage current	mm (inch)	128.4 x 107 x 258 - (5.0 x 4.2 x 10.15) - 1/4 Rack 19"
Dimensions HxLxP)	°C	- 15 < T < + 70
Storage temperature	dB(A)	< 70
Sound level		in compliance
W.E.E.E. (2002/96/CE)		in compliance
R.O.H.S (2002/95/CE)		in compliance

Environmental conditions

Use of the product		Indoor
Protection		IP20
Ambient operating temperature	°C	0 < T < + 50
Maximum altitude	m (ft)	< 2000 (6561)
Pollution degree		II
Maximum relative humidity	%	Maximum relative humidity 95 % for temperature until 31 °C, decreasing until 50 % at 40 °C

Input/Output connector wiring

Before switching on the pump, the user should study the manual and follow the safety instructions listed in this manual.

AVERTISSEMENT

When units containing control circuits are equipped with dry contact outputs, it is the responsibility of the customer to use these outputs in compliance with installation and security standards.

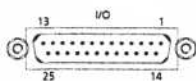
Remote control connector

Remote control allows :

- remote control inputs of the START, STOP, and Running-in functions
- outputs of the monitoring parameters.

2 available relays can be set for the following functions:

- start
- standby
- running-in
- accelerating
- nominal speed
- fault
- analog input threshold 0-10V n°1 and n°2
- venting valve
- no functions
- Gauge 1 and 2 thresholds



Input/Output connector wiring

Available outputs

Outputs are open collector type outputs (Imax. 40 mA, Vmax. 30 V) whose functions are to provide the information related to the pump status.

When the output is valid (low level), the corresponding light indicator is lit (refer **C200**).

Pin		Output status
4	Speed (pulse)	This output delivers one pulse with a frequency equal to the pump speed in rps.
5	Speed	Pump reaches the selected speed.
17	Fault	The fault is signaled.
18	Running	Pump is accelerating.
19	Analog output	This output delivers a DC voltage with a linear variation from 0 to 10 V (set by "OPT1 command"), refer to "Detailed description of RS Commands".
10-22	Relay 1	These relays can be set for functions via RS232, "REL command". When they are set to «Fault», it is possible to invert the operation logic via, «REV command». Refer to C800 . It is necessary to connect a free wheeling diode to avoid any circuit damage.
11-23	Relay 2	

Command inputs

The inputs are activated when a direct voltage between 12 and 30 Volts max. is applied on the pins.

For local operating mode, a power supply is available between pin 16 and a ground pin.

Verify electrical connections before positioning the main switch to position 'I' (voir **B 400**).

1. Indicator lights will illuminate for a few seconds as the controller performs an initialization.



2. the monitoring screen displays with the message: "Ready to start"

A fault message is displayed if the pup is not connected (**D08**) (see **D 200**).

Local mode operation

Start the pump by pressing on START button: the rotational speed is displayed.

Pump operation status is shown in the indication of rotation table.

Stop the pump by pressing on STOP button.

Remote mode operation

The pump can be remotely controlled when the I/O connector has been wired (see **B 430**).

Pump start and stop are controlled by the START/STOP command inputs from the I/O connector.

RS 232/RS 485 mode operation

The RS232/RS485 serial link mode operation is possible if the RS connector has been wired (see **B 450**).

Pump start and stop are controlled by the corresponding RS commands (see **C 800**).

Input/Output connector wiring

Available outputs (cont')

Pin	Output status
1	<p>Running-in</p> <p>First, open the external contact J1-14. Close the external contact J1-1 and maintain it closed during the running-in. Close the contact J1-14 (running-in request) and open it. If the contact J1-1 is opened during the running-in, the running-in is interrupted after the cycle. it is not possible to stop a running-in when it has been launched by a start/stop input action. Only the 'TMPOFF' and 'BRK' commands allow the running-in to be stopped. During the running-in, the yellow light is flashing, the "starting" output is activated when the pump is acceleration, "the nominal speed" output is activated when the speed is reached.</p> <p>At the end of the running-in program, the pump stops. Depending on the J1-1 and J1-14 inputs status, the operating mode will be as follow:</p> <ul style="list-style-type: none"> - if the two external contacts are opened, the pump stays off - if the J1-14 external contact remains closed when J1-1 is opened, the pump starts and runs at nominal speed. - if the two external contacts remain closed, the running-in program starts again.
14	<p>Start/Stop</p> <p>To start the pump, close the J1-14 external contact. The opening of this contact stops the pump.</p>
2	<p>Standby</p> <p>This command is associated with the Start/Stop command: it allows pump running at reduced speed (setting via RS 232/485). To run at standby speed, close the J1-2 contact and start the pump (close J1-14). The opening of J1-2 external contact allows pump rotation at nominal speed.</p>
7 20	<p>Analog inputs</p> <p>The 2 analog inputs can be used to launch an action from RS232/485 setting thresholds (ASD, ASP, REL command, refer to C 800).</p>
4	<p>Inhibit</p> <p>This input inhibits the front panel operation (local mode inactive)</p>

Indication of rotation

Light	Description	Light indicator status
Yellow	The pump is accelerating	<ul style="list-style-type: none"> speed lower than nominal speed running-in is in progress
Green	The pump has reached the nominal speed	<ul style="list-style-type: none"> nominal speed or standby speed is reached speed higher than the one selected
Red	A fault is occurring	<ul style="list-style-type: none"> faulty pump warning is signaled
Yellow	Standby speed	Standby mode selected. (ACT 20xTH)

Lit Flashing

Diagnosis and troubleshooting

Default type

"Warning"

A warning doesn't stop the pump, it is signaled by:

- the flashing of the red light indicator.
- the display of a warning WXX.

"Fault"

A fault stops the pump, it is signaled by:

- the lighting of the red light indicator.
- fault output is activated (pin17) on the Input/output connector (I/O)
- the display of a fault message DXX.

Warning and faults are also available on the RS232/RS485 serial link - STA2 command- on warning (z) and fault (y) bits.

Warning and Fault list, see **D 200**.

Input/Output connector wiring

Remote control wiring

