FLUIGENT

RX - PRESSURE SOURCE
USER MANUAL & DATASHEET

VERSION 5 - JUNE 2020

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INTRODUCTION

This document presents the general usage of the RX compressor – gas pump. It will cover the basic usage when associated with instruments, i.e. pressure controllers such as the Fluigent PX series or other end user or OEM instruments. The remote communication through the RS232 protocol and how to set custom pressures or reconfigure your product.

GENERAL DESCRIPTION

The RX is a pressure source packaged in powder coated steel enclosure. It can be used as a standalone equipment or be integrated in OEM system.s The RX can be mounted in any position or direction (horizontal or vertical), as long as the fan intake is not obstructed.

On the connectors side, the RX module presents 3 connectors:

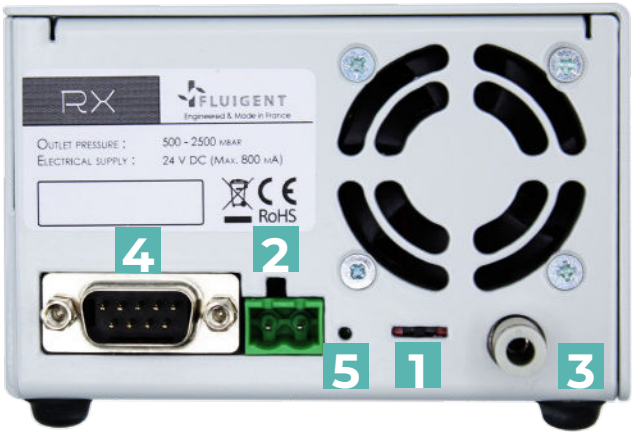
- Power supply (male MSTBA)
- Sub-D socket for serial connection
- Pneumatic output of the module.

Always use a power supply with the 24V on the side of the keying of the female MSTBA connector, and ground on the other. The RS-232 interface will be described in details in another section.

GETTING STARTED

This section will help you start the module as safely as possible

1. Make sure the red switch is in the middle position. This will prevent the pump from getting full throttle instantly.
2. Plug the power supply through the MSTBA connector. As it is keyed there is no risk of plugging it the wrong way.
3. Plug your downstream system to the outlet port (PX modules, etc)
4. (optional) For remote control, connect a DB9 serial cable, otherwise select the local pressure mode using the switch. Please refer to the dedicated sections for more details.



1. Switch
2. Power supply connector
3. Pressure outlet
4. Serial port
5. LED indicator

DATASHEET

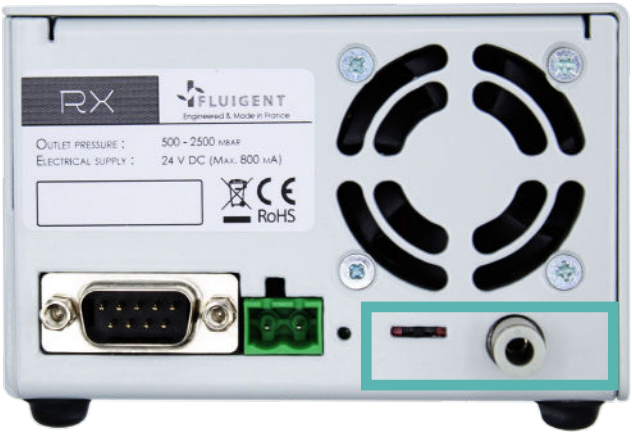
SPECIFICATIONS	
PNEUMATIC SPECIFICATIONS	
Minimum pressure	500 mbar
Maximum pressure	2500 mbar
Free flow (flow rate at 0 mbar output)	5,6 L/min
Flow rate at 2000 mbar	0,8 L/min
ELECTRICAL SPECIFICATIONS	
Power voltage	24 V
Maximum current	800 mA
Maximum power consumption	19 W
PNEUMATIC SPECIFICATIONS	
Dimensions (L x W x H)	106 x 96,5 x 61,5 mm
Weight	823 g
OTHER	
Air quality*	Dried and filtered

*the RX has a built in drying component, it will reduce the humidity of the air supply to prevent condensation. This component is designed to perform in room temperature, for more detailed information on air supply conditions of your setup please contact us.

LOCAL USAGE

The RX can be used with any instrument needing a compact pressure source, it's also perfectly compatible with a variety of Fluigent products, more specifically the PX pressure control modules.

To use the RX without connecting it to a PC or another serial manager, the built-in switch should be used to commute between the stored pressures:



Left position (LED side)	Center position	Right position (pneumatic output side)
P1 (default value: 1300 mbars)	Sleep mode	P2 (default value: 2400 mbars)

The table that follows will give you the standard usage of these positions with Fluigent products:

LEFT POSITION	Up to 4 **PX** 1 bar 1 or 2 **Flow-EZ** 1 bar (with or without a pressure tank)
RIGHT POSITION	2 **PX** 2 bars for low volume reservoirs (performances will be degraded for higher volumes) 1 **PX** 2 bars for higher volumes 1 **Flow-EZ** 2 bars (better response time without an intermediate tank

RS-232 INTERFACE

The RS-232 interface is a 9-pin D-Sub socket used for remote communication. The voltage level is ±10 V (pin 5: GND; pin 2: RX +-10V; pin 3: TX +- 10V).

For communications, use the following settings:

BAUD RATE	115 200 bps
DATA BITS	8
STOP BITS	1
PARITY	No parity
FLOW CONTROL	None

Also, be sure that the switch is in the central position to allow for the communication. Left and right are not intended for that purpose as the value is stored in the memory of the device, which does not allow real time control.

REMOTE COMMAND SET

This remote command set is the default set available on the instrument. All commands must be terminated with a <CR>. All decimal values use the dot "." as decimal separator.

Make sure your serial communication software does not add line feed or flow control characters, as the instrument will not be able to parse them and will consider the command invalid.

A query command ends with a question mark "?". The data column represents the response of the instrument. All response strings are terminated with a <CR>.

QUERY	REPONSE	NOTES	EXEMPLES
SYST:IDN?	<vendor>,<instrument>, <serialno>, <version>	The numbers are in decimal on 5 digits. The version is the firmware version	FLUIGENT,RX, 0001,00001
SYST:STATUS?	<status1>,<status2>	<status1> : L= Local, R=Remote <status2> : P= Pressure regulation, V= Voltage regulation, P1 or P2	L,P1 R, V L, P2
SYST:TARGET?	<target>	XXXX = Pressure (mbar) if Pressure regulation YY% = % Voltage if Voltage regulation	1300 50%
SYST:MEAS?	<pmeasure>	pmeasure = mbar	1294
SYST:P1?	<P1value>	P1value = XXXX mbar	1300
SYST:P2?	<P2value>	P2value = XXXX mbar	2400

For all commands (no question mark "?"), the value is the required parameters to be sent to the instrument following the string in the command column. In case of error in the command spelling, the command is ignored by the instrument and no error code is returned.

QUERY	NOTES	EXEMPLES
SYST:P:<value>	Sets the remote pressure (from 500 to 2500)	SYST:P:1200
SYST:V:<value>	Sets the remote control voltage in % (from 0 to 100)	SYST:P:1200
SYST:P1:<value>	Memorizes the value as P1 to be used in left position	SYST:P1:1450
SYST:P2:<value>	Memorizes the value as P2 to be used in right position	SYST:P2:500
SYST:S	Sleep mode (stops pump and fan)	
SYST:R	Resets the values of P1 and P2 to factory settings	

AVAILABLE ACCESSORIES

ACCESSORY	DESCRIPTION	PART NUMBER
RX Connection Kit	Kit - connection fittings for Rx	IPCKPX1
RX Power Kit	Kit - power hardware for Rx	IPPKPX1
24V Power Cable	1m red cable	SYST:P1:1450
1m black cable	IAECB24V100	SYST:P2:500
Female MSTBA connector	Green connector to connect the 24V into the RX	IAECTP241
OEM Power Supply 36 W	TRACO OEM power supply	IAEPS36W1
220 V Power Cable EU plug	220V Cable EU plug	IAECB220V1
Fitting M5-4mm	Fitting M5-4mm quantity x1	ICPXOF4M1
Fitting M5-6mm	Fitting M5-6mm quantity x1	ICPXOF6M1
Inlet Tubing OD 6 mm	Inlet Tubing OD 6 mm x 1 m	ICPTB6M100
Outlet Tubing OD 4 mm	Outlet Tubing OD 4 mm x 0.4 m	ICPTB4M100
Pneumatic T 6 mm	Pneumatic T 6 mm quantity x 2	IAPT6M1
RS232 Cable	RS232 Cable quantity x 1	IAECBRS1
Fixation DIN Rail	Mounting plate to adapt it to a standard DIN rail	ICPXODRF1

STORAGE AND TRANSPORT

Please manipulate the module carefully and avoid bumps or violent collisions. No extra care is required for transportation. Store in dry environment and avoid extreme temperatures.

WARRANTY

What This Warranty Covers

This warranty is granted by Fluigent and applies in all countries

Your Fluigent product is under warranty for one year from the date of delivery at your premises against defects in materials and workmanship

If found to be defective within the warranty period, your Fluigent product will be repaired or replaced free of charge

What This Warranty Does Not Cover

This warranty does not cover routine maintenance, or damage resulting from the failure to maintain the product in accordance with instructions provided by Fluigent. This warranty also does not cover damage that arises from accidental or intentional misuse or abuse, alteration or customization, or repaired by unauthorized persons.

How to Get Service

If something goes wrong, contact the Fluigent dealer from whom you purchased your product. Arrange a mutually convenient time for Fluigent service representative to discuss over the problem and find a solution to fix the issue. Will be favored any remote repairs, but in case more actions need to be taken, the system will come back to Fluigent offices (for no additional cost, only if it is under warranty).

The RX warranty conditions are:

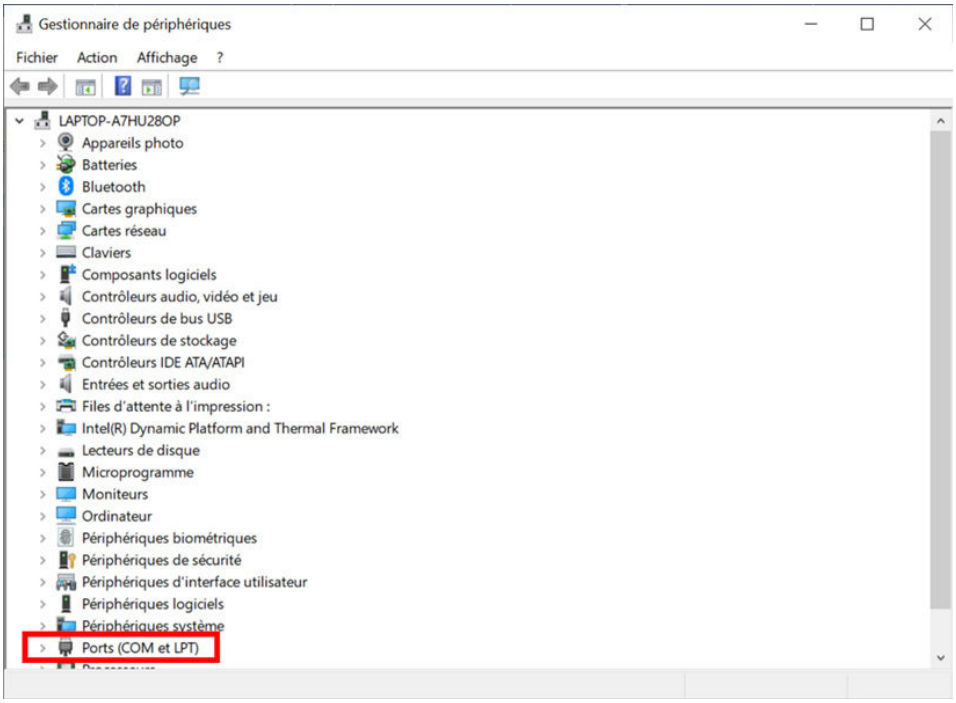
- Do not apply a positive or vacuum pressure to the RX
- Do not submerge the RX
- Respect the temperature compatibility (from 5°C to 50°C)
- Do not use in any corrosive or toxic gas environment
- Do not use other cables than cables provided by Fluigent
- Prevent foreign objects or liquids from entering the RX
- Connect the 2 power cables to the correct terminal and voltage, do not connect electric power anywhere else
- Do not place the product in an unstable location, place the unit in a location with a strong and stable support
- Do not treat the RX in order the clean it (autoclave)

PUMP DOESN'T TURN ON	Verify that the power supply connector is well inserted and that it delivers the necessary voltage (24 V). The positive voltage should be delivered to the left pin of the connector (keying side) and the ground to the right one.
PUMP ISN'T DETECTED ON THE PC	Change the RS-232 cable and try again, if you still can't detect the device repeat the steps mentioned in Appendix 1.
PUMP DOESN'T DELIVER THE COMMANDED PRESSURE	Verify that the tube is well inserted on the speedfit connector and there is no pressure leaking between the pump and the pressure regulator as well as between the last and the pressurized tank. If the pressure is too low and the pump seem to work at full throttle, the flowrate might be too high for the pump to handle (see datasheet for more informations)
CAN I USE THE MODULE IN AN INCUBATOR	Although there should be no risks (all the components individually can be used in an incubator, or a humid/hot environment), this has not been tested internally to see if there is any long-term damage. Also note that the built-in dryer would not work as expected.

APPENDIX 1:
FINDING THE COM PORT NUMBER OF THE DEVICE

To find out the COM port number, or narrow down the list to existing ports, go to the device manager (Start menu, either type “device manager” or look for device manager in the control panel).

Then go down the list and there should be a COM port categorie



Click on the arrow on the left, and the options available should display.

If you have several of them and do not know what they are for, try them one by one with a standard query (SYST:IDN?) to see if there is a response. If not, try another one. This can happen when you are using a serial hub or other equipments that require a serial connection (microscopes, PX, ...).

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