

Compact Ejector Series VEQ-I

Use and maintenance instructions

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The products are designed and manufactured in conformity with the following directives:
 - 2014/30/EU "Electromagnetic compatibility"
 They also comply partially or totally with regard to the applicable parts of the following standards:
 - EN 61000-6-2:2005 Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments
 - EN 61000-6-4:2007 Electromagnetic compatibility (EMC) Part 6-4: Generic standards - Emissions for industrial environments.
 - UL 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use.
 Part 1: General requirements.
 and the following technical standards:
 - EN ISO 4414:2010 Pneumatics - General rules and safety requirements for systems and their components.

For more information regarding the declarations of conformity, see the Certifications section on the website <http://catalogue.camozzi.com>

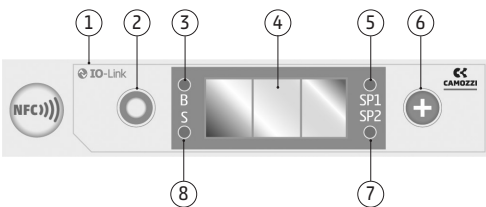
1 General recommendations

- Some hazards can only be associated with the product after it has been installed on the machine/equipment. It is the task of the final user to identify these hazards and reduced the associated risks accordingly.
- The products dealt with in this manual may be used in circuits that must comply with the standard EN ISO 13849-1.
- For information regarding component reliability, contact Camozzi Automation.
- Before proceeding with use of the product, carefully read all information in this document.
- The instructions in this instructions sheet must be observed together with the instructions and additional information regarding the product in this manual, available from the following reference links:
 - Website <http://www.camozzi.com>
 - Camozzi Automation general catalogue
 - Technical assistance service
- Assembly and start-up operations must be performed exclusively by qualified and authorized personnel on the basis of these instructions.
- It is the responsibility of the system/machine designer to ensure the correct selection of the most suitable pneumatic component according to the intended application.
- For all situations not contemplated in this manual and in situations in which there is the risk of potential damage to objects, or injury to persons or animals, contact Camozzi Automation for advice.
- Never make unauthorized modifications to the product. In this case, any damage or injury to objects, persons or animals will be the responsibility of the user.
- All relevant product safety standards must be observed at all times.
- Never intervene on the machine/system before verifying that all working conditions are safe.
- Before installation and maintenance, ensure that the specific envisaged safety locks are active, and then disconnect the electrical mains (if necessary) and system pressure supply, discharging all residual compressed air from the circuit and deactivating residual energy stored in springs, condensers, recipients and gravity.
- To reduce the noise levels caused by the discharge of air from the component, envisage the use of silencers or convey the fluid to a zone where no personnel are envisaged during normal operation.
- Avoid covering the equipment with paint or other substances that may reduce heat dissipation.
- Avoid cleaning with aggressive agents such as to dull the plastics.

2 Installation and start-up

- During unpacking, take great care not to damage the product.
 - Check whether there are any faults caused by product transport or storage.
 - Separate all packaging material to enable the recovery or disposal in accordance with current standards in the country of use.
 - Where possible avoid the risk of repeated pressure surges on the circuit where the component is installed.
 - The components must be fixed correctly using, where possible, the specific brackets and ensuring that the fixture remains efficient even when the regulator is repeatedly used at a high frequency and in the presence of strong vibrations.
 - In the case of strong vibrations envisage suitable devices/systems able to dampen the effect on the component.
 - Ensure that the tubes are correctly connected and secured to the fittings.
 - If the power supply is turned off, residual pressure may remain on the secondary side of the regulators.
- The manufacturer must provide for additional exhaust components.

3 Display and Operating Element in Detail



Nr.	Function
1	IO-Link symbol (product available via an IO-Link interface)
2	MENU BUTTON
3	LED status "blow off" B
4	Display
5	LED limit switch point SP1
6	PLUS BUTTON
7	LED limit switch point SP2
8	LED status "suction" S

• Definition of the LED indicators

The "suction" and "blow off" process states are each assigned an LED.

Pos	Meaning	Display	Description
3	Led blow B	OFF	The ejector does not blow
		on	The ejector blow
8	Led suck S	OFF	The ejector does not suck
		on	The ejector suck

• Meaning of the vacuum limit value LED

The display depends on the switching function and the assignment of the outputs. The table below illustrates the meaning of the LEDs:

Pos.	Limit value LED	Description	Ejector status
5 e 7		Both LEDs are off	Rising vacuum: Blank <SP2 Decreasing vacuum: Vacuum <rP2
5 e 7		The SP2 LED remains on	Rising vacuum: Blank> SP2 and <SP1 Decreasing vacuum: Vacuum> rP2 and <rP1
5 e 7		Both LEDs are always on	Rising vacuum: Blank> SP1 Decreasing vacuum: Vacuum> rP1
5 e 7		Both LEDs continuously lit	Manual control of the suction and blowing ejector functions. The ejector is in manual operation or in setting mode.

• Additional Display Functions on the LED Bar Display

The current system vacuum is always displayed in the 8-digit LED bar display.

LED bar display	Meaning
Max. LED lights up briefly	Supply pressure present, otherwise no LED is active
Entire LED bar lights up Max. LED flashes rapidly	Vacuum > permitted range
Max. LED flashes rapidly	Voltage supply > permitted range
10% LED flashes rapidly	Vacuum < permitted range (for example, during blow off)

When mounting the M4 fixing screws and washers, apply a tightening torque max. of 2 Nm.

To start up the ejector via the connector, connect the connection cable to the control. The compressed air necessary for generating the vacuum is connected through the appropriate compressed air connection.

The compressed air supply must be supplied through a superordinate machine.

The vacuum connection is connected to the vacuum circuit.

The installation is illustrated in detail below.

Pin			
Display	3	num	7-segment red LED indication
Resolution	±1	mbar	--
Precision	±3	% FS	T _{amb} = 25 ° C, relative to the final value FS (full-scale)
Display refresh rate	5	1/s	Only affects 7-segment displays
Inactivity interval until exiting the menu	1	min	If no settings have been made in a menu, it automatically switches to display mode.

• General Parameters

Parameter	Symbol	Limit values			Unit	Comment
		min.	typ.	max.		
Operating temperature	T _{amb}	0	---	50	°C	---
Storage temperature	T _{sto}	-10	---	60	°C	---
Umidità dell'aria	H _{rel}	10	---	90	%rf	Without condensation
Air humidity	---	---	---	IP65	---	---
Operating pressure (flow pressure)	p	3	4,2	6	bar	---
Vacuum max.	p	---	---	-850	mbar	---
Accuracy of the vacuum sensor	---					± 3% FS (Full Scale)
Means of exercise	Air or neutral gas, filtered 5 µm, with or without oil, compressed air quality class 3-3-3 according to ISO 8573-1					

• Electrical Parameters

Parameter	Description		
Supply temperature	24V 10% VDC (PELV ¹⁾)		
Reverse protection of polarity	si		
Current consumption (at 24 V)	-	Typical current draw	Current consumption max.
	SCPMi - xx - NC	50 mA	70 mA
	SCPMi - xx - NO	75 mA	115 mA
NFC	NFC-Forum-Tag tipo 4		
IO-Link	IO-Link 1.1 Baudrate COM2 (38,4 kBit/s)		

¹⁾ The power supply voltage must comply with the provisions in accordance with standard EN60204 (protective low voltage). The signal inputs and outputs are protected against reverse polarity.

• Manual function mode

Through the configuration menu it is possible to prevent access to the menus by means of a PIN code [Pin]. When the lock is active, [Loc] flashes on the display or a PIN code is requested. The menu is activated as follows:
 1. Press the **MENU** button
 → The screen changes to input
 2. Enter the first number of the PIN code with the **UP** or **DOWN** buttons
 3. confirm with the **ENTER** key
 4. Enter the other two digits as well following the same procedure
 5. to activate, press the **MENU** button
 The lock is activated automatically after exiting the selected menu or at the end of the desired function.
 For permanent activation, the PIN code [000] must be reset.

Practical tips for setting parameters

- Pressing the **UP** or **DOWN** buttons for about 3 seconds starts the numerical value to be modified to scroll quickly.
- If you exit a modified value after briefly pressing the **MENU** key, the value is not applied.

Code visualization	Parameter	Explanation
H-1	Vacuum limit value H1	Switch-off value of the regulation function (Only with ctr = on and ON5 active)
h-1	Hysteresis value h-1	Hysteresis value of the regulation function
H-2	Limit value of vacuum H2	Switching value for part inspection
h-2	Hysteresis value h-2	Hysteresis value for piece inspection
tbl	Blowing time	Active only with E-1 or l-t
cal	Calibration	Vacuum sensor calibration

• SIO operating mode

In SIO mode all input and output signals are connected to the control directly or via intelligent junction boxes. For this purpose it is necessary to connect, in addition to the supply voltage, two input signals and an output signal through which the ejector communicates with the control. The following functions of the ejector case are used:

- Inputs
- Suction ON / OFF
- Blows ON / OFF
- Exit
- Feedback H2 (piece control)

Alternatively, the "Blow" signal can be dispensed with when the ejector is operated in the blowing mode "with internal time control".

In this way it is possible to operate on only one port of a configurable junction box (use 1xD0 and 1xDI).

Parameter settings and reading of the internal counters are carried out via the operating and display elements.

The energy and process control functions are not available in the SIO operating mode.

• IO-Link operating mode

IO-Link Version 1.1	
Vendor ID	805 (0x0325)
Device ID	0x0008
SIO-Mode	Yes
IO-Link Revision	1.1 (compatible with 1.0)
IO-Link Bitrate	38.4 kBd (COM2)
Minimum cycle time	3.4 ms
Processdata input	4 byte
Processdata output	2 byte

Process Data In	IO-Link Version 1.1	Data type	Access	Availability	Remark		
PD In Byte 0	Signal H2 (part present)	0	Boolean	ro	IO-Link V1.1	Vacuum is over H2 & not yet under H2-h2	
	Signal H1 (automatic air saving function)	1	Boolean	ro	IO-Link V1.1	Vacuum is over H1 & not yet under H1-h1	
	-	2	Boolean	ro	-	unused	
	CM-Autoset acknowledged	3	Boolean	ro	IO-Link V1.1	Acknowledge that the Autoset function has been completed	
	EPC-Select acknowledged	4	Boolean	ro	IO-Link V1.1	Acknowledge that EPC values 1 and 2 have been switched according to EPC-Select: 0 - EPC-Select = 00 1 - otherwise	
	Device status - green	5	Boolean	ro	IO-Link V1.1	Device is working optimally	
	Device status - yellow	6	Boolean	ro	IO-Link V1.1	Device is working but there are warnings	
PD In Byte 1	Device status - red	7	2 bit integrated	ro	IO-Link V1.1	Device is not working properly, there are errors	
	EPC value 1	7...0	8 bit integrated	ro	IO-Link V1.1	EPC value 1 (byte) Holds 8bit value as selected by EPC-Select (see PD Out Byte 0) EPC value 2 (word) Holds 16bit value as selected by EPC-Select (see PD Out Byte 0)	
PD In Byte 2	EPC value 2, high-byte	7...0	16 bit integrated	ro	IO-Link V1.1	EPC value 2 (word) Holds 16bit value as selected by EPC-Select (see PD Out Byte 0)	
PD In Byte 3	EPC value 2, low-byte	7...0	16 bit integrated	ro	IO-Link V1.1	EPC value 2 (word) Holds 16bit value as selected by EPC-Select (see PD Out Byte 0)	
PD Out Byte 0	Vacuum	0	Boolean	wo	IO-Link V1.1	Vacuum on/off	
	Blow-off	1	Boolean	wo	IO-Link V1.1	Activate Blow-off	
	Setting Mode	2	Boolean	wo	IO-Link V1.1	Vacuum on/off with continuous	
	CM Autoset	3	Boolean	wo	IO-Link V1.1	Perform CM Autoset function and save	
	EPC-Select	5.4	Boolean	wo	IO-Link V1.1	Select the function of EPC values 1 and 2 in PD In (content is 2 bit binary coded integer) 0: EPC value 1 = Input pressure (0.1 bar) EPC value 2 = System vacuum (1 mbar) 1: EPC value 1 = CM-Warnings (see ISDU 146 for bit definitions) EPC value 2 = Evacuation time t1 (1msec) 2: EPC value 1 = Leakage of last suction cycle (1mbar/sec) EPC value 2 = Last measured free-flow vacuum (1 mbar) 3: EPC value 1 = Primary supply voltage (0.1 Volt) EPC value 2 = Air consumption of last suction cycle (0.1 NL)	
	Profile-Set	7..6	Boolean	wo	IO-Link V1.1	Select Production Profile (content is 2-bit binary coded integer) 0: Activate Production Setup Profile P0 1: Activate Production Setup Profile P1 2: Activate Production Setup Profile P2 3: Activate Production Setup Profile P3	
	PD Out Byte 1	Input pressure	7..0	8 bit integrated	wo	IO-Link V1.1	Pressure value from external sensor (unit: 0.1 bar)

5 Limitations of use

- With the exception of specific intended applications, do not use the product in environments where there is the risk of direct contact with corrosive gas, chemical products, salt water, water or steam.
- If possible, do not install the device:
 - in closed and small spaces;
 - exposed to direct sunlight (if necessary, provide a shield);
 - near heat sources or in areas subject to sudden changes in temperature;
 - near power on parts with no proper insulation;
 - near conductors or electrical devices with high alternate or impulsive currents (danger of parasitic currents);
 - near sources of high intensity electromagnetic waves (antennas) (danger of parasitic currents and / or arcing of electric arcs).

6 Maintenance

- Check whether it is possible to have the product serviced at a technical assistance centre.
- Never disassemble units when pressurized
- Shut off all pneumatic, hydraulic and electric supplies before maintenance.

7 Environmental notes

- At the end of the product's life cycle, separate the relative materials to enable recycling.
- Observe all current standards in the country of use governing waste disposal.

Camozzi Automation S.p.A.
 Via Eritrea, 20/I
 25126 Brescia - Italy
 Tel. +39 030 37921
 www.camozzi.com

Assistenza clienti
 Tel. +39 030 3792790
 service@camozzi.com

Certificazione di Prodotto
 Informazioni relative a certificazioni di prodotto, marcatura CE, dichiarazioni di conformità e istruzioni productcertification@camozzi.com