STACCATO TECHNOLOGIES

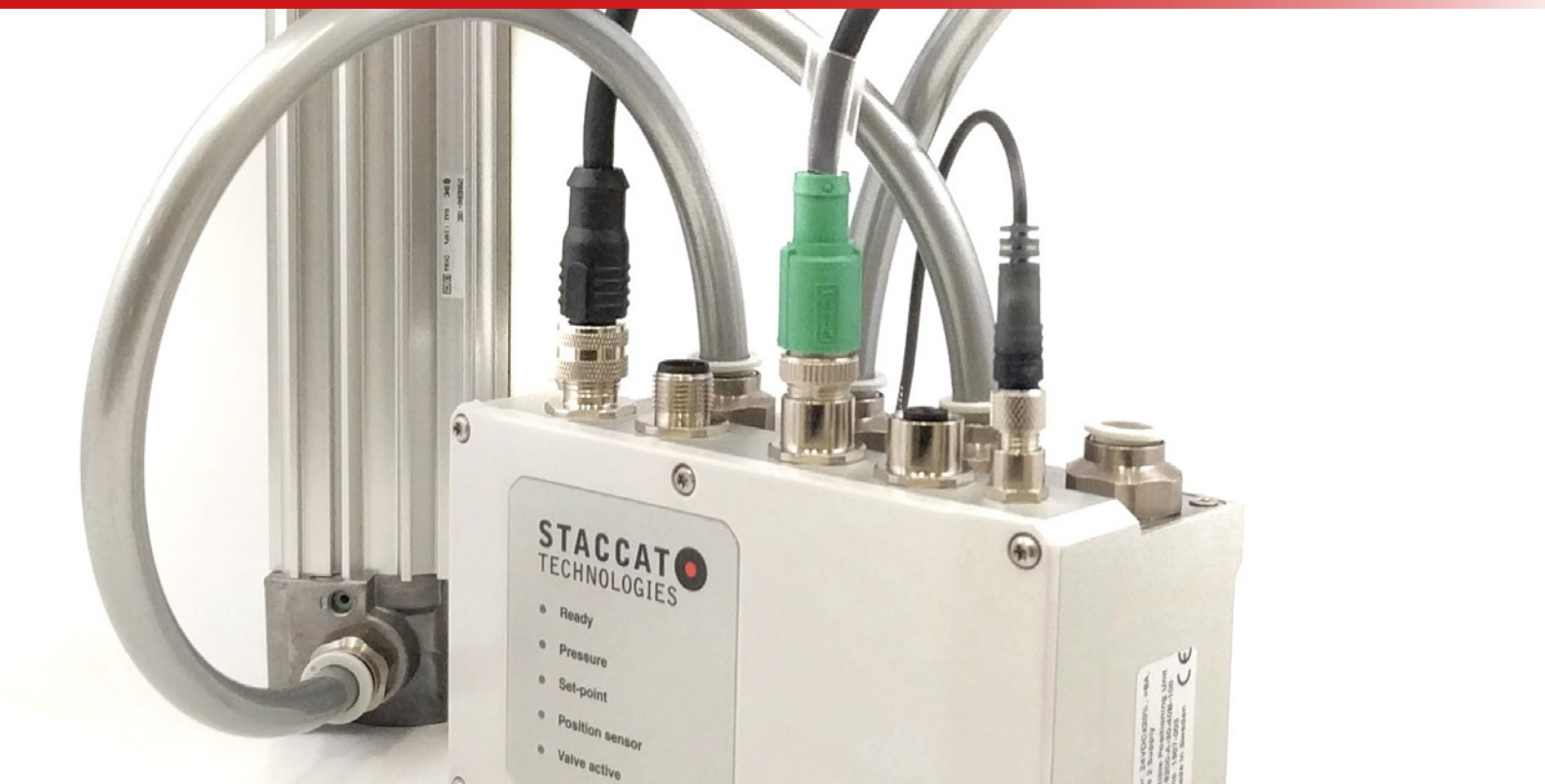
“Digital Pneumatics”

New possibilities for pneumatic systems

STACCATO TECHNOLOGIES

CE

Flexible Positioning Unit, FPU



Flexible Positioning unit, FPU

The FPU-unit is a fully embedded self-contained package with 4pcs of high-speed 2/2-valves, customized control electronics and user friendly software.

Complete positioning package consist of pneumatic actuator, position sensor and positioning unit. (+ fittings, tubing & silencer).

Pneumatic servo system designed for industrial environments. Integrated valves and control electronics enable fast actuator travel with high speed and accurate position control. Can be used to position all kinds of standard pneumatic actuators, including grippers, rotary and rodless actuators.

Key features

- Positioning system for double acting pneumatic actuators
- Position accuracy down to 0.1 mm
- Integrated pressure sensors
- Adjustable force setting and/or analog force control
- Adjustable speed setting and/or analog speed control
- “Enable” Function with selectable predetermined behaviour on shutdown
- Integrated adjustable soft-start
- Analog 4-20 mA, 0-10V, 1-5V control with monitor feedback
- Digital input position control for up to 8 pre-setable positions or modes
- I/O-link
- 3 PNP I/O channels
- Peak detect function
- Will automatically adjust for variable pressures, loads and leakages
- No directional valves, regulators and speed controllers required

Configuration

Part	Description	
Actuator	Type	Linear actuators, grippers, rodless, and rotary actuators
	Stroke lengths	5 to 5000 mm
	Bore sizes	Ø 12 to 500 mm
Assembly	- Any position. - Minimize tubing length for optimal performance.	
Position sensor	4-20 mA analog position sensors or angle sensors. SICK MPA/MPC, SMC D-MP, Festo SDAT, Metal Work LTS, Aventics SM6-AL etc.	
Pressure Sensors	Integrated in valve system for monitoring both actuator chambers.	
Weight	1.8 kg	
Customs stat no.	8481209090	
Country of Origin	Sweden	

Feature	Value
Protection class	IP67
Temperature range	0 to 60 °C
Certification	CE

Feature	Value	
Power Supply	Supply	24VDC ± 10 %, 8A peak
	Power consumption	10 W
Signal	Signal Type	Description
	Analog, Current 4-20 mA	M12 connector 5-pin A-code
	Analog, Voltage 1-5V, 0-10V	M12 connector 5-pin A-code
	I/O-Link & PNP I/O	M12 Connector, 12-pin
Compressed air	Pressure range	0.4-0.8 MPa / 5.8-116 Psi (consider actuator requirement)
	Air quality	- Filtered: 50 µm - Lubricated or unlubricated - For optimal performance, pressure should be stable

Properties

Units with smaller valve orifices' have higher accuracy, and versions with larger valve orifice's have higher speed, versions vary between 0.5 and 5.1mm orifice. Below data is without external load. Load conditions and longer stroke length will impact achievable accuracy.

(Evaluation FPU sample is available for test in application)

Note: Most pneumatic actuators have a recommendation of max. 1m/s.

Feature	Valve orifice	Cylinder bore size					
		Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80
Maximum speed	Ø 0,5	0,08 m/s	0,04 m/s	0,03 m/s	0,02 m/s	0,01 m/s	0,01 m/s
	Ø 0,7	0,15 m/s	0,09 m/s	0,07 m/s	0,04 m/s	0,02 m/s	0,01 m/s
	Ø 1,0	0,3 m/s	0,2 m/s	0,1 m/s	0,1 m/s	0,05 m/s	0,03 m/s
	Ø 1,5	0,7 m/s	0,4 m/s	0,3 m/s	0,2 m/s	0,1 m/s	0,06 m/s
	Ø 2,0	1,0 m/s	0,7 m/s	0,5 m/s	0,4 m/s	0,2 m/s	0,1 m/s
	Ø 3,0	2,6 m/s	1,6 m/s	1,0 m/s	0,7 m/s	0,4 m/s	0,3 m/s
	Ø 4,0	4,7 m/s	2,9 m/s	1,8 m/s	1,2 m/s	0,7 m/s	0,5 m/s
	Ø 5,1	7,6 m/s	4,6 m/s	3,0 m/s	1,9 m/s	1,2 m/s	0,7 m/s
Feature	Valve orifice	Cylinder bore size					
		Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80
Repeatability	Ø 0,5	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm
	Ø 0,7	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm
	Ø 1,0	± 0,13 mm	± 0,10 0mm	± 0,10 mm	± 0,10 mm	± 0,10 mm	± 0,10 0mm
	Ø 1,5	± 0,29 mm	± 0,18 mm	± 0,11 mm	± 0,10 mm	± 0,10 mm	± 0,10 mm
	Ø 2,0	± 0,51 mm	± 0,31 mm	± 0,20 mm	± 0,13 mm	± 0,10 mm	± 0,10 mm
	Ø 3,0	± 1,15 mm	± 0,70 mm	± 0,45 mm	± 0,29 mm	± 0,18 mm	± 0,11 mm
	Ø 4,0	± 2,05 mm	± 1,25 mm	± 0,80 mm	± 0,51 mm	± 0,32 mm	± 0,20 mm
	Ø 5,1	± 3,33 mm	± 2,03 mm	± 1,30 mm	± 0,83 mm	± 0,52 mm	± 0,33 mm

Positioning unit Part no

The positioning unit will be pre-set for the chosen actuator. Users can re-configure actuator type, bore size, stroke, speed etc. with the help of CAN & Software set 3203001.

Valve orifice	
05	0.5 mm
07	0.7 mm
10	1.0 mm
15	1.5 mm
20	2.0 mm
30	3.0 mm
40	4.0 mm
51	5.1 mm

Actuator type	
B	Basic
D	Double piston
W	Double rod
R	Rodless

Position Sensor	
S	Included
	Not included

FPU - 30 - 40 B - 200 - C10 - S

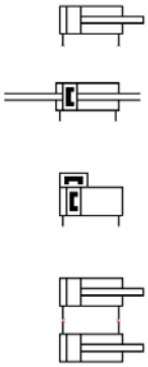
Actuator Bore size	
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm
(*)	Other

Actuator Stroke (mm)	
25	25 mm
50	50 mm
100	100 mm
200	200 mm
320	320 mm
(*)	Other

* Enter required number

Connection	
	G 3/8"
C6	6 mm Fitting
C8	8 mm Fitting
C10	10 mm Fitting
C07	1/4" Fitting
C09	5/16" Fitting
C11	3/8" Fitting

Actuator types



Basic (Standard)

Double (Through) Rod

Rodless

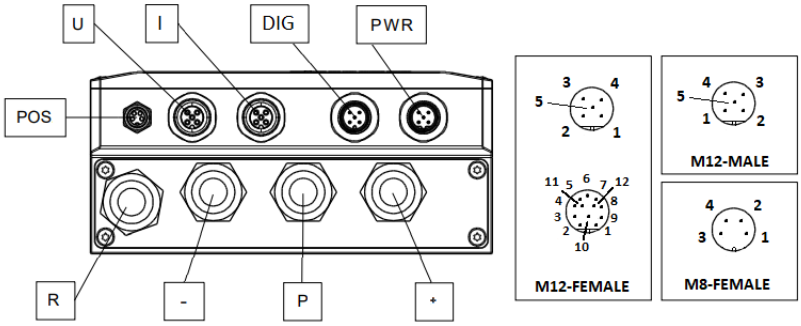
Double Piston (Twin Rod)

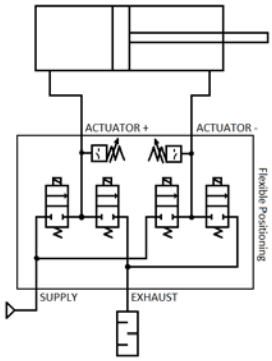
note: Magnetic coupled rodless actuators have high initial friction, and function can be impaired on bore sizes below Ø32.

LED Indication

LED	Description
Ready	Led ON indicates position system is functional. - flashing, system not ready. - When system is started, system will initiate for 1s. Led will flash during this time.
Pressure	Led ON indicates pressure is ok. - flashing indicates pressure is outside recommended range.
Set Point	Led ON indicates set-point is ok. - flashing indicates set-point signal is not ok.
Position Sensor	Led ON indicates position sensor is ok. - flashing indicates position sensor signal is not ok.
Valve Active	ON when any of the valves in positioning unit is active.

Wiring & Setup





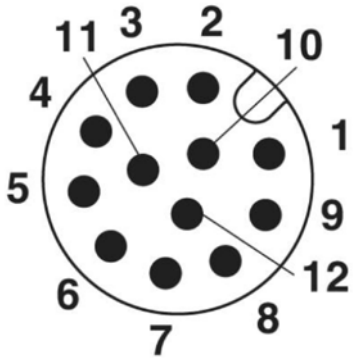
Pneumatic connection	Port	
G 3/8" Female thread	R	Exhaust
	-	Actuator retraction
	P	Supply pressure
	+	Actuator extension

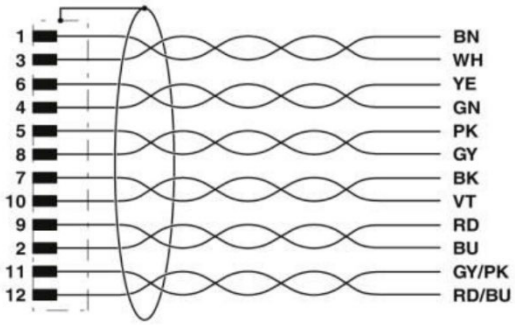
Electrical Connection	Description	Connector type	Pinning	
POS	Position sensor input.	M8 4 pole, Female	1	+24V out
			2	4-20 mA
			3	GND
			4	I/O-link
U	Set-point input, 1-5V, 0-10 V Analog voltage.	M12 5 pole, A-code female	1	+24V out
			2	Set-point, 0-10 V
			3	GND
			4	Position, 0-10 V
			5	GND
I	Set-point input, 4-20 mA Analog current.	M12 5 pole, A-code female	1	+24V out
			2	Set-point, 4 to 20 mA
			3	GND
			4	Position, 4 to 20 mA
			5	GND
DIG	Digital interface.	M12 12-pole, A-code male	1	CAN L
			2	CAN H
			3	GND
			4	Output, 1 (PNP)
			5	Output, 2 (PNP)
			6	Output, 3 (PNP)
			7	Input, 1 (PNP)
			8	Input, 2 (PNP)
			9	Input, 3 (PNP)
			10	24V Output for I/O-link slave
			11	I/O-Link Communication
			12	I/O-Link GND
PWR	Power supply.	M12 5 pole, B-code Male	1	+24V
			2	GND
			3	Not used
			4	Not used
			5	GND

The CAN-port is used for factory set-up and re-configuration with staccato software. CAN & Software set. Part no; **3203001**.

Wiring (DIG)

I/O Connection





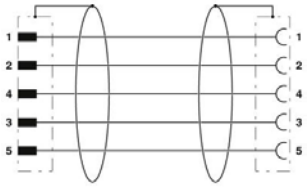
Circuit diagram
Contact assignment of the M12 plug

Connection for cables 1430048, 1430051 & connector 1404411

Pin	Colour	Function	Explanation
1	Brown	CAN L	Communication with CAN-Dongle
2	Blue	CAN H	
3	White	GND	0 V (-)
4	Green	DO 1	PNP Out (1)
5	Pink	DO 2	PNP Out (2)
6	Yellow	DO 3	PNP Out (3)
7	Black	DI 1	PNP IN (1)
8	Grey	DI 2	PNP IN (2)
9	Red	DI 3	PNP IN (3)
10	Violet	I/O-Link +24 V Device	24 V from I/O-link master
11	Grey/Pink	I/O-Link CQ Device	I/O-Link Communication
12	Red/Blue	I/O-Link GND Device	I/O-Link GND

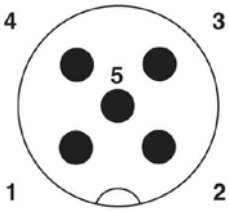
Power Cable 4354023 (M12 B-code)

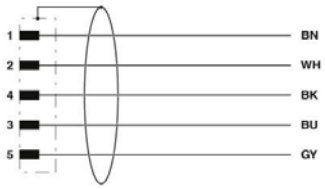
Pin	Colour	Function	Explanation
1	White	+24V	+ 24VDC +/- 10%
2	Brown	GND	Ground (-)
3	Green	N.C.	Not used
4	Yellow	N.C.	Not used
5	Grey	GND	Ground (-)



Signal Cable 1500732 (M12 A-code)

Pin	Colour	Function	Explanation
1	Brown	+24V out	+ 24VDC +/- 10%
2	White	Set-point, Current or volt	Target Position
3	Blue	GND	Not used
4	Black	Position, Current or volt	Feedback signal
5	Grey	GND	Ground (-)





Accessories

Item	Part no	Description/Comment	
CAN adapter kit	3203001	CAN Adapter, T-Connection, Cables & Terminating resistor. Enable communication between PC software and positioning unit. Used for changing parameters, firmware update etc.	

Power supplies

Item	Part no	Description/Comment	
Power supplies	3202001	Power supply, type F (European plug)	
	3202001-UK	Power supply, type G (UK & Ireland plug)	
	3202001-ZA	Power supply, type M (South African plug)	
	3202001-N	Power supply, type B (JP & Americas plug)	
	3202001-AU	Power supply, type I (AU, NZ plug)	

Cables, connectors and conversions

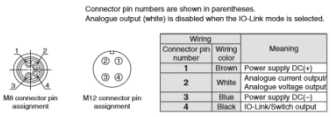
Item	Part no	Description/	
10m Power Supply cable.	4354023	M12 5-pole B-Code, female open end (Shielded)	
Position sensor extension cable, 1.5m.	1455735	4-pin M8, Male-female (Shielded)	
Position sensor extension cable, 3m.	1574603	4-pin M8, Male-female (Shielded)	
Position sensor extension cable, 5m.	1571525	4-pin M8, Male-female (Shielded)	
Analog Signal extension cable, 1.5m	1500907	M12 5-pole A-Code, Male-female (Shielded)	
Analog Signal extension cable, 3m	1500910	M12 5-pole A-Code, Male-female (Shielded)	
Analog Signal extension cable, 5m	1693092	M12 5-pole A-Code, Male-female (Shielded)	
Analog Signal cable, 10m	1500732	M12 5-pole A-Code, Male, open end (Shielded)	
I/O Extension Cable, 3m.	1402551	M12 12-pin, Male-female, (Shielded)	
I/O-Cable, 1.5m.	1430048	M12 12-pin, Male Open end, (Shielded)	
I/O-Cable, 3m.	1430051	M12 12-pin, Male Open end, (Shielded)	
CAN-Cable	2112030009	M12, 5-pin, Female A-code – M12 12-pin, Male. (Included in CAN-Set)	
I/O-Link cable	2112030015	M12, 5-pin, female A-code – M12 12-pin, Male.	

Conversion M8-M12

Can be used when an M12 position Sensor is used. Intended for use with SMC D-MP*C and other M12 sensors with standard pinning configuration

Master-Slave adapter cable

Used when a position sensor from another actuator is used as master for a FPU, (mirrored / Copy movement)



Item	Part no		
Adapter	1519736	Male M8-female M12 A-code,	
Master-Slave adapter cable, 0.3m.	1694923	Female M8-Male M12 A-code,	
M12 Lid, Male thread	1680539	For internal (female) thread, M12. Fits on Analog and DIG ports.	
M12 Lid, Female thread	1560251	For external (male) thread, M12. Fits on FPU PWR	

Loose connectors

Item	Part no	Descripton	Picture
Power supply connector	1424676	Female M12 5-pole Shielded B-code Cable Ø 4-8mm	
Analog signal connector	1424658	Male M12 5-pole Shielded A-code Cable Ø 4-8mm	

Position sensor connector	1441053	4-pole, Female M8 Cable Ø 2.5-5 mm	
I/O Connector	1404410	M12 12-pole, (DIG) CAN, I/O-Link & I/O Cable Ø 6-8mm	

Fittings and silencers

Plug, 3/8”	107-F03-OR	G 3/8”, O-ring seal	
Straight fitting	KQ2H10-G03N	G 3/8”-10mm tube O-ring seal	
Straight fitting	KQ2H08-G03N	G 3/8”-8mm tube O-ring seal	
Straight fitting	KQ2H06-G03N	G 3/8”-6mm tube O-ring seal	
Straight fitting	KQ2H11-U03N	3/8” thread, 3/8” tube O-ring seal	
Straight fitting	KQ2H09-U03N	3/8” thread, 5/16” tube O-ring seal	
Straight fitting	KQ2H07-U03N	3/8” thread, ¼” tube O-ring seal	
Silencer assembly	2112010001	½” high noice reduction silencer with fitting & 1m. 10mm. tubing.	
Silencer, 3/8”	ANA1-03	For direct mounting	

Mounting brackets

Mounting plate	21168402	Stainless bracket kit for wall mounting. Can be turned either way. M8 threaded holes, (M6 screws pass through)	
Mounting plate	21168403	As above, side version	
Vibration damping feets, kit	2112030011	4 pcs of rubber isolation spacers. Height 10mm.	
DIN-Bracket	2116841	For bottom mounting on DIN-rail	
Din Rail, Aluminum	21168421	148mm (for one unit, flush mounting)	
	21168422	298mm (for two positioning units)	
	21168423	985.5mm	
Mounting plate	21168401	Bracket kit for side & bottom mounting, std, 140mm.	
	2116840	Short version, 120mm	

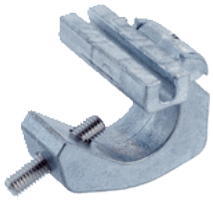
Position sensors

Measuring Range	Mounting, Connection	Part no	Picture
25 mm	C-Slot, M8	D-MP025B	
50 mm	C-Slot, M8	D-MP050B	
100 mm	C-Slot, M8	D-MP100B	
200 mm	C-Slot, M8	D-MP200B	
25 mm	C-Slot, M8	MPS-025CLTP0	
50 mm	C-Slot, M8	MPS-050CLTP0	
100 mm	C-Slot, M8	MPS-100CLTP0	
200 mm	C-Slot, M8	MPS-200CLTP0	
32 mm	T-Slot, M8	MPS-032TSTP0	
64 mm	T-Slot, M8	MPS-064TSTP0	
96 mm	T-Slot, M8	MPS-096TSTP0	
128 mm	T-Slot, M8	MPS-128TSTP0	
160 mm	T-Slot, M8	MPS-160TSTP0	
192 mm	T-Slot, M8	MPS-192TSTP0	
224 mm	T-Slot, M8	MPS-224TSTP0	
256 mm	T-Slot, M8	MPS-256TSTP0	
107 mm	Bracket, M8	MPA-107THTP0	
143 mm	Bracket, M8	MPA-143THTP0	
179 mm	Bracket, M8	MPA-179THTP0	
215 mm	Bracket, M8	MPA-215THTP0	
287 mm	Bracket, M8	MPA-287THTP0	
323 mm	Bracket, M8	MPA-323THTP0	
359 mm	Bracket, M8	MPA-359THTP0	
395 mm	Bracket, M8	MPA-395THTP0	
431 mm	Bracket, M8	MPA-431THTP0	
467 mm	Bracket, M8	MPA-467THTP0	
503 mm	Bracket, M8	MPA-503THTP0	
539 mm	Bracket, M8	MPA-539THTP0	
575 mm	Bracket, M8	MPA-575THTP0	
611 mm	Bracket, M8	MPA-611THTP0	
647 mm	Bracket, M8	MPA-647THTP0	
683 mm	Bracket, M8	MPA-683THTP0	
719 mm	Bracket, M8	MPA-719THTP0	
755 mm	Bracket, M8	MPA-755THTP0	
791 mm	Bracket, M8	MPA-791THTP0	
827 mm	Bracket, M8	MPA-827THTP0	
863 mm	Bracket, M8	MPA-863THTP0	
899 mm	Bracket, M8	MPA-899THTP0	
935 mm	Bracket, M8	MPA-935THTP0	
971 mm	Bracket, M8	MPA-971THTP0	
1007 mm	Bracket, M8	MPA-1007THTP0	
3m	Wire, 1.5m cable	BCG08-K1KM03PP	
5m	Wire, 1.5m cable	BCG13-K1KM05PP	

Contact Staccato if you need other types of sensors like laser, etc.

Sensor mounting brackets

MPS & D-MP sensors fit directly into C-Groove of most actuators

Item	Part no	Descripton	Picture
C-Slot bracket	BEF-KHZ-CT45	for T-Slot sensors (For C-slot profile actuator)	
T-slot bracket	2112020002	for C-Slot sensors (For T-slot profile actuator)	
T-Slot bracket	BEF-KHZT01MPA	For MPA Sensor	
Mounting band	BEF-KHZ-RC1-130	For C-slot sensors (Actuator Ø. 25-130)	
Mounting band	BEF-KHZ-RT1-130	For T-slot sensors (Actuator Ø. 25-130)	
Mounting band	BEF-KHZR085MPA	For MPA Sensors (Ø. 25-100)	
Mounting band	BEFKHZR210MPA	For MPA Sensors (Ø. 25-225)	
C-slot Tie-rod bracket	BEF-KHZ-PC1	For C-slot sensors (For actuators with tie-rod)	
T-slot Tie-rod bracket	BEF-KHZ-PT1	For T-slot sensors (For actuators with tie-rod)	
Tie-rod bracket	BEF-KHZPZ1MPA	MPA Sensor Tie-rod bracket (max 18mm tie rod)	

Actuator brand specific sensor brackets

Item	Part no	Descripton	Picture
T-Slot Bracket	BEFKHZTS080MPA	MPA Sensor bracket for SMC CP96Ø80	
T-Slot Bracket	BEFKHZTS100MPA	MPA Sensor bracket for SMC CP96Ø100	
T-Slot Bracket	BEF-KHZTS125MPA	MPA Sensor bracket for SMC CP96Ø125	
T-Slot Bracket	BEF-KHZPF032MPA	MPA Sensor bracket for Festo DSBC Ø32	
T-Slot Bracket	BEF-KHZPF040MPA	MPA Sensor bracket for Festo DSBCØ40	
T-Slot Bracket	BEF-KHZPF050MPA	MPA Sensor bracket for Festo DSBC Ø50	
T-Slot Bracket	BEF-KHZPF063MPA	MPA Sensor bracket for Festo DSBC Ø50	
T-Slot Bracket	BEF-KHZPF080MPA	MPA Sensor bracket for Festo DSBC Ø80	
T-Slot Bracket	BEF-KHZPF100MPA	MPA Sensor bracket for Festo DSBC Ø100	

Sensor magnet

For indirect measuring, actuators without magnets etc.

Accessory	Part no	
Magnet, mounting hole for M3 countersunk screw, Ø 15.2 mm, h. 6 mm	5327349	

Accessories

Additional accessories for flexible positioning units, FPU

Connection Box, 2112030012

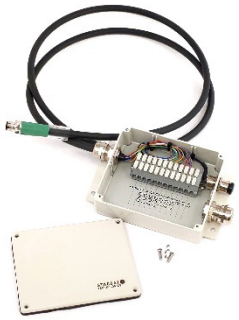
Terminal box with connection for digital I/O on FPU-unit & 1.5m Cable, connector for CAN-Dongle connection.

Equipped with cable gland and wire terminals

Allow simultaneous programming and monitoring during operation and set-up. 4 mounting holes for M4 screws.

Can be extended with extension cable 1402551 (3m).

Part no; **2112030012**



8 position dial, 2112030014

As above, also equipped with an 8 positon dial that combine the 3 PNP inputs into 8 combinations for manual control of pre-set positioning etc without the need for any other signals. Equipped with battery holder (2*AA) and an alternative power connection (3-24V)

Part no; **2112030014**

Remote control, 2112030013

Remote control for setup and useage.

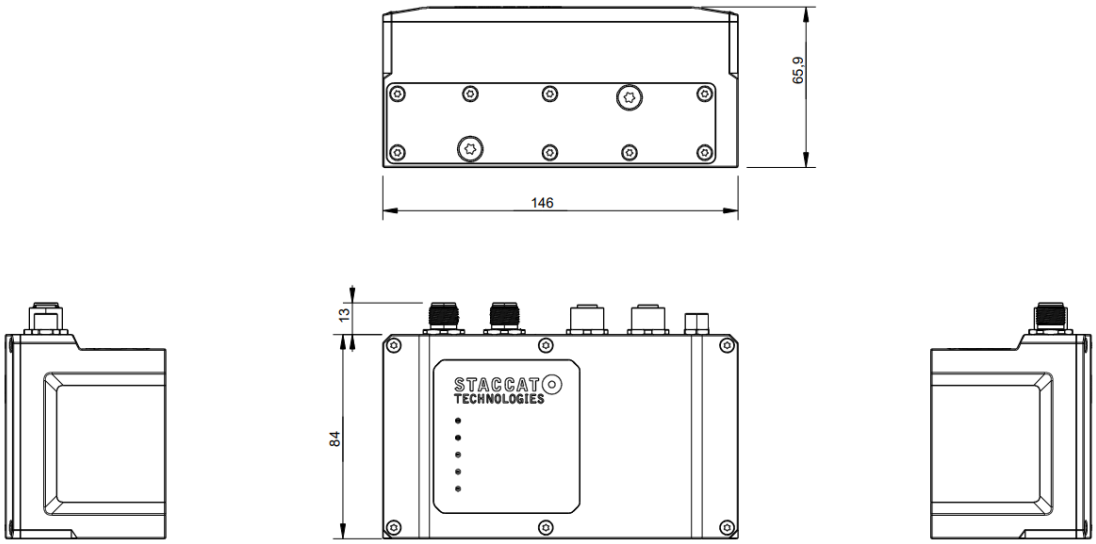
Allow users to manually set digital inputs and monitor outputs, battery operated, Equipped with hanging loop, 1.5m. Cable.

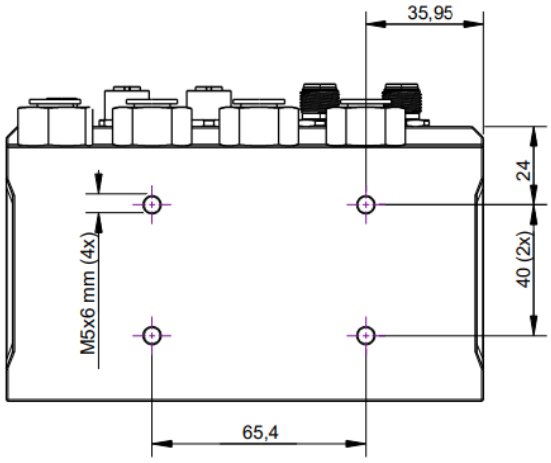
Latching buttons for Inputs, LED Display for outputs & inputs

Cable can be extended with extension cable 1402551 (3m).

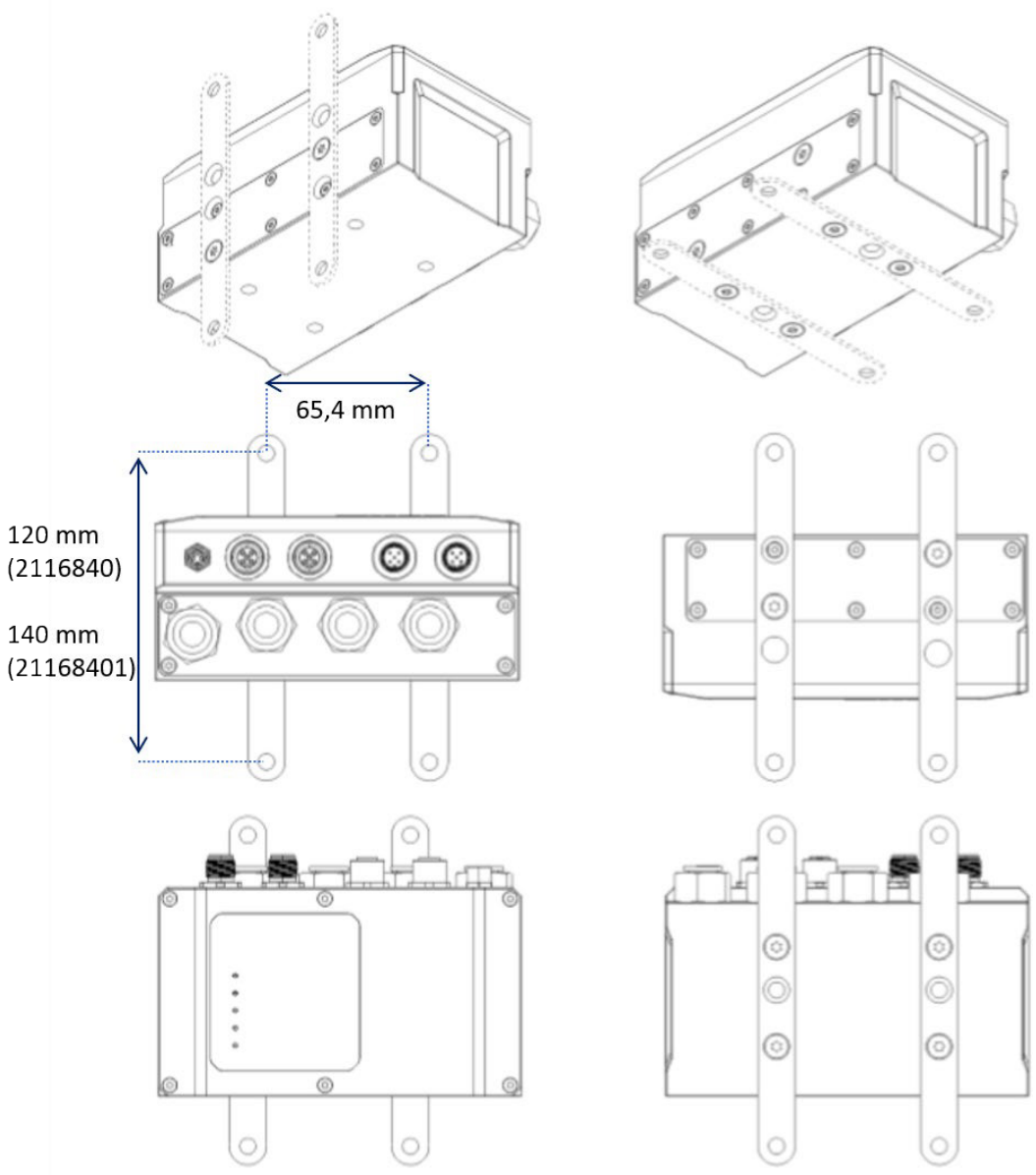
Part no; **2112030013**

Dimensions, FPU unit

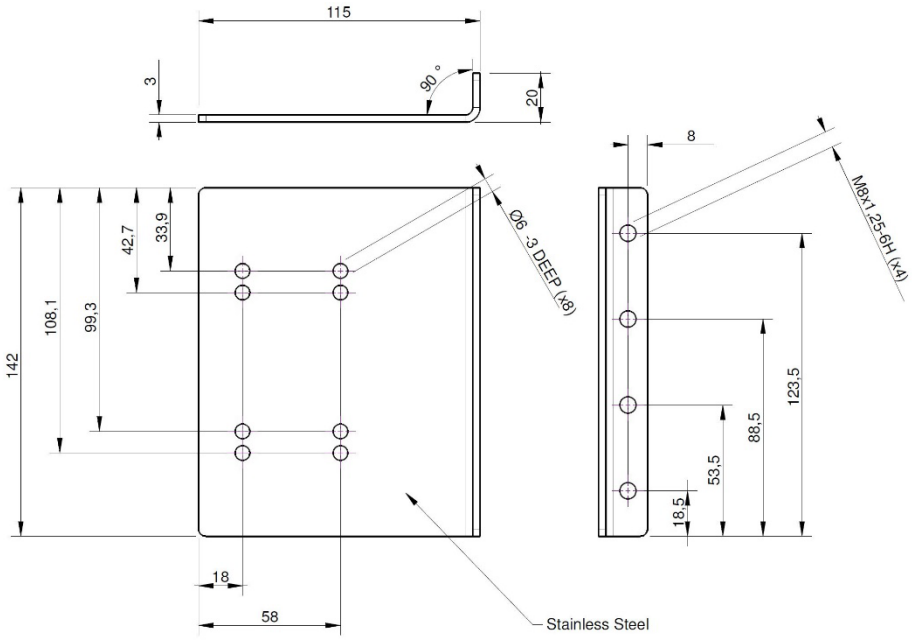




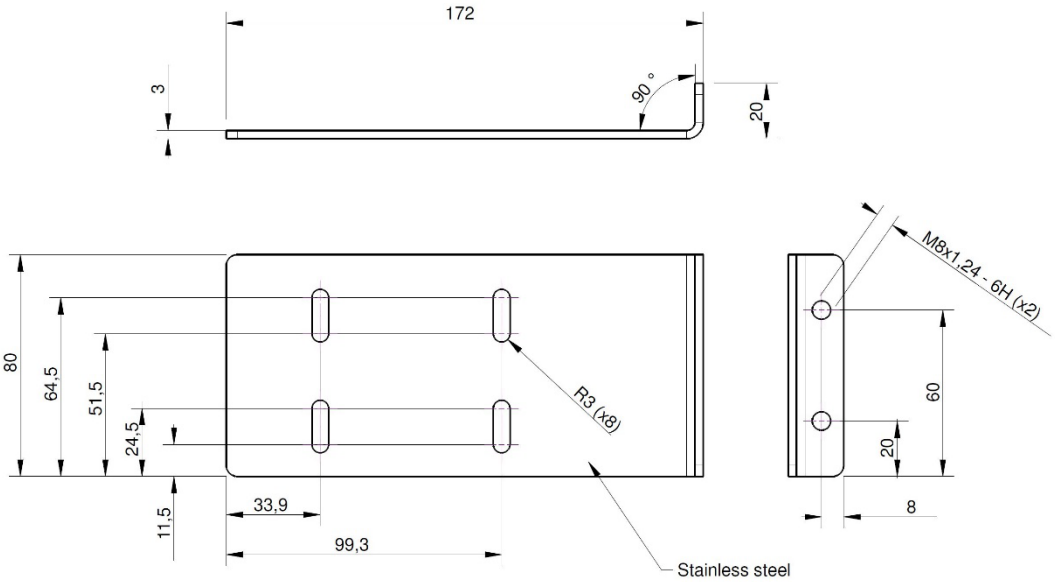
Mounting plate options, 2116840 & 21168401



21168402



21168403



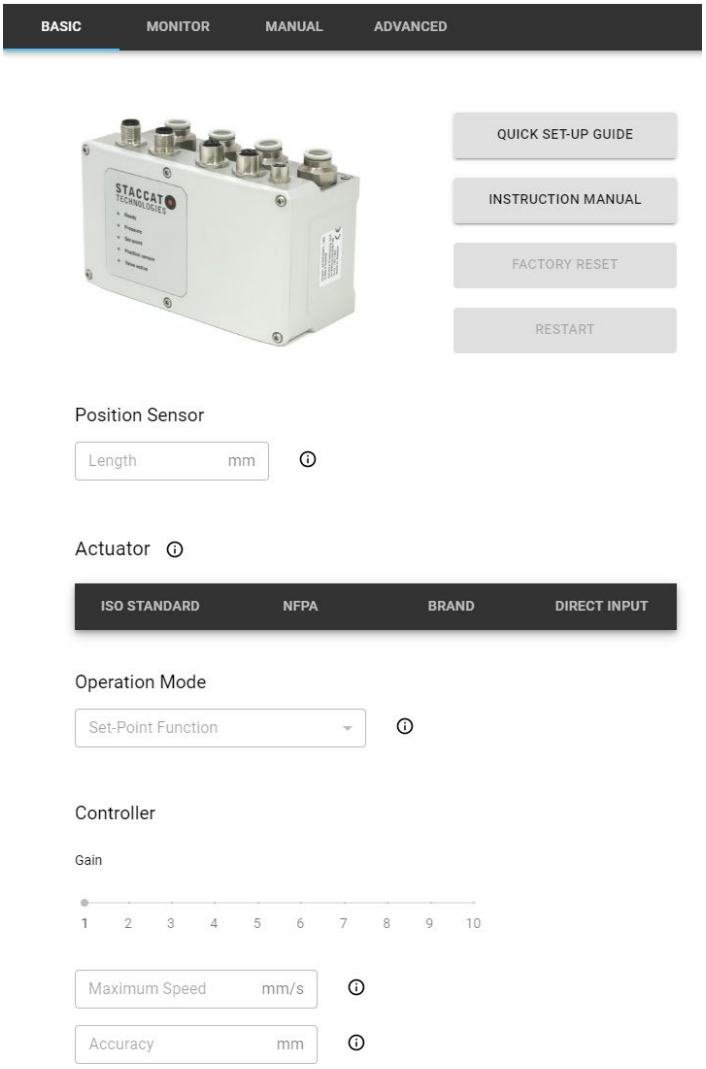
PC-Software

Connect to PC using Can dongle kit part nr **2112030009**.

Software, cables & terminating resistor is provided in the kit

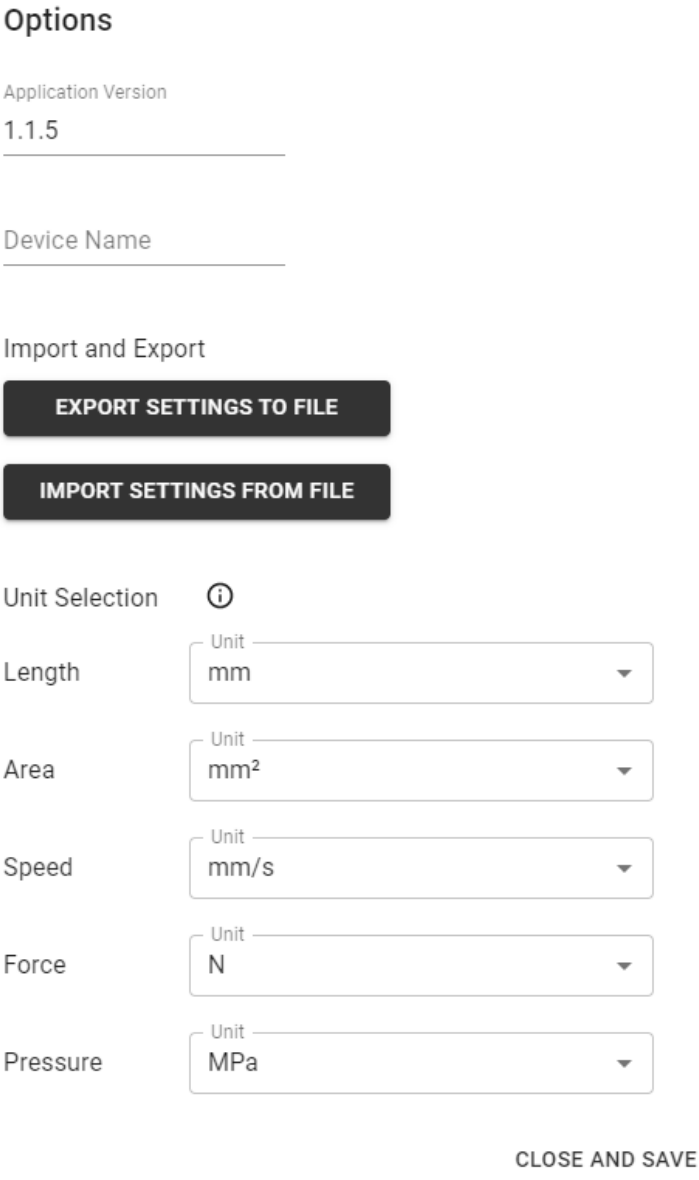
Set standard Basic setting Parameters

- Stroke length (feedback sensor operation length
- Input Actuator type.
  ISO standard
  NFPA
  Specific brand & type
- Direct input using bore and piston rod dimensions
- Set regulation characteristics with gain
- 1 Soft (slow) to 10 Aggressive (fast)
- Set maximum speed
- Set position accuracy



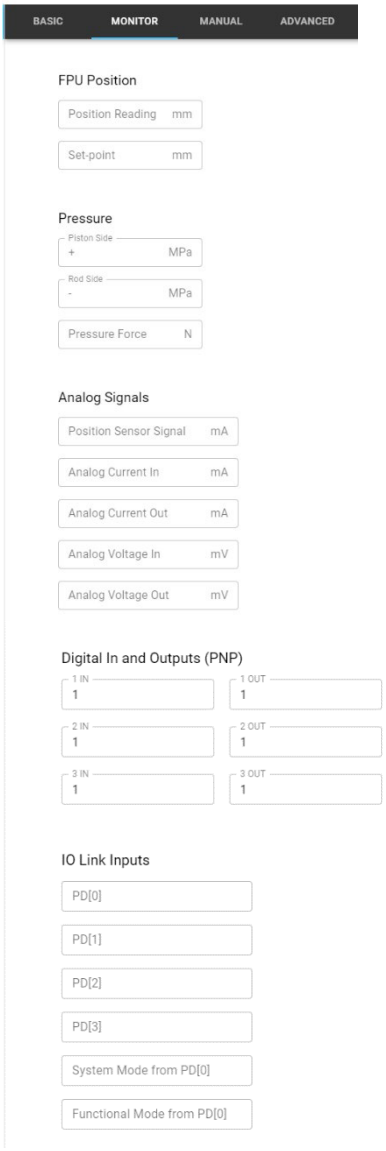
Options

- Option to name unit
- Check software version
- Import and export settings in separate file for remote support etc.
- Option to change preferred units



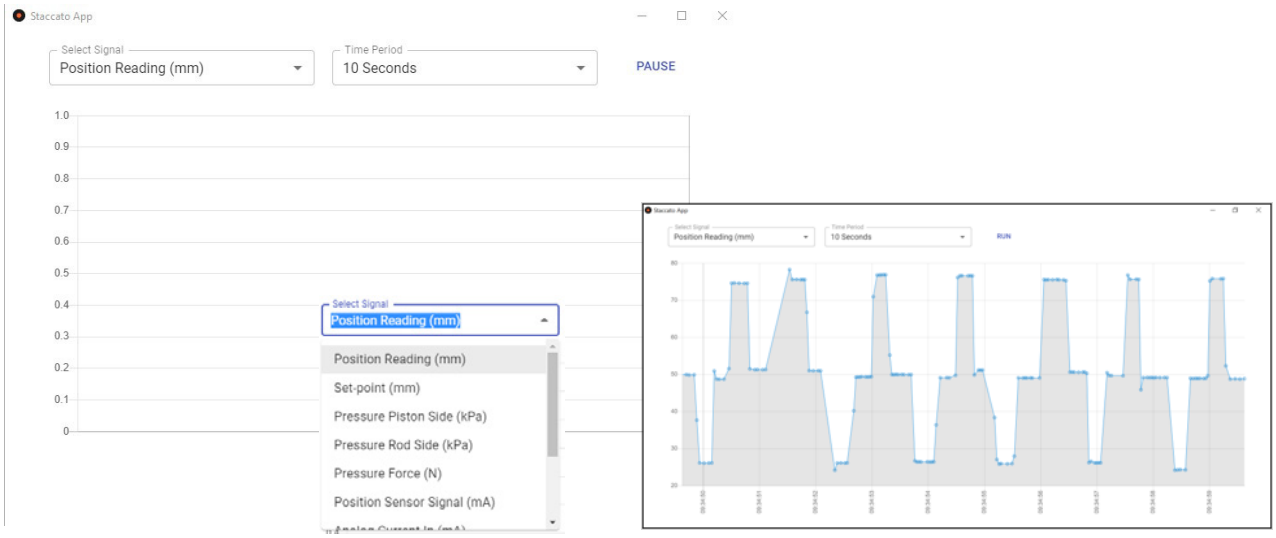
Check operation parameters using monitor

Simplifies setting and confirmation of operation parameters



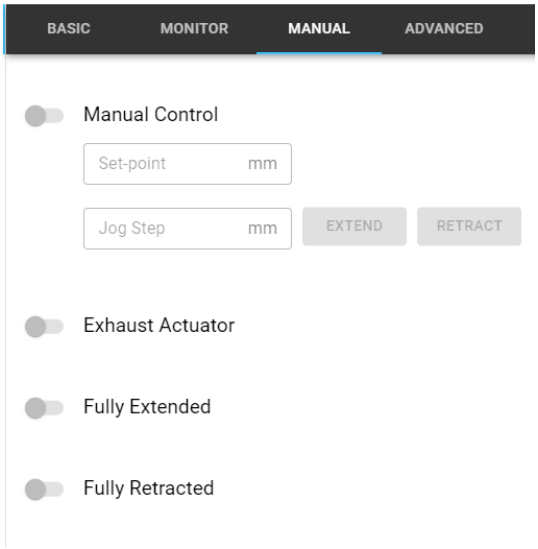
- Position in mm compared to set-point mm. (Based on position feedback sensor range length)
- Confirm pressure in actuator chambers and force applied
- Check analog input signal
- Check Analog feedback values
- Digital input and output state. On/Off
- I/O-Link input values

- Option to present values in graphs and select desired signal/value/position.



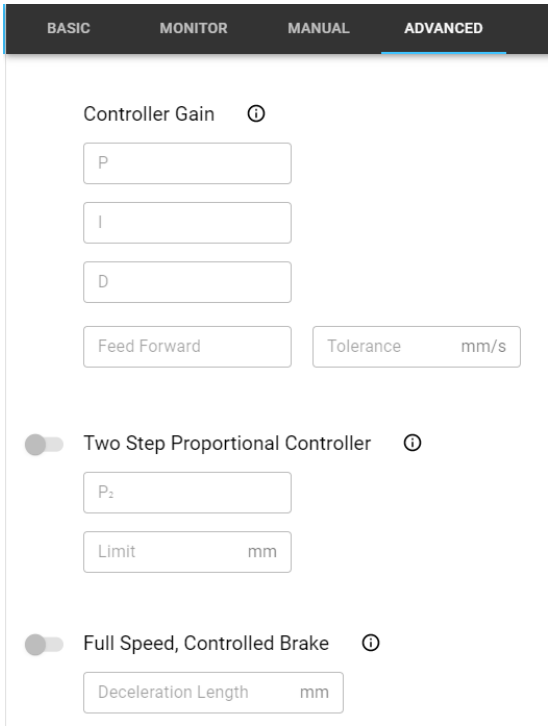
Test functionality with manual control from PC-software

Test set up parameters without control system. Speed and accuracy will be based on your setup parameters

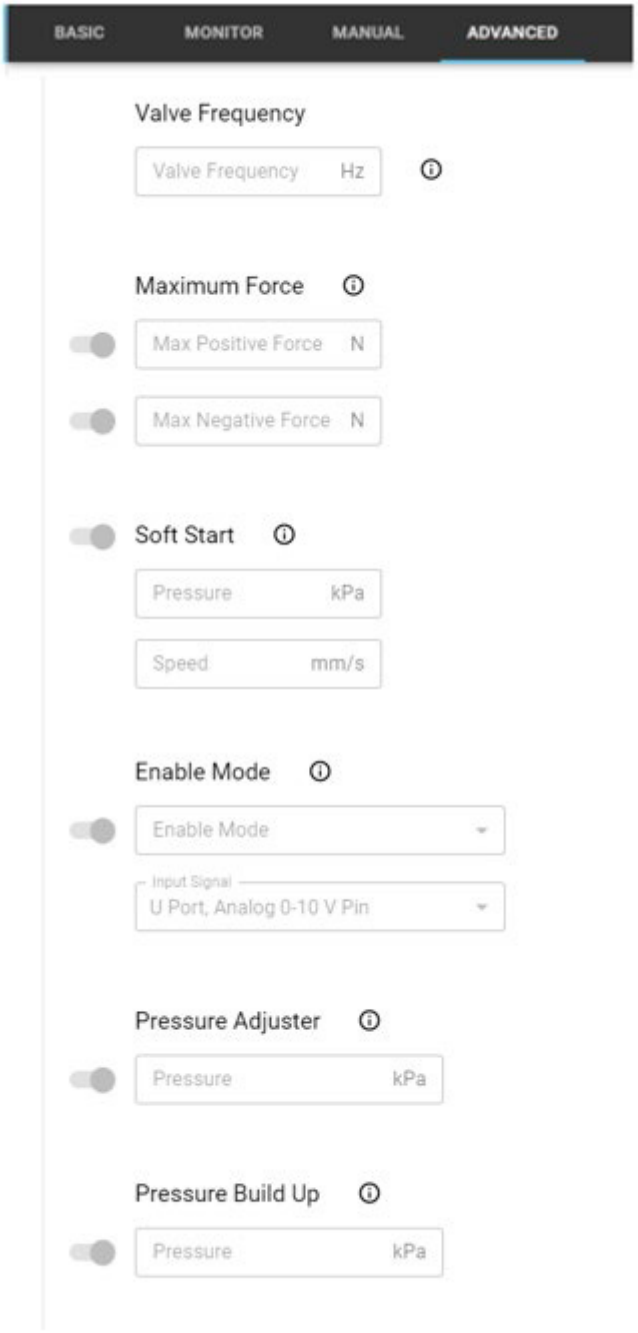


- Set point in mm or run forward and backwards using a desired jog step in mm
- Run actuator to end positions or exhaust system
- Exhaust actuator and use monitor function to confirm exact positions manually

Use advanced setting parameters



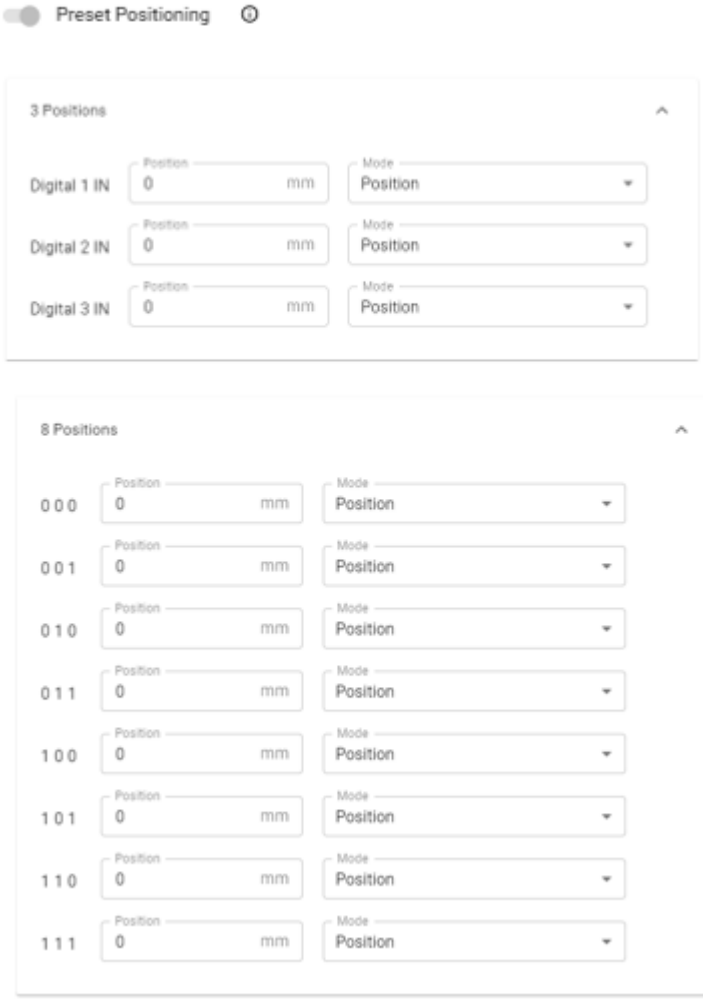
- Set regulator PID parameters manually. P is also set from Basic gain setting.
- Improve functionality when required to follow a highspeed movement pattern using feed forward and stating limit required for activating function.
- Two step control gives possibility to set additional P value. P2 is used outside chosen limit value from set point. Realising more aggressive regulator during transport movement and switching to standard P setting when approaching. Possible to avoid overshoot
- Full speed and controlled break will activate maximum possible speed to chosen deceleration length chosen (Limit from set point)



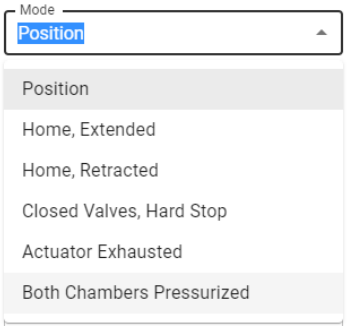
- Reduce valve frequency to reduce flow. Can reduce oscillation if FPU size is to big compared to actuator dimensions and performance requirements, or if long tubing is used.
- Set maximum force allowed individually depending on movement direction and application requirements.
- Soft start can be set in system.
- Enable mode can be activated. Set desired action and control via digital input or analogue voltage input port. (3-24V). Predetermined behaviour activated when enable signal is lost.
- Pressure adjuster and pressure build up can improve stability when operating with small low loads. Can improve stability.

Preset positioning

Use digital input to switch between selectable positions or other mode



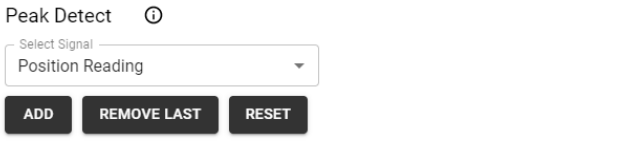
- Active 3 or 8 position options
- Set desired activation action mode

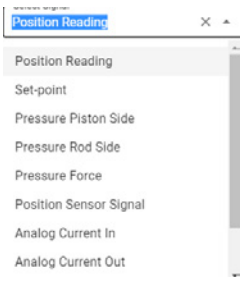


8 position dial, 2112030014 can be used for manual switching between the 8 positons/modes

Peak Detect

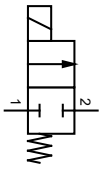
Save min/max parameters of desired Parameter. Add rows if you want to check several times.





High Speed valves, Series V27

High speed 2-port valves, suitable for various blow applications where high-speed response and high flow is beneficial, such as Sorting, Cooling, Drying. Also available for liquid applications such as spray, dispensing etc.

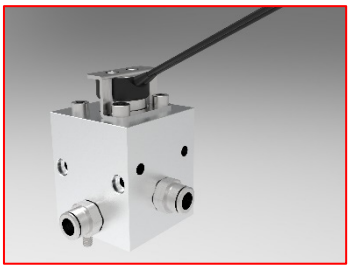


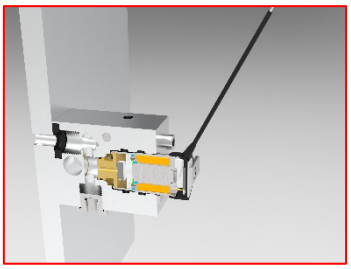
Direct acting 2-port valves.

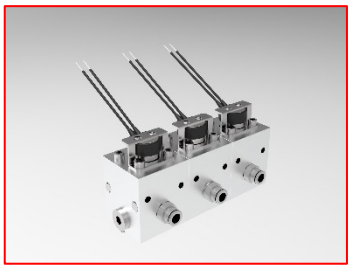
The Staccato valve principle has several world-wide patents that enable performance like no other valves on the market.

Key features

- Normally closed 2-port valves for gases and liquids
- Response time down to 1mS.
- Life time of up to 1Bn cycles
- Robust construction reduce sensitivity in harsh environments
- Available in various connection versions
- Cartridge, subplate, manifold mounting
- Several orifice sizes up to Ø 5.1mm
- Subplate prepared for manifold mounting
- Symmetric subplate allow mixed output directions in manifold
- Subplate prepared for various mounting methods
- 3-port version will be released 2021







Valves Part no

Valve type	
Air	VA27
Water	VW27

Orifice	Code
0.5	05
0.7	07
1	10
1.5	15
2	20
3	30
4	40
5.1	51

Voltage
24
48*

Version	
S	Standard
HE	High speed, embedded driver
E	Energy Saving, embedded driver
H	High speed

Require driver

Subplate materiel	
A	Aluminium
B	Brass*
S	Stainless steel*
	No Subplate

VA27 - F 30 - 24 DC - HE - G3 - A

Seal material	
P	PUR (std)
F	FKM
N	NBR
FC	Flour Silicone *

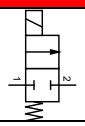
AC/DC
DC
AC*

Electric Connection	
G06	Grommet, 0.6m
G3	Grommet, 3m
P	Pin
D	DIN 43650C

*Made to order

The high speed version of the valve require a peak and hold driver to ensure quick response time and to reduce risk of overheating. The “Embedded” and the “Energy saving” versions have a peak and hold circuit included in the body. Additional benefit is that they reduce the power consumption to a level where you can control these high performance direct acting valves with normal transistor outputs on standard PLC’s.

General Features

Feature	Value
Valve unit function	2/2 normally closed valve 
Life time	> 1 billion cycles
Operating pressure	0 to 1 MPa (0-10bar)
Operating voltage	24 V DC Other voltages upon request.
Working medium	Air, gases and liquids.
Seal material	PU, FKM (other versions available on request).
Ambient temperature	0 to 60 °C
Assembly position	Any
Protection class	IP20 (PIN), IP67 (Grommet), IP65 (DIN)
Temperature range	0 to 60 °C
Certification	CE

Standard Version, Air, Gas(S)

Performance:

Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Flow (1)	16	30	58	120	200	460	700	880	SLPM
Opening time (1)	3.8	3.8	3.9	3.9	4.0	4.4	6.0	6,8	ms
Switching time (1)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	ms
Closing time (1)	1.8	1.8	1.8	1.8	2.1	1.6	2.0	2.2	ms

Driver Conditions:

Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Boost Current	2.0	2.0	2.0	2.0	2.0	2.5	3.0	3.0	A
Hold Open Current	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	A
Boost Time	5.0	5.0	5.0	5.0	6.0	6.0	10.0	10.0	ms
Coil Resistance	4.5	4.5	4.5	4.5	4.5	4.5	6.3	6.3	Ω

High Speed Version, Air, Gas(H)

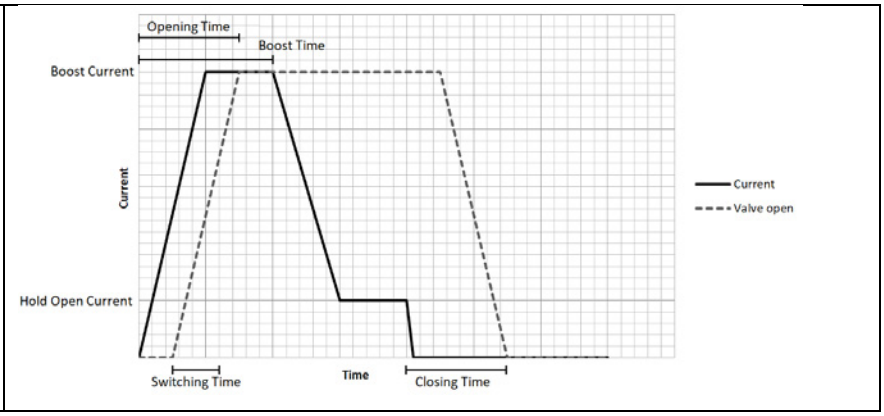
(Higher speed versions with special drive units can be made to order)

Performance:

Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Flow (1)	16	30	58	120	200	460	700	880	SLPM
Opening time (1)	1.5	1.5	1.6	1.7	1.8	1.7	2.3	2.6	ms
Switching time (1)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	ms
Closing time (1)	1.2	1.2	1.3	1.4	1.4	1.1	1.3	1.4	ms

Driver Conditions:

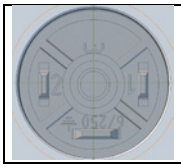
Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Boost Current	6.0	6.0	6.0	6.5	7.0	7.0	8.0	9.0	A
Hold Open Current	2.1	2.1	2.1	2.1	2.1	2.1	1.8	1.8	A
Boost Time	2.1	2.1	2.1	2.1	2.1	2.1	3.0	4.0	ms
Coil Resistance	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.7	Ω

Definitions	

1) Nominal Performance values at 0.5 MPa relative pressure

Energy Saving Version, Air, Gas, Embedded Driver(E)

All embedded driver versions are equipped with integrated DIN 43650C connector.
Connector:



Pin	Name	Comment
1	On/Off	0..1V=Off, 1,5..32V=On
2	+24Vdc	22V..32Vdc, >1.5A
⏚	GND	Return

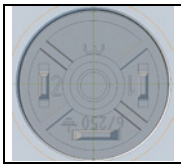
Performance:

Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Flow (1)	16	30	58	120	200	460	700	880	SLPM
Opening time (1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	10	ms
Switching time (1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	2.0	ms
Closing time (1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	9	ms

1) Nominal Performance values at 0.5 MPa relative pressure
2) To be released Q4-2020

High SpeedVersion, Air, Gas, Embedded Driver (HE)

All embedded driver versions are equipped with integrated DIN 43650C connector.
Connector:



Pin	Name	Comment
1	On/Off	0..1V=Off, 1,5..32V=On
2	+24Vdc	22V..32Vdc, >I_{supply}
⏚	GND	Return

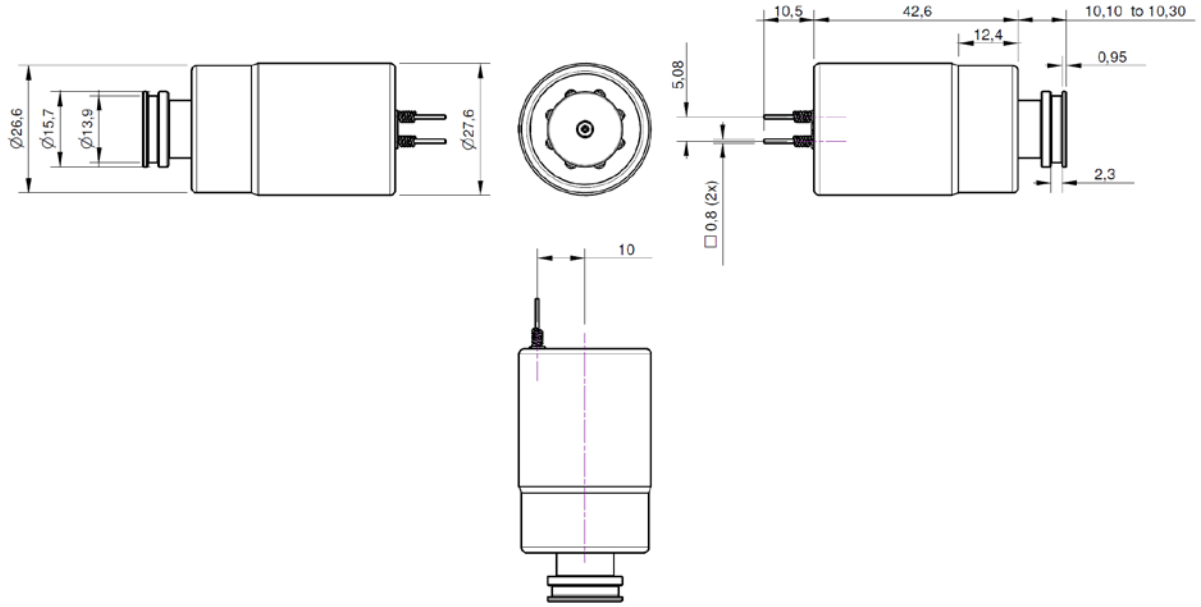
Performance:

Valve Orfice Ø (mm)	0.5	0.7	1.0	1.5	2.0	3.0	4.0	5.1	Unit
Flow (1)	16	30	58	120	200	460	700	880	SLPM
Opening time (1)	1.5	1.5	1.6	1.7	1.8	1.7	2.3	2.6	ms
Switching time (1)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	ms
Closing time (1)	1.2	1.2	1.3	1.4	1.4	1.1	1.3	1.4	ms
I_{supply}	6.0	6.0	6.0	6.5	7.0	7.0	8.0	9.0	A

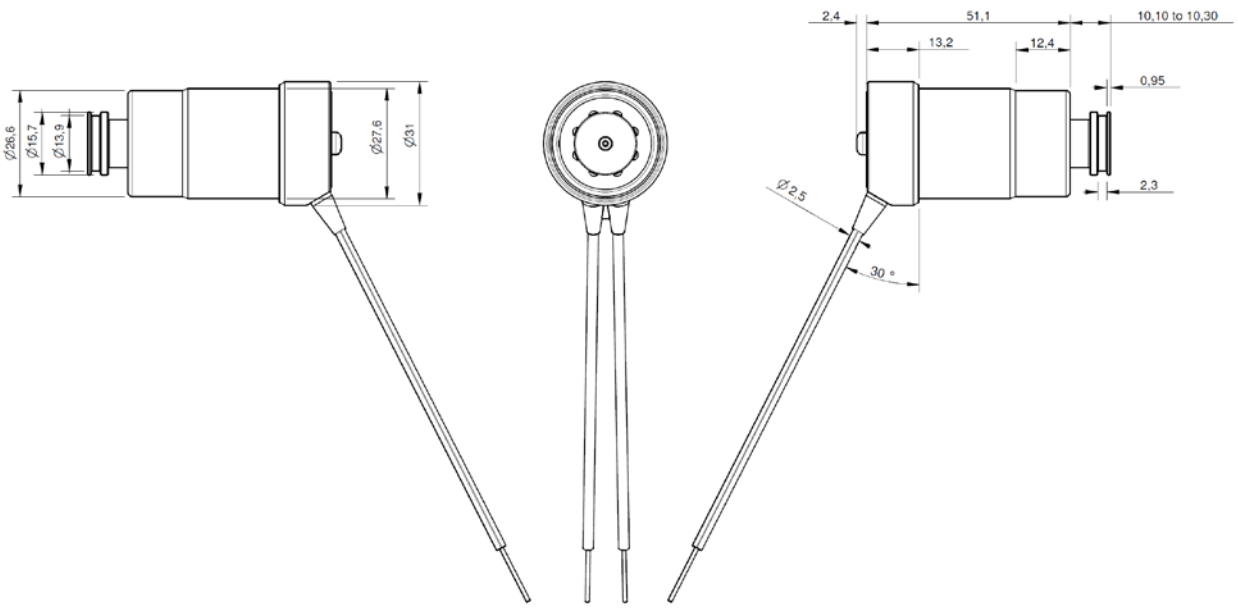
1) Nominal Performance values at 0.5 MPa relative pressure
To be released Q2-2021

Mechanical Dimensions

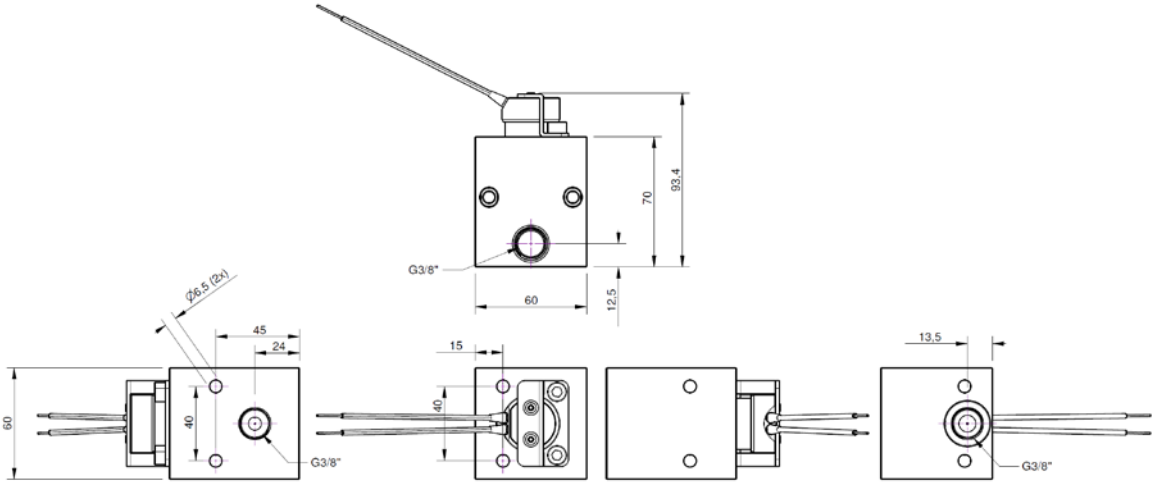
Valve (Pin version).



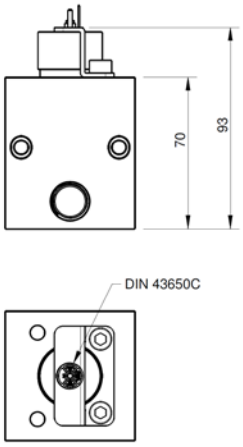
Valve (Grommet version).



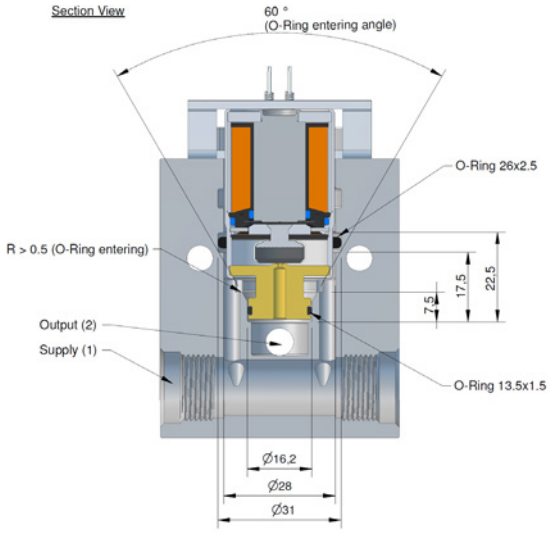
Subplate / Manifold block and Valve with grommet

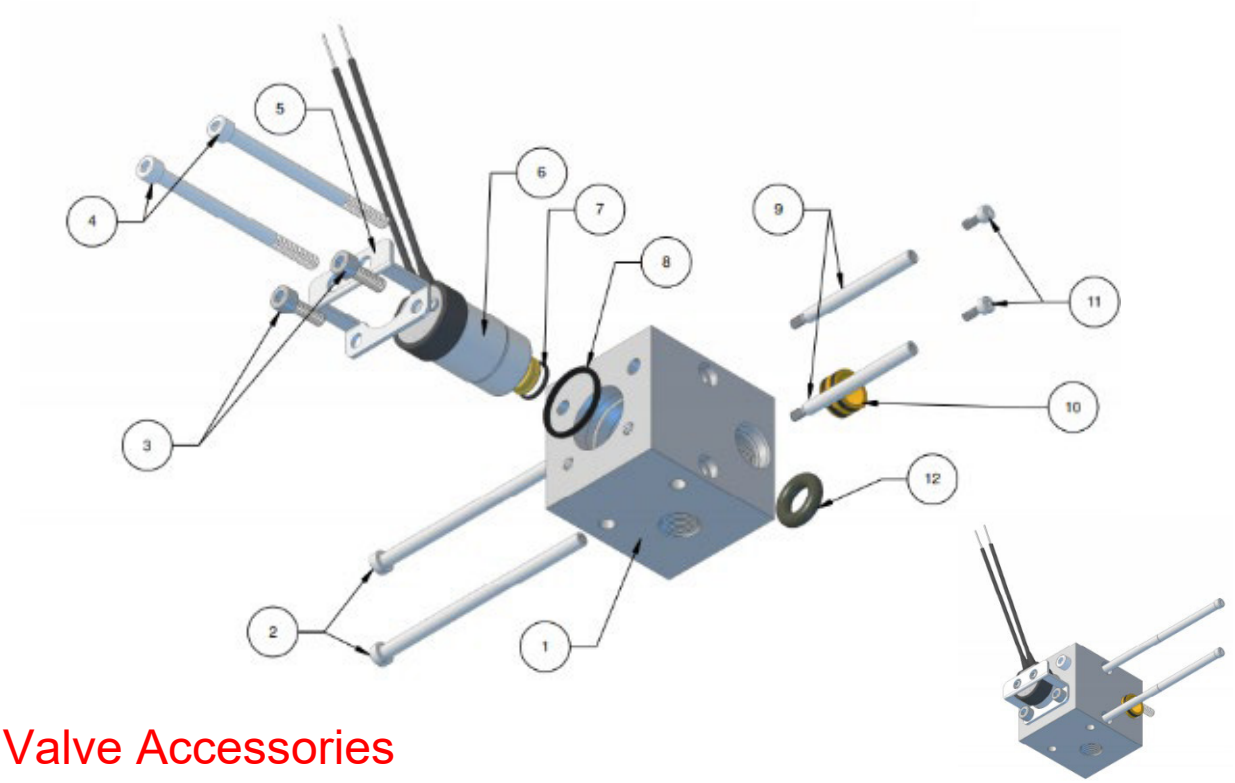


Subplate / Manifold block and Valve with DIN 43650C connector



Recomended dimensions for custom Designed manifolds





Valve Accessories

Accesories

Item	Part no	Description	Picture
Valve (6,7,8)	Various (order code in beginning of chapter)	Valve for cartridge mounting. O-Rings included.	
Subplate / Manifold block (1)	5111250	For single valves, can also be combined into manifolds. G3/8" Supply on side, Outlet ports side & bottom.	
Valve holder kit, standard (3, 5)	21168405	Holder for valves, with screws.	
Valve holder kit, low type (Only used for PIN-Type connection) (3, 5)	21168405	Holder for valves, with screws.	

Manifold kit, start, (For 2 stations), (2,10,11)	21168407	Tie rods for two stations, end nuts & sealed passage pipe assembly	
Tie rod kit, extension. 1 kit needed for each station from station 3. (9,10)	21168408	Extension tie rods, set of 2, Sealed passage pipe assembly	
Wall Mounting kit (4,12)	21168404	Screws (2xM6*90), O-Ring, (NBR, 12x6)	
Plug, 3/8”	107-F03-OR	G 3/8”, O-ring seal	
Straight fitting	KQ2H10-G03N	G 3/8”-10mm tube O-ring seal	
Straight fitting	KQ2H08-G03N	G 3/8”-8mm tube O-ring seal	
Straight fitting	KQ2H06-G03N	G 3/8”-6mm tube O-ring seal	
Straight fitting	KQ2H11-U03N	3/8” thread, 3/8” tube O-ring seal	
Straight fitting	KQ2H09-U03N	3/8” thread, 5/16” tube O-ring seal	
Straight fitting	KQ2H07-U03N	3/8” thread, ¼” tube O-ring seal	
Manual shut-off valve with exhaust function	VCS-1/8” VCS-1/4” VCS-3/8” VCS-1/2”	G 1/8” G 1/4” G 3/8” G 1/2”	
DIN-connector	2112030016	DIN43650C Connector with screw & gasket	

Tube Cutters

To ensure straight cut, minimizing risk of leakages

Accessory	Part no	
Plastic tube cutter for tube sizes under 12mm	TK-3	
Metal Tube cutter for tube sizes up to 16mm	TK-6	

Tube Holders

Multi-tube holder, to improve installations

Accessory	Part no	
6mm Tubing	TM-06	
8mm Tubing	TM-08	
10mm Tubing	TM-10	
12mm Tubing	TM-12	

Description	Order Code	
Leak detector set, with camera and memory for simplified reporting	LD510	
CS Leak reporter software for detailed ISO5001 reports	05540105	
CS Soft basic software. For analysing in charts & tables, can download data from detector	05547040	

Test & evaluation accessories

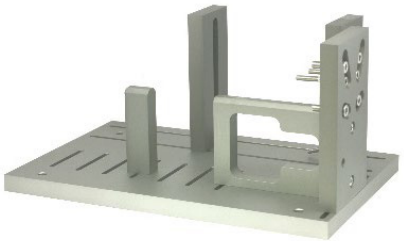
Test Kit , 5580109

Adjustable modular test kit.

Prepared for various sizes of pneumatic actuators etc.
Moveable stands and holders.

Made from hard anodized aluminium

Part no; **5580109**



Weight adaptors, 2112010001

Piston rod adaptors for standard weights with Ø25 or 1” hole, kit
Prepared for various sizes of pneumatic actuators etc. 3pcs, internal threads M10x1.25, M12x1.25, M16x1.5

External thread M25x3, 3 tightening nuts included.

Made from hard anodized aluminium

Part no; **2112010001**

SCIO I/O-system

The Scio I/O-system is a modular system developed and manufactured by Aros Electronics in Sweden. Aros Electronics is part of the same industry group as Staccato Technologies.

The Scio I/O-system is based around a powerful Ethernet I/P master and can be extended with various inputs and outputs based on your needs. Internal communication is done with a secure optic communication. Safe outputs are in the process of being certified.

Feature	Specification			
	SCIO-EI-A	SCIO-S-A	SCIO-S-B	SCIO-S-C
Power Supply	Class 2, 24VDC, -15% +20%			
Input current, 24V System	150 mA	-	-	-
Input current, Process	8A		150 mA	
Plug-in Current	< 2A, 1mS.			
Surge protection	Yes			
Reverse polarity protection	Yes			
Power Dissipation (typical)	3.0W	2.1W	2.5W	2.1W
Power Dissipation (max)	5.8W	4.6W	4.3W	3.0W
Communication	EtherNet I/P	Internal optical serial interface		
Data transfer rate	10/100 Mbit/S.	1.5Mbit /S.		
UDP Message to output	0.5 mS			2 mS
Input to UDP transmission	0.5 mS			2 mS
Dimensions of module (W*D*H)	33.3*75*101 mm			
Weight	117 g	105 g	133 g	95 g
Mounting	free			
Protection class	IP20			
Operating temperature	+5 - +65 °C			

Module Specifications

Feature	Specification			
	SCIO-EI-A	SCIO-S-A	SCIO-S-B	SCIO-S-C
I/O	Max 30VDC		Max 230 VAC, 2A (Relay) Max 30VDC (PNP)	0-10V

Parts

Item	Part no	Descripton	Picture
Digital base module	SCIO-EI-A	Ethernet I/P master 16 PNP IN 16 PNP Out	
Digital I/O extension	SCIO-S-A	16 PNP IN 16 PNP Out	
Relay extension	SCIO-S-B	8 PNP IN 8 Relay OUT	
Analog extension	SCIO-S-C	4 Analog IN 4 Analog OUT	
DIN-Rails, Aluminium	21168421	148mm (max 4 units)	
	21168422	298mm (max 8 units)	
	21168423	length 985.5mm	

Connectors

Item	Part no	Descripton	Picture
2-Pole Connector (Power) for SCIO-S-A, SCIO-E-A, SCIO-S-B, SCIO-S-C	1707854	FMCD 1,5/ 2-ST-3,5	
5-Pole connector, Digital IN / “X2” for SCIO-S-B	1738830	FMCD 1,5/ 5-ST-3,5	
8-Pole connector Analog I/O / “X1” for SCIO-S-C	1738869	FMCD 1,5/ 8-ST-3,5	
9-Pole connector (Digital IN) for SCIO-S-A, SCIO-E-A	1738872	FMCD 1,5/ 9-ST-3,5	
10-Pole connector (Digital out) for SCIO-S-A, SCIO-E-A	1738885	FMCD 1,5/10-ST-3,5	
8-Pole connector, Relay out / “X1” for SCIO-S-B,	1732807	FKCN 2,5/ 8-ST	

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