

New

# Digital proportional servo valves

## Flow control - Series LRWD2

## Pressure control - Series LRPD2

3/3-way directly operated servo valves for the flow (LRWD2) and pressure control (LRPD2)



- » Digital version which is completely configurable through USB
- » Rotating spool system with a metal to metal seal
- » Compact design
- » High flow rate
- » Electronic control to ensure high precision in the flow control
- » 3-way-function with 4 - 6 mm nominal diameters
- » Compact version for cabinet mounting on DIN-rail

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CONTROL

Series LRWD2 and LRPD2 digital proportional servo valves are direct driven 3/3-way valves with a patented rotating spool system with closed loop control circuit. The electronic board is integrated into the valve's body ready to connect.

Series LR\*D2 digital proportional servo valve has been designed to be as compact as possible in order to save space and to be mounted on a DIN-rail. Thanks to this new digital version, the valve can be configured through a USB connection according to different requirements.

### GENERAL DATA

Power supply	24 VDC +/- 10%, max absorption 1.5 A
Command signal	+/- 10 V 0-10 V 0-20 mA
Hysteresis	1% FS LRWD2 - 0,2% FS LRPD2
Linearity	1% FS LRWD2 - 0.3% FS LRPD2
Switching time	see the following pages
Working temperature	from 0 to 50° C
Relative humidity of air	max. 90%
Direction of assembly	any
Maximum flow rate at 6 bar $\Delta P$ 1 bar	450 NI/min LRWD2 - 700 NI/min LRPD2 690 NI/min LRWD2 - 950 NI/min LRPD2
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Supply pressure	-0,9 to 10 bar
Leakage	< 1% of maximum flow rate
Electrical connection	male connector M12 8 poles

## SERIES LRWD2 - CODING EXAMPLE

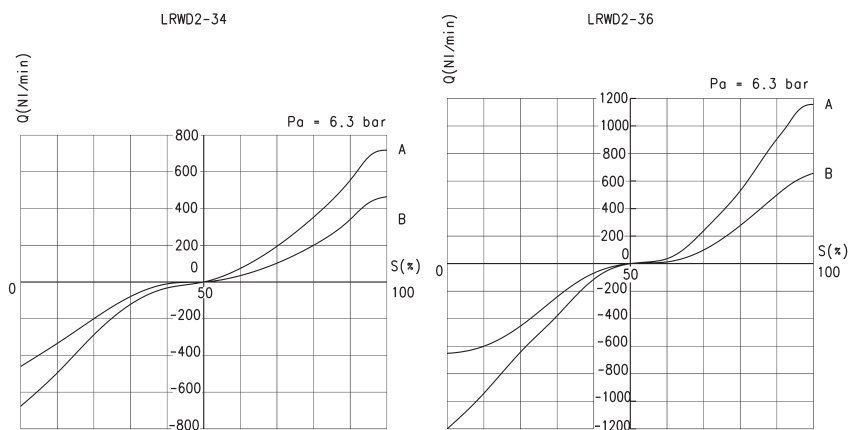
L	R	W	D	2	-	3	4	-	1	-	A	-	00
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<b>L</b>	SERIES: L = proportional servo valves
<b>R</b>	TECHNOLOGY: R = rotating spool
<b>W</b>	VERSION: W = flow control
<b>D</b>	ELECTRONICS: D = digital
<b>2</b>	MODEL: 2 = compact DIN-RAIL
<b>3</b>	FUNCTION: 3 = 3/3-way
<b>4</b>	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
<b>1</b>	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 4 = 4-20 mA
<b>A</b>	FEEDBACK SIGNAL: A = internal encoder
<b>00</b>	CABLE: 00 = no cable

## FLOW DIAGRAMS

## LEGEND:

A = free flow  
B =  $\Delta P1$   
Q = flow  
S = set point  
Pa = inlet pressure



## RESPONSE TIMES ACCORDING TO THE COMMAND SIGNAL

COMMAND SIGNAL	-5% + +5%	+5% + -5%	-25% + +25%	+25% + -25%	-90% + +90%	+90% + -90%
Time [ms] LRWD2-34	4	5	6	9	10	10
Time [ms] LRWD2-36	5	5	6	6	10	10

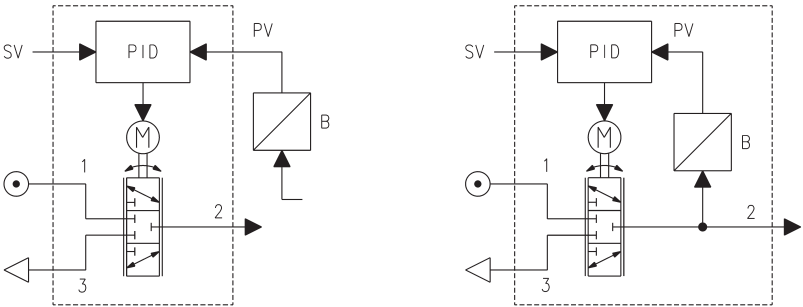
\* closed valve with SET POINT = 0  
loaded valve with SET POINT = +  
exhaust valve with SET POINT = -

SERIES LRPD2 - CODING EXAMPLE

L	R	P	D	2	-	3	4	-	2	-	D	-	00
L	SERIES: L = proportional servo valves												
R	TECHNOLOGY: R = rotating spool												
P	VERSION: P = pressure												
D	ELECTRONICS: D = digital												
2	MODEL: 2 = compact DIN-RAIL												
3	FUNCTION: 3 = 3/3-way												
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm												
1	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 5 = 4-20 mA												
D	Sensor SIGNAL or External signal: 2 = 0..10 V 4 = 0 - 5 V 5 = 4..20 mA B = 1 bar INTERNAL D = 10 bar INTERNAL E = 250 mbar INTERNAL F = +1/-1 bar INTERNAL												
00	CABLE: 00 = no cable												

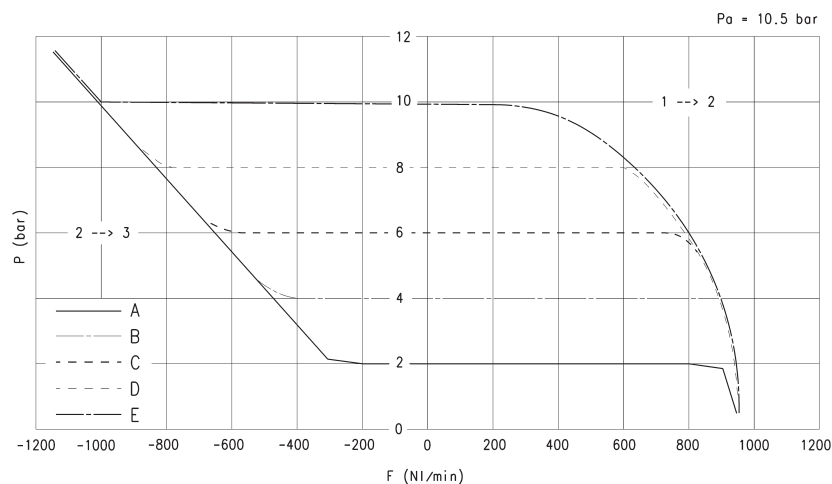
SERIES LRPD2 - PNEUMATIC SCHEME FOR THE INSTALLATION

SV = setpoint value  
PV = process value  
B = sensor  
PID = proportional control,  
integrative, derivative



## LRPD2-34 - STEP RESPONSE

LEGEND:  
P = pressure  
F = flow  
Pa = inlet pressure

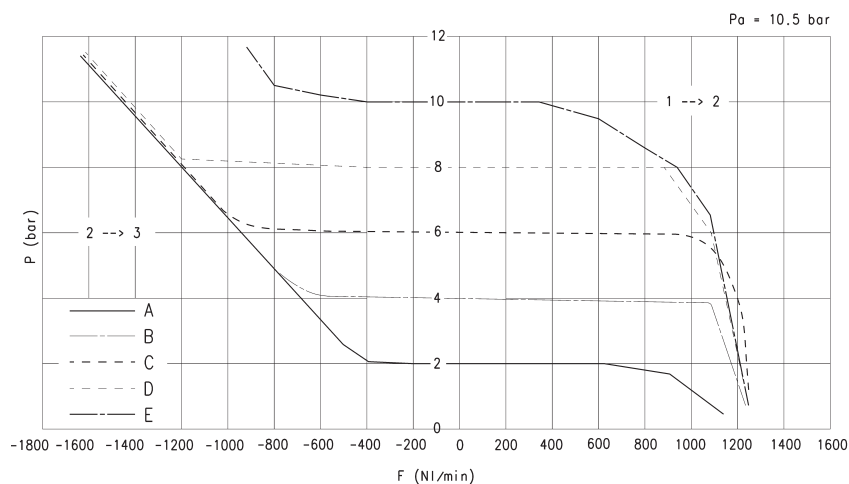


RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100%

	Without volume	Volume 0,5 l	Volume 2 l
Filling [ms]	24	313	1841
Exhaust [ms]	35	663	3640

## LRPD2-36 - STEP RESPONSE

LEGEND:  
P = pressure  
F = flow  
Pa = inlet pressure



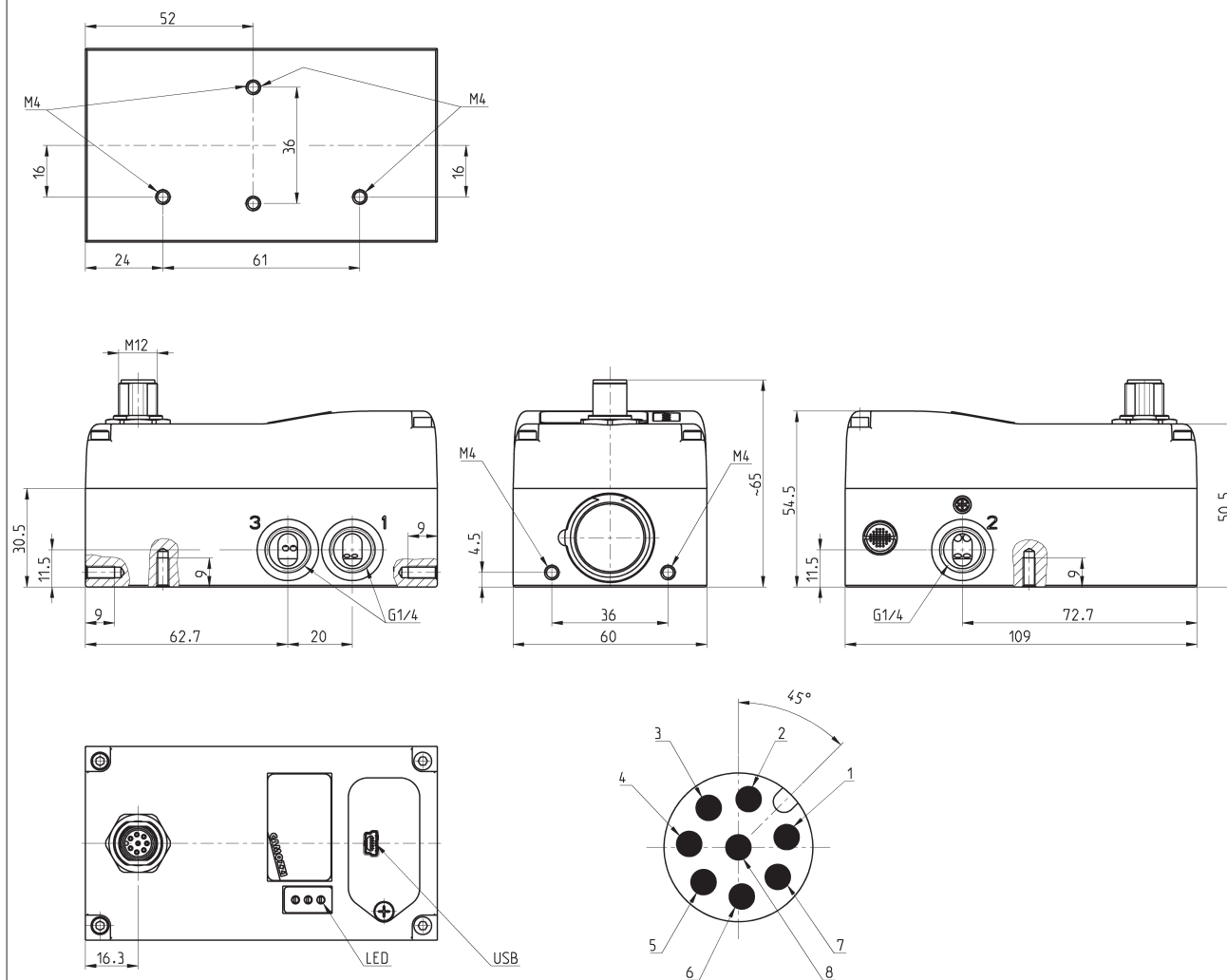
RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100%

	Without volume	Volume 0,5 l	Volume 2 l
Filling [ms]	20	263	1560
Exhaust [ms]	32	357	1905

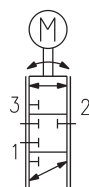
## SERIES LRWD2 and LRPD2 - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on the previous page.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.



PIN	SIGNAL	DESCRIPTION
1	+5V	+5V power supply for external potentiometer transducer (ref. GND). If used, is necessary to connect RIF- with GND.
2	24 V DC	24V DC power supply (logic and motor): connect to the positive pole of the 24V DC power supply (ref. GND)
3	RIF-	GND reference or NEGATIVE pole of the command signal (0-10V / 4-20mA / $\pm 10V$ )
4	RIF+	POSITIVE reference of the command signal (0-10V / 4-20mA / $\pm 10V$ )
5	EXT	Not used
6	FBK	Feedback signal 0-10V / 4-20mA (ref. GND)
7	GND	Common (reference pin 1 and 2): connect to the negative pole of the 24V DC power supply (compulsory)
8	ERR	Error signal (output) 0-24V (ref. GND)

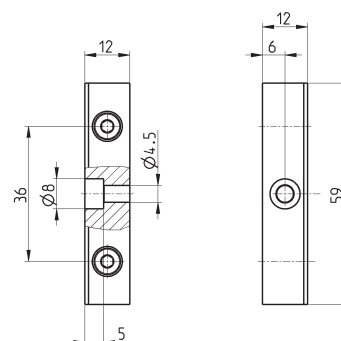


## SERIES LRWD2 AND LRPD2 - TECHNICAL FEATURES

Mod.	Control	Nominal diameter (ø)	Command/Input signal	Sensor/External signal
LRWD2-34-1-A-00	flow	4 mm	+/- 10 V	-
LRWD2-34-2-A-00	flow	4 mm	0-10 V	-
LRWD2-34-5-A-00	flow	4 mm	4..20 mA	-
LRWD2-36-1-A-00	flow	6 mm	+/- 10 V	-
LRWD2-36-2-A-00	flow	6 mm	0-10 V	-
LRWD2-36-5-A-00	flow	6 mm	4..20 mA	-
LRPD2-34-1-2-00	pressure	4 mm	+/- 10 V	0..10 V
LRPD2-34-2-2-00	pressure	4 mm	0-10 V	0..10 V
LRPD2-34-5-2-00	pressure	4 mm	4..20 mA	0..10 V
LRPD2-34-1-4-00	pressure	4 mm	+/- 10 V	0 - 5 V
LRPD2-34-2-4-00	pressure	4 mm	0-10 V	0 - 5 V
LRPD2-34-5-4-00	pressure	4 mm	4..20 mA	0 - 5 V
LRPD2-34-1-5-00	pressure	4 mm	+/- 10 V	4..20 mA
LRPD2-34-2-5-00	pressure	4 mm	0-10 V	4..20 mA
LRPD2-34-5-5-00	pressure	4 mm	4..20 mA	4..20 mA
LRPD2-34-1-B-00	pressure	4 mm	+/- 10 V	1 bar internal
LRPD2-34-2-B-00	pressure	4 mm	0-10 V	1 bar internal
LRPD2-34-5-B-00	pressure	4 mm	4..20 mA	1 bar internal
LRPD2-34-1-D-00	pressure	4 mm	+/- 10 V	10 bar internal
LRPD2-34-2-D-00	pressure	4 mm	0-10 V	10 bar internal
LRPD2-34-5-D-00	pressure	4 mm	4..20 mA	10 bar internal
LRPD2-34-1-E-00	pressure	4 mm	+/- 10 V	250 mbar internal
LRPD2-34-2-E-00	pressure	4 mm	0-10 V	250 mbar internal
LRPD2-34-5-E-00	pressure	4 mm	4..20 mA	250 mbar internal
LRPD2-34-1-F-00	pressure	4 mm	+/- 10 V	+1/-1 bar internal
LRPD2-34-2-F-00	pressure	4 mm	0-10 V	+1/-1 bar internal
LRPD2-34-5-F-00	pressure	4 mm	4..20 mA	+1/-1 bar internal
LRPD2-36-1-2-00	pressure	6 mm	+/- 10 V	0..10 V
LRPD2-36-2-2-00	pressure	6 mm	0-10 V	0..10 V
LRPD2-36-5-2-00	pressure	6 mm	4..20 mA	0..10 V
LRPD2-36-1-4-00	pressure	6 mm	+/- 10 V	0 - 5 V
LRPD2-36-2-4-00	pressure	6 mm	0-10 V	0 - 5 V
LRPD2-36-5-4-00	pressure	6 mm	4..20 mA	0 - 5 V
LRPD2-36-1-5-00	pressure	6 mm	+/- 10 V	4..20 mA
LRPD2-36-2-5-00	pressure	6 mm	0-10 V	4..20 mA
LRPD2-36-5-5-00	pressure	6 mm	4..20 mA	4..20 mA
LRPD2-36-1-B-00	pressure	6 mm	+/- 10 V	1 bar internal
LRPD2-36-2-B-00	pressure	6 mm	0-10 V	1 bar internal
LRPD2-36-5-B-00	pressure	6 mm	4..20 mA	1 bar internal
LRPD2-36-1-D-00	pressure	6 mm	+/- 10 V	10 bar internal
LRPD2-36-2-D-00	pressure	6 mm	0-10 V	10 bar internal
LRPD2-36-5-D-00	pressure	6 mm	4..20 mA	10 bar internal
LRPD2-36-1-E-00	pressure	6 mm	+/- 10 V	250 mbar internal
LRPD2-36-2-E-00	pressure	6 mm	0-10 V	250 mbar internal
LRPD2-36-5-E-00	pressure	6 mm	4..20 mA	250 mbar internal
LRPD2-36-1-F-00	pressure	6 mm	+/- 10 V	+1/-1 bar internal
LRPD2-36-2-F-00	pressure	6 mm	0-10 V	+1/-1 bar internal
LRPD2-36-5-F-00	pressure	6 mm	4..20 mA	+1/-1 bar internal

### Fixing foot

Supplied with:  
2x feet  
4x screws



Mod.

LRADB

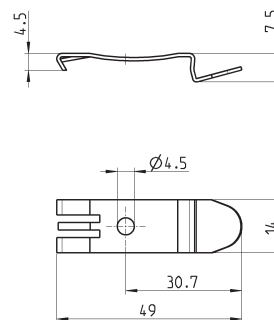
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CONTROL

### Mounting brackets for DIN-rail

DIN EN 50022 (7,5mm x 35mm - width 1)

Supplied with:  
2x mounting brackets  
2x screws M4x6 UNI 5931  
2x nuts

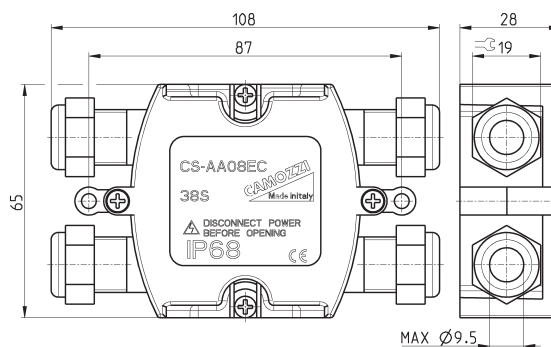


Mod.

PCF-EN531

### Electrical tee box Mod. CS-AA08EC

Connection valve-PLC-external transducer

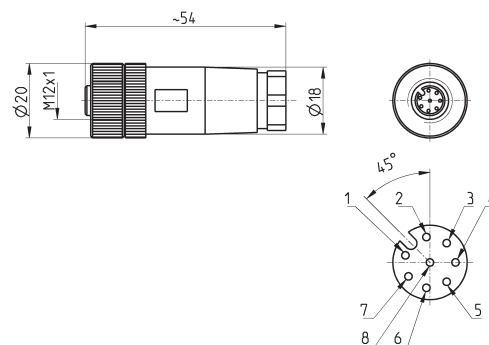


CS-AA08EC



## Straight female connector M12 8 poles

For electric supply and commands

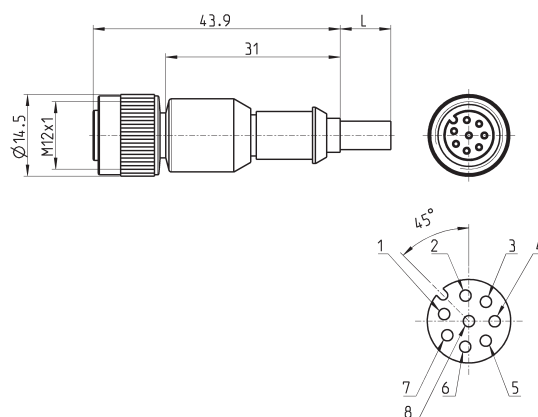


CS-LF08HC



## Cable with straight female connector M12 8 poles

For electrical supply and commands

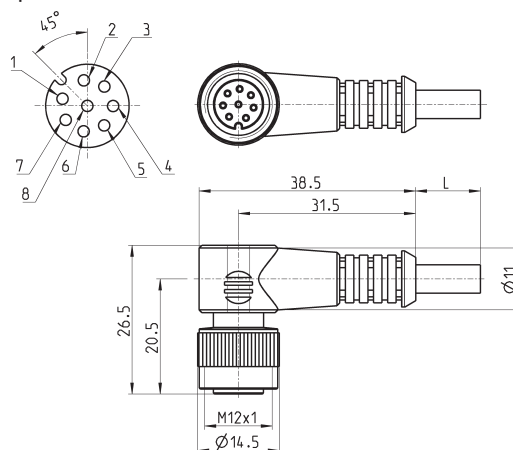


Mod.	Cable length (m)
CS-LF08HB-C200	2
CS-LF08HB-C500	5



## Cable with angular (90°) female connector M12 8 poles

For electric supply and commands



Mod.	Cable length (m)
CS-LR08HB-C200	2
CS-LR08HB-C500	5