

S4 Pro Datasheet

Product Overview

The S4 Pro delivers unmatched control in the smallest package available. With a 12.2 mm port circle and weight of just 290 g, it enables precision control where every millimetre matters.

Trusted in robotics, motorsport and compact industrial systems, the S4 Pro brings proven Domin reliability and performance into space-constrained environments.

Key Features

- Integrated electronics with spool position feedback
- Rated flow rate of up to 18 l/min
- Bandwidth of over 200 Hz
- Low power consumption of less than 2 W
- Miniature footprint (ISO 10372 size 01)
- Low weight of 290 g

Customisation

The S4 Pro is designed to be customised. Standard modifications include:

- Rated flow rates of up to 18 l/min
- Multiple voltage or current control options
- Various seal materials available
- Non-standard configurations are available

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Contact Us

If you have any questions about using the S4 Pro, or if you need a non-standard configuration, we would be happy to hear from you.

Contact us using the details below and one of our team will be there to assist you.

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Technical Data

General Data

Design	Direct Drive Servo Valve		
Actuation	Rotary-Rotary		
Size	Miniature		
Mounting Interface	ISO 10372-01-01		
Ambient Temperature	°C (°F)	-20 to +60 (-4 to +140)	
Mass	kg (lb)	0.29 (0.64)	
Vibration Resistance ⁽¹⁾	g	35, 3 axes	
Shock Resistance ⁽²⁾	g	50	

Hydraulic Data

Max. Operating Pressure (P, A, B, T)	Bar (psi)	350 (5,000)		
Fluid				
Fluid Temperature	°C (°F)	-20 to +80 (-5 to +175)		
Filtration	ISO 4406 (1999) 18/16/13			
Viscosity	cSt	5 to 500		
Rated Flow ⁽³⁾	l/min (US gal/min)	0.5 to 6 (0.2 to 1.6)	6 to 11 (1.6 to 2.9)	11 to 18 (2.9 to 4.8)
Flow Maximum	l/min (US gal/min)	1.4 to 12 (0.4 to 3.2)	12 to 22 (3.2 to 5.8)	22 to 36 (5.8 to 9.6)
Pressure Gain	%/%	>20	>20	>40
Leakage at 100 bar	l/min (gpm)	<0.2 (0.05)	<0.45 (0.12)	<0.45 (0.12)

Static/Dynamic Data

Response Time at 100% Step Input ⁽⁴⁾	ms	< 3		
Frequency Response (-3dB gain, ±25% signal) ⁽⁴⁾	Hz	> 280	> 280	> 230
Frequency Response (-90deg phase, ±25% signal) ⁽⁴⁾	Hz	> 200	> 200	> 200
Hysteresis	%	< 1		
Threshold	%	< 1		
Null Shift	%	< 1		

1. BS EN 60068-2 (20-35Hz, 16g for 15 minutes per axis, 35-2000Hz, 35g for 15 minutes per axis)

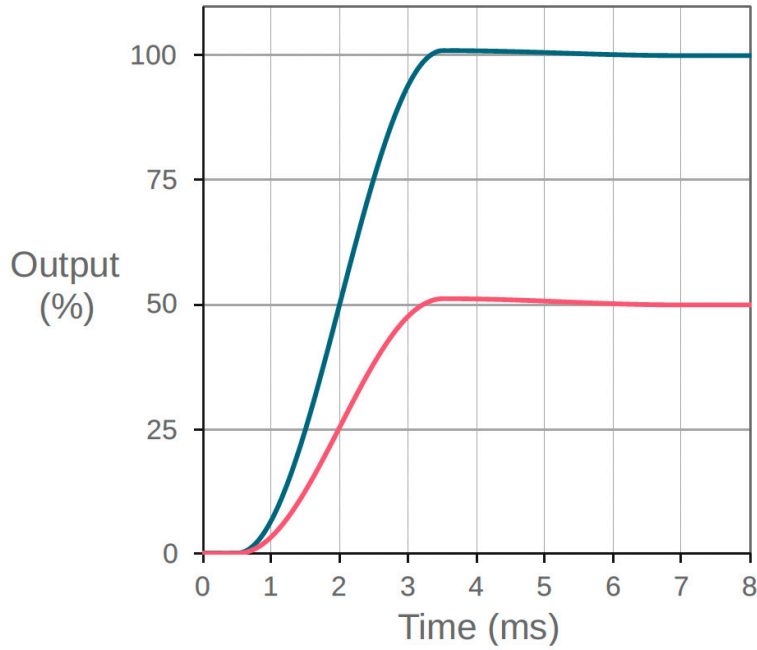
2. BS EN 60068-2 (20 shocks 50g in Z axis)

3. Rated at a ΔP of 70 bar (35 bar per edge). 18lmin is only available for Axis cut valves

4. Measured as 90% output rise time with Δ70 bar P-T (two control edges)

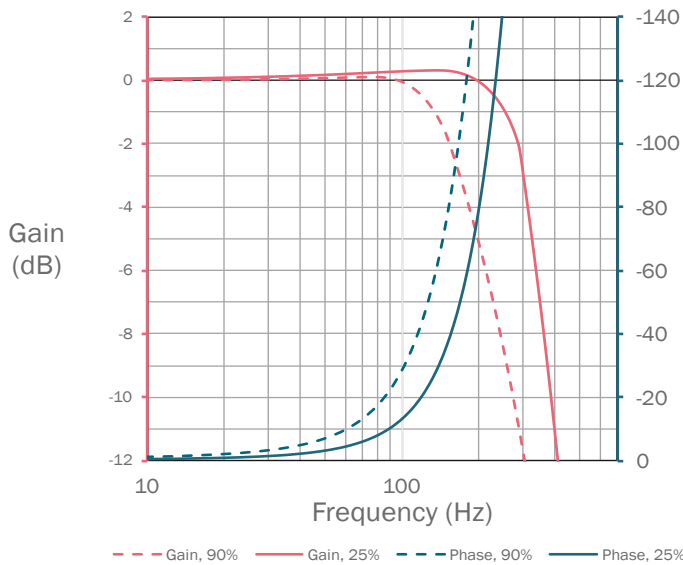
Performance Graphs

Step Response⁽¹⁾

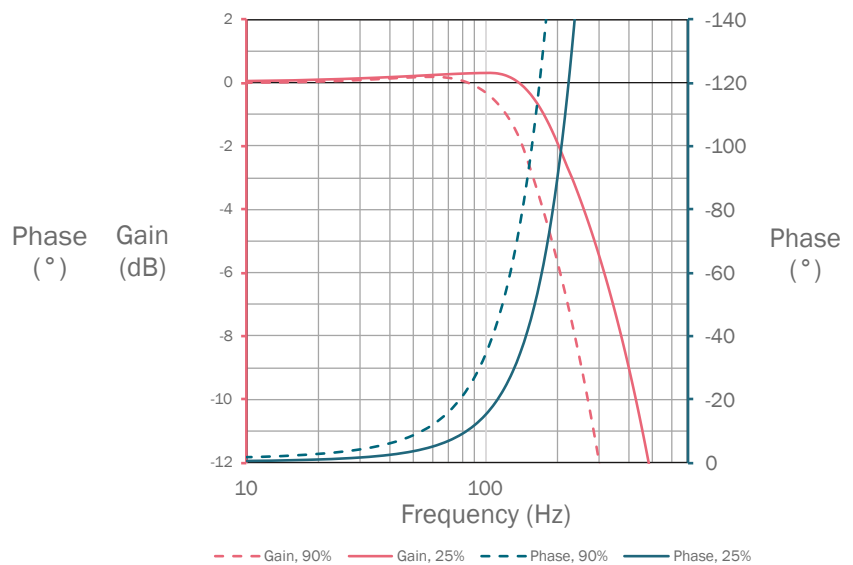


Frequency Response⁽¹⁾

0.5 to 11 l/min



11 to 18 l/min



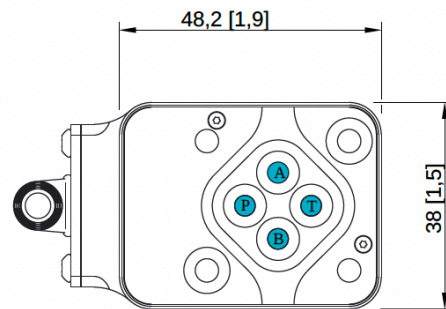
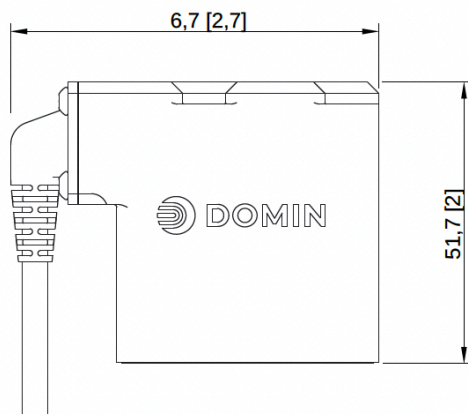
1. Measured at a 70 bar pressure drop.

Standards References

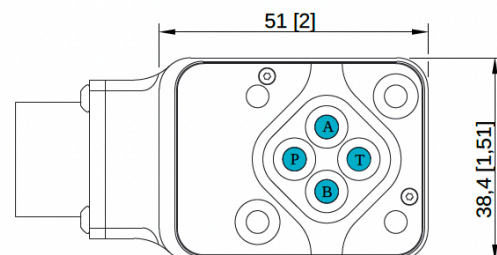
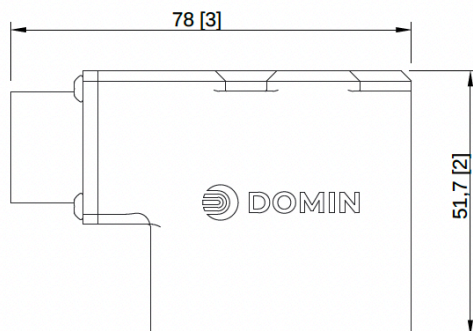
EMC Regulations:	Immunity: EN 61000-6-2, Emission: EN 61000-6-3
Performance Tests:	ISO 10770-1
Pressure Rating:	ISO 10771
Hydraulic Interface:	ISO 10372-01-01

Unit Dimensions

Connector Code G and B4



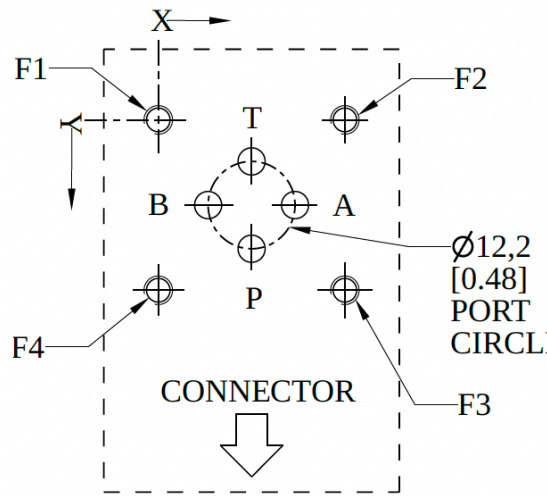
Connector Code E and E4



Nominal dimensions are displayed in mm, [] indicates inches. Not to scale.

Mounting Dimensions

		P	A	B	T	F1	F2	F3	F4
Diameter	mm	3.8	3.8	3.8	3.8	M4	M4	M4	M4
X Position	mm	11.9	18.0	5.8	11.9	0	23.8	23.8	0
Y Position	mm	19.2	13.1	13.1	7.0	0	0	26.2	26.2



Bolts (F1, F2, F3, F4)

Type: M4 x 55 mm DIN EN ISO 4762-10.9

Required Torque: 2.5 Nm (5.53 ft-lbf)

O-Rings (P, A, B, T)

Type: 4.47 mm x Ø 1.78 mm (ISO 3601-1-008)

LED Status

LED Colour	LED State	Motor Drive State	Valve State
Green	Solid - On	Motor Drive On	Valve OK
	Flashing	Motor Drive On	Warning Present
Red	Solid - On	Motor Drive Off	Valve OK
	Flashing	Motor Drive Off	Error Present

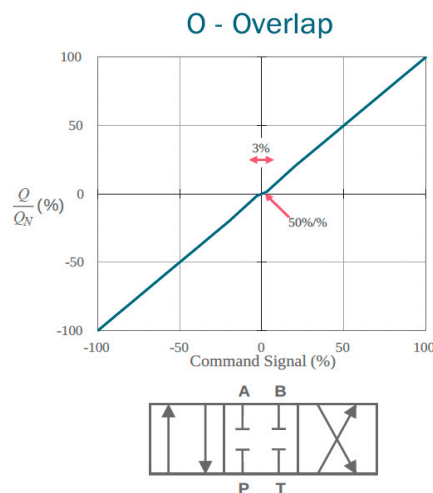
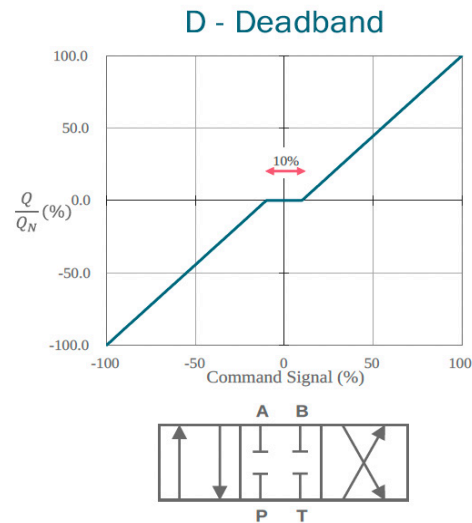
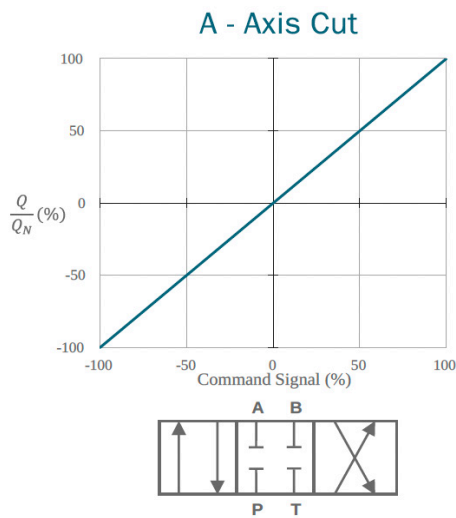
1. Please note, the status LED is only available on valves with valves with B4 or G connector codes

Code 1 Rated Flow

Any value in range 0.5 to 18 l/min rated at 35 bar ΔP per control edge. R – Suffix for reversal of A and B port e.g. 18R

Code 2 Lap Condition

	Overlap Region (%)	Flow Gradient (%/%)	
A Axis Cut	0	100	1% overlap linearised
D Deadband	± 10	0	10% overlap with flow dead band
O Overlap	± 3	50	3% overlap linearised to 50% gain over centre
X	For other options please enquire		



Code 3 Control Methods

Code	Input Signal	Input Impedance	Output Signal	Output Load Impedance
A	± 10 V	200 k Ω	± 10.5 V	-
D	± 5 V		± 5.25 V	
E	± 5 mA	200 Ω	± 5.25 mA	600 Ω
F	± 10 mA		± 10.5 mA	
B	± 20 mA		± 21 mA	
I ⁽²⁾	± 25 mA		-	-
C ⁽¹⁾	4 to 20 mA		3.8 to 21 mA	600 Ω
G ⁽²⁾	± 50 mA	402 Ω	-	-
H ⁽²⁾	± 40 mA			
X	For other options please enquire			

1. For 4 to 20mA input signal, a current input below 2 mA will disable the motor drive
2. Configuration available for Input only. Default output will be Control Mode - A
3. Valves with a current command signal use a 0.1% tolerance shunt resistor to measure demand current.
4. For differing input and output signals, use two letters, e.g. AC denotes ± 10 V input and 4 to 20mA output

Electrical

Supply Voltage (Operational)	V	22 to 30
Supply Voltage (Absolute) ⁽¹⁾	V	-0.5 to 33
Current Consumption ⁽²⁾	A	0.04
Peak Current Draw ⁽³⁾	A	3.3

1. Conditions outside the absolute maximum ratings may cause permanent damage to the valve. These are absolute ratings only. Operation of the product outside of the nominal operating conditions is not guaranteed and may affect product reliability.
2. Approximate current consumption for 100 Hz at 25 % amplitude
3. The valve supply must be protected with a 4 AT fuse or equivalent overcurrent protection device.

Code 4 Power Off Position

C	Centre. The spool is intended to return to centre passively under typical flow conditions
X	For other options please enquire

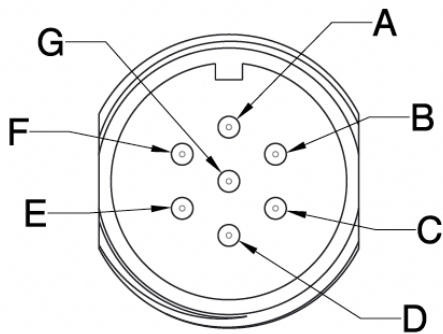
Code 5 Electrical Connectors

6 + PE Circular Connector (E)

Type: Case-Mounted

Termination: Connector according to EN 175201-804/MIL 5015 equivalent, shell size 14

Number of Contacts: 7



Pin	Function	Description
A	Supply +	+24 V
B	Supply 0 V	0 V
C	Output - Enable input ⁽¹⁾	Output 0 V Reference Drive enable input ⁽¹⁾
D	Input +	Differential input signal, +
E	Input -	Differential input signal, -
F	Output +	Output Signal
G	Earth	-

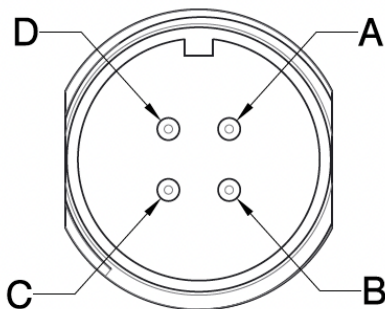
1. When the enable function is selected, the function of pin C is the enable input. This replaces the standard pin function.

4 Pin Circular Connector (E4)

Type: Case-Mounted

Termination: Connector according to EN 175201-804/MIL 5015 equivalent, shell size 14

Number of Contacts: 4

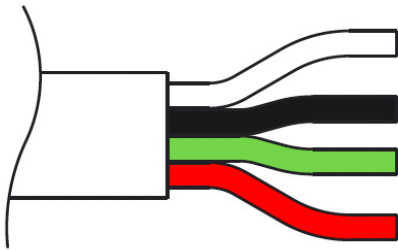


Pin	Function	Description
A	Supply +	+24 V
B	Input +	Differential input signal, +
C	Input -	Differential input signal, -
D	Supply 0 V	0 V

4 Contact, Unterminated flying lead (B4)

Type: Flying Lead (300mm length)

Termination: Bare Wires - 4-Core 22AWG Unscreened

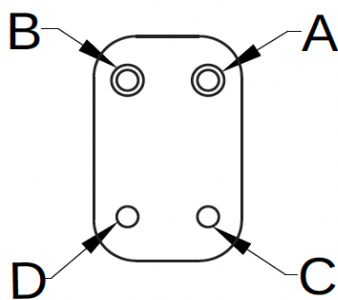


Colour	Function	Description
White	Supply 0 V	0 V
Black	Supply +	+24 V
Green	Input – (Ground Reference)	Differential Input Signal, –
Red	Input +	Differential input signal, +

G4-20P Rack and Panel Connector (G)

Type: Flying Lead

Termination: Winchester™ G4-20P



Pin	Function	Description
A	Input – (Ground Reference)	Differential Input Signal, –
B	Input +	Differential input signal, +
C	Supply 0 V	0 V
D	Supply +	+24 V

Code 6 Enable Modes

Valves can be provided with an enable function. This allows the valve to be enabled or disabled by varying the voltage into the enable pin. Note that valves with a code C command type can also be enabled or disabled using the command signal; see the corresponding table above for further details. Enable function is only applicable with Code E electrical connector option.

N No Enable Functionality

Y Enable mode on

Normal Operating Conditions		Units	Min.	Typical	Max.
Enable Mode	Drive On	V	9	-	30
	Drive Off	V	0	-	5
	Input Impedance	kΩ	55	-	100

Code 7 Fluid Types

R Recommended - any hydraulic oil in accordance with DIN 51524, filtered in accordance with ISO4406 18/16/13. Compatibility with water-free synthetic fluids available on enquiry.

X For other options please enquire

Code 8 Seal Materials

N Nitrile (Shore 90)

V Viton (Shore 85)

F FFKM (Shore 75)

X For other options please enquire