

ZEUS HYDRATECH LTD
Global Suppliers of Premium Hydraulic Components

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S6 Pro X Datasheet

Product Overview

The Domin S6 Pro X Direct Drive Servo Valve (DDV) has been designed to achieve the best characteristics from two competing valve technologies: fluid amplified EHSV and DDVs. The S6 Pro X has the size, mass, and dynamic capabilities of the most compact EHSV, and the low quiescent leakage and reliability of the best DDV.

The S6 Pro X is based around the S04 port pattern and weighs less than 800 g. With a rated flow of 63 litres per minute, the valve is available in voltage or current controlled versions.

Key Features

- Onboard electronics with spool position feedback
- S04 port pattern (ISO 10372-04-04)
- Rated flow of up to 63 lpm (at 70 bar ΔP)
- Maximum flow of up to 130 lpm
- Bandwidth of > 250 Hz (-3 dB, up to $\pm 25\%$ FS)
- Low power consumption of < 5 W (operating within 45 degrees phase lag & 80% command)
- Valve mass less than 800 g

Versatile by Design

The S6 Pro X is designed to be customised. Standard modifications include:

- Rated flow rates of up to 63 l/min
- 5 different control methods
- 2 different hydraulic fluids
- 3 choices of seal material
- Non-standard configurations available

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Contact Us

If you have any questions about using the S6 Pro X, 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-Linear
Size		Size 04
Mounting Interface		ISO 10372-04-04
Ambient Temperature	°C (°F)	-20 to +60 (-4 to +140)
Mass	kg (lb)	0.75 (1.7)
Vibration Resistance	g	30, 3 axes
Shock Resistance	g	50
Hydraulic Data		
raMax. Operating Pressure (P, A, B, T)	Bar (psi)	350 (5000) P, A, B, 250 (3600) T
Fluid		Hydraulic Oil DIN 51524-535
Fluid Temperature	°C (°F)	-20 to +60 (-5 to +175)
Viscosity	cSt	5 to 500
Rated Flow ⁽¹⁾	l/min (US gal/min)	6 - 63 (1.6 - 16.6)
Flow Maximum	l/min (US gal/min)	130 (34.3)
Leakage at 100 bar ⁽²⁾	l/min (US gal/min)	< 1.1 (0.3)
Filtration		ISO 4406 (1999) 18/16/13
Static/Dynamic Data		
Response Time at 100% Step Input ⁽³⁾	ms	< 3.5
Frequency Response (-3dB gain, ±25% signal) ⁽³⁾	Hz	250
Frequency Response (-90deg phase, ±25% signal)	Hz	140
Hysteresis	%	< 0.2
Threshold	%	< 0.1
Null Shift	%	< 1

1) Axis cut valve, tested at 70 bar according to ISO-10770-1-8.1.4

2) Axis cut valve

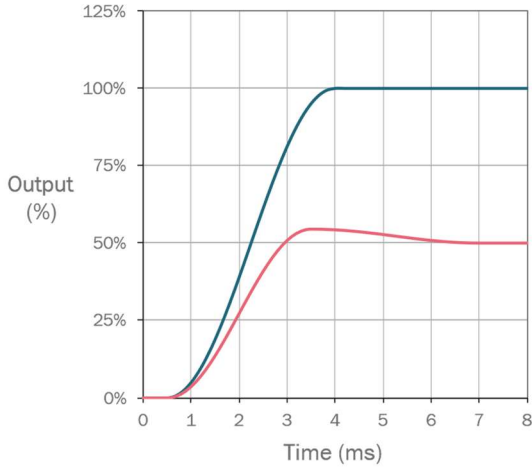
3) Measured as 90% output rise time with Δ70 bar P-T (two control edges)



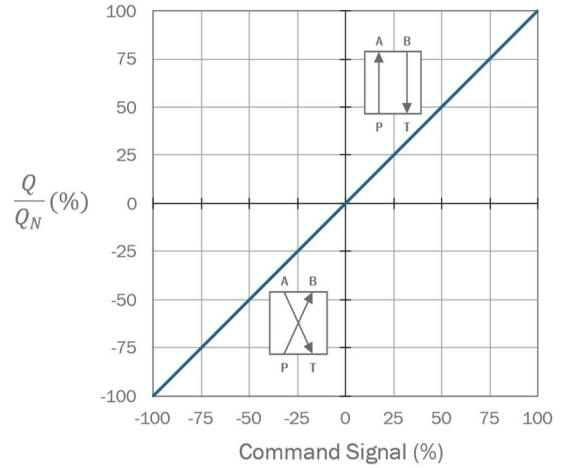


Performance Graphs

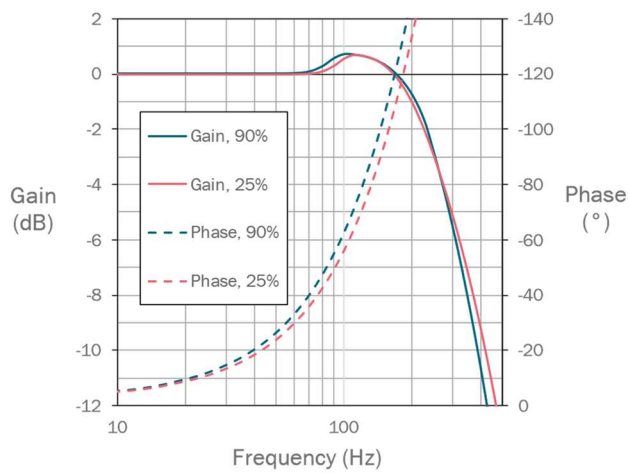
Step Response (1)



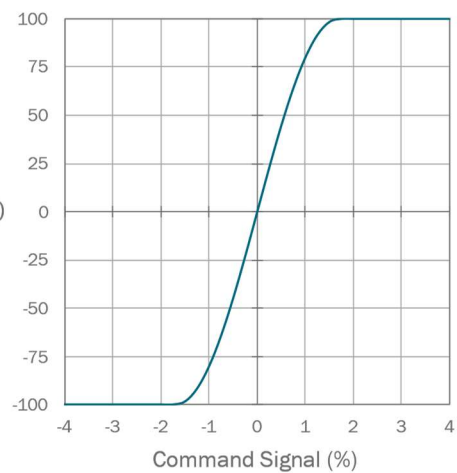
Flow vs Command



Frequency Response (1)



Pressure Gain



1) Measured at a 70 bar pressure drop.





Electronics Data

Ratings of the valve electronics vary based on selected command input.

±10 V

Absolute Maximum Ratings ⁽¹⁾		Min.	Typical	Max.
Supply Voltage	V	0	-	30
Differential Input Signal	V	-10.5	-	10.5
Input Signal Common Mode Offset	V	-10	-	10
Normal Operating Conditions				
Supply Voltage	V	22	24	30
Absolute maximum current draw ⁽²⁾	A	-	-	4.5
Quiescent Power Draw	W	-	-	1.5
Differential Input Signal	V	-10	-	10
Input Impedance	kΩ	200	-	-

±20 mA

Absolute Maximum Ratings ⁽¹⁾		Min.	Typical	Max.
Supply Voltage	V	0	-	30
Differential Input Signal	mA	-25	-	25
Input Signal Common Mode Offset	V	-10	-	10
Normal Operating Conditions				
Supply Voltage	V	22	24	30
Absolute maximum current draw ⁽²⁾	A	-	-	4.5
Quiescent Power Draw	W	-	-	1.5
Differential Input Signal	mA	20	-	20
Input Impedance ⁽³⁾	Ω	-	392	-





+4 to +20 mA

Absolute Maximum Ratings ⁽¹⁾		Min.	Typical	Max.
Supply Voltage	V	0	-	30
Voltage Mode Differential Input Signal	mA	-25	-	25
Input Signal Common Mode Offset	V	-10	-	10
Normal Operating Conditions				
Supply Voltage	V	22	24	30
Absolute maximum current draw ⁽²⁾	A	-	-	4.5
Quiescent Power Draw	W	-	-	1.5
Differential Input Signal	mA	4	-	20
Differential Input Signal for drive off ⁽⁴⁾	mA	-20	-	2
Input Impedance ⁽³⁾	Ω	-	392	-

± 5 V

Absolute Maximum Ratings ⁽¹⁾		Min.	Typical	Max.
Supply Voltage	V	0	-	30
Voltage Mode Differential Input Signal	V	-5.5	-	5.5
Input Signal Common Mode Offset	V	-5	-	5
Normal Operating Conditions				
Supply Voltage	V	22	24	30
Absolute maximum current draw ⁽²⁾	A	-	-	4.5
Quiescent Power Draw	W	-	-	1.5
Differential Input Signal	V	-5	-	5
Input Impedance	k Ω	200	-	-



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±25 mA

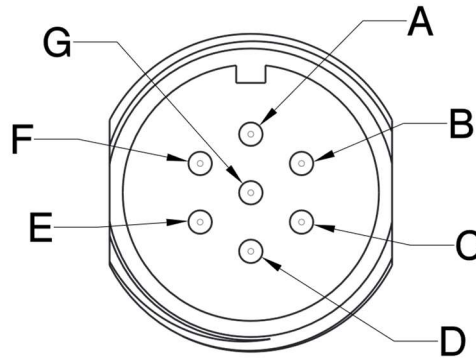
Absolute Maximum Ratings ⁽¹⁾		Min.	Typical	Max.
Supply Voltage	V	0	-	30
Differential Input Signal	mA	-25	-	25
Input Signal Common Mode Offset	V	-10	-	10
Normal Operating Conditions				
Supply Voltage	V	22	24	30
Absolute maximum current draw ⁽²⁾	A	-	-	4.5
Quiescent Power Draw	W	-	-	1.5
Differential Input Signal	mA	20	-	20
Input Impedance ⁽³⁾	Ω	-	392	-

- 1) Conditions outside the absolute maximum ratings may cause permanent damage to 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) Maximum current draw occurs during chip shear events or operation at high frequencies (e.g. Close to -3dB frequency) and at maximum rated flow. Typical operating conditions require significantly less current
- 3) Current inputs use a 0.1% tolerance shunt resistor to measure demand current.
- 4) For 4 to 20mA command signal, a current in this range will disable the motor drive until a current outside this range is received at the command input.



Electronic Interface Diagrams

6 + PE Circular Connector (Code E)



Type: Case-Mounted
Termination: Connector according to EN 175201-804/MIL 5015 equivalent, shell size 14
Number of Contacts: 7

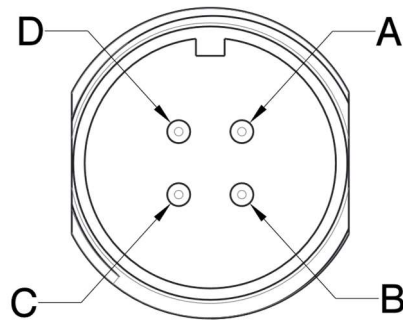
Pin	Function	Description
A	Supply +	+24 V
B	Supply 0 V	0 V
C	Output - Enable input ⁽¹⁾	Output 0 V Reference Drive enable input ⁽¹⁾
D	Input +	Differential input signal, +
E	Input -	Differential input signal, -
F	Output +	Output signal
G	Earth	-

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

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4 Pin Circular Connector (Code 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

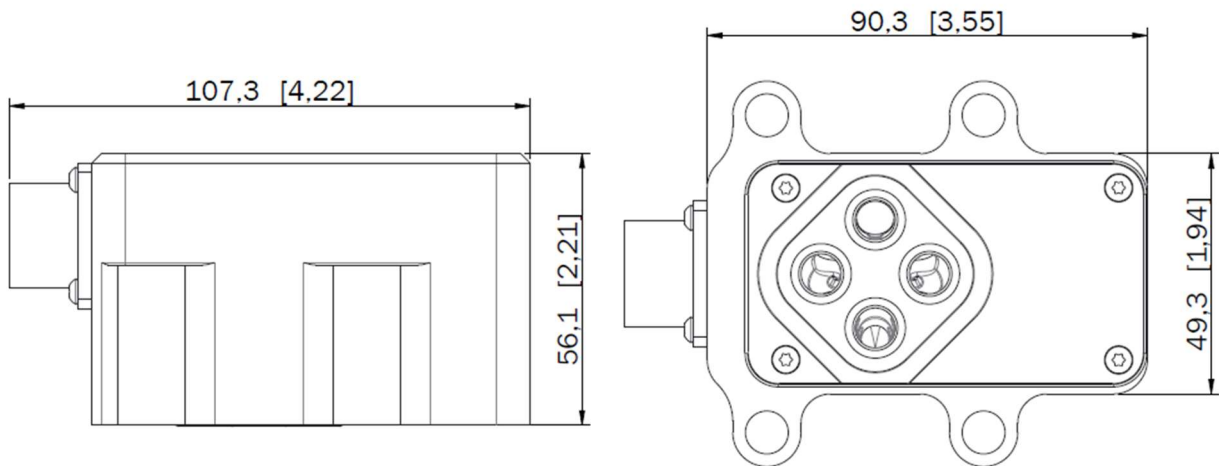
Standards References

EMC Regulations: EN 61000-6-2
EN55011:1998+A1
Performance Tests: ISO 10770-1
Pressure Rating: ISO 10771
Hydraulic Interface: ISO 10372-01-01-0-92





Unit Dimensions



Nominal dimensions are displayed in mm. Not to scale.

Mounting Surface Pattern

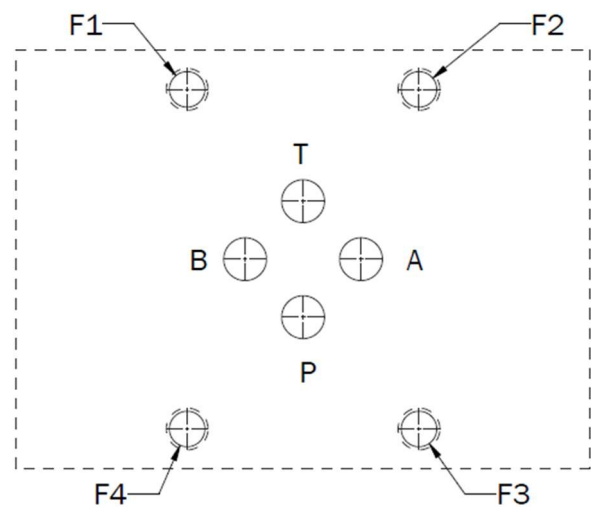
		P	A	B	T	F1	F2	F3	F4
Diameter Ø	mm	Ø 8.2	Ø 8.2	Ø 8.2	Ø 8.2	M8	M8	M8	M8
X Position	mm	22.2	33.3	11.1	22.2	0	44.4	44.4	0
Y Position	mm	43.6	32.5	32.5	21.4	0	0	65.0	65.0

Bolts (F1, F2, F3, F4)

Type: M8 x 45 DIN EN ISO 4762-10.9
 Required Torque: 15 Nm

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

Type: 4x ISO 3601-1-012
 Material: NBR, EPDM or Viton, 70 Shore A
 Hardness: 70 Shore A



Variants on request

At Domin, we are proud of our ability to offer tailored solutions that meet our customers' specific needs. If you require a non-standard configuration, or a bespoke modification, we are confident we can provide you with the best solution. Talk to us using the contact details provided and one of our team will respond as soon as possible.



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Code 1 Rated Flow	
Any value in range 5 to 63	
Rated flow in l/min for 35 bar ΔP per control edge	
R – Suffix for reversal of A and B port e.g. 60R	

Code 2 Spool Lap Condition	
A	Axis cut (1% overlap linearised)
O	3% Overlap (linearised to 50% gain over centre)
D	10% Overlap (with flow dead band)
X	For other options please enquire

Code 3 Control Method	
A	± 10 V
B	± 20 mA
C	4 to 20 mA
D	± 5 V
X	For other options please enquire
For differing input and output signals, use two letters, e.g. AC denotes ± 10V Input and 4 to 20mA output	

Code 4 Power off Position	
C	Centre
X	For other options please enquire

Code 9 Custom ID	
Assigned individually to any with customised options upon enquiry	

Code 8 Seal Material	
N	Nitrile
V	Viton
X	For other options please enquire

Code 7 Fluid Type	
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 6 Enable Mode	
Y	Enable mode on ¹
N	No Enable Functionality

Code 5 Electrical Connector	
E	6 pin + PE circular connector ²
E4	4 pin circular connector ²
X	For other options please enquire

1. Only available with connector option E
 2. EN 175201-804/MIL 5015 equivalent connector, shell size 14

