S12 Pro Datasheet

Product Overview

The S12 Pro is Domin's high-performance servo valve for NG16 applications where precision and stability directly impact safety, throughput, and cost. Built on a two-stage architecture using Domin's proven valve technology as a pilot stage, it prioritises stability, durability, and consistent performance under heavy load.

The S12 Pro delivers stable, responsive control across the operating range, maintaining integrity even in the most demanding conditions, ideal for systems where instability cannot be tolerated.

Key Features

- Onboard electronics with spool position feedback
- Rated flow of up to 580 l/min (35 bar ΔP per edge)
- Based on the NG16 port pattern
- Bandwidth > 130 Hz (-3 dB, ±25% of full stroke)
- Low power consumption of less than 5 W

Customisation

The S12 Pro is designed to be customised. Standard modifications include:

- Choice of rated flows 250-580 l/min
- Multiple voltage or current control options
- Various seal materials available
- Non-standard configurations are available

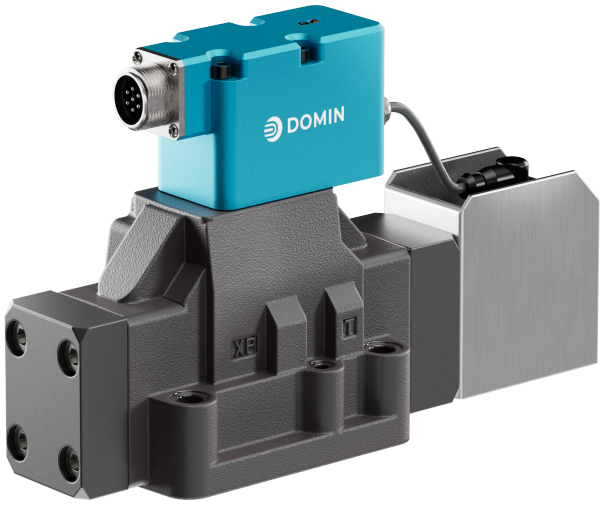
Contents

Contact Us

If you have any questions about using the S12 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.

33 Colston Avenue, Bristol, BS1 4UA
sales@domin.com
domin.com



DOMIN

Technical Data

General Data

Design		Two-Stage Servo Valve
Actuation		Direct Drive Pilot
Size		NG16
Mounting Interface		ISO 4401-07-07
Ambient Temperature	°C (°F)	–20 to +60 (-4 to 140)
Mass	kg (lb)	< 7 (15.4)
Vibration Resistance	g	10
Shock Resistance	g	15
IP		IP65

Hydraulic Data

Max. Operating Pressure (P, A, B, X)	bar (psi)	350
Max. Operating Pressure (Y, T)	bar (psi)	250
Fluid		Hydraulic Oil DIN 51524-535
Fluid Temperature	°C (°F)	–20 to +60 (-4 to 140)
Viscosity	cSt	10 to 400
Rated Flow (35 bar per edge)[1]	l/min (gpm)	580 (153)
Flow Maximum	l/min (gpm)	1000 (264)
Pilot Leakage[2]	l/min (gpm)	0.8 (0.21)
Main Stage Leakage[2]	l/min (gpm)	1.0 (0.26)
Filtration		ISO 4406 (1999) 18/16/13

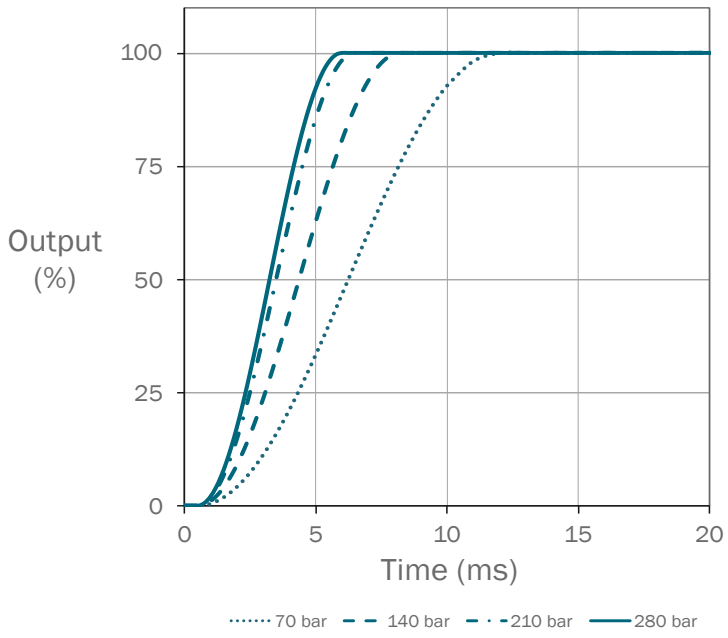
Static/Dynamic Data

Response Time[3]	ms	< 6.5
Frequency Response (-3dB gain, ±25% signal)[3]	Hz	> 130
Frequency Response (-90deg phase, ±25% signal)[3]	Hz	> 100
Hysteresis	%	< 0.2
Threshold	%	< 0.1
Null Shift	%	< 1

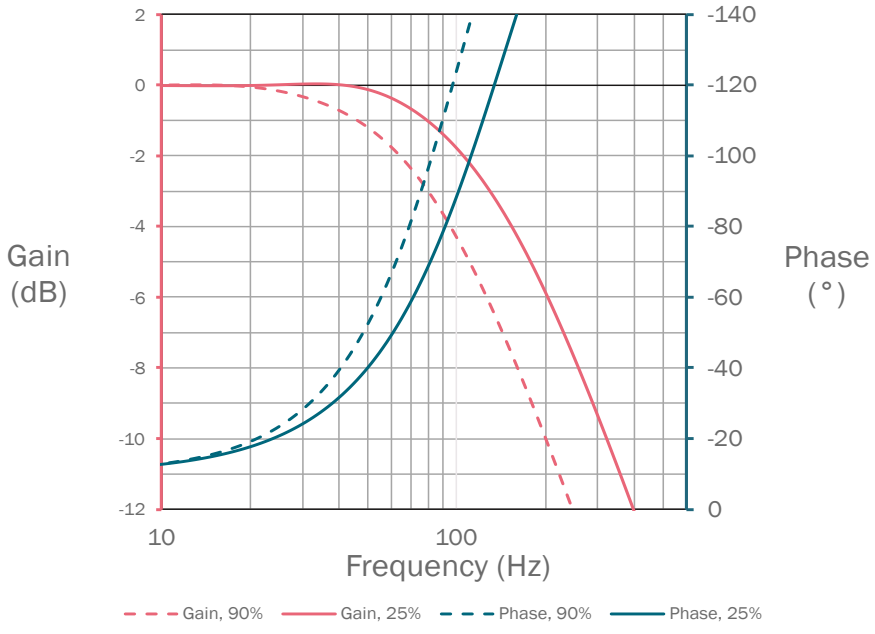
1. Based on an axis cut (A) value.
2. Measured at a test pressure (P.T) of 100 bar.
3. Measured at 210 bar pilot pressure, ISO 32 oil at 40°C.

Performance Graphs

Step Response



Frequency Response[1]



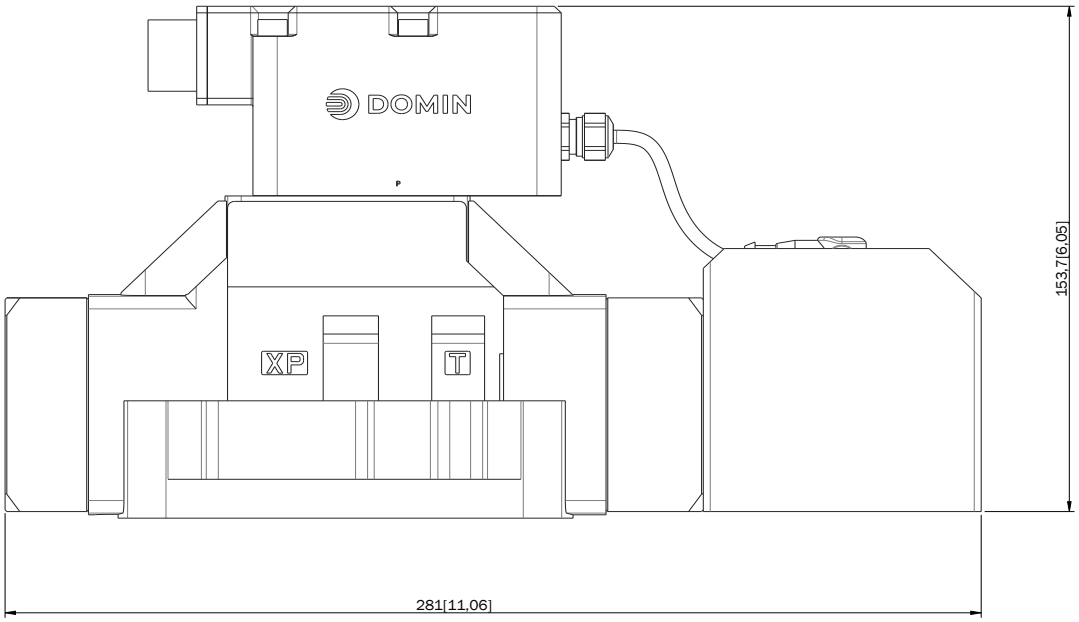
1. Measured at a 210 bar pressure drop.

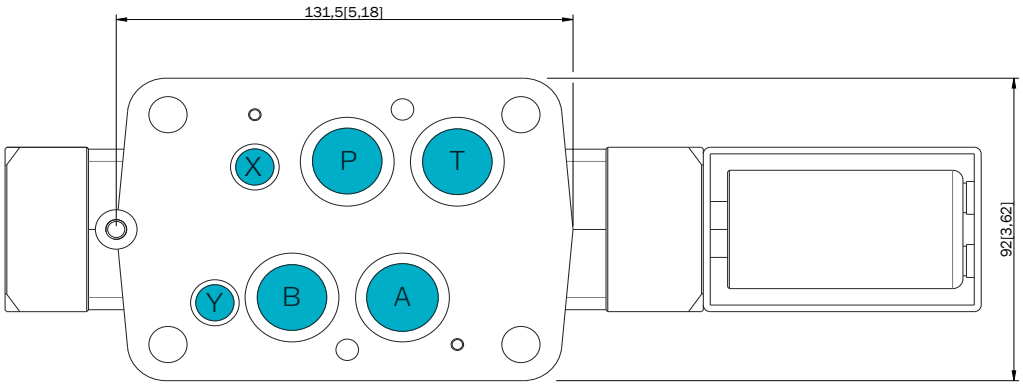
Standards References

EMC Regulations:	Emission: EN 61000-6-3, Immunity: EN 61000-6-2
Performance Tests:	ISO 10770-1
Pressure Rating:	ISO 10771-1
Hydraulic Interface:	ISO 4401-07-07[1]

1. Ports over-sized to 20 mm.

Unit Dimensions

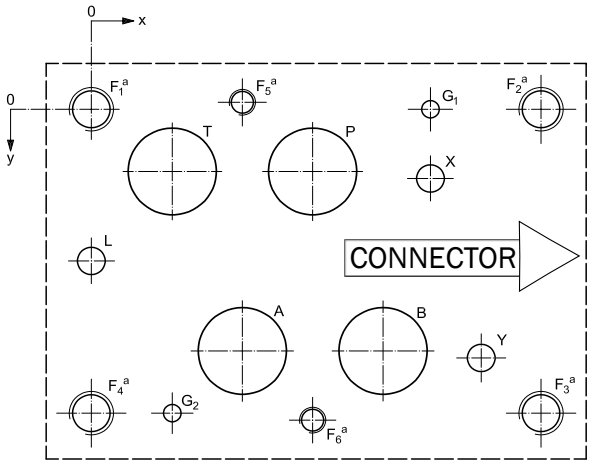




Nominal dimensions are displayed in mm, [inches] indicates inches. Not to scale.

Mounting Dimensions

		P	A	B	T	L	X	Y	F1	F2	F3	F4	F5	F6
Diameter	mm	20	20	20	20	6.3	6.3	6.3	M10	M10	M10	M10	M6	M6
X Position	mm	50	34.1	65.9	18.3	0	76.6	88.1	0	101.6	101.6	0	34.1	50
Y Position	mm	14.3	55.6	55.6	14.3	34.9	15.9	57.2	0	0	69.9	69.9	-1.6	71.5



Bolts (F1, F2, F3, F4)

Type: M10 x 50 mm DIN EN ISO 4762-8.8

Required Torque: 40 Nm (29.5)

(F5, F6)

M6 x 50 mm DIN EN ISO 4762-8.8

8 Nm (5.9)

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

Type: 22.22 x Ø 2.62

Material: NBR or Viton, 90 Shore A

(L, X, Y)

10.82 x Ø 1.78

NBR or Viton, 90 Shore A

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

SKU Selection

Use our SKU builder to configure your Domin Valve. If you need a non-standard setup or a bespoke option, just get in touch – we can tailor a solution to suit your exact requirements.

S12 Pro - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - Custom ID

Code 1	Rated Flow
250 to 580	l/min
250 to 580R	l/min, Reverse

Code 2	Flow Behaviour
A	Axis
B	Float
D	Blocked
X	Special Enquiries

Code 3	I/O
A	± 10 V
B	± 20 mA
C	4 to 20 mA
F	± 10 mA
G	± 50 mA
X	Special Enquiries

Code 4	Power Off Behaviour
A	Axis
B	Float
C	Passive
D	Blocked
PA	A Bias
PB	B Bias

Code 5	Electrical Connector
E	6 pin + PE
E4	4 pin

Code 6	Enable Mode
Y	Enable Mode
N	No Enable Functionality
X	Special Enquiries

Code 7	Fluid Type
R	Recommended Oil
X	Special Enquiries

Code 8	Seal Material
N	Nitrile
V	Viton

Code 9

1. Flow rating set in value software - dynamic performance measured set as 580 l/min flow.

Code 1 Rated Flow

Any value in range 250 to 580 l/min rated at 35 bar ΔP per control edge. R – Suffix for reversal of A and B port e.g. 580R

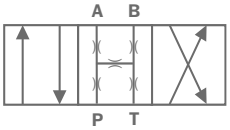
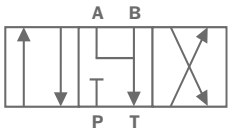
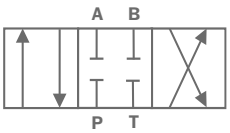
$$Q = Q_N \sqrt{\frac{P}{70}}$$

Q = Calculated flow
Q_N = Rated flow (at 70 bar)
P = Pressure

Code 2 Flow Behaviour

Flow behaviour is defined by key elements within the SKU, including flow rate, centre flow, and power-off position. The properties that define each aspect are described in detail below.

Hydrualic Connections

Code	Hydrualic Connection	Description	Symbol	Deafult Flow Map
A	Axis	1% overlap		Linear
B	Float	5% overlap P 5% underlap T		Deadband
D	Blocked	5% overlap		Deadband
X	For other options please enquire			

By default, each hydraulic connection will have a default flow mapping, and the code will be simplified to a single letter. If a non-default flow mapping is desired a second letter will denote the flow map.
E.g., an Axis-Linear valve will have a single code A, an Axis-Deadband valve will have the code AD.

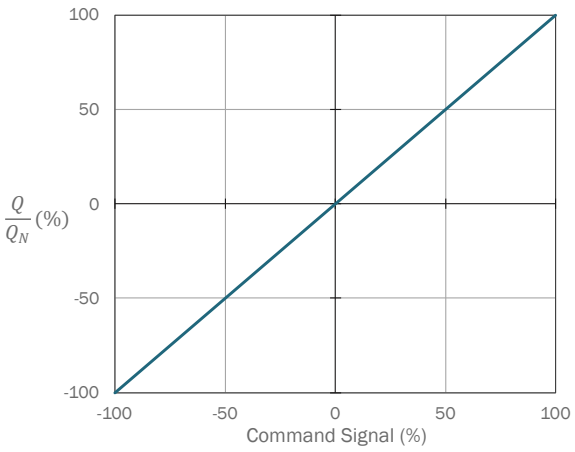
Please enquire for options.

Flow Map

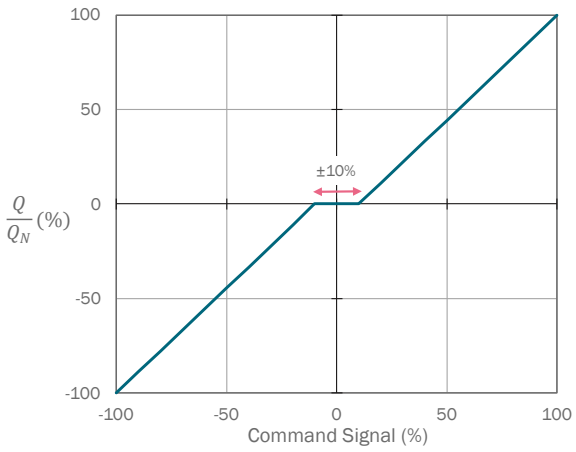
Flow mapping is how the valve behaves from its command signal, drives how much flow is being delivered at any given command signal. These behaviours are independent of the edge-condition and mechanical behaviour; However, they may be typically used in combination with the above.

Code	Flow Map	Description
A	Linear	100% flow gain across full range
D	Deadband	0% flow gain between ±10% flow demand
O	Gradual	50% flow gain between ±3% flow demand

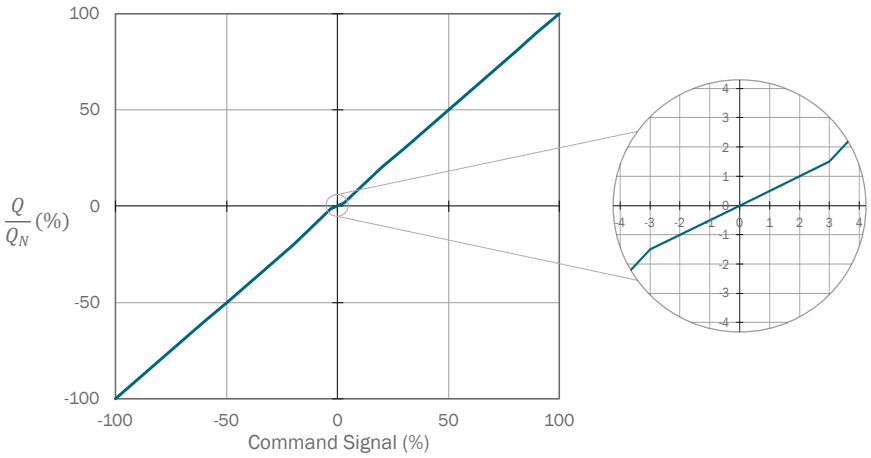
A - Axis



D - Deadband



O - Gradual



DOMIN

Code 3 Control Methods

Code	Input Signal	Input Impedance	Output Signal	Output Load Impedance
A	± 10 V	200 kΩ	± 10.5 V	-
B	± 20 mA	402 Ω	± 21 mA	600 Ω
C[1]	4 to 20 mA		3.8 to 21 mA	
F	± 10 mA		± 10.5 mA	
G[2]	± 50 mA	200 Ω	-	-
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

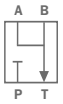
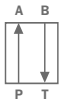
Electrical

Supply Voltage (Operational)	V	22 to 30
Supply Voltage (Absolute)[1]	V	-0.5 to 33
Peak Current Draw[2]	A	4.5

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. The valve supply must be protected with a 5 AT fuse or equivalent overcurrent protection device

Code 4 Power Off Behaviour

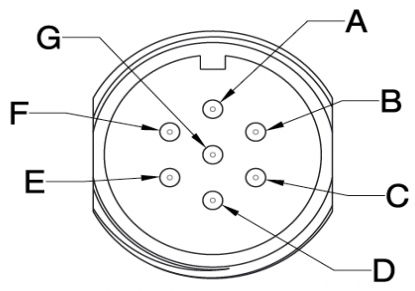
Power off behaviour defines the hydraulic connection that the valve will move to when the power / input is removed, or if the valve errors, or if the enable pin (if enable mode Y) is low

Code	Name	Description	Symbol
A	Axis	Leakage flow across all edges	
B	Float	P blocked, A, B, T connected	
C	Passive	Spool is intended to return to centre passively under typical flow conditions	
D	Blocked	All ports blocked	
PA	A Bias	P connected to A, B connected to T	
PB	B Bias	P connected to B, A connected to T	
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

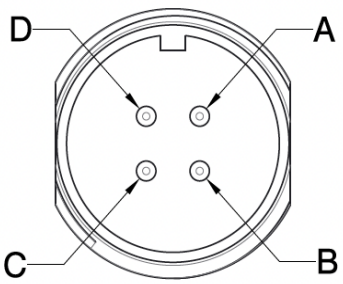


Pin	Function	Description
A	Supply +	+24 V
B	Supply 0 V	0 V
C[1]	Output – Enable input	Output 0 V Reference Drive enable input
D	Input +	Differential input signal, +
E	Input –	Differential input signal, –
F	Output +	Output Signal
G	Earth	-

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

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	-	15	-

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)
X	For other options please enquire