Superheat Controller for Bipolar Electric Expansion Valve

Parker Sporlan PSD4 stepper motor driver to control Parker’s range of SER, SERI and SEHI electric expansion valves
With over 65 years of valve design expertise and with more than 10 years experience in superheat control know-how, Parker Sporlan is the ideal partner for optimum refrigeration performance, and reduced energy consumption.

PSD4 is a stand alone, electronic valve driver, specifically designed for the control of Parker Sporlan’s SER, SERI and SEHI range of bipolar stepper motor valves.

The Parker Sporlan’s family of SER, SERI and SEHI valves and PSD4 driver, improves superheat control for air conditioning and refrigeration systems, by controlling the difference between the actual temperature and the saturation temperature of the refrigerant.

Configuring the controller to match the Sporlan electric expansion valve, to optimise system performance is easy. Customers simply select the valve type from a pick list held in the controller’s memory, and the system is ready to start.

The PSD4 has four models, all DIN rail mounting. Ranging from simple stand-alone units, without display, to a models with LCD display and communication interfaces cards, such as CANbus, Modbus RS-485, making it ideal for OEM’s who require system flexibility and external control and monitoring.

The PSD4 has two selectable methods of control, superheat controller or analogue positioner.

PSD4 has 4 configurable analogue inputs, for the most commonly used transducers, NTC, PT1000, 0-5 V ratiometric, 0-10 V, 0-20 mA & 4-20 mA, for pressure and temperature inputs. Two of the analogue inputs can be used as emergency back up in the event of one of the other inputs failing.

When the controller is selected to work as an analogue positioner, one of the analogue inputs is configured for 0 to 10 volts input. This function is ideal for OEM’s who have designed their own superheat algorithm and wishes to use this to control the valve position.

The PSD4 valve driver can be used in the following application:
- Heat pumps
- Air Conditioning
- Chillers
Technical Specifications

- Voltage supply 24Vac +10% -15%
- Ambient temperature range -20 to +60 °C (@r.H < 95% non-condensing)
- 4 x Programmable analogue inputs* (NTC, PT1000, 0..20 mA, 4..20 mA, 0..5 V)
- 3 x Configurable Digital inputs (Enable the controller, change parameters set and resynchronise)
- 1 x Configurable Digital output (Alarm, solenoid valve)
- 3 x Serial ports*: ◗ TTL Port for quick down load of parameters via PSKEY10 (Programming key) and PSIF20TUX1 (PC programming kit), ◗ Dedicated communications port, Modbus RS-485, CANbus,
- 4 DIN mounting
- Available with optional LCD display*
- 5 LED status indicators for controllers supplied without display
- Relay output (8A)
- Interface to external controllers via communication port
- Remote mounting LCD display PSV4GBR
- SuperCap valve closing up unit PSS4B

* Model dependent

Widest range of cooling capacity, with Sporlan SER, SEPI and SEHI family of electric expansion valves up to 1.400 kW.
# PSD4 Driver for Heat pumps, Air conditioning, Chillers, Packaged rooftop units

## Order Selection Guide PSD4

<table>
<thead>
<tr>
<th>Va. c.</th>
<th>Hz</th>
<th>A/I</th>
<th>D/I</th>
<th>D/O</th>
<th>SO</th>
<th>BS</th>
<th>PP</th>
<th>SP</th>
<th>CB</th>
<th>RS</th>
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<td>50/60</td>
<td>4</td>
<td>3</td>
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<td>1</td>
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</tbody>
</table>

**Key:**
- A/I = Analogue input
- D/I = Digital Input
- D/O = Digital Output
- SO = Stepper Output
- BS = Battery Back Up
- PP = Programming Port
- SP = Serial Port
- CB = CANBus
- IN = INTRABUS
- RS = Modbus RS-485
- DP = Display Fitted (LED)" LED.
**Options**

**EVPT5108**
Steel Pressure transducers, 0.5 to 8 bar working pressure, power supply 8-28 VDC, 4-20 mA output 2 wire. 7/16” male - 20 UNF threaded tip

**EVPT5130**
Steel Pressure transducers, 0 to 30 bar working pressure, power supply 8-28 VDC, 4-20 mA output 2 wire. 7/16” male - 20 UNF threaded tip

**EVTPN530F202**
Fast response temperature Probes NTC 10kOhm @ 25°C Overmoulded bulb -50 to 110°C

**PSPTB0008C1GB** Pressure Range -1 to 8 barg
**PSPTB0015C1GB** Pressure Range -1 to 15 barg
**PSPTB0030G1GB** Pressure Range 0 to 30 barg
**PSPTB0050G1GB** Pressure Range 0 to 50 barg

Stainless Steel Pressure transducer, power supply 8 to 28 Vdc, 4-20mA output 2 wire. 7/16” 20 UNF threaded tip female connection, including access pin for Schraeder valve.

**P2NZ3000**
DIN connector for pressure transducer series PSPT

**CP2N03000AA25**
5 meter PVC cable with DIN connector fitted for transducer series PSPT

**PSS4B**
SuperCap EEV closing unit (typically < 10 s) if power supply is lost. Contact Parker-Race for more details.

**PSIF20TUXI**
TTL/USB serial interface for upload and download of parameters via the programming software

**PSKEY10**
Parameter quick set up key

**PSV4GBR**
Remote mounting LCD (128 x 64 pixel) programming panel, 118 x 10 mm, RTC, alarm, buzzer, isolated 12-24 VAC/DC power supply mounting accessories available.

**PSPS**
Power supply for PSKEY10 115-230 VAC / 9 VDC
WARNING - USER RESPONSIBILITY
FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety, and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

OFFER OF SALE
Please, contact your Parker representation for a detailed "Offer of Sale".

R-407C at 38°C (100°F) liquid, 7 bar (100 psi) pressure drop, and 5°C (40°F) evaporated temperature.
At Parker, we’re guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374

**Aerospace**
- **Key Markets**
  - Aircraft
  - Military aircraft
  - Spacecraft
  - Unmanned aerial vehicles

**Climate Control**
- **Key Markets**
  - Agriculture
  - Food & beverage
  - Industrial machinery
  - Life sciences
  - Machine tools

**Electromechanical**
- **Key Markets**
  - Aerospace
  - Factory automation
  - Life science & medical
  - Machine tools

**Filteration**
- **Key Markets**
  - Aerospace
  - Food & beverage
  - Industrial paint & equipment
  - Life sciences

**Fluid & Gas Handling**
- **Key Markets**
  - Aerial lift
  - Agriculture
  - Bulk chemical handling

**Hydraulics**
- **Key Markets**
  - Aircraft
  - Agriculture
  - Alternative energy

**Pneumatics**
- **Key Markets**
  - Aerospace
  - Conveyor & material handling

**Process Control**
- **Key Markets**
  - Aircraft
  - Medical equipment
  - Process control

**Sealing & Shielding**
- **Key Markets**
  - Dynamic seals
  - Elastomeric O-rings

**Valves**
- **Key Products**
  - Connectors for low pressure
  - Fluid conveyance
  - Connectors for low pressure

**Key Products**
- **Connectors for low pressure**
  - Fluid conveyance
  - Connectors for low pressure

**Key Markets**
- **Fluid conveyance**
  - Engineers
  - Advanced actuators
  - Electrohydraulic actuators

**Key Products**
- **Electrohydraulic actuators**
  - Parker’s Motion & Control Technologies