

Reliable Electronic Solutions from Sun. . .

ELECTRO-PROPORTIONAL VALVES WITH ON-BOARD ELECTRONICS

Sun's new amplifiers with embedded electronics are built for easy assembly and to meet unique customer requirements. Offered in a wide range of control configurations and connector options, Sun's electro-hydraulic valves with embedded electronics are ideal for both mobile and industrial applications. With these products, valves can be mounted close to actuators for improved performance; system plumbing and wiring are simplified.

Embedded amplifier features:

- 6 pin connector is IP 69K rated.
- Amplifier assembly is ultrasonically welded and polyurethane potted for environmental protection.
- Minimum and maximum outputs are separate and settable, with fully adjustable ramps.
- CE approved.
- Digital design – no potentiometers to set. Valve assemblies can be supplied pre-set to customer specified parameters.
- Parameters are changed via hand held programmer and infrared (IR) link – no need to disconnect wiring harness – settable “on the fly”.
- Status LED's for visual confirmation.
- 9 - 28 volt operating range.



For our full range of Cartridge Valves and Manifolds, visit the Sun website:

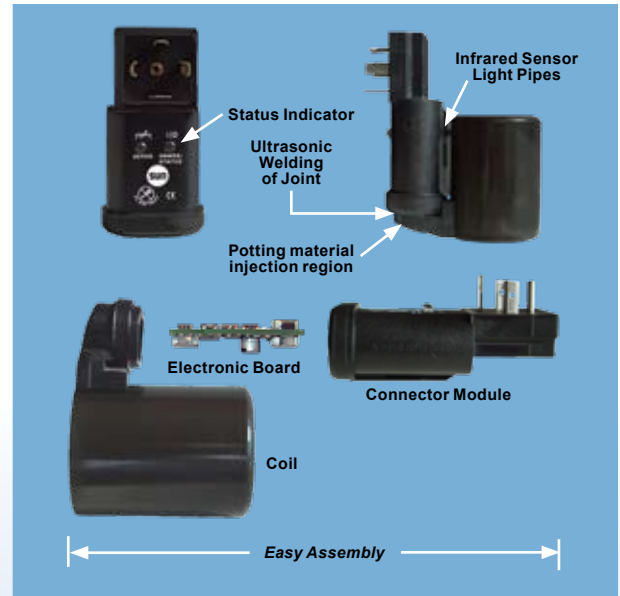
www.sunhydraulics.com

To see complete information on Sun's electronic products, click on Products, Accessories, Amplifiers and Accessories.

SUN'S ON-BOARD ELECTRONICS

EMBEDDED ELECTRONICS COIL ASSEMBLY AND COMPONENT ELEMENTS

- **Two Coil Types:** 12 V DC and 24 V DC.
- **Three Electronic Board Versions:** Proportional Amplifier, Ramping Amplifier, and Power Saver.
- **Ramping Amplifier:** This card is user adjustable and provides simplified, time controlled shift of switching and proportional valves without using a completely proportional amplifier.
- **Power Saver:** Adjustable power saver reduces power consumption and heat generation. It can extend the operating range of switching solenoid valves.
- **Dither:** Frequency adjustable (80 - 300 Hz) to allow tuning for optimum performance.
- **Ramping Time:** 0 - 120 seconds in 0.5 second increments.



MODEL CODE STRUCTURE FOR ON-BOARD AMPLIFIERS

790-*****	CODE	CONNECTOR OPTION	CODE	CARD OPTION	CODE	COIL VOLTAGE	CODE	COMMAND INPUT
PROPORTIONAL AMPLIFIER OPTIONS	2	DIN 43650A, 4 pin (Hirshman)	B C D	Separate command common 5 v reference Enable	12 24	12 Volt 24 Volt	V	0 - 10 v
	4	Deutsch, 6 pin	A	All functions enabled (separate command common, 5 v reference, and an enable)	12 24	12 Volt 24 Volt	V	0 - 10 v
	2	DIN 43650A, 4 pin (Hirshman)	B C D	Separate command common 5 v reference Enable	12 24	12 Volt 24 Volt	A	0 - 20 mA
	4	Deutsch, 6 pin	A	All functions enabled (separate command common, 5 v reference, and an enable)	12 24	12 Volt 24 Volt	A	0 - 20 mA
COIL SAVER	2	DIN 43650A, 4 pin (Hirshman)	E	Programmable via IR link coil/power saver	12 24	12 Volt 24 Volt	V	0 - 10 v
RAMPING AMPLIFIER	2	DIN 43650A, 4 pin	F	Programmable ramps, separate rise and fall via IR link	12 24	12 Volt 24 Volt	V	0 - 10 v
	4	Deutsch, 6 pin						

DIN PLUG CLOSED LOOP PROPORTIONAL AMPLIFIER

- P, I, and D gains set independently (or off).
- Separate programmable values for minimum and maximum command, minimum and maximum feedback, and minimum and maximum output.
- Three modes of operation:
 - Normal closed loop
 - Inverse closed loop
 - Open loop



ADDITIONAL ELECTRONIC PRODUCTS FROM SUN

RAMPING AMPLIFIER FOR PROPORTIONAL VALVES

- Independent ramp up and ramp down settings.
- Ramping up/down is controlled by a digital on/off input.
- Ramping times adjustable from 0 - 120 seconds (in 0.5 second increments).
- Available in 12 and 24 V DC coils.
- Settable minimum and maximum amplifier outputs.
- Adjustable dither frequency.
- All parameter setting is by hand held programmer via IR link.



HAND HELD PROGRAMMER

Used to set all the parameters for proportional valves with embedded, plug mount, ramping, and power saver amplifiers:

- Easy to use – intuitive, simple.
- Self contained – battery powered.
- Battery saver – turns itself off when not in use.
- Valve set point parameters can be stored.
- Infrared (IR) link to the valve amplifiers.
- Large LCD display.

POWER SAVER AMPLIFIER FOR SOLENOID VALVES

- Reduces the holding current required by the solenoid coil after the valve has shifted to the energized position.
- Reduces power consumption of the solenoid.
- Reduces heat generation – coils run cooler.
- Extends coil life.
- Shift time and hold current are user adjustable.
- Can extend operating range of switching valves.



SUN'S STANDARD AND CUSTOM MANIFOLD CONFIGURATIONS

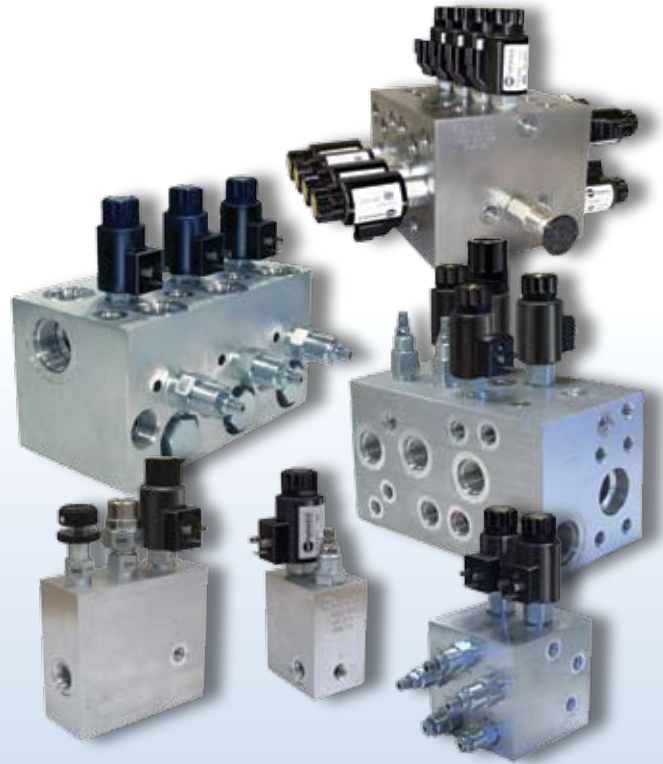
Sun Hydraulics has been a leading designer and manufacturer of screw-in hydraulic cartridge valves and manifolds for more than 30 years. Sun has established strong recognition in international markets and built a global presence to service customers wherever they choose to manufacture.

Sun's differentiation and attention to detail that we employ in our cartridges are also applied to our manifold designs. We design a more compact manifold that dramatically reduces or eliminates the need for construction plugs and means potentially less leakage points. Our manifolds also have more direct flow paths, which along with the large diameter drilling allowed by the Sun cavity, provide lower pressure drops within the assembly. The ultimate benefit to you is greater design freedom and considerably fewer service complaints .

Additionally, our electro-proportional cartridge valves and electronic accessory products can be seamlessly integrated with your electronic control system.

For our full range of Cartridges, Manifolds, and Electronic Products, call your distributor or consult the Sun website:

www.sunhydraulics.com



Worldwide manufacturing operations for on time delivery!

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