

# ELECTRONIC TEMPERATURE CONTROL SYSTEMS

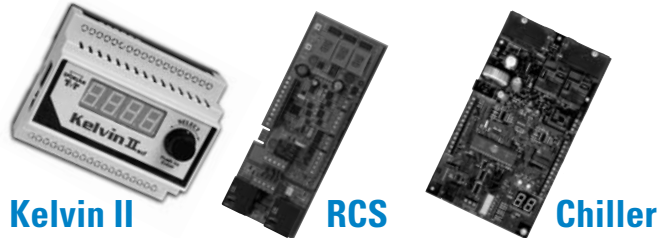
## Electric Valve Controllers

Sporlan offers a variety of controllers for use in refrigeration and air conditioning systems. Applications include self-contained food service equipment, cold rooms and chillers. With over 80 different models, Sporlan can satisfy almost any customer requirement.

Small, standalone controllers include the compact Kelvin II and larger Superheat and Refrigeration controllers. All provide true pressure/temperature superheat control of any system using Sporlan Electric Expansion Valves (EEVs). Chiller controllers offer true pressure/temperature superheat control for two Sporlan EEVs and are available in Fahrenheit/psi or Celsius/Bar versions.

Sporlan offers purpose built controllers, such as subcoolers for supermarket refrigeration, head pressure, temperature only and pressure only.

Cold rooms can be controlled with RCS, which has onboard remote communication, and master-slave settings for defrost control. Included real time clocks allow defrost initialization times to be set precisely and relays allow control of fans, solenoids, alarms and compressors. Many of the controllers can be customized for specific needs, or supplied in an enclosure.



CONTROLLER PACKAGES	DISPLAY	COMMUNICATION	RELAYS	REFRIGERANTS	INPUTS*	VALVES
<b>Kelvin IIs</b>	No	RS-485	None	R-22, R-134a, R-404A, R-507, R-410A, R-407C Not all refrigerants are available on all models.	1 Press, 3 Temp.	1 SER, SEI, ESX, SEHI, SDR or CDS
<b>Kelvin IIsd</b>	4 Alphanumeric	RS-485, USB	None		1 Press, 3 Temp.	1 SER, SEI, ESX, SEHI, SDR, CDS, or 2 PWM
<b>RCS</b>	3 Alphanumeric	RS-485	Four		1 Press, 4 Temp.	1 SER, SEI, ESX or SEHI
<b>Subcooler</b>	2 Numeric	None	None		1 Press, 2 Temp.	1 SER, SEI, ESX or SEHI
<b>Chiller</b>	2 Numeric	None	Three		1 Press, 4 Temp.	2 SER, SEI, ESX or SEHI
<b>Chiller European</b>	2 Numeric (C°/Bar)	None	Three		1 Press, 4 Temp.	2 SER, SEI, ESX or SEHI
<b>Pressure</b>	2 Numeric	None	None		1 Press	1 CDS or 1 SDR
<b>Dual Pressure Control</b>	2 Numeric	None	None		2 Press	2 CDS or 2 SDR or 1 of each
<b>Temperature Control</b>	2 Numeric	None	None		1 Temperature	1 CDS or 1 SDR
<b>Dual Temp. Control</b>	2 Numeric	None	None		2 Temperature	2 CDS or 2 SDR or 1 of each
<b>Superheat</b>	2 Numeric	None	None		1 Press, 2 Temp.	1 SER, SEI, ESX, or SEHI
<b>Superheat Low Temp.</b>	2 Numeric	None	None		1 Press, 2 Temp.	1 SER, SEI, ESX, or SEHI
<b>Refrigeration</b>	2 Numeric	None	None		1 Press, 2 Temp.	1 SER, SEI, ESX, or SEHI

Notes: \* See accessories below, only Sporlan approved sensors may be used. \*\* All products control temperature, other functions not available on all models.

ACCESSORIES	ITEM NUMBERS	APPLICATION
0-150 psig Pressure Transducer 5' Cable (Green Color Code)	953091	RCS and Kelvin except R-410A
0-300 psig Pressure Transducer 5' Cable (Black Color Code)	952740	All except TCB, IB
0-150 psig Pressure Transducer 10' Cable (Green Color Code)	953092	RCS and Kelvin except R-410A
0-300 psig Pressure Transducer 10' Cable (Black Color Code)	952503	All except TCB, IB
0-500 psig Pressure Transducer 10' Cable (Yellow Color Code)	952505	Head Pressure and CO <sub>2</sub> Applications only
Surface Sensor - 2K (Black Color Code)	952662	All except RCS and Kelvin
Surface Sensor - 3K (White Color Code)	952551	RCS and Kelvin
Well Sensor	952795	All except IB, TCB less Potentiometer, RCS, and Kelvin
Air Sensor	952669	All except IB, TCB less Potentiometer, RCS, and Kelvin
SMA-12 Valve Actuator	953276	All 12 Volt DC Step Motor Valves

## TCB Temperature Control Board/IB Interface Board

The TCB interface/controller allows all Sporlan step motors to be modulated in response to an externally generated signal. The IB and TCB accept a 4-20 milliamp, or 0-10 volt DC inputs and stroke the valve proportionately to that signal. The TCB and IB allow use of the CDS or SDR valves with an existing DDC system or other generic temperature controller for hot gas bypass, evaporator temperature, or reclaim applications. While the TCB and IB will control Sporlan's line of SEI and SEH step motor electric expansion valves, an external signal must be generated in response to superheat and not simply temperature.



When the TCB is purchased with optional set point potentiometer and sensor, the TCB becomes a stand alone single point temperature control for the CDS or SDR valves. The sensor is installed in the air stream or affixed to the pipe containing the liquid to be controlled. The potentiometer is set to the temperature desired, and the TCB will modulate the valve to maintain tight temperature control. The TCB can be configured to "close on rise" or "open on rise" and requires only an external 24 volt AC 40 VA power source. The TCB

incorporates separate "pump down", "open valve", and "close valve" contacts for use with external relays to allow even greater control choices. The TCB and IB have screw terminals for easy connections, and should be mounted in a control panel or other enclosure.

## SMA-12 Step Motor Actuator

The SMA-12 is designed to diagnose systems with step motor valves by proving operation of the step motor. The unit is powered by two 9 volt alkaline batteries and will power any standard 12-volt DC bipolar step motor. Step rate is selectable at 1, 50, 100 or 200 steps per second and will stroke the motor in both directions. Red lamps indicate continuity of the motor windings and battery power, and binding posts provide quick connection of the motor leads. In the event of a controller failure, the SMA-12 can manually open or close the valve or step it to any position. The SMA-12 is the basic troubleshooting tool for all step motor valve operated systems.



ITEM NUMBER	DESCRIPTION	CONNECTOR
953276	SMA-12	Binding Post
953277	SMA-12 w/Pigtail	Packard Pigtail Item #958112

INTERFACE BOARDS	INPUT	VALVES*
<b>TCB</b>	4-20 ma, 0-10 VDC	SDR, CDS
<b>TCB with Potentiometer</b>	Temperature Sensor	SDR, CDS
<b>IB-ESX</b>	4-20 ma, 0-10 VDC	ESX
<b>IB-1</b>	4-20 ma, 0-10 VDC	SDR-3
<b>IB-3</b>	4-20 ma, 0-10 VDC	SDR-3, 3X
<b>IB-6</b>	4-20 ma, 0-10 VDC	SDR-4, CDS-9, -16, -17, Y1177

\* Interface boards may be used with electric expansion valves SER, SEI, SEHI, ESX only when used with external superheat controllers. For complete information consult your nearest Sporlan Wholesaler or email europecold@parker.com and request Bulletin 100-50-1 and 100-50-2.