



## The MCS-SER-20, MCS-SEI-30/50, & MCS-SEH-100/175

### Physical Characteristics

- Motor Type:** 2 phase permanent magnet, 2 coil bipolar
- Supply Voltage:** 12 VDC, -5% + 10%, measured at the valve leads
- Phase Resistance:** 75 ohms per winding  $\pm$  10%
- Maximum Power:** 4 watts
- Required Step Rate:** 200 steps per second, other rates must be tested and approved
- Number of Steps:** SER - 1596, SEI 30 - 3064, all others 6386
- Maximum Rated Pressure (MRP):** SER - 700 psi, SEI & SEH -620 psi
- Operating Temperature Range:** -50°F to 140°F (-45°C to 60°C)
- Materials of Construction:** copper - fittings; brass - valve body, motor housing, and adaptors; synthetic materials - seating and seals



### Product Description

The SER, SEI and SEH are Electronically Operated Step Motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor provide discrete angular movement, which translates into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing improved flow resolution and performance. The SER, SEI and SEH valves are easily interfaced with MCS micro-processor based controllers. Therefore, they are applicable on all the same types of systems found in the air conditioning and refrigeration industry as thermostatic expansion valves.

The SER, SEI and SEH valves modulate by the electronically controlled rotation of a step motor. The step motor drives a gear train and lead screw to position a piston. The piston is used to modulate flow through a port.

The motor is a two phase type driven in the bi-polar mode. Two discrete sets of motor stator windings are powered in sequence to rotate the rotor 3.6 degrees per step. Polarity of the drive signal reverses for each step.

When used with one of the MCS Controls, the valves provide unsurpassed accuracy in resolution of flow and repeatability of position.

### Parts#

<b>MCS-SER-20</b> .....	20 Ton EXV, 5/8" inlet fitting, 1-1/8" outlet fitting, 30' cable
<b>MCS-SEI-30</b> .....	30 Ton EXV, 7/8" inlet fitting, 1-7/8" outlet fitting, 30' cable
<b>MCS-SEI-50</b> .....	50 Ton EXV, 1-1/8" inlet fitting, 1-3/8" outlet fitting, 30' cable
<b>MCS-SEH-100</b> .....	100 Ton EXV, 1-3/8" inlet fitting, 1-5/8" outlet fitting, 30' cable
<b>MCS-SEH-175</b> .....	175 Ton EXV, 1-5/8" inlet fitting, 2-1/8" outlet fitting, 30' cable

External parts of the valve are brass and copper and meet or exceed 2000 hour salt spray tests per ASTM B-117.