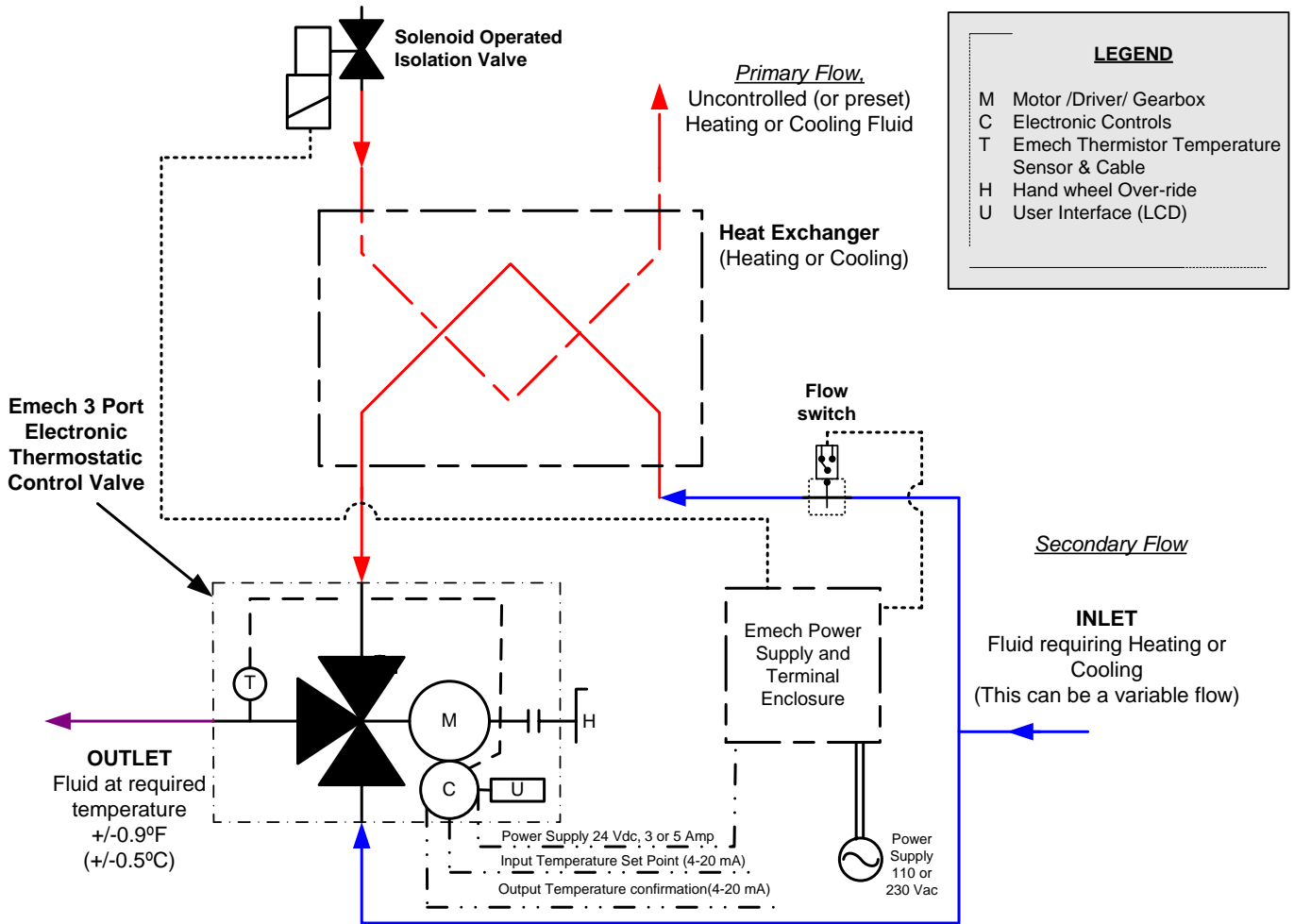


APPLICATION NOTE 5: Emech Heat Exchanger Application

Model F3 3-Port Valve, and G1 Electronic Actuator, with primary side isolation valve.



LEGEND	
M	Motor /Driver/ Gearbox
C	Electronic Controls
T	Emech Thermistor Temperature Sensor & Cable
H	Hand wheel Over-ride
U	User Interface (LCD)



F3 Valve and G1 Actuator

Advantages of the Emech 3 Port Electronic Thermostatic Control Valve

1. No control valve is required on the 'Primary Flow' side of the heat exchanger.
2. The isolation valve automatically isolates the heating/cooling fluid when the secondary flow demand is zero. This prevents undesirable boiling or freezing of the fluid in the heat exchanger.
3. As the control valve and temperature sensor are physically close together, the Emech controller can be set with very 'aggressive gains'. The result is **FAST, STABLE** control **REGARDLESS** of variable flows and large step change disturbances.
4. The Temperature Sensor 'T', is located in the valve outlet. The sensor measures any error in output temperature, and the actuator can respond immediately. There is **NO DELAY** due to heat exchanger thermal transfer, or transport lags.
5. If the Primary side flow or temperature is reduced, the Emech controller automatically DIRECTS and REDUCES the flow through the heat exchanger to achieve the desired outlet temperature. i.e. set point is achieved regardless of significant upset in the heat transfer availability.
6. Unlike most 3 port valves the Emech Valve can isolate **BOTH INLETS** at once (i.e. it has a fully closed position). This may eliminate the need for separate isolation valving.
7. The Emech solution includes full P.I.D. control gain configuration. An RS232 connection enables the actuator to be tuned to suit the installation.
8. The Emech valve uses ceramic 'hard-seal' disc technology for long life sealing integrity, and low torque operation.

Disclaimer:
 This diagram is for general discussion purposes only. It is NOT intended as a design document. The actual operation and equipment selection is the responsibility of the plant owner.
 The information is solely intended to provide a general understanding of the subject matter and to assist Emech's customers and potential customers to assess whether they require further information.
 Emech does not guarantee or warrant the accuracy, completeness or currency of any information provided.
 SDAN0005_RevB_F3-G1 Heat Exchanger Control-Isolator.vsd

