PROCESS CONTROLLER
SAMPLE SPECIFICATION

This sample specification is for a process controller. In addition to the following, it may be useful to include information on specific process requirements, such as peripheral process equipment.

1.0 GENERAL

1.1 The controller shall be a single unit with no trays, racks, or connector cables required.

1.2 The controller shall have a waterproof, sealed display panel.

1.3 Display bezel dimensions shall be international DIN standard 72 mm wide by 144 mm high.

1.4 The controller shall have a panel depth of less than 12" (305mm).

1.5 The controller shall have removable plug-in terminal connections.

2.0 DISPLAY PANEL

2.1 The controller shall include an integral display for the user to perform monitoring, loop tuning, and controller configuration.

2.2 The display panel shall provide bargraph indication of setpoint, process, and valve loading.

2.3 The display panel shall also support digital indication of multiple loops containing setpoint, process, valve loading, totalizer, and any two additional values selected.

2.4 Universal pushbuttons located on the panel shall be configurable for a variety of functions such as computer/local operation, external/internal setpoint switches, and sequence starting and stopping.

2.5 The display panel shall include a knob for precision adjustment of setpoint, valve loading, etc.

2.6 The display panel shall include a visible flashing alarm indicator as well as an alphanumeric display.

2.7 The display panel shall have a tactile membrane keypad.

3.0 CONFIGURATION

3.1 The controller shall be completely configurable from the display panel without external devices.

3.2 No programming language shall be required for configuration.

3.3 Configuration shall be performed using function block techniques which allow blocks to be selected and arranged into the configuration.

3.4 Logic circuits shall be configurable in ladder logic using a Microsoft® Windows™ based software package.

3.5 The controller shall contain in memory a library of commonly used control strategies, such as single-loop PID, ratio control, and single-station cascade to allow implementation by entering only application-specific information.

3.6 Password security shall be available to selectively restrict access to configuration modes.

4.0 CONTROL FUNCTIONS

4.1 The controller shall allow the user to implement complete control strategies without the need for additional devices. Strategies supported shall include, but not be limited to: feedforward, single-station cascade, adaptive gain, on-off control, dead time, air/fuel ratio control with lead/lag, three element drum level control, valve characterization, and pressure/temperature compensation.

4.2 Math functions associated with the control loop shall be supported in the same unit.

4.3 The controller shall be capable of adapting to changing control requirements without changes in equipment, training, or operating procedures.

4.4 The controller shall have a library of function blocks and the function blocks must be reusable.

4.5 The controller shall be capable of controlling up to 25 control loops.

5.0 I/O SUPPORT

5.1 The controller shall accept up to six 4-20 mAdc inputs, not dedicated to a specific function.

5.2 The controller inputs shall include two isolated universal inputs capable of accepting thermocouple or RTD signals without external T/C conversion or linearization.

5.3 Digital outputs shall include at least two relay contacts rated for 5 Amps at 115 Vac.

5.4 The controller shall have three 4-20 mA outputs, each capable of driving an 800 ohm load.

5.5 The controller shall have a built-in power supply. It shall provide 26 Vdc field power, with short circuit protection, to power up to six 2-wire transmitters.

5.6 Controller I/O shall be expandable to 128 remote I/O points. Remote I/O shall connect to the controller using a single twinaxial (i.e., 2-conductor, twisted-pair) cable.

6.0 SERIAL COMMUNICATIONS

6.1 The controller shall come standard with two independent serial communication ports.

6.2 The controller shall include options for connection to a communication network with:

      6.2.1   Peer-to-peer communications
- Half second continuous update for data values
- Self-configuring architecture
- Structure preventing the failure of one device from, disrupting link operation
- Ability to communicate with host and personal computers for data acquisition and supervisory functions
- Support of configuration transfer if desired

      6.2.2   High speed digital fieldbus
- Capable of supporting 128 remote I/O points
- Support data transfer at 78.1 kbytes
- Capable of wiring in a free topology (e.g., star, loop, single termination bus)
- Operator interaction shall be possible via a personal computer

6.3 Software shall be available for the operator interface that provides faceplate displays, point trending, alarm handling and logging, interactive graphic displays, and report generation.

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