

ROYCE SUSPENDED SOLIDS SYSTEM

(Revised 1/12/2006)

MODEL 7011A AND SENSORS MODELS 72A, 72P, 73B, 74A, 75A & 76A

The system shall operate on the principle of light absorption. It shall consist of an analyzer Model 7011A and the appropriate sensor for the range being measured. The system shall operate on either 115/230 VAC, 50/60Hz. The analyzer shall be provided with an thermostatically controlled heater for temperatures below -10 Deg. C.

Suspended Solids Analyzer Model 7011A -

The analyzer shall be housed in a NEMA 4X enclosure with brackets for wall or standard two inch Dia. round handrail mounting as required. The analyzer shall be fully microprocessor controlled.

The system shall be capable of being calibrated to a known value without removing the sensor from the process.

The analyzer shall have the following minimum features:

1. An LCD display of a minimum 1.5" x 2.2" (64 x 128 Pixel) This display shall be visible without opening the analyzer cover and shall have the capability of displaying:-
 - A. The reading in either milligrams per liter or density percentage as applicable.
 - B. Individual Menu driven text "Help Screens" for each program parameter.
 - C. Individual "Help Screens" for each step of the calibration process.
 - D. Error messages for the self-diagnostic functions.
2. The analyzer shall have built in self-diagnostic features to alert:
 - A. Sensor light detector failure.
 - B. Abnormal conditions during calibration.
 - C. Internal program failure.
3. The analyzer shall have built in "Test" features including:
 - A. Constant current output on demand for both the 4 and 20 milliamps

B. Relay activation test parameter to latch and unlatch the relays on demand.

4. Individually programmable SPDT relays rated Form C, 7 amps resistive.
5. Either a 4 - 20 mA or 0 - 1 VDC, Isolated output. Completely programmable by the end user. The latch and unlatch points can be set separately.
6. A Digital Serial RS-485 Interface with programmable baud rates of 300, 6000, 1200, 2400, 4800, 9600, and 19200.
7. The analyzer shall be Auto-Ranging.
8. User selectable calibration linearization curves.
9. Automatic color compensation for the Models 73A.
10. Automatic ambient light compensation for the Model 72A sensor.

The Model 72A Low Range Sensor:-

The Model 72A Sensor shall contain the light source and photo detector. It shall be automatically compensated for ambient light conditions and have the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 -1500 mg/l

Accuracy: +/- 5% of reading or +/- 5 mg/l, (1.7 NT), whichever is greater.

Repeatability: +/- 1% of reading or +/- 2 mg/l (0.5 NT), whichever is greater.

Resolution: 1 mg/l

Temperature Limit: 0-50 Deg. C.

Pressure: 0-50 PSIG

Cable Termination: Tinned Ends.

Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified.

Mounting: Brackets included to mount to Standard two inch Dia. handrail or as required. The sensor mounting shall be slip fit 1-1/2" PVC pipe. This is to match a suitable length of pipe supplied by the installer.

The Model 72P Low Range Pipe Insertion Sensor:-

The Model 72P Sensor shall contain the light source and photo detector. It shall be automatically compensated for ambient light conditions and have the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 -1500 mg/l

Accuracy: +/- 5% of reading or +/- 5 mg/l, (1.7 NT), whichever is greater.

Repeatability: +/- 1% of reading or +/- 2 mg/l (0.5 NT), whichever is greater.

Resolution: 1 mg/l

Temperature Limit: 0-50 Deg. C.

Pressure: 0-20 PSIG

Flow: 800 GPM to Drain (Not to exceed 20 PSI)

Cable Termination: Tinned Ends or Connector for Quick-Disconnect
Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified.
Mounting: Sensor Incorporates 3" ANSI Flange.

The Model 73B Medium Range Sensor:-

The Model 73B Sensor shall contain the phased array light source, and photo detector. It shall be completely submersible. It shall be air or water jet self-cleaning with automatic color compensation and have the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 - 30,000 mg/l

0 - 3%

Accuracy: +/- 5% of reading or +/- 100 mg/l, whichever is greater.

Repeatability: +/- 1% of reading or +/- 20 mg/l whichever is greater.

Temperature Limit: 0-50 Deg. C.

Pressure: 0-50 PIG

Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified

Cable Termination: Tinned Ends or JB-93 Junction Box with quick disconnect.

Mounting: Handrail Brackets included to mount to Standard two inch Dia. handrail or as required. The sensor mounting shall be slip fit 1-1/2" PVC pipe. This is to match a suitable length of pipe supplied by the installer.

The Model 74A High Range In-Line Sensor:-

The Model 74A Sensor shall contain the light source, photo detector, and self-cleaning actuator mechanism. It shall be self-cleaning with the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 - 80,000 mg/l

0 - 8%

Accuracy: +/- 5% of reading or +/- 150 mg/l, whichever is greater.

Repeatability: +/- 1% of reading or +/- 30 mg/l whichever is greater.

Temperature Limit: 0-50 Deg. C.

Pressure: 0-50 PIG

Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified.

Cable Termination: Tinned Ends or JB-93 Junction Box with quick disconnect.

Mounting: Shall be into a pipe through a two inch female NPT saddle or similar arrangement provided by the installer. A two inch male NPT insertion nipple shall be provided as part of the sensor assembly.

The Model 75A Medium/High Range Sensor:-

The Model 75A Sensor shall contain a light source, and photo detector. It shall be completely submersible. It shall be air or water jet self-cleaning and have the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 - 50,000 mg/l

0 - 5%

Accuracy: +/- 5% of reading or +/- 100 mg/l, whichever is greater.

Repeatability: +/- 1% of reading or +/- 20 mg/l whichever is greater.

Temperature Limit: 0-50 Deg. C.

Pressure: 0-50 PSIG

Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified.

Cable Termination: Tinned Ends or

JB-93 Junction Box with quick disconnect.

Mounting: Brackets included to mount to Standard two inch Dia. handrail or as required. The sensor mounting shall be slip fit 1-1/2" PVC pipe. This is to match a suitable length of pipe supplied by the installer.

The Model 76A Medium Range In-Line Sensor:-

The Model 76A Sensor shall contain the light source, photo detector, and self-cleaning actuator mechanism. It shall be self-cleaning with the following minimum specifications.

Type: Single-gap optical light absorption sensor.

Range: 0 - 30,000 mg/l

0 - 3%

Accuracy: +/- 5% of reading or +/- 150 mg/l, whichever is greater.

Repeatability: +/- 1% of reading or +/- 30 mg/l whichever is greater.

Temperature Limit: 0-50 Deg. C.

Pressure: 0-50 PSIG

Cable Termination: Tinned Ends or JB-93 Junction Box with quick disconnect.

Cleaning: Air or Water Jet included. Self contained air or house air/water to be specified.

Mounting: Shall be into a pipe through a two inch female NPT saddle or similar arrangement provided by the installer. A two inch male NPT insertion nipple shall be provided as part of the sensor assembly.

OPTIONAL JET CLEAN SELF-CLEANING SYSTEM

All Royce Suspended Solids sensors can be supplied with an optional Jet self-cleaning system. This cleaning system can operate from plant air or water of at least 30 PSI with a maximum of 60 PSIG for Immersion sensors and 20 PSIG greater than line pressure for in-line sensors. Simply specify the Jet Self-Cleaning assembly. If plant

air or water is not available, Royce can supply a complete self-contained compressor package **MODEL JCT**. The solenoid shall be programmed by the Royce **MODEL 7011A** suspended solids analyzer to deliver an air or water jet blast across the sensor optics at timed intervals.

Type: Air Compressor, light, non-continuous duty.

Pressure Supplied: 40 to 60 PSIG.

Temperature Limits: 0 to 50° C.

Enclosure: NEMA 4X, 14" x 12" x 6"D.

Input Power: 115/230VAC, 60/50 Hz, 325 Watts.

Options: Heater (Recommended for -10° C).

Mounting: Royce Rail Mounting Kit.

CAUTION: The AIR JET CLEANING should NOT be used on In-Line applications where injecting air would be detrimental to the process.



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