

Principle of Operation

The Jerguson Model RST2 is a 4-20 mA, two wire, loop-powered level transmitter. It has been designed and is intended to be used in conjunction with the Jerguson Magnicator II magnetic liquid level gage. As the magnetic float travels up and down inside the Magnicator chamber, small magnetic reed switches close and open with the movement of the float. These switches are connected by a series of resistors. A constant current is passed through the reed switch circuit, and the varying voltage is detected and converted into the 4-20 mA output signal.

The part number designator for the RST2 can be found below.

* PART NUMBERS TO BE IN ACCORDANCE WITH THE FOLLOWING:

A25531-1/X-XXX

— DENOTES RANGE, FROM 12" TO 264" (22')

— DENOTES RESOLUTION, EITHER 1/4" OR 1/2"

There are two main components that make up the RST2. These two components are the electronics housing and the sensor housing (see Fig. 1). These two components are assembled at the factory and should not be separated in the field.

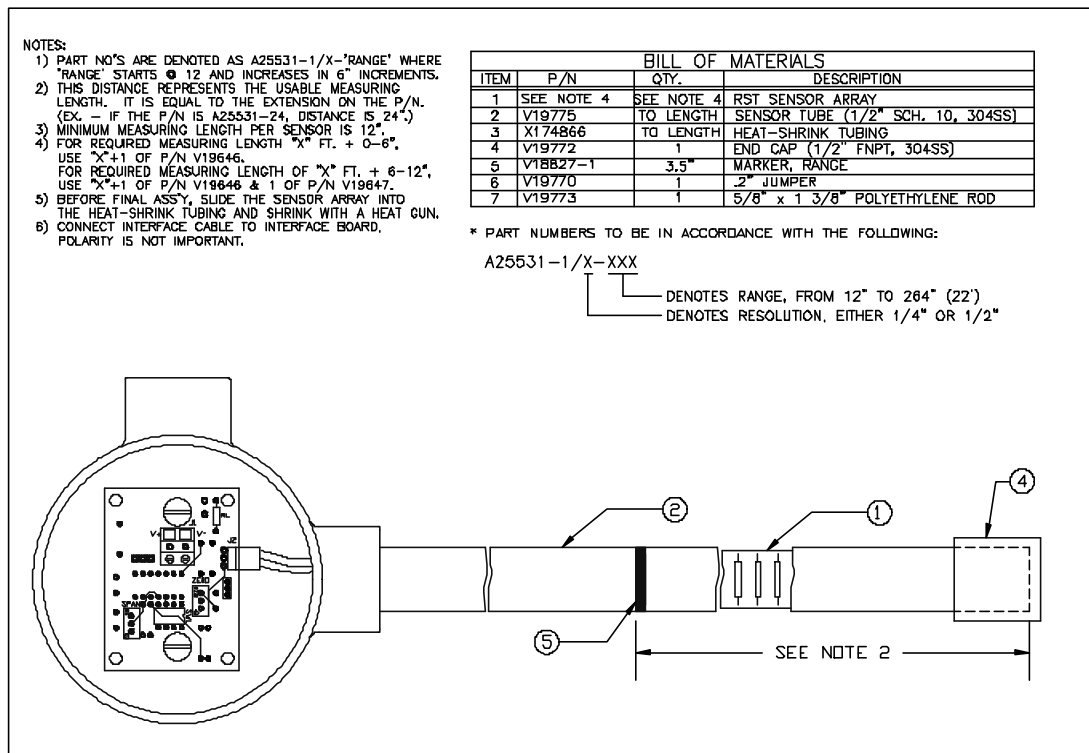


Figure 1: RST2 Assembly

General Specification

Sensor Length	1 to 22 feet (.31 to 6.7 meters)
Wiring	2 wire twisted pair or shielded cable, 24 AWG or heavier
Maximum Cable Length	5,000 feet (1,524 m)
Conduit Connection	¾" FNPT
Wiring Connection	Screw terminal, 12 AWG Max.
Input Voltage	24 VDC Nominal 11 VDC Min. / 35 VDC Max.

Output

Current	4 - 20 mA (max. rated 28mA)
Non linearity	Max. 0.05% of Full Scale
Temperature Sensitivity	0.02% FS / °C
Operating Temperature	0 to 150 °F
Span Adjustment	FS greater than or equal to 12 inches (30.5 cm) from zero
Zero Adjustment	20 inches or FS, whichever is less.

Installation

Mounting

The RST2 is designed to mount directly to the outside of the Magnicator II chamber. The RST2's electronics can be mounted at the top or the bottom (depending upon the configuration of the internal switch) of the Magnicator II chamber. The flat side of the electronics enclosure should be mounted flush against the chamber. Place the spacer blocks under the sensor housing and secure the transmitter to the chamber using the supplied hose clamps. Align the low level range marking on the sensor housing with the lowest process connection. Ensure that the clamps are tight.

Electrical Connections

Connect the 24 VDC power supply to the electronics module using the screw terminal block on the interface board. A typical wiring arrangement is shown below. NOTE: A 100Ω loop resistance is already included on the RST Interface board. If additional resistance is required, please check Figure 2 to ensure that the DC power supply voltage and loop resistance fall within the shaded operating region.

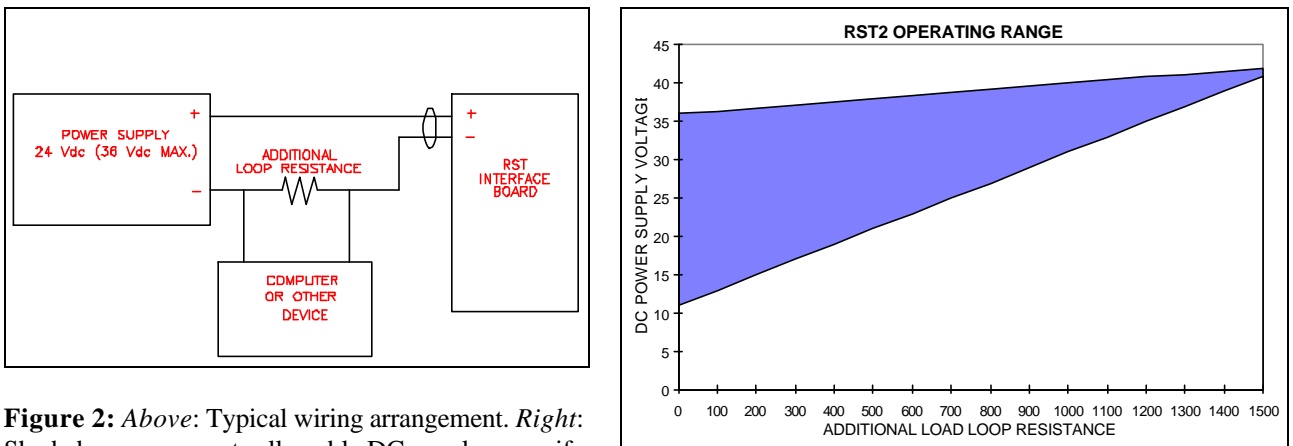


Figure 2: Above: Typical wiring arrangement. Right: Shaded area represents allowable DC supply range if additional loop resistance is introduced.

NOTE: For explosion-proof installations, wiring shall be in accordance with the National Electric Code ANSI/NFPA 70, Article 501-30.

Calibration

When purchased with a Jerguson magnetic liquid level gage, the RST2 will be calibrated at the factory. The factory calibration will be set such that the lowest process connection will correspond to 4 mA and the highest process connection will correspond to 20 mA.

If the RST2 is not purchased with the magnetic liquid level gage or you desire to change the zero and span of the transmitter the following steps should be followed. NOTE: Use a voltmeter connected across resistor RL. 4 to 20 mA will read 400 mV to 2V.

Zero Adjustment

1. Move the float along the transmitter sensor housing to the desired 4 mA position.
2. If the present output is greater than 4 mA, turn the potentiometer labeled “ZERO” counterclockwise until the output equals 4 mA. Turn the potentiometer clockwise if the reading is less than 4 mA.

Span Adjustment

1. Determine the active measuring length (span) of the sensor and set the switches on switch SW1 according to Figure 3 at right.
2. Move the float along the transmitter sensor housing to the desired 20 mA position.
3. If the present output is greater than 20 mA, turn the potentiometer labeled “SPAN” counterclockwise until the output equals 20 mA. Turn the potentiometer clockwise if the reading is less than 20 mA.

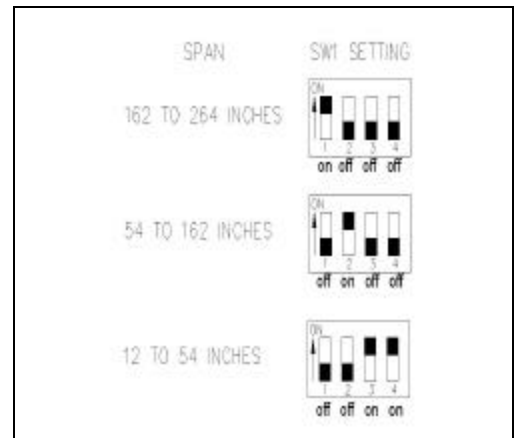


Figure 3

Alarm Setting

In the event that the RST Interface cable were to become disconnected or the magnet were to go out of sensing range, the output of the transmitter will measure greater 24 mA continuously.

Warnings

This equipment is suitable for use in Class I, Div. 1, Groups B, C, & D; Class II, Div. 1, Groups E, F, & G hazardous locations or non-hazardous locations only, or the equivalent.

WARNING: EXPLOSION HAZARD – The area must be known to be non-hazardous before servicing/replacing the unit and before installing or removing I/O wiring.

WARNING: EXPLOSION HAZARD – Do not disconnect equipment unless power has been disconnected and the area is known to be non-hazardous.