AnaLynk
Wireless, LLC

**Installation and Operation Manual for
4-20mA RF Wireless Transmitter Model A753**

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Rev 1.3

1.0 Features

- The Model A753 offers simplicity and reliability in a point to point RF system.
- Designed for easy transmission of 4-20mA or other DC signals.
- Two discrete (switch) inputs, switch inputs can be wet or dry.
- Two radio power levels available: 1W or 50mW (A753-LP).
- 11 to 32 Vdc power (nominal 24 Vdc).
- Repeaters can be added to extend range with no programming.
- Simple dip switch selectable RF channel.
- No software required.
- RSSI test (received signal strength indicator test).
- Convenient 35 mm DIN rail installation.
- Designed to interface with A750 receiver.
- Demo mode.

Transmitter A753

Receiver A750 (sold separately)

2.0 Description

The A753 has one 4-20mA input and two discrete inputs. Other analog inputs are available always refer the label on the side of the unit to determine proper input. Discrete inputs can be either wet or dry. The status of the discrete inputs is displayed on the front panel as A1 and A2. The 4-20mA input signal is replicated on the receiver's 4-20mA output. Similarly the state of switches A1 and A2 are mapped to the receiver's A1 and A2 respectively. To facilitate installation, the transmitter is designed for 35mm DIN mount and powered by the industry standard +24Vdc (11 to 32 Vdc). The receiver model A750 is sold separately. The Model 753 can be used with a repeater (Model A759). If a repeater is used – please refer to section 4.4 for configuration.

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3.0 Mounting and Electrical Connections

Mount the transmitter on 35mm DIN rail. The connectors are removable for simple transmitter replacement. Figure 1 and table 1 show connections to the transmitter. One 4-20mA signal and up to two switches, wet or dry contact can be used at a time. Switches A1A and A1B should not be used at the same time; similarly switches A2A and A2B should not be used at the same time.
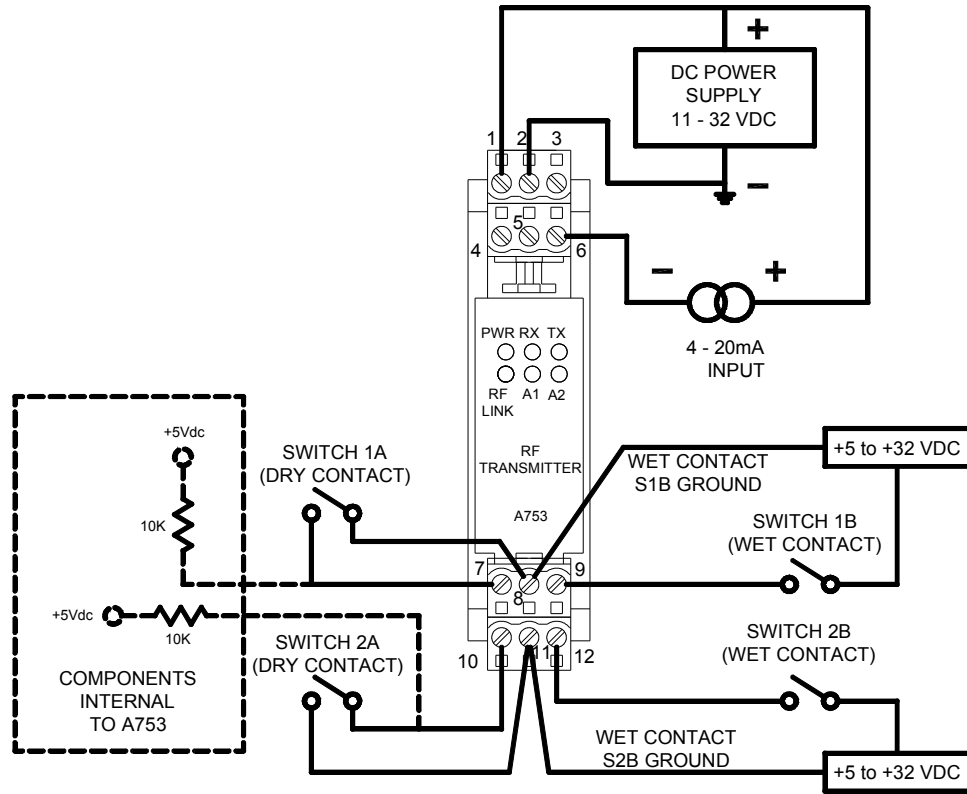

Figure 1 Transmitter connections.

Terminal Number	Terminal Description		Terminal Number	Terminal Description
1	Positive +11 to 32 Vdc power supply		7	A1A dry contact positive
2	Power supply ground, Signal Ground		8	A1B wet or dry contact ground
3	No connection		9	A1B wet contact positive 5 - 32 VDC
4	No connection		10	A2A dry contact positive
5	No connection		11	A2B wet or dry contact ground
6	4-20mA signal (or analog positive see label on side of unit)		12	A2B wet contact positive 5 - 32 VDC

Table 1 Transmitter connections.

ACCESS
DOOR

RX
(RECEIVE)
POWER
TX (TRANSMIT)
RF LINK
SWITCH STATUS/ALARM 2
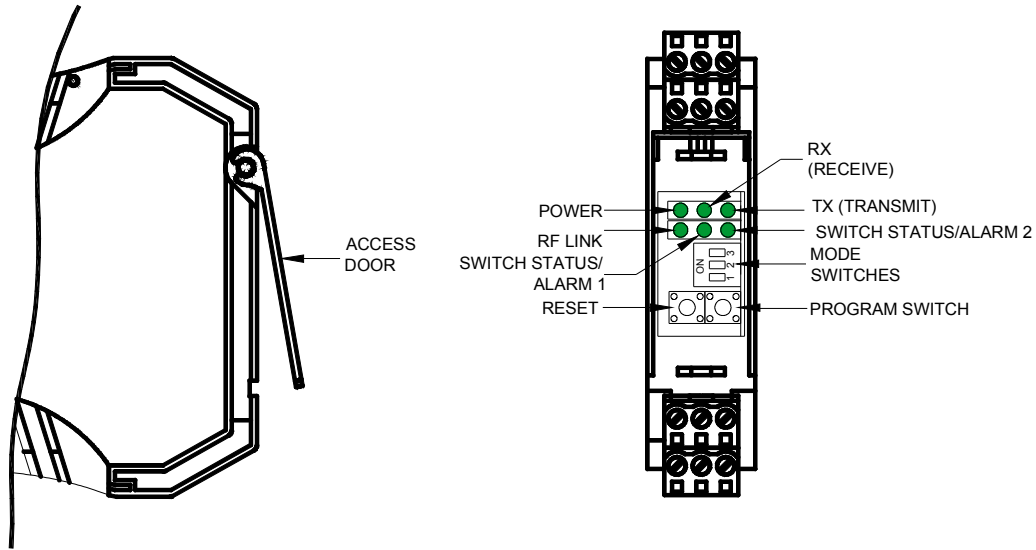SWITCH STATUS/
ALARM 1
MODE
SWITCHES
RESET
PROGRAM SWITCH

Figure 2 Access door, switch and LED locations.

4.0 Setup

Transmitter setup is accomplished without software. Access the programming buttons and switches by lifting the access door as shown in figure 2.

4.1 Power up Sequence

When the A753 is powered, LEDs light in the following sequence: Power, RF Link, A1, A2. Then either A1 or A2 will blink (4) times – this will indicate Normal RF Mode or Repeater Mode – see Section 4.4 for configuration. After a brief pause all LEDs will report the appropriate status.

4.2 Mode Switch Selection

The mode switches are used for calibration, RF channel selection and RSSI (received signal strength indication) activation. Figure 3 shows the function of each switch position.
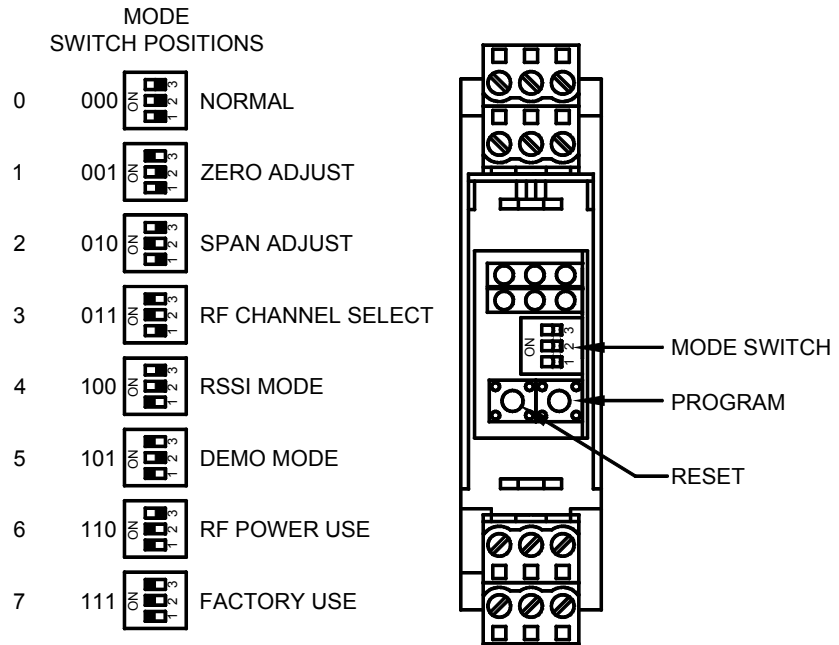
MODE
SWITCH POSITIONS

0	000	NORMAL
1	001	ZERO ADJUST
2	010	SPAN ADJUST
3	011	RF CHANNEL SELECT
4	100	RSSI MODE
5	101	DEMO MODE
6	110	RF POWER USE
7	111	FACTORY USE

MODE SWITCH
PROGRAM
RESET

Figure 3 Mode switches.

Return all switches to Mode 0 for normal operation. Refer to figure 3 for mode switch settings.

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Note: b000 is binary 000, the decimal equivalent of decimal 0. The least significant bit is switch position 3.

Mode 0 (b000): Normal operation; this mode is for standard 4-20mA and switch status operation. The unit is normally left in this mode.

Mode 1 (b001): Calibration mode Zero adjust; See Section 4.3 for Zero/Span Calibration.

Mode 2 (b010): Calibration mode Span adjust; See Section 4.3 for Zero/Span Calibration.

Mode 3 (b011): RF Channel Select: Set mode switches for mode 3 (see figure 3) then press and release the reset switch. There are 8 RF channels available, 0-7. After power up sequence, the present RF channel will be displayed, see figure 4. To return to normal mode return all switches to b000 or to change RF, channels press and release the program switch and the next incremented channel will be displayed. Each subsequent press and release of the program switch increments the RF channel, channels will wrap around from 7 to 0. When the desired channel is displayed, press and hold the program switch for five seconds, the power LED will blink twice to indicate value has been stored. Return all switches to b000, programming is complete. *The RF channel must match the RF channel on the receiver.* Refer to A750 Receiver manual for RF Channel Select procedure.

Mode 4 (b100): RSSI mode: Set mode switches for mode 4. In this mode the RF field strength can be monitored on the model A750 receiver. The A750 receiver must also be in RSSI mode for proper operation. Refer to A750 Receiver manual for RSSI Mode procedure. RSSI Mode can be helpful during installation for antenna alignment.

Mode 5 (b101): Demo mode: Set mode switches for mode 5. All inputs are automatically simulated in the following sequence: 4.00mA, 20.00mA, A1 closed, A2 closed, 20mA 4.00mA, 20mA, A1 open, A2 open, 20.00mA, and repeat. All input connections are ignored in this mode. Return all switches to b000 when demo is complete.
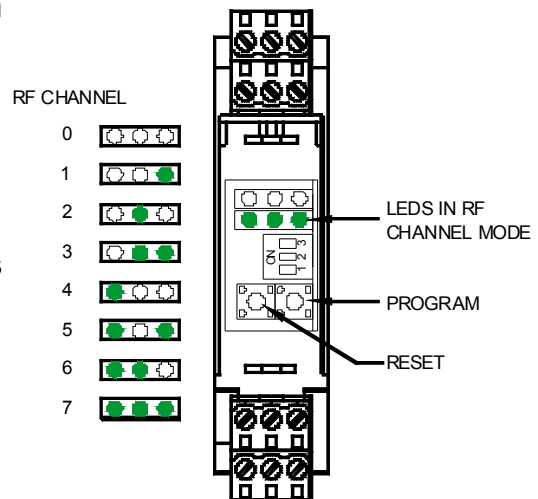

Figure 4 RF Channel Selection.

Mode 6 (b110): RF Power Select: Set mode switches for mode 6 (see figure 3) then press and release the reset switch. There are 5 RF power settings available (1mW, 10mW, 100mW, 500mW, 1W). After power up sequence, the present RF power setting will be displayed, see figure 5. To return to normal mode return all switches to b000 or to change RF power setting, press and release the program switch and the next incremented channel will be displayed. Each subsequent press and release of the program switch increments the RF power, power setting will wrap around from 4 to 0. When the desired power level is displayed, press and hold the program switch for five seconds, the power LED will blink twice to indicate value has been stored. Return all switches to b000, programming is complete.
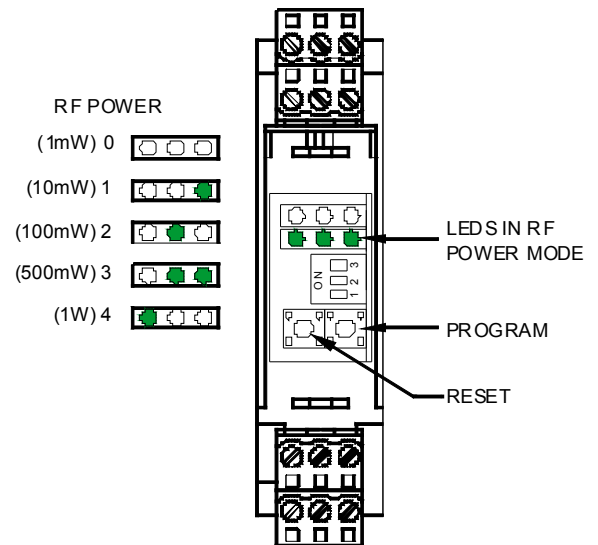
4.3 Zero and Span Calibration *(refer to label on side of unit for actual input voltage/ current, substitute value for 4-20mA below as necessary)*

4.3.1 Lift Access Door to expose mode, reset, and programming switches (see figure 3).
4.3.2 Connect calibration source to 4-20ma input (see figure 1, and table 1)
4.3.3 Set mode switch to Mode 2 ("Span Adjust") – see figure 3 for proper setting.
4.3.4 Apply power to unit or if unit is already powered – press and release the "reset switch" – after unit has completed power up sequence, apply "Zero" signal of 4ma.
4.3.5 Press and release the "program switch" – the Power LED will blink twice to indicate value is stored.
4.3.6 Apply "Span" value of 20ma.
4.3.7 Press and release the "program switch" – the Power LED will blink twice to indicat value is stored.
4.3.8 Span calibration is completed. Return mode switch to Mode 0.
4.3.9 Set mode switch to Mode 1 ("Zero Adjust") -- see figure 3 for proper setting.
4.3.10 Press and release the "reset switch" – after unit has completed power up sequence, apply "Zero" signal of 4ma.
4.3.11 Press and release the "program switch" – the Power LED will blink twice to indicate value is stored.
4.3.12 Zero/Span calibration is completed. Return mode switch to Mode 0.
4.3.13 Check Zero/Span calibration by observing 4-20ma output of A750 Receiver at different input values of connected calibrator source (e.g. 4,8,12,16,and 20ma).
4.3.14 If unit is properly calibrated – disconnect calibration source; otherwise, repeat calibration process – starting at step 4.3.2.

4.4 Normal RF or Repeater Mode Configuration

When transmitter initially powers up or unit is reset – Transmitter will go through power up sequence (see Section 4.1) – the A1 or A2 LED blinks (4) times to indicate if unit is in Normal RF Mode or Repeater mode. If the system does not have a repeater (Model A759) – it should be in Normal RF Mode (A1 will blink 4x at initial power up – see fig 2). If system does use a repeater – the unit should be in Repeater Mode (A2 will blink 4x at initial power up). To program for Normal RF or Repeater mode , please do the following.

4.4.1 Lift Access Door to expose mode, reset, and programming switches (see figure 2).

4.4.2 Press Reset switch and then press / hold programming switch.

4.4.3 After initial power up – the Normal RF / Configuration will change from one to the other by blinking the appropriate A1 or A2 LED. Release Programming switch.

4.4.4 Repeat process if needed until correct configuration is achieved.

5.0 Specifications

Input:
4-20mA (optional analog inputs are available, refer to label on side of unit)
Discrete: dry contact switch or logic level
Wet contact range: +5 to +32 Vdc

Accuracy:
16 bit

RF Output:
1 Watt (+30 dBm), 900 MHz FHSS
Optional 50mW (+20 dBm) 900MHz FHSS (Model A753-LP)

Power:
11 to 32 Vdc, 5W maximum

Operating Temperature Range:
-40°C to +85°C

RF Encryption:
256 bit

DIN RAIL MOUNT:
35mm