Parrot Wireless 4-20mA cable replacement - Quick start guide

This manual provides step-by-step instructions for setting up and operating a radio transmitter and receiver system that transmits a 4-20mA current loop signal wirelessly. The radio receiver mirrors the 4-20mA input received by the transmitter, acting as a cable replacement.   Please note that all Parrot devices are pre-paired and fully calibrated.

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** IMPORTANT SAFETY INFORMATION**

• Please read this document entirely before beginning.
• Installation and use of this information and this system is to be performed by a competent, trained person only.
• Danger of electric shock.
• Always power down the system before making or changing wiring connections.
• Ensure all connections are secure to prevent accidental shorts or open circuits.

System Overview

• The transmitter accepts a 4-20mA current loop input and operates at nominal 24V DC (+/- 10%).
• The receiver outputs (at a set interval – default 10 minutes) a 4-20mA signal that mirrors the transmitters' input.
• All units include a switch, for the transmitter this will immediately measure the loop current and send the value to the receiver. For the receiver this will send a request to the transmitter to measure the loop current and return it.
• To enable fault relay visit menu A fault relay output is available on the receiver. By default, the relay is Normally Closed (energised) when data is being received successfully and will only be Opened (de-energised) when 2.5 transmit intervals have passed with no transmission being received.
• The system is designed for remote analogue signal transmission, commonly used in industrial process control.

System Wiring and Setup

1. Power Supply Connection for Transmitter
• Connect the positive terminal of the 24V DC power supply to the positive power input of the transmitter.
• Connect the negative terminal of the power supply to the transmitter's power ground.

2. 4-20mA Input Signal Connection for Transmitter
•Connect the signal source (e.g., sensor or controller) output to the transmitter's 4-20mA input terminals.
•Ensure correct polarity: the current should flow from the signal source, through the transmitter, and return to the signal source or ground, as per your loop configuration.

3. Radio Link
•Ensure both transmitter and receiver are powered and within radio communication range.
•Each transmitter and receiver are supplied as a paired is set, with a standard address.
•For operating environments where multiple pairs of devices are operational, it may be necessary to change the standard address of some of the paired devices (see item 4 for address pairing).

4. Instruction for changing standard address pairing of a transmitter / receiver pair
•Remove front covers of both the transmitter and receiver to expose USB serial connection.
•Plug in USB cable to units and connect to Laptop / PC then open any serial terminal emulator (such as Real Term)
•For PC interface set operating speed to 9600bps with no flow control and 8-N-1.
•When the system starts it will enter the top-level menu system (pressing ESC twice will refresh the terminal to enter the menu system from an idle device or new terminal connection).
•From top level menu select option 3, this will take you to the radio parameter menu.
•From the radio parameter menu select option 2," set address by characters". Addresses may be set by any 2-characters such a S1 or aB in either upper or lower case. NB. The preset standard address is set to II (capital i,i not one one).
•Both Transmitter and Receiver need to be set to the same address.

5. Power Supply Connection for Receiver
•Connect the positive terminal of the 24V DC power supply to the positive power input of the receiver.
•Connect the negative terminal of the power supply to the receivers' power ground

6. Receiver Output Connection
•Connect the receiver's 4-20mA output terminals to the load device (e.g., PLC analogue input, meter).
•A fault relay Output is available on the receiver. The relay is energised when packets are being received. It will be de-energised when 2.5 transmit periods have passed with no transmission being received
•The receiver output will mirror the input signal received by the transmitter, providing a faithful reproduction of the original 4-20mA value.

Basic Operation

•When powered, the transmitter regulates the current in the loop based on the input signal (4mA = 0%, 20mA = 100% of measured parameter).
•The receiver outputs a 4-20mA signal identical to the transmitter's input, allowing remote monitoring or control.
•The system is robust against electrical noise and voltage drops over long distances, making it suitable for industrial environments.

Important Notes
•Only one transmitter should be present in each current loop.
•To minimise noise from signal source, use shielded twisted-pair wiring for long sensor cable runs.
•The 4mA "live zero" allows for fault detection: if the loop current drops below 4mA, it typically indicates a wiring or device failure.

Troubleshooting
•No output at receiver: Check power supplies, radio link status, and wiring continuity.
•Incorrect output current: Verify correct input signal, wiring polarity, and that only one transmitter is present in the loop.
•Signal loss or noise: Ensure adequate radio signal strength and use shielded cables for wired segments.
By following these instructions, your radio transmitter and receiver system will reliably transmit 4-20mA analogue signals for remote monitoring or control in industrial applications.

Volt-free Dry contact   **Switch**

ℹ️ The *Volt-free dry contact* status is also transmitted with each transmission.

Transmitter

4-20mA   **+24VDC**

ℹ️ The *Fault Relay* is Normally Closed (NC). Change of status occurs when no transmitter signal is received within 2.5 times the transmit interval

Fault Relay   **Switch**

Receiver

4-20mA   **+24VDC**