AnalogBridge™

Analog transmission system

Enclosure showing RTU Module and optional Power supply, External Relay

User Guide

Revision 1.4

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Introduction

The AnalogBridge system is designed to replace cable between analog sensors and display equipment.

The system consists of a transmitter unit, that is attached to the remote sensors, and receiver unit that receives information from the transmitter unit and generates the appropriate analog output according to the levels presented at the transmitter inputs.

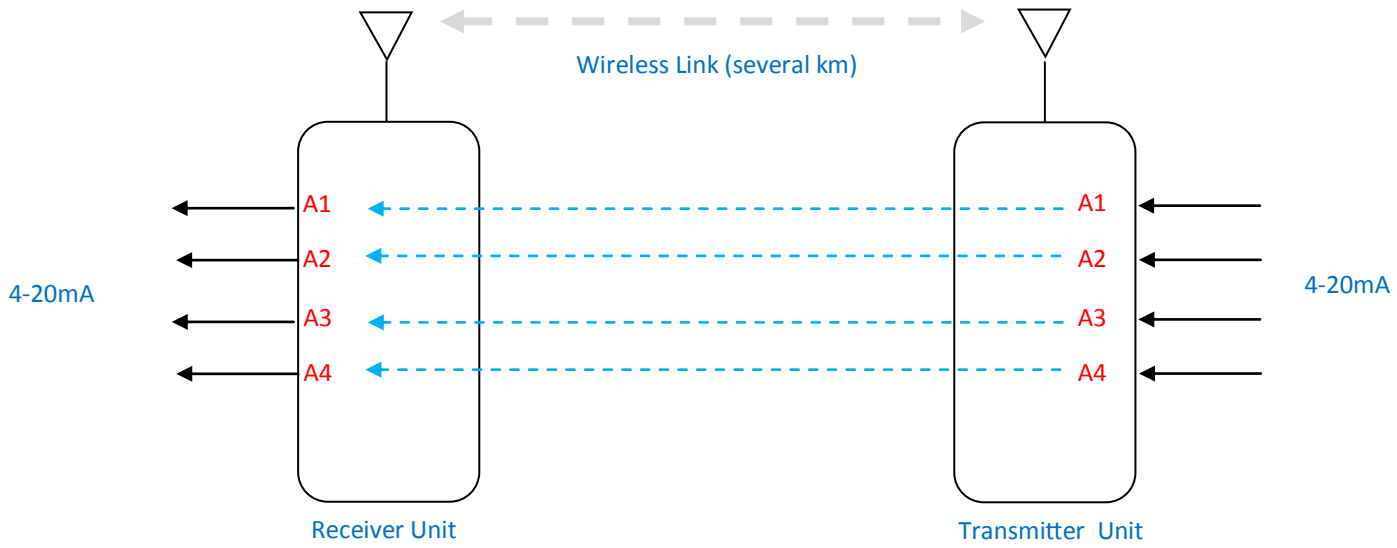


Figure 1. System Overview Diagram

How it Works

The Transmitter unit consists of a Digital RTU Module and 4-Channel, 4-20mA input Module.

The Receiver unit consists of a Digital RTU Module and a 4-Channel, 4-20mA output Module.

The RTU Module is responsible for communicating with the Analog Modules and sending or receiving readings to the other end of the link.

The Transmitter Unit continuously monitors the state of the Analog Inputs (A1.. A4).

If the Input level is 4mA or greater the corresponding A1LED to A4LED will be ON. If the input value is less than 4mA (Invalid) then the corresponding LED will be OFF.

Approximately 4 times per second, the Transmitter unit will send the measured values to the Receiver Unit.

The Relay outputs (R1 to R4) at the Receiver unit reflect the state of the Digital inputs (D1 to D4) of the Transmitter unit.

These outputs can be connected to a measuring device (such as a PLC). The corresponding 4-20mA output will revert to 0 mA to indicate error.

The Receiving Unit will set its Analog Outputs accordingly.(i.e. If input “A1” at the Transmitter Unit measured a value of 6 mA then the corresponding output “A1” at the Receiving Unit would generate 6 mA).

Each Analog output (A1 to A4) of the Receiving Unit has a LED that indicates current loop is connected. This LED will be dim when 4mA is being generated and full brightness when 20mA is being generated.

In the event of a radio link error all analog outputs at the Receiver unit will drop to 0mA and all LED indicators will switch OFF.

The RTU unit LINK OK LED at the Transmitter Unit will flash each time updated information is being sent to the Receiver Unit.

The RTU unit Receive LED at the Receiver Unit will blink each time a message is received from the Transmitter Unit. The LINK OK LED will switch ON and stay on unless the radio link has an error (No reception for 10 seconds or more from Transmitter Unit).

RTU LED Status Panel

The front panel has a number of LEDs that indicate particular conditions for the system.

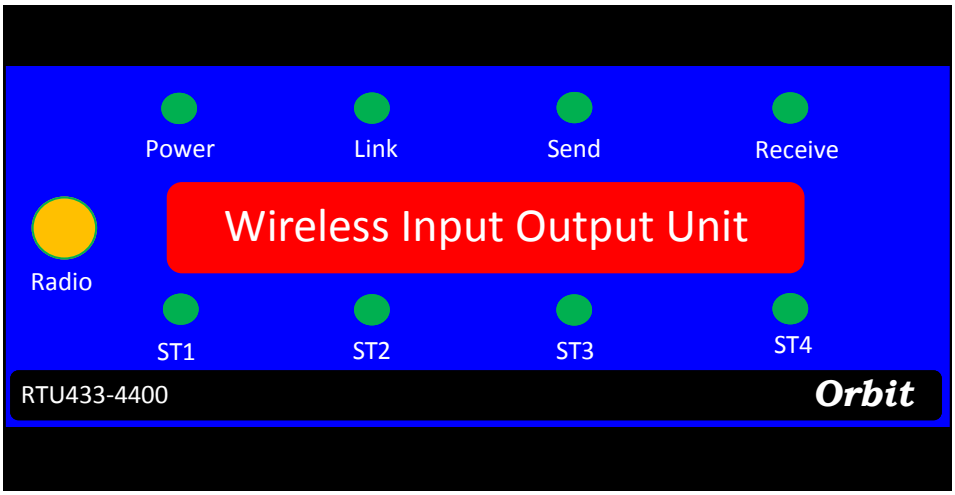


Figure 2. Transmitter/Receiver RTU LED Status Panel

LED	Description	Function
Power	Power Indicator	ON when unit has power
Link	Link Health	ON when radio link is healthy
Send	Send Status	Blinks when sending a radio message
Receive	Receive Status	Blinks when receiving a radio message
ST1	Valid Data	ON when receiving valid data from IR gun
ST2	COM Link	ON When linked to Analog Module
ST3	COM TX	Blinks when sending data to Analog Module
ST4	COM RX	Blinks when receiving data from Analog Module

Analog Input Module

The front panel has a number of LEDs that indicate particular conditions for the system.

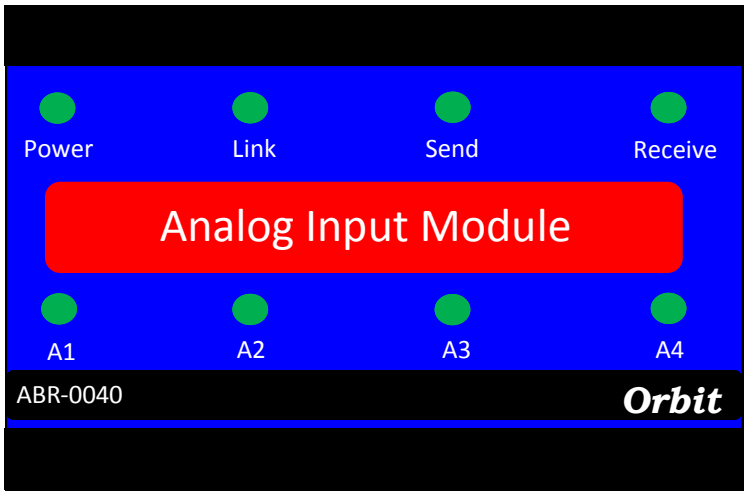


Figure 2. Analog Module LED Status Panel

LED	Description	Function
Power	Power Indicator	ON when unit has power
Link	Link Health	ON when radio link to RTU is healthy
Send	Send Status	Blinks when sending data to RTU
Receive	Receive Status	Blinks when receiving from RTU
A1	Ain 1	ON when input >= 4mA
A2	Ain 2	ON when input >= 4mA
A3	Ain 3	ON when input >= 4mA
A3	Ain 4	ON when input >= 4mA

Table 1. Functions of Analog Module LED Status

Analog Output Module

The front panel has a number of LEDs that indicate particular conditions for the system.

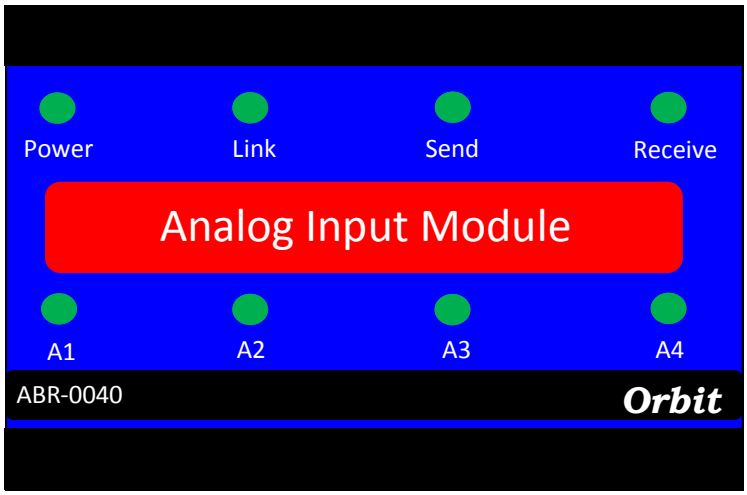


Figure 2. Analog Module LED Status Panel

LED	Description	Function
Power	Power Indicator	ON when unit has power
Link	Link Health	ON when radio link to RTU is healthy
Send	Send Status	Blinks when sending data to RTU
Receive	Receive Status	Blinks when receiving from RTU
A1	Aout 1	ON current flowing to connected device
A2	Aout 2	ON current flowing to connected device
A3	Aout 3	ON current flowing to connected device
A3	Aout 4	ON current flowing to connected device

Table 1. Functions of Analog Module LED Status

Transmitter and Receiver Unit Wiring

The Originator unit must be powered by 12 or 24V DC (Current requirement < 100mA peak).

Orbit also supplies the following power supply options:

- Solar Power kit
- 230VAC DIN rail supply (95 to 275 VAC input)
- Wall plug pack (12V or 24V DC)
- Battery backup system with trickle charger

Antenna

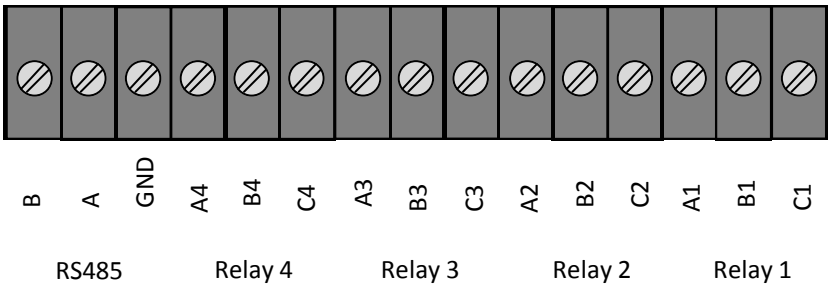
The Antenna kit comprises a small whip antenna with a base, right-angle metal mounting bracket and 5m of cable (which is terminated with a small “SMA” style connector to plug directly into the “Radio” connector on front panel of RTU433-4400).

The antenna should be mounted vertically, high as possible and in good view of the antenna at the other end of the link. Ensure the whip part of the antenna is not located close to metal objects.

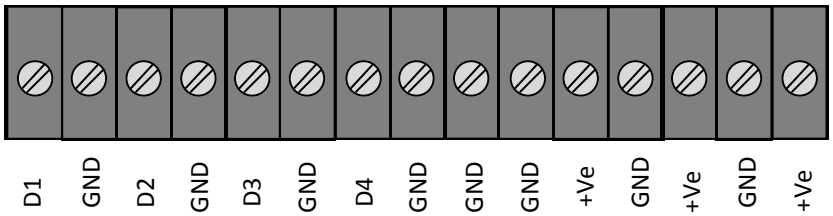
Higher gain antenna options are available from Orbit:

- Collinear whip. High gain suitable for omni-directional (any direction)
- Yagi. High gain directional antenna similar in style to typical television antenna.

Top row RTU Terminals

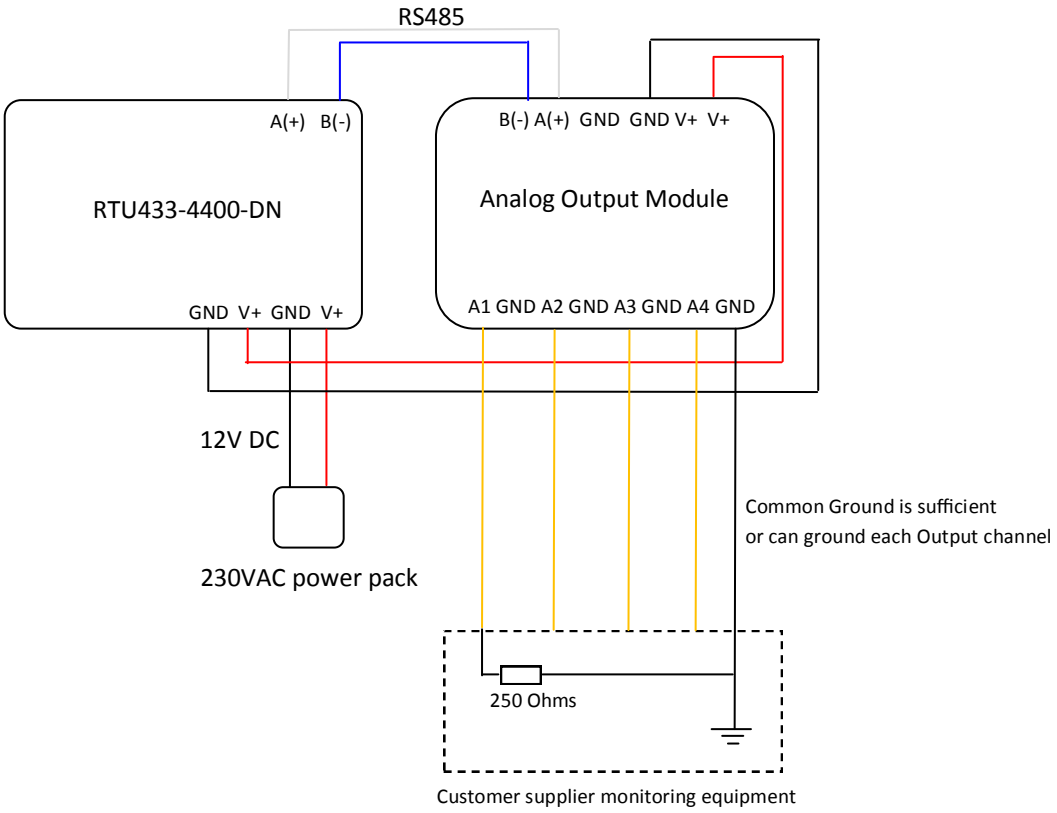


Bottom row RTU Terminals



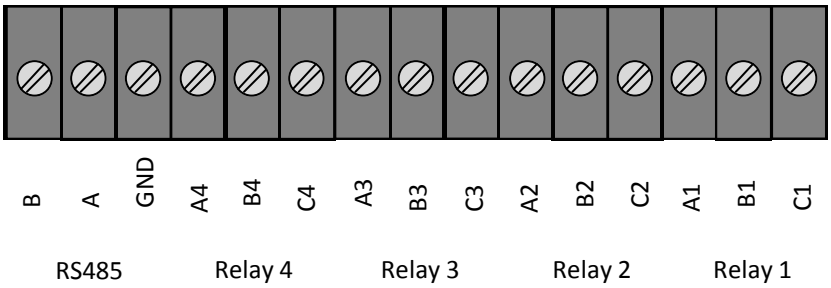
GND = Power supply negative, ground

+Ve = Power supply positive 12 or 24V DC

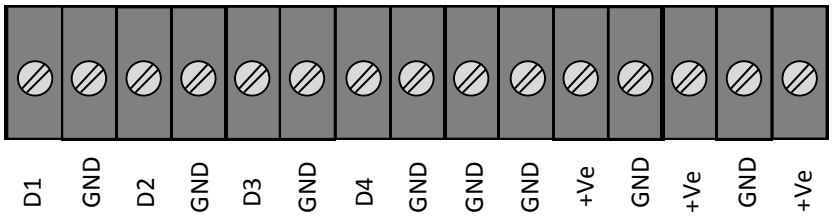


Receiver Unit Wiring Diagram

Top row RTU Terminals



Bottom row RTU Terminals



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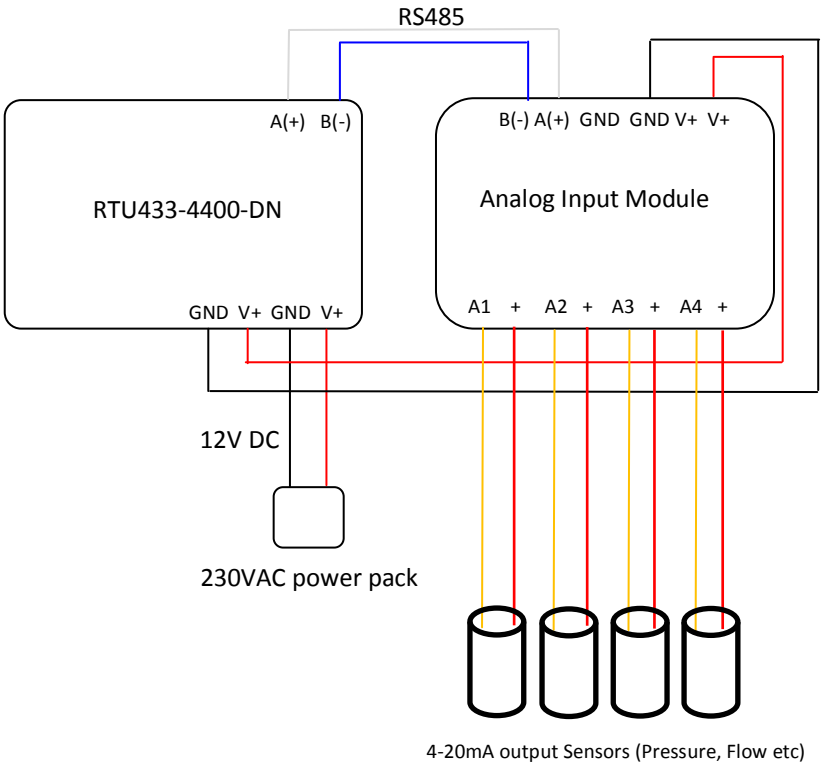

Transmitter Unit Wiring Diagram

Safety Precautions

The following safety precautions must be observed whenever the Orbit wireless device system is in operation or in service. Failure to comply with these precautions violates the safety standards of the design, manufacture and intended use of the product

- The system is not to be used:

  In hospitals or places where medical equipment may be in use.

  In an aircraft (whether on the ground or in the air)

  Refuelling points

  Explosive areas

- Restricted use of the Orbit wireless device

  Near any chemical plant

  Near any Fuel depot

The Orbit wireless device system receives and transmits radio frequency energy while switched on, therefore interference can occur if the Orbit wireless device is located near TVs, radios, PCs or any inadequately shielded equipment.

WEEE directive 2002/96/EC, disposal of old electronic equipment

This product shall not be treated as household waste. It must be placed at an appropriate collection point for the recycling of electrical and electronic equipment. By ensuring the correct disposal of this equipment, it will help the environment and human's health. The recycling will help to conserve the natural resources.

Important

Due to the nature of wireless systems, transmission and reception of data can never be guaranteed. Data may be corrupted (i.e. Have errors) or be totally lost at certain times due to the environment, other machinery or malfunction of electronic components. Although significant loss of data are rare when wireless devices such as the Orbit wireless device system are used in a normal manner, Orbit's wireless device system should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death or loss of property. Orbit Communications Pty Ltd accepts no responsibility for damages of any kind resulting from errors in data transmitted or received using Orbit's Orbit wireless device systems, or for the failure of the Orbit wireless device system to transmit or receive such data.

Do not operate the Orbit wireless device system in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference, in such areas, Orbit's wireless device system must be powered OFF.

Do not operate Orbit wireless device system in any aircraft, whether the aircraft is on the ground or in flight. In an aircraft the Orbit wireless device system must be powered OFF.

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