



# Wired Beams v 2.0

Revised: 2/3/2010



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## Introduction

The Traf-Sys Wired Beam Sensors are designed to work with the RS485 interface of the MIU-1000 data controller. Traf-Sys Wired Beam Sensors can measure directional traffic and are mounted on each side of a doorway with a horizontal detection pattern.

## Setting up Your Wired Beam Sensors for the First Time

Your Traf-Sys Wired Beam Sensors will be mounted horizontally at the portal you would like to monitor. Wired Beam Sensors contain two parts, the transmitter and receiver. The Transmitter side will require a wired power source (2-wires) and the Receiver side will require wiring to a RS-485 interface (4-wires) which will be wired to a MIU-1000 so that the data can be logged (See [Figure 1](#)).

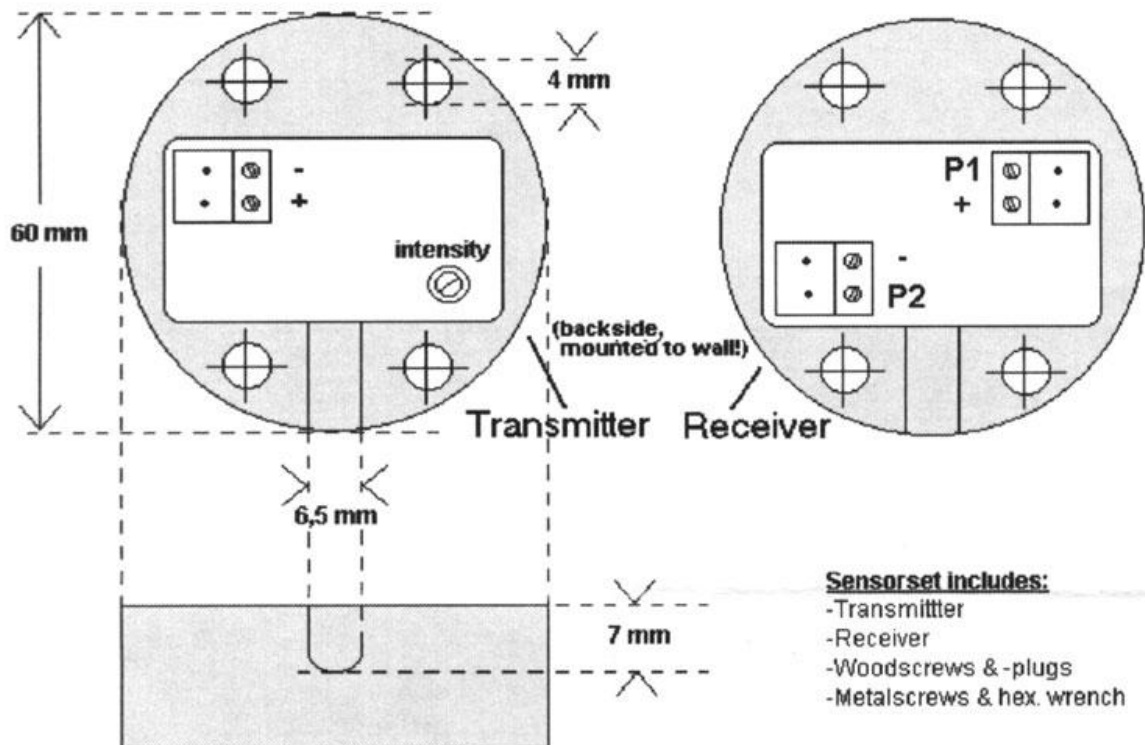
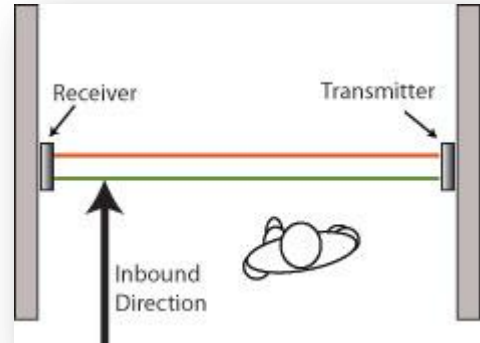


Figure 1: Sensor Layout

## Orientation and Mounting

The placement of your beams will determine how the direction of travel is recorded. Make sure your beams are installed properly so that the data recorded will more closely reflect the number of pedestrians moving in and out of your portal. Both the transmitter and receiver will be

mounted to the wall or doorframe with the wiring channel pointed toward the floor. The diagram in [Figure 2](#) shows an overhead view of how the sensors are mounted and the location of the transmitter and receiver in relation to the portal.



**Figure 2: Orientation**

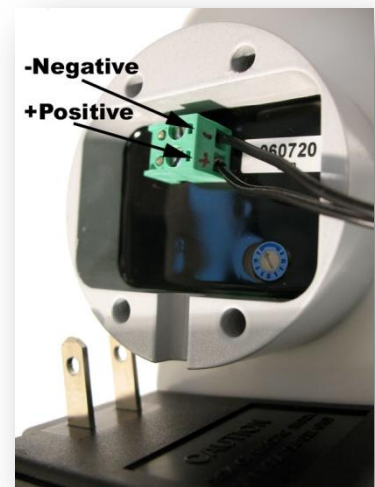
## Connections

Traf-Sys Wired Beam Sensors require a wired connection for each side of the beam. The Transmitter side will require a power connection and the Receiver side will be connected to an RS-485 interface which will communicate with a MIU-1000 data controller.

### Transmitter Side

The Transmitter Side of the beams will require a wired DC power source, usually in the form of a power transformer. To make installation easier, make sure you have an electrical outlet near the transmitter location.

With the wiring channel facing the floor, make sure the power is wired with the top connection **negative** and the bottom connection **positive** (See [Figure 3](#)).



**Figure 3: Transmitter Wiring**

### Receiver Side

The Receiver Side of the beams will be wired directly to a RS-485 interface which will send data to the RS-485 wiring port MIU-1000. You'll notice on the Receiver Side of the beams, there are a total of 4 wiring connections on the back with two separate sections. The sections are located on opposite sides of the sensor, left and right. These connections will be wired to the **button end** of the RS-485 Interface (See [Figure 4](#)). For a complete picture of the wired connection, see [Appendix A: RS-485 Interface Wiring](#). With the wiring channel facing the floor, make sure the wires to the RS-485 interface are connected in the following order: Upper-Left **BLACK**; Lower-Left **GREEN**; Upper-Right **WHITE**; Lower-Right **RED** (See [Figure](#) ).

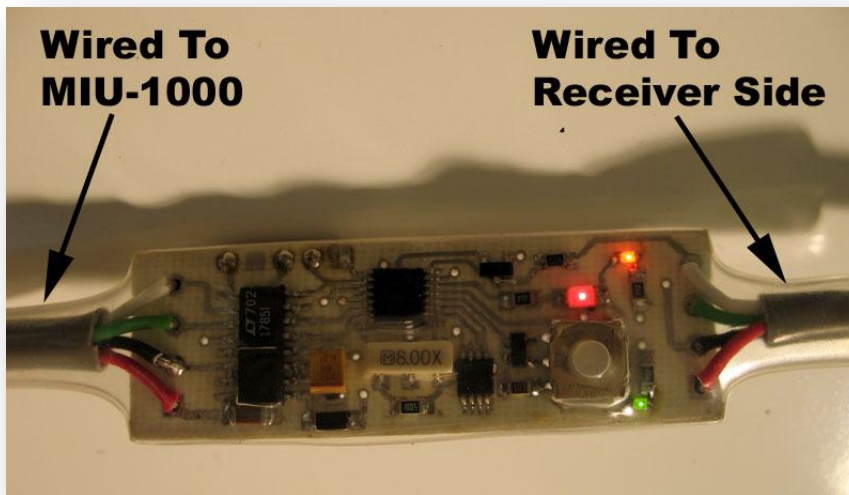


Figure 4: RS-485 Interface

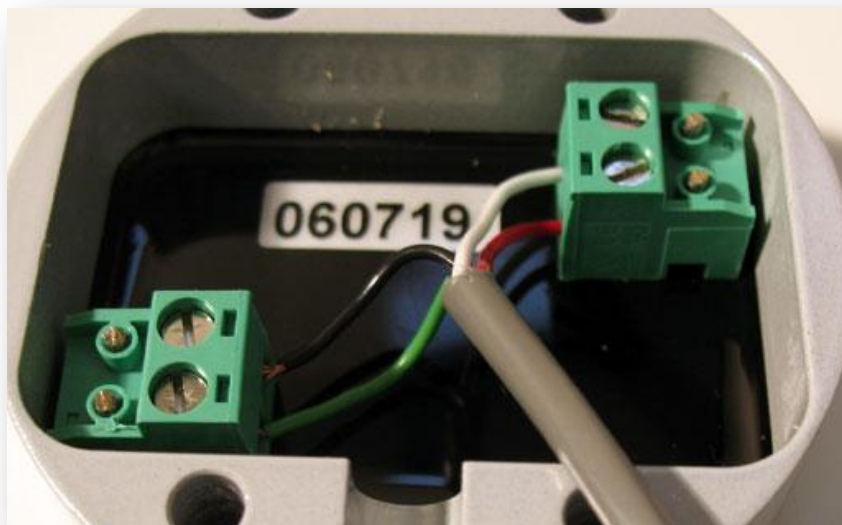


Figure 5: Receiver Side Wiring

### RS-485 Interface

The wiring from the other side of the RS-485 interface will be connected to the RS-485 connection found on the back of the MIU-1000. If your MIU-1000 is not equipped with this connection, contact [sales@trafsys.com](mailto:sales@trafsys.com) to order a MIU-1000 with an on-board RS-485 connection.

Wire the RS-485 interface to the MIU-1000 as follows: Rx+ **WHITE**; Rx- **GREEN**; GND **BLACK**; PWR **RED** (See [Figure](#) ).

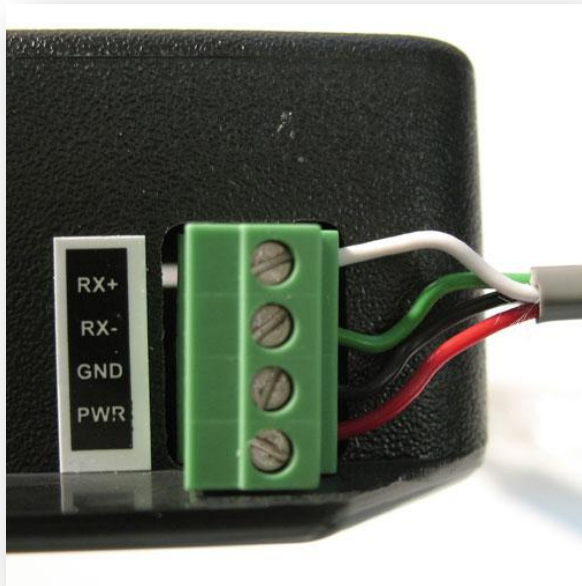


Figure 6: MIU Connection

With the RS-485 interface connected and the MIU-1000 powered on, the RED activity light on the RS-485 interface should be on. There are two LEDs on the interface for each relay from the sensors: ORANGE and GREEN. These will help you determine which direction is being recorded, inbound or outbound, according to the order in which the LEDs will flash.

An **inbound** count is indicated by the LEDs flashing first GREEN then ORANGE. **Outbound** counts are indicated by LEDs flashing first ORANGE then GREEN.

### MIU-1000 Configuration

Once all connections are made, you will be able to configure your MIU-1000 to add the wired beams to the sensor table. You can add these beams manually by entering the ID number assigned to the RS-485 interface or by using the Auto-Add feature on the MIU-1000 (See the MIU-1000 manual for more details).

Pressing the white button on the RS-485 interface board will deliver a service packet to the MIU, which will automatically add the sensor to the sensor table when the MIU is in "Auto-Add" mode. Once the sensor is listed in the table, pressing the button will update the counts and the status. Otherwise, the updates are automatically applied every 5-15 seconds.

## Troubleshooting

Here are some solutions to common problems you may experience with the Wired Beam Sensors.

### **The Wired Beams are showing “Blocked” Status on the MIU-1000. What does this mean?**

Beam sensors will show up as blocked if an object is physically blocking the detection pattern of the beams, the beams are misaligned or if the Transmitter Side of the beams is turned off. Check the following items if you are receiving “Blocked” status.

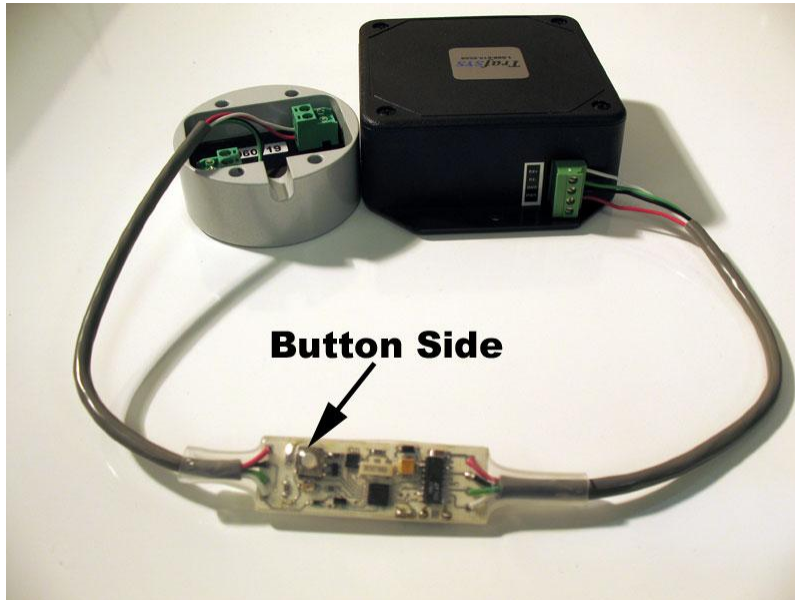
- Are there any objects placed in the detection area of the beams?
- Is the Transmitter Side of the beams receiving power?
- Do the beams appear to be facing each other?
- Does the RS-485 interface blink as you move between the beams? If not, the beams may be misaligned or are too far apart to complete the detection area.

### **The Wired Beams are showing “Offline” status on the MIU-1000.**

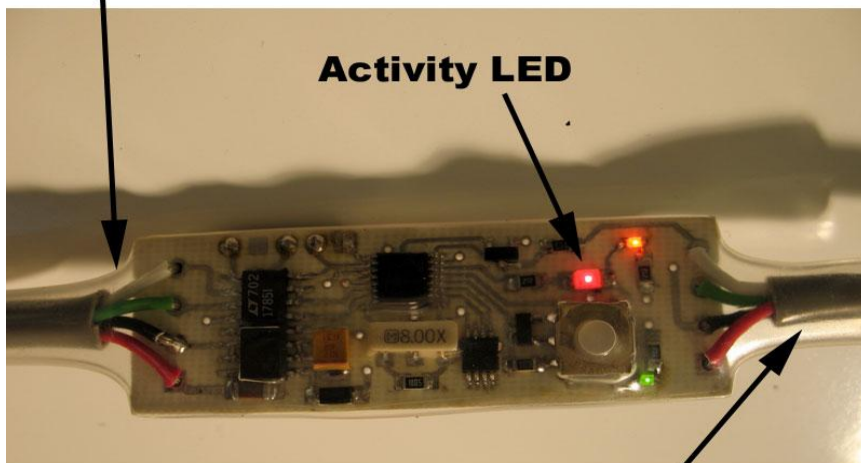
The “Offline” status indicates the MIU-1000 is not receiving data from the sensor. Check the following items if you are receiving “Offline” status.

- Are the connections to the RS-485 interface okay?
- Does the RS-485 Interface blink when there is activity in the detection area? Is the Activity LED on?

## Appendix A: RS-485 Interface Wiring



**MIU-1000 Connection**  
Red -----Power  
Black -----Ground  
Green -----RS485-  
White -----RS485+



**Sensor Connection**  
Red -----Power  
Black ---Ground  
Green ---Relay1  
White ---Relay2



## Appendix B: Wired Beams Specifications

### Sensor Characteristics

Emitter		IR-emitter diode			
Working Principle		Opposed (transmitter/receiver)			
Parameter	Test Condition	Min	Typ.	Max.	Unit
Peak Wave Length			880		Nm
Maximum Adjustable Detection Distance			15		m
Touch Frequency			10		kHz
Operating Temperature		-20		+70	°C

### Electrical Data

Receiver					
Output		Output transistor PNP			
Supply Voltage Polarity Protection		Yes			
Short Circuit Protection		Yes			
Overload Protection		Yes			
Output Reversal Current Protection		Yes			
Receiver					
Parameter	Test Condition	Min	Typ.	Max.	Unit
Supply Voltage $V_{CC}$		10		30	V
Supply Voltage Ripple				10	%
Current Consumption	Load Resistance $R_L = \infty$		10		mA
Output Load Current				200	mA
Response Time			1.3		ms
Transmitter					
Supply Voltage Polarity Protection		Yes			
Transmitter					
Parameter	Test Condition	Min	Typ.	Max.	Unit
Supply Voltage $V_{CC}$		10		30	V
Supply Voltage Ripple				10	%
Current Consumption				25	mA

### Mechanical Data

Degree of Protection, Color & Temperature	Customer Request
Dimensions (Receiver Rx)	PCB: approx. 30x48 mm excl. Housing Height approx 16 mm incl connectors excl. LEDs
Dimensions (Transmitter Tx)	PCB: approx. 30x30 mm excl. Housing Height approx 16 mm incl connectors excl. LEDs

## Appendix C: RS-485 Interface Specifications

<b>Network</b>	RS-485, 19200 Baud 1/8 load IEC-1000-4-2 Level 4: ±15kV Air Discharge IEC-1000-4-2 Level 2: ±4kV Contact Discharge Protected from Line Faults to ±60V
<b>Operating Power</b>	6-36 Volts @ 10 mAmp
<b>Beam Break Logic</b>	Sequence, Low=Beam Break
<b>Packet Transmission Rate</b>	17 seconds

## Contact Information

### Traf-Sys Inc.

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