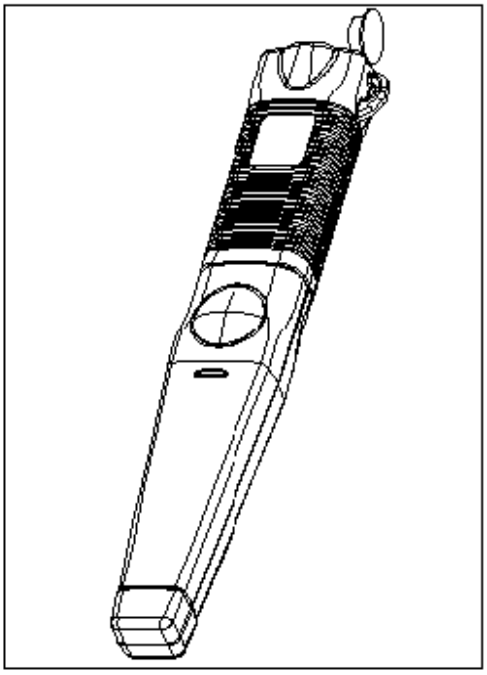
Brady Wand
RF/ID Reader



Users Guide

Preliminary

Contents

Important Information

Limited Hardware Warranty
Brady USA, Inc. warrants solely to the purchaser that the hardware components of the Wand RFID reader will be free from defects in materials and workmanship under normal use for a period of 90 days from the date of shipment by Brady USA. This limited warranty does not extend to any components which have been subject to misuse, neglect, accident, or improper installation or application. Brady USA's liability and the purchaser's remedy for the breach of this warranty shall be at Brady USA's option to either (i) repair or replace defective components or (ii) upon return of the defective components, refund the purchase price paid for the components. *EXCEPT FOR THE LIMITED HARDWARE WARRANTY SET FORTH ABOVE, BRADY USA AND ITS LICENSORS PROVIDE THE HARDWARE ON AN "AS IS" BASIS, AND WITHOUT WARRANTY OF ANY KIND EITHER EXPRESS, IMPLIED OR STATUTORY.*

Limitation of Liability
In no event shall Brady USA or its suppliers be liable for any damages in excess of the price paid by you to Brady USA for the component, regardless of under what legal theory such damages may be alleged arising out of the use or inability to use the component, even if Brady USA has been advised of the possibility of such damages.

FCC
This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC ID
NUC -BW125IS

Specifications

Input Voltage.....5 or +12V D/C Nominal

Input Current
While Activated.....150 mA
Standby .....20 mA

Tag Protocols Supported.....Phillips, Hitag,

Frequency of Operation.....125 kHz
Modulation .....ASK (Amplitude Shift Keying)

Dimensions .....11.00” L x 1.75” W x .875” H
(27.94 cm L x 4.45 cm W x 2.22 cm H)
Weight.....1lb(.453 kg)

Temperature
Operating.....-4 º to + 104 º F (-20 º to +40 º C)
Storage.....-40 º to + 140 º F (-40 º to +60 º C)

Data output Formats
RS-232/422/485..... 9600 baud, 1 stop, 8 data, carriage return
Barcode Emulation.....Code 39

Typical Tag Read Time
40 Bit.....20m sec
256 Bit.....40m sec
1056 Bit.....100m sec
2048 Bit.....500m sec

Introduction

Brady RF/ID systems consist of Brady RF/ID tags and a reader/writer for reading data from tags or writing data to tags. Several different types tags and various reader options are available to suite any application.

Brady RF/ID Tags

Brady RF/ID tags consist of a microchip, coil antenna, and packaging. Packaging and microchip options can be combined to fit any RF/ID tag requirement.

Microchip options include read only, read write and several different memory capacities for read/write applications. Typically, *read only* tags are randomly preprogrammed with 40 bits(*10 HEX Characters*) of permanent data. Versions of read only tags are available which can be programmed once with a designated number. This number is then permanently stored in the tag and can be read many times. This type of tag is typically referred to as a WORM (*write once read many*).

Read/write tags have permanent data as well as programmable data. The permanent data is similar to a read only tag. It is usually 32 bits (*8 HEX Characters*) of data which can not be changed. Read/write tags also have memory which can be changed. The amount of changeable memory in a read/write tag ranges from 152 bits (*19 Alphanumeric Characters*) to 1536 bits (*192 Alphanumeric Characters*). Versions of read/write tags are also available with password protection or data encryption for high security applications that require secure data transmission between the reader and the tag.

Packaging options include a variety of forms as well as different case materials for a wide range of operating temperatures and chemical resistance.

Brady Wand

The Brady Wand is an RF/ID reader which interfaces to a host PC or hand held data collection device through standard RS-232/422/485 or Wand emulation hardware format. The reader is typically powered from the host device with 5V D/C. If an un-powered data port is used, an external battery source must be provided to power the reader.

The Brady Wand was designed to be used in various Industrial applications which require rugged and reliable equipment. Versions of the Wand are available with an Intrinsically Safe Rating which allow them to be used in explosion hazard areas. The Wand is water resistant and can withstand many of the harsh chemicals found in industrial manufacturing and petrochemical processing. In environments where visual and audible indicators can not be heard or seen, the Brady Wand has a unique vibrating feature for indicating reader status to the operator.

Use

Operating the Brady Wand is very easy. To read/write to a tag the operator presses the large activation button located above the hand grip.(*see fig.1*). Once the button is pressed, the reader electronics sends out a radio frequency field to search for a tag. During this time the red LED, located above the button, will illuminate indicating that the Wand is in search mode. When a tag is present within the field of the reader antenna, the microchip inside the tag is activated and transmits its ID code back to the reader. . If the data received from a tag is valid, the green LED located above the activation button will illuminate, an audible “beep” will sound, and the wand will vibrate for a short period of time.

After the reader receives the transmission from the tag, it converts this information RS-232/422/485 or Wand emulation format and transmits the data to the host.

The Brady Wand can also be used remotely without pressing the button. When used for remote read/write operation, commands which activate the reader/writer are sent from the host to the Wand without the need for pressing a button. *(See Programmers Guide for information on host commands).*

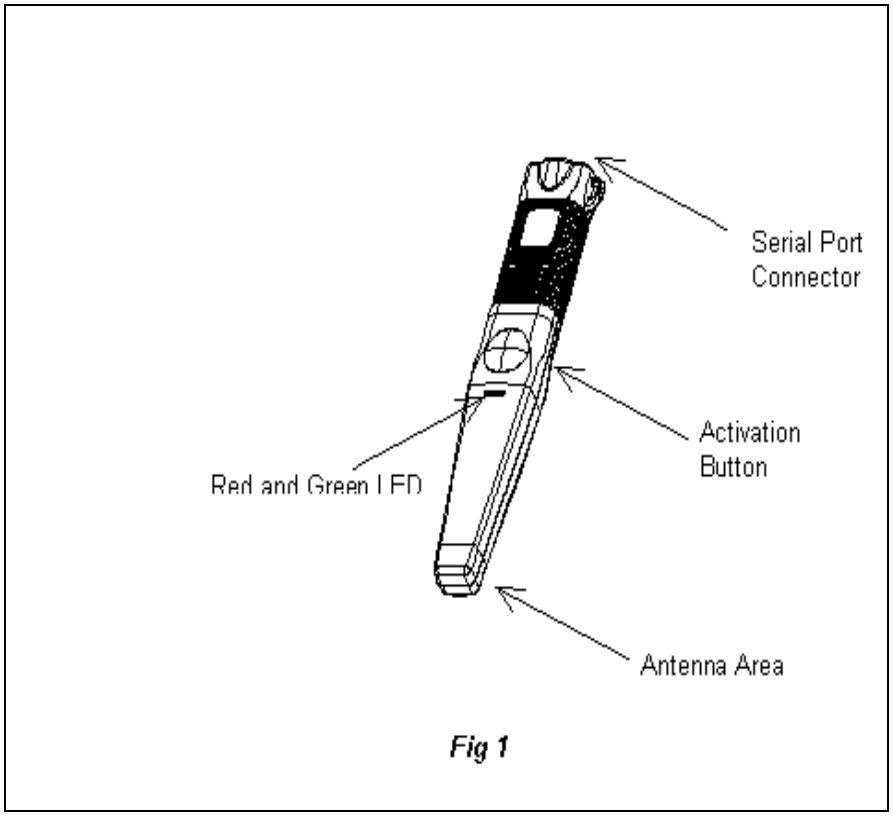


Fig 1

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Setup and Wiring

The following is a simple procedure for setting up and operating the Brady Wand RF/ID read/writer. Follow the instructions carefully. *Any deviation from these instructions may void the Limited Hardware Warranty.*

Upon Receipt

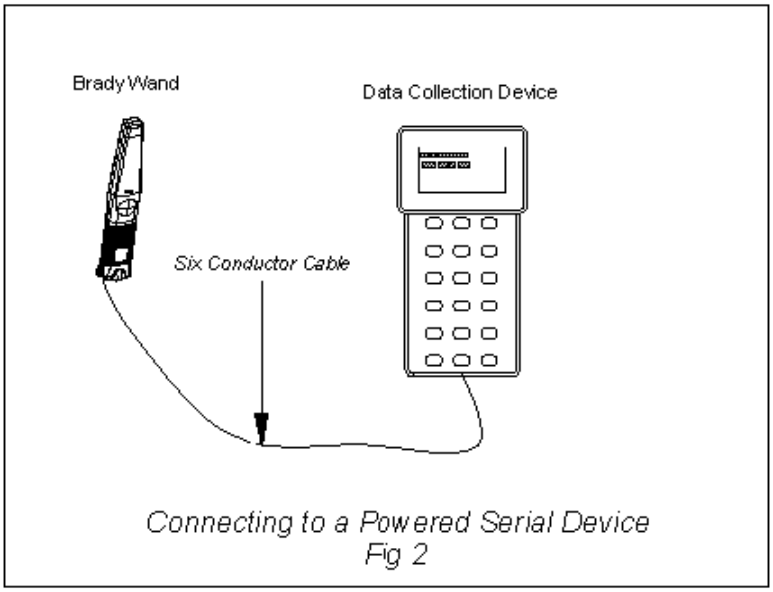
•Remove items from shipping the container.
•Check package contents for the following items:
1. Brady Wand Reader/Writer
2.Coil cable with circular connector and flying leads.
3.Optional accessories.
•Fill out and return product registration card.

Connecting the Brady Wand to a Data Collection Device

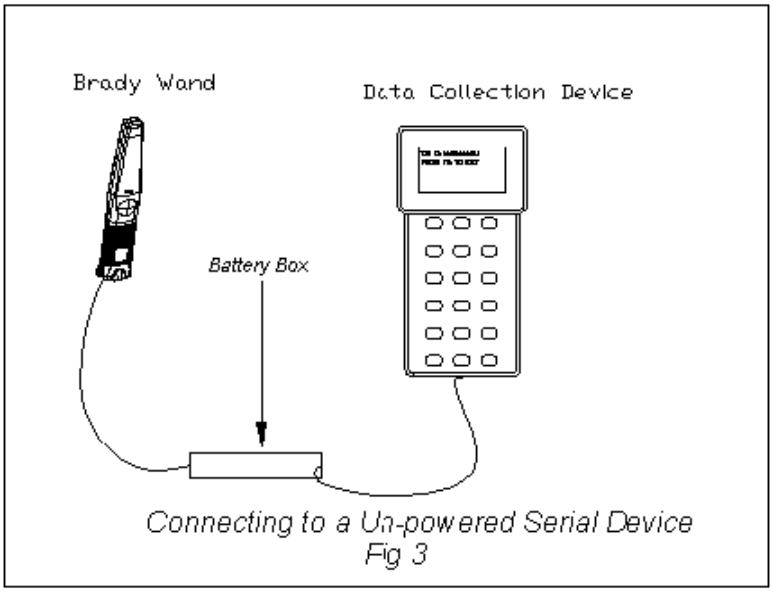
The coil cable is used for connecting the Brady Wand reader/writer to a host computer or data collection device. (*See Fig 2 and 3 page 7*) Because of the many different data collection devices and serial port formats which can be used, consult the owners manual of the data collection device to be used for proper wiring and connector information. *See wiring diagrams on page 8,9,10,11 for detailed wiring and connector pin-out information about the Brady Wand.*

Once you have determined the proper wiring and connector information for the data collection device, the cable can be plugged into the Brady Wand.
**Connectors are available at the time of purchase to match to most common data collection devices.*

If you are interfacing to a data collection device which does not provide power through the serial port, you must use the optional external power interface box. This box is connected between the data collection device's serial port and the Brady Wand's serial port. The external power interface box provides battery power from one 9V battery. (*See fig 3 page 7*).

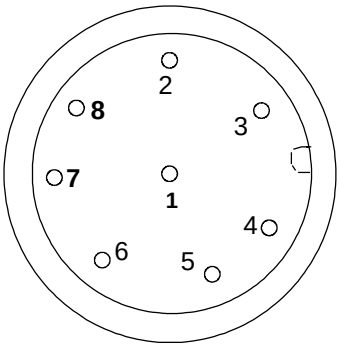


Connecting to a Powered Serial Device
Fig 2



Connecting to a Un-powered Serial Device
Fig 3

RS-232



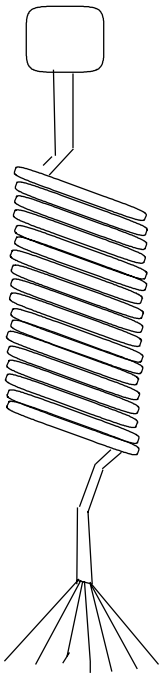
Connector on Wand
Veiwed From Bottom Of Wand

Pin Assignment

1 +5-12V D/C
2 RX Data **
3 TX Data*
4 N/C
5 GND
6 N/C
7 N/C
8 N/C

** RX Data from the Wand needs to be connected to TX Data from Host

* TX Data from tw Wand needs to be connected to RX Data from the Host



Circular Connector
On Cable Assembly

8 Flying
Leads

Flying Leads

Cable Conductor Assignment

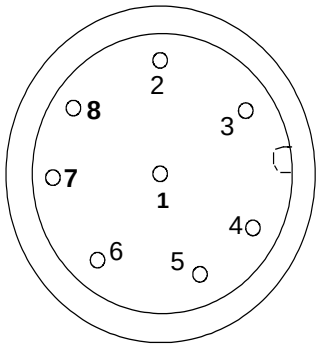
Red	+5-12V D/C
Green	RX Data
White	TX Data
Orange	N/C
Black	GND
Brown	N/C
Yellow	N/C
Violet	N/C

Fig 4

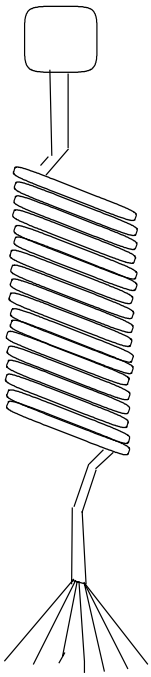
RS-422

Pin Assignment

1 +5-12V D/C
2 RXA
3 TXA
4 N/C
5 GND
6 RXB
7 TXB
8 N/C



Connector on Wand
Veiwed From Bottom Of Wand



Circular Connector
On Cable Assembly

8 Flying
Leads

Flying Leads

Cable Conductor Assignment

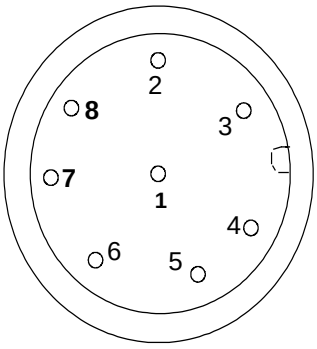
Red	+5-12V D/C
Green	RXA
White	TXA
Orange	N/C
Black	GND
Brown	RXB
Yellow	TXB
Violet	N/C

Fig 5

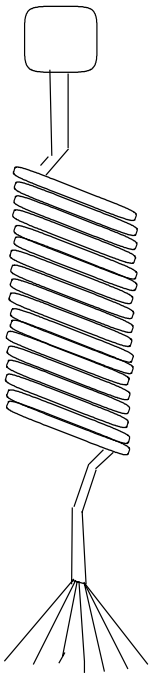
RS-422

Pin Assignment

1 +5-12V D/C
2 RXA
3 TXA
4 N/C
5 GND
6 RXB
7 TXB
8 N/C



Connector on Wand
Veiwed From Bottom Of Wand



Circular Connector
On Cable Assembly

8 Flying
Leads

Flying Leads

Cable Conductor Assignment

Red	+5-12V D/C
Green	RXA
White	TXA
Orange	N/C
Black	GND
Brown	RXB
Yellow	TXB
Violet	N/C

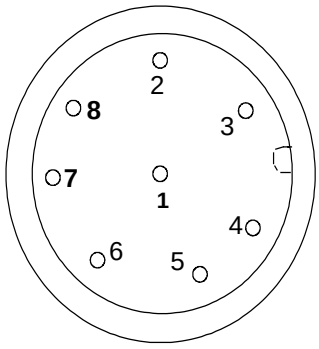
Fig 6

BAR CODE Emulation

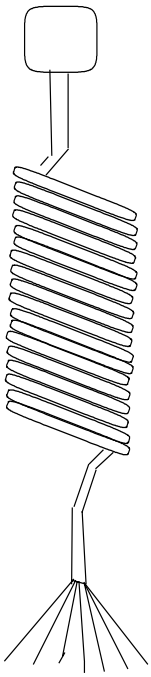
(Read Only)

Pin Assignment

1 +5-12V D/C
2 N/C
3 N/C
4 N/C
5 GND
6 N/C
7 N/C
8 TX Data



Connector on Wand
Veiwed From Bottom Of Wand



Circular Connector
On Cable Assembly

8 Flying
Leads

Flying Leads

Cable Conductor Assignment

Red	+5-12V D/C
Green	N/C
White	N/C
Orange	N/C
Black	GND
Brown	N/C
Yellow	N/C
Violet	TX Data

Fig 7

Wand Operation

Operating Hints

Because the Brady RF/ID System uses radio frequency (RF) energy to communicate between the tag and the Wand, there are several important points to keep in mind while setting up and operating the system.

- Metal effects both Wand and tag antennas by reducing the read range of the overall system. If at all possible, keep tags and the Wand antenna away from metal.
- Interference from other electronic sources can reduce read range. If the interference is strong enough, it may render the system inoperative. When reading tags, keep the Wand and tags as far away from these sources as possible. *These sources include but are not limited to:*

1. CRTs (*Computer Monitor, CCTV Monitor TV's*)
2. Light Dimmers
3. Brush-type motors

Operating the Wand

To read or write to a RF/ID tag:

1.Bring the nose of the wand to within 1 inch of the tag to be read. Although the Wand will read/write from any angle, best results are achieved when the nose of the Wand is parallel to the face of the tag. Read range will also vary with the type of tag to be read and the operating environment

2.Press the button located above the handle.

3.The red LED will illuminate and stay on for approximately 5 seconds or until a valid tag has been detected. Whenever the red LED is on, it is an indication that the Wand is actively searching for a tag.

4.Once the Wand detects a valid tag signal, the green LED will illuminate momentarily, the audio indicator will sound a short beep and slight vibrating sensation will be felt.

5.Release the button when the green LED illuminates. This will speed the process of reading subsequent tags.

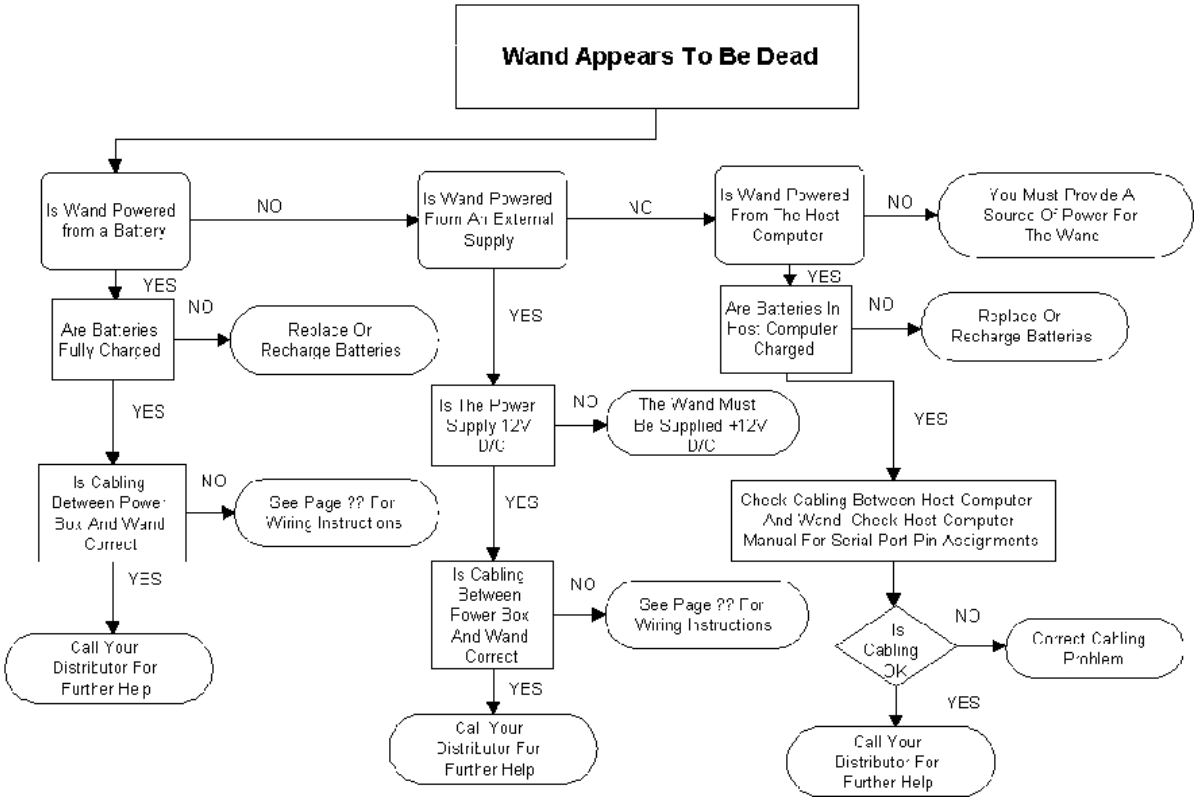
6.Once a valid tag has been read, the wand then converts the data received from the tag into the required serial data format (*RS-232,485,Barcode*) and sends this information on to the host or data collection device.

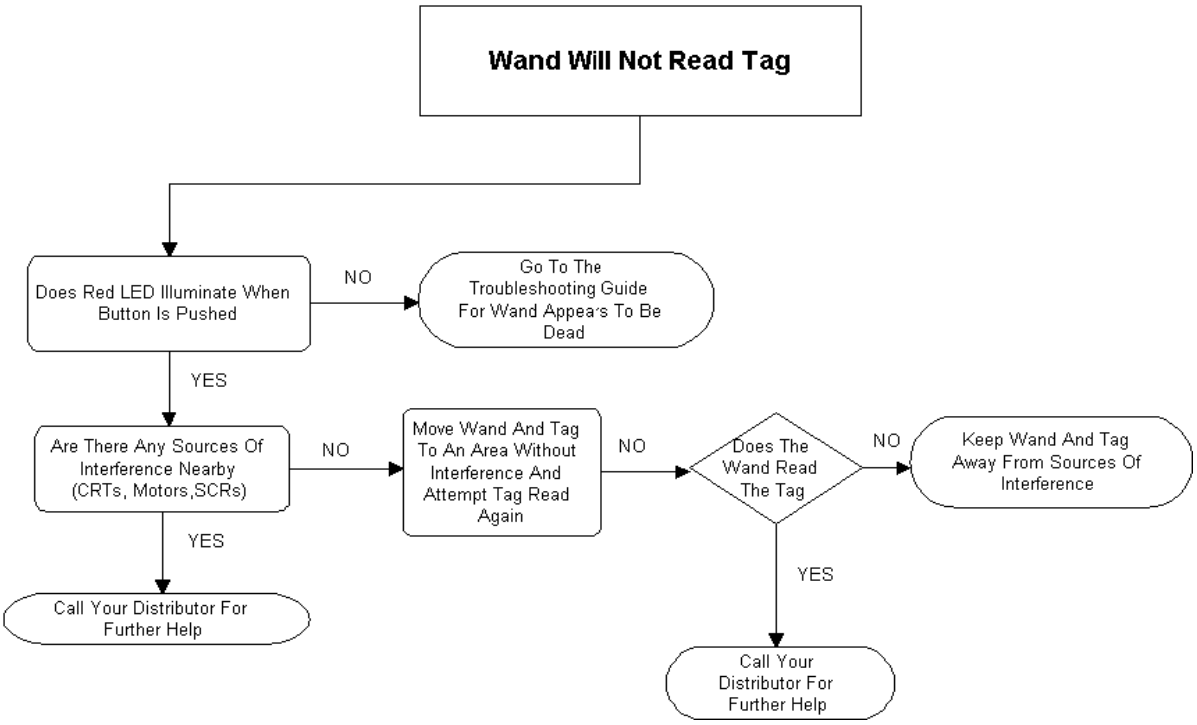
Remote Operation

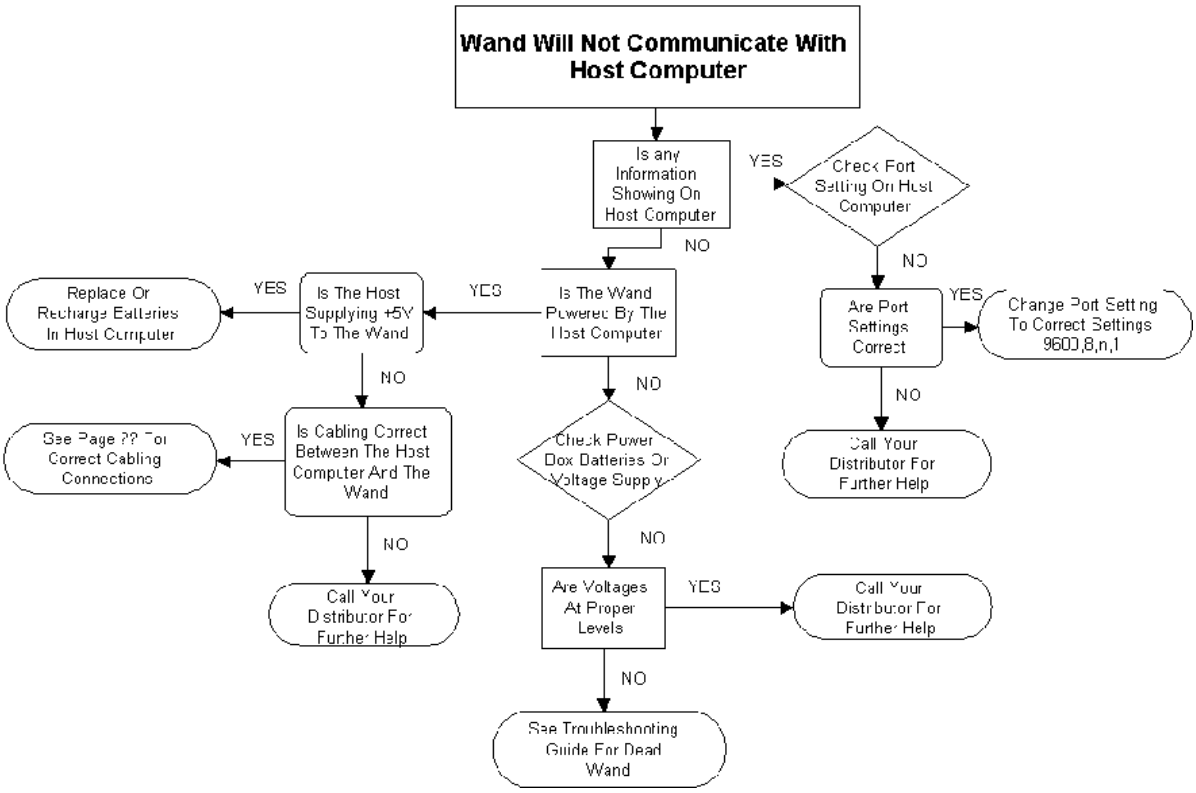
The Brady Wand can be used remotely used from the operator. The above procedure applies for remote operation but instead of pressing the button to read or write to a tag, a command is sent from the host data collection device to the wand. See the *Wand Programmers Manual* for more information on remote operation.

Troubleshooting Procedure

If you should experience problems in the normal usage of your Brady Wand the following troubleshooting procedure will help in determining the cause of the problem and a possible solution to the problem.




Wand Will Not Read Tag
Does Red LED Illuminate When Button Is Pushed
NO
Go To The Troubleshooting Guide For Wand Appears To Be Dead
YES
Are There Any Sources Of Interference Nearby (CRTs, Motors,SCRs)
NO
Move Wand And Tag To An Area Without Interference And Attempt Tag Read Again
NO
Does The Wand Read The Tag
NO
Keep Wand And Tag Away From Sources Of Interference
YES
Call Your Distributor For Further Help
YES
Call Your Distributor For Further Help


Wand Will Not Communicate With Host Computer
Is any Information Showing On Host Computer
YES
Check Port Setting On Host Computer
NO
Are Port Settings Correct
YES
Change Port Setting To Correct Settings 9600,8,n,1
NO
Call Your Distributor For Further Help
NO
Is The Wand Powered By The Host Computer
YES
Is The Host Supplying +5V To The Wand
YES
Replace Or Recharge Batteries In Host Computer
NO
Is Cabling Correct Between The Host Computer And The Wand
YES
See Page ?? For Correct Cabling Connections
NO
Call Your Distributor For Further Help
NO
Check Power Box Batteries Or Voltage Supply
NO
Are Voltages At Proper Levels
YES
Call Your Distributor For Further Help
NO
See Troubleshooting Guide For Dead Wand