B55 Wide Beam Retroreflective Sensor Product Manual

Original Instructions
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Chapter 1 Product Description



- Superior detection across a wide beam regardless of target shape, position, or material
  - Reliably detects targets as small as 3 mm, such as mailers or polybags
  - Detects the leading edges of packages anywhere within the 55 mm beam
  - Avoids chatter caused by targets with folded edges, holes, or open flaps that would be an issue for other sensors
  - Effectively detects challenging targets including dark, shiny, and clear
- Intuitive, user-friendly design simplifies installation, commissioning, and maintenance
  - Quick set up and configuration with a single button, remote input wire, or IO-Link interface
  - Intelligently learns belt characteristics and optimizes sensing to ignore belt flutter and seams
  - Optimize variable sensitivity settings for clear targets or dirty environments

1.1 Models

Models	Detection Range[1]	Supply Voltage	Output	Connection
B55-K6LV-Q5	0 m to 4.5 m (0 ft to 14.7 ft)	10 V DC to 30 V DC	Push-Pull with IO-Link, PNP	150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector
B55-K6LV-Q8	0 m to 4.5 m (0 ft to 14.7 ft)	10 V DC to 30 V DC	Push-Pull with IO-Link, PNP	4-pin M12 adjustable quick-disconnect connector

1.2 Product Overview

The B55 is an industrial retroreflective sensor that utilizes a 55 mm wide beam to reliably detect targets.

The wide beam is capable of detecting targets as small as 3 mm anywhere within the 55 mm beam. This is vital for leading edge applications which include targets that may have an inconsistent edge, such as mailers or polybags. Targets with folded edges, holes, or open flaps are consistently detected when other sensors would chatter with these types of targets. Configure the sensor with a simple push button and the LED indicators on the back of the housing, with a remote input wire, or with IO-Link.

Use "Configuration Instructions" on page 8 to set up the sensor. A sensor is in standard sensitivity by default, and the output switches when the LED next to the "Stnd" marking on the sensor turns off.

[1] Range with a BRT-84x84A reflector.

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1.3 Features and Indicators

Figure 1. Features



1. Green Power Indicator
2. Amber Output Status Indicator
3. TEACH Button
4. Bar Graph

The bar graph represents several functions. During Run mode, it shows how much light is being blocked. During sensor configuration, it shows the current setup or options, depending on the step being performed.

In Run mode, press the TEACH button one time to view the current sensor settings. For example, if the bar graph shows the following:

1. LO/DO LED bar = On
2. High LED bar = Off
3. Unnamed LED bar = Off
4. Stnd LED bar = On
5. Unnamed LED bar = Off
6. Low LED bar = Off
7. Delay LED bar = Off

then the sensor is set to light operate, standard sensitivity, and has no active delay (see "Figure: Features" on page 4).

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Chapter 2 Specifications

Supply Voltage
10 V DC to 30 V DC

Use only with a suitable Class 2 power supply (UL) or LVLC circuit

Supply Protection Circuitry
Protected against reverse polarity and transient overvoltages

Power and Current Consumption
Power Consumption: <1.2 Watt

Output
Push-Pull with IO-Link, PNP

Output Rating
50 mA maximum per output

Black wire specifications per configuration		
IO-Link Push/ Pull	Output High:	≥ Vsupply - 2.5 V
	Output Low:	≤ 2.5 V
PNP	Output High:	≥ Vsupply - 2.5 V
	Output Low:	≤ 1V (loads ≤ MegΩ)
NPN	Output High:	≥ Vsupply - 2.5 V (loads ≤ 50 kΩ)
	Output Low:	≤ 2.5 V

White wire specifications per configuration		
PNP	Output High:	≥ Vsupply - 2.5 V
	Output Low:	≤ 2.5 V (loads ≤ 70 kΩ)
NPN	Output High:	≥ Vsupply - 2.5 V (loads ≤ 70 kΩ)
	Output Low:	≤ 2.5 V

IO-Link Interface
IODD files: Provides all programming options of the display, plus additional functionality. See p/n 261078 for IO-Link reference information.

Sensing Beam
Visible red LED, 630 nm

Switching Frequency
200 Hz

Sensing Range
0 m to 4.5 m (0 ft to 14.7 ft)

Distance to Reflector
Up to 4.5 m (14.7 ft)

Response Speed
2.5 ms

Minimum Detectable Object(2)

Sensitivity	Sensor to Reflector Distance	Typical Minimum Object
Standard	4.5 m	10 mm
Standard	4 m	8 mm
Standard	3 m	5 mm
Standard	2 m	3 mm

Delay at Power-up
1.25 seconds

Pin 2 Configuration
Disabled, Health, Alarm, Detection, Complementary, Remote Input

Warm-Up Time
15 minutes

Indication
Green Indicator LED: Power

Amber Indicator LED: Discrete Signal

7 Amber LED Bars: Beam blockage from taught state

Construction
Housing: Polycarbonate

Window: Acrylic

Connections
-Q5 models: 150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector

-Q8 models: 4-pin M12 adjustable quick-disconnect connector

Operating Conditions
Operating Temperature: –30° C to +60° C (–22° F to +140° F)

Storage Temperature: –40 °C to +70 °C (–40 °F to +158 °F)

Environmental Rating
IP65

Certifications

(2) Minimum object specifications are defined at 20 °C and require a BRT-84x84A reflector.

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2.1 Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

Figure 2. -Q5 Model

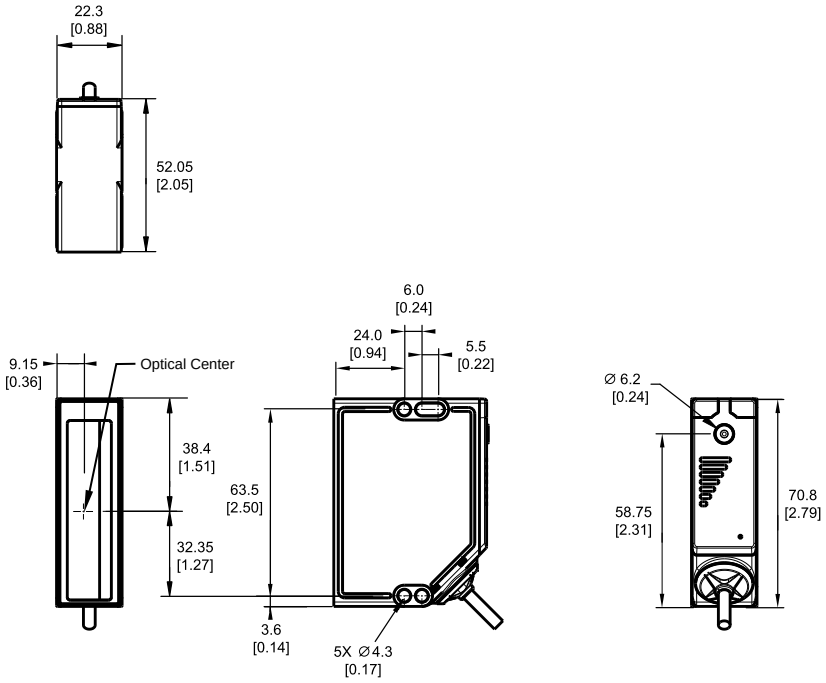
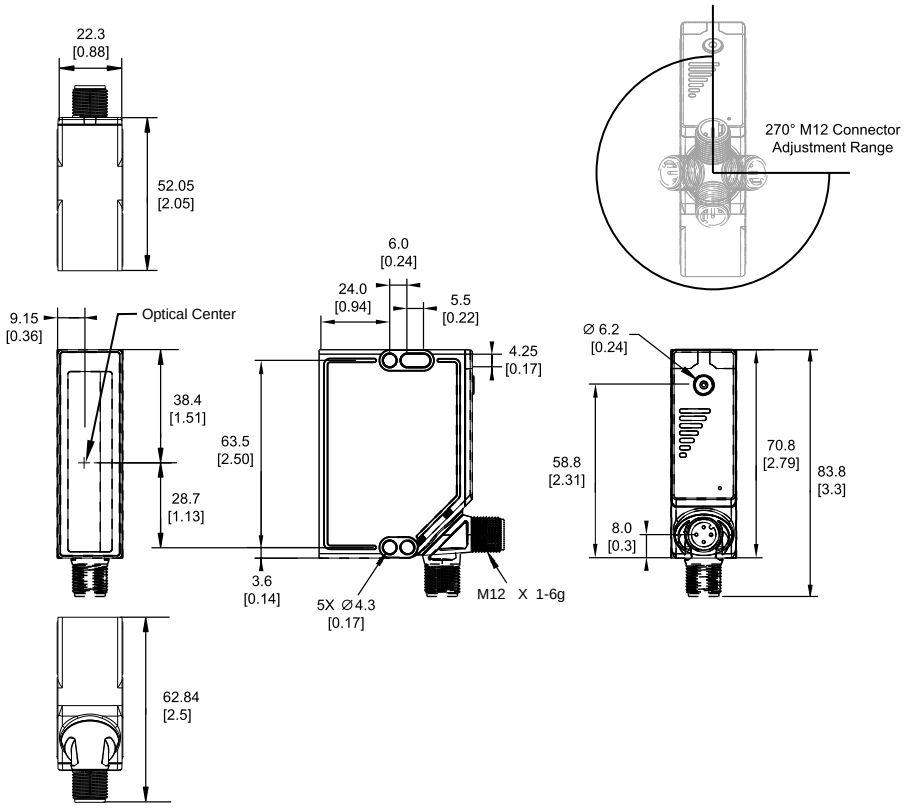


Figure 3. -Q8 Model



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Chapter 3 Installation Instructions

3.1 Mount the Device and the Reflector

1. If a bracket is needed, mount the device onto the bracket.
2. Mount the device (or the device and the bracket) to the machine or equipment at the desired location. Do not tighten the mounting screws at this time.
3. Mount the reflector.
4. Check the device alignment.
   The face of the sensor must be perpendicular to the reflector.
5. Tighten the mounting screws to secure the device (or the device and the bracket) in the aligned position.

3.2 Wiring

Quick disconnect wiring diagrams are functionally identical.

Figure 4. Channel 2 as PNP discrete

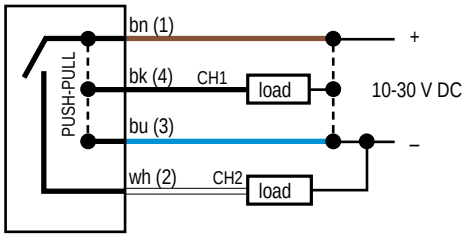
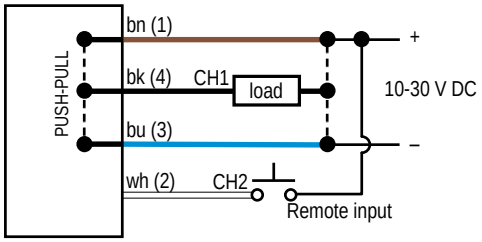
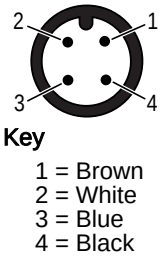


Figure 5. Channel 2 as remote input





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Chapter 4 Configuration Instructions

Quickly set up and configure the sensor using the push button on the sensor, a remote input wire, or IO-Link.

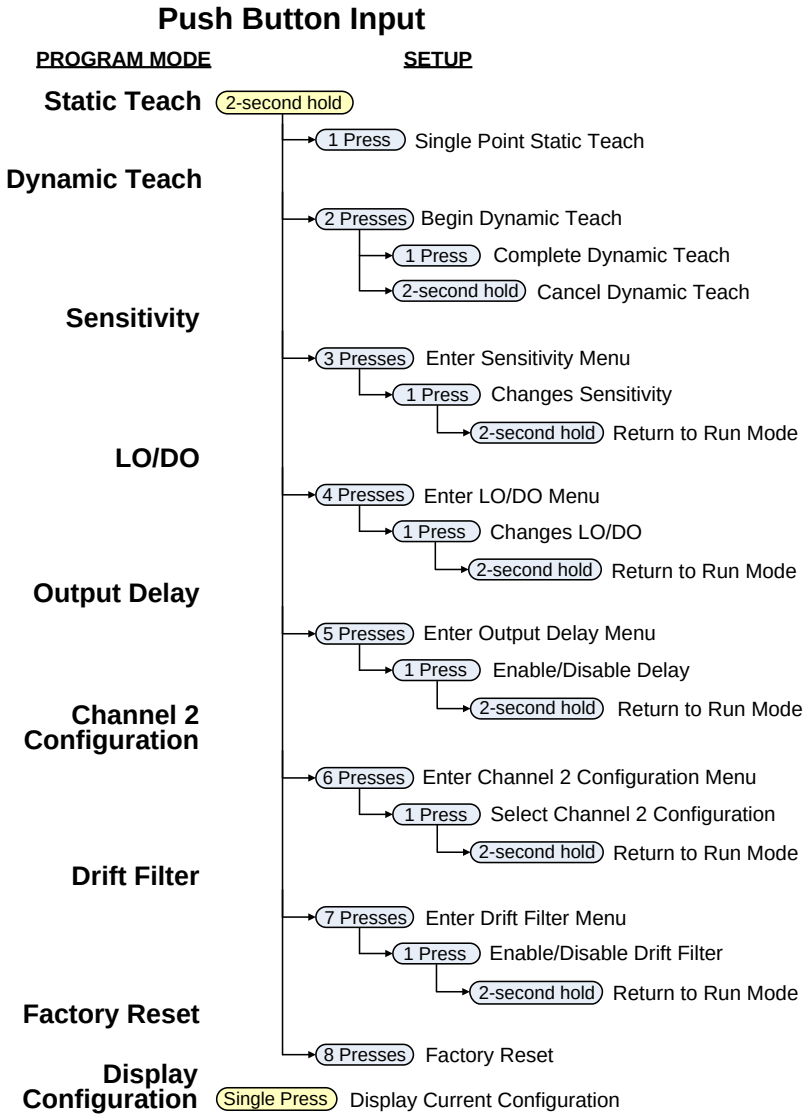
The following instructions use the push button or the remote input wire. See p/n 261078 for IO-Link information.

4.1 TEACH Button Overview

Press the TEACH button to configure the sensor.

See "TEACH Procedures" on page 9 for detailed instructions.

Figure 6. TEACH Button Chart



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4.2 Remote Input

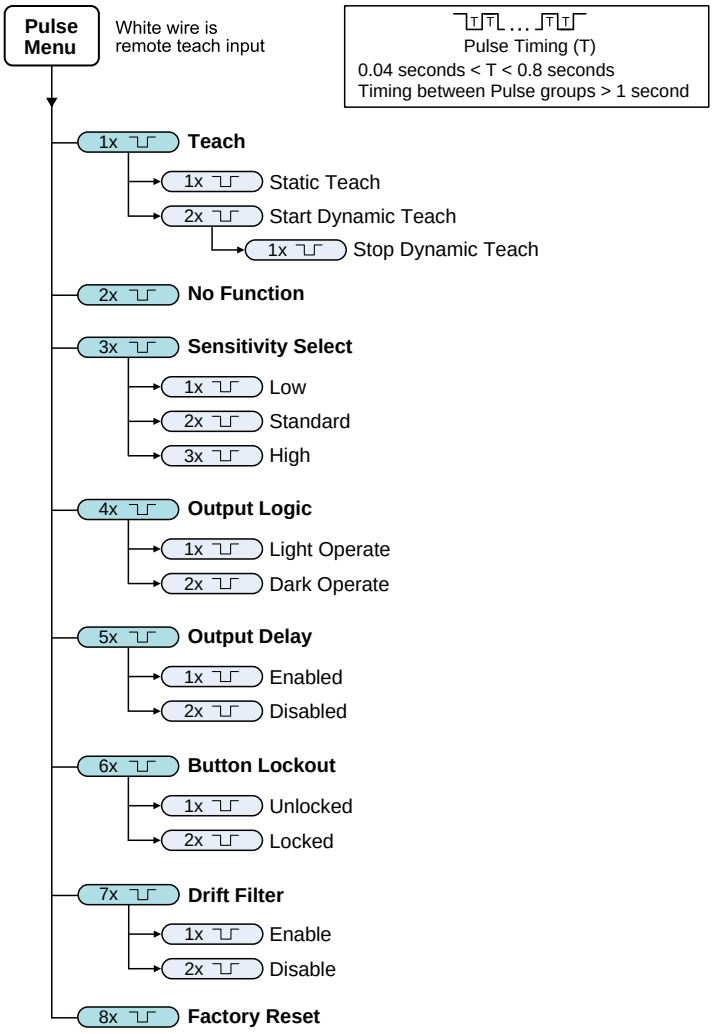
The remote input provides limited programming options. When the polarity selection is push-pull or PNP, remote input is Active High. When the polarity selection is NPN, remote input is Active Low.

For Active High, connect the white input wire to V+ (10 V DC to 30 V DC), with a remote switch connected between the wire and V+. For Active Low, connect the white input wire to ground (0 V DC) with a remote switch connected between the wire and ground.

Pulse the remote input according to the diagram and the instructions provided in this manual.

The length of the individual programming pulses is equal to the value **T: 0.04 seconds ≤ T ≤ 0.8 seconds**.

Figure 7. Remote Input Map



4.3 TEACH Procedures

Use the following procedures to configure the sensor.

To exit a TEACH procedure, press and hold the TEACH button for longer than two seconds.

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4.3.1 Static TEACH

Use the following procedure to statically configure the sensor.

The Static TEACH method configures the sensor to detect beam blockage in excess of the taught condition. For example, if the sensor is above a surface and is taught with no part of the beam blocked, then the sensor will detect when a large enough object is present anywhere in the beam.

Alternatively, if the sensor is mounted slightly below the plane of a surface, some of the beam will be blocked by the surface. Teaching the sensor in this setup sets the threshold of the sensor so that the surface is accounted for, and additional beam blockage from objects on the surface will be detected.

If the sensor is taught with a surface present (part of the beam is blocked) and then the sensor is moved so that no part of the beam is blocked, the sensor will only detect when light equivalent to the taught condition (the surface) *plus* a minimum object is subsequently blocked.

1. Make sure the sensor is properly aligned with the retroreflector.
2. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	Pulse the remote input once.	

3. Configure the sensor.

Method	Action	Result
Push Button	Press the TEACH button once.	**Configuration Accepted** The green and amber LEDs flash twice and the sensor returns to Run mode. **Configuration Not Accepted** The amber LED flashes three times and the sensor returns to Run mode.
Remote Input	Pulse the remote input once.	

4.3.2 Dynamic TEACH

Use the following procedure to dynamically configure the sensor.

When using the Dynamic TEACH method, the sensor learns during actual sensing conditions, taking multiple samples and automatically setting the threshold at the optimum level. This is the recommended TEACH method for most applications.

Using the Dynamic TEACH method is an effective way to account for most belt flutter, seams, or other undesirable targets within the sensing beam. The Dynamic TEACH method sets the sensor threshold to ignore most belt imperfections and reduces the likelihood of false detections.

To cancel, press and hold the button or the remote input for two seconds during the process.

1. Make sure the sensor is properly aligned with the retroreflector.
2. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	Pulse the remote input once.	

3. Start the dynamic TEACH.

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Method	Action	Result
Push Button	Press the TEACH button twice.	The bar graph LEDs cycle up and down the graph, the green LED is on, and the amber LED is off.
Remote Input	Pulse the remote input twice.	

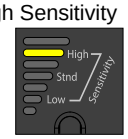
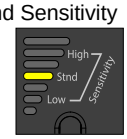
4. End the TEACH process.

Method	Action	Result
Push Button	Press the TEACH button once.	**Configuration Accepted** The green and amber LEDs flash twice and the sensor returns to Run mode.
Remote Input	Pulse the remote input line once.	**Configuration Not Accepted** The amber LED flashes three times and the sensor returns to Run mode.

4.3.3 Adjust the Sensitivity

Use the following procedure to adjust the sensitivity of the sensor to detect smaller targets or to increase performance in dirty environments.

Table 1. Sensitivity Options

LED Bar(s) On	Setting	LED Bar(s) On	Setting	LED Bar(s) On	Setting
High Sensitivity 	High	Stnd Sensitivity 	Standard (default)	Low Sensitivity 	Low

1. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	No action required.	N/A

2. Access the sensitivity settings.

Method	Action	Result
Push Button	Press the TEACH button three times.	By default, the middle (Stnd) LED on the bar graph is on. See "Sensitivity Options" on page 11.
Remote Input	Pulse the remote input three times.	The green (power) LED flashes.

3. Select the desired level. Three settings are available, ranging from low to high.

Method	Action	Result
Push Button	Press the TEACH button to move through the settings on the bar graph until the LED at the desired level is on.	The LED on the desired level is on. See "Sensitivity Options" on page 11.

Continued on page 12

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Continued from page 11

Method	Action	Result
Remote Input	Pulse the remote input to select the desired level. **Pulses** / **Sensitivity Level** 1 – Low 2 – Standard 3 – High	The green and amber LEDs flash twice and the sensor returns to Run mode.

4. Confirm the selection.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green and amber LEDs flash twice and the sensor returns to Run mode.
Remote Input	No action required.	N/A

4.3.4 Set Light Operate (LO) or Dark Operate (DO)

Set the output of the sensor to light operate or dark operate, depending on what is needed for the application.

Light Operate

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target.

Dark Operate

In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target.

Table 2. LO/DO Options

LED Bar(s) On	Setting		LED Bar(s) On	Setting
LO/DO 	Light Operate		None 	Dark Operate (default)

1. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	No action required.	N/A

2. Access the LO/DO setting.

Method	Action	Result
Push Button	Press the TEACH button four times.	The LO/DO LED (top bar) on the bar graph shows the current setting. See "LO/DO Options" on page 12.
Remote Input	Pulse the remote input four times.	The green (power) LED flashes.

3. Select the desired setting.

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Method	Action	Result
Push Button	Press the TEACH button to cycle between LO and DO to select the desired setting.	The LO/DO LED (top bar) on the bar graph shows the selected setting. See "LO/DO Options" on page 12.
Remote Input	Pulse the remote input to select the desired setting. Pulses: 1 = Light Operate; 2 = Dark Operate	The green and amber LEDs flash twice and the sensor returns to Run mode.

4. Confirm the selection.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The LEDs on the bar graph show the current selection.The green and amber LEDs flash twice and the sensor returns to Run mode.
Remote Input	No action required.	N/A

4.3.5 Set a Delay

Use the following procedure to turn the delay function on or off.

The default delay time is a 10 ms on delay and a 10 ms off delay. The delay time can be changed via IO-Link. The default function is inactive.

Table 3. Delay Options

LED Bar(s) On	Setting		LED Bar(s) On	Setting
Delay 	Delay function active		None 	Delay function inactive (default)

1. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	No action required.	N/A

2. Access the Delay setting.

Method	Action	Result
Push Button	Press the TEACH button five times.	The Delay LED (bottom bar) on the bar graph shows the current setting. See "Delay Options" on page 13.
Remote Input	Pulse the remote input five times.	The green (power) LED flashes.

3. Select the desired setting.

Method	Action	Result
Push Button	Press the TEACH button to cycle between on and off to select the desired setting.	The Delay LED (bottom bar) on the bar graph shows the selected setting. See "Delay Options" on page 13.

Continued on page 14

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Continued from page 13

Method	Action	Result
Remote Input	Pulse the remote to select the desired setting. **Pulses** / **Setting** 1 — Enabled 2 — Disabled	The green and amber LEDs flash twice and the sensor returns to Run mode.

4. Confirm the selection.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The LEDs on the bar graph show the current selection.The green and amber LEDs flash twice and the sensor returns to Run mode.
Remote Input	No action required.	N/A

4.3.6 Input/Output Configuration for Channel 2

Use the following procedure to select the function for Channel 2.

This procedure is for the push button only. Remote input does not apply; see "Remote Input" on page 9.

The default output is Complementary.

Table 4. Configuration Options

LED Bar(s) On	Setting	LED Bar(s) On	Setting
Middle three 	**Complementary (default)** The output on Channel 2 is opposite of the output on Channel 1. For example, if the output on Channel 1 is active, then the output on Channel 2 is inactive.	Top and bottom 	**Channel 2 disabled** Channel 2 has no function and is effectively disabled.
Bottom 	**Health** The B55 monitors deviation from the taught condition. The health output is active after a successful configuration. If the signal quality deviates far enough from the taught conditions, the health output turns off. This output is not the same as a detection condition. Configure the health output threshold via the alarm threshold setting in IO-Link.	Middle and bottom 	**Remote input** Channel 2 accepts remote input commands as described in "TEACH Procedures" on page 9.
Top 	**Alarm** The inverse of health, alarm has the output inactive until the alarm threshold is reached, at which point the output becomes active.	Top and middle 	**Detection output** The output on Channel 2 is the same as Channel 1. For example, if the output on Channel 1 is active, then output on Channel 2 is also active.

1. Enter configuration mode.

Action	Result
Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.

2. Access the Channel 2 Configuration settings.

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Action	Result
Press the TEACH button six times.	The LEDs on the bar graph show the current setting and the green (power) LED flashes. See "Configuration Options" on page 14.

3. Select the desired setting.

Action	Result
Press the TEACH button to cycle through the options and select the desired setting.	The LEDs on the bar graph show the selected setting and the green (power) LED flashes. See "Configuration Options" on page 14.

4. Confirm the selection.

Action	Result
Press and hold the TEACH button for 2 seconds.	The LEDs on the bar graph show the current selection. The green and amber LEDs flash twice and the sensor returns to Run mode.

4.3.7 Enable or Disable the Drift Filter

Use the following procedure to enable or disable the drift filter.

The drift filter allows the sensor to compensate, within its limits, for environmental changes, such as dust accumulation or temperature variations. If the sensor sees light blocked for a period of time without reaching the detection threshold, it automatically adjusts to maintain the ability to detect targets. If enough light is blocked for detection to occur, the sensor does not compensate for what is present in the beam.

The default is enabled.

Table 5. Configuration Options

LED Bar(s) On	Setting		LED Bar(s) On	Setting
Top three 	Enabled (default)		Bottom three 	Disabled

1. Enter configuration mode.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The green (power) LED flashes.
Remote Input	No action required.	N/A

2. Access the Drift Filter setting.

Method	Action	Result
Push Button	Press the TEACH button seven times.	The green (power) LED is on, the amber (output status) LED is off, and the bar graph shows the current setting. See "Configuration Options " on page 15.
Remote Input	Pulse the remote input seven times.	The green (power) LED flashes.

3. Select the desired setting.

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<table>
<tr><th>Method</th><th>Action</th><th>Result</th></tr>
<tr><td>Push Button</td><td>Press the TEACH button to cycle between enabled and disabled to select the desired setting.</td><td>The green (power) LED flashes, the amber (output status) LED is off, and the bar graph shows the selected setting. See "Configuration Options " on page 15.</td></tr>
<tr><td>Remote Input</td><td>Pulse the remote to select the desired setting.
<table><tr><th>Pulses</th><th>Setting</th></tr><tr><td>1</td><td>Enabled</td></tr><tr><td>2</td><td>Disabled</td></tr></table></td><td>The green and amber LEDs flash twice and the sensor returns to Run mode.</td></tr>
</table>

4. Confirm the selection.

Method	Action	Result
Push Button	Press and hold the TEACH button for 2 seconds.	The LEDs on the bar graph show the current selection. The green and amber LEDs flash twice and the sensor returns to Run mode.
Remote Input	No action required.	N/A

4.4 Reset the Sensor to Factory Default Settings

To reset the sensor to factory default, eight-pulse the remote input or press the TEACH button eight times.

The bar graph, the green LED, and the amber LED flash twice and the sensor returns to Run mode.

4.4.1 Factory Default Settings

Setting	Factory Default
Sensitivity	Standard
Light Operate/Dark Operate	Dark Operate (DO)
Delay function	Disabled
Delay timing	10 ms on delay 10 ms off delay
Polarity	PNP (Polarity is changed via IO-Link and does not change with a factory reset)
Channel 2 output configuration	Complementary
Drift filter	Enabled

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Chapter 5 IO-Link Overview

IO-Link®[3] is an open standard serial communication protocol that allows for the bi-directional exchange of data from IO-Link-supported devices, such as sensors, that are connected through IO-Link. For the latest IO-Link protocol and specifications, please visit http://www.io-link.com.

Advantages to an IO-Link system include standardized wiring, remote configuration, simple device replacement, advanced diagnostics, and increased data availability. Because IO-Link is an open standard, the devices can be integrated in almost any fieldbus or automation system.

An IO-Link system consists of an IO-Link master and an IO-Link device such as a sensor, lighting product, IO-Link hub, or actuator.

The functions and parameters of the IO-Link devices are represented in a device description file (IODD). IODD files contain information about identification, device parameters, process and diagnostic data, communication properties, and other details. The IODD files for Banner IO-link devices can be downloaded for free on www.bannerengineering.com. For a list of supporting files, please refer to "Supporting Documentation" on page 21.

5.1 IO-Link Interface

For the latest IO-Link protocol and specifications, see www.io-link.com.

Each IO-Link device has an IODD (IO Device Description) file that contains information about the manufacturer, article number, functionality etc. This information can be easily read and processed by the user. Each device can be unambiguously identified via the IODD as well as via an internal device ID. Download the B55's IO-Link IODD package (p/n 260565) from Banner Engineering's website at www.bannerengineering.com.

Banner has also developed Add On Instruction (AOI) files to simplify ease-of-use between the B55, multiple third-party vendors' IO-Link masters, and the Logix Designer software package for Rockwell Automation PLCs. Three types of AOI files for Rockwell Allen-Bradley PLCs are listed below. These files and more information can be found at www.bannerengineering.com.

Process Data AOIs—These files can be used alone, without the need for any other IO-Link AOIs. The job of a Process Data AOI is to intelligently parse out the Process Data word(s) in separate pieces of information. All that is required to make use of this AOI is an EtherNet/IP connection to the IO-Link Master and knowledge of where the Process Data registers are located for each port.

Parameter Data AOIs—These files require the use of an associated IO-Link Master AOI. The job of a Parameter Data AOI, when working in conjunction with the IO-Link Master AOI, is to provide quasi-realtime read/write access to all IO-Link parameter data in the sensor. Each Parameter Data AOI is specific to a given sensor or device.

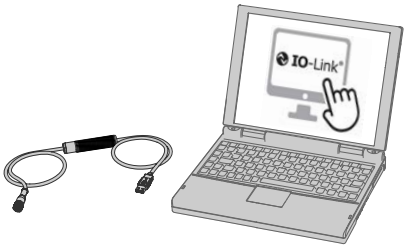
IO-Link Master AOIs—These files require the use of one or more associated Parameter Data AOIs. The job of an IO-Link Master AOI is to translate the desired IO-Link read/write requests, made by the Parameter Data AOI, into the format a specific IO-Link Master requires. Each IO-Link Master AOI is customized for a given brand of IO-Link Master.

Add and configure the relevant Banner IO-Link Master AOI in your ladder logic program first; then add and configure Banner IO-Link Device AOIs as desired, linking them to the Master AOI as shown in the relevant AOI documentation.

[3] IO-Link® is a registered trademark of PROFIBUS Nutzerorganisation e.V.

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5.2 IO-Link Configuration Software



Banner's IO-Link Configuration Software provides an easy way to configure Banner IO-Link masters and connected IO-Link devices, giving users full control over master, port, and device settings.

The software enables users to configure port settings for Banner serial and Ethernet IO-Link masters, including each port's operating mode and associated SIO (discrete input or output) behavior. It also supports configuration of IP address settings for Banner Ethernet IO-Link masters and allows users to configure Banner IO-Link devices connected to the master.

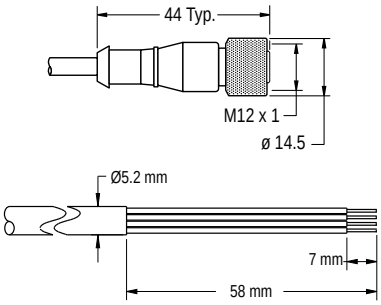
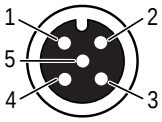
Download the free IO-Link Configuration Software at https://www.bannerengineering.com/us/en/products/software/io-link-software.html.

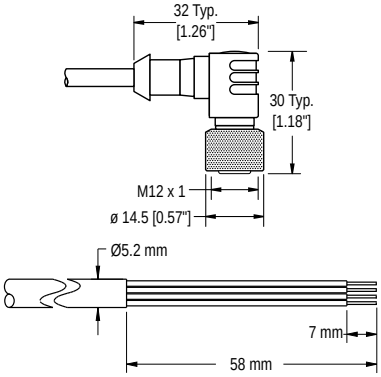
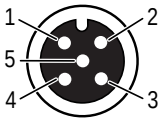
For instructions on how to use the software to configure IO-Link port settings and IO-Link devices connected to the IO-Link master, use the IO-Link Configuration Software Instruction Manual available from the software by going to **Help › Help File**. The IO-Link Configuration Software Instruction Manual (p/n 228876) can also be downloaded directly from www.bannerengineering.com.

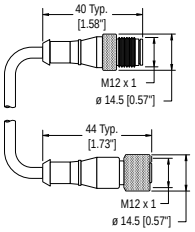
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Chapter 6 Accessories

6.1 Cordsets

4-Pin A-Code Single-Ended M12 Female Cordsets (datasheet p/n 235937)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F4-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-22-2	2 m (6.56 ft)			
BC-M12F4-22-5	5 m (16.4 ft)			
BC-M12F4-22-8	8 m (26.25 ft)			
BC-M12F4-22-10	10 m (30.81 ft)			
BC-M12F4-22-15	15 m (49.2 ft)			
BC-M12F4-22-20	20 m (65.61 ft)			
BC-M12F4-22-25	25 m (82.02 ft)			
BC-M12F4-22-30	30 m (98.42 ft)			

4-Pin A-Code Single-Ended M12 Female Right-Angle Cordsets (datasheet p/n 235937)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F4A-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4A-22-2	2 m (6.56 ft)			
BC-M12F4A-22-5	5 m (16.4 ft)			
BC-M12F4A-22-8	8 m (26.25 ft)			
BC-M12F4A-22-10	10 m (30.81 ft)			
BC-M12F4A-22-15	15 m (49.2 ft)			

4-Pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236186)				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-3	3 m (9.84 ft)			
BC-M12F4-M12M4-22-4	4 m (13.12 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4-22-15	15 m (49.2 ft)			

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6.2 Brackets

SMBB55RA

- Zinc plated, 14-gauge cold rolled steel
- CAD Files: DXF, PDF, IGS, STP



SMBB55AP

- Zinc plated, 12-gauge cold rolled steel
- CAD Files: DXF, PDF, IGS, STP



6.3 Reflectors

BRT-84X84A

- Square, acrylic target
- Reflectivity Factor: 2.0
- Temperature: –20 °C to +60 °C (–4 °F to +140 °F)
- Approximate size: 84 mm × 84 mm × 9 mm
- Two 4.2 mm diameter slots for mounting
- CAD Files: DXF, PDF, IGS, STP



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Chapter 7 Product Support

7.1 Supporting Documentation

The following documentation is available at www.bannerengineering.com.

Part number	Document Name
261078	B55 Wide Beam IO-Link Data Reference Guide
260565	B55 IODD File
b_51934077	B25 and B55 IO-Link AOI File
228876	IO-Link Configuration Software Instruction Manual

7.2 Troubleshooting

If the configuration is not accepted during a TEACH procedure (the amber LED flashes three times), see the following possible reasons why.

During a Static TEACH: Not enough returned light results in the configuration not being accepted. For example, the reflector is not in place.

During a Dynamic TEACH:

- Not enough returned light at the start of the TEACH process causes the configuration to be rejected immediately. For example, not having a reflector in place.
- If the TEACH process starts with the reflector in place, but then too much light is blocked, the configuration will not be accepted. For example, starting the TEACH process, removing the reflector and returning it, and then completing the TEACH process.

7.3 Clean Sensor with Compressed Air and Lint-Free Cloth

Handle the sensor with care during installation and operation. Sensor windows soiled by fingerprints, dust, water, oil, etc. create stray light that may degrade the peak performance of the sensor.

Blow dust from the sensor using filtered, compressed air, then clean as necessary using a lint-free cloth. Do not use any chemicals for cleaning.

7.4 Repairs and Translations (No Field-Replaceable Parts)

English

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

```
IMPORTANT: If instructed to return the device, pack it with care. Damage that occurs in return
shipping is not covered by warranty.
```

Obtain assistance with product repairs by contacting your local Banner Engineering Corp distributor or by calling Banner directly at (763) 544-3164. Access literature translated into your native language on the Banner website at www.bannerengineering.com or contact Banner directly at (763) 544-3164.

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Deutsch

Wenden Sie sich zur Fehlerbehebung dieses Geräts an Banner Engineering. **Versuchen Sie nicht, Reparaturen an diesem Banner-Gerät vorzunehmen. Das Gerät enthält keine am Einsatzort auszuwechselnden Teile oder Komponenten.** Wenn ein Banner-Anwendungstechniker zu dem Schluss kommt, dass dieses Gerät, ein Teil oder eine Komponente davon defekt ist, erhalten Sie von dem Techniker Erläuterungen zu Banners RMA-Verfahren (Return Merchandise Authorization) für die Warenrückgabe.

WICHTIG: Wenn Sie der Techniker anweist, das Gerät zurückzusenden, verpacken Sie es bitte sorgfältig. Transportschäden bei der Rücksendung werden von der Garantie nicht abgedeckt.

Unterstützung bei Produktreparaturen erhalten Sie von Ihrem örtlichen Banner Engineering Corp Händler oder direkt von Banner unter Tel. (763) 544-3164. Die in Ihre Muttersprache übersetzte Literatur finden Sie auf der Banner-Website unter www.bannerengineering.com oder kontaktieren Sie Banner direkt unter Tel. (763) 544-3164.

Français

Pour plus d'informations sur le dépannage du produit, contactez Banner Engineering. **Ne tentez pas de réparer ce dispositif Banner. Il ne contient aucun composant ou pièce qui puisse être remplacé sur place.** Si un ingénieur de Banner conclut que le dispositif ou l'une de ses pièces ou composants est défectueux, il vous informera de la procédure à suivre pour le retour des produits (RMA).

Important : Si vous devez retourner le dispositif, emballez-le avec soin. Les dégâts occasionnés pendant le transport de retour ne sont pas couverts par la garantie.

Pour vous aider lors de la réparation de produits, contactez votre distributeur Banner local our appelez directement Banner au (763) 544-3164. La documentation traduite dans votre langue est disponible sur le site internet de Banner www.bannerengineering.com ou contactez directement Banner au (763) 544-3164.

Italiano

Per le procedure di individuazione e riparazione dei guasti di questo dispositivo, contattare Banner Engineering. **Non tentare di riparare questo dispositivo Banner, in quanto non contiene parti o componenti sostituibili dall'utente.** Se il dispositivo, una parte del dispositivo o un componente del dispositivo viene riscontrato difettoso da un tecnico Banner, il nostro personale vi comunicherà la procedura da seguire per ottenere l'autorizzazione al reso.

Importante: Se si ricevono istruzioni di rispedire il dispositivo al produttore, imballarlo con cura. I danni dovuti al trasporto non sono coperti dalla garanzia.

Per assistenza nelle riparazioni dei prodotti, contattare il distributore locale Banner Engineering Corp o contattare direttamente Banner al numero (763) 544-3164. È possibile accedere alla documentazione tradotta nella propria lingua madre sul sito Web Banner all'indirizzo www.bannerengineering.com o contattare direttamente Banner al numero (763) 544-3164.

Español

Comuníquese con Banner Engineering para solucionar de problemas de este dispositivo. **No intente ninguna reparación a este dispositivo de Banner, contiene piezas o componente que no se pueden cambiar en terreno.** Si algún ingeniero de aplicaciones de Banner determina que el dispositivo, alguna de las piezas o alguno de los componentes del dispositivo está defectuoso, le informará el procedimiento de autorización de devolución de mercancía (RMA, por sus siglas en inglés) de Banner.

Importante: Si se le solicita devolver el dispositivo, empáquelo con cuidado. Puede haber daños durante el envío de devolución que no estén cubiertos por la garantía.

Para reparaciones de productos, por favor contacte a su distribuidor local de Banner Engineering o llame a Banner directamente al 00 1 (763) 544-3164. Vea la literatura traducida en su idioma en el sitio web Banner en www.bannerengineering.com o comuníquese con Banner directamente al 00 1 (763) 544-3164.

中国人

如需对本装置进行故障排查，请联系邦纳。**请勿尝试自行维修该邦纳装置；本装置不包含任何可在现场更换的部件或组件。** 若经邦纳应用工程师确认设备、设备部件或组件存在缺陷，他们将告知您邦纳退货授权 (RMA) 流程。

重要注意事项： 如被要求退回装置，请妥善包装后寄回。退货运输过程中发生的损坏不在保修范围内。

请联系当地的 Banner Engineering Corp 经销商或直接致电 Banner +1 (763) 544-3164，以获得产品维修帮助。请访问邦纳网站 www.bannerengineering.com 或直接拨打 +1 (763) 544-3164 联系邦纳，获取翻译成您母语的资料。

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한국인

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日本語

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重要 ： 返品を指示された場合は、装置を丁寧に梱包してください。返品時に発生した破損は保証の対象外となります。

製品の修理については、最寄りのBanner Engineering Corp代理店にお問い合わせいただくか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。バナーのウェブサイト（www.bannerengineering.com）でお客様の言語に翻訳された資料にアクセスするか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。

čeština

Pro řešení problémů se zařízením kontaktujte společnost Banner Engineering. **Neprovádějte žádné opravy zařízení Banner. Neobsahují žádné komponenty nebo části, které by byly vyměnitelné.** Pokud je zařízení, jeho část nebo díl označen technikem společnosti Banner jako poškozený, bude Vám doporučeno vyplnit reklamační RMA protokol.

Důležité: Pokud byl vydán požadavek na vrácení zařízení, pečlivě ho zabalte. Poškození vzniklé při dopravě není považováno za záruční opravu.

Pokud produkt potřebuje opravu, vyžádejte si pomoc od místního distributora společnosti Banner Engineering Corp nebo přímo na telefonním čísle (763) 544-3164. Dokumentaci přeloženou do vašeho jazyka si vyhledejte na webových stránkách společnosti Banner na adrese www.bannerengineering.com nebo se obraťte přímo na společnost Banner na telefonním čísle (763) 544-3164.

Polski

W celu rozwiązania problemów z urządzeniem należy skontaktować się z działem technicznym firmy Banner Engineering. **Pod żadnym pozorem nie próbuj naprawiać tego urządzenia firmy Banner; nie zawiera ono części ani elementów, które można wymieniać samodzielnie.** Jeśli urządzenie, jego część lub element zostaną uznane za wadliwe przez inżyniera technicznego Banner, poinformuje on użytkownika o firmowej procedurze zwrotu towaru (RMA) firmy Banner.

Ważne: Jeśli urządzenie ma zostać zwrócone, należy je starannie zapakować. Uszkodzenia powstałe podczas odsyłki nie są objęte gwarancją.

Aby uzyskać pomoc w zakresie naprawy produktu, należy skontaktować się z lokalnym dystrybutorem Banner Engineering Corp lub zadzwonić bezpośrednio do firmy Banner pod numer (763) 544-3164. Dostęp do literatury przetłumaczonej na swój język ojczysty można uzyskać na stronie internetowej firmy Banner pod adresem www.bannerengineering.com lub kontaktując się bezpośrednio z firmą Banner pod numerem (763) 544-3164.

Português

Entre em contato com a Engenharia da Banner para a solução de problemas deste dispositivo. **Não tente fazer nenhum reparo neste dispositivo Banner; ele não contém peças ou componentes substituíveis em campo.** Se um técnico de aplicações da Banner determinar que o dispositivo, peça ou componente do dispositivo está com defeito, ele o informará sobre o procedimento de RMA (Autorização de Devolução de Mercadoria) da Banner.

Importante: Se for instruído a devolver o dispositivo, embale-o com cuidado. Os danos ocorridos no transporte de devolução não são cobertos pela garantia.

Obtenha assistência para reparos do produto entrando em contato com o distribuidor local da Banner Engineering Corp ou ligando diretamente para a Banner no telefone (763) 544-3164. Acesse a literatura traduzida para seu idioma nativo no site da Banner em www.bannerengineering.com ou entre em contato diretamente com a Banner pelo telefone (763) 544-3164.

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Türkçe

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```
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7.5 Contact Us

Banner Engineering Corp. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit www.bannerengineering.com.

7.6 Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

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