

FIXED INDUSTRIAL SCANNER

FS10

Product Reference Guide

MN-004336-05EN Rev A



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About this Guide

This guide provides information on configurations, specifications, power sources, connectivity options, LED indicators, and maintenance guidelines for using the scanner.

Notational Conventions

The following conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
 - Dialog box, window, and screen names
 - Dropdown list and list box names
 - Checkbox and radio button names
 - Icons on a screen
 - Key names on a keypad
 - Button names on a screen
- Bullets (•) indicate:
 - Action items
 - List of alternatives
 - Lists of required steps that are not necessarily sequential
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following visual indicators are used throughout the documentation set.



NOTE: The text here indicates information that is supplemental for you to know and that is not required to complete a task.



IMPORTANT: The text here indicates information that is important for you to know.



CAUTION: If the precaution is not heeded, you could receive a minor or moderate injury.



WARNING: If danger is not avoided, you **CAN** be seriously injured or killed.



DANGER: If danger is not avoided, you **WILL** be seriously injured or killed.

Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region.

Contact information is available at: zebra.com/support. When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software/firmware type and version number

Zebra responds to calls by email, telephone, or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

Getting Started

This section provides information on device configurations and supported accessories.

Configurations

The FS10 fixed industrial scanner supports USB-C with auto-focus, standard barcode reading, fast 2D, or Deep Learning OCR decode capabilities.



NOTE: The FS10 (including configurations with a polarizer) is not suited for use with high-powered lasers typically used for part marking (such as a YAG laser).

Table 1 Configurations

Device	Description
FS10-SR10D1-1L02K	Fixed Industrial USB scanner with auto-focus, standard range, 1.0 MP, fast 1D-2D decoder with DPM, red and white illumination, loud beeper, plastic exit window, India/Korea
FS10-SR10D1-1L02W	Fixed Industrial USB scanner with auto-focus, standard range, 1.0 MP, fast 1D-2D decoder with DPM, red and white illumination, loud beeper, plastic exit window, Worldwide
FS10-SR10D1-1402K	Fixed Industrial USB scanner with auto-focus, standard range, 1.0 MP, fast 1D-2D decoder with DPM, red and white illumination, loud beeper, polarizer filter, plastic exit window, India/Korea
FS10-SR10D1-1402W	Fixed Industrial USB scanner with auto-focus, standard range, 1.0 MP, fast 1D-2D decoder with DPM, red and white illumination, loud beeper, polarizer filter, plastic exit window, Worldwide

Accessories

The FS10 is compatible with a range of accessories, including 90° cables, brackets, deflective mirrors, and power supplies.



NOTE: The serial and Ethernet adapter (CBL-USB00200-M1200) and power supply (PWR-24V05A-0000) are required to use CBL-ENT00500-M1200, CBL-ENT01500-M1200, CBL-PWR00500-M1200, and CBL-PWR01500-M1200.

Part Number	Description
Cables	
CBL-USB00400-USC00	USB-C to USB-C locking cable, 4M
CBL-USB00200-USA00	USB-C to USB-A locking cable, 2M
CBL-USB00400-USA00	USB-C to USB-A locking cable, 4M
CBL-USB00200-USC00	USB-C to USB-C locking cable, 2M
CBL-ENT00500-M1200	Cable, Ethernet 5M, X-Coded M12 to RJ45, standard flex
CBL-ENT01500-M1200	Cable, Ethernet 15M, X-Coded M12 to RJ45, standard flex
CBL-PWR00500-M1200	Cable, power 5M, 12 Pin M12 to flying leads, standard flex
CBL-PWR01500-M1200	Cable, power 15M, 12 Pin M12 to flying leads, standard flex
CBL-USB00200-M1200	USB-C to Serial and Ethernet adapter cable, 2M, locking USB-C to M12
CBL-MATE-USA00	I/O mating cable, DB-15 to USB-A and flying power leads
CBL-ADPTR-USC00	I/O adapter cable, USB-C to DB-15
CBL-USB00202-USA00	90° USB-C to USB-A cable, 2M
CBL-USB00402-USA00	90° USB-C to USB-A cable, 4M
CBL-USB00202-USC00	90° USB-C to USB-C cable, 2M
CBL-USB00402-USC00	90° USB-C to USB-C cable, 4M
CGRD-USBC-D000	90° cable guard
Brackets	
BRKT-LMNT-C000	Compact Bracket
BRKT-LMNT-C002	Adjustable Bracket
Deflective Mirrors	
MIRR-DFLA-D000	Deflective Mirror
Power Supplies	
PWR-24V05A-0000	Power supply, 24VDC 5AMP, DIN rail mount

Installation

If you are using the scanner in a deployment environment, fasten it to a support structure using its provided mounting holes. View the dimensional drawings to understand how to mount the scanner.

Torque Specification

Each connector on the devices requires a specific torque value.

To guarantee an IP65 or IP67 product specification, Zebra cables or connector thread safe covers must be torqued to the following specifications:

- Torque for USB-C cables: .2 to .5 Nm / 1.7 to 4 lbf-in.



NOTE: Connector covers are hand-tightened from the factory to allow for easy hand removal. The covers must be torqued at installation to guarantee an IP65 or IP67 specification if cables are not used.

Mounting Instructions

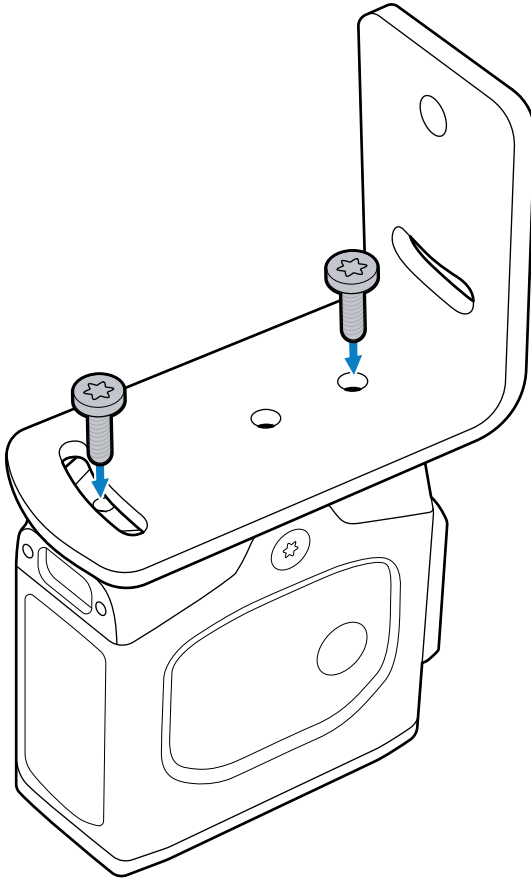
Depending on the mounting orientation and configuration, you may need to use different screws. Use the guidance in this section to understand what screws are appropriate for your use case.



NOTE: If you are mounting the scanner directly onto the bracket, use 6.25 mm screws.

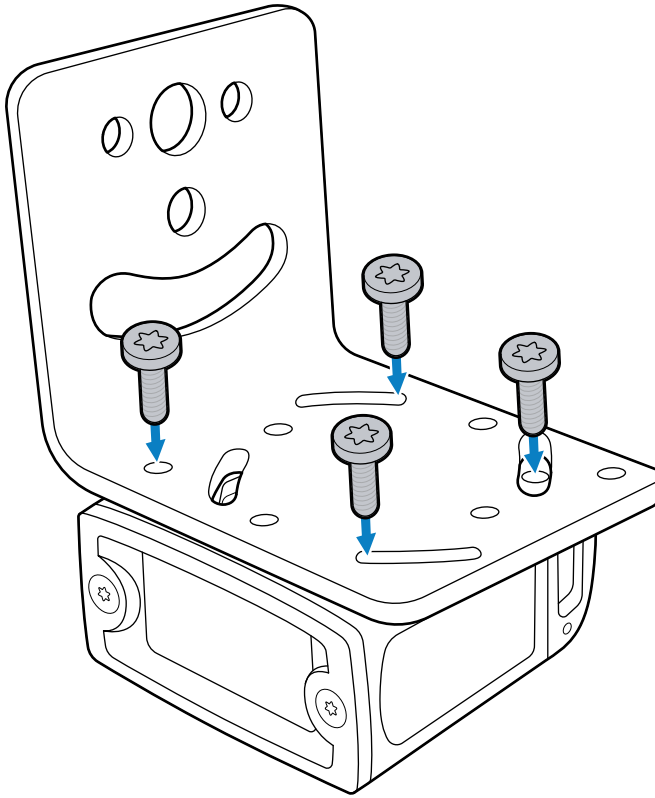
1. Refer to the dimensional drawings for mounting hole placements on the device.
2. Align the holes on the mounting surface with the mounting holes on the device.
3. Insert 6.25 mm screws into the mounting holes and tighten using a Torx T8 screwdriver. The recommended torque is 2 to 3 Nm / 17 to 26 lbf-in.

Figure1 Compact Bracket (BRKT-LMNT-C000)



NOTE: The FS10 can be mounted on the compact bracket with various mounting orientations and angles. The available options depend on the combination of FS10 mounting holes and the bracket's holes and slots. Additionally, the bottom mounting holes on the FS10 may be used for installation (not shown here).

Figure 2 Adjustable Bracket (BRKT-LMNT-C002)

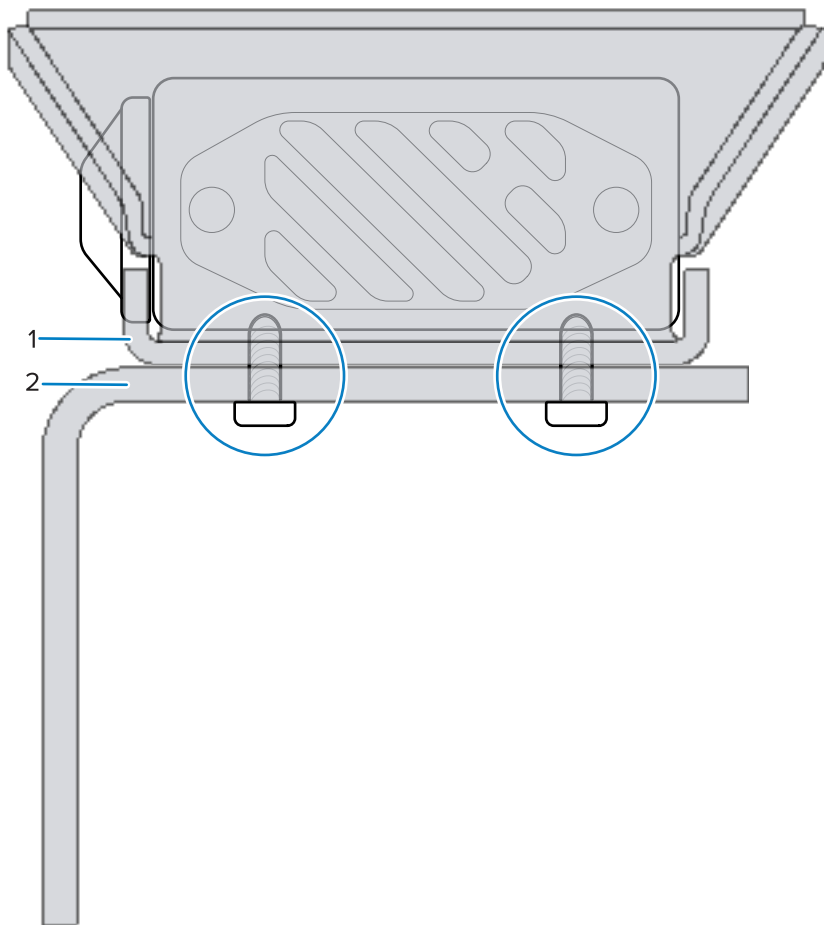


NOTE: The FS10 can be mounted on the adjustable bracket using (2) screws instead of (4). Using (2) screws provides a wider range of mounting orientations and angles. The available options depend on the combination of FS10 mounting holes and the bracket's holes and slots. Additionally, the rear mounting holes on the FS10 may be used for installation (not shown here).



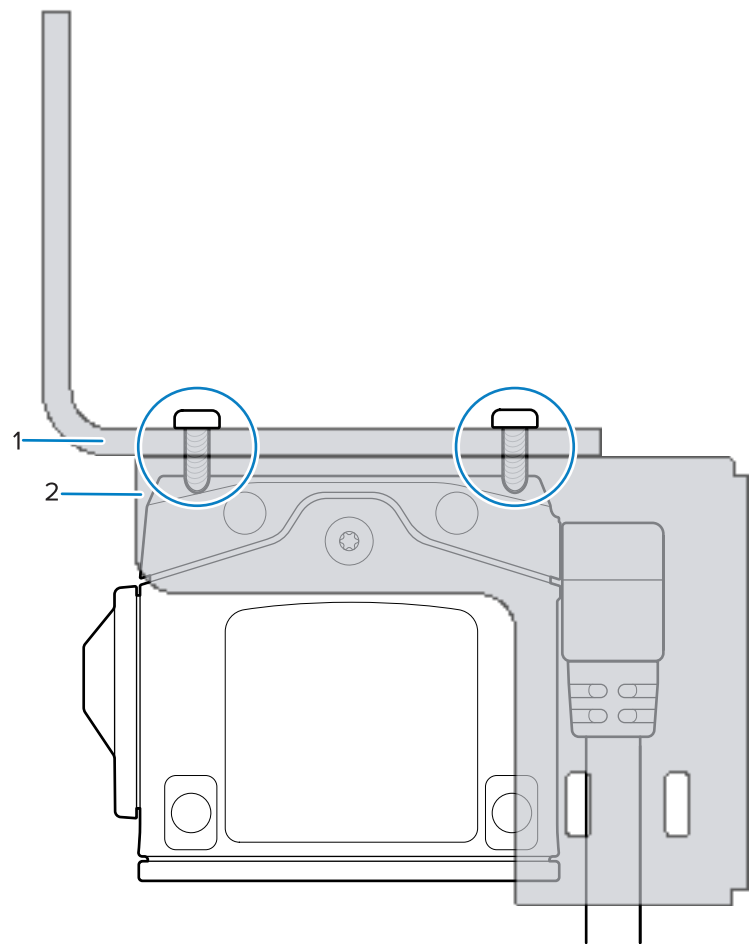
NOTE: Use 8 mm screws and a Torx T10 screwdriver if you are mounting the compact or adjustable bracket on top of the cable guard or deflective mirror using common mounting holes.

Figure 3 Compact Bracket with Deflective Mirror



1	Deflective Mirror Bracket
2	Compact Bracket

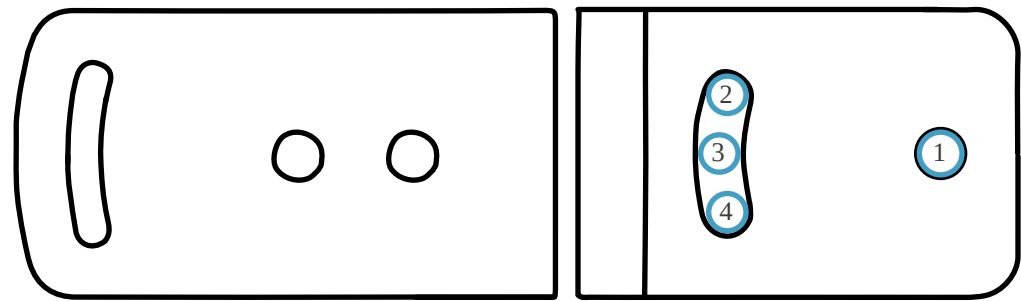
Figure 4 Compact Bracket with Cable Guard



1	Compact Bracket
2	Cable Guard

Compact Bracket Mounting Options

The compact bracket supports multiple mounting options.

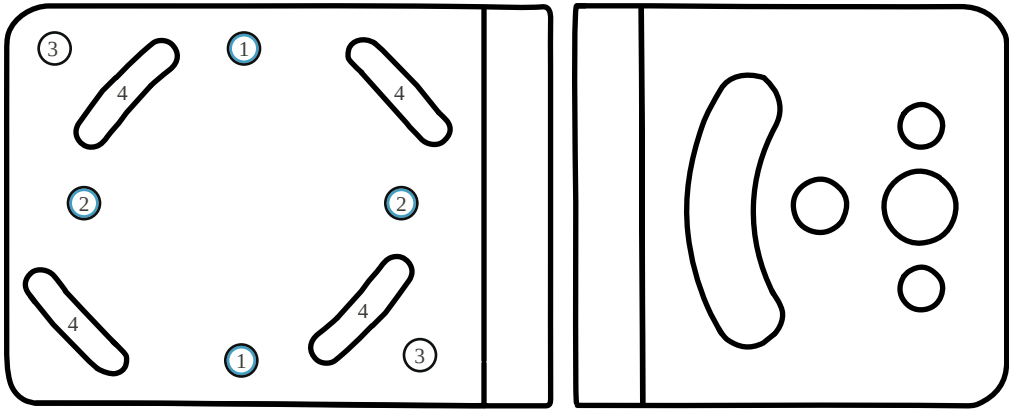


1 and 2	+ 13° angle
---------	-------------

1 and 3	Vertical/Horizontal Option
1 and 4	- 13° angle

Adjustable Bracket Mounting Options

The adjustable bracket supports multiple mounting options.



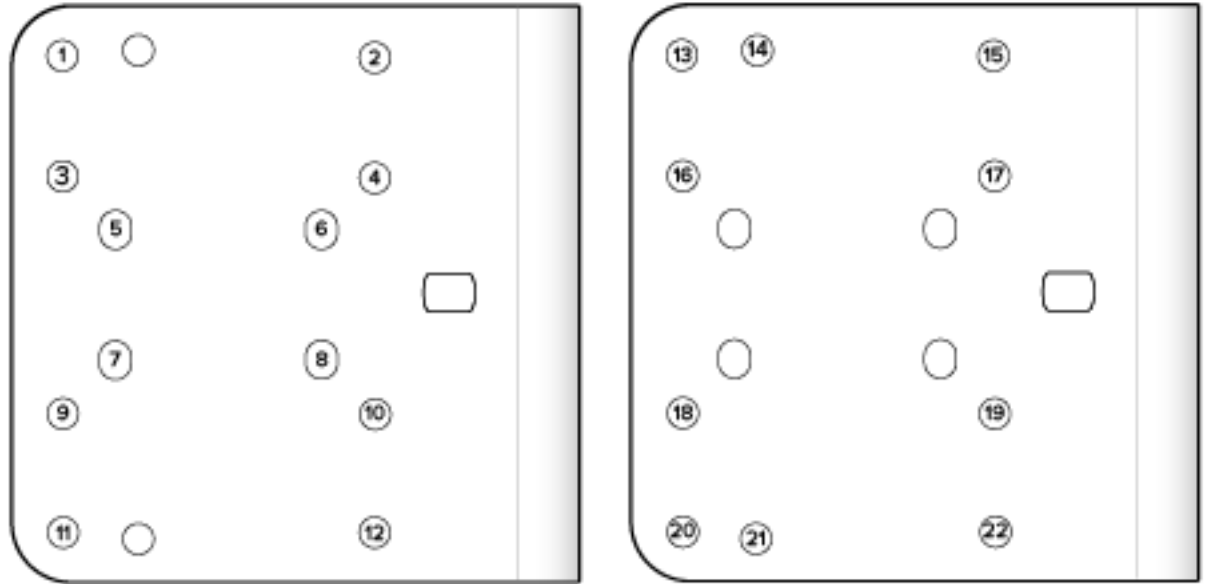
1	Vertical Mounting Option
2	Horizontal Mounting Option
3 and 4	Adjustable Mounting Option up to +/- °15

Mounting the Device Using the L-Bracket Accessory

This section illustrates the mounting orientations for the device using the L-bracket accessory (BRKT-LMNT-U000).

1. Use the mounting screws provided with the kit to attach the device to the bracket. The recommended Torque is 6.0 in-lbs.
2. Refer to the L-bracket mounting options outlined below.

Figure 5 Mounting Orientations



Bottom Mounting Options	Back/Side Mounting Options
1,2,9,10 or 3,4,11,12 for the FS10 (two options)	13 and 15, 16 and 17, 18 and 19, 20 and 22 Back Mounting Holes for the FS10 (four options)
1,2,9,10 or 3,4,11,12 for the xS20 (two options)	13 and 21 or 14 and 20 Side Mounting Holes for the xS20 (two options)

Installing the Deflective Mirror

Use the deflective mirror to expand the field of view (FOV) and access occluded areas.

Required equipment:

- Deflective mirror
- 5 mm or 8 mm screws (depending on configuration)
- Torx T10 screwdriver



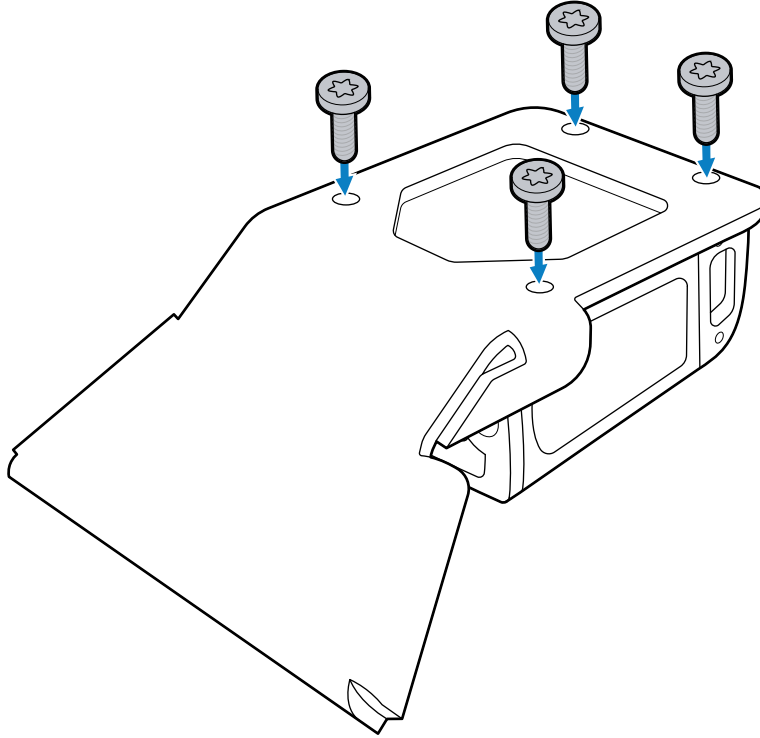
NOTE: Consider wearing gloves during the installation process to keep the mirror clean and prevent scratches. Keep the protective layer on the mirror until the end of the installation to protect the mirror.

1. Mount the mirror bracket onto the device, aligning it with the mounting holes.



NOTE: If you are mounting the mirror directly onto the scanner, use 5 mm screws.

2. Insert the four 5 mm screws and hand-tighten them to mount the adjustable bracket onto the device. Recommended torque: 2-3 Nm / 17-26 lbf-in.



NOTE: If you are installing the mounting bracket on top of the deflective mirror, use 8 mm screws. The back mounting holes on the scanner remain accessible when the mirror is mounted.

3. Remove the protective film from the mirror.

Installing the Cable Guard

Cable guards help protect the cables that transmit power and data from the device, ensuring efficient operation.

Required equipment:

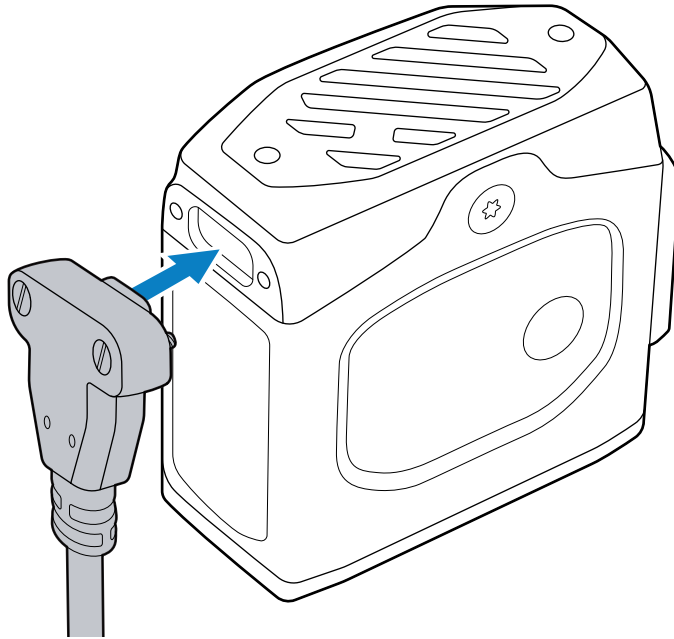
- 90° cable



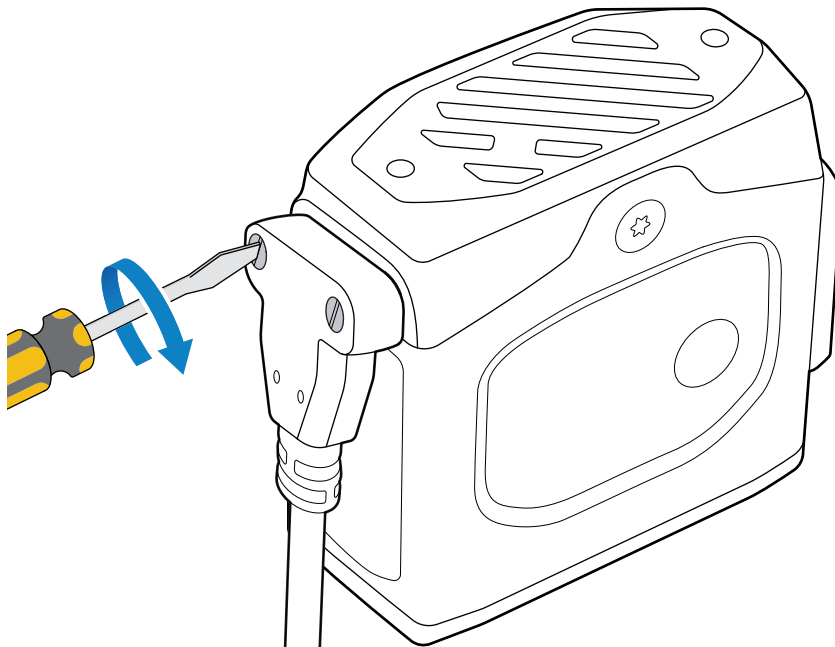
NOTE: The cable guard is intended for use with 90° USB-C to A/USB-C to C cables or Serial Ethernet cable adapters only (CBL-USB00202-USA00, CBL-USB00402-USA00, CBL-USB00402-USC00, CBL-USB00202-USC00 or CBL-USB00200-M1200).

- Cable guard
- 5 mm or 8 mm screws (depending on configuration)
- Torx T10 screwdriver

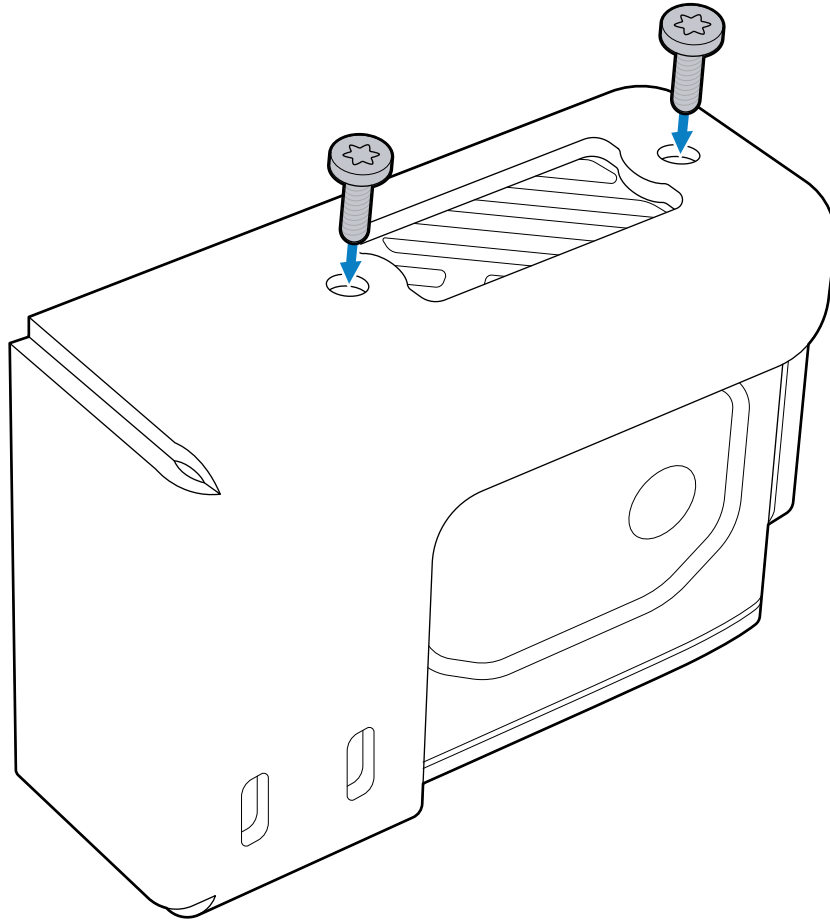
1. Connect the cable to the scanner.



2. Tighten the screws on the cable.



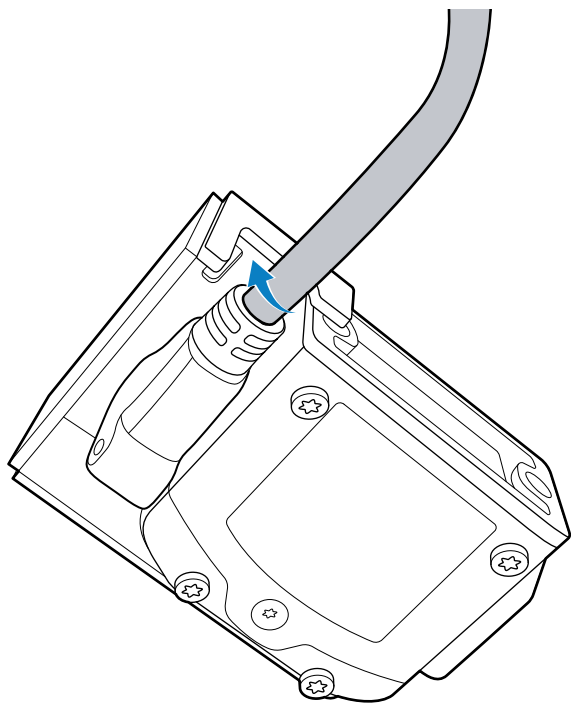
3. Align the cable guard bracket with the mounting holes on the device.
4. Insert the (2) 5 mm mounting screws and secure the cable guard firmly to the scanner using a Torx T10 screwdriver. The recommended torque is 2-3 Nm / 17-26 lbf-in.



5. Feed the cable connector end through the open end of the cable guard, starting at the external (entry) end toward the device, until the connector reaches the desired port.

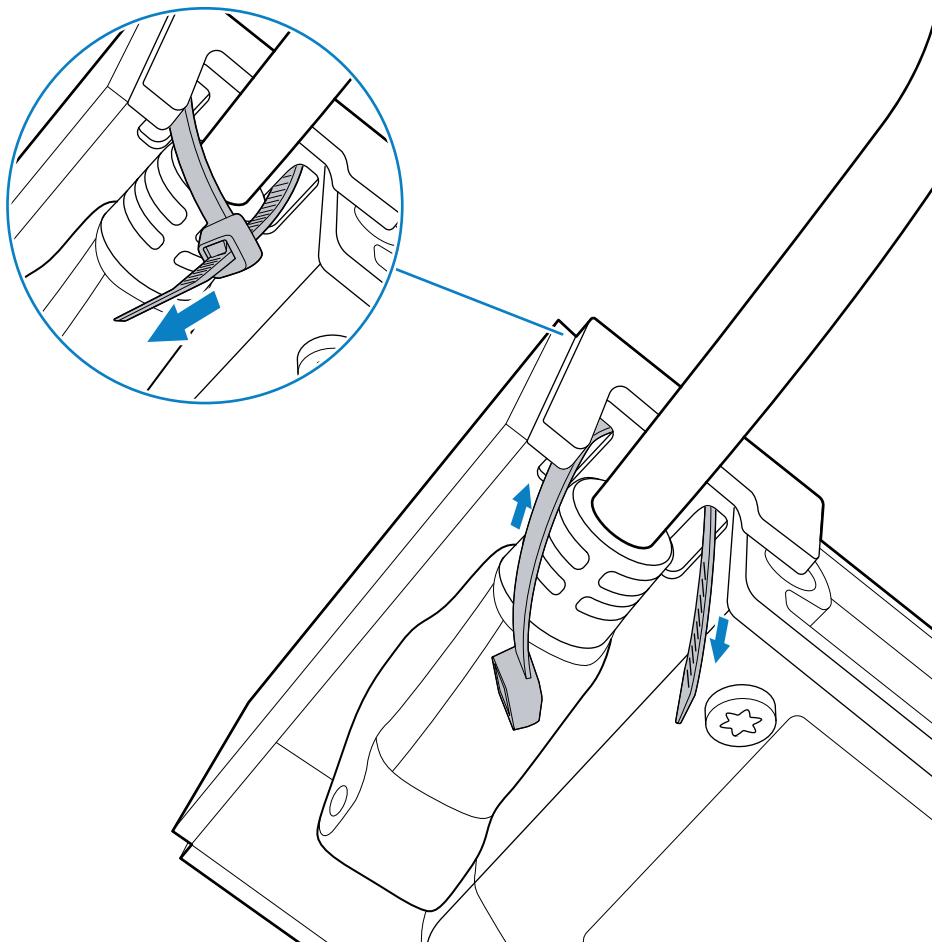


NOTE: Ensure the guard is oriented correctly and extends toward the planned cable route.



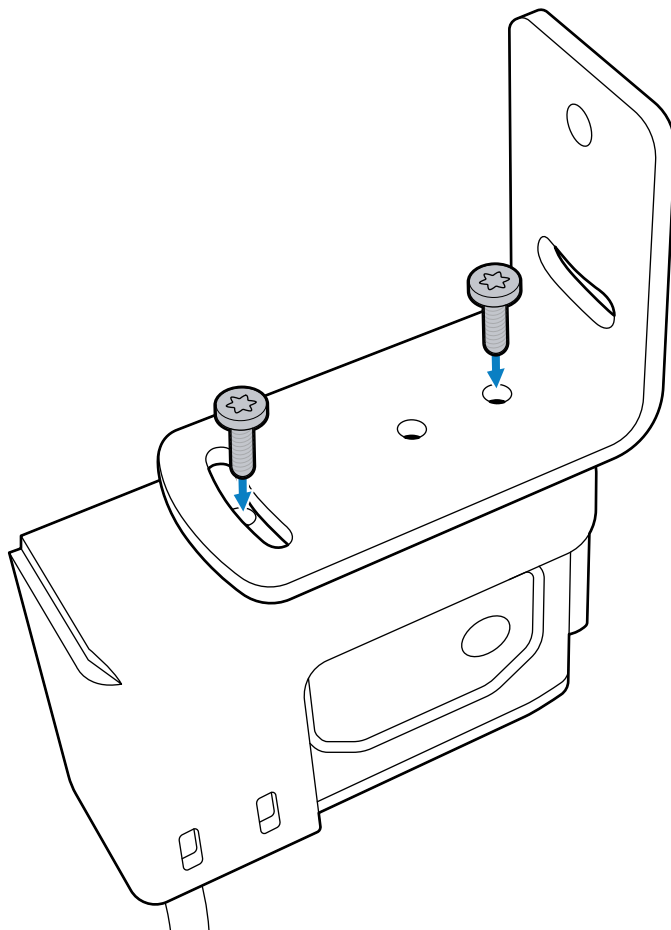
NOTE: Confirm that the cable is not pinched and that the bend radius inside the guard complies with cable specifications.

6. Thread a zip tie through the slots on the cable guard and pull to tighten and secure the cable (optional).



WARNING: After the zip tie is secure, you may have to cut it to remove it. Use appropriate cutting tools and exercise caution to avoid injury or damage to surrounding components.

7. Align the scanner's (or cable guard assembly's) mounting holes with the external mounting accessory and insert the (2) 8 mm screws. The recommended torque is 2-3 Nm / 17-26 lbf-in.

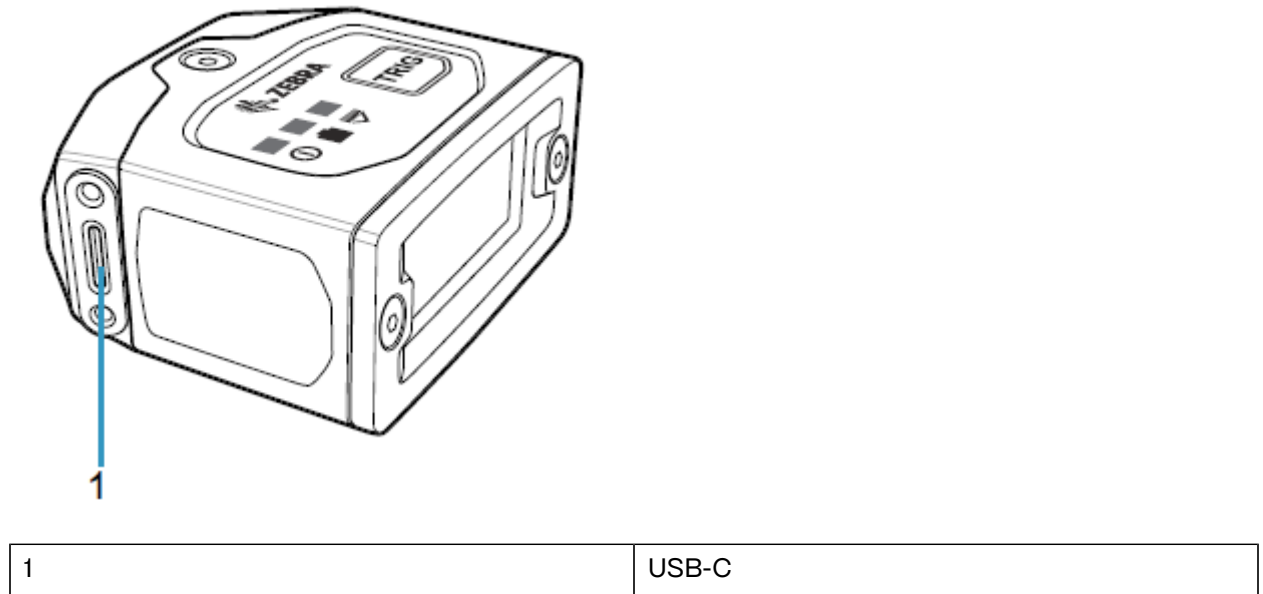


NOTE: If you are installing the mounting bracket on top of the cable guard, use 8 mm screws. The scanner's back mounting holes remain accessible when the mirror is mounted.

FS10 Connections

The FS10 supports USB-C connections (USB 2.0 high speed only).

Figure 6 FS10 Connections



Power Sources

FS/VS Smart Camera devices are powered through an external power supply or USB Type C for maximum flexibility. A power priority scheme selects power from the external power supply and USB host power (when using the Flying Lead Adapter cable) to ensure the least restrictive power source is utilized. Changes to the power source may trigger a reboot.

USB Type C

The FS10 can connect to any USB host with a USB-C or USB type A connector. However, the FS10 only supports USB 2.0 and does not support USB 3.0 Super Speed.



NOTE: While the cables can be used on either side at the FS10, the cable guard and mounting brackets can support only certain configurations of the USB cable mounting options. Go to [Installing the Cable Guard](#).



CAUTION: For optimal performance, use USB BC1.2 or USB charging ports that can supply up to 1.5A only.

USB Type C Operation

The FS10 utilizes a USB type C connection that supports USB 2.0 high speed communication only. The sealed port implements a standard USB Type C dual screw lock mechanism for secure connections. When paired with the IP67 series of Zebra screw locking cables, the interface maintains a full IP67 seal.



CAUTION: The sealing gasket on IP67 series Zebra USB Type C cables require adequate pressure for proper seal and connector engagement. Always tighten the locking screws when using these cables, even if IP67 sealing is not required.

When connected as a peripheral to a USB host, the devices can be configured to support the following functionality:

- RNDIS Ethernet over USB
- HID keyboard

Using the Device

This section includes information on data capture, LED and beeper feedback, and power and thermal management strategies to ensure efficient operation.

Data Capture

The device has an LED aiming dot.

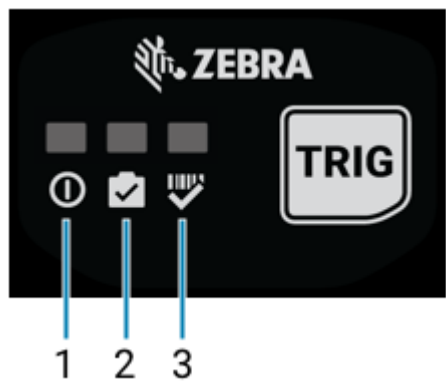
Figure 7 Aiming Dot



User Interface Label

The User Interface (UI) label uses LEDs to provide information on device state and feedback. The sensor PCB switch controls the device's trigger buttons, and the TRIG switch acts as a trigger.

Figure 8 FS10 UI Label



1	Power
2	Device Status
3	Decode

LED and Beeper Indications

The following table describes the device's LED and beeper indications during power-up, maintenance operations, and decoding events.

Table 2 LED and Beeper Indications

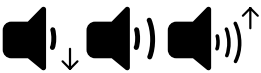
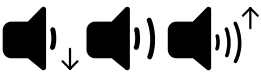
Event	Beeper	Power LED	Device Status LED	Decode LED
Power Up				
Power up with Low Power	 Low, Medium, High Tone	 Solid Red	-	-
Power up with Limited Power (USB or 15W PoE)	 Low, Medium, High Tone	 Green (Slow Blink)	-	-
Power up with Full Power (24V or 30W PoE)	 Low, Medium, High Tone	 Solid Green	-	-

Table 2 LED and Beeper Indications (Continued)

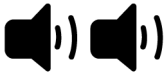
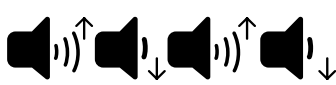
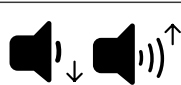
Event	Beeper	Power LED	Device Status LED	Decode LED
Job Error	 Low, Low Tone	 Solid Green	 Solid Red	-
Device Maintenance				
Factory Reset	 Medium, Medium Tone	 Solid Green	-	-
Firmware Operations				
Firmware Update Start	-	 Solid Green	 Continuous Red Flash (2hz)	-
Firmware Update Success	-	 Solid Green	-	-
Firmware Update Fail	 Low Tone	 Solid Green	 Continuous Red Flash (5hz)	-
Autotune Operations				
AutoTune Start	 Medium Tone	 Solid Green	-	 Continuous Green (2Hz)
AutoTune Success	 High Tone	 Solid Green	-	 Solid Green

Table 2 LED and Beeper Indications (Continued)

Event	Beeper	Power LED	Device Status LED	Decode LED
AutoTune Fail	 Low Tone	 Solid Green	-	 Solid Red
Decode				
Barcode Decode Start	-	 Solid Green	 Solid Amber	-
Barcode Decode Success	 Medium Tone	 Solid Green	-	-
Barcode Decode Failure	-	 Solid Green	-	-
Parameter Programming				
Parameter Entry Accepted	 High, Low, High, Low Tone	-	 Solid Green	-
Parameter Number Entry Expecting Barcodes	 High, Low Tone	-	 Solid Green	-
Parameter Entry Error	 Low, High Tone	-	 Solid Green	-

Using the USB-C Serial and Ethernet Cable

The USB-C to Serial and Ethernet cable (CBL-USB00200-M1200) provides power, GPIO, serial, and Ethernet connectivity for the FS10. For additional information on using the serial and Ethernet interface, refer to the xS20 Product Reference Guide.



NOTE: The Serial and Ethernet adapter cable must be powered using the power and IO M12 connector with a 24VDC power supply only. For additional information, go to [Accessories](#) on page 9.

The cable can be installed in either orientation and supports M12 cables.

- Recommended Torque for the USB-C locking screws: 0.2 to 0.5 Nm / 1.7 to 4 lbf-in
- Recommended Torque for the M12 cable: 0.8 Nm to 1.0 Nm max. (hand-tighten)

For additional information on supported cables, go to [Cables](#).



WARNING: The Serial and Ethernet cable does not support Power over Ethernet. Do not connect the Ethernet connector to a port that is actively supplying PoE and cannot be disabled. An Ethernet connection is required for device discovery and configuration in Aurora Focus; however, the FS10 can also be used without an Ethernet cable connected.

The LED on the cable indicates Ethernet status.

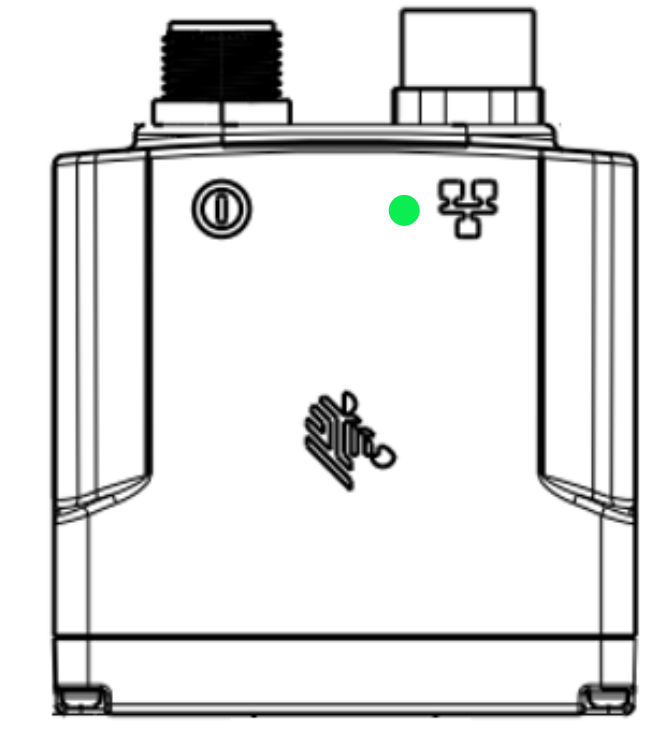


Table 3 LED States

Color	Description
Green	1000 Mbps - Ethernet Link Active
Amber and Green	100 Mbps - Ethernet Link Active

Table 3 LED States (Continued)

Color	Description
Red	10 Mbps - Ethernet Link Active

For more information on pinouts and dimensional drawings, go to [Technical Reference](#).



NOTE: The FS10 is not discoverable upon first use in Aurora Focus when connected to the Serial and Ethernet cable (CBL-USB00200-M1200). Before configuring the Serial and Ethernet cable, use the standard USB-C to USB-A (or USB-C) to configure the FS10 in Host Mode and reboot the device to apply any changes to the configuration. Once applied, connect to the device to use the Serial and Ethernet cable. When in Host Mode, the device also supports Device Mode functionality when connected to a host via USB. If no host is detected while the FS10 is connected to a USB device, the FS10 acts as a host to support Serial and Ethernet operation. In this case, boot time can take up to two minutes.



WARNING: The device reverts to its default settings following a factory reset. For example, the FS10 reverts to Device Mode after a factory reset. It must be reconfigured to Host Mode using a USB-C to USB-A (or USB-C) cable before being reconnected to operate with the Serial and Ethernet cable. For more information on performing a factory reset, refer to the Aurora Focus User Guide.

Aurora Focus supports the following operable modes for the Serial and Ethernet cable:

- USB-C to USB-A (or USB-C) cable
 - Device Mode enables one of the following at a time.
 - HID
 - Automation Wedge
 - CDC Serial
- Serial and Ethernet Cable
 - Host Mode enables:
 - RS232
 - GPIOs

For more information on enabling and configuring the cable, refer to the Aurora Focus User Guide.

General Purpose Input and Outputs

They are all optically coupled to provide electrical isolation and wiring flexibility.

Figure 9 Opto-Isolated Inputs

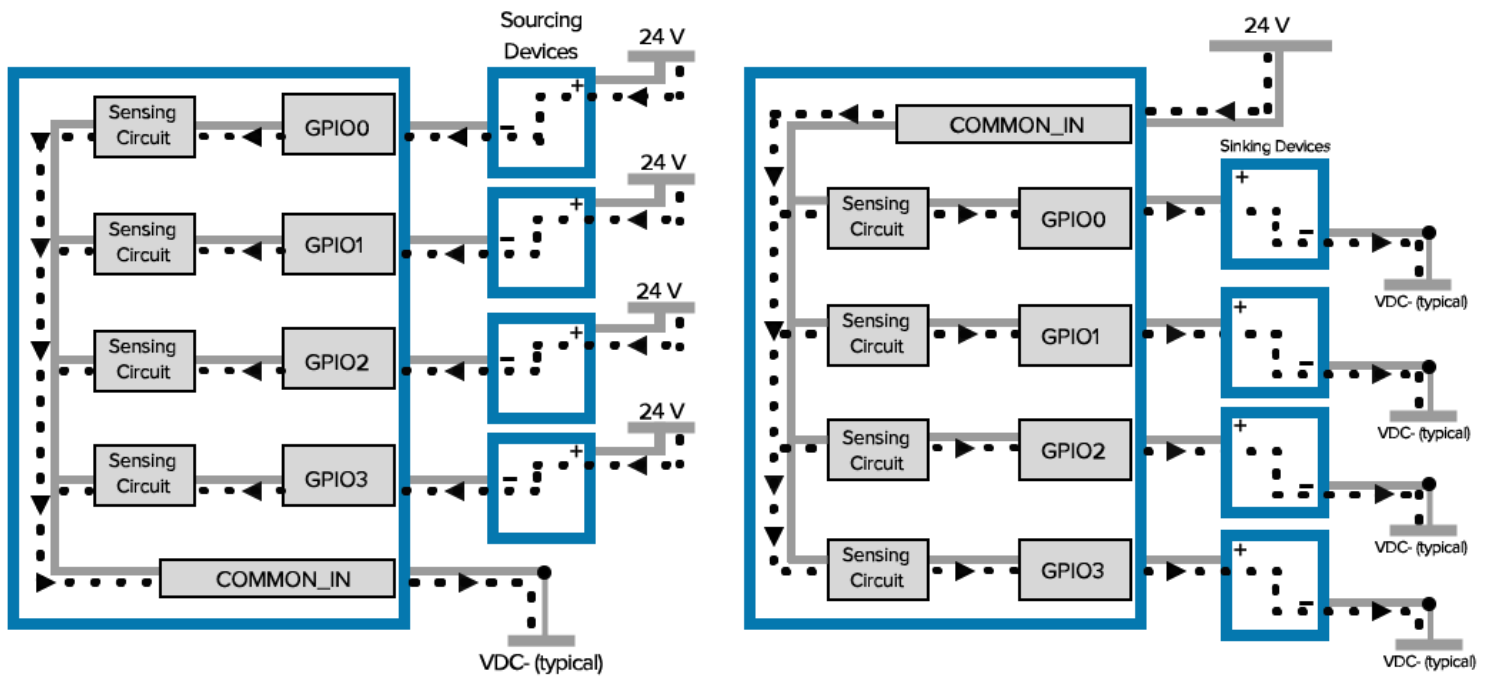
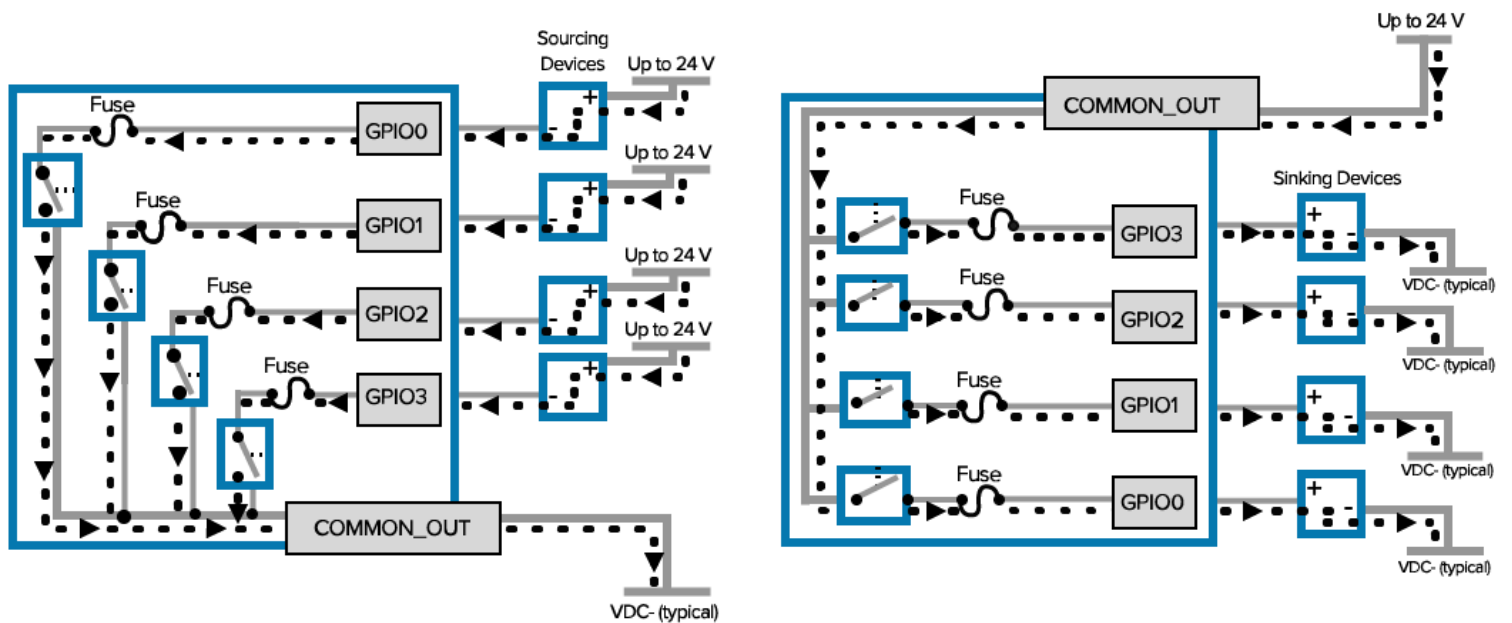


Figure 10 Opto-Isolated Outputs



GPIO Summary

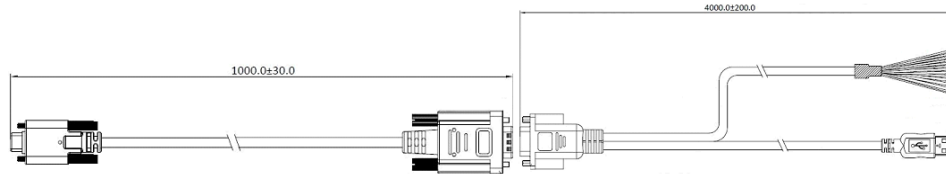
The following table provides GPIO details such as connector, input mode, and output mode.

Table 4 FS10 I/O Summary

IO	Hardware	DB15 Pin	Color	Isolated	Sink PNP	Source NPN	Current
Input 0	Opto	4	Orange	Yes	Yes	Yes	¹ 10mA
Input 1	Opto	14	White/Brown	Yes	Yes	Yes	¹ 10mA
Output 0	Opto	5	Blue	Yes	Yes	Yes	100mA
Output 1	Opto	15	Yellow	Yes	Yes	Yes	100mA
Com_IN	-	9	White/Purple	Yes	Yes	Yes	-
Com_Out	-	10	Green	Yes	Yes	Yes	-



NOTE: The FS10 IOs are accessible from the USB-C to DB15 adapter cable (CBL-ADPTR-USC00) and the DB-15 to USB-A and flying leads mating cable (CBL-MATE-USA00).



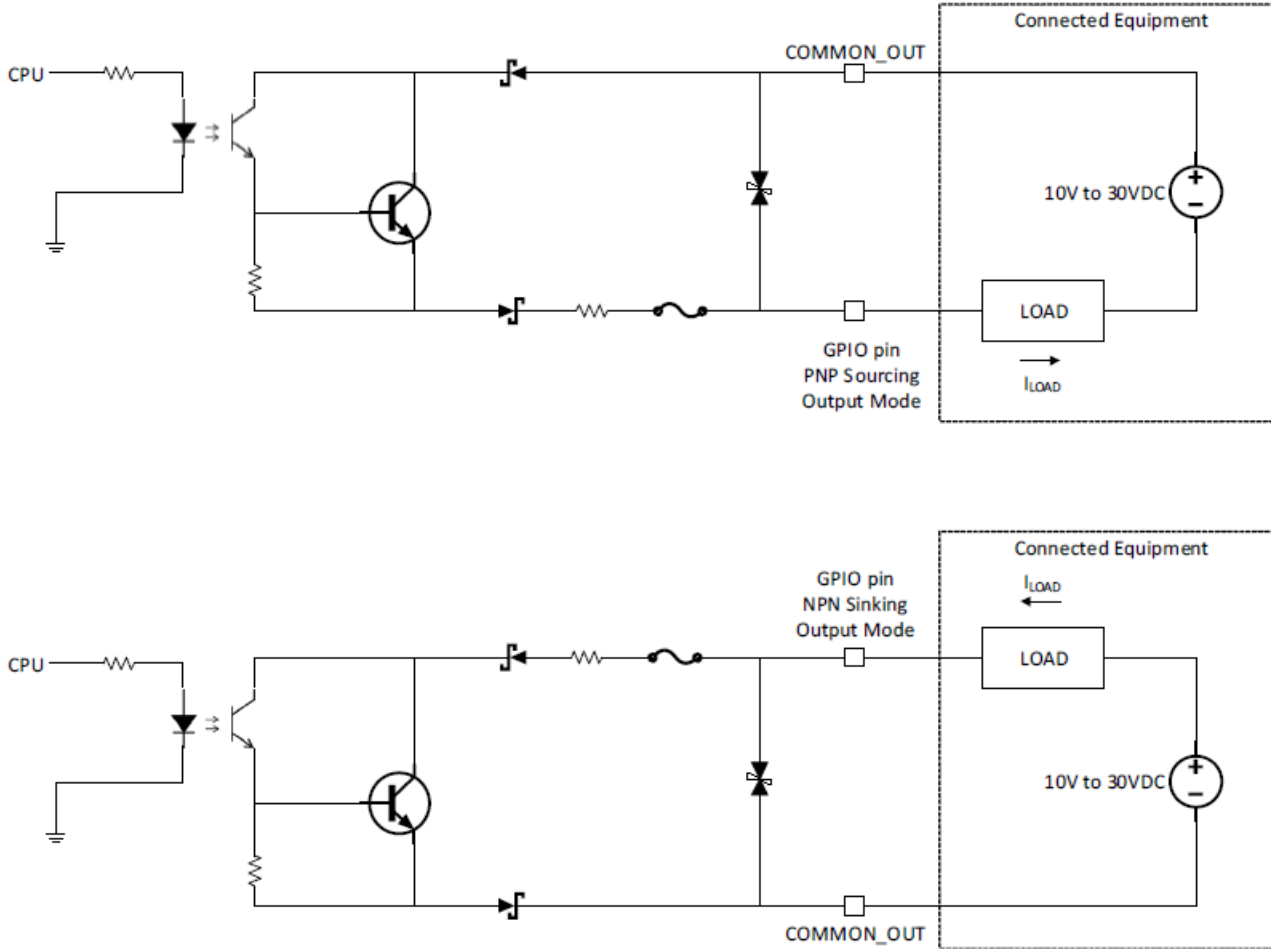
NOTE: ¹ Digital outputs consume power, reducing the power budget available for illumination. It is recommended to disable unused outputs when using PoE.

Optically Coupled GPIO

Optocoupled GPIO have the advantage of being electrically isolated from the rest of the vision system and require external reference through the COMMON_IN and COMMON_OUT wires. The termination of COMMON_IN and COMMON_OUT to an external voltage or ground determines if the input or output is Sinking (also known as NPN) type or Sourcing (also known as PNP) type.

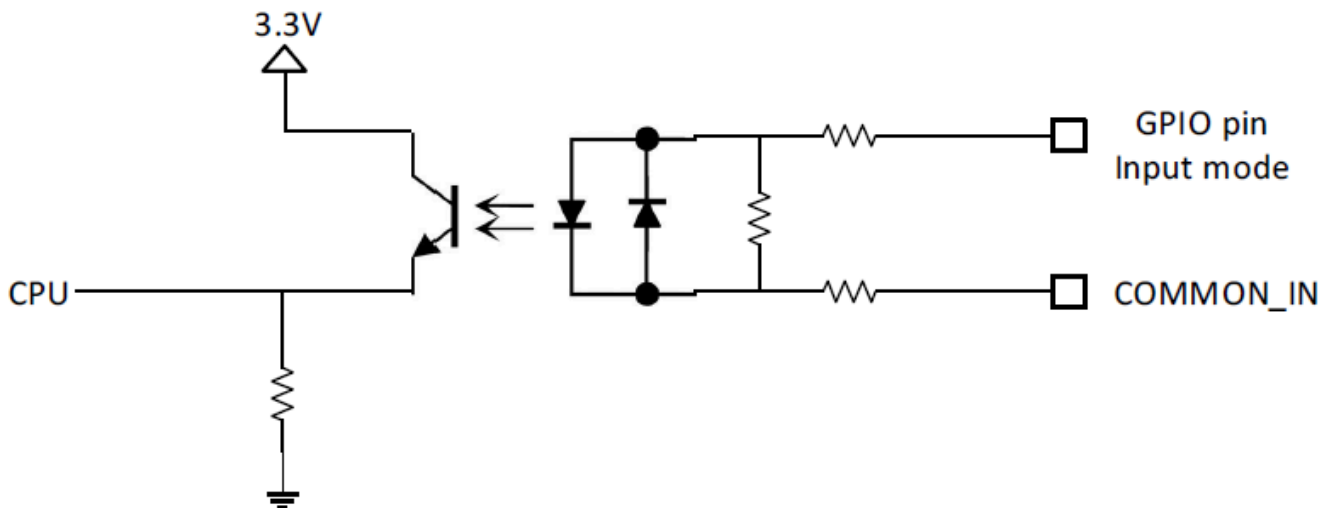
The output GPIO performs similarly to switches connecting the GPIO pin to COMMON_OUT. When disabled, the GPIO pin is disconnected from COMMON_OUT and allowed to float. As a result, optocoupled outputs turn on relatively quickly, while the turn off time is dependent upon how quickly the connected load dissipates charge.

Figure 11 Output Mode Equivalent Circuit Diagram for NPN and PNP Mode



Optocoupled inputs are enabled when voltage is applied across the GPIO pin and COMMON_IN.

Figure 12 Input Mode Equivalent Circuit Diagram for NPN and PNP Mode



Optocoupled GPIO can be operated in a non-isolated fashion by terminating COMMON_IN and COMMON_OUT to the DC_IN or GND wires used to power the device.

The following table provides a useful reference for such connections.

Table 5 Connection References

Wire	Termination	Configuration
COMMON_IN	GND	Sinking Input (PNP)
COMMON_IN	DC_IN	Sourcing Output (NPN)
COMMON_OUT	GND	Sinking Input (NPN)
COMMON_OUT	DC_IN	Sourcing Output (PNP)

While it is possible to configure inputs and outputs as the same type, this is not recommended as inputs and outputs must be of opposite type on the device and auxiliary equipment to be compatible. All optocoupled GPIO share the COMMON_IN for inputs and COMMON_OUT for outputs. Therefore, all inputs must be of the same type and all outputs must be of the same type. For example, it is not possible to simultaneously configure sinking output on OUT0 and sourcing output on OUT1.



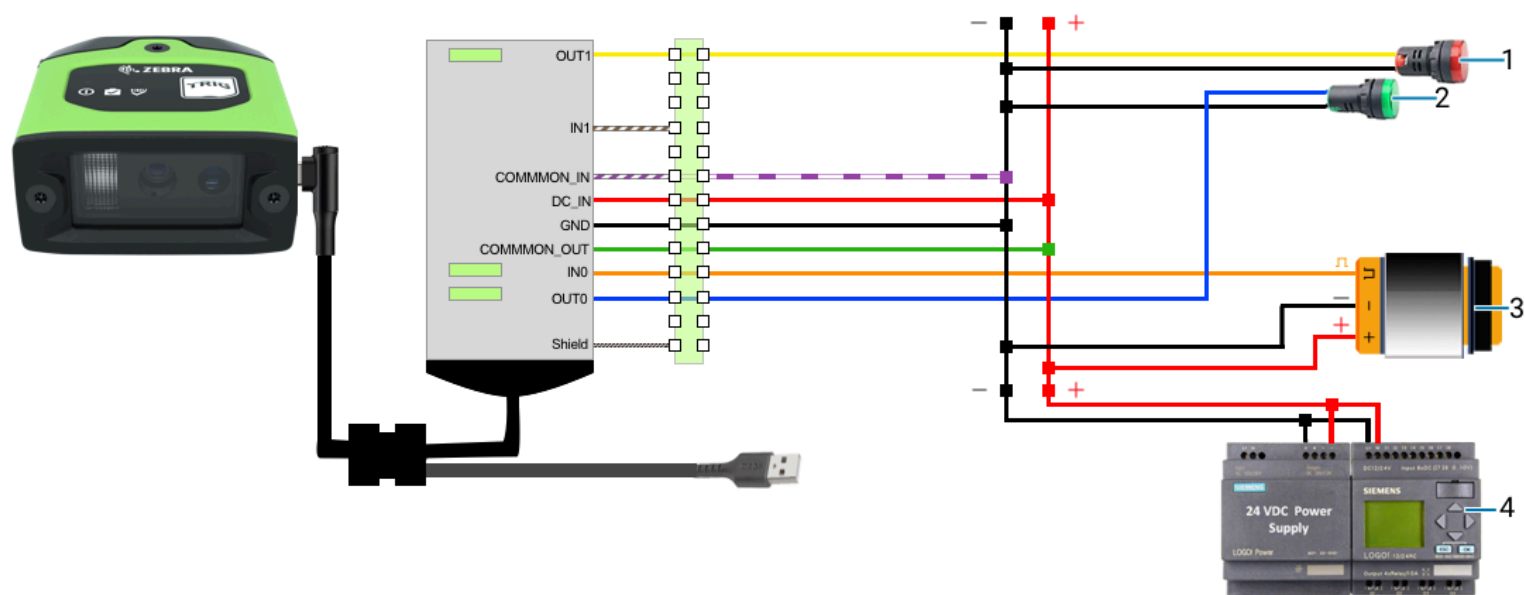
NOTE: Refer to the documentation of the connected auxiliary equipment to ensure a compatible configuration, and remember to leave unused GPIO in a disabled state.

Optocoupled outputs are individually fused to protect against damage from short circuit or overload events. Since no power is consumed from the vision system, optocoupled GPIO are always available regardless of power source and have no impact on power budgeting.

FS10 GPIO Wiring Diagrams

The following diagram shows an FS10 device with two LEDs on outputs indicating job outcome and input trigger from a proximity sensor. The GPIO input is a current sink. The outputs are set as a current source. The power source is a PLC 24VDC PSU, and the GPIO functions are opto-isolated.

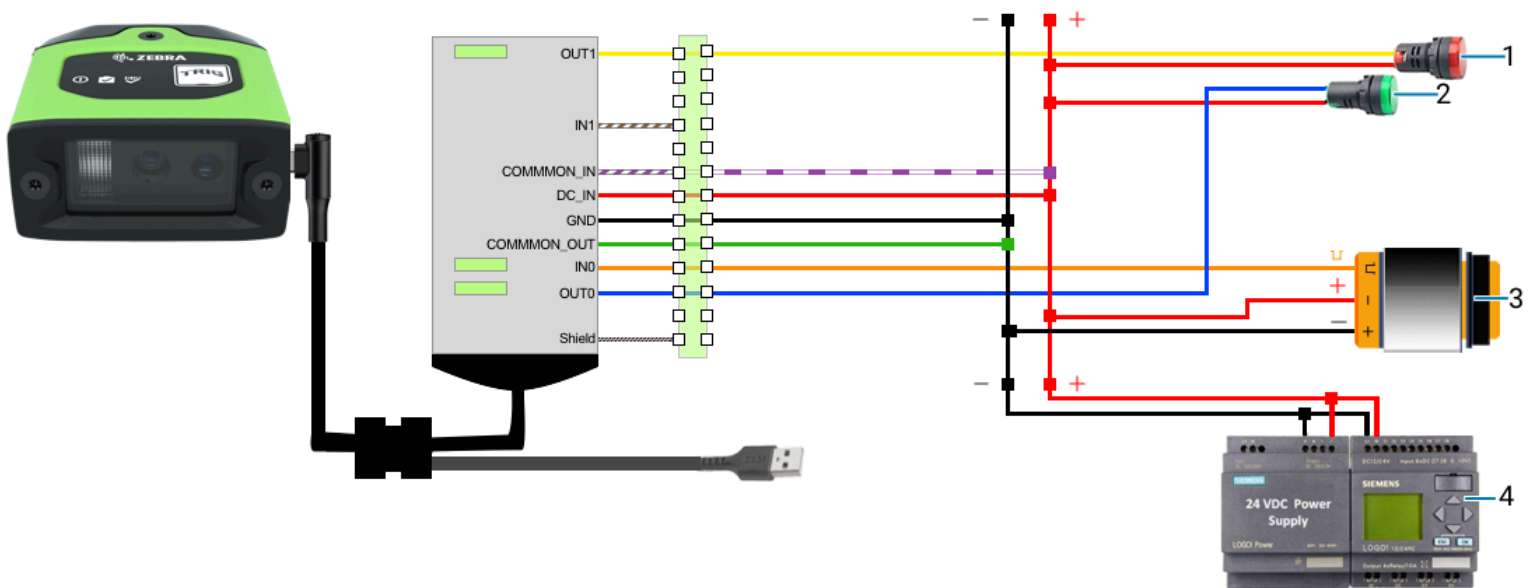
Figure 13 FS10 GPIO Input as Current Sink and Outputs as Current Source



1	Job Fail
2	Job Pass
3	Proximity Sensor
4	Power Supply

The following diagram shows an FS10 device with two LEDs on outputs indicating job outcome and input trigger from a proximity sensor. The GPIO input a the current source. The outputs are set as a current sink. The power source is a PLC 24VDC PSU, and the GPIO functions are opto-isolated.

Figure 14 FS10 GPIO Input as Current Source and Outputs as Current Sink



1	Job Fail
2	Job Pass
3	Proximity Sensor
4	Power Supply

Thermal Management

Sophisticated algorithms keep the operation of the system within acceptable thermal parameters to ensure reliable operation over the device's lifetime.

Temperature is actively monitored at critical points within the system. If the device exceeds a recommended limit, the system response may include stopping active jobs. If this condition occurs, consider mitigation strategies to avoid overheating. It is required to power cycle the device to resume normal operation if one of these strategies is employed.

Mitigate the risk of overheating by:

- Avoiding continuous trigger mode
- Lowering trigger rate
- Using external illumination
- Operating in a cooler environment
- Actively cooling with a fan

For optimal performance, ensure that the device does not exceed the recommended operating ranges listed below:

Table 6 Operating Temperature

Temperature	Operating Range
Ambient Temperature	0°C to 45°C (non-POE, duty cycle-dependent)



NOTE: If temperatures exceed the recommended operating range, additional heat-sinking strategies such as mounting to a metal infrastructure or forced convection via an external fan may be necessary. The Zebra Universal Mounting Bracket (BRKT-LMNT-U000) provides multiple options to mount to a metal infrastructure.

Grounding for Electro-Magnetic Compliance and ESD Safe

The system is designed with a rugged metal chassis connected internally to ground for robust Electro-Magnetic Compliance (EMC) and ESD Safe operation. Do not mount to any conductive object, body, structure, or mechanism that may become connected to line voltage or a voltage potential other than Protected Earth Ground. Chassis grounding via cable shield, mounting screws, or low inductance ground strap to a local Protected Earth Ground is acceptable.



NOTE: There is no galvanic connection to Earth Ground when the device is powered over an unshielded Ethernet cable. In this scenario, grounding to local Earth Ground through another cable shield, mounting screw, or ground strap is required for ESD Safe compliance and best practice for EMC.

Maintenance

To maintain Zebra devices, avoid harmful chemicals such as acetone as they damage plastics. Only use approved cleaning agents such as pre-moistened wipes and 70% isopropyl alcohol. Use a dampened soft cloth for routine cleaning to avoid liquid pooling and direct spraying into the scanner exit window.

Known Harmful Ingredients

The following chemicals are known to damage the plastics on Zebra scanners and should not come in contact with the device:

- Acetone
- Ammonia solutions
- Aqueous or alcoholic alkaline solutions
- Aromatic and chlorinated hydrocarbons
- Benzene
- Bleach
- Carbolic acid
- Compounds of amines or ammonia
- Ethanolamine
- Ethers
- Ketones
- TB-lysoform
- Toluene
- Trichloroethylene

Approved Cleaning Agents

The following cleaning agents are approved for cleaning the plastics on Zebra scanners:

- Pre-moistened wipes
- Isopropyl alcohol 70%

Tolerable Industrial Fluids and Chemicals



NOTE: Not all fluid variants and brands have been tested.

The following industrial fluids and chemicals were evaluated and deemed tolerable for the FS/VS Smart Camera series.

- Motor/Engine Oil
- Automatic Transmission Fluid (ATF)
- Continuously Variable Transmission Fluid (CVT)
- Industrial De-Greaser (Engine Brite Heavy Duty)

Cleaning the Device

Routinely cleaning the exit window is required. A dirty window may affect scanning accuracy. Do not allow any abrasive material to touch the window.

To clean the device:

1. Dampen a soft cloth with one of the approved cleaning agents listed above or use pre-moistened wipes.
2. Gently wipe all surfaces, including the front, back, sides, top and bottom. Never apply liquid directly to the scanner. Be careful not to let liquid pool around the scanner window, trigger, cable connector or any other area on the device.
3. Be sure to clean the trigger area by wiping the surface with careful attention to avoid lifting the label from the device.
4. Do not spray water or other cleaning liquids directly into the exit window.
5. Wipe the scanner exit window with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.
6. Immediately dry the scanner window after cleaning with a soft non-abrasive cloth to prevent streaking.
7. Allow the unit to air dry before use.
8. Scanner connectors:
 - a. Dip the cotton portion of a cotton-tipped applicator in isopropyl alcohol.
 - b. Rub the cotton portion of the cotton-tipped applicator back-and-forth across the connector on the Zebra scanner at least 3 times. Do not leave any cotton residue on the connector.
 - c. Use the cotton-tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.

Use a dry cotton tipped applicator and rub the cotton portion of the cotton-tipped applicator back-and-forth across the connectors at least three times. Do not leave any cotton residue on the connectors.

Troubleshooting

This section describes potential issues that could arise while using the device and possible solutions such as power cycling or pinging the device.

Table 7 Troubleshooting the Device

Problem	Cause	Solution
Device is not connecting to network when using Device Discovery.	Specific ports that are utilized by the application are blocked by Windows Defender Firewall.	Ensure that Zebra Aurora has access to Domain, Public and Private networks.
	Ensure that the device is visible in the Windows Network by viewing the File Explorer and selecting Network.	If the device is not viewable under the Network dropdown or listed under Other Devices, it is not connected.
	There is no RNDIS driver available to the device when connected via USB.	To verify that there is a RNDIS driver, go to the Windows Device Manager and search under the Network Adapters dropdown.
Device is cycling power or data connection on USB port.	USB cable may be loose or intermittent.	Reseat the USB cable and tighten locking screws firmly.
	USB port does not source enough power.	Use another USB port that is BC1.2, USB charging, USB-C or has enough power. Use an appropriate cable that utilizes an external power supply.

Communicating With the Device

Pinging via IP and pinging via hostname are two common strategies that you can use to communicate with the device.

Pinging the Device via IP

Users can ping the device by providing the IP address via command prompt or powershell to communicate with the device.

To ping the device via IP address:

1. Open a command prompt or powershell.

2. Enter the following command: ping <ip address>
3. Check to see if the device responds or fails to respond.

Example: Pinging 192.168.4.100 with 32 bytes of data:

- Reply from 192.168.4.100: bytes= 32 time=1ms TTL=64
- Reply from 192.168.4.100: bytes= 32 time=1ms TTL=64
- Reply from 192.168.4.100: bytes= 32 time=1ms TTL=64

Device Discovery Troubleshooting Methods

Two common solutions to enable the device to re-connect via device discovery are performing a factory reset on the device and power cycling the device.

Factory Reset the Device

Perform a factory reset on the device using the hardware buttons.

1. Disconnect all power sources.
2. Press and hold the TRIG button on the device.
3. Connect to a power source.
4. Continue to hold the TRIG button.
After 20 seconds, the device's Power LED turns yellow to green.
5. Release the TRIG button.

Power Cycling the Device

Power cycling the device can help in troubleshooting potential network discoverability issues.

1. Remove all cables to ensure no power is being directed to the device.
2. Reinsert a power source and allow the device approximately one minute to boot up.
3. Re-attempt to:
 - Discover a device in Zebra Aurora Focus by restarting the application and clicking **View Devices**.
 - View a device in the Windows Network.
 - Access a device using the Zebra Web HMI.

If failure persists, repeat the steps above for all of the connection types being used with the device, including:

- Ethernet directly to the PC.
- Ethernet connection to a network via switch or hub.

Technical Reference

FS10 Specifications

The following table lists the physical characteristics, user environment, and regulatory specifications of the FS10.

Specification	Description
Physical Characteristics	
Dimensions	1.0 in. H x 2.0 in. W x 1.92" D 25.4 mm H x 50.8 mm W x 48.9mm D
Weight	110 g/3.9 oz
Power	USB Type-C, 1A max
Communication Protocols	USB RNDIS, HID, CDC
Interface Ports	(1) USB Type C supports USB 2.0 high speed only
Performance Characteristics	
Image Sensor	Monochrome: 1.0 MP (1280x800 pixels) CMOS Sensor with Global Shutter and 3.0 µm pixel size
Acquisition Rate	60 frames/second
Aimer	617nm Red LED aim dot
Illumination	(1) 2700K (Color Temperature) White LED (1) 660nm Red LED
Imager Field of View	35°(H) x 26°(V)
User Environment	
Operating Temperature	0°C to 45°C (32°F to 113°F) (duty cycle-dependent)
Storage Temperature	-40° to 70°C (-40°F to 158°F)
Humidity	5 % to 90 % RH (Non-Condensing)
Vibration Resistance	EN 60068-2-6, 14 mm @ 2 to 10 Hz, 1.5 mm @ 13 to 55 Hz; 2 g @ 70 to 500 Hz; 2 hours on each axis

Specification	Description
Shock Resistance	EN 60068-2-27, 30g; 11 ms; 3 shocks on each axis
Sealing	IP65 and IP67
Light Immunity	• Sunlight (10000 fc $\pm$ 500 fc) • Flicker-Free LED Light Source Warm White 3000K @450fc $\pm$ 23fc • Flicker-Free LED Light Source Cool white 6500K @450fc $\pm$ 23fc • 60 Hz Line Current Flickering LED Light Source Warm White 3000K, 120 Hz with Flicker% = 31% $\pm$ 5%, @450fc $\pm$ 23fc • 50 Hz Line Current Flickering LED Light Source Warm White 3000K, 100 Hz with Flicker% = 31% $\pm$ 5%, @450fc $\pm$ 23fc
Electrostatic Discharge	$\pm$ 15KV Air, $\pm$ 8KV Direct/Indirect Contact
Regulatory Approvals	
Environmental	EN 50581:2012 EN IEC 63000:2018
Electric Safety	IEC 62368-1 (Ed.2) EN 62368-1:2014/A11:2017
EMI/EMS	EN 55032:2015/A11: 2020 EN 55035:2017/A11: 2020 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61000-6-2: 2005 & 2019 FCC 47 CFR Part 15, Subpart B Canada ICES-003, Issue 7
EU Declaration of Conformity	2014/30/EU; 2014/35/EU; 2011/65/EU Refer to the Declaration of Conformity (DoC) for details of compliance with the current standards. The DoC is available at: zebra.com/doc

FS10 Drawings

Figure 15 FS10 Dimensional Drawings

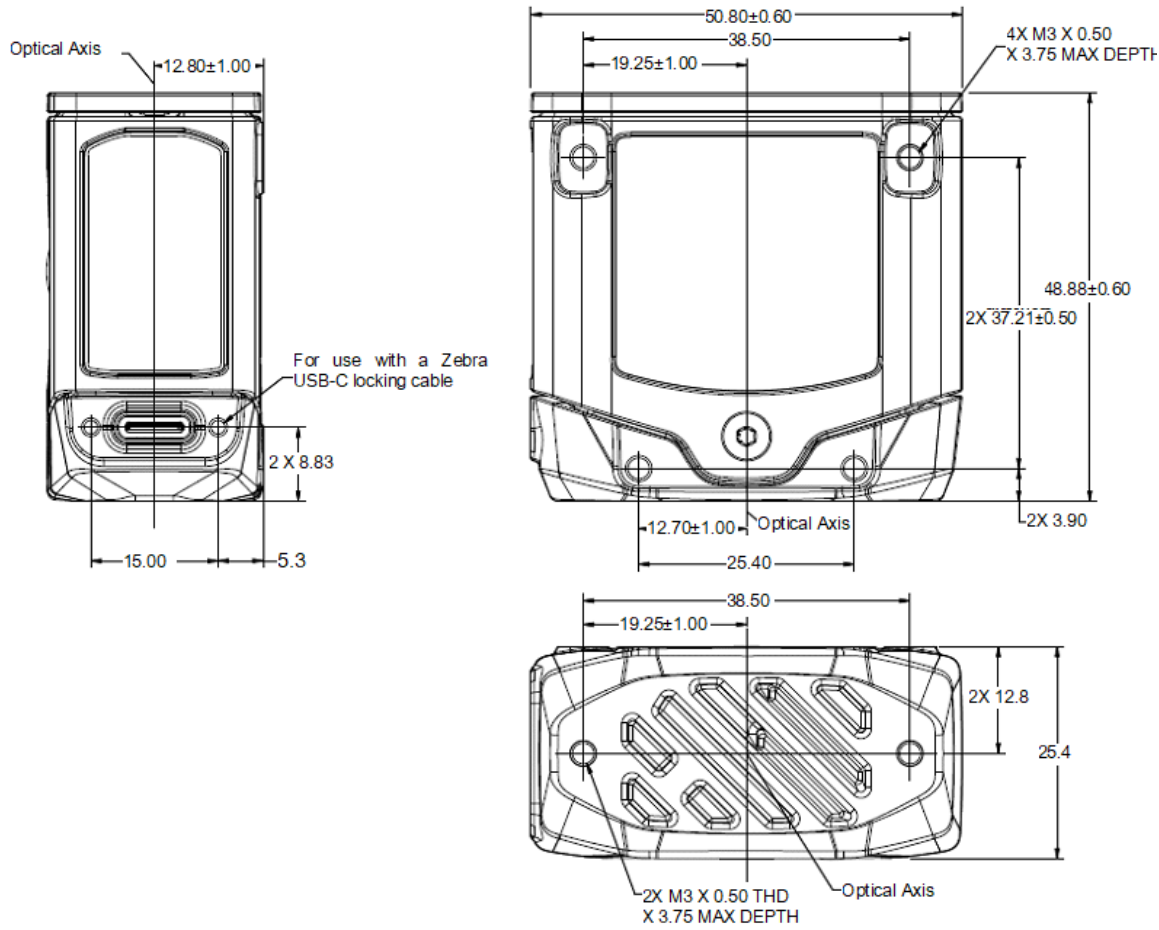
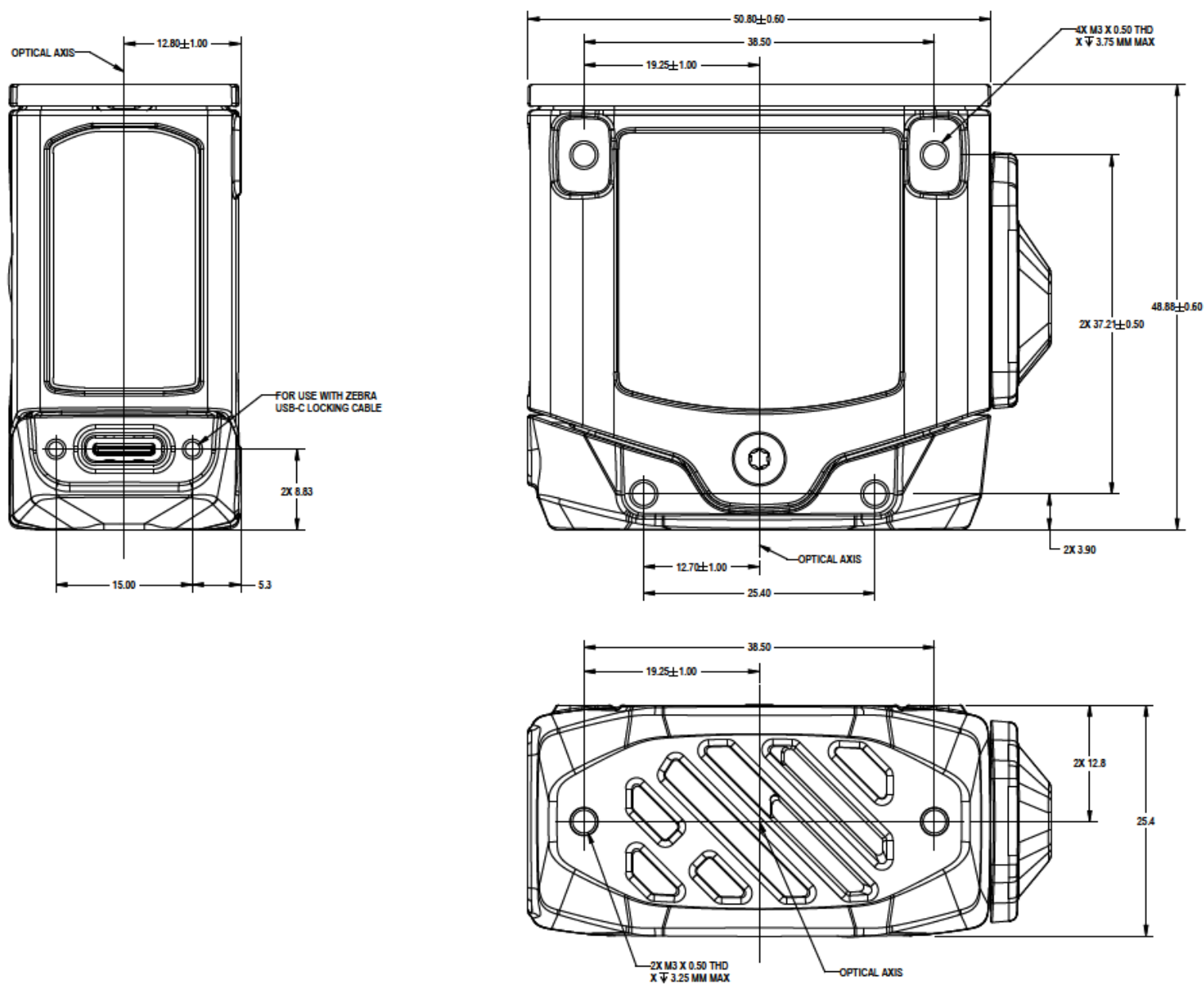


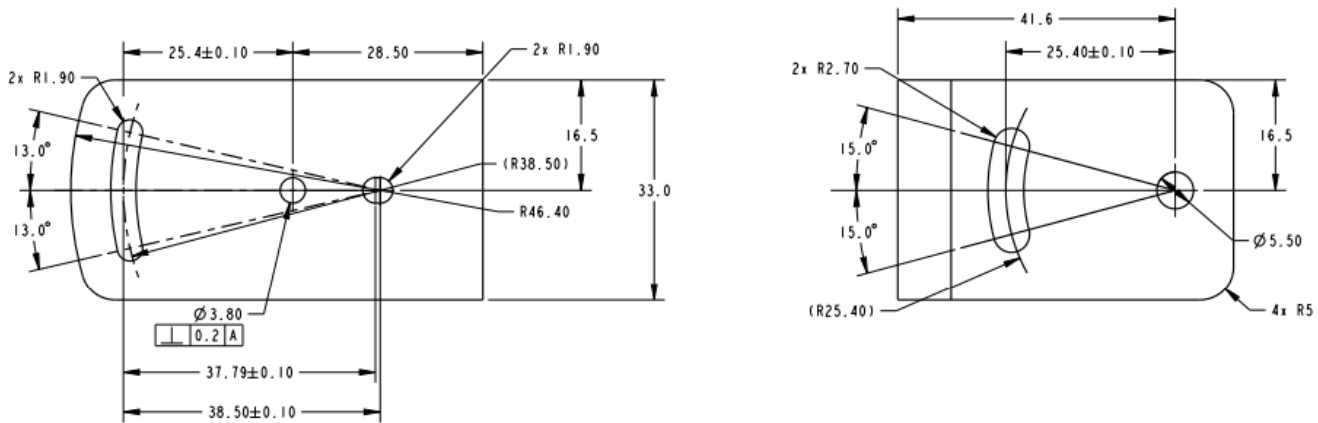
Figure 16 FS10 Loud Beeper Dimensional Drawings



Compact Bracket Dimensions

View the dimensional drawings to understand the compact bracket's footprint when installed in an industrial environment.

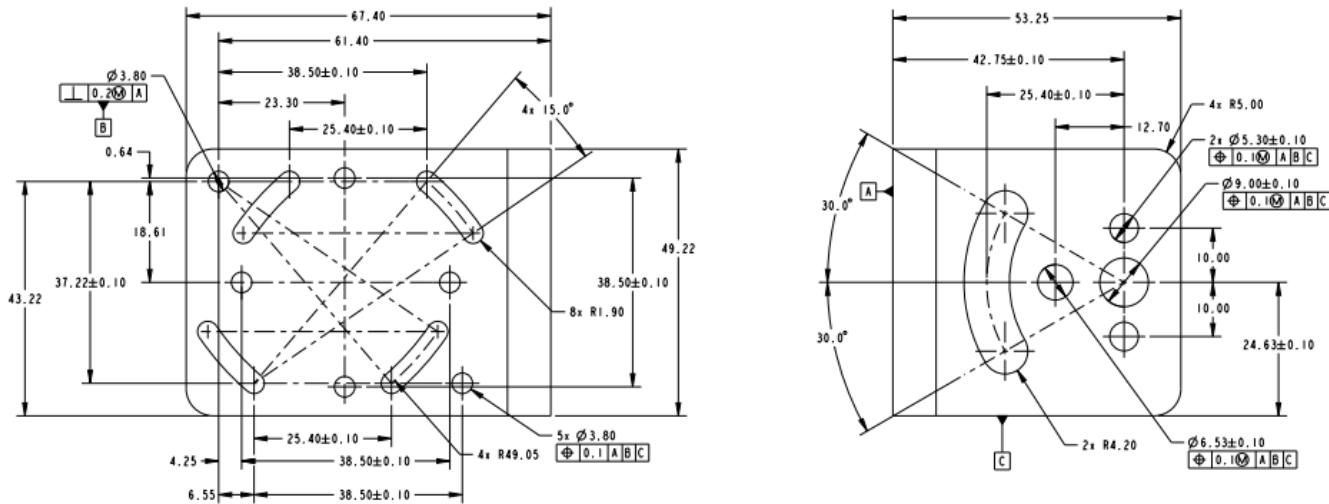
Figure 17 FS10 Compact Bracket



Adjustable Bracket Dimensions

View the dimensional drawings to understand the adjustable bracket's footprint when installed in an industrial environment.

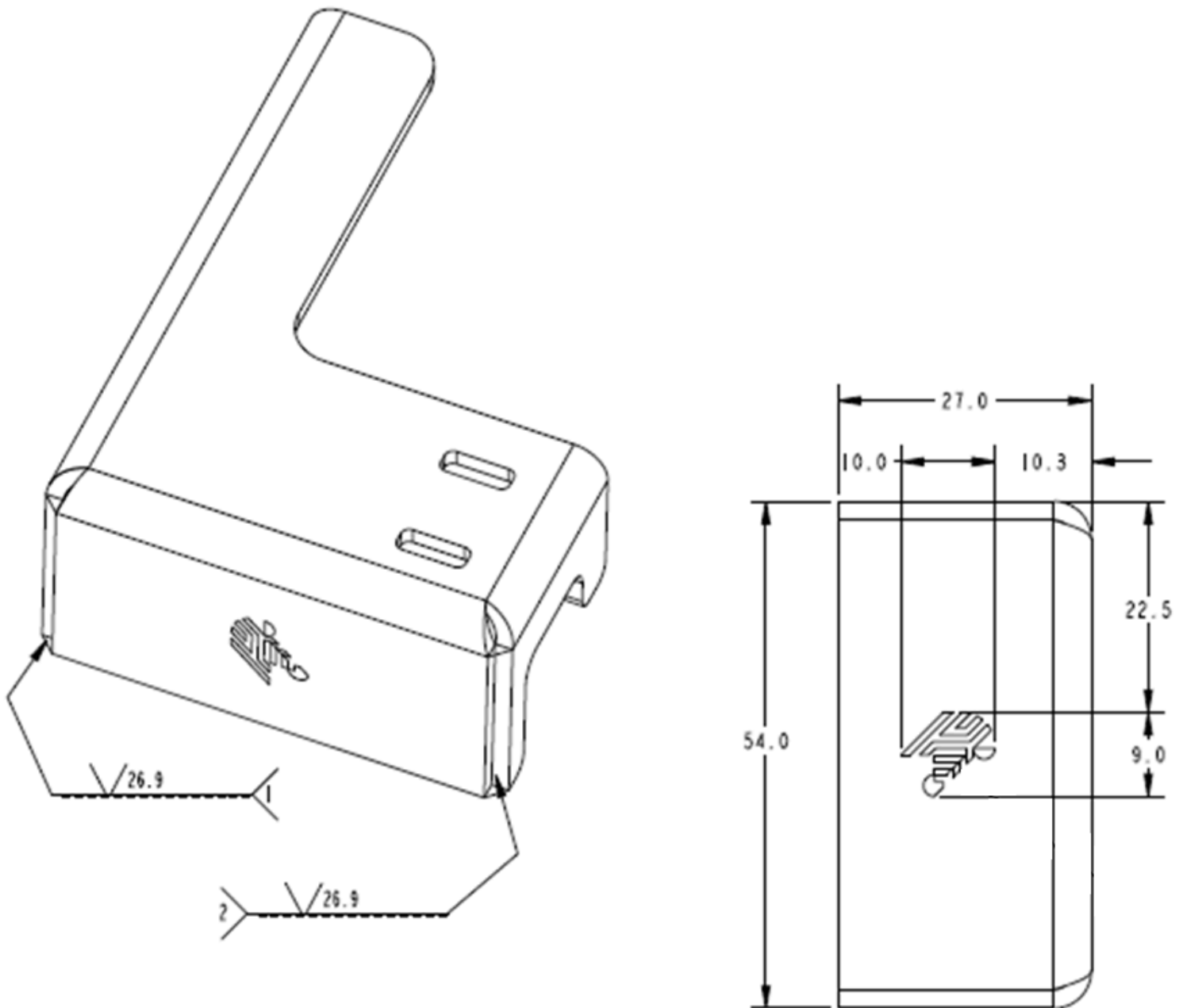
Figure 18 FS10 Adjustable Bracket



Cable Guard Dimensions

View the dimensional drawings in this section to understand the cable guard's footprint when installed in an industrial environment.

Figure 19 Cable Guard Dimensions



Deflective Mirror Dimensions

View the dimensional drawings in this section to understand the mirror's footprint when installed in an industrial environment.

Figure 20 FS10 Deflective Mirror Dimensions - Top View

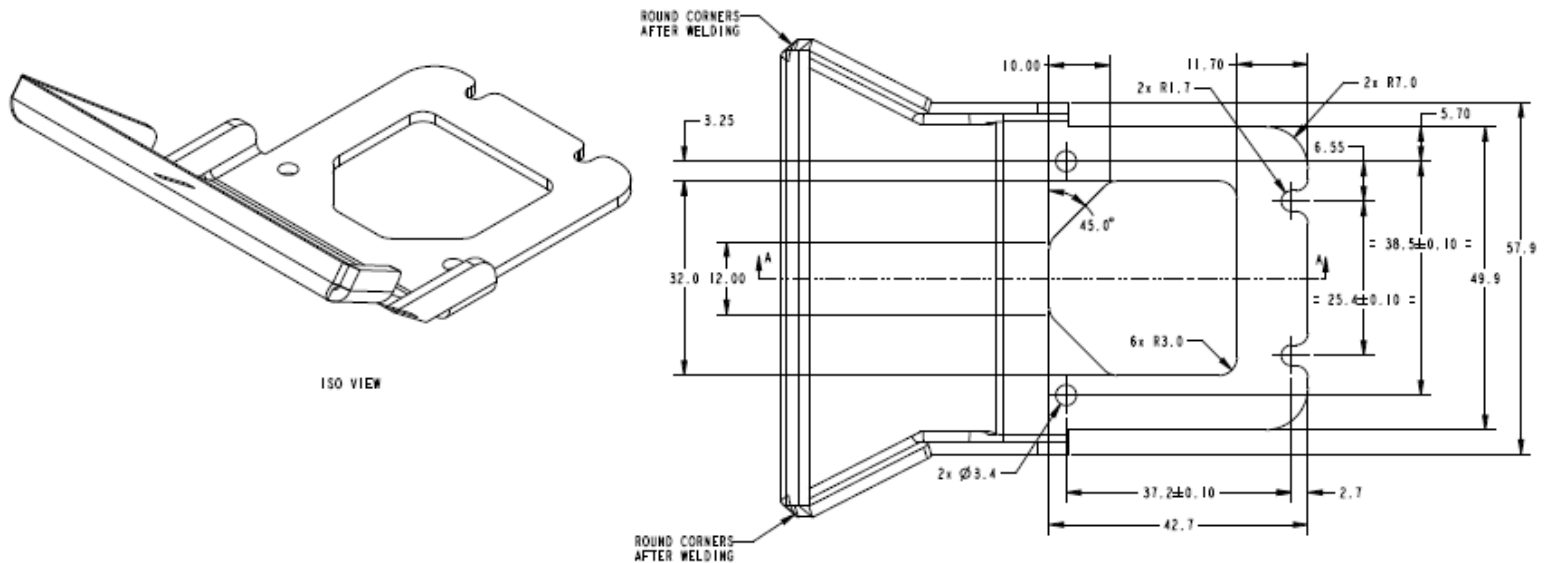
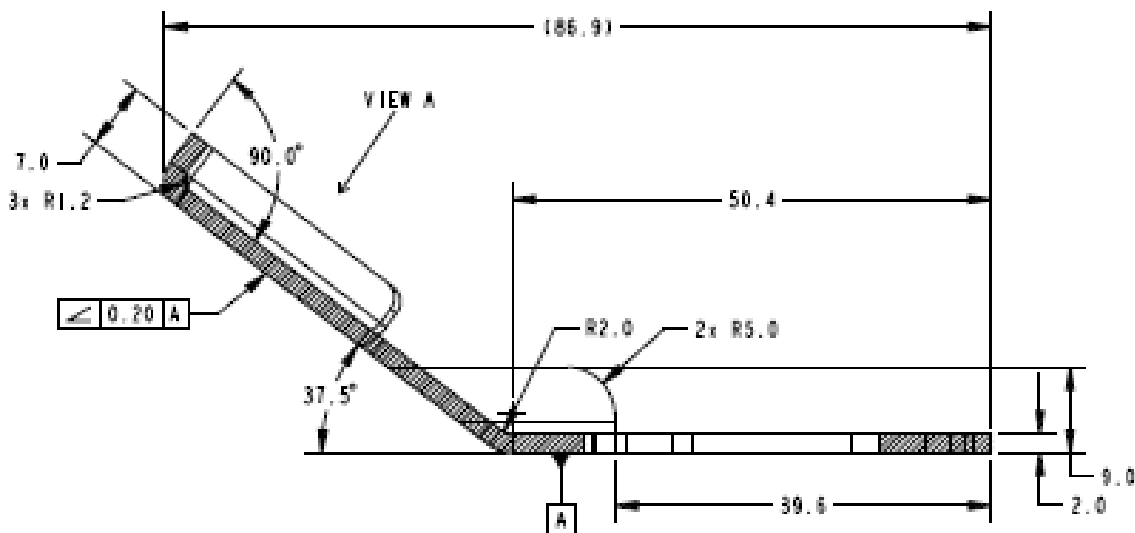


Figure 21 FS10 Deflective Mirror Dimensions - Side View



Cable Pin Outs

Flying Lead Adapter Cable

FS10 devices support flying lead adapter cables. View the table in this section to understand the wire colors and supported signals.

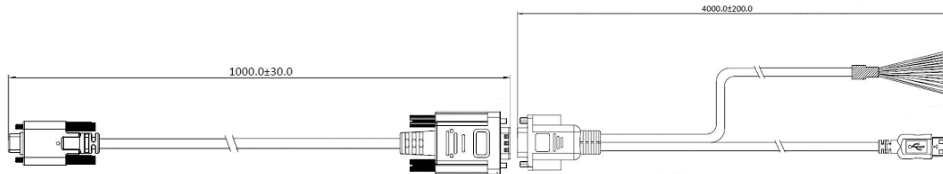


Table 8 Flying Leads Adapter Cable

Wire Color	Description
Yellow	OUT1
White/Brown	IN1
White/Violet	COMMON_IN
Red	DC_IN
Blank	GND
Green	COMMON_OUT
Orange	INO
Blue	OUT0
Bare	SHIELD

USB-C to Serial and Ethernet Cable

This section provides the pinout diagram and descriptions for the Serial and Ethernet cable.



NOTE: The cable is an active device, not a passive cable. It does not support Power over Ethernet and can only be powered using the power and IO M12 connector.



NOTE: To ensure proper IP sealing, do not tamper with or open any part of the adapter.

Figure 22 Top View

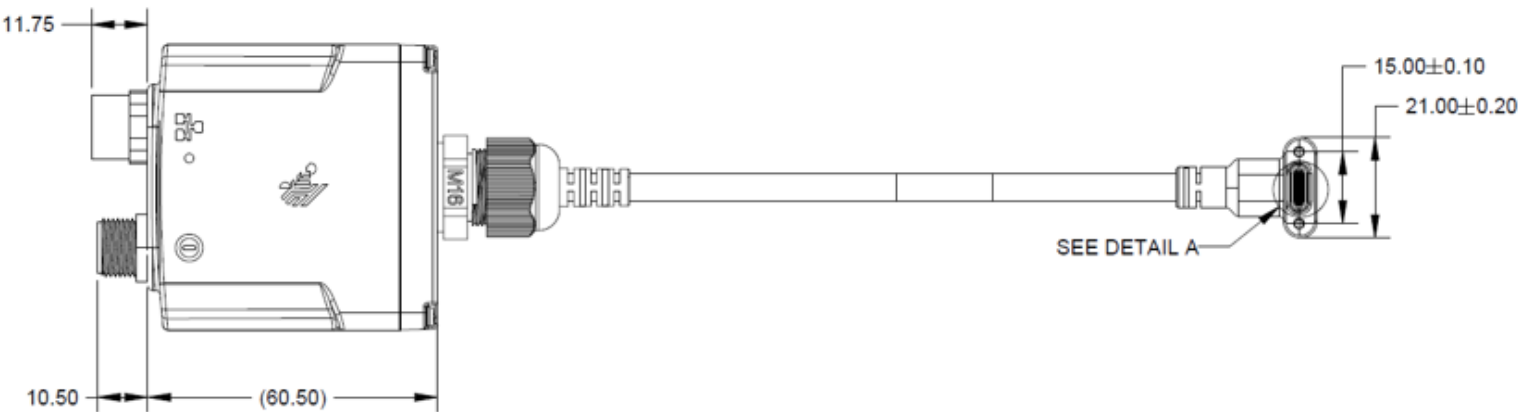
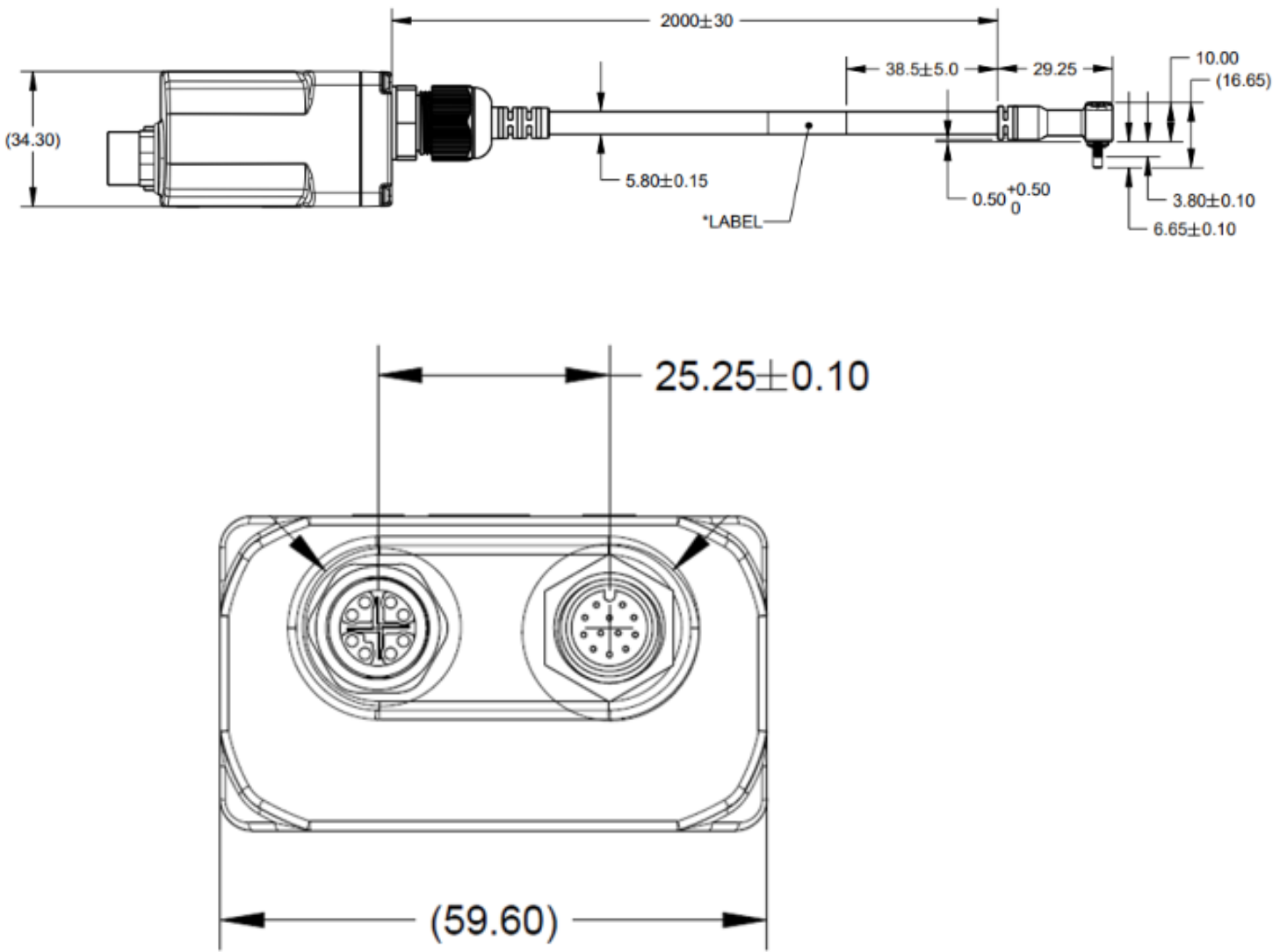


Figure 23 Side View



The FS10 is powered using the power and IO M12 cable. For additional information on supported power supplies and cables, see [Accessories](#) on page 9.

Figure 24 M12 A Code 12 Pin Connector Diagram

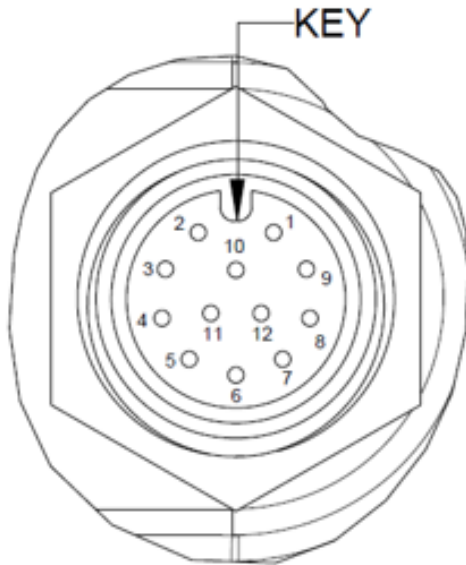


Table 9 Power and IO Connector Pin Out Description

Pin	Color	Description
1	Yellow	OUT1
2	White/Yellow	TXD
3	Brown	RXD
4	White/Brown	IN1
5	Violet	RTS
6	White/Violet	COMMON_IN
7	Red	DC_IN
8	Black	GND
9	Green	COMMON_OUT
10	Orange	IN0
11	Blue	OUT0
12	Grey	CTS
SHELL	Bare	SHIELD



NOTE: For additional information on supported power supplies and cables, see [Accessories](#) on page 9.

Figure 25 8 Pin Ethernet Connector Diagram

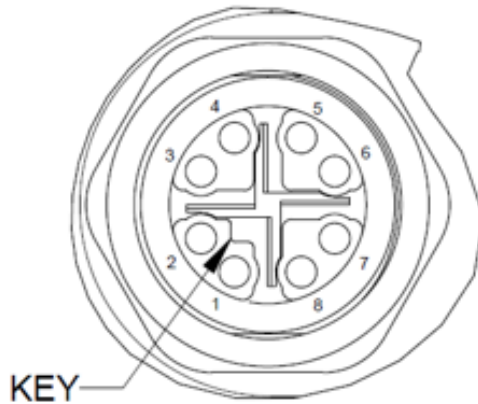


Table 10 8-Pin Ethernet Connector Pin Out Description

Pin	Description
1	ENET_MX1P
2	ENET_MX1N
3	ENET_MX2P
4	ENET_MX2N
5	ENET_MX4P
6	ENET_MX4N
7	ENET_MX3N
8	ENET_MX3P
SHELL	SHIELD

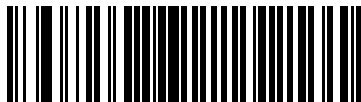
Using Autofocus Barcodes

Use calibration barcodes to set the device's focus settings automatically.

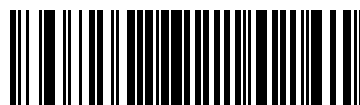


NOTE: This process only adjusts the focus setting on the device and does not adjust exposure or gain.

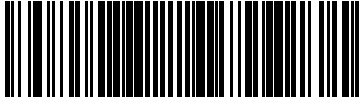
Bring one of the following calibration barcodes into the device field of view:



5s delay



8s delay



13s delay

1. Read one of the autofocus barcodes to start the focus-tuning process based on the selected delay.



NOTE: Observe the status LED flash every 500ms during the delay, providing time to bring the test barcode into the field of view to tune the focus on it.

2. During this delay, bring the desired test barcode into the field of view for the autofocus process to use as a reference. It is recommended to tune the focus of the device with a barcode type that is commonly decoded in your use case.



NOTE: Do not use the calibration barcode as the test barcode to calibrate focus against.

3. After the delay, the autofocus process starts and continues for 5-15 seconds.
4. Listen for the confirmation beeper sequence indicating the focus calibration process is complete.

Using Parameter Barcodes

Set feature values by scanning a single barcode or a short barcode sequence. The settings are stored in non-volatile memory and are preserved even when the scanner powers down.



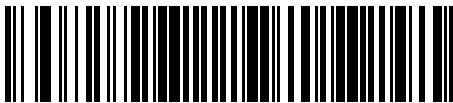
NOTE: Most computer monitors allow scanning barcodes directly on the screen. When scanning from the screen, be sure to set the document magnification to a level where you can see the barcode clearly, and bars and/or spaces do not merge.

If you are not using a USB cable, select a host type after the power-up beeps sound. This is only necessary upon initial power-up when connecting to a new host.

HID Keyboard Keystroke Delay

Parameter #65705

Scan a barcode to select a predetermined keystroke delay



Predefined Keystroke Delay 0s

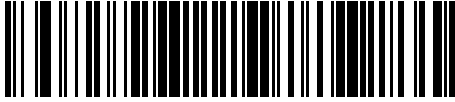


Predefined Keystroke Delay 5ms

HID Keyboard Special Keystroke Delay

Parameter #65706

Scan a barcode to select a predefined special keystroke delay.



Predefined Special Keystroke Delay 0s

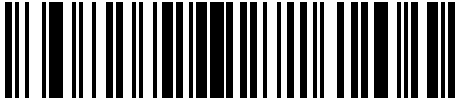


Predefined Special Keystroke Delay 5ms

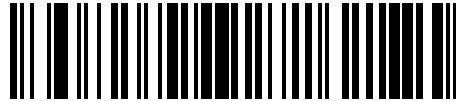
HID CDC Serial

Parameter #66934

Scan a barcode to enable to disable CDC serial.



Enable CDC Serial (Disable HID)



Disable CDC Serial

HID CDC Serial Results

Parameter #66933

Scan a barcode to enable or disable HID CDC Serial results on the device.



Enable CDC Serial Results

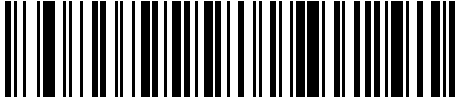


Disable CDC Serial Results

USB Power Configuration

Parameter #65079

Scan a barcode to enable or disable Unrestricted USB-A power.



Enable Unrestricted USB A-Power



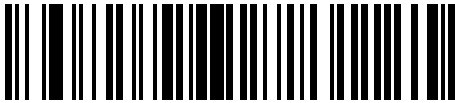
Disable Unrestricted USB A-Power

Input/Output (IO) Interface Configuration

TCP Result Output

Parameter #66930

Scan a barcode to enable or disable an IO interface.



Enable TCP Result Output



Disable TCP Result Output

TCP Result Control

Parameter #66915



Enable TCP Result Control



Disable TCP Result Control

RS232 Result Output

Parameter #66931



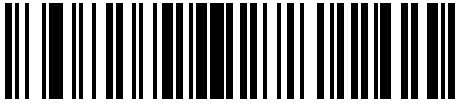
Enable RS232 Result Output



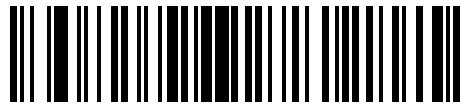
Disable RS232 Result Output

RS232 Result Control

Parameter #66932



Enable RS232 Result Control

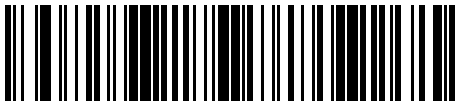


Disable RS232 Result Control

Barcode Configuration Mode

Parameter #69035

Scan a barcode to enter or exit barcode configuration mode.



Enter Parameter Barcode Configuration Mode



Exit Parameter Barcode Configuration Mode

Change Active Job Slot Number

Parameter #69053

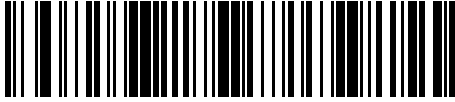
Scan a barcode to change the active job slot to the specified number.



Change Active Job Slot to Number 1



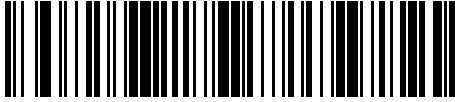
Change Active Job Slot to Number 2



Change Active Job Slot to Number 3



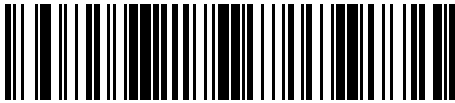
Change Active Job Slot to Number 4



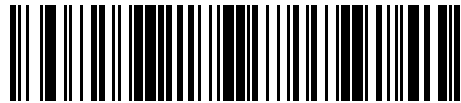
Change Active Job Slot to Number 5



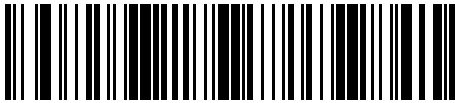
Change Active Job Slot to Number 6



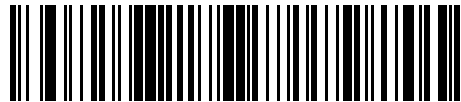
Change Active Job Slot to Number 7



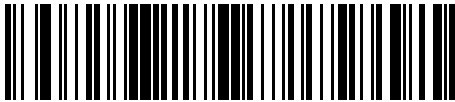
Change Active Job Slot to Number 8



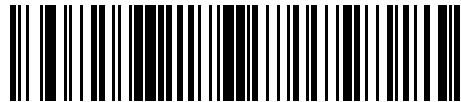
Change Active Job Slot to Number 9



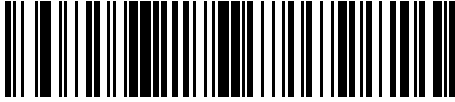
Change Active Job Slot to Number 10



Change Active Job Slot to Number 11



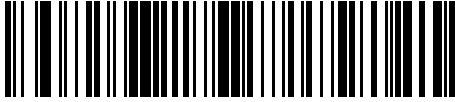
Change Active Job Slot to Number 12



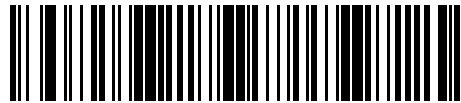
Change Active Job Slot to Number 13



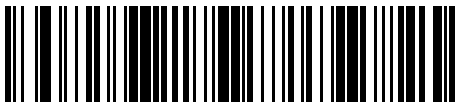
Change Active Job Slot to Number 14



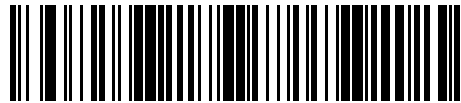
Change Active Job Slot to Number 15



Change Active Job Slot to Number 16



Change Active Job Slot to Number 17



Change Active Job Slot to Number 18



Change Active Job Slot to Number 19



Change Active Job Slot to Number 20

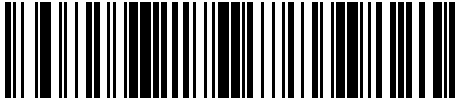
Change Startup Job Slot Number

Parameter #69054

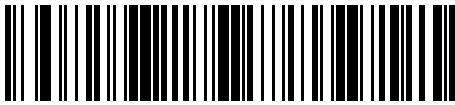
Scan a barcode to change the startup job slot to the specified number.



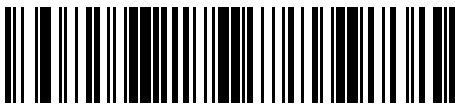
Change Startup Job to Slot Number 1



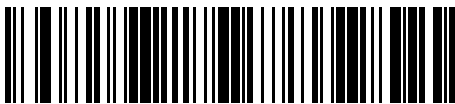
Change Startup Job to Slot Number 3



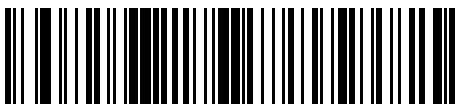
Change Startup Job to Slot Number 5



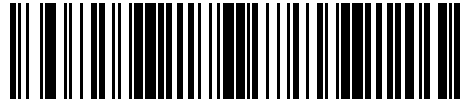
Change Startup Job to Slot Number 7



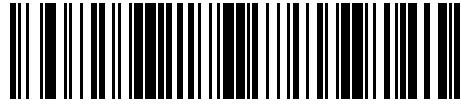
Change Startup Job to Slot Number 9



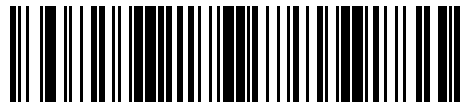
Change Startup Job to Slot Number 11



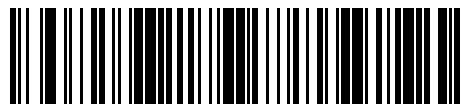
Change Startup Job to Slot Number 2



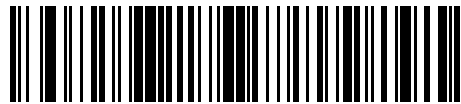
Change Startup Job to Slot Number 4



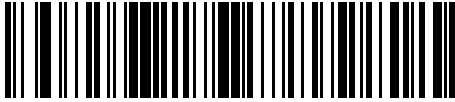
Change Startup Job to Slot Number 6



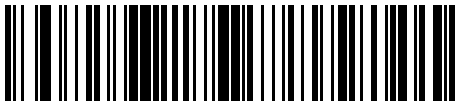
Change Startup Job to Slot Number 8



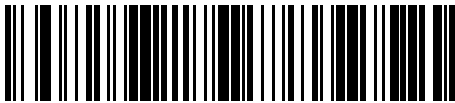
Change Startup Job to Slot Number 10



Change Startup Job to Slot Number 13



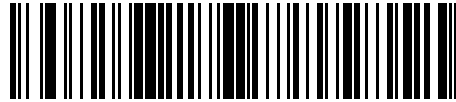
Change Startup Job to Slot Number 15



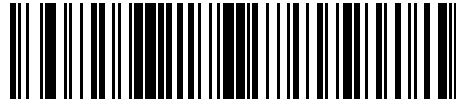
Change Startup Job to Slot Number 17



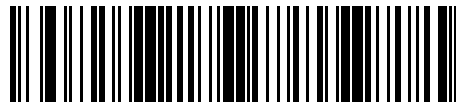
Change Startup Job to Slot Number 19



Change Startup Job to Slot Number 12



Change Startup Job to Slot Number 14



Change Startup Job to Slot Number 16



Change Startup Job to Slot Number 18



Change Startup Job to Slot Number 20

Reboot Device

Parameter #69030

Scan the following barcode to reboot the device.



Reboot the Device

Restart Core Services

Parameter #69031

Scan the barcode to restart core services.



Restart Core Services

Reading Diagrams

The following diagrams provide reading distances based on ECC 200 and Code128 barcode reads.

Reading Distances



NOTE: Offset values for window distance when using the deflective mirror:

- FS10: -14 mm
- xS20: -16 mm

When using the deflective mirror accessory, subtract this value from the standard reading distances in this section to calculate the effective reading distance measured from the mirror surface.

The following table provides typical working ranges on photographic-quality barcodes at a 20° tilt pitch under normal room light (30 fcd) while operating at room temperature, 72°F (22°C).

Table 11 Typical Working Ranges

Symbology/Resolution	Near	Far
5 mil Code 128	2 in./5.08 cm	10 in./25.4 cm
10 mil Code 128	2 in./5.08 cm	15 in./38.1 cm
15 mil Code 128	2 in./5.08 cm	20 in./50.8 cm
20 mil Code 128	2 in./5.08 cm	24 in./61.0 cm
5 mil DataMatrix	2 in./5.08 cm	7.7 in./19.56 cm
10 mil DataMatrix	2 in./5.08 cm	15 in./38.1 cm
15 mil DataMatrix	2 in./5.08 cm	20 in./50.8 cm



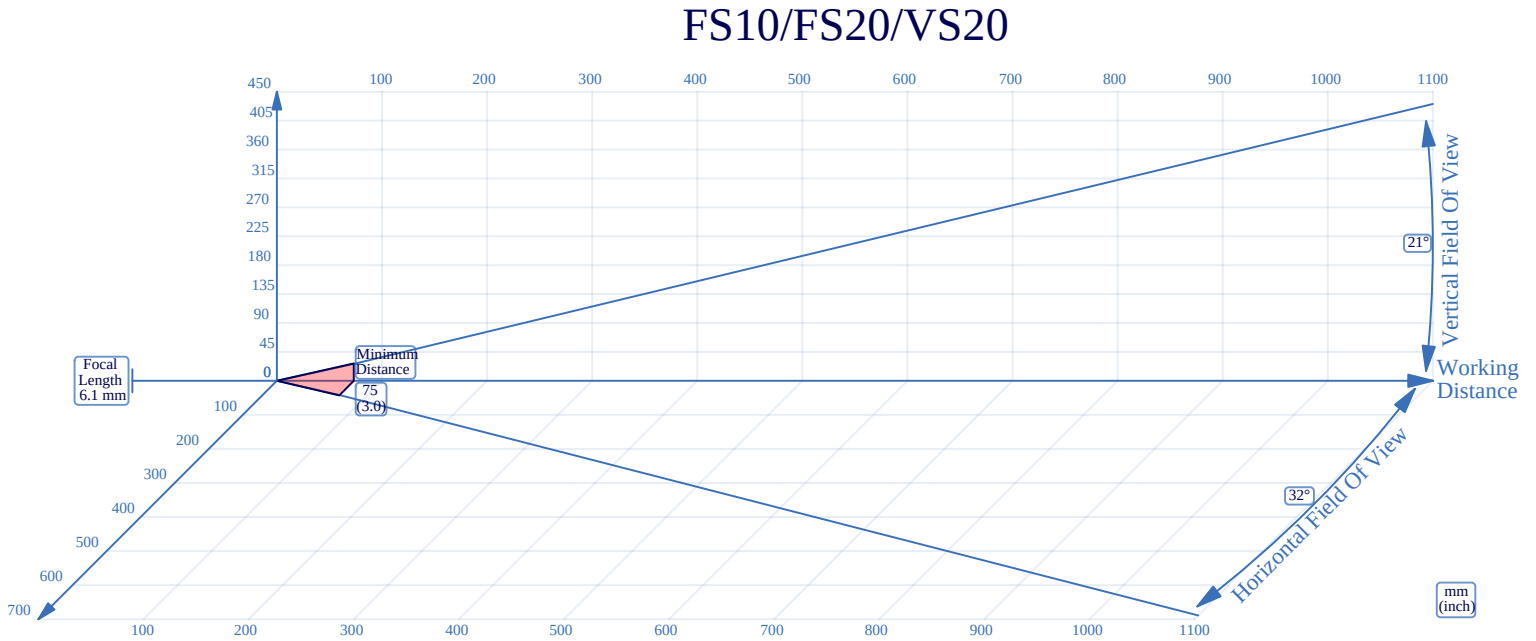
NOTE: Printing resolution, contrast, illumination source, and ambient light may affect these values.



NOTE: Configurations with a polarizer may experience a further reduction in maximum reading distance in low ambient light.

The measurements in the following diagrams provide guaranteed reading distance for different resolutions when the target symbol is entirely contained inside the field of view in normal room light (30 fcd).

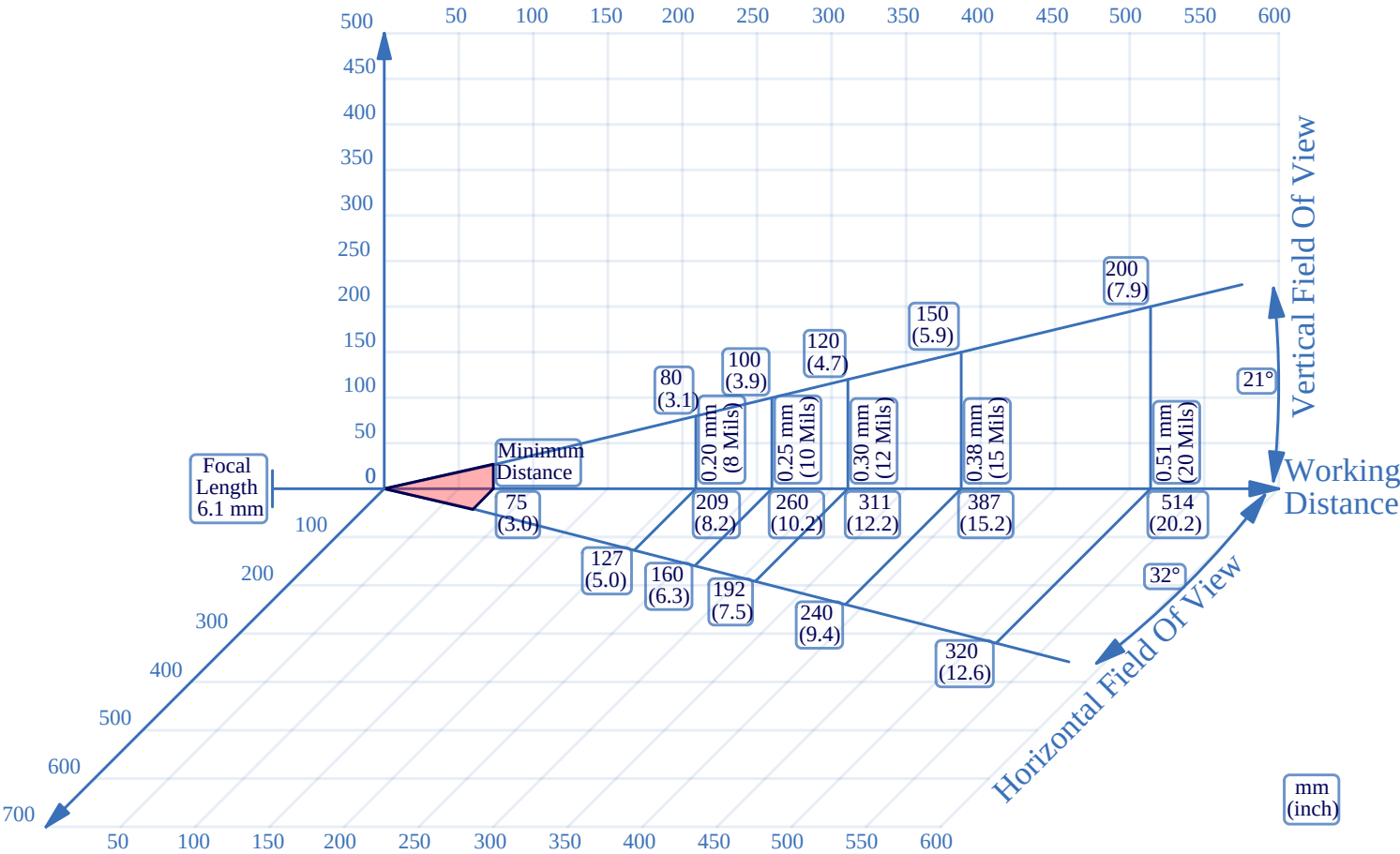
Figure 26 Guaranteed FS10/xS20 Reading Distances



ECC 200 Reading Distances

Figure 27 Guaranteed ECC 200 Reading Distances

FS10/FS20/VS20 - ECC 200



Code 128 Reading Distances

Figure 28 Guaranteed Code 128 Reading Distances

FS10/FS20/VS20 - Code128

