

Datasheet



Important: For complete technical information about this product, including installation instructions, application requirements and guidelines, EU Declaration of Conformity, technical specifications, and accessories, see www.bannerengineering.com and search for the Instruction Manual (p/n 208913).

- Two-dimensional laser scanner effectively protects personnel and stationary and mobile systems within a user-designated area
- Individually define up to six Safety Zones and two Warning Zones using a PC
- Safety Zone range of 5.5 meters at 70 mm resolution or 3 meters at 40 mm resolution
- Highly flexible Safety and Warning Zones can be set to match the shape of the work area
- 275° sensing angle
- Suitable for horizontal, vertical, and AGV applications

Models

A SX5 Safety Laser Scanner System refers to the laser scanner, cordsets (ordered separately), and mounting hardware (ordered separately). Interfacing solutions include safety modules, controllers, and muting modules.

Model	Description
SX5-B	SX5 Safety Laser Scanner, basic model

The following items, ordered separately from the scanner, are required to make a complete system.

Qty	Description
1	Mounting hardware (If desired, can mount directly to a surface)
1	Machine interface cable
1	M12 Ethernet cable



Important: Configuration software is required. The software is available at www.bannerengineering.com/SX5.

Features



1. Display
2. LED indicators
3. M12 Ethernet connector cover
4. Keypad

Specifications

Power Consumption

No output load: 8 W at 24 V dc
 With maximum output load: 27 W at 24 V dc
 Power-up delay: 40 seconds, typical

Current Consumption (24 V dc)

No output load: 0.3 A at 24 V dc
 With maximum output load: 1.1 A at 24 V dc

Static Input Generic

Input voltage high: > 12 V
 Input voltage low: < 5 V
 Input current high: 2 mA at 24 V dc
 Input impedance: 12 kΩ

Connectors

I/O and power: M12 male type A connector (8 poles)
 Ethernet to GUI or Data transmission: M12 male type D connector (4 poles)



Power and Electrical Protection

Protection class: III (EN 61140 / IEC 61140)
 Supply voltage: Uv 24 Vdc (19.2 V ... 30 Vdc) (SELV/PELV)¹
 Residual ripple: $\pm 5\%$ ²
 Start-up current (I): $< 0.6\text{ A}$ ³
 The Scanner should be connected only to a SELV (Safety Extra-Low Voltage) for circuits without earth ground or a PELV (Protected Extra-Low Voltage) for circuits with earth ground power supply.

Light Beam Diameter

At front screen: 8 mm
 At middle field distance: 10 mm
 At max distance: 20 mm
 Detectable remission: 1.8% to 1000%
 Maximum homogeneous contamination of the optics cover without preventing the detection capability –30% of nominal optic power

Output (warning and generic)

Output logic and protection: PUSH-PULL, Overcurrent protection
 Output voltage for ON status (HIGH): Uv–2 V at 250 mA
 Output voltage for OFF status (LOW): 0 V
 Output current for ON status (HIGH): 250 mA
 Leakage current: $< 700\ \mu\text{A}$ ⁴
 Load inductance: 2 H
 Load capacity: 2.2 μF

Safety Data

Type 3 (EN 61496-1)
 SIL 2 (IEC 61508)
 Category 3 (EN ISO 13849-1)
 SILCL 2 (EN 62061)
 PL d (EN ISO 13849-1)
 PFHd (mean probability of a dangerous failure per hour): 6.38×10^{-8}
 SFF: 97.58%
 MTTFd: 61 Years
 TM (mission time): 20 years (EN ISO 13849-1)
 HFT (Hardware Fault Tolerance): 1
 State of safety: OSSD in OFF State (open circuit \rightarrow I OSSD = 0)
 Response time to malfunction: \leq Response Time

Operating Conditions

0 °C to +50 °C (+32 °F to +122 °F)⁵
 95% maximum relative humidity (non-condensing) (According to IEC 61496-1 5.4.2; IEC 61496-3 5.4.2; 4.3.1; 5.4.4.3)

Storage Conditions

–20 °C to +70 °C (–4 °F to +158 °F)

Environmental Rating

IEC IP65

Optical Data

Wavelength: 905 nm
 Pulse duration: 3 nsec
 Average output power: 8 mW
 Laser class: CLASS 1 (EN 60825-1)
 Divergence of collimated beam: 0.12°

Mechanical Data

Dimensions (W × H × D): 112.5 × 152 × 102
 Weight (including system plug): 1.5 kg
 Housing material: Aluminum Alloy
 Housing color: YellowRAL1003
 Optics cover material: PC
 Optics cover surface: Acrylic

OSSD (Safety Output)

OSSD logic and protection: PUSH-PULL, Overcurrent protection
 Output voltage for ON status (HIGH): Uv–2V at 250 mA
 Output voltage for OFF status (LOW): 0 V
 Output current for ON status (HIGH): 250 mA
 Leakage current: $< 700\ \mu\text{A}$ ⁵
 Max Load inductance: 2 H
 Max Load capacity: 2.2 μF
 Test pulse width: 300 μs
 Test pulse interval: 167 ms
 OFF status duration: 900 ms
 Latency time between output pair: 450 ms

Features

Safety protective field range: 3 m, 5.5 m
 Warning field range: 40 m with remission of target = 90% (white)
 Scanning angle: 275°
 Detection capability: 40 mm, 70 mm
 Scan cycle time: 30 ms
 Response time: Programmable 62 ÷ 482 ms
 Tolerance zone max: 150 mm
 Angular resolution: 0.1°
 Zones sets: 6 Max

Vibration

According to IEC 61496-1 4.3.3.1 ; 5.4.4.1 ; IEC 60068-2-6
 Frequency from 10 Hz to 55 Hz ; Scan Speed 1 octave/min
 Range: 0.35 mm \pm 0.05 mm

Shock

According to IEC 61496-1 4.3.3.2 ; 5.4.4.2
 IEC 60068-2-29; Acceleration: 10 g; Pulse Duration: 16 ms; Number of Shocks: 1000 \pm 10 (for each of the three mutually perpendicular axes)
 IEC 61496-3 5.4.4.1-3 ; IEC 60068-2-75 ; Hammer test

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¹ To meet the requirements of the relevant product standards (e.g. EN 61496-1), the external voltage supply for the devices (SELV) must be able to bridge a brief mains failure of 20 ms. Power supplies according to EN 60204-1 satisfy this requirement.

² The absolute voltage level must not drop below the specified minimum voltage.

³ The load currents for the input capacitors are not taken into account.

⁴ In the case of a fault (0 V cable open circuit) maximally the leakage current flows in the OSSD cable. The downstream controller must detect this status as LOW. A FPLC (fail-safe programmable logic controller) must be able to identify this status.

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⁶ We recommend that you allow for a 15-minute warmup from a cold start.