

Shadow 9 Specifications

Scanning heights in. (mm)	9.4 (240), 12.6 (320), 18.9 (480), 25.2 (640), 31.5 (800), 37.8 (960), 47.2 (1200), 59.8 (1520).
Scanning range	Default setting: 1 to 65 ft (0.3 to 20 m) Short range setting: 1 to 23 ft (0.3 to 7 m)
Beam spacing	0.79 in. (20 mm) centers
Object sensitivity	1.18 in. (30 mm) Note: use of fixed and/or floating blanking increases this value
Response time	For an individual pair of light curtain heads: 8 ms for up to 31.5 in. (800 mm) 13 ms for all other sizes For cascaded installations, up to three pairs of heads in series: 13 ms for up to 110 in. (2800 mm) combined length of 2 or 3 pairs of heads 18 ms for greater than 110 in. (2800 mm) combined length of 2 or 3 pairs of heads If light curtains are wired to optional Shadow 9 control, add 10 ms to response time for N/O safety relay outputs, 20 ms for N/C output.
Dimensions Optic heads Control box	See <i>Figure 2-6</i> and <i>Table 2-2</i> , page 54 7.4 x 10.8 x 2.8 in. (189 x 274 x 70 mm). See <i>Figure 2-25</i> , page 69.
Construction Heads Control	Extruded aluminum; 0.1 in. (2.5 mm) wall min. 14-gauge, .081 in. (2 mm) welded steel with enclosure clasp
Attached Pigtail Cable	11.8 in. (300 mm)
Cascading Cable	7.8 in. (200 mm)
Available Interconnect Cables	with connector on one end for attachment to pigtails on transmitter and receiver: 9.8 ft (3 m), 23.0 ft (7 m), 33 ft (10 m), 50 ft (15 m), 65.6 ft (20 m) ft, 110 ft (30 m) with connectors on both ends for attachment to cascaded heads: 1.6 ft (0.5 m), 3 ft (1 m), 10 ft (3 m), 16 ft (5 m), 23.0 ft (7 m), and 33 ft (10 m)
Cascading	As many as three pairs of heads can be cascaded (connected in series).
Environmental Heads Control Cables Vibration Shock testing	IP67 IP65 IP67 connector; oil-resistant PVC cable standard 10-55 Hz, multiple amplitude of 0.7 mm, 20 sweeps for all three axes. 10 g, 1,000 shocks for each of three axes.
Ambient Temperature	Operating 14 to 131° F (-10 to 55° C) (non-icing) Storage -13 to 158° F (-25 to 70° C)

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Ambient Humidity	Operating 35% to 85% (non-condensing) Storage 35% to 95%
Electrical	Power Supply Voltage: 24 Vdc \pm 20% (ripple p-p 10% max.) Heads: 24 Vdc, 0.5 A max. Optional Shadow 9 control: 100-240 Vac; 0.6 A max; 50-60 Hz EDM Monitor (MPCE): For external dry contacts rated at 50 mA @ 24 Vdc
Light Source	Infrared light-emitting diodes (LEDs), approximately 880 nanometer wavelength
Optics	Angle of divergence and acceptance: \pm 2.5°.
Safety Outputs, optic heads	2 solid-state PNP, each sourcing 300 mA @ 24 Vdc, short-circuit-protected Load current 300 mA max. Residual voltage of 2 V max. (except for voltage drop due to cable extension) Capacitive load of 1 μ F max Inductive load of 2.2 H max.* Leakage current of 1 mA max.** * The load inductance is the maximum value when the safety output frequently cycles ON and OFF. When you use the safety output at 4 Hz or less, the usable load inductance becomes larger. ** These values must be taken into consideration when connecting elements including a capacitive load such as a capacitor.
Safety outputs, optional Shadow 9 control box	2 cross-checked "captive contact" stop relays, one N/O, the other N/O or N/C, rated for 6 A @ 250 Vac or 6 A @ 30 Vdc
Auxiliary output (non-safety), optional Shadow 9 control box	1 auxiliary output, N/O or N/C, "Follow" mode only, rated for 5 A @ 250 Vac or 5 A @ 30 Vdc
Indicators	LED indicators on first (or standalone) transmitter: Operating range – Green Power – Green Lockout – Red LED indicators on first (or standalone) receiver: Top-beam-state – Blue Sequence - Yellow Blanking – Green Configuration – Green Interlock – Yellow External device monitoring – Green Internal error – Red Lockout – Red Stable-state – Green

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<p>Indicators</p>	<p>ON/OFF – Green/Red Communication – Green Bottom-beam state – Blue</p> <p>Optional State Indicator Lamp installs on last receiver Light curtain unobstructed – Green Light curtain obstructed – Red Heads slightly misaligned – Blinking Yellow.</p>
<p>Conformity</p>	<p>Conforming standards: See <i>UL, CSA, CE, OSHA, and ANSI Compliance</i>, page 20</p> <p>Performance Level (PL)/Safety category: Type 4 – PL e/Category 4 (EN ISO 13849-1:2015)</p> <p>PFHd: 1.1×10^{-8} (IEC 61508)</p> <p>Proof test interval T_M: Every 20 years (IEC 61508)</p> <p>SFF: 99% (IEC 61508)</p> <p>HFT: 1 (IEC 61508)</p> <p>Classification: Type B (IEC 61508-2)</p>

UL, CSA, CE, OSHA, and ANSI Compliance

Shadow 9 has undergone independent testing, certification, and/or approval by the following bodies:

1. The Shadow 9 is electro-sensitive protective equipment (ESPE) in accordance with European Union (EU) Machinery Directive Index Annex V, Item 2.
2. EC/EU Declaration of Conformity
Wintriss declares that the Shadow 9 is in conformity with the requirements of the following EC/EU Directives:
Machinery Directive 2006/42/EC
EMC Directive 2004/108/EC, 2014/30/EU
3. Conforming Standards
 - (1) European standards EN61496-1 (Type 4 ESPE), EN 61496-2 (Type 4 AOPD), EN61508-1 through -4 (SIL 3 for Type 4 and EN ISO 13849-1:2015 (PL e, Category 4 for Type 4)
 - (2) International standards
IEC61496-1 (Type 4 ESPE), IEC61496-2 (Type 4 AOPD), IEC61508-1 through -4 (SIL 3 for Type 4), ISO 13849-1:2015 (PL e, Category 4 for Type 4)
 - (3) North American standards
UL61496-1(Type 4 ESPE), UL61496-2 (Type 4 AOPD), UL508, UL1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
4. Third-Party Certifications
 - (1) TÜV SÜD
 - EC Type-Examination certificate: EU Machinery Directive, Type 4 ESPE (EN61496-1), Type 4 AOPD (EN 61496-2)
 - Certificate: Type 4 ESPE (EN61496-1), Type 4 AOPD (EN61496-2), EN 61508-1 through -4 (SIL 3 for Type 4), EN ISO 13849-1:2015 (PL e, Category 4 for Type 4)
 - (2) UL
 - UL Listing: Type 4 ESPE (UL61496-1), Type 4 AOPD (UL61496-2), UL508, UL1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
5. Other Standards
The Shadow 9 is designed according to the standards listed below.
 - European Standards: EN415-4, EN691-1, EN692, EN693, IEC/TS 62046
 - U.S. Occupational Safety and Health Standards: OSHA 29 CFR 1910.212
 - U.S. Occupational Safety and Health Standards: OSHA 29 CFR 1910.217
 - American National Standards: ANSI B11.1 to B11.19
 - American National Standards: ANSI/RIA R15.06
 - Canadian Standards Association CSA Z142, Z432, Z434
 - SEMI Standards SEMI S2