



AG4 Safety Laser Scanners

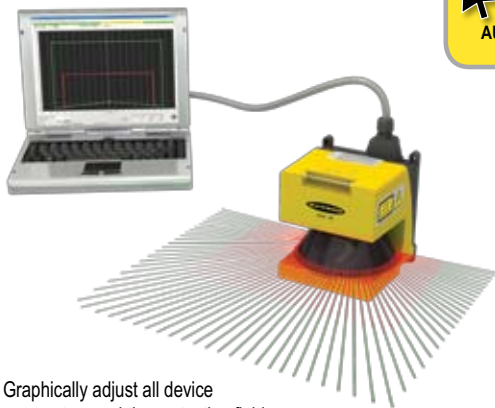
- Two-dimensional laser scanners effectively protect personnel, as well as stationary and mobile systems within a user designated area.
- Persons or objects entering the protection field will be detected and a protective (safety) stop signal will be generated.
- Eight protective and warning field pairs are individually defined using a PC.
- Protective field resolution is from 30 to 150 mm with ranges up to 4 or 6 m.
- The warning field can be set for up to 15 m with a resolution of 150 mm.
- Scanner has a 0.36° lateral resolution and detects objects in a 190° working zone.
- Two solid-state OSSD safety outputs (250 mA) and two solid-state auxiliary outputs (100 mA).
- The highly flexible protective and warning fields can be set to match the shape of the work area.
- System meets all requirements for Type 3 applications per IEC 61496-1/-2 and Safety Integrity Level (SIL) 2 per IEC 61508.
- Response time is 80 milliseconds (default), adjustable to 640 milliseconds.
- Compact design, simple installation and easy-to-use software provide efficient integration into work areas.
- Rugged, die-cast aluminum housing withstands the rigor of factory floors.
- 5-LED display presents system status and diagnostics of devices without connecting to a PC.

| |
|-----------------------|
| Photoelectrics |
| Sensors |
| Fiber Optic |
| Sensors |
| Special Purpose |
| Sensors |
| Measurement & |
| Inspection Sensors |
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| Safety Systems |
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Configuration and diagnostic software



Graphically adjust all device parameters and the protective field contours to both local conditions and required safety distances.



Configuration parameters are permanently stored in the configuration plug, providing easier storage and device replacement without a PC.



AG4 Safety Laser Scanner, 24V dc

| Range | | Safety Output | Aux. Outputs | Scanning Angle | Response Time | Model* |
|---|--------------------------|---------------|--------------|----------------|---|--------|
| Protective Fields | Warning Fields | | | | | |
| 30 mm Resolution = 1.6 m 40 mm Resolution = 2.2 m 50 mm Resolution = 2.8 m 70 mm Resolution = 4.0 m 150 mm Resolution = 4.0 m | 150 mm Resolution = 15 m | 2 PNP OSSD | 2 PNP | 190° | 80 ms (Default) adjustable to 640 ms | AG4-4E |
| 30 mm Resolution = 1.6 m 40 mm Resolution = 2.2 m 50 mm Resolution = 2.8 m 70 mm Resolution = 6.25 m 150 mm Resolution = 6.25 m | | | | | | AG4-6E |

* Model includes scanner, plugs and CD with diagnostic and configuration software. Cordset ordered separately (see page 488).

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AG4-TB1 Test Box

With the test box it's possible to test the following Scanner functions without hooking it up to the machine interface:

- Switch over between the different field pairs
- Indication of the Safety OSSD outputs (When entering protective field)
- Indication of the Alarm outputs (When entering warning field)
- Can be used as a "cloning" device to load the same configuration into multiple scanners
- Power supply not included



AG4 Safety Laser Scanner Kits



You can purchase a kit that contains a laser scanner, optional interfacing solutions and cordsets.

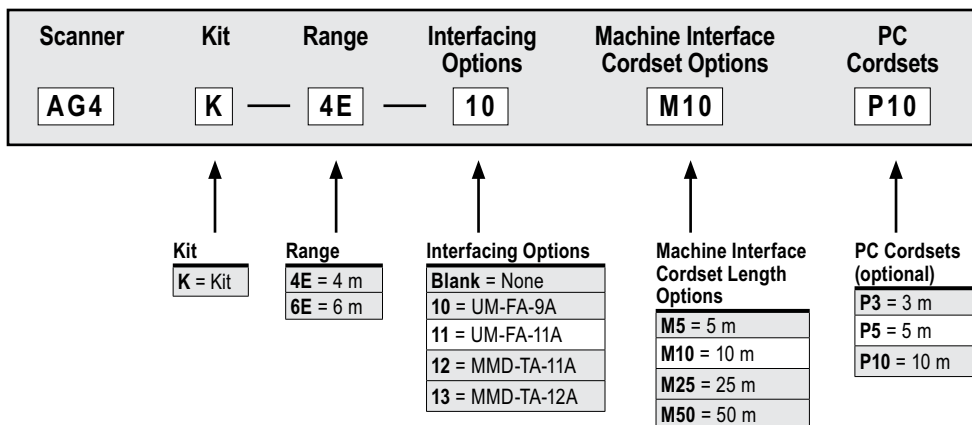
- *Scanner* page 485
- *Interfacing Options* 488
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To Order:

1. Choose an optional interfacing solution, such as an **UM-FA-9A** or **-11A** universal input safety module.
2. Choose a DB15 machine interface cordset, such as **AG4-CPD15...**
3. Choose a PC communication cordset, such as **AG4-PCD9...**

See www.bannerengineering.com for complete documentation and a current listing of accessories.

Kit Model Key



AG4 Laser Scanner Specifications



| | | |
|--|---|---|
| Supply Voltage (UB) | 24V dc (+20% / -30%) Power supply in acc. with IEC 742 with safe supply isolation and compensation with voltage dips of up to 20 milliseconds in acc. with EN 61496-1. Over current protection: Via 1.6 A fuse in the cabinet Over-voltage protection: Over-voltage protection with safe limit stop Protective earth conductor: Connection not permitted | |
| Supply Current | 420 mA approx. (use 2.5 A power supply) | |
| Fuse (power supply) | 1.6A normal blow, medium time lag fuse (user supplied) | |
| Response Time | Min. 80 milliseconds (2 scans) Max. 640 milliseconds (16 scans) | |
| Wavelength | 905 nm | |
| Protection Field | 150 mm resolution: 200 mm to 4.0 m (radius) 70 mm resolution: 200 mm to 4.0 m (radius) 50 mm resolution: 200 mm to 2.8 m (radius) 40 mm resolution: 200 mm to 2.2 m (radius) 30 mm resolution: 200 mm to 1.6 m (radius) Sensing object reflectance: Minimum 1.8% | 150 mm resolution: 200 mm to 6.25 m (radius) 70 mm resolution: 200 mm to 6.25 m (radius) 50 mm resolution: 200 mm to 2.8 m (radius) 40 mm resolution: 200 mm to 2.2 m (radius) 30 mm resolution: 200 mm to 1.6 m (radius) Sensing object reflectance: Minimum 1.8% |
| Warning Field | Min. object size: 150 x 150 mm Sensing range (radius): 200 mm to 15 m Sensing object reflectance: Minimum 20% | |
| Measurement Field | 0-50 m | |
| Scanning Angle | max. 190° | |
| Output Signal Switching Devices (OSSD1, OSSD 2) | PNP open-collector transistor 2 outputs: short circuit proofed Rated operating voltage: supply voltage (UB) -3.2 V Max. source current: 250 mA Residual voltage: 3.2 V or less Operation mode: No object in detection zone: ON Object inside detection zone: OFF Response Time: Min. 80 milliseconds (2 scans) to max. 640 milliseconds (16 scans) switching method | |
| Auxiliary Output 1 (Alarm 1) & Auxiliary Output 2 (Alarm 2) | PNP open-collector transistor Rated operating voltage: supply voltage (UB) -4 V Max. source current: 100 mA Residual voltage: 4 V or less Operation mode: Switching method of operation mode (set below) Scanner at normal operation: ON Abnormal operation: OFF No object inside warning zone: ON Object inside warning zone: OFF Response Time: Min. 80 milliseconds (2 scans) to max. 640 milliseconds (16 scans) switching method | |
| Start-restart | +24V opto-uncoupled, dynamically monitored | |
| Field Pair Switchover | Selection of 4 or 8 field pairs via 4 control lines, +24V opto-uncoupled, dynamically monitored, logically 1 = field pair activated | |
| Input Signal Definition | High/logical 1: 16-30V Low/logical 0: less than 3V | |
| Laser Protection Class | Class 1 (IEC 60825-1) | |
| Number of Field Pair Configurations | 8 field pairs in combination of protective field and warning field can be switched over by external input. Field pair number 8 is not user configurable. | |
| Environmental Rating | IP65 (per IEC 60529) | |
| Housing Material | Die-cast aluminum with a thermoplastic resin window | |
| Weight | 2.1 kg | |
| Operating Conditions | Temperature: 0 to 50°C | Humidity: Max. 95% |
| Indicators | Five LEDs on front show Safety Sensor Status | |
| Shock and Vibration | 10 to 150 Hz frequency, 5 G max. (50 m/s ² approx.) in X, Y and Z directions for twenty times each | |
| Max Cordset Length | 15-pin plug: 50 m 9-pin plug: 10 m (RS-232C), 50 m (RS-422) | |

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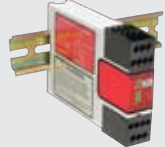


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More on next page

AG4 Laser Scanner Specifications (cont'd)

| | | |
|-------------------------|---|--|
| Design Standards | IEC 61496-1/-3 (Type 3), ISO 13849-1 (Category 3, PLd), IEC 61508-1 to -7 (SIL2) and IEC 62061 SIL CL2 | |
| Certifications |   | TUV Rheinland of North America, a Nationally Recognized Test Laboratory (NRTL) in the United States according to OSHA 29 CFR 1910.7, and accredited by the Standards Council of Canada to test and certify products to Canadian National Standards, has certified the AG4 Laser Scanner to all applicable U.S. and Canadian National Standards. The cTUVus mark is recognized throughout the United States and Canada by OSHA and the SCC. |
| Wiring Diagrams | WD020, WD021, WD022 (pp. 756-757) | |

AG4 Interfacing Products

| | Description | Models | Product Information |
|--|--|-----------------------------|---------------------|
| Interface Modules and Controllers |  <ul style="list-style-type: none"> Universal input safety modules monitors both contact-based and PNP solid-state input devices. Convenient plug-in terminal blocks on a 22.5 mm DIN-rail mountable housing. | UM-FA-9A (3 NO) | Page 521 |
| | | UM-FA-11A (2 NO/1NC) | |
| Interface Modules and Controllers |  <ul style="list-style-type: none"> One controller provides configurable monitoring of multiple safety devices. 22 input terminals can monitor both contact-based and PNP solid-state input devices. 3 pairs of independent solid-state safety outputs can be used with selectable one- or two-channel external device monitoring. Ten configurable non-safety status outputs track inputs, outputs, lockout, I/O status and other functions. All SC22-3 modules use 24V dc. 10/100 Base TX Ethernet communication option using EtherNet/IP and Modbus TCP protocols (SC22-3E models). | SC22-3-S... | Page 508 |
| | | SC22-3-C... | |
| | | SC22-3E-S... | |
| | | SC22-3E-C... | |
| Muting Modules |  <ul style="list-style-type: none"> The Muting Module temporarily inhibits a safety laser scanner so materials can safely pass through the screen without stopping the machinery. The module uses redundant microcontroller-based logic. | MM-TA-12B | Page 526 |
| | | MMD-TA-12B | |
| | | MMD-TA-11B | |

NC = Normally closed, NO = Normally open

Cordsets

| DB15 Machine Interface | |
|------------------------|--------------|
| See page 678 | |
| Length | Model |
| 5 m | AG4-CPD15-5 |
| 10 m | AG4-CPD15-10 |
| 25 m | AG4-CPD15-25 |
| 50 m | AG4-CPD15-50 |



| DB9 PC Communication* | |
|-----------------------|-------------|
| See page 677 | |
| Length | Model |
| 3 m | AG4-PCD9-3 |
| 5 m | AG4-PCD9-5 |
| 10 m | AG4-PCD9-10 |




| DB9 to USB† | |
|--------------|---------------|
| See page 677 | |
| Length | Model |
| 1 m | AG4-PCD9USB-1 |




† Not recommended for use with AG4-PCD9-10

* RS-232 Serial protocol


 Additional cordset information available. See page 655.

Bracket

| Swivel |
|---|
|  |
| pg. 608 |
| AG4-MBK1 |

 Additional bracket information available. See page 601.

Test Box

| Configuration & Test Box |
|---|
|  |
| AG4-TB1 |

Misc. Replacement Parts

| Description | Model |
|--|------------------|
| Software | AG4A-SW-A |
| Replacement window | AG4-WIN1 |
| Replacement configuration plug, straight | AG4-CPD15 |

| Description | Model |
|-------------------------------|-----------------|
| Replacement PC plug, straight | AG4-PCD9 |
| Cleaning set (150 ml fluid) | AG4-CLN1 |
| Cleaning set (1000 ml fluid) | AG4-CLN2 |