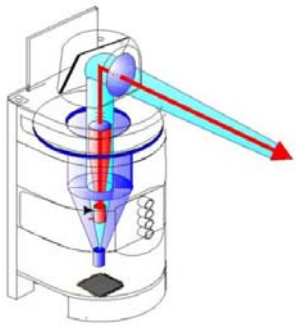
# MODULOC Control Systems

## LDA 2D Laser Scanner



### Features

- Long range, non contact 2D profile measurement
- Range > 40M on dark, natural targets
- Range > 100M on light, natural targets
- High accuracy, resolution and measurement rate
- Integrated processor with intelligent and definable data evaluation for object measurement
- Standard Interface RS232/RS422, optional Ethernet Interfaces, TCP/IP, CAN BUS
- Self-test function
- Rugged design, IP65
- Easy Installation with user oriented Software
- Installable in any direction
- Multiple (4) switching outputs

### Product Family

LDA is a member of the LADAR DIDITAL sensor family. The LDA offers a compact design for two dimensional (2D) measurement applications over long distances.

Measurement may be made onto natural targets at distances of 100M, and onto co-operative targets (e.g. 3M foil) to more than 250M.

### Typical Applications

| | |
|---|---|
| **General** | Profile measurement with more than 100M radius |
| **Materials** | Object measurement regarding form and volume, loads , container |
| **Crane Control** | Profile measurement of goods, collision avoidance, docking of AGV, trucks and chassis |
| **Container Terminal** | Stack profile measurement, object protection |
| **Survey** | Length, width, height, level and position of objects and surroundings |
| **Mining** | Measurement of cavern |

### LDA 2D Description

The LDA scanner uses the time-of-flight measurement method to calculate target range, and couples the range measurement with an angle measurement to create a polar coordinate position. A complete circular profile is created as the LDA head rotates a full 360° at a 10 Hz rate.

As an option the LDA contains an integrated DSP processor allowing online profile evaluation and interfacing over a special CAN BUS I/F. The DSP can be programmed to support form, volume, and movement applications.

The LDA covers an area within a 40M radius onto dark targets (e.g. dark walls of a tunnel), and a 100M onto light targets over and angular range of up to 360°. If the application requires the sensor to self-test, the angular range is limited to 300° to allow 60° internal self-test check area.

**MODULOC Technology - The Total Laser Solution**

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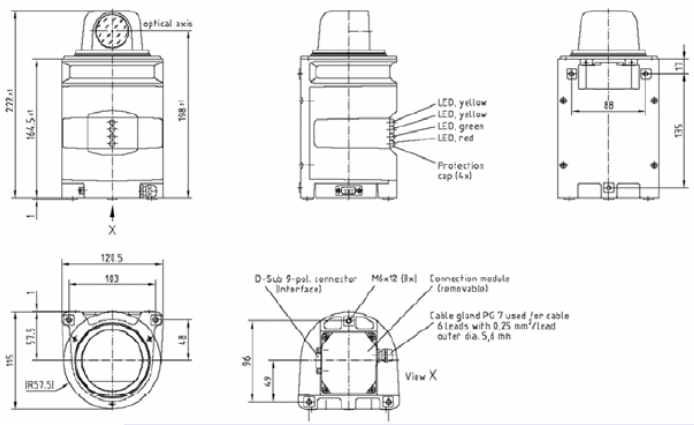


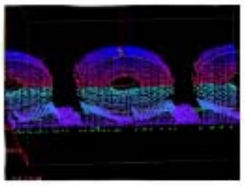

## Technical Info

| | |
|---|---|
| Measurement Range[1) 2)] | 0.5 … 24m on 5% black<br>0.5 … 50m at 20% reflection<br>0.5 … 100m at 90% reflection<br>0.5 … 250m on reflectors |
| Usable Scanning Angle | 360° |
| Angular Step Width | 0.125° |
| Scanning frequency | 5 to 15 Hz ± 5% in increments of 1 Hz |
| Measurement Resolution | 3.9 mm |
| System Error | ± 38mm with 20 to 90% reflection |
| Beam Divergence | 2.5 mrad (0.143°) |
| Laser Diode | Infrared light (λ + 905mm) |
| Pulse Repetition Frequency | Max. 14.4 kHz (10.8 kHz with mean across 360°) |
| Laser Safety Class | Class 1, (Class 1/IEC 60825-1), eye-safe |
| Visual Displays | 4 x LED (status indicators) |
| Data Interface RS-232/422 | Serial switchable |
| Data Transmission Rate | 4 800, 9 600, 19 200, 38 400, 57 600, 115 200 Baud |
| Data Format | 8 data bits, 1 stop bit, no parity, fixed output format |
| Data Transmission Rate CAN BUS | 10 Bit/s … 1 MBit/s, max. cable length 30m |
| Data Interface ETHERNET | 10 MBit/s, TCP/IP |
| Switching Outputs | 4 x “Highside” semi-conductor, max. output current as a result of load per 0.5 A at 24 VDC |
| Electrical Connections | 1 x 6-pin terminal strip via PG 7 cable gland for power supply and 4 switching outputs.<br>1 x 15-pin D-Sub-HD-plug for data interfaces, power supply and 2 switching outputs |
| Power Supply | 24 V DC ± 15% to IEC 364-4-41 (VDE 0100 Teli 410) |
| Housing | Die-cast aluminum |
| Protection Glass | IP65 (nach DIN 40 050) |
| Shock, Vibration | to EN 60068-2-6 |
| Weight | 3.2kg |
| Operation/Storage Temperature | 0 to +45°C/-20 to +80°C |
| Max. Relative Humidity | 5 to 85%, non considering |
| Mounting | M6 x 12 mm, QTY (8) |

1) Condition: Laser Spot completely on the object, warming up time of 30min. Kept
2) By using without close range blanking
3) At disconnected switching outputs

## *MODULOC* Technology - The Total Laser Solution

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We reserve the right to alter specifications without prior notice. Specifications without tolerances are typical values.

Your Local Sales Representative:

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