

## AMS 300i - **A**bsolute **M**easurment **S**ystem – **i**ntegrated interface and bus field

### The new **AMS 300i** – the better alternative for many positioning tasks.

When distances from linearly-moving system parts have to be determined quickly and reliably, the new AMS 300i is the right choice. With the use of the most modern signal processes in the ms-grid, it measures up to 300m away and is the only one on the market with an absolute measurement accuracy tested by the Physikalisch-Technische Bundesanstalt (German Metrology Institute). Its uncomplicated use also makes it an easy-to-operate alternative for a multitude of positioning tasks. As a substitute for conventional rotation encoders with costly implementation mechanisms, the AMS 300i shows its complete range of performance.



### It can do (almost) anything - and even better than the rest!

- 1 mm repeatability, with tested absolute measurement accuracy of  $\pm 2$  mm to  $\pm 5$  mm at a 300 m range for process-precise positioning and optimal use of space
- Simultaneous calculation and monitoring of position, speed or configured borderline situations
- Integrated interface diversity for problem-free integration into a large array of systems
- Industry-suitable M12 connection field
- Red light laser for simple alignment and real-time position measurement
- Integrated intelligent mounting solution for simple alignment and securing
- Efficient damping for ensuring vibration-decoupled measurement data
- Plain-text display in five languages for international use



high-bay storage device



materials handling



gantry crane



electroplating

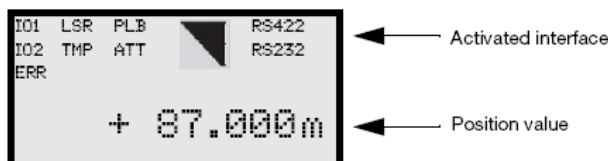
## AMS 300i – General specification

Measurement data	AMS 300i 40 (H)	AMS 300i 120 (H)	AMS 300i 200 (H)	AMS 300i 300 (H)
Measurement range	0.2 ... 40 m	0.2 ... 120 m	0.2 ... 200 m	0.2 ... 300 m
Accuracy	± 2 mm	± 2 mm	± 3 mm	± 5 mm
Consistency <sup>1)</sup>	0.3 mm	0.5 mm	0.7 mm	1.0 mm
Light spot diameter	≤ 40 mm	≤ 100 mm	≤ 150 mm	≤ 225 mm
Measurement value output	1.7 ms			
Integration time	8 ms			
Resolution	adjustable, see chapter of the individual interfaces			
Temperature drift	≤ 0.1 mm/K			
Ambient temperature sensitivity	1 ppm/K			
Air pressure sensitivity	0.3 ppm/hPa			
Traverse rate	≤ 10 m/s			
<b>Electrical data</b>				
Supply voltage Vin <sup>2)</sup>	18 ... 30 VDC			
Current consumption	without device heating: ≤ 250 mA / 24 VDC with device heating: ≤ 500 mA / 24 VDC			
<b>Optical data</b>				
Transmitter	laser diode, red light, wavelength 650 ... 690 nm			
Laser class	2 acc. to EN 60825-1, CDRH			
Laser life expectancy <sup>3)</sup>	average temperature / year 50 °C: 23.000 h 25 °C: 60.000 h 20 °C: 75.000 h 10 °C: 120.000 h			

We always specify the **Accuracy** and **Repeat Accuracy** ( Consistency )

In the case of **AMS 40/120/200** ( in the range of 0.2 – 200 m ) the max **Accuracy** is +/- 3 mm a max **Repeat Accuracy**(\*) of 0.7 mm.

The resolution of our AMS 300 is a mathematical expression of the output value that varies from model to model, and it only effects the data visualization which can be displayed with three decimal place.



### Position value

The measured position value is displayed in the configured unit of measurement.

+87.000 m With the **metric** setting, the measurement value is always displayed in meters with **three decimal places**.

+87.0 in With the **inch** setting, the measurement value is always displayed in inches with **one decimal place**.

**The AMS 300i is the only device in the market certified on its **Accuracy** and **Repeat Accuracy** from the “PTB” : National institute for science and technology for the field of metrology and physical safety engineering, as the highest technical authority of Germany.**

Its **Repeat Accuracy** falls into **3 SIGMA** spec : This term tells us the **PROBABILITY** that a particular measurement is **MORE ACCURATE** than some particular value. **3 SIGMA** it would mean that you have **98.9%** probability that your measurement lies **INSIDE** the expected range value. **2 SIGMA : 86.5 % while 1 SIGMA just 39.4 %**

## AMS 300i – Mounting

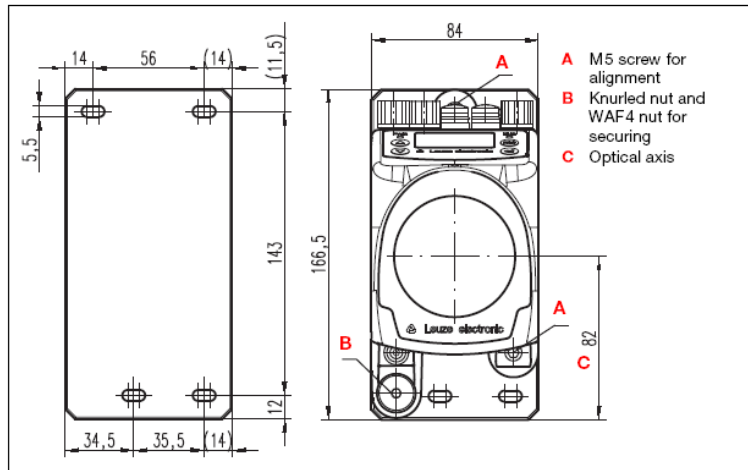
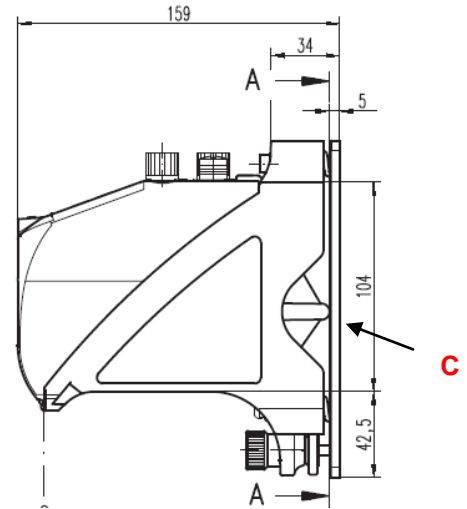


Figure 5.2: Mounting the device



**BEST system mounting on the market which comes with the AMS – IT's NOT SOLD separately.**

1. First you **ALIGN** the AMS with **SCREWS (A)**
2. Then you **LOCK** the **POSITION** for securing the mounting (**B**)
3. The **Reeling Ball (C)** grants the absolute accuracy, even after adjustment and mounting.  
No costeffective readjustment or misalignment.

Other mounting possibility...

### Mounting the laser beam deflector unit with integrated mounting bracket



## AMS 300i – Reflector Foils

### Dimensioned drawing of reflective tape on a metal plate

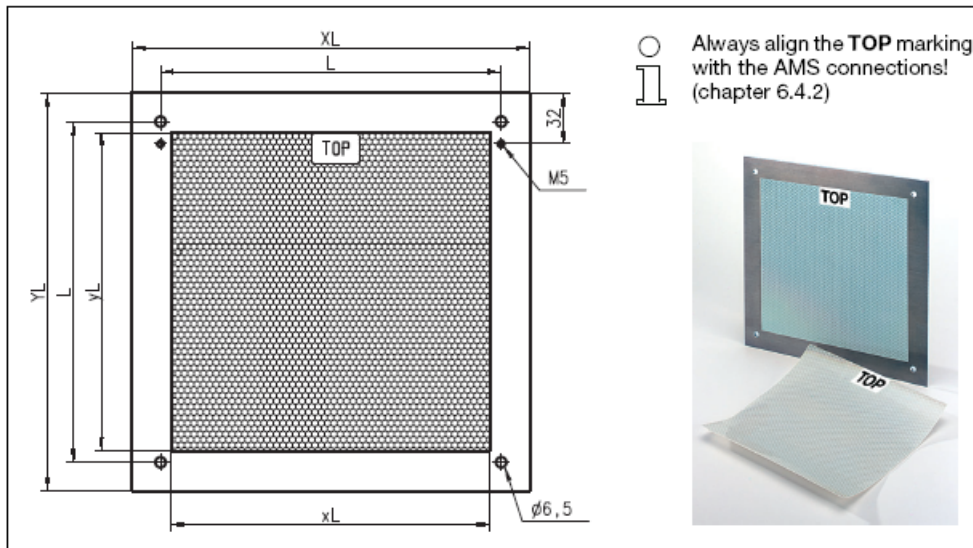


Figure 6.1: Dimensioned drawing of reflectors

Part	Reflective tape (mm)		Reflector plate (mm)		
	xL	yL	XL	YL	L
Reflective tape 200x200-M	200	200	250	250	214
Reflective tape 500x500-M	500	500	550	550	514
Reflective tape 914x914-M	914	914	964	964	928

**The AMS 300i uses the same reflector foil for all distance range devices from 40 up to 300mm  
THE FOIL HAS TO ORDERED SEPARATELY.**

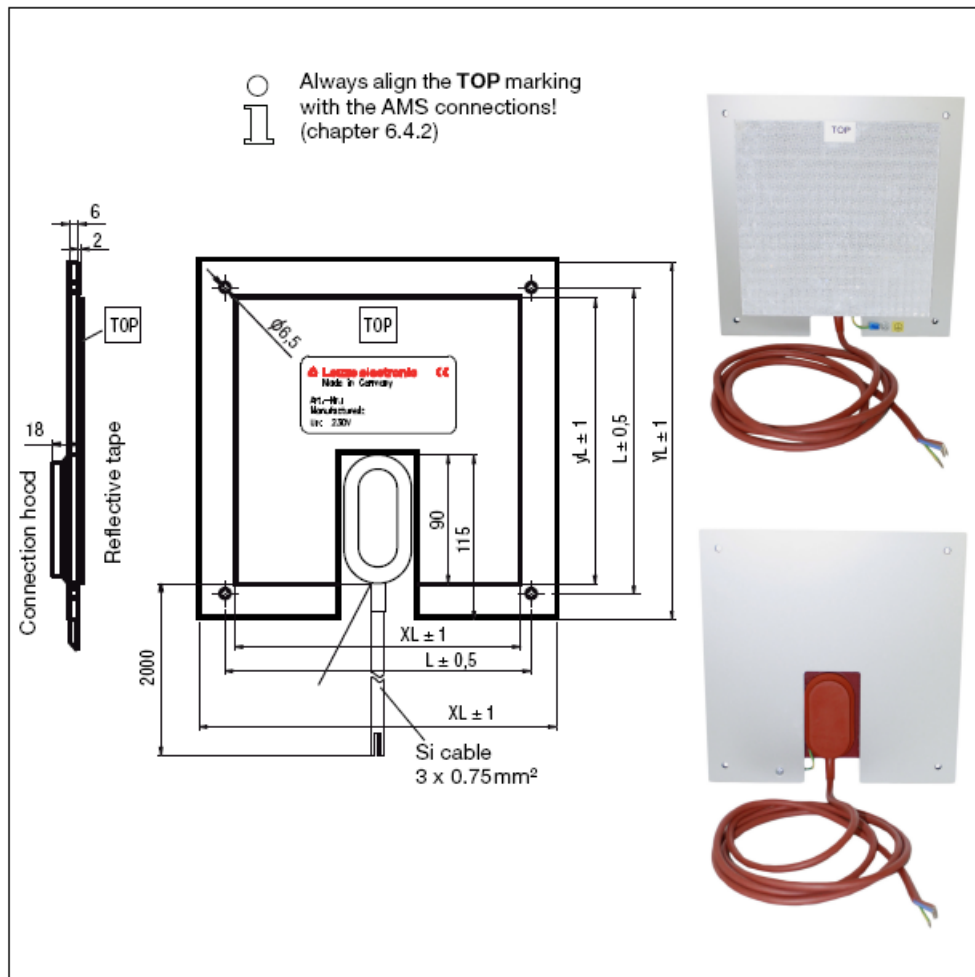


Figure 6.2: Dimensioned drawing of heated reflectors

Part	Reflective tape (mm)		Insulated base plate (mm)		
	xL	yL	XL	YL	L
Reflective tape 200x200-H	200	200	250	250	214
Reflective tape 500x500-H	500	500	550	550	514
Reflective tape 914x914-H	914	914	964	964	928

**Our HEATED REFLECTORS use ¼ of the power of the ones from the competitions = SAVING MONEY in bills.**

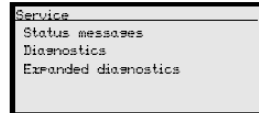
**Temperature range : -30°C up to 70°C**



## AMS 300i – Warnings and Error – Diagnostics

### Service and diagnostics in the display of the AMS 300i

In the main menu of the AMS 300i, expanded "Diagnostics" can be called up under the Service heading.



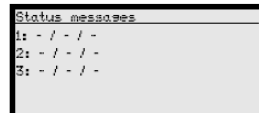
From the Service main menu, press the enter button (↵) to access the underlying menu level.

Use the up/down buttons (↑/↓) to select the corresponding menu item in the selected level; use the enter button (↵) to activate the selection.

Return from any sublevel to the next-higher menu item by pressing the ESC button (⏮).

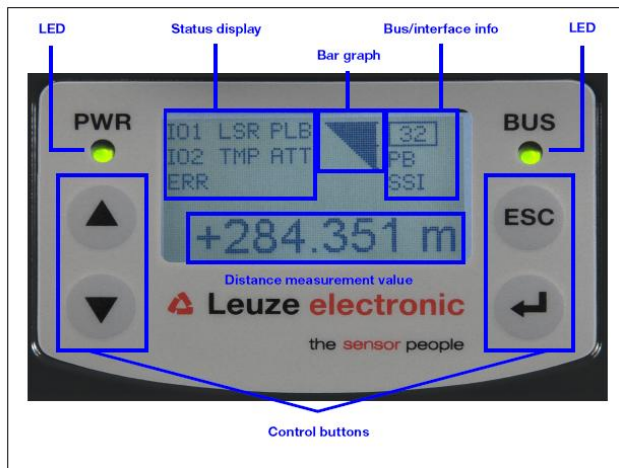
### Status messages

The status messages are written in a ring memory with 25 positions. The ring memory is organized according to the FIFO principle. No separate activation is necessary for storing the status messages. Power OFF clears the ring memory.



The status messages within the ring memory are selected with the up/down buttons (↑/↓). Use the enter button (↵) to call up detailed information about the respective status message that includes the following details:

**Type:** Designates the message type I = info; W = warning, E = error.  
**No:** Internal numbering  
**Ref.:** Plain-text explanation of the displayed status  
**Time:** Time stamp in the hh.mm format. The displayed time is added to the time since the last power ON. Power OFF clears the time stamp.



- LSR** **Warning - laser prefailure message:**  
Laser diode old, device still functional, exchange or have repaired.
- TMP** **Warning - temperature monitoring:**  
Permissible internal device temperature exceeded / not met.
- PLB** **Plausibility error:**  
Implausible measurement value. Possible causes: light beam interruption, outside of measurement range, permissible internal device temperature considerably exceeded or traverse rate >10m/s.  
Depending on the configuration, either zero or the last valid measurement value is output at the interfaces.
- ATT** **Warning received signal:**  
Laser outlet window or reflector soiled or fogged by rain, water vapor or fog. Clean or dry surfaces.
- ERR** **Internal hardware error:**  
The device must be sent in for inspection.

**Wide DIAGNOSTICS routine available on the DISPLAY as well as on every Interface or Field Bus.**

## AMS 300*i* – All available models

With the AMS 3xx*i* product series, Leuze electronic makes available a range of internationally relevant interfaces. Note that each interface version listed below corresponds to a different AMS 3xx*i* model.

		AMS 304 <i>i</i>
		AMS 348 <i>i</i>
		AMS 355 <i>i</i>
		AMS 358 <i>i</i>
		AMS 335 <i>i</i>
		AMS 338 <i>i</i>
		AMS 308 <i>i</i>
		AMS 384 <i>i</i>
		AMS 301 <i>i</i>
		AMS 300 <i>i</i>

AMS 3xx *i* **yyy** H

Heating option H = With heating  
Sensing distance 40 Max. operating range in m  
120 Max. operating range in m  
200 Max. operating range in m  
300 Max. operating range in m

i = Integrated fieldbus technology

Interface 00 RS 422/RS 232  
01 RS 485  
04 PROFIBUS DP / SSI  
08 TCP/IP  
35 CANopen  
38 EtherCAT  
48 PROFINET RT  
55 DeviceNet  
58 EtherNet/IP  
84 Interbus

AMS Absolute Measuring System

**80 VERSIONS IN TOTAL**