



HOKUYO

UAM-05LECA-T301

SAFETY-LASER SCANNER





UAM-05LECA-T301

The Hokuyo UAM-05LECA-T301 is a Category 3 safety laser scanner designed for seamless integration in FSoE and EtherCAT environments. Compact and lightweight at just 400g, it is ideal for AGV and AGC applications where space and efficiency are key.

Despite its small size, the UAM-05LECA-T301 delivers high performance detection with a 270° field of view, a 5m protection range, and warning zones extending up to 30m - matching the performance of much larger scanners.

To ensure maximum flexibility, users can programme up to 5 safety protection zones, with a maximum of 176 switchable area patterns.

When multiple scanners are required, such as in vehicle fleets or networked systems, the EtherCAT interface enables simple connection and integration. This reduces cabling cost and complexity while maintaining full safety compliance.

Additional features include direct encoder inputs for speed-dependent range switching, improved responsiveness and safety in dynamic applications. The scanner also provides raw navigation data via Ethernet-over-EtherCAT (EoE), supporting advanced guidance and mapping functions.

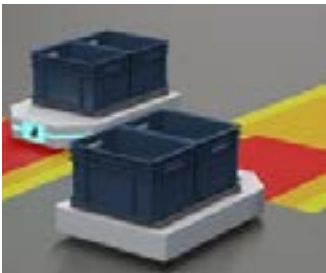
Approvals

IEC 61496-1/3 Typ 3
IEC 61508 SIL 2
IEC 61784-2 SIL 2
Type B, HFT=1 SIL 2



EXTENDS THE RANGE OF SAFETY APPLICATIONS

Collision avoidance



Up to 5 metre protection zone and 30 metre warning zones can be configured to suit the AGV or guarding requirements.

Presence and Intrusion detection



The UAM can detect personnel entering hazardous zones to ensure a safe workplace. Virtual outputs enable safety actions, while boundary monitoring detects gaps around the protection zone and any sensor misalignment.

Multiple Protection Zones



With up to 5 configurable protection zones and 176 area patterns, the UAM lets you tailor safety configurations precisely to your workflow, improving efficiency while minimising unnecessary interruptions.

Easy and minimal wiring



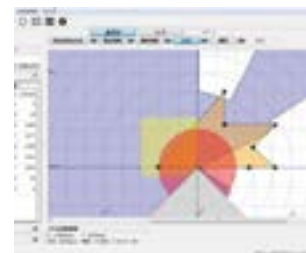
Basic safety outputs are wired via EtherCAT, therefore there is no need to worry about complex wiring.

Easy to understand display



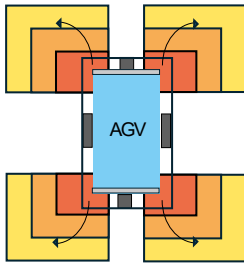
The UAM-05LECA includes a visual display, allowing for a clear and immediate view of operating status and settings.

Simple user interface



A simple graphic interface for configuration of safety and warning zones, allowing simultaneous viewing of measurement data to help accurate programming of complex areas.

Encoder input



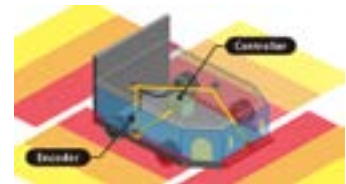
2-Axis monitoring with 4 encoder inputs. Dynamic area switching is possible using speed and direction information.

Network management via EtherCAT connection



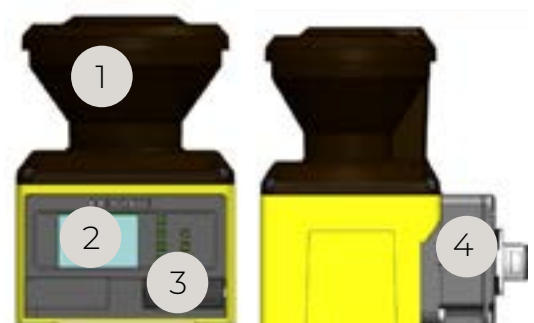
With EtherCAT industrial network connectivity, multiple sensors can be easily managed over the network. Configuration, monitoring, and output control can all be handled centrally. Navigation data can also be transmitted, enabling seamless integration with existing navigation controllers via the EtherCAT master.

Sharing AGV speed information over the network



By connecting a standard encoder to the sensor, speed information from the encoder installed on the AGV can be shared over the network, making area pattern switching based on speed easier. There is no need to use an EtherCAT-compatible encoder.

NO	SIGNAL	FUNCTION	DESCRIPTION
1	+24 V DC	Power	Power supply DC 24V
2	0VDC	Power	Power supply: 0V
3	P1_MUT_IN1/ ENC1_A	Input	Muting input 1/Encoder input1_A
4	P1_MUT_IN2/ ENC1_B	Input	Muting input 2/Encoder input1_B
5	P2_MUT_IN1/ ENC2_A	Input	Muting input 1/Encoder input2_A
6	P2_MUT_IN2/ ENC2_B	Input	Muting input 2/Encoder input2_B
7	RESET1/ENC3_A	Input	Reset input 1/Encoder input3_A
8	RESET2/ENC3_B	Input	Reset input 2/Encoder input3_B
9	OVERRIDE1/ENC4_A	Input	Override 1/Encoder input4_A
10	OVERRIDE2/ENC4_B	Input	Override 2/ Encoder input4_B
11	RES_REQ1 / MUT_OUT1/ AUX_OUT1	Output	RES_REQ1: ON when resuming the OSSD1/2 signal from interlock state using external inputs MUT_OUT1: ON when OSSD1/2 signals are performing muting operation AUX_OUT1: Synchronous signal/ error/ window contamination error/ window contamination warning
12	RES_REQ2 / MUT_OUT2/ AUX_OUT2	Output	RES_REQ2: ON when resuming the OSSD1/2 signal from interlock state using external inputs MUT_OUT2: ON when OSSD1/2 signals are performing muting operation AUX_OUT2: Synchronous signal/ error/ window contamination error/ window contamination warning



- 1: Optical window
- 2: LCD display
- 3: USB port
- 4: 3 x M12 connectors: EtherCAT interface (IN/OUT), power, I/Os

Rear and bottom facing connector modules available (sold separately)

UAM-05LECA-T301		SPECIFICATION
DETECTION PROPERTY	Protection Range	Max: 5m
	Warning Range	Max: 30m (non-safety) *1
	Distance Tolerance *2	~3000mm: +60mm 3001mm~: +100mm
	Detection Capability	From black reflector sheet (1.8%) to retro-reflector sheet
	Detectable Range	270°
	Minimum Detectable Width	ø 30mm (Max: 1.8m)
		ø 40mm (Max: 2.5m)
		ø 50mm (Max: 3.0m)
		ø 70mm/150mm (Max: 5.0m)
	Scan Frequency	30ms (Rotational speed 2,000rpm)
OPTICS	Area Pattern	Max 176 patterns
	Zone per area	Protection: Max 5 Warning: Max 4 *3
	Response Time	OFF 80ms ~ 2,030ms ON 270ms ~ 2,010ms
OPTICS	Element	Pulsed laser diode
	Wavelength	905nm
	Safety Class	Laser class 1
TYPE	Type 3 (IEC 61496-1, IEC 61496-3)	
FUNCTIONAL SAFETY	SIL 2 (Typ B, HFT=1) (IEC 61508)	
PFHd	9.4 x 10 ⁸ (T1 = 20 year)	
HOUSING*4	Size	80mm (W), 104mm (D), 95mm (H) (without cable)
	Weight	~ 400g
	Protection	IP65
	Case Material	Body: Aluminum / Optical window: Polycarbonate
	Connection	3 x M12-Connector: EtherCAT IN/OUT, Power, IOs
POWER SUPPLY / CONSUMPTION	DC24±10% power supply DC24-30% /+20% battery power	
	7W Normal (without load) 20w Max. (with load)	
OUTPUT	RES_REQ 1/ RES_REQ 2 MUT_OUT 1/ MUT_OUT 2	Output type (PNP-Transistor)/ Output current (Max: 200mA) Leak current (Max: 1mA)/ Cable AWG 26
INPUT	MUTING1/ MUTING2 MUTING3/ MUTING4 OVERRIDE1/ OVERRIDE2 RESET1/ RESET2 ENC_A1/ ENC_A2 ENC_B1/ ENC_B2*3	Input impedance 2.2 kΩ AWG 26
INTERFACE	Configuration	USB2.0 (USB micro type-B connector)
	Data output	Ethernet 100BASE-TX (EtherCAT IN)/ Ethernet 100BASE-TX (EtherCAT OUT)
FIELDBUS / INDUSTRIAL NETWORK	Type	EtherCAT
	Connector	M12 female connector, 4-pin, D-coded
	Profiles	FSoE, CoE, EoE, FoE
	Cycle time	1ms, 2ms, 4ms, 8ms, 16ms
DATA OUTPUT	Configuration*5	±20mm (TYP)
	Maximum Range	40m
	Angular Resolution*5	0.25°, 0.125°
ANGULAR ERROR	Vertical Plane*5	±1° (Beam divergence is excluded)
	Horizontal Plane*5	±0.3° (Beam divergence is excluded)
ENVIRONMENTAL RESISTANCE	Temperature	-10°C to +50°C (no freezing)
	Storage Temperature	-25°C to +70°C (no freezing)
	Humidity/ Storage Humidity	95% RH with no condensation
	Surrounding Intensity*6	Less than 1,500lx
	Vibration	Frequency range: 10 ~ 55Hz, Sweep rate: 1 octave/ min Amplitude: 0.35mm, ±0.05mm
SHOCK RESISTANCE	Acceleration: 100m/s ² (10G), Pulse duration: 16ms	
OUTDOOR OPERATION	Not permitted	

*1 - Distance when reflectance of the object is 90 % or above. *2 - Additional distance of 200mm is needed when the UAM is working under a high reflective background. *3 - Maximum 5 protection and warning zones combined can be set in one detection field. *4 - Two types of connector units are available: Back facing type and bottom facing type. The sensor unit does not include a connector unit. *5 - Reference value under the factory test. *6 The angle between the sensor detection plane and the light source should be 5° or more.

• MULTIPLE PROTECTION ZONES

• IMMUNE TO ELECTRICAL & AMBIENT LIGHT

• IDEAL FOR MOBILE VEHICLES



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Subject to change without notice