

Safety laser scanner

A new Safety scanner with FSoE support joins the UAM series



UAM-05LEC-T301

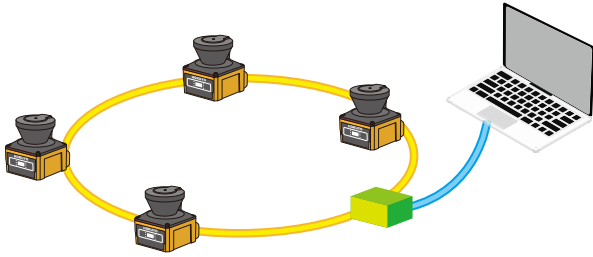


IoT • smart factory are becoming today's market trends and the support of industrial network in safety laser scanners is also an important key. Hokuyo's new safety scanner UAM-05LEC-T301 supports " ^{Safety over} EtherCAT  ".

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Key features of UAM-05LEC-T301

- Controlled through network via " ^{Safety over} EtherCAT[®] ".



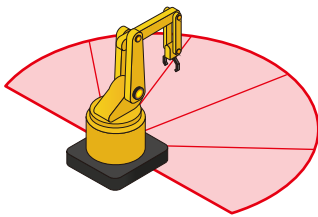
Multiple scanners can be controlled through " ^{Safety over} EtherCAT[®] ". Configuration, monitoring and I/Os are accessible through the network. Distance measurement data is also available and it can be shared with a navigation controller through the EtherCAT master.

- Simplified cabling.



All needed safety signals are channeled through " ^{Safety over} EtherCAT[®] ". This simplified connection saves wiring costs and installation time.

- Even more protection zones and detection field sets.

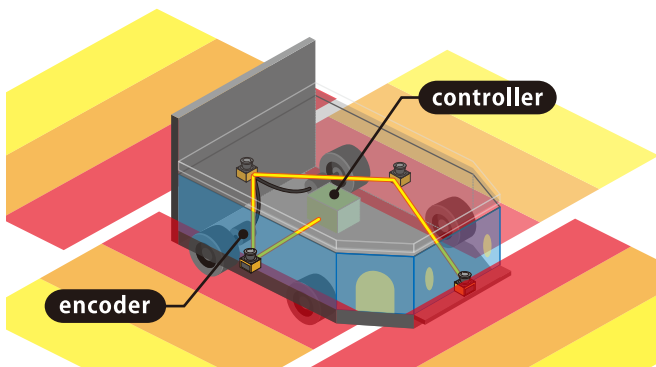


Max.5
protection zones

Max.176
detection field set

Maximum 5 protection zones are configurable per detection area. Extended number of protection zone allows for more flexible configuration. Number of detection field set is also increased to 176 patterns.

- AGV velocity is shared over the network.



UAM-05LEC can be directly connected to encoders on the AGV. The AGV velocity is shared over the network among other scanners and it dynamically changes the scanner's detection field sets.

" ^{Safety over} EtherCAT[®] " compatible encoders are not required for the scanner.

- Inheriting the usability of the UAM series.

Small size

Distance measurement output

Muting inputs

Teaching configuration

Laser-off mode

Area sequence setting

On-off delay

Reference monitoring

Scan skip setting

Contamination alarm

On top of all the needed features for static and mobile applications, UAM-05LEC's functionality is improved for higher usability.

Specification

Part number	UAM-05LEC-T301 : Main module			
Detection property	Protection range	Max: 5m	Number of protection zone*3	Max: 5
	Warning range	Max: 20m (No-safety) *1	Number of warning zone*3	Max: 4
	Distance tolerance*2	+100mm	Number of detection field set	Max: 176 patterns (when 1 zone per detection field)
	Detection capability	Black reflector sheet (1.8%) to retro-reflector sheet		
	Angular range	270°	Number of simultaneous zone	Max: 6 (5 protection zones + 1 reference zone)
	Minimum detectable width	30 mm (Max: 1.8m) / 40 mm (Max: 2.5m) 50 mm (Max: 3.0m) 70 mm / 150 mm (Max: 5.0m)		
	Scan frequency	30ms (rotation speed: 2000 rpm)	Response time	OFF : 80 ~ 2030ms ON : 290 ~ 2030ms
Optics	Element	Pulsed laser diode	Safety class	Laser class 1
	Wave length	905nm		
Type	Type 3 (IEC6149-1, IEC61496-3)			
Functional safety	SIL2 (Type B, HFT=1) (IEC61508)			
PFHd	7.8×10 ⁻⁸ (T1=20year)			
Housing	Size	80mm (W) x 104mm (D) x 95mm (H)	Case material	Body: Die-cast aluminium Optical window: polycarbonate Connector module: Die-cast aluminium
	Weight	0.4kg		
	Connector module	1 x M12 A coded male connector 2 x M12 D coded female connector	Protection	IP65
Power supply	DC 24V ±10% : when operating with converter power supply / DC 24V -30%/+20% : when operating with battery			
Power consumption	Without load	7W	With load	20W
Start-up time	Less than 30 sec			
Output	RES_REQ1/RES_REQ2 MUT_OUT1/ MUT_OUT2		Output type (PNP transistor) Output current (Max: 200mA) Leak current (Max: 1mA) Connector cable (AGW26)	
Input	P1_MUT_IN1 / P1_MUT_IN2 / P2_MUT_IN3 / P2_MUT_IN4 / OVERRIDE1 / OVERRIDE2 / RESET1 / RESET2 / ENC1_A / ENC1_B / ENC2_A / ENC2_B		Input impedance 4.7ksΩ Connector cable AWG26	
Interface	Configuration	USB2.0 (USB micro type-B connector)		
	Communication/Configuration	Ethernet 100BASE-TX (EtherCAT IN/OUT)		
FieldBus/ Industrial network	Type	EtherCAT	Profiles	FSoE: Safety I/Os CoE: Read only setting data EoE: Measurement data and configuration FoE: Offline generated file based configuration
	Connector	M12 D coded female connectors		
Measurement data characteristic	Measurement error (distance)*5	±35mm (TYP)	Max range (distance)	40m
			Angular resolution	0.125°, 0.25°
Angular error*5	Vertical plane	±1° (excluding beam divergence)	Horizontal plane*4	±0.3° (excluding beam divergence)
Environmental resistance	Temperature	-10 to + 50 degrees C (No frost)	Vibration	Frequency range : 10 ~ 55 Hz Sweep rate : 1 octave/min Amplitude : 0.35mm ±0.05mm
	Storage temperature	-25 to + 70 degrees C (No frost)		
	Humidity	95% RH with no condensation	Shock resistance	Acceleration : 98m/s2(10G) Pulse duration : 16 ms
	Storage humidity	95% RH with no condensation		
	Surrounding illumination*4	Less than 1500lx	Outdoor operation	not permitted
		Altitude	Below 2000m	

*1.Distance when reflectance of the object is 90% or above.

*2.Additional distance of 200mm is needed when the UAM is working under high reflective background.

*3.Maximum 5 protection and warning zones combined can be set in one detection field.

*4.The angle between the sensor detection plane and the light source should be 5° or more.

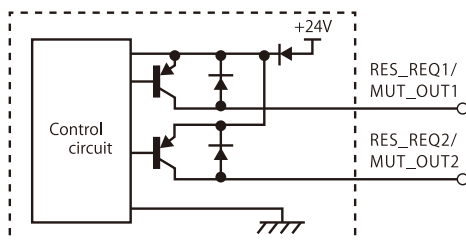
*5.Reference value under the factory test.

< Connector modules (sold separately) >

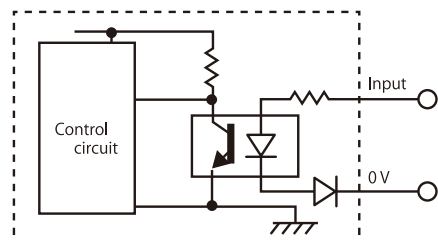
Part number	UAM-5CUBA : Rear facing connector module	UAM-5CUBO : Bottom facing connector module
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I/O circuits

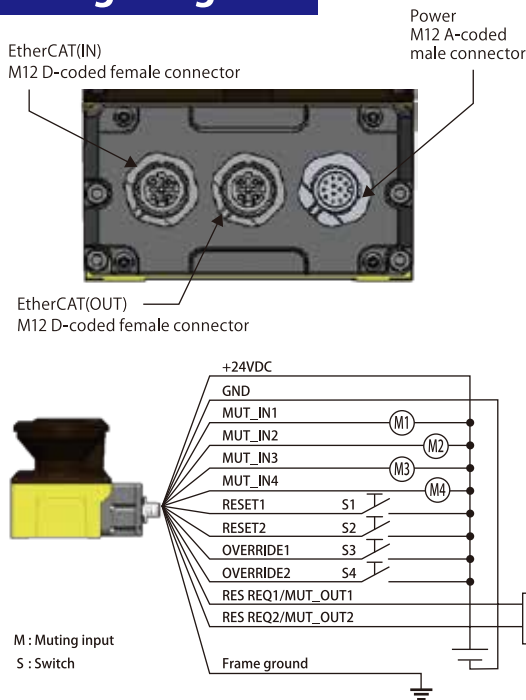
Output



Input



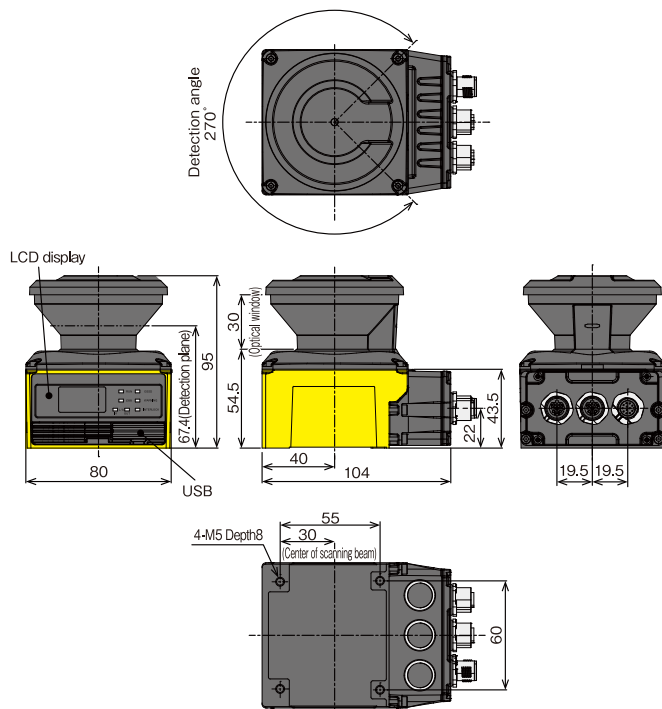
Wiring diagram



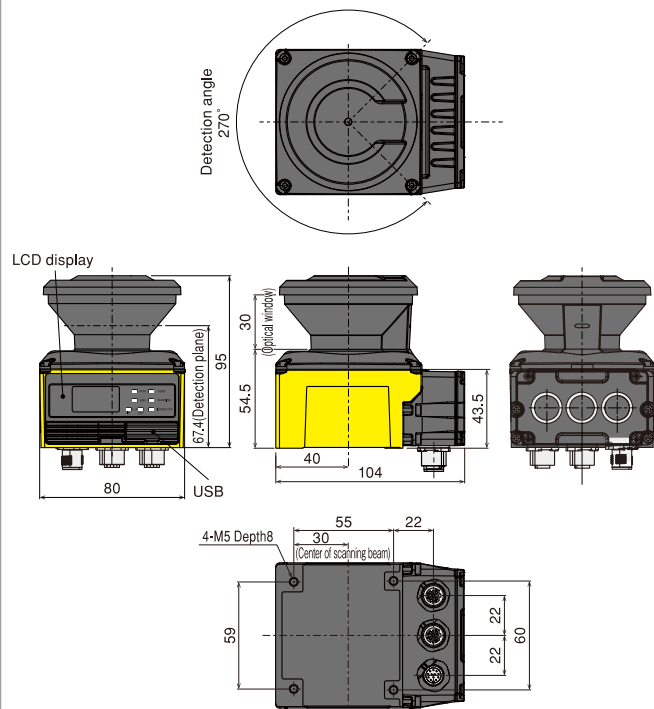
No	Signal	Function	Description
1	+24VDC	Power	Power supply: 24VDC
2	0VDC	Power	Power supply: 0VDC
3	P1_MUT_IN1/ENC1_A	Input	Muting input1/Encoder input1_A
4	P1_MUT_IN2/ENC1_B	Input	Muting input2/Encoder input1_B
5	P2_MUT_IN3/ENC2_A	Input	Muting input3/Encoder input2_A
6	P2_MUT_IN4/ENC2_B	Input	Muting input4/Encoder input2_B
7	RESET1	Input	Reset input1
8	RESET2	Input	Reset input2
9	OVERRIDE1	Input	Override input1
10	OVERRIDE2	Input	Override input2
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

External dimension

UAM-05LEC-T301(with rear facing connector module)



UAM-05LEC-T301(with bottom facing connector module)



HOKUYO AUTOMATIC CO.,LTD.

- Head Office
Higobashi Union Building, 1-9-6 Edobori, Nishi-ku Osaka-shi, Osaka, 550-0002 Japan
TEL: +81-6-6441-2239 FAX: +81-6-6441-2204
URL: <http://www.hokuyo-aut.jp> E-mail: info@hokuyo-aut.jp

- EUROPE / HOKUYO AUTOMATIC CO., LTD. Amsterdam Branch
Prof. J.H. Bavincklaan 2, 1183 AT Amstelveen, The Netherlands
TEL: +31-20-240-0110 E-mail: info@hokuyo-aut.jp

- AMERICA / Hokuyo Automatic USA Corporation
2019 Van Buren Ave, Suite A, Indian Trail, NC 28079 U.S.A.
TEL: +1-704-882-3844 E-mail: info@hokuyo-usa.com

- KOREA / HOKUYO KOREA CO., LTD.
104-211, 397 Seokcheon-Ro, Ojeong-Gu, Bucheon-City, Korea
TEL: +82-32-624-3194 E-mail: hokuyokorea@naver.com



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Caution for safety use

- Read instruction manual carefully before use.
- Products published in this brochure are intended to be used under specific conditions.
- For product related questions or technical issues, please contact our offices.

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■ The content of this catalog are based material from February 2021. External dimensions and specifications may change without notice.

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