

5M SAFETY RANGE  
30M WARNING RANGE



IMMUNE TO  
ELECTRICAL &  
AMBIENT LIGHT



IDEAL FOR  
MOBILE VEHICLES



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VERSION V1.1

Subject to change without notice



# HOKUYO

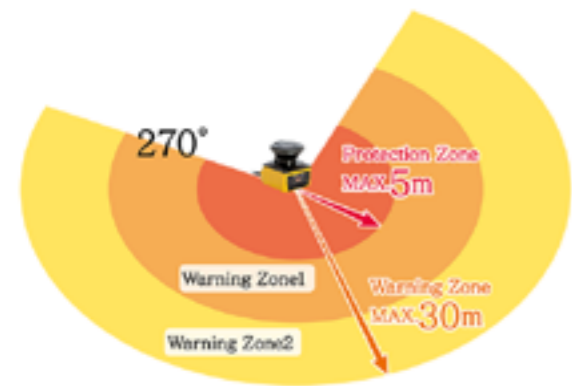
## UAM-05LPA SERIES

### SAFETY LASER SCANNER

Enhanced High performance Safety Lidar.  
5m Safety Zone plus warning zones up to 30m.  
2-axis monitoring with 4 encoder inputs.  
Stronger environmental resistance.

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# PREMIUM MODEL BOASTING ENHANCED FEATURES AND IMPROVED ENVIRONMENTAL RESISTANCE



The UAM-05LPA has inherited its compact size and light weight from the UAM-05LP series, measuring just 80 x 80 x 95mm, and weighing only 800g. With a 270° field of view, 5 metre safety range and an extended 30 metre warning zone, the UAM-05LPA has the performance you might expect from larger scanners.

This model also offers 2 additional encoder inputs. Whilst the original UAM had 2 inputs, the UAM-05LPA has 4, which together with additional on-board intelligence makes it possible to select monitored area by speed and direction of travel.

The UAM-05LPA offers improved environmental resistance compared to the conventional UAM, due to a conductive coating on the optical window which reduces adhesion of dirt and dust. This is particularly advantageous when the scanner needs to be mounted upside down or used in a dusty environment. An additional data processing algorithm applied to the UAM-05LPA makes this scanner even more robust in harsh conditions.

In addition to the USB port and SD Card slot, it is now possible to configure the scanner using its Ethernet interface. The UAM Project Designer software has also been updated to allow for additional programming options, including remote access through WiFi when the device is connected to the AGV network.

In order to provide flexibility across larger set-ups, the UAM-05LPA is backwards compatible and can use the same configuration and project files originated for the UAM-05LP model and both can operate within the same master-slave network.

## Approvals

IEC 61496-1/3 Type 3  
 IEC 61508 SIL 2  
 ISO 13849-1 PL d Category 3  
 UKCA  
 UL 508  
 UL1998  
 UL61496-1 Type 3  
 CSA C22.2 No. 14



# EXTENDS THE RANGE OF SAFETY APPLICATIONS

## Collision avoidance



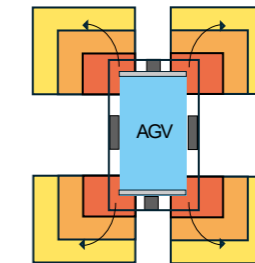
Up to 5m protection zone and an extended 30m warning zone can be configured to suit AGV requirements.

## Better performance in dirty environments



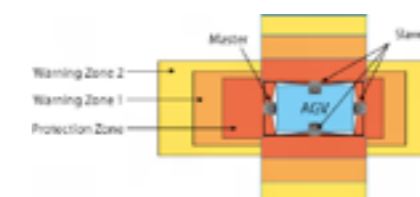
The addition of a conductive coating on the optical window reduces the adhesion of dirt and dust, therefore resulting in improved performance.

## 4 Encoder inputs



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

## Master-Slave function



A simple 2-wire connection bus can be used to connect up to 3 (slave) devices to a master UAM scanner in order to protect larger areas.

## Field setting flexibility



Paired switching mode (Max 32 field-sets)	Encoder input mode (Max 128 field-sets)	Fixed switching mode (Max 128 field-sets)
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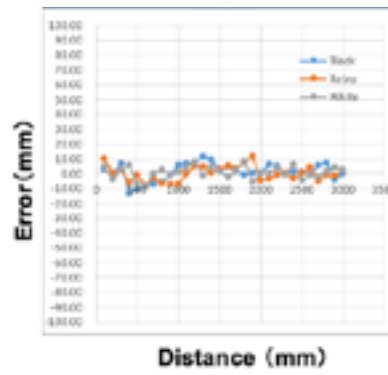
In addition to the conventional paired switching and encoder input mode, this model includes a fixed switching mode, enabling higher flexibility for integration of the scanner.

## Backward compatible to UAM-05LP Series



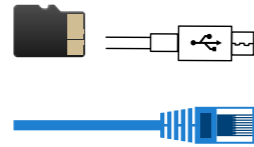
The same configuration software and project files can be used by the UAM-05LP and UAM-05LPA allowing both models to operate within the same master-slave network.

## Ranging



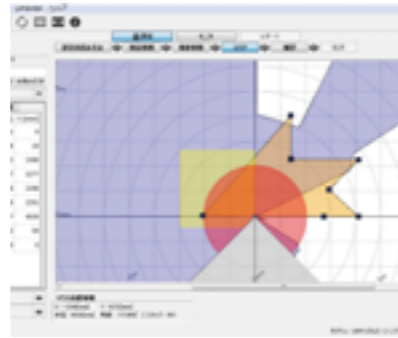
With more uniform distribution along the detection range, the UAM-05LPA offers improved ranging accuracy, thereby providing more reliable navigation and positioning.

## Configuration through Ethernet connection



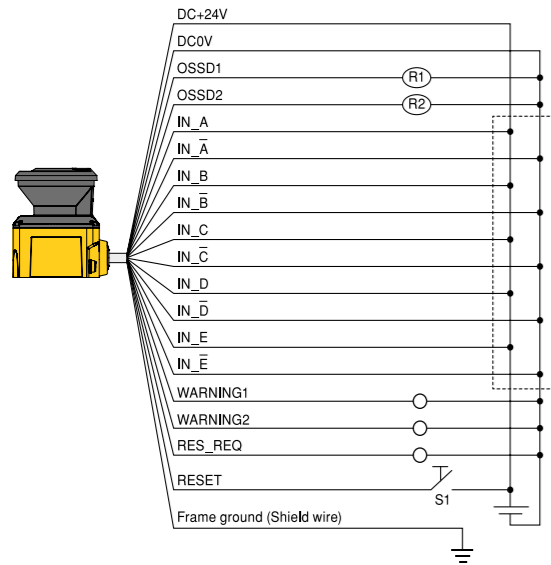
The UAM-05LPA allows configuration through Ethernet in addition to USB or SD card. Distance, RSSI, IO state and internal state information are all available in real-time over Ethernet.

## Intuitive user interface



Simple graphic interface for configuration of safety and warning zones. Simultaneous viewing of the measurement data helps accurate programming of complex areas.

## Wiring example



R1 and R2: External equipment (safety relay, electromagnetic contactor). S1: Interlock reset switch.

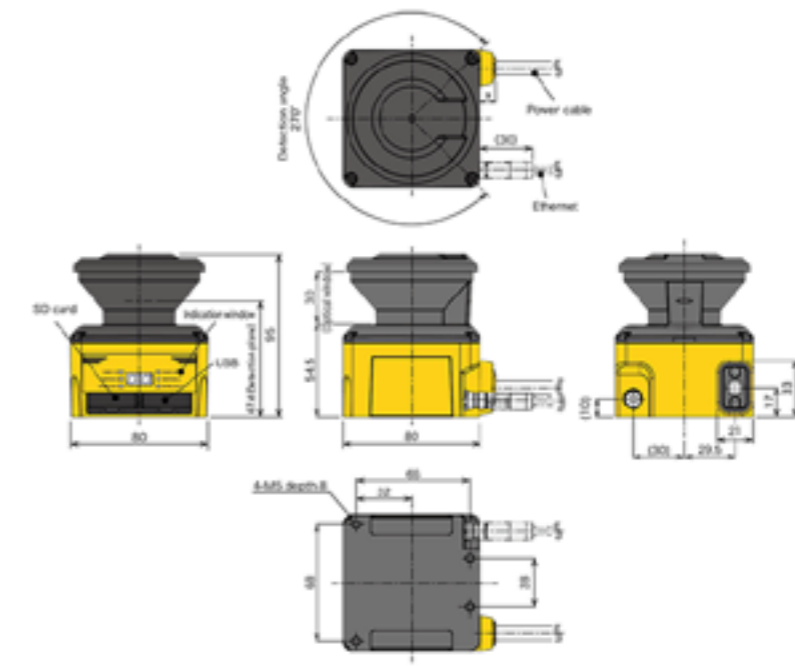
\*1: Refer to user manual, section 3.5 for details on area switching.

COLOUR	SIGNAL	FUNCTION	DESCRIPTION	AWG
BROWN	+24VDC	Power	Power supply: DC 24V	22
BLUE	0V DC	Power	Power supply: DC 0V	22
RED	OSSD1	Output	Protection zone output 1	26
YELLOW	OSSD2	Output	Protection zone output 2	26
RED/ BLACK	OSSD3/WARNING1	Output	Protection zone output 3 Warning zone output 1	28
YELLOW/ BLACK	OSSD4/WARNING2	Output	Protection zone output 4 Warning zone output 2	28
PURPLE	IN_A	Input	Area switching input A	28
GRAY	IN_B/MUTING3 / ENC3(4)_A	Input	Area switching input B/ Muting input 3 / Encoder input 3(4)_A	28
WHITE	IN_C/OVERRIDE1/ENC1_A	Input	Area switching input C / Override input 1 / Encoder input 1_A	28
PINK	IN_D/MUTING1/ENC1_B	Input	Area switching input D / Muting input 1 / Encoder input 1_B	28
GREEN	IN_E/EDM1 / ENC3(4)_A	Input	Area switching input E External device monitoring 1 / Encoder input 3(4)_A	28
PURPLE/ BLACK	IN_A	Input	Area switching input A invert	28
GRAY/ BLACK	IN_B/MUTING4 / ENC_3(4)_B	Input	Area switching input B invert Muting input 4 / Encoder input 3(4)_B	28
WHITE/ BLACK	IN_C/OVERRIDE2/ ENC2_A	Input	Area switching input C invert/ Override input 2 / Encoder input 2_A	28
PINK/ BLACK	IN_D/MUTING2/ENC2_B	Input	Area switching input D invert/ Muting input 2 / Encoder input 2_B	28
GREEN/ BLACK	IN_E/EDM2 / ENC3(4)_B	Input	Area switching input E invert / External device monitoring 2 / Encoder input 3(4)_B	28
YELLOW/ GREEN	RESET 1 / ENC3(4)_A	Input	Reset input 1 / Encoder input 3(4)_A	28
YELLOW/ BLUE	RESET 2 / ENC3(4)_B	Input	Reset input 2 / Encoder input 3(4)_B	28
ORANGE	RES_REQ1/MUT_OUT1 / AUX_OUT1	Output	RES_REQ1: Request output 1 MUT_OUT1: Muting state output 1 AUX_OUT1: Synchronous signal/ Error/Window contamination error/ Window contamination warning	28
ORANGE/ BLACK	RES_REQ2/MUT_OUT2 / AUX_OUT2	Output	RES_REQ2: Request output 2 MUT_OUT2: Muting state output 2 AUX_OUT2: Synchronous signal/ Error/Window contamination error/ Window contamination warning	28
WHITE/ BLUE(TP)	RS485+	Communication	Communication protocol RS485	28
WHITE/ RED (TP)	RS485-	Communication	Communication protocol RS485	28
SHIELD WIRE	FG	-	Frame ground	-

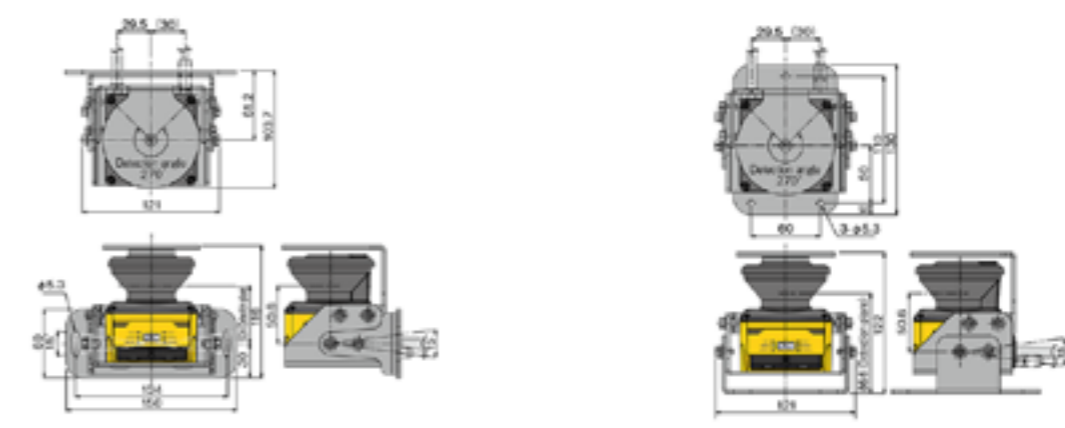
SUBJECT		SPECIFICATIONS	
MODEL		UAM-05LPA-T301	UAM-05LPA-T301C
DETECTION PROPERTY	Protection Range	Max : 5m	
	Warning Range	Max : 30m (Non-safety) <sup>*1</sup>	
	Distance Tolerance <sup>*2</sup>	+100mm	
	Detection Capability	From black-reflector sheet (1.8%) to retro-reflector sheet	
	Detectable Range	270°	
	Minimum Detectable	ø 30mm (Max : 1.8m), ø 40mm (Max : 2.5m)	
	Width	ø 50mm (Max : 3.0m), ø 70mm (Max : 5.0m)	
	Scan Frequency	30ms (Rotational speed 2000rpm)	
	Area Pattern	Max 32 patterns (pair input mode) Max 128 patterns (Fixed input mode / Encoder mode)	
Response Time	OFF   60ms ~ 2010ms ON   270ms ~ 2010ms		
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 (Type B, HFT=1) (IEC 61508)		
PFHd	8.1x10 <sup>-8</sup> (T1=20 year) : When master-slave function is not in use.		
	1.6x10 <sup>-7</sup> (T1=20 year) : When master-slave function is in use.		
HOUSING	Size	80.0mm (W), 80.0mm (D), 95.0mm (H) (without cable)	
	Weight	0.8kg	0.5kg
	Protection	IP65	
	Case Material	Body : Aluminum / Optical window : Polycarbonate	
SUPPLY CURRENT	Connection Cable	Flying lead cable : 3m	Water proof connector : 0.3m
	Normal (without load)	6W	
OUTPUT	Max. (with load)	50W	
	OSSD1/2 (Safety)	Output type (High side SW)   Output current (Max : 500mA) <sup>*3</sup>   Leak current (Max : 1mA)   AWG 26   Load tolerance (L/ R=25ms, C=1µF)	
INPUT	OSSD3/4 (Safety) Warning 1/2 (Non-safety)	Output type (High side SW)   Output current (Max : 250mA) <sup>*3</sup>   Leak current (Max : 1mA)   AWG 28   Load tolerance (L/ R=25ms, C=1µF)	
	RES_REQ 1/ 2 MUT_OUT 1/ 2 AUX_OUT 1/2	Output type (PNP Transistor)   Output current : (Max : 200mA) <sup>*3</sup>   Leak current (Max : 1mA)   AWG 28	
INTERFACE	Area pattern 32 (5 Inputs x 2 Channels) EDM1/ EDM2 MUTING1/ MUTING2 MUTING3/ MUTING4 OVERRIDE1/ OVERRIDE2 RESET1/ RESET2 ENC1_A/B/ ENC2_A/B ENC3_A/B/ ENC4_A/B	Input impedance 4.7 kΩ	
	Configuration	AWG 28	
COMMUNICATION DATA	USB2.0 (USB micro type-B connector)	RS-485 <sup>*4</sup>	
	Ethernet 100BASE-TX (water proof connector)	Measurement Error (Distance) <sup>*5</sup>	
ANGULAR ERROR <sup>*6</sup>	Configuration	± 20mm(TYP)	
	Max Range (Distance)	40m	
ENVIRONMENTAL RESISTANCE	Vertical Plane	±1° (Beam divergence is excluded)	
	Horizontal Plane	±0.3° (Beam divergence is excluded)	
	Temperature	-10°C to +50C (No freezing)	
BUMP	Storage Temperature	-25°C to +70C (No freezing)	
	Humidity/ Storage	95% RH with no condensation	
OUTDOOR OPERATION	Surrounding Intensity <sup>*6</sup>	Less than 1500lx	
	Vibration	Frequency range: 10 ~ 55Hz Sweep rate: 1octave/ min Amplitude : 0.35mm ±0.05mm	
ALTITUDE	Acceleration : 98m/s <sup>2</sup> (10G)	Pulse duration : 16ms	

\*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 - Total current supply of OSSD output and Warning output should be below 1A. \*4 - Relates to Master-Slave or HSC networks. \*5 - Reference data measured at the manufacturer's facility. \*6 - When the light sources are located ≥5° from the detection plane of UAM.

APPEARANCE	MODEL NUMBER	PRODUCT CODE	NOTES	
	UAM-05LPA-T301	UUAM019		
	UAM-05LPA-T301C	UUAM020		
APPEARANCE	SPECIFICATION	MODEL NUMBER	PRODUCT CODE	NOTES
	Extension cable: 10m	UAM-5C10	UZ00066	Bare cable. (T301 only)
	Extension cable: 20m	UAM-5C20	UZ00067	
APPEARANCE	SPECIFICATION	MODEL NUMBER	PRODUCT CODE	NOTES
	Extension cable: 2m (with connector)	UAM-5C02C	UZ00081	Each UAM requires 1 cable (T301C only)
	Extension cable: 5m (with connector)	UAM-5C05C	UZ00082	
	Extension cable: 10m (with connector)	UAM-5C10C	UZ00083	
	Extension cable: 20m (with connector)	UAM-5C20C	UZ00084	
APPEARANCE	SPECIFICATION	MODEL NUMBER	PRODUCT CODE	NOTES
	Micro USB Length: 1m	UAM-MUSB	UZ00065	For configuration
APPEARANCE	SPECIFICATION	MODEL NUMBER	PRODUCT CODE	NOTES
	Ethernet Length: 3m	UAM-ENET	UZ00062	For distance data output.
APPEARANCE	SPECIFICATION	MODEL NUMBER	PRODUCT CODE	NOTES
	Base mounting bracket	UAM-BK03	UZ00059	
	Rear mounting bracket	UAM-BK04	UZ00060	
	Cover bracket	UAM-BK05	UZ00061	To protect the optical window.
	Protection cover	UAM-BK06	UZ00103	Combine with bottom or rear mounting brackets to protect the entire surface.
	Optical window	UAM-W004	UZ00174	For replacement when damaged. Only to be fitted by approved personnel.



Rear and Base mounting bracket (with cover bracket)



Rear and Base mounting bracket (with protection cover)

