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# HOKUYO

UAM-05LP-T301/C

*short form*

# Small, light ...

Protection over a wide range

Dual protection mode

Cable or connector wiring

Data output via ethernet

Master-slave function

Encoder Input

LED display

SD card for configuration

Compact design: 95 x 80 x 80 mm, 0,8 Kg



SAFETY LEVEL

TYPE 3

SIL 2  
PL d - Cat. 3

# ... and user-friendly!

## Protection over a wide range

Up to 5 meters of protection zone and 20 meters of warning zone configuration to suit various application requirement.

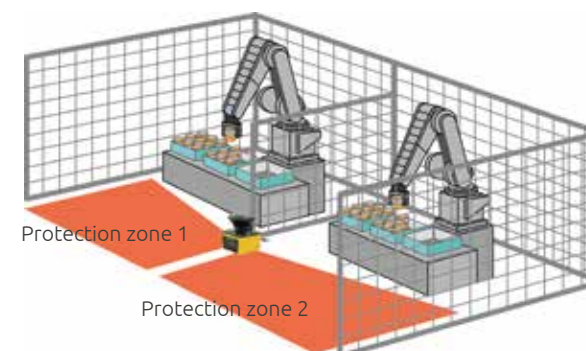


## 2 operating modes

2 warning zones + 1 protection zone  
2 simultaneous protection zones

## Dual protection mode

UAM can simultaneously protect two hazardous areas. Separate OSSD signals are triggered for the respective protection zones making it possible to guard two machines with a single UAM.



## Data output via ethernet

Measurement data can be acquired via Ethernet with status of input/output signals and cyclic redundancy check code. Also supports command in SCIP2.0 protocol.

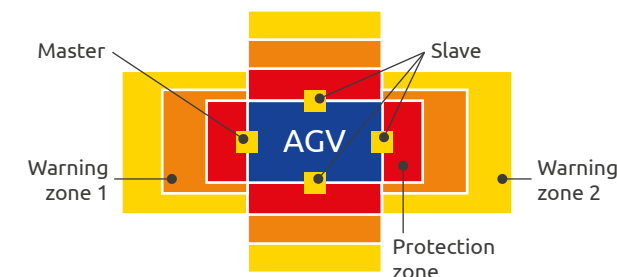


Ethernet (TCP/IP)

Distance data  
Intensity data  
Input and output status  
CRC...

## Master-slave function

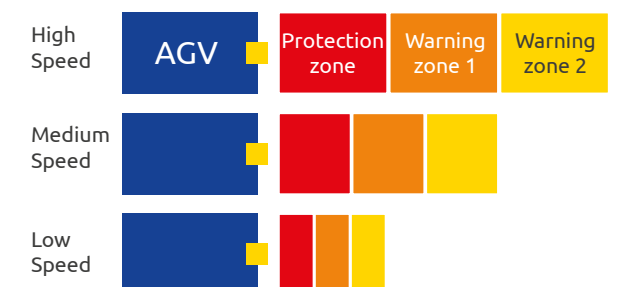
Maximum 4 units of UAM can be interconnected for Master-Slave operation when multiple units are required to guard the hazardous area. The system can be controlled by connecting the input and output signals to Master unit only<sup>1</sup>.



<sup>1</sup> It is not possible to control the actuators via master-slave bus communication

## Encoder input

In AGV applications, area is switched depending on the vehicle's speed. Speed and direction of travel provided via encoders are constantly monitored to switch the area and stop the AGV during abnormal travel.



## SD card for configuration

Configuration data can be saved in a SD card which in turn can be used for configuring the UAM without connecting it to a PC. The feature is useful while replacing the UAM or configuring multiple units with the same settings.



# Expands the range of safety applications

## Collision prevention



32 safety area patterns to accommodate the AGV travel path for collision prevention

## Presence detection



Detects humans or objects entering the hazardous area

## Intrusion detection



Detects access into critical zone

# Technical features

## Quality and reliability

Detection property	Protection range	Max: 5 m
	Warning range	Max: 20 m (Non-safety) <sup>1</sup>
	Distance tolerance <sup>2</sup>	+100 mm
	Detection capability	From black-reflector sheet (1.8%) to retro-reflector sheet
	Detection range	270°
	Minimum detectable width	30 mm (Max: 1,8 m)      50 mm (Max: 3,0 m) 70 mm (Max: 5,0 m)      150 mm (Max: 5,0 m)
	Scan frequency	30 ms (rotational speed: 2000 rpm)
	Area pattern	Max 32 patterns for safety and 64 patterns for non-safety
	Response time	OFF 60 ms ~ 510 ms ON 270 ms ~ 510 ms
Optics	Element	Pulsed laser diode
	Wave length	905 nm
	Safety class	Class 1 Laser
Safety level		Type 3 (IEC 61496-1, IEC 61496-3)
Functional safety		SIL 2 (Tipo B, HFT=1) (IEC61508)
PFHd		7.8×10 <sup>-8</sup> (T1 = 20 year) (when master slave function is not in use) 1.6×10 <sup>-7</sup> (T1 = 20 year) (when master slave function is in use)
Housing	Size	80,0 mm (W), 80,0 mm (D), 95,0 mm (H) (without cable)
	Weight	0,8 kg
	Protection	IP65
	Case material	Body: aluminum / optical window: polycarbonate
	Connection cable	UAM-05LP-T301: 3 m cable, UAM-05LP-T301C: pigtail with connector
Power supply		24 Vcc ±10% (when operation using converter power supply) 24 Vcc -30%/+20% (when operation using battery)
Current supply	Normal (without load)	6 W
	Max. (with load)	50 W
	OSSD1/2 (Safety)	Output type (High side SW) Output current: Max. 500 mA <sup>3</sup> Leak current: Max. 1 mA AWG: 26 Load tolerance (L/R = 25 ms, C = 1 µF)
		Output type (High side SW) Output current: Max. 250 mA <sup>3</sup> Leak current: Max. 1 mA AWG: 28 Load tolerance (L/R = 25 ms, C = 1 µF)
		Output type (PNP Transistor) Output current: Max. 200 mA <sup>3</sup> Leak current: Max. 1 mA AWG: 28
Output	OSSD3/4 (Safety) WARNING 1/2 (Non-Safety)	Output type (High side SW) Output current: Max. 250 mA <sup>3</sup> Leak current: Max. 1 mA AWG: 28 Load tolerance (L/R = 25 ms, C = 1 µF)
	RES_REQ 1 RES_REQ 2 MUT_OUT 1 MUT_OUT 2	Output type (PNP Transistor) Output current: Max. 200 mA <sup>3</sup> Leak current: Max. 1 mA AWG: 28
Input	Area pattern 32 (5 Inputs x 2 Channels) EDM1/EDM2 MUTING1/MUTING2 MUTING3/MUTING4 OVERRIDE1 OVERRIDE2 RESET1/RESET2 ENC_A1/ENC_A2 ENC_B1/ENC_B2	Input Impedance: 4,7 kΩ AWG: 28
	Configuration	USB2.0 (USB micro type-B connector)
Interface	Data output	Ethernet 100 BASE-TX (water proof connector)
	Operating temperature	Da -10 a +50° C (no freezing)
Environ-mental resistance	Storage temperature	Da -25 a +70° C (no freezing)
	Humidity	95% RH with no condensation
	Storage humidity	95% RH with no condensation
	Surrounding intensity <sup>4</sup>	Less than 1500 lx
	Vibration	Frequency range: 10 ~ 55 Hz    Sweep rate: 1 octave/min Amplitude: 0,35 mm ±0,05 mm
Bump		Acceleration: 98 m/s <sup>2</sup> (10 G)    Pulse duration: 16 ms
Outdoor operation		Not permitted
Altitude		Below 2000 m

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

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

3 Total current supply of OSSD output and Warning output should be below 1.0 A


4 When the light sources are located at ≥5° from the detection plane of UAM





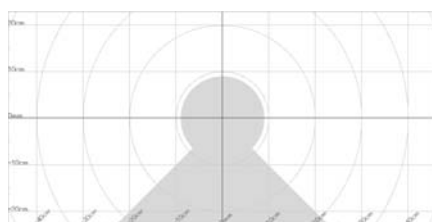
# Part numbers

A versatile range for safety applications

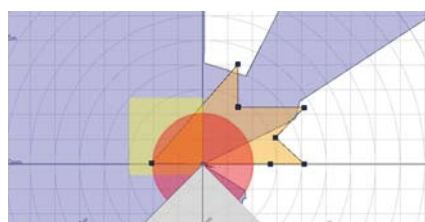
Main unit	Description	Model	Part Number	Note
	Safety Laser Scanner	UAM-05LP-T301 (cable)	1350100	Includes CD-ROM with configurator software and manual
		UAM-05LP-T301C (connector)	1350101	
Extension cable without connector	Description	Model	Part Number	Note
	Lenght: 10 m	UAM-5C10	1350130	
	Lenght: 20 m	UAM-5C20	1350131	
Extension cable with connector	Description	Model	Part Number	Note
	Lenght: 2 m	UAM-5C02C	1350132	UAM T301C requires one cable
	Lenght: 5 m	UAM-5C05C	1350133	
	Lenght: 10 m	UAM-5C10C	1350134	
	Lenght: 20 m	UAM-5C20C	1350135	
Connection cables	Description	Model	Part Number	Note
	Micro USB cable (1 m)	UAM-MUSB	1350140	UAM configuration cable
	Ethernet cable (3 m)	UAM-ENET	1350141	Distance data output cable
Brackets and spares	Description	Model	Part Number	Note
	Base mounting bracket	UAM-BK03	1350110	
	Rear mounting bracket	UAM-BK04	1350111	
	Optical lenses protection add-on	UAM-BK05	1350112	Optical window protection
	Optical head spare	UAM-W002	1350120	Replacement head unit (only to be fitted by approved personnel)*
Mosaic/AD SR1 adapter	Description	Model	Part Number	Note
	Pull-down resistor (2,2 kΩ)	MPD	1350150	For the use of the Scanner with Mosaic Safety Controller or AD SR1 Safety Interface

\* Attention: After replacement of the Head Unit a calibration of the laser scanner is required (calibration software included with the scanner). Please contact ReeR After Sales Team for more information (aftersales@reer.it)

## Easy configuration of complicated zones



Before settings



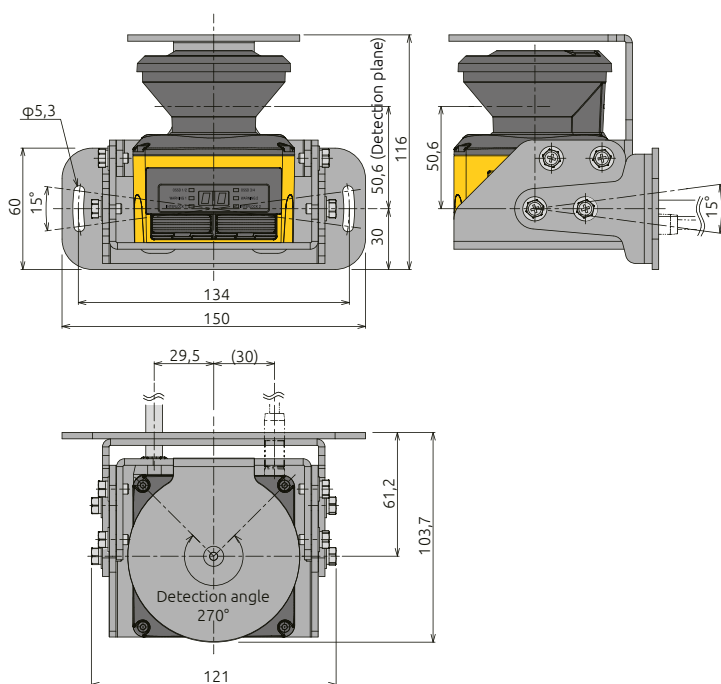
After settings

### User friendly interface

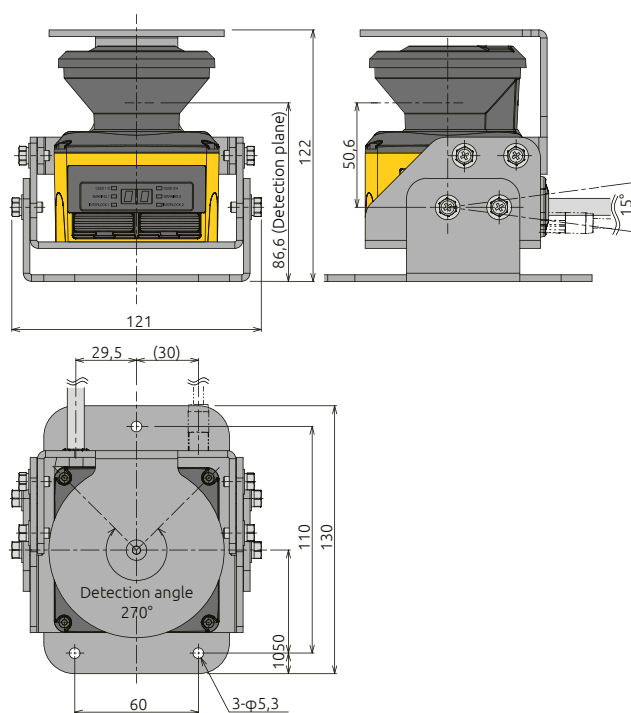
Simple user interface to configure even a complicated zone by simultaneously viewing the measurement data. Zones can be configured with 3 different methods

## The smallest size in the world

UAM-05LP-T301 (cable)



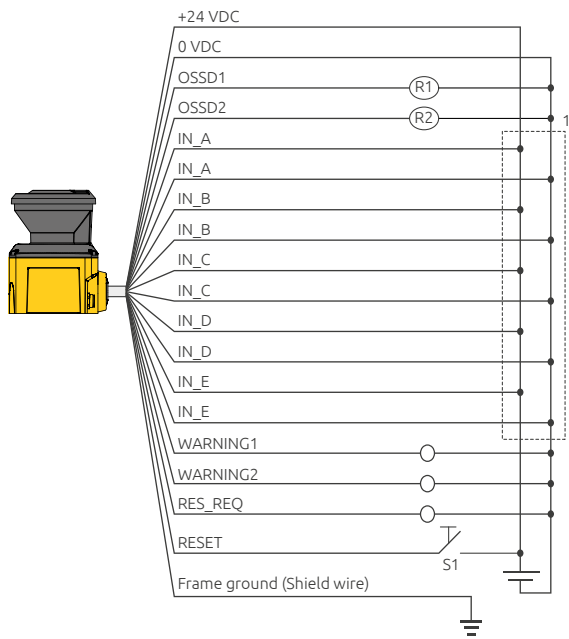
## Fixing with base mounting bracket



UAM

# Wiring diagrams

## Wiring example



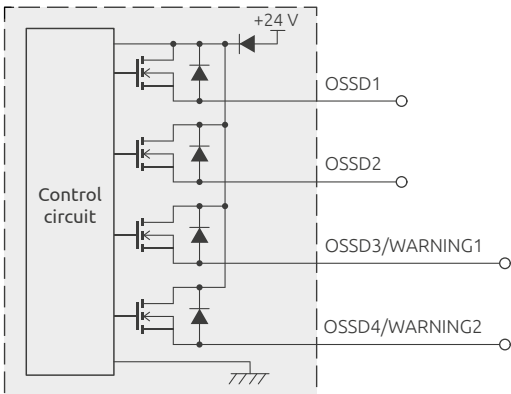
R1 and R2 : External equipment (Safety relay, Electromagnetic contactor)  
S1: Interlock reset switch  
1: Refer to user's manual for details on area switching

Color	Signal	Function	Description	AWG
Brown	+24 VDC	Power	Power Supply: 24 VDC	22
Blue	0 VDC	Power	Power Supply: 0 VDC	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	Input	Area Switching Input B/ Muting input 3	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	Input	Area Switching Input E/ External device monitoring 1	28
Purple/Black	IN_A	Input	Area Switching Input A invert	28
Gray/Black	IN_B/ MUTING4	Input	Area Switching Input B invert/ Muting input 4	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	Input	Area Switching Input E invert External device monitoring 2	28
Yellow/Green	RESET1	Input	Reset input 1	28
Yellow/Blue	RESET2	Input	Reset input 2	28
Orange	RES_REQ1/ MUT_OUT1	Output	RES_REQ 1 : Request output 1 MUT_OUT 1 : Muting state output 1	28
Orange/Black	RES_REQ2/ MUT_OUT2	Output	RES_REQ 2 : Request output 2 MUT_OUT 2 : Muting state output 2	28
White/Blue (TP)	RS 485 +	Com	Communication Protocol RS 485	28
White/Red (TP)	RS 485 -	Com	Communication Protocol RS 485	28
Shield wire	FG	—	Frame ground	

## Input/Output circuit

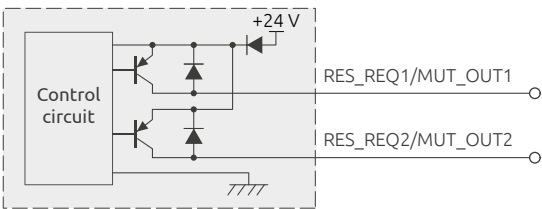
### OSSD output circuit

OSSD/Warning output is output type



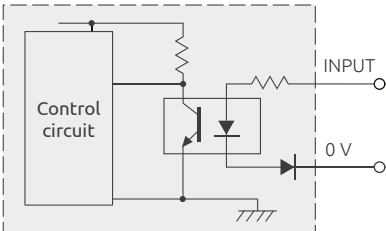
### Other output circuit

RES\_REQ1, RES\_REQ2, MUT\_OUT1, MUT\_OUT2 output circuit



### Input circuit

Area input, EDM1, EDM2, RESET1, RESET2, MUTING1, MUTING2, MUTING3, MUTING4, OVERRIDE1 and OVERRIDE2



## Use with MOSAIC and AD SR1

For a correct use with Mosaic Safety Controller or AD SR1 Safety Interface, the use of a Pull Down Resistor is necessary.  
Model MPD, Part Number 1350150



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Founded in Turin, Italy in 1959, ReeR distinguished itself for its strong commitment to innovation and technology.

A steady growth throughout the years allowed ReeR to become a point of reference in the safety automation industry at a worldwide level.

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