InnoSenT

Data Sheet iSYS-4010 (RS485)

Version 1.6 - 21.07.2020

PRODUCT FAMILY

K-Band FSK Movement Detection System

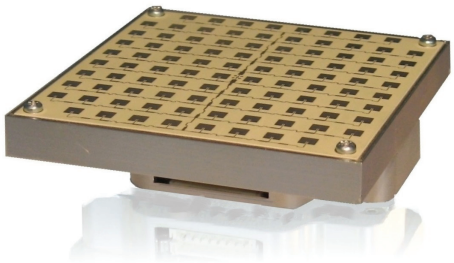
- Movement
- Velocity
- Direction
- Presence
- Distance
- Angle

APPLICATIONS

- Industrial Applications
- Energy Saving
- Traffic Monitoring
- Lighting Control
- Security Applications

FEATURES:

» radar-based motion detector working in the 24GHz - ISM - Band
» Detection of moving objects in a distance from 0.3 to 150m (depending on RCS of detected object)
» Detection range configurable
» Unambiguous Velocity: ±250km/h
» Minimum Velocity: ± 0.8km/h
» Direction of motion discrimination



DESCRIPTION

K-Band based motion detector with intelligent µC decision unit. The unambiguous velocity range is ±250km/h. The sensor provides 3 programmable output pins that offering a wide area of individual configurations to be sure that the sensor fits to your individual requirements. The programming can be easily done by a GUI, witch is available under www.innosent.de.

CERTIFICATES

InnoSenT GmbH has established and applies a quality system for: development, production and sales of radar sensors for industrial and automotive sensors. More information on our quality standards:

https://www.innosent.de/en/company/certifications/

ADDITIONAL INFORMATION

InnoSenT Standard Product. Changes will not be notified as long as there is no influence on form, fit and within this datasheet specified function of the product.

RoHS-INFO

This product is compliant to the restriction of hazardous substances (RoHS - European Union directive 2011/65/EU).

PARAMETERS

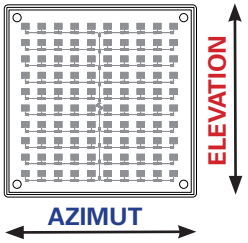
The iSYS-4010 consist of a 24GHz Radarfrontend (RFE) with DSP-Board for measuring distance and radial velocity of objects. The sensor offers 3 outputs that can be configured within the specified ranges:

speed area:	0.8....250km/h	(radial velocity of detected object)
distance area:	0.3....150m	(reachable distance depending on RCS of detected object)

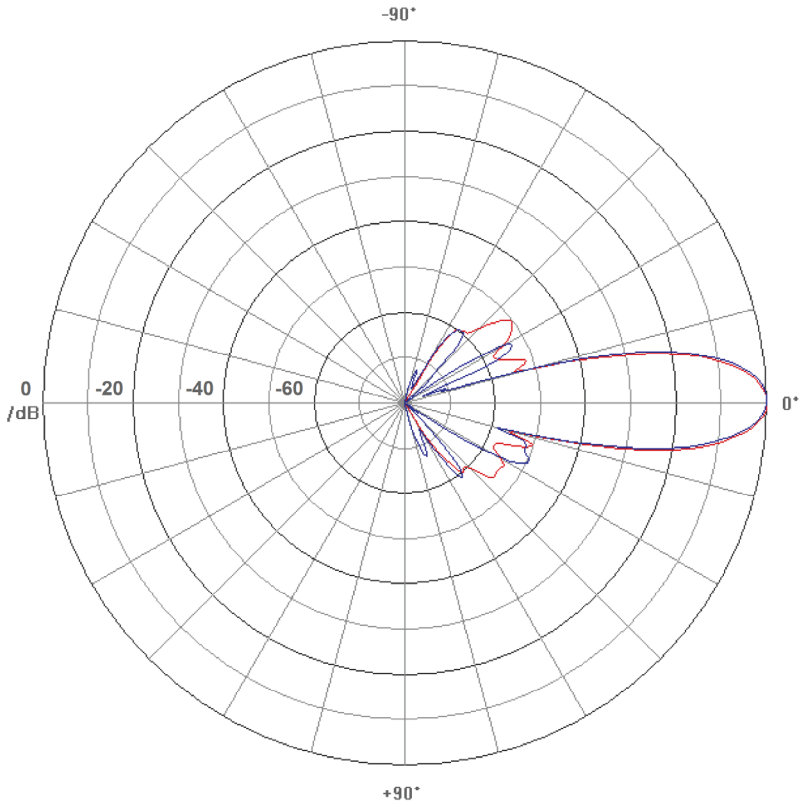
The communication is be done by RS485 interface. Three output signals are available as PWM or as digital output (open drain). The configuration of the sensor can be done by a GUI (Graphical User Interface).

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Radar						
transmit frequencies	channel 1 (EU)	f_1		24.190		GHz
	channel 2 (EU)	f_2		24.210		GHz
	channel 3 (US)	f_3		24.115		GHz
	channel 4 (US)	f_4		24.135		GHz
	channel 5 (EU) available from firmware v1.310	f_5		24.195		GHz
	channel 6 (EU) available from firmware v1.310	f_6		24.215		GHz
	channel 7 (US) available from firmware v1.310	f_7		24.120		GHz
	channel 8 (US) available from firmware v1.310	f_8		24.140		GHz
output power (EIRP)	@ 25°C	P_{out}			20	dBm
Sensor						
detection distance	depending on RCS of detected object	d_r	0.3		150	m
speed range		v_r	±0.8		±250	km/h
standard detection field	compare with plot on page 3	horizontal		8.5		°
		vertical		10		°
Power supply						
supply voltage		V_{CC}	10		30	V
supply current	@ 12V without digital out current	I_{CC_12V}		135	150	mA
supply current	@ 24V without digital out current	I_{CC_24V}		76	85	mA
Digital Output Current						
OUT1	open drain	I_{Out}			-400	mA
OUT2	open drain	I_{Out}			-400	mA
OUT3	open drain	I_{Out}			-400	mA
digital total current		I_{Out}			-800	mA
Environment						
operating temperature		T_{OP}	-25		+60	°C
storage temperature		T_{STG}	-25		+60	°C
Mechanical Outlines						
outline dimensions	compare to schematic on page 4	height length width		73.7 73.7 22.2		mm

ANTENNA ORIENTATION:

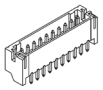


SYSTEM PATTERN



PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
system antenna pattern						
system pattern (3dB width)	horizontal	azimuth		8.3		°
	vertical	elevation		8.3		°
side-lobe suppression	horizontal	azimuth		-50		dB
	vertical	elevation		-50		dB
squinting angle				0		°

INTERFACE iSYS-4010 (RS485)

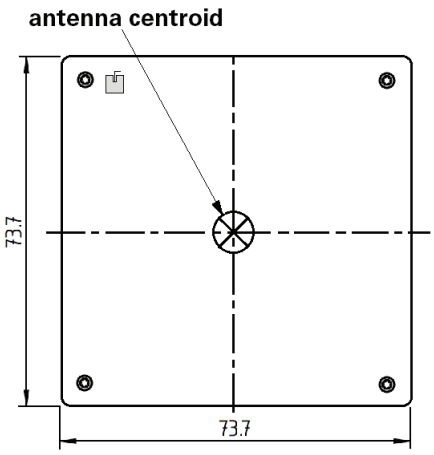
The sensor provides a Würth 620 108 131 822 connector  mates with Würth 620 008 113 322 

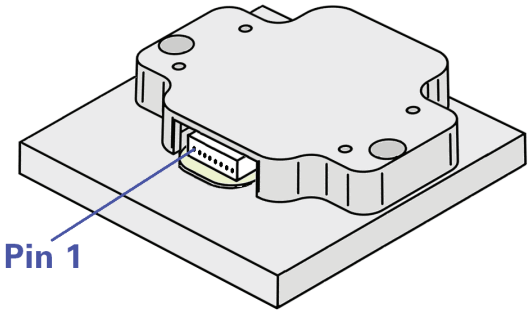
PIN #	DESCRIPTION	IN / OUT	COMMENT
1	OUT1	output	open drain
2	OUT2	output	open drain
3	OUT3	output	open drain
4	Boot Mode	input	do not connect in operation
5	VCC	input	supply voltage (DC 10...30V)
6	GND	input	
7	RS485_A	in/output	
8	RS485_B	in/output	

MECHANICAL OUTLINES

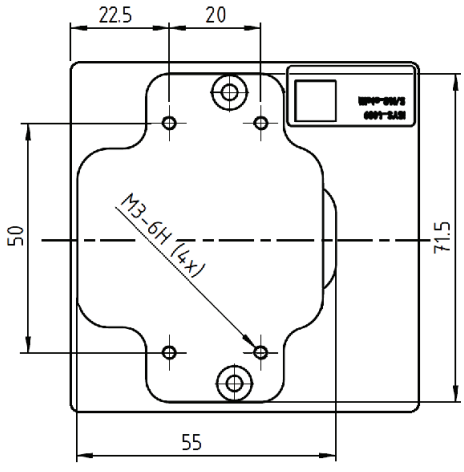
For mounting the module we recommend to use standard M3 screws.

top view

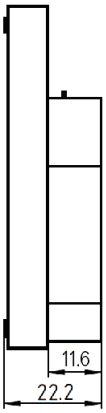




bottom view



side view



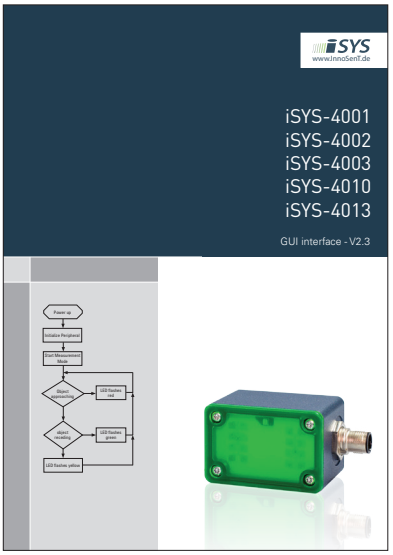
QUICK-START-GUIDE

For an easy start with the iSYS-4010 a quick-start-guide is under the name iSYS-4001 available at www.innosent.de

GUI - Graphical User Interface

The iSYS-4010 can be configured by using the corresponding GUI.

The actual Software can be downloaded under the name iSYS-4001 www.innosent.de.



APPROVAL

This Data Sheet contains the technical specifications of the described product. Changes of the specification must be in written form. All previous versions of this Data Sheet are no longer valid.

VERSION	DATE	COMMENT
1.0	16.09.2015	initial release
1.1	13.10.2015	changes in standard detection field
1.2	10.11.2016	outputs changed to open drain; adding new transmit frequencies channels; changes in mechanical outlines; connector changed
1.3	13.12.2016	iSYS_4009 removed
1.4	22.03.2017	changes in system-pattern
1.5	04.05.2017	adding system-pattern informations
1.6	21.07.2020	new layout

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