OIAC00R

Redundant Tilt Switch - 2-Axis
Dual Thresholds - 1P NC output

General Description

The OIAC00R is a 2-axis redundant tilt switch, which main application is in stabilizing man baskets. Its behaviour is symmetrical along the two axes.

It has 2 customizable threshold (pre-alarm and alarm) and each threshold has a positive and a negative hysteresis, in turn, customizable. The OIAC00R is designed to control the activation of a normally open solenoid valve; two output pins are dedicated to the supply of the solenoid that will be set or not by the overcoming of a threshold. The reaching of the alarm threshold can be monitored by two safety feedback signals changing their values from high to low as the threshold is reached.

The OIAC00R includes three pair of output pins suitable for the control of: a power supply indicator, a “stable” warning light and a buzzer. The power supply indicator will signal if the device is supplied correctly; the “stable” warning will state whether the device is in alarm/pre-alarm condition or not; and the buzzer will alert different conditions according to different acoustic signal.

Four pair of input pins are dedicated to control buttons and switches. The OIAC00R is provided to have: a stop button to deactivate the device and keep the solenoid valve closed, a switch dependant on the presence or absence of the remote control, an “authorized” input to force the opening of the valve in any condition and a reset button to open the valve working only in alarm condition.

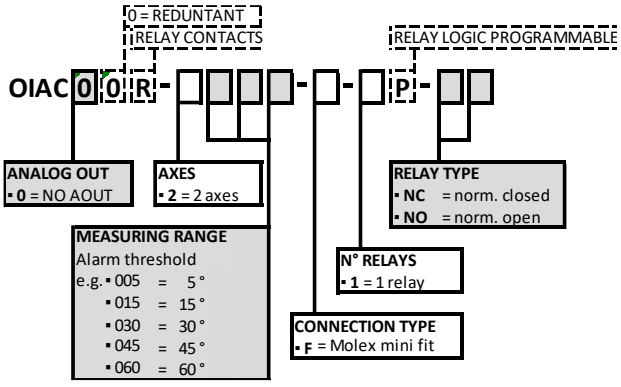
Applications

Aerial work platform

Features

- **12 / 24 Vdc**
- **Fully redundant inclination sensing**
- **Customizable alarm and pre-alarm thresholds**
- **Customizable hysteresis for every threshold**
- **Angles resolution up to ± 0.01 deg**
- **Typical accuracy up to ± 0.2 deg**
- **Operating temperature -20 °C to +70 °C**
- **SSR Output up to 60 V - 3 A**
- **Safety feedback signals for alarm condition**
- **Warning light/Buzzer actuation outputs**
- **Partially sealed device**

Ordering Information



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T_A	Operating Temperature Range	-20	70	°C
T_S	Storage Temperature	-20	70	°C
V_{CC}	Supply Voltage Range	12	24	V

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{SUPPLY}	Supply Voltage Range	-20 < T_A < +70	12		24	V
I_{SUPPLY}	Current Consumption (1)	Stop Mode	75		95	mA
		Remote Presence Mode	95		125	
		Operational Mode	85		105	
I_{FUSE}	Pre-Fusing			4		A
Rg	Range of Measurement		± 5	± 30	± 60	deg
Res	Angle Resolution				0,05	deg
Acc	Accuracy			± 0,2	± 0,5	deg
X_A	Cross Axis Error			± 1,0		% FS
Ths	Thresholds Values		- Rg		+ Rg	deg
Hst	Threshold's hysteresis values		0		± 5 (2)	deg

(1) the maximum current consumption must be increased by relay output current and safety feedback signals' current.

(2) e.g.: hysteresis value is added to positive thresholds value to compute the trip point; to return under the trip point, measured angle value must go below positive threshold value minus hysteresis. Hysteresis value is subtracted to negative thresholds value to compute the trip point; to return over the trip point, measured angle must go over the negative threshold plus values plus hysteresis.

INPUT / OUTPUT CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

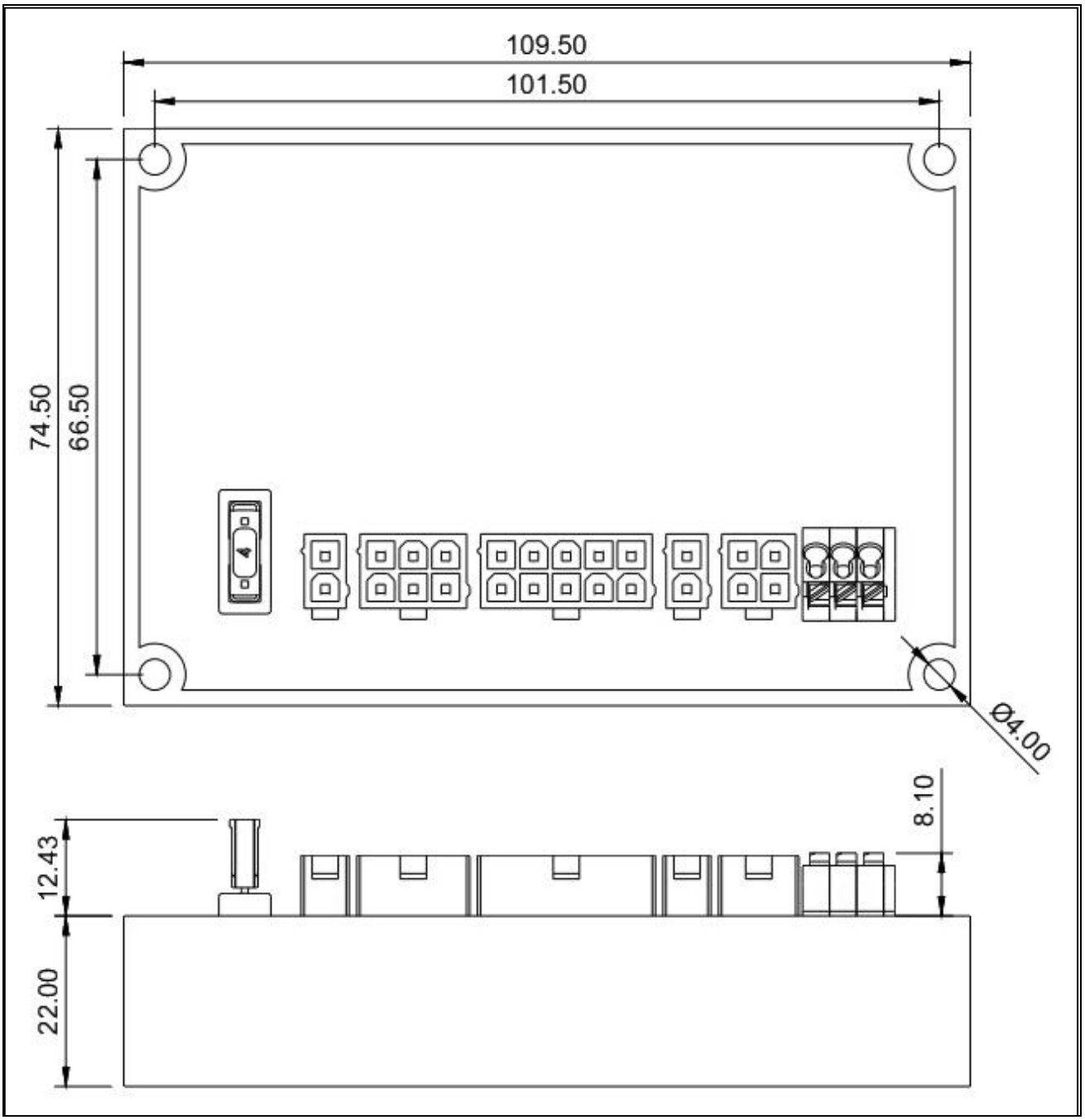
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RELAY}+	Relay Positive Output Voltage		V_{SUPPLY} – 1		V_{SUPPLY}	V
V_{RELAY}-	Relay Negative Output Voltage			GND		V
I_{RELAY}	Relay Output Current	V_{SUPPLY} = 12V			1,5	A
		V_{SUPPLY} = 24V			0,8	
V_{FB}	Safety Feedback Signals Voltage		V_{SUPPLY} – 1		V_{SUPPLY}	V
I_{FB}	Safety Feedback Signals Current	V_{SUPPLY} = 12 / 24 V			1	A
V_{WS}	Warning Signal (3) Outputs Voltage		V_{SUPPLY} – 1		V_{SUPPLY}	V
I_{WS}	Warning Signal (3) Outputs Current	V_{SUPPLY} = 12 / 24 V			0,5	A
V_{BUTTON}	Buttons (4) Nominal Voltage		V_{SUPPLY}			V
I_{BUTTON}	Buttons (4) Nominal Current	V_{SUPPLY} = 12 / 24 V	2,5			A

(3) warning light/buzzer

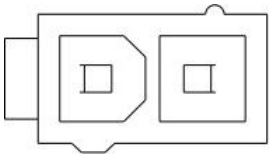
(4) stop/remote presence/authorized/reset

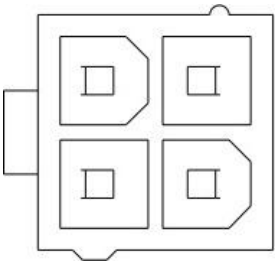
MECHANICAL CHARACTERISTICS AND DIMENSIONS

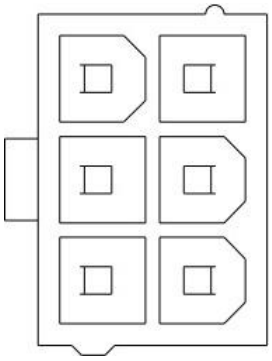
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
W	Width			109,5		mm
L	Length			74,5		mm
H	Height			34,5		mm
W_G	Weight			230		g

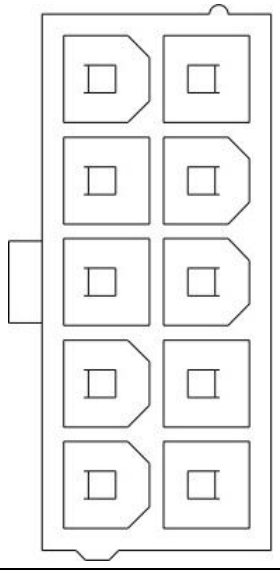


CONNECTORS' PINOUT

Name	Symbol	No		No	Simbol	Name
Device UART TX	DEV_TX	2		1	DEV_RX	Device UART RX

Name	Symbol	No		No	Simbol	Name
Stop Button	STOP_b	3		1	STOP_a	Stop Button
Remote Presence Button	PRES_b	4		2	PRES_a	Remote Presence Button

Name	Symbol	No		No	Simbol	Name
Positive Power Supply	V+	4		1	GND	Ground
Relay Negative Output	REL-	5		2	REL+	Relay Positive Output
Safety Feedback 1	SF_1	6		3	SF_2	Safety Feedback 2

Name	Symbol	No		No	Simbol	Name
Reset Button	RES_b	6		1	RES_a	Reset Button
Authorized Input	AUT_IN	7		2	NC	Not Connected
Stable Warning Positive Output	PREAL+	8		3	PREAL-	Stable Warning Negative Output
Power Warning Positive Output	POW+	9		4	POW-	Power Warning Negative Output
Buzzer Warning Positive Output	BUZZ+	10		5	BUZZ-	Buzzer Warning Negative Output