Operating Manual

0729-1736-99

Dual Axis
Tilt Switch

- Independent X and Y trip angles
- Trip angles 1 to 35 degrees
- Accuracy to 0.2 degrees
- Automatic zeroing after installation
- Relay output, LED status indicators
- Operates from 7 to 30 volt dc supply
- All features can be setup via RS232 link

The Fredericks - Dual axis tilt switch has been designed with the ability to be pre-programmed via an RS232 link to be adaptable for many applications. These features can be preset by the factory to customer specifications or by the end product user. With one basic model all features can be preset such as - set trip angles, set zero position, set trip delay (on and off), set polarity of relay (normally on or off), set hysteresis (return from trip point angle) and set filter value (eliminate vibrations). These values will be permanently saved to internal memory.

Operation:

In the non-tripped position the green led will be illuminated and the red led will be off. When the unit is tilted past the programmed trip angle, either in the x axis or the y axis, the green led will go off. Depending on the trip/return delay time the red led will illuminate indicating that the relay has changed polarity. The polarity of the relay depends on the pre-programmed value. When the unit is returned to the non-tripped position the green led will illuminate and the red led will go off. This also depends on the delay time. The return angle is controlled by the hysteresis value which subtracts additional angle value from the tripped position. The minimum value is 0.25 degrees to eliminate oscillations. There is additional return delay that can be added.

Installation:

When the unit is installed into the user's equipment it may be necessary to zero the unit if the mounting is not at true zero. First insure that the equipment is level. Take the zero input wire and connect it to ground then power up the unit. After 3 seconds and within 10 seconds of applying power remove the wire from ground. Both LEDs should illuminate. If the zeroing is successful the red led will blink 3 times indicating the new zero position is set and saved.

Inputs and outputs:

Power is supplied to the unit thru the red (+) and black (-) wires. The range is 7 to 30 VDC. Typical current is 20 milliamps.

The output is provided by a relay via 3 wires. The normally open contact is thru the violet wire, the normally closed contact is thru the blue wire, and a common contact is thru the green wire.

Wiring chart:

Description	**Color**
Power input	red
Common	black
Zero wire	orange
Relay (C)	green
Relay (NO)	violet
Relay (NC)	blue

(Setup via RS232 link)

RS232 input	brown
RS232 output	yellow

The RS232 interface link is thru the brown wire (input) and the yellow wire (output). The black wire is ground.

Typical connections to a PC with a DB-9 connector are as follows,

DB-9 pin #	Tilt Switch wire
2	*yellow*
3	*brown*
5	*black*

Note: Zeroing after installation

The zero input wire (orange) is also used to zero the unit after it is installed into the operating equipment. The unit must be within 5 degrees of level to use this feature. See installation above.

Below is a description of the commands to pre-set the unit via the RS232 link.

Command menu (RS232 interface)

' ?'	Show list of all commands
's'	
'e'	
't'	Enter setup mode to change values
'x'	Change x axis trip angle
'y'	Change y axis trip angle
'+'	Increment selected axis trip angle
'-'	Decrement selected axis trip angle
'S'	Save above set trip points (upper case)
'Z'	Reset and save zero position of unit (upper case)
'd'	Change and save trip delay Enter 0 to 9 (# times 0.5 seconds)
'r'	Change and save return delay Enter 0 to 9 (# times 0.5 seconds)
'p'	Change and save relay polarity Enter 0 or 1 (off or on) in non-trip mode
'h'	Change and save hysteresis value Enter 1 to 8 (# times 0.25 degrees) return from tripped position
'f'	Change and save filter value Enter 0 to 9 (# times 0.268 msec) filter time
'q'	Show above values
ESC	Cancel the current command

Note: Trip angle setup in RS232 mode

After selecting either the 'x' or 'y' axis, enter either a '+' or '–' to either increase or decrease the trip angle in 0.1 degree steps. Any new value must be saved 'S' before becoming effective. After saving, the new value will be stored in permanent memory.

Specifications

Operating voltage:	7 to 30 VDC
Power Protection:	Over-voltage and reverse voltage protected (re-settable fuse)
Trip Angle:	1 to 35 degrees Settable to independent X and Y trip angles
Trip Accuracy:	0.2 degrees (20C)
Repeatability:	0.1 degrees (20C)
Output:	Relay: 2A @ 30 VDC resistive load rating Settable to active or non-active in trip or non-trip mode
Delay (to trip):	Settable: 0 to 9 (# times 0.5 seconds)
Delay (to non-trip):	Settable: 0 to 9 (# times 0.5 seconds)
Hysteresis:	Settable: 1 to 8 (# times 0.25 degrees) return from tripped position
Filter:	Settable: 0 to 9 (# times 0.268 msec) filter time
Operating Temperature:	-35 to +70 C
Housing dimensions:	(L x W x H) 4.05 x 2.10 x 1.08 in.
Mounting holes:	0.188 inches diameter; 3.5 inch. centers

FREDERICKS COMPANY

Distribuidor

Brasil e América do Sul

CONTATO

Endereço
Rua Sete de Setembro, 2671 - Centro
13560-181 - São Carlos - SP - Brasil

Telefone
+ 55 (16) 3371-0112
+ 55 (16) 3372-7800

Internet
www.metrolog.net
metrolog@metrolog.net

Metrolog Controles de Medição