Operating Manual

0729-1756-99

Single Axis Programmable Tilt Switch

1. PRODUCT DESCRIPTION

The single axis programmable tilt switch incorporates an electrolytic tilt sensor and micro-controller technology. One of the special features is its ability to be field programmable by the user. It provides a wide-angle trip range and a wide operating supply voltage range. There are 2 open collector outputs to indicate trip points. The unit will indicate which direction the unit is tilted when the unit reaches the trip point. The center set point can be at any angle within the specified range of the unit. The unit will retain the programmed trip points even when the power is removed. It can be reprogrammed as often as necessary for multiple applications.

2. WIRING CONNECTIONS

The diagram shows the connections to power and output. Observe all voltage and current limits. Do not exceed the open collector output current or the internal transistors can be damaged. The common (open collector – green wire) is only used if a separate power supply is used for the loads. This common (open collector – green wire) is internally connected the common (power supply – black wire).

Wire Description	POWER	COMMON	OUTPUT (LEFT)	OUTPUT (RIGHT)	
RED	×				+4.5 to 28 VDC
BLK		×			Power/signal common
GREEN		×			Power/signal common
BLUE			× **SEE NOTE**		Low /non-tripped * High/tripped * 200 mA (max)
GRAY				× **SEE NOTE**	Low/non-tripped * High/tripped * 200 mA (max)

* Consult factory for other configurations.

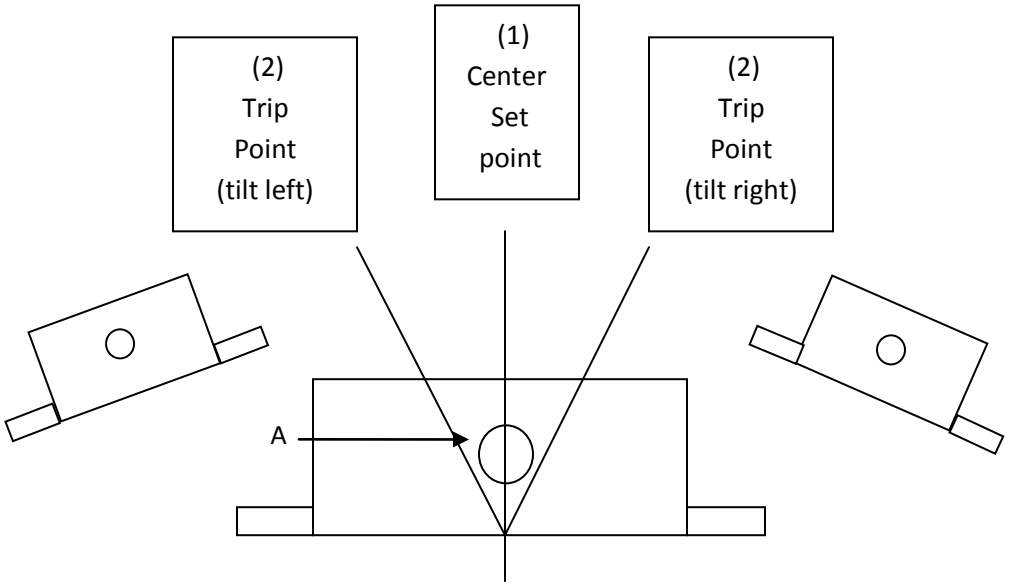
NOTE: The outputs (left and right) are open collector with an internal 1K ohm pull-up to power input

3. PROGRAMMING

To program the tilt switch, remove the cap on the front of the unit (A).*With no power applied to the unit, insert a jumper into the hole by shorting the 2 pins inside the unit. Position the unit to a center position within the specified range of the unit (1). This will be the center of the non-trip area. Apply power and wait at least 3 seconds. Next, tilt the unit to a position that you want the output to indicate a trip point (2). Remove the jumper and wait at least 3 seconds. This can be either the + or – direction from the center set point. The set trip point angle will work in both directions from the center set point when either + or - angle is set. Remove power from the unit. Replace the cap on the front of the unit. The unit is now fully programmed. The unit will retain these values until it is reprogrammed. The unit can be reprogrammed as many times as needed for other trip positions. The unit will output a signal when tilted past the preset trip points depending on the direction of tilt, either left (blue wire) or right (gray wire).

*For potted units:

Potted units have 2 wires (brown and orange). Connect wires together in place of inserting jumper. Disconnect wires in place of removing jumper. Isolate wires when unit is in normal operation.



Electrical	
Power supply voltage (range)	+4.5 to +28VDC
Power supply current (typical)	24 mA @ 12VDC
Output (Blue wire)	200 mA max
Output (Gray wire)	200 mA max
Output saturation voltage (typ)	1.0 volt
Cable length	18.0" nom.
Output delay	0.5 sec.
Output hystersis	0.35° nom. (tripped non-tripped direction only)

Connections	
Red	+4.5 to 28 VDC
Black	Common
Green	Common (OC)
Blue	Open Collector w/1K pullup (trip left) Low- non trip position High- trip position
Grey	Open Collector w/1K pullup (trip right) Low- non trip position High- trip position

Case Dimensions:	
Length	2.00"
Width	1.50"
Height	0.750"
Flange Length	3.00"
Flange Holes (centerline)	2.50"
Hole Diameter	0.190"

Environmental	
Temperature range	
Operating & Storage*	-40 to +70° C

*Limited by housing

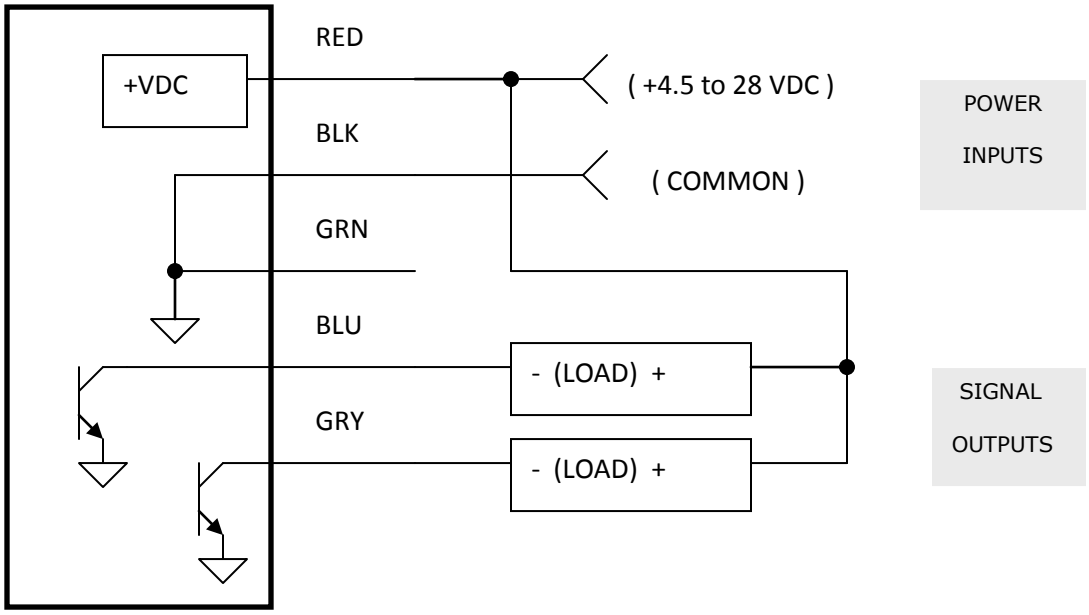
Sensor Operating Specifications	
Tilt sensor part number	0717-4318-99
Operating Range (max.)	± 45°
Repeatability	±0.1°
Resolution	< 0.2 arc minutes
Symmetry (typ.)	±5 %
Mech. Crosstalk / Deg. (to 20°)	±0.025°
Temperature Coefficient	
Null (max) Scale (max)	±20 arc sec / °C 0.1 % / °C
Stability @ 24 Hrs	±0.1°
Time Constant (1)	≤ 100 msec
Material	magnetic

Power and signal connection guide

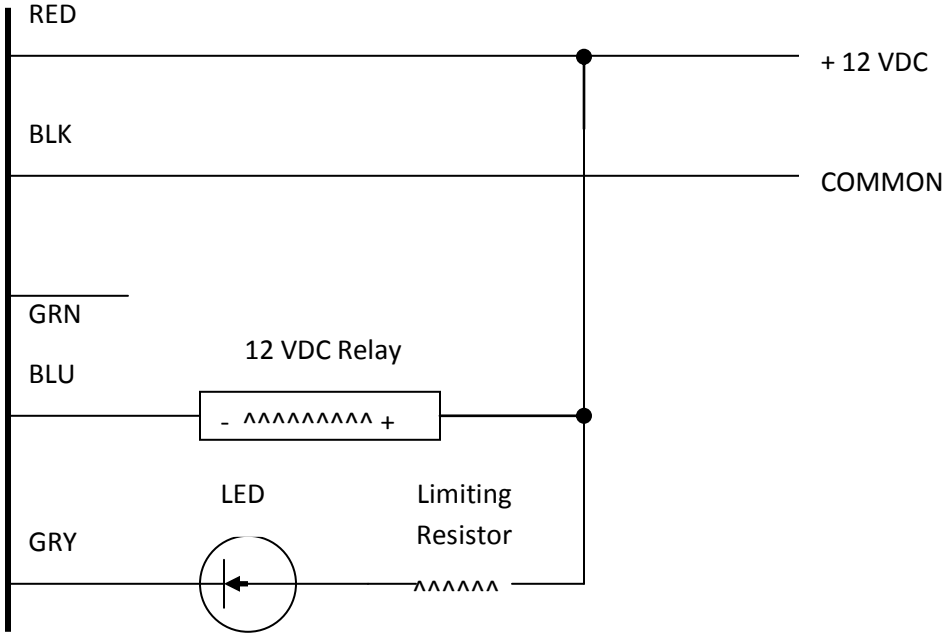
Caution: Observe polarity when connecting power input and signal outputs.

SINGLE AXIS PROGRAMMABLE TILT SWITCH

Note: Open collector outputs have 1K internal pull-ups to power input



Typical power and output examples



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