NTI-T245-FDA Two-axis Inclinometer Switch Specification

NTI-T245-FDA series is a two-axis inclinometer switch which is researched and produced for Nordic Transducer Denmark. The measuring range is +/- 45 degree. Switch trigger point can be set by ASCII command freely.

It can be widely used in engineering mechanism field.

Features

Four channel switch signal and RS232 output

Entirely industrial parts of apparatus, stable and credible performance

Shockproof>10000g

Small volume, light weight

DC 9-24 wide voltage power supply,

Reverse polarity protection, over loading short circuit protection.

Transistor drive, OC control output,

Cast aluminum, IP67 protection

Application

Chain block, Hoist, crane,

Aerial platform vehicle, lifts

Automatic orientation platform

Mining mechanism, oil-well drilling equipment

Security control,

Monitor alarm

Technical Data:

Item	Parameter	Unit	Remark
Operating voltage (1	9-24	VDC	
Quiescent current (2	≤50	mA	
Measuring range	±45	Degree	Two-axis
Resolution	0.1	Degree	
Repeatability (3	0.3	Degree	@25°C
Trigger accuracy (4	0.5	Degree	@25°C
Output voltage (5	5±0.3	V	@I_{out}=50mA
Output current (6	≤500	mA	@25°C
Zero temperature drift	0.016	degree/C	
Trigger delay time (7	0.5	S	
Operating temperature	-40 - +85	°C	

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Note 1: Recommend to use DC 12V power supply, in order to reduce internal loss. When power supply voltage is larger than 25V, it may lead parts damaged or short lifetime. Please avoid the situation occur during normally using condition.

Note 2: Quiescent current means input current of parts when power supply voltage is 12V without alarm signal output.

Note 3: Repeatability means measuring error of one certain point in each time.

Note 4: Trigger accuracy means repetitious (•16 times) RMS Error of input trigger angle and set trigger angle.

Note 5: Output voltage is limited by output current.

The larger output current, the lower output voltage.

Note 6: Though the parts has over loading and short-circuit protection, please try to avoid the situation of overloading and short-circuit occurred in normally using, for fear that it may short the parts lifetime. When circumstance temperature is higher than room temperature, you should decrease output current properly, so that reduce the temperature of internal parts. When circumstance temperature is 85 degree, recommend to use 10% rated current, or else it may cause lifetime short or permanent damage.

Note 7: From the time when input angle achieve to set angle to the time when the part output alarm signal,the spend time is trigger delay time.

Attention in use:

1.When measuring axis tilt angle is larger than set angle or equal to it, relevant signal line will

output high 5V, at this time, the max load current should less than 0.5A. When tilt angle is smaller

than set angle, measuring axis signal line output high impedance state.

2. Connection schematic diagram as follows;

Pin #	1	2	3	4	5	6	7	8	9
Function	Power + 9-24 (VCD)	RS232 send (TX)	RS232 Receive (RX)	Power (GND)	Alarm signal on X-axis	Alarm signal on Y-axis	Relative Zero setting	Power-Gnd (zero)	None
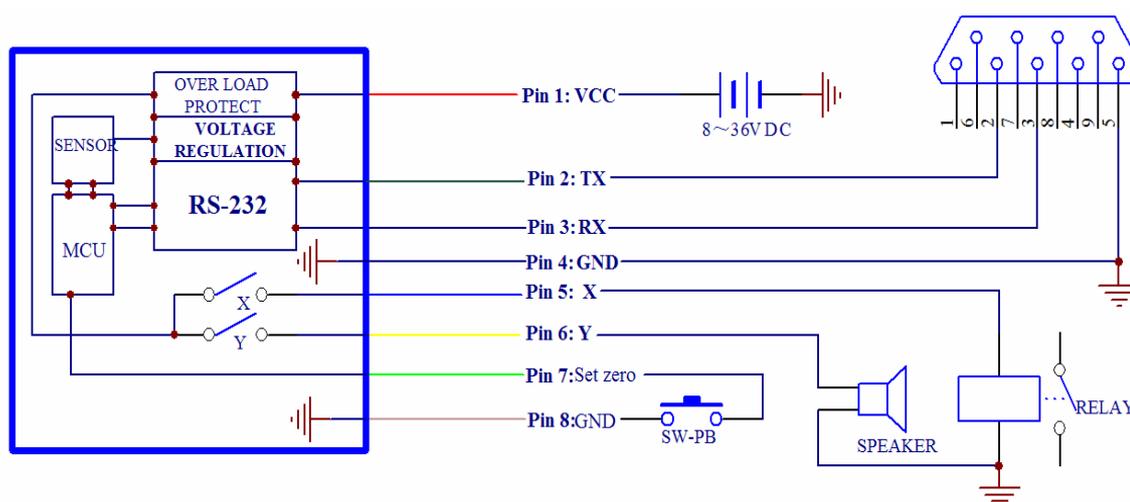
3.Serial port setting:

Baud rate: 9600, data bit: 8 bit, stop bit: 1 bit, parity bit: none

4.ASCII format output

- First the system will report version information to host computer after power-on:

    ZCT245-FDAIV1.0

- If user have sat relative zero, then the system will output: "relative angle measure!"

- Output one set of data has 16 Byte.

Byte1: X

Byte2: +/-

Byte3: tens digit of X axis angle value

Byte4: unit digit of X axis angle value

Byte5:decimal point".”

Byte6:one digit after decimal point of X axis angle value.

Byte7: 20

Byte8: 20

Byte9: Y

Byte10: +/-

Byte11:   tens digit of Y axis angle value

Byte12: unit digit of Y axis angle value

Byte13: decimal point".”

Byte14: one digit after decimal point of Y axis angle value.

Byte15: 0d

Byte16: 0a

Format as below:

ITEM	SIGN	DATA	STOP
X/Y	+/-	**.*	Enter

e.g: now X axis angle is +23.6 degree, Y axis angle is -01.0 degree, then it will show

    X +23.6

    Y +01.0

Note: Out of range will show angle value 88.8

5. Command word related:

FILT??--output frequency set, "??"advisable value is "03—40". Default is 10. After accepting command it will output "setfilt ??", The smaller value, the higher frequency.

&Z --set current position as relative zero, store corresponding datas in ROM and output comparatively angle, accept command, then output: "set relative zero".

&R --output absolutely angle, accept command, then output: "absolute zero".

*SetxP=??--set X axis positive half axis alarm point,"??"is angle value, advisable value is "01-45".
Default is 10: Accept command, then output : "SetxP OK!"

*SetxN =??--set X axis negative half axis alarm point: "??"is angle value: advisable value is "01-45". Default is 10.Accept command, then output: "SetxN OK!"

*SetyP =??--set Y axis positive half axis alarm point: "??"is angle value: advisable value is "01-45". Default is 10: Accept command, then output:"SetyP OK!"

*SetyN =??--set Y axis negative half axis alarm point: "??"is angle value: advisable value is "01-45". Default is 10: Accept command, then output: "SetyN OK!"

6. Dimensions in mm:
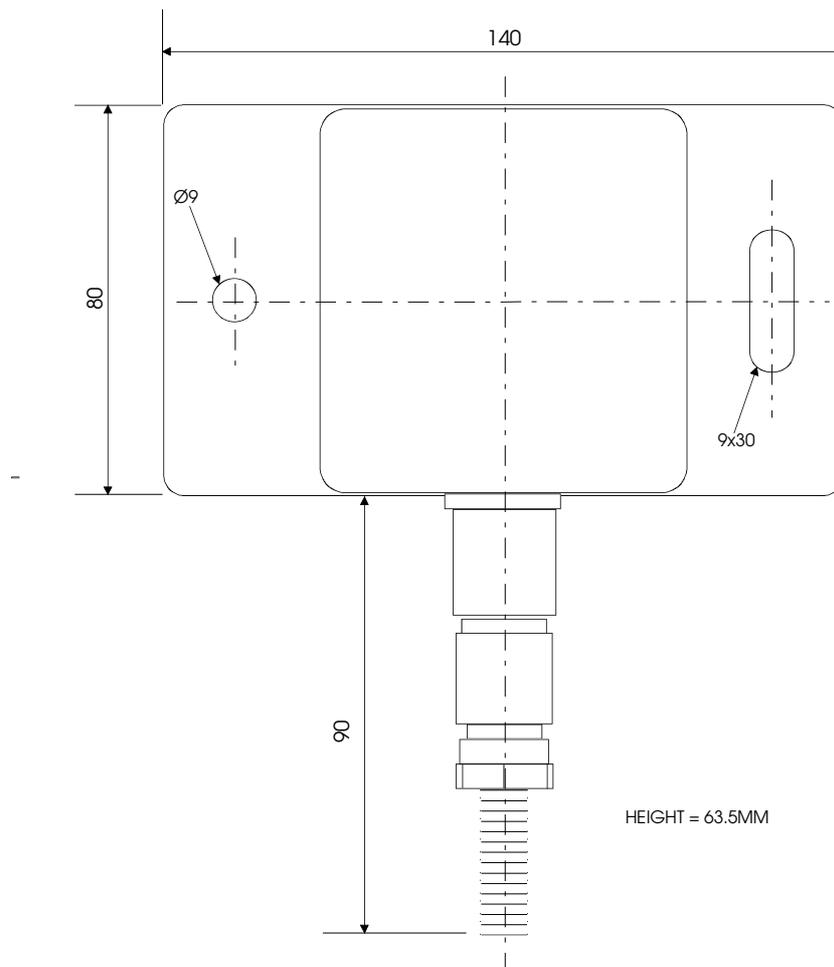
7.Notice in testing:

Angle moving direction of plane which is being surveyed must be paralleled with surveying axis of inclinometer when surveying, No angle between this two plane is permitted. As follow diagram: Use x-axis survey plane β, along with angle Ψ which is an angle between a and horizontal.(In actual ,it will not must along with the edge of the place which is being surveyed.) Because Y axis is not parallel with horizontal, Φ exists, there will be some error between the output angle and the true angle Ψ, it will be a little smaller than true angle. Please pay more attention to these two angles relations when installing and using inclinometer..
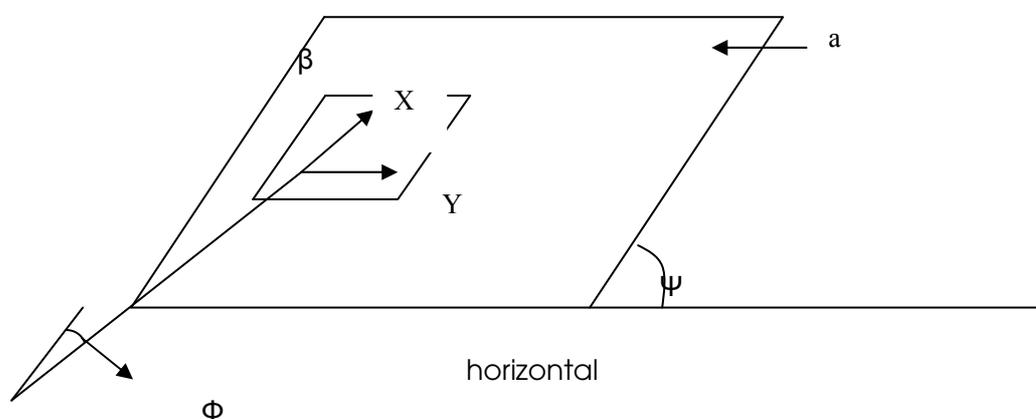
Specifications subject to change without notice!