SC35 Tuning Fork Level Switch Operation Manual

SPECIFICATION

Supply voltage	19 ~253 Vdc/Vac, 50/60 Hz			
Power consumption	Max. 1.5 W			
Separation voltage	3.7 kV			
Overvoltage protection	Overvoltage category II			
Storage temp.	-40~85°C			
Ambient temp.	-40~85°C (Cable type: -40~75°C)			
Process temp.	Standard/Extension: -40~150°C Hi-temp./Extension: -40~280°C Cable wire: -40~80°C			

1-1/2"PT

Hi-temperature

Bulk density	³ 0.01 g/cm ³ or ³ 0.05 g/cm ³				
Measuring frequency 140Hz±5Hz					
Material size	Max.10 mm				
Connecting cable	φ6~10mm				
Operating pressure	SC350/SC351: 25 Bar SC352: 2 Bar				
Output signal	2 sets SPDT relay 2 sets transistor				
Contact rating	Relay: 6A / 250 Vac, 6A / 28 Vdc Transistor: 350mA, 60 Vac / Vdc				
IP rating	IP 66/IP 67				

PANEL DESCRIPTION

DIMENSIONS

SC350

Standard

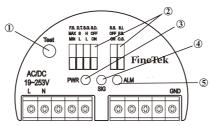
Abb.	Functions	Description	Remarks
Test	Test Bottom	Reverse output signal	Reverse output signal can be used to provide a method for testing control equipment which is connected to sensor output
F.S.	Fail Safe	MAX: High MIN: Low	Includes high low fail-safe mode
D.T.	Delay Time	S: General settings L: Delay of 5 seconds	Material covered: 0.5s Material not covered: 150°C:≤1.5s 230°C/280°C:≤2s L sets delay of 5s for covered/ uncovered
S.G.	Specific Gravity	H: 0.05 g/cm ³ L: 0.01 g/cm ³	High Density >0.05 g/cm³ Low Density >0.01 g/cm³
S.D.	Self Diagnosis	OFF ON	ON setting allows the sensor to detect fork abrasion or material build-up; SIG LED will flash if trouble exists
S.S.	Super Safe	OFF ON	When set ON Output 2 will be dedicated to indicate self-diagnostics alarm exists
S.I.	Signal Indicator	F.S.: failsafe mode O.S.: output status mode	F.S. (fail safe) selected = Normal / Alarm status; O.S. (relay output status) selected = Relay energized (on) or de-energized (off)

1-1/2"PT

225~4000

SC351

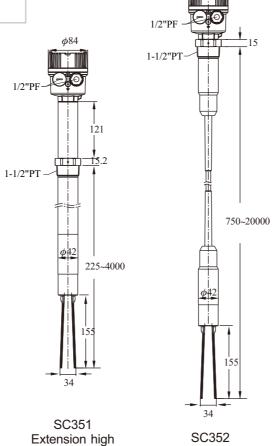
Extension



- ①:Test button
- ④:Signal indicator
- 2: Function switch 5: Alarm indicator

Cable type

3:Power indicator



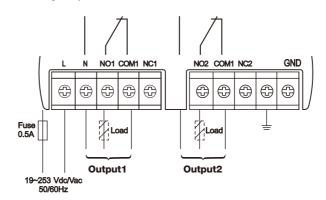
temperature



NEPSI Ex tD A21 IP66/67 T85°C~T300°C IECEx Ex ta IIIC T95°C / T130°C / T136°C Da Ex tb IIIC T80°C / T95°C / T130°C / T160°C /T240°C / T290°C Db

WIRING AND FUNCTION

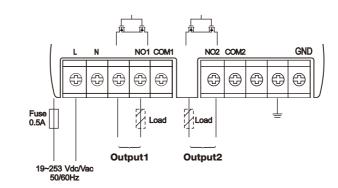
■ Two relay output



Load: External load U ~ max. 250Vac@l∟ ~ max. 6A U = max. 28Vdc@l = max. 6A

Fail-safe	Level	Output signal			LED Indicator		
mode		output1	outp S.S. OFF	out2 S.S. ON	Power green	Status yellow	Alarm red
MAX		NO1 COM1 NC1	NO2 COM2 NC2	NG2 COM2 NC2	*	0.sX- F.S. O	0
		NO1 COM1 NC1	NO2 COM2 NC2	NO2 COM2 NC2	\	o.s. O F.SX-	0
MIN		NO1 COM1 NC1	NO2 COM2 NC2	NO2 COM2 NC2	\	0.S	0
		NO1 COM1 NC1	NO2 COM2 NC2	NO2 COM2 NC2	**	o.s. O F.s\\(\frac{1}{2}\)-	0
Fork build-up		Maintain the previous state		NO2 COM2 NC2	\	o.s. O F.SX-	Þ
Fork brasion		NO1 COM1 NC1	NO2 COM2 NC2	NO2 COM2 NC2	*	0	ఘ

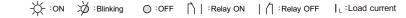
■ Two NPN/PNP output



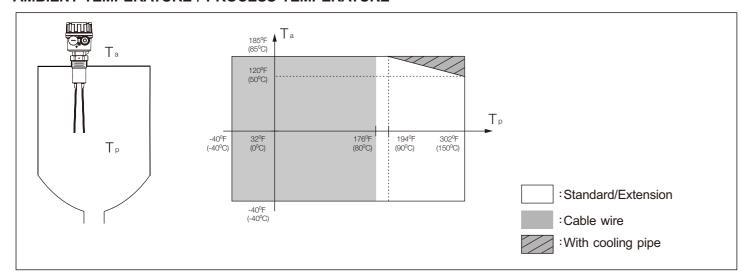
Load: Extermal load U ~ max. 60Vac@l∟~ max. 350mA U== max. 60Vdc@l∟== max. 350mA ★External load R must be connected

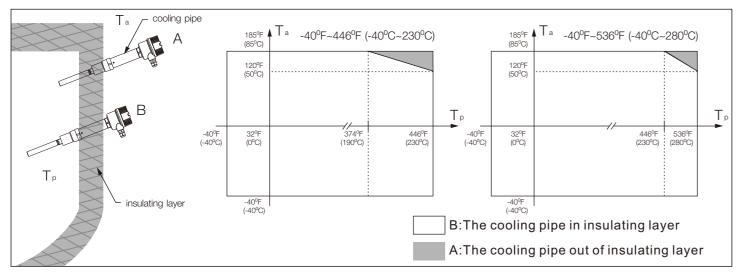
Fail-safe							
	Level	Output signal			LED Indicator		
mode		output1	output2		Power	Status	Alarm
			S.S. OFF	S.S. ON	green	yellow	red
MAX		NO1 L COM1	NO2 L COM2	NO2 L COM2	☆	0.S	0
IVIAX		NO1 <100ml COM1	NO2 <100mA COM2	NO2 L COM2	☆	0.S. O F.S\\	0
MIN	— might	NO1 L COM	NO2 L COM2	NO2 L COM2	☆	0.S	0
IVIIIN		NO1 <100m/ _A COM1	NO2 <100mA COM2	NO2 L COM2	☆	0.S. O F.S\\(\frac{1}{2}\)-	0
Fork build	Fork build-up		Maintain the previous state		☆	o.s. O F.S\\	Þ
Fork bra	Fork brasion		NO2 <100mA COM2	NO2 <100mA COM2	ఘ	0	*
Output1 > 350mA		NO1 <100ml COM1	Maintain the previous state	NO2 <100mA COM2	ఘ	$\not\!$	\
Output2 > 350mA		Maintain the previous state		NO2 <100mA COM2	☆	₩	*
	Output1 & Output2 > 350mA		NO2 <100mA COM2	NO2 <100mA COM2	☆	Þ	$\not\!$

*When output is off, there will be no error current status.



AMBIENT TEMPERATURE / PROCESS TEMPERATURE





- ※ ETFE Coating pT max.= 150°C
- ※ PTFE Coating PT max.= 230°C

INSTALLATION INSTRUCTIONS

I. .Top mounts (Figure 1)

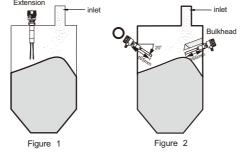
- * Keep away from the mouth when installing in order to not cause damage when the sensor bar is hit by the material.
- * Take account of the angle problems when installing, to avoid the material splitting untouched with the sensor bar.

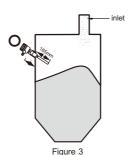
II. Slide Mount (Figure 2)

- Need to prevent the instrument be installed from the inlet to re-duce the risk of inflowing material damaging the probe. If it is inevitable, please install another protection cover above the instrument.
- * The best installation angle is leaning 15-20 degrees, as it can reduce the strike and the pile up.
- * The gate of the terminal box should be installed lower in order not to let the water get into and damage the circuit.

III General Requirements

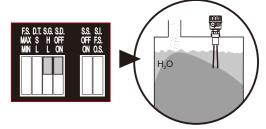
- \divideontimes The lead-in of the wire terminal should correctly comply with and the nut should be tightly locked, to ensure the validity of the IP grade.
- * The wire should be installed downwards and again round it and get into the gate in order not let the rain into the box.
- * The total length of the wire should be >the length of the extended pipe + fork length 165mm.(Figure 3)
- * The maximum vertical stress that can be received by the Sensor bar is 177in.Lbs(20Nm)
- Avoid twisting the box directly during installation and dismounting. Try to spanner tighten
 the nut.
- * Please avoid cutting the sensor bar or altering the size or specifications of the products on your own.
- When carrying, avoid sizing tuning fork in order not to cause any damages.
- * When operating in the tub, avoid taking the tuning fork as the climbing ladder.





SEDIMENT DETECTION

- Only sediment is detected.
 Water-like liquids or entrained substances are not detected.
- 2. S.G. (Specific Gravity) to set to H position.
- 3. S.D. (Self Diagnostics) to be turn off.
- 4. SC352 cable wird type is not suitable for Immersion.



PRECAUTIONS FOR USE

- 1. GB 12476.1-2013 Electrical apparatus for use in the presence of combustible dust. Part 1: General requirements. GB12476.5-2013Electrical apparatus for use in the presence of combustible dust. Part 5: Protection by enclosures "tD".
- 2. Make sure there is no harmful gas (corrosive to aluminum alloy) at the installation site.
- 3. A grounding terminal is set on the shell of tuning fork level switch; adjoin it to the ground steadily during installation. The cable wire size is ≥4mm2
- 4. The sensor should be installed in Zone 21 & 22.
- 5. The operating temp. : -40°C ~ 85°C
- 6. The Maximum temperature of environment and medium, as well as the temperature class are as follows:

Product model	Temp. Class	Maximum temp. of operating environment (°C)	Maximum temp. of medium (°C)
SC350 Series SC351 Series	T300°C	85	280
	T300°C	85	230
	T200°C	85	150
	T135°C	85	130
	T100°C	85	95
SC350 Series SC351 Series SC352 Series	T85°C	75	80

- *Actual endurable temperature of the product according to the latest product catalog released by FineTek; should be in accordance with explosion-proof certification.
- 7. When installing in combustible dust environment, please check the cable wire in use must be approved by legal inspection agency; comply with the standard: GB12476.1-2013 \ GB12476.5-2013; Explosion proof class Ex tD A21; thread connection in require is 1/2" NPT; IP66/67 protection, in order to use in hazardous area.
- 8. Product in installation or maintenance should be in accordance with the rule of "don't switch on under a combustible dust environment"
- 9. Please do not change any components of the instrument on his/her own. In case of any problem occurs, please consult with the manufacturers for technical supports.
- 10. When installing, using and maintaining the products, the user should strictly comply with the instructions and the following standard: GB 3836.13-2013 Explosive atmospheres. Part 13.: Equipment repair, overhaul and reclamation. GB/T3836.15-2017 Explosive atmospheres—Part 15: Electrical installations design, selection and erection.
 - GB 50257-2014 Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineeringGB 15577-2018 Safety regulations for dust explosion prevention and protection
- 11. Prohibit any process will generate the brush discharge with propagation form, for instances, dust particles in fast move, powder transmission and Spraying process in Electrostatic coating.
- 12. Please do not use dry cloth to clean up due to Static electricity.





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