

SKRD 30 Series Guided Wave Radar Level Meter



Principle

High frequency microwave pulses travels along the detecting component (steel rope or rod) and reflects when reaching the product surface. The time from emission to reception is proportional to the distance between the surface and the reference plane on the instruments.

Features

SKRD31 equipped with the advanced microprocessor and unique EchoDiscovery echo processing technology can be used in severe ambience.

It is extremely low emission power, can be mounted on various metal or nonmetal vessels, harmless towards the environment and human beings.

There are multiple options available in choosing various process connections and detecting components, which enable the guided wave radar level meter to be applied in a broad extent of applications, such as high temperature, high pressure, medium with small dielectric constant and etc.

Product Overview

SKRD31



Features: Rope probe
 Application: liquid or solids level
 Range: 30m
 Process connection: thread, flange
 Process temperature: -40~250 °C
 Process Pressure: (-0.1~2.0)Mpa
 Accuracy: ±3mm
 Repeatability: ±2mm
 Frequency Range: 100MHz~1.8GHz
 Explosion Proof:Exia IIC T6 Ga
 Protection level:IP67
 Output: (4~20mA)/Hart (2 wire/4 wire)

SKRD32



Features: rod probe
 Application: liquid level
 Range: 6m
 Process connection: thread, flange
 Process temperature: -40~250 °C
 Process Pressure: (-0.1~2.0)Mpa
 Accuracy: ±3mm
 Repeatability: ±2mm
 Frequency Range: 100MHz~1.8GHz
 Explosion Proof:Exia IIC T6 Ga
 Protection level:IP67
 Output: (4~20mA)/Hart (2 wire/4 wire)

SKRD33



Features: double rope probes
 Application: Solids powder or liquid with small dielectric constant
 Range: 30m
 Process connection: thread, flange
 Process temperature: -40~250 °C
 Process Pressure: (-0.1~2.0)Mpa
 Accuracy: ±3mm
 Repeatability: ±2mm
 Frequency Range: 100MHz~1.8GHz
 Explosion Proof:Exia IIC T6 Ga
 Protection level:IP67
 Output: (4~20mA)/Hart (2 wire/4 wire)

SKRD34

Features: For high temp and high pressure, rod or coaxial pipe probes

Application: liquid level

Range: 6m

Process connection: thread, flange

Process temperature: -200~400 °C

Process Pressure: (-0.1~40)Mpa

Accuracy: ±3mm

Repeatability: ±2mm

Frequency Range: 100MHz~1.8GHz

Explosion Proof:Exia IIC T6 Ga

Protection level:IP67

Output: (4~20mA)/Hart (2 wire/4 wire)

SKRD 35

Features: rod probe with PTFE coated

Application: Corrosive liquid

Range: 6m

Process connection: flange

Process temperature: -40~180 °C

Process Pressure: (-0.1~2.0)Mpa

Accuracy: ±3mm

Repeatability: ±2mm

Frequency Range: 100MHz~1.8GHz

Explosion Proof:Exia IIC T6 Ga

Protection level:IP67

Output: (4~20mA)/Hart (2 wire/4 wire)

SKRD 36

Features: coaxial pipe probes

Application: liquid with small dielectric constant or vibration surface liquids, complicated internal structure tank

Range: 6m

Process connection: thread, flange

Process temperature: -40~250 °C

Process Pressure: (-0.1~2.0)Mpa

Accuracy: ±3mm

Repeatability: ±2mm

Frequency Range: 100MHz~1.8GHz

Explosion Proof:Exia IIC T6 Ga

Protection level:IP67

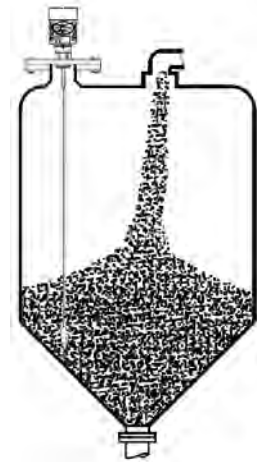
Output: (4~20mA)/Hart (2 wire/4 wire)

Mounting Requirement

The following installation guided is only applied to powder or liquid level measure with rope or rod probes. Coaxial pipe probe is only for liquid level measurement.

3.1 Mounting Position

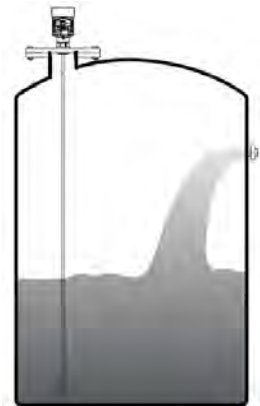
- Keep far away from inlet or discharge port.
- No contacting with metal or plastic tank within the whole measuring range.
- Rope or rod probe should keep at least 300mm distance with the tank wall.
- The best mounting position for a conical vessel with flat top is the center of its top, as the effective measurement can reach the bottom of vessel



3.2 Rod probe Level Installation

The right picture shows rod probe radar level installation, it is mainly for liquid measurement.

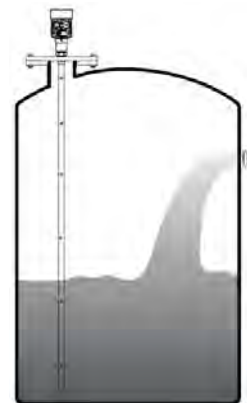
- It can measure medium with dielectric constant ≥ 1.9
- Medium viscosity should be less than 500 cst, and the medium is not sticky.
- Rod probe max length is 6m
- It can measure medium with steam or bubbles.



3.3 Coaxial pipe probe level meter Installation

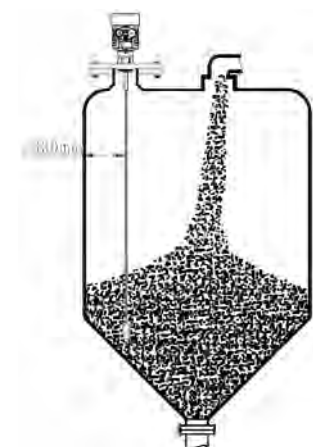
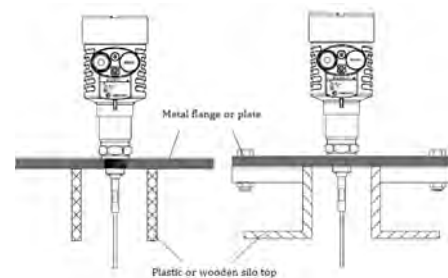
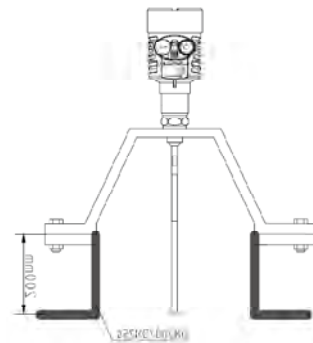
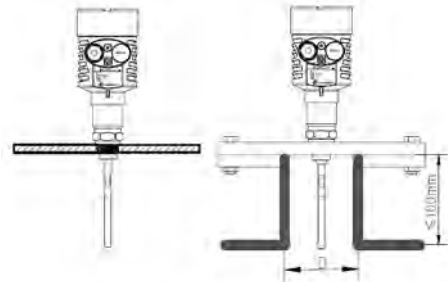
The right picture shows coaxial pipe probe level meter, it is mainly for liquid level measurement.

- It can measure liquid with small dielectric constant.
- It can measure medium with dielectric constant ≥ 1.6
- Medium viscosity should be less than 500 cst, and the medium is not sticky.
- Rod probe max length is 6m
- It can measure medium with steam or bubbles.

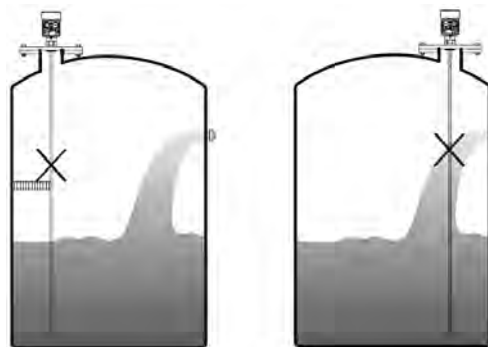


3.4 Installation Method

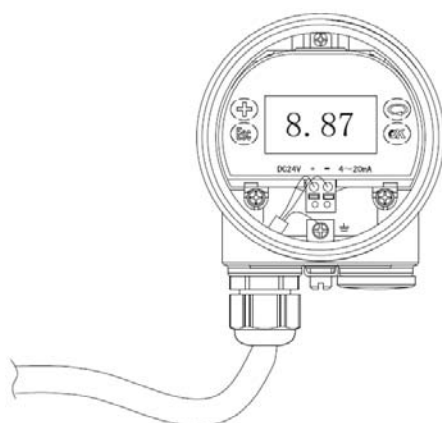
- The instruments can be mounted with thread connection; the thread connection pipe height should not be over 100mm, if you install the level meter with 2" to 6" socket, the socket height should be less than 100mm, otherwise you should fix the rope probe.
- If you install the instrument with DN200 or DN250 socket, the socket surface will generate echo, it will affect accuracy when the medium with small dielectric constant. In that case you should prepare a special "horn shape connection" as right picture shows.
- The process connection surface should be metal material. If the tank material is plastic, you should prepare a metal flange for installation, or you need to prepare a metal plate with thread connection.
- The probe should keep at least 300mm distance with the tank wall. And at least 500mm for concrete tank. And the end of probe should keep distance more than 50mm with the bottom of the tank.



- Keep in mind that rope/rod is kept away from obstructions with vessel, the obstruction is like: ladders, limit switches, heating spirals, struts and etc.
- The level meter should not be installed in the inlet port of tank.



Wirings



2 wire connection



4 wire connection

Configuration

- **Configuration methods**

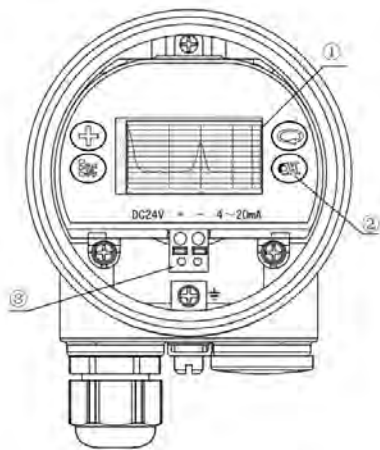
Three ways can be selected when configuration the radar level meter:

1. by adjusting the display /buttons
2. by adjusting the host computer
3. Handheld HART Communicator

- **Display /buttons:**

There are four buttons on display; Optional menu operation languages are available for selection.

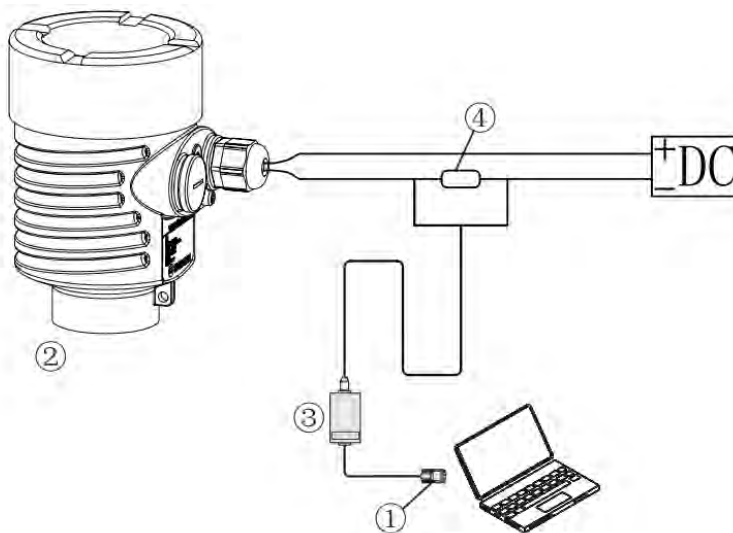
It is only used for display after adjustment in that the measurement results can be seen clearly through the glass window.



- ① LCD display
- ② Buttons
- ③ Wiring terminals

● **Host Computer Configuration**

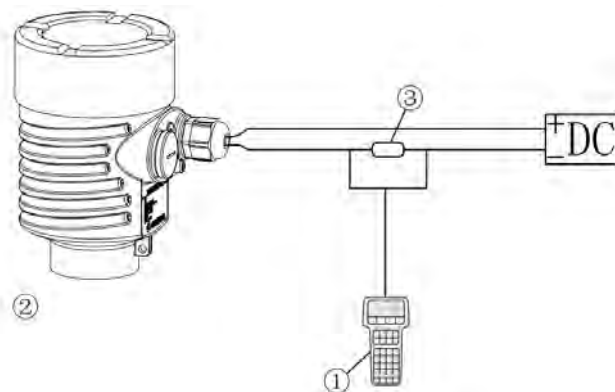
Connect the radar level meter with Host Computer through HART



- ① RS232 or USB Interface
- ② SKRD30
- ③ Hart Adapter
- ④ 250Ω Resistance

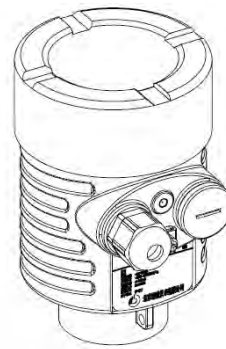
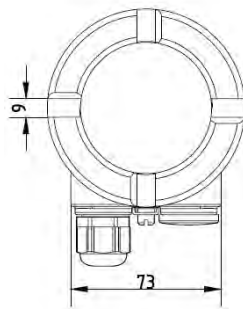
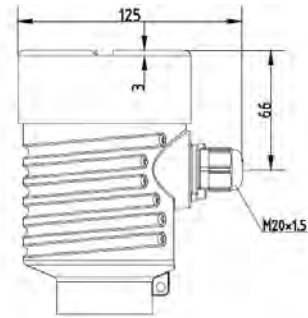
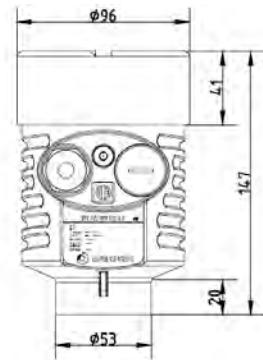
● **Hart Communication Configuration**

SKRD30 can be adjust by Handheld Hart Communicator



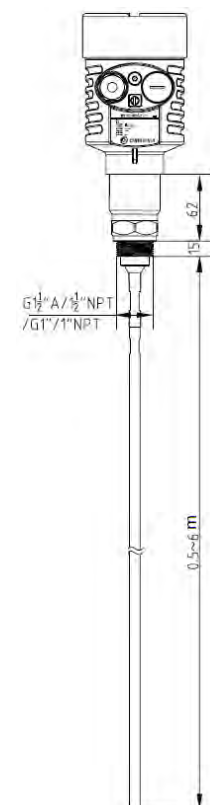
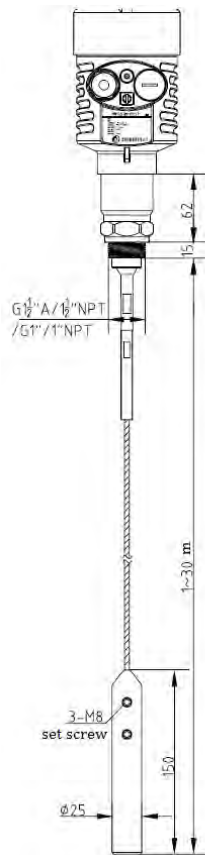
- ① Hart Communicator
- ② SKRD30
- ③ 250Ω Resistance

Dimension



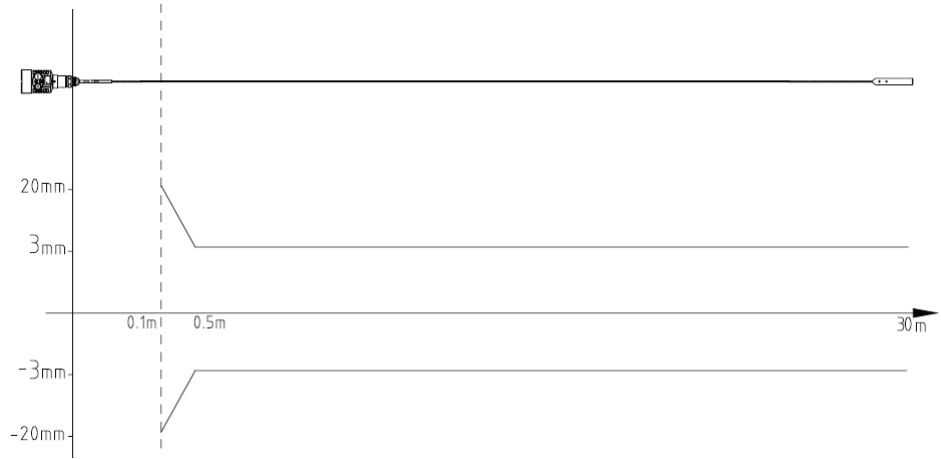
SKRD31

SKRD32

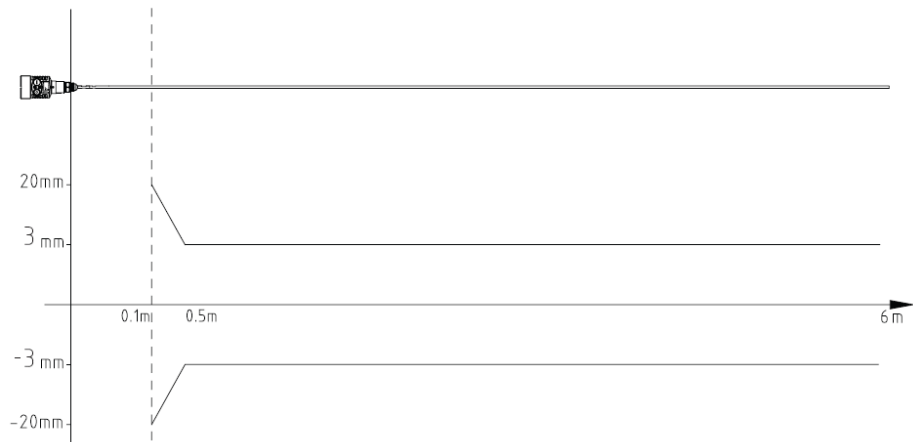


Linearity

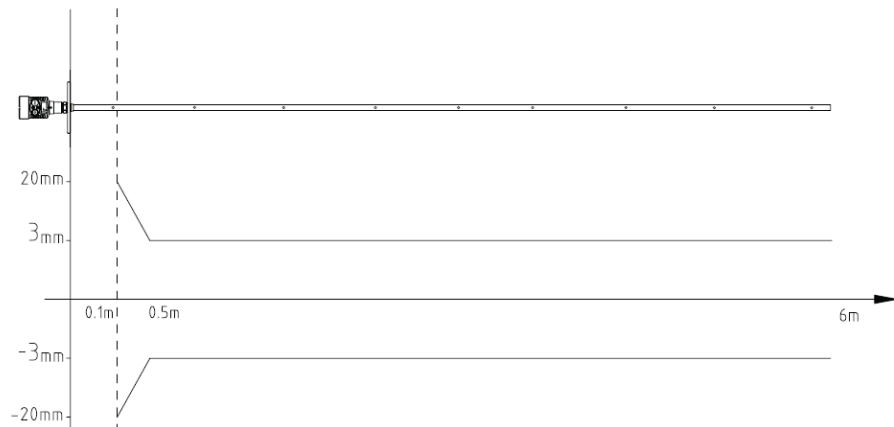
Rope Probe



Rod Probe



Coaxial Tube Probe



Technical Specifications

Frequency Range:	100MHz~1.8GHz
Range:	Rope(0-30m);rod, coaxial pipe (0-6m)
Repeatability:	±2mm
Resolution:	1mm
Sampling :	Echo sampling 55 times/second
Response time:	>0.2S (varies according to different situation)
Output:	4~20mA
Accuracy:	±3mm
Communication:	Hart
Process connection:	Flange DN 50, 80,100,150,200,250.
Process Pressure:	-0.1~2Mpa
Power supply:	24V DC(±10%),ripple:1 Vpp,
Consumption:	max 22.5mA
Environment Temperature:	-40~70°C
Enclose Protection Level:	IP67
Explosion Proof :	Exia IIC T6 Ga
Cable Entry:	M20*1.5 or 1/2"NPT (Cable diameter 5-9mm)

Measuring Rang

No.	DK(ε)	Solids	Liquids	Measuring Range
1	1.4...1.6		Condenser, such as N2CO2	3m
2	1.6...1.9	White lime, special cement, Sugar	LPG, solvent, Freon, palm oil	20m
3	1.9...2.5	ordinary cement, Gypsum	Mineral oil	20m
4	2.5...4	Grain, seeds Stones Sand grains	Benzene, Styrene, Methylbenzene, Furan, naphthalene	25m
5	4...7	Wet stones, ore salt	Chlorobenzene, chloroform, Cellulose spray, iso-cyanate, aniline	30m
6	>7	Metal powder Carbon black Coal	Liquids with water Alcohol, liquid ammonia	30m

Model Selection

SKRD31

Code	Explosion Proof		
P	No explosion proof		
I	Exia IIC T6 Ga		
D	Exd IIC T6 Gb		
Code	Rope Probe diameter/Material		
A	Liquids 4mm/304 stainless steel		
B	Liquids 4mm/316L stainless steel		
C	Solids 6mm/304 stainless steel		
D	Solids 6mm/316L stainless steel		
Code	Sensor /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
G1.5" A thread connection, Liquid		GA	GB
1.5"NPT Thread connection, Liquid		NA	NB
G1.5" A thread connection, Solids		GC	GD
1.5"NPT Thread connection, Solids		NC	ND
G3/4" A thread connection, Liquid		G3	G4
3/4"NPT Thread connection, Liquid		N3	N4
Y		Special	
Code	Flange /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
DN40,PN16 Flange		AA	AB
DN50,PN16 Flange		BA	BB
DN65,PN16 Flange		CA	CB
DN80,PN16 Flange		DA	DB
DN100,PN16 Flange		EA	EB
DN125,PN16 Flange		FA	FB
DN150,PN16 Flange		GA	GB
DN200,PN16 Flange		HA	HB
DN250,PN16 Flange		JA	JB
ANSI 1.5",150LB Flange		AAM	ABM
ANSI 2",150LB Flange		BAM	BBM
ANSI 2.5",150LB Flange		CAM	CBM
ANSI 3",150LB Flange		DAM	DBM
ANSI 4",150LB Flange		EAM	EBM
ANSI 5",150LB Flange		FAM	FBM
ANSI 6",150LB Flange		GAM	GBM
ANSI 8",150LB Flange		HAM	HBM

ANSI 10", 150LB Flange		JAM	JBM
X	Without flange		
Y	Special		
Code	High temperature connector/Process Temperature		
P	Without /(-40~130)°C		
G	With /(-40~250)°C		
Code	Electronics		
2	(4~20)mA/24V DC 2 wire		
3	(4~20)mA/24V DC 4 wire		
4	(4~20)mA/220v AC 4 wire		
5	(4~20)mA/24V DC /Hart 2 wire		
6	(4~20)mA/24V DC /Hart 4 wire		
7	(4~20)mA/220V AC /Hart 4 wire		
Y	Special		
Code	Enclose /Protection Level		
L	Aluminum/IP67		
G	Stainless steel/IP67		
Code	Cable Entry		
M	M20*1.5		
N	1/2"NPT		
Code	Programming/Display		
V	With		
X	Without		

SKRD32

Code	Explosion Proof		
P	No explosion proof		
I	Exia IIC T6 Ga		
D	Exd IIC T6 Gb		
Code	Rod Probe diameter/Material		
A	6mm/304 stainless steel		
B	6mm /316L stainless steel		
C	10mm /304 stainless steel		
D	10mm /316L stainless steel		
Code	Sensor /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
G1.5" A thread connection, Liquid		GA	GB
1.5"NPT Thread connection, Liquid		NA	NB
G3/4" A thread connection, Liquid		G3	G4
3/4"NPT Thread connection, Liquid		N3	N4
Y	Special		

Code		Flange /Material	
Specification	Material	304 stainless steel	316L stainless steel
	Code		
DN40,PN16 Flange	AA	AB	
DN50,PN16 Flange	BA	BB	
DN65,PN16 Flange	CA	CB	
DN80,PN16 Flange	DA	DB	
DN100,PN16 Flange	EA	EB	
DN125,PN16 Flange	FA	FB	
DN150,PN16 Flange	GA	GB	
DN200,PN16 Flange	HA	HB	
DN250,PN16 Flange	JA	JB	
ANSI 1.5",150LB Flange	AAM	ABM	
ANSI 2",150LB Flange	BAM	BBM	
ANSI 2.5",150LB Flange	CAM	CBM	
ANSI 3",150LB Flange	DAM	DBM	
ANSI 4",150LB Flange	EAM	EBM	
ANSI 5",150LB Flange	FAM	FBM	
ANSI 6",150LB Flange	GAM	GBM	
ANSI 8",150LB Flange	HAM	HBM	
ANSI 10",150LB Flange	JAM	JBM	
X	Without flange		
Y	Special		
Code	High temperature connector/Process Temperature		
P	Without /(-40~130)°C		
G	With /(-40~250)°C		
Code	Electronics		
2	(4~20)mA/24V DC 2 wire		
3	(4~20)mA/24V DC 4 wire		
4	(4~20)mA/220v AC 4 wire		
5	(4~20)mA/24V DC /Hart 2 wire		
6	(4~20)mA/24V DC /Hart 4 wire		
7	(4~20)mA/220V AC /Hart 4 wire		
Y	Special		
Code	Enclose /Protection Level		
L	Aluminum/IP67		
G	Stainless steel/IP67		
Code	Cable Entry		
M	M20*1.5		
N	1/2"NPT		
Code	Programming/Display		
V	With		
X	Without		

SKRD33

Code		Explosion Proof	
P		No explosion proof	
I		Exia IIC T6 Ga	
D		Exd IIC T6 Gb	
Code		Rope Probe diameter/Material	
CC		Double ropes 6mm /304 stainless steel	
DD		Double ropes 6mm /316L stainless steel	
Code		Flange /Material	
Specification	Material	304 stainless steel	316L stainless steel
	Code		
DN80,PN16 Flange		DA	DB
DN100,PN16 Flange		EA	EB
DN125,PN16 Flange		FA	FB
DN150,PN16 Flange		GA	GB
DN200,PN16 Flange		HA	HB
DN250,PN16 Flange		JA	JB
ANSI 3",150LB Flange		DAM	DBM
ANSI 4",150LB Flange		EAM	EBM
ANSI 5",150LB Flange		FAM	FBM
ANSI 6",150LB Flange		GAM	GBM
ANSI 8",150LB Flange		HAM	HBM
ANSI 10",150LB Flange		JAM	JBM
X	Without flange		
Y	Special		
Code		High temperature connector/Process Temperature	
P	Without /(-40~130)°C		
G	With /(-40~250)°C		
Code		Electronics	
2	(4~20)mA/24V DC 2 wire		
3	(4~20)mA/24V DC 4 wire		
4	(4~20)mA/220v AC 4 wire		
5	(4~20)mA/24V DC /Hart 2 wire		
6	(4~20)mA/24V DC /Hart 4 wire		
7	(4~20)mA/220V AC /Hart 4 wire		
Y	Special		
Code		Enclose /Protection Level	
L	Aluminum/IP67		
G	Stainless steel/IP67		
Code		Cable Entry	
M	M20*1.5		
N	1/2"NPT		
Code		Programming/Display	

V	With
X	Without

SKRD34

Code	Explosion Proof		
P	No explosion proof		
I	Exia IIC T6 Ga		
D	Exd IIC T6 Gb		
Code	Rod Probe diameter/Material		
A	6mm/304 stainless steel		
B	6mm/316L stainless steel		
C	10mm/304 stainless steel		
D	10mm/316L stainless steel		
Code	Sensor /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
G1.5" A thread connection, Liquid		GA	GB
1.5"NPT Thread connection, Liquid		NA	NB
Y		Special	
Code	Flange /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
DN40,PN16 Flange		AA	AB
DN50,PN16 Flange		BA	BB
DN65,PN16 Flange		CA	CB
DN80,PN16 Flange		DA	DB
DN100,PN16 Flange		EA	EB
DN125,PN16 Flange		FA	FB
DN150,PN16 Flange		GA	GB
DN200,PN16 Flange		HA	HB
DN250,PN16 Flange		JA	JB
ANSI 1.5", 150LB Flange		AAM	ABM
ANSI 2", 150LB Flange		BAM	BBM
ANSI 2.5", 150LB Flange		CAM	CBM
ANSI 3", 150LB Flange		DAM	DBM
ANSI 4", 150LB Flange		EAM	EBM
ANSI 5", 150LB Flange		FAM	FBM
ANSI 6", 150LB Flange		GAM	GBM
ANSI 8", 150LB Flange		HAM	HBM
ANSI 10", 150LB Flange		JAM	JBM
X	Without flange		

Y	Special
Code	High temperature connector/Process Temperature
G	With /(-200~400)°C
Code	Electronics
2	(4~20)mA/24V DC 2 wire
3	(4~20)mA/24V DC 4 wire
4	(4~20)mA/220v AC 4 wire
5	(4~20)mA/24V DC /Hart 2 wire
6	(4~20)mA/24V DC /Hart 4 wire
7	(4~20)mA/220V AC /Hart 4 wire
Y	Special
Code	Enclose /Protection Level
L	Aluminum/IP67
G	Stainless steel/IP67
Code	Cable Entry
M	M20*1.5
N	1/2"NPT
Code	Programming/Display
V	With
X	Without

SKRD35

Code	Explosion Proof		
P	No explosion proof		
I	Exia IIC T6 Ga		
D	Exd IIC T6 Gb		
Code	Rope Probe diameter/Material		
A	8mm/304 stainless steel coated PTFE		
B	8mm/316L stainless steel coated PTFE		
C	12mm/304 stainless steel coated PTFE		
D	12mm/316L stainless steel coated PTFE		
Code	Flange /Material		
	Material	304 stainless steel	316L stainless steel
Specification	Code		
DN40,PN16 Flange		AA	AB
DN50,PN16 Flange		BA	BB
DN65,PN16 Flange		CA	CB
DN80,PN16 Flange		DA	DB
DN100,PN16 Flange		EA	EB

DN125,PN16 Flange	FA	FB
DN150,PN16 Flange	GA	GB
DN200,PN16 Flange	HA	HB
DN250,PN16 Flange	JA	JB
ANSI 1.5",150LB Flange	AAM	ABM
ANSI 2",150LB Flange	BAM	BBM
ANSI 2.5",150LB Flange	CAM	CBM
ANSI 3",150LB Flange	DAM	DBM
ANSI 4",150LB Flange	EAM	EBM
ANSI 5",150LB Flange	FAM	FBM
ANSI 6",150LB Flange	GAM	GBM
ANSI 8",150LB Flange	HAM	HBM
ANSI 10",150LB Flange	JAM	JBM
Y	Special	
Code	High temperature connector/Process Temperature	
P	Without /(-40~120)°C	
G	With /(-40~180)°C	
Code	Electronics	
2	(4~20)mA/24V DC 2 wire	
3	(4~20)mA/24V DC 4 wire	
4	(4~20)mA/220v AC 4 wire	
5	(4~20)mA/24V DC /Hart 2 wire	
6	(4~20)mA/24V DC /Hart 4 wire	
7	(4~20)mA/220V AC /Hart 4 wire	
Y	Special	
Code	Enclose /Protection Level	
L	Aluminum/IP67	
G	Stainless steel/IP67	
Code	Cable Entry	
M	M20*1.5	
N	1/2"NPT	
Code	Programming/Display	
V	With	
X	Without	

SKRD36

Code	Explosion Proof
P	No explosion proof
I	Exia IIC T6 Ga
D	Exd IIC T6 Gb
Code	Coaxial Pipe Probe
A	φ25mm
B	φ50mm

Code	Process Connection/Material
GA	Thread G1"A/ 304 stainless steel
NA	Thread 1"NPT/ 304 stainless steel
A	Flange DN50/Stainless steel304/PN16
B	Flange DN80/Stainless steel304/PN16
C	Flange DN100/Stainless steel304/PN16
E	Flange DN150/Stainless steel304/PN16
F	Flange DN200/Stainless steel304/PN16
H	Flange DN250/Stainless steel304/PN16
Y	Special
Code	Seal Temperature
P	Normal Temperature /(-40~130)°C
G	High temperature /(-40~250)°C with radiator
Code	Electronics
2	(4~20)mA/24V DC 2 wire
3	(4~20)mA/24V DC 2 wire/Hart
4	(4~20)mA/24V DC 4 wire
5	(4~20)mA/220V AC 4 wire
Y	Special
Code	Enclose /Protection Level
L	Aluminum/IP67
G	Stainless steel/IP67
Code	Cable Entry
M	M20*1.5
N	1/2"NPT
Code	Programming/Display
V	With
X	Without

Attached Menu Tree

