

RADAR LEVEL TRANSMITTER

PIR6400 Series 80GHz



HART
COMMUNICATION PROTOCOL

Modbus

ISO

CE

IP68

Référence : **PIR6400 Series**

Non-contact level measurement of liquids

Measuring ranges up to 30 m

Accuracy $\pm 2\text{mm}$

Different Models depending on the application

Display and Adjustment LCD display, tank side display and tank side hub

Communications : HART, RS485 Modbus, 4-20 mA...

Also suitable for hazardous areas

PRESENTATION

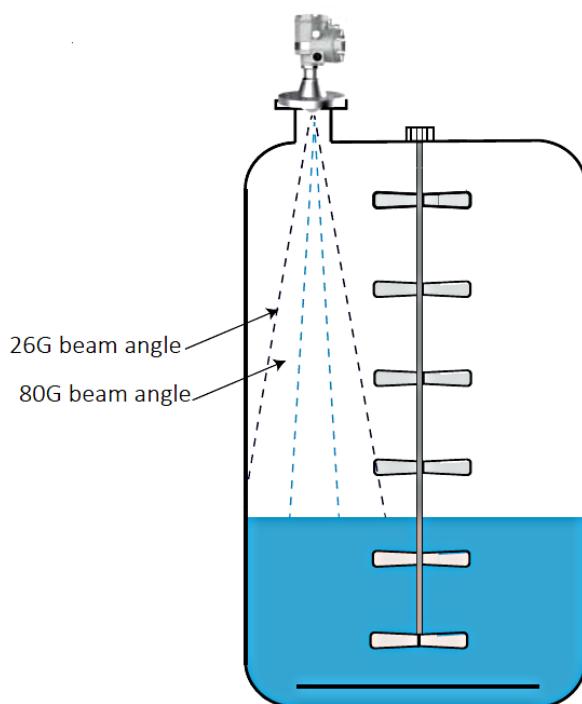
Prisma Instruments release latest 80GHz FMCW radar level transmitter **PIR6400**. It can deliver extremely reliable and accurate measured value. Thanks to the high focus beam it's unaffected by buildup, condensation and dust. With innovative IsoLens technology (Isolated emitting and receiving signal) it enables sensors to acquire full range measurement without dead zone. Furthermore, the small antenna size allows the usage in tight space. Area of application

Area of application

The PIR6400 series can measure all kinds of liquids, even under high pressure and extreme temperatures, in simple as well as difficult processing. With compact antenna design, it is particularly suitable for applications with tight space. High focus makes it possible for measurement for silos with high mounting nozzle or obstacle inside.

Measuring principle

The radar uses 80GHz Frequency Modulated Continuous Wave. The FMCW radar emits a high frequency signal whose frequency increases linearly during the measurement phase (called the frequency sweep). The signal is emitted, reflected from measuring surface and received with a short time delay " $t = 2d/c$ " where " d " is the distance to the product surface and " c " is the speed of light in the gas above the product. For further signal processing the difference Δf is calculated from the actual transmit frequency and the receive frequency. The difference is directly proportional to the distance.



Advantages & Features

Isolens Technology (Patent Technology)

Isolated emitting and receiving signal enable full range measurement without dead zone.
Unaffected by buildup near sensor.

EverCheck

Real time self-monitoring on voltage, current and chip.
Output warning when abnormality present.

WavesMemo

Wave management concept.
To help understand abnormal output, the PIR6400 stores echo automatically.

MultiTrack

Due to new MultiTrack wave tracking algorithm, PIR6400 gets highest reliability

PIR6400 with rod antenna



PIR6400 in thread version



Application	Applicable for continuous level measurement of aggressive liquids in storage containers, reactors or process vessels.	Applicable for continuous level measurement of liquids with slightly aggressiveness in storage containers, reactors or process vessels.
Measuring range	0 ~ 20m / 0 ~ 30m	0 ~ 30m
Process fitting and beam angle	Thread G1½, 1½NPT ; Beam angle 7° Thread G3, 3 NPT; Beam angle 3°	Thread G¾, ¾ NPT ; Beam angle 14° Thread G1½, 1½NPT ; Beam angle 7° Thread G3, 3 NPT; Beam angle 3°
Power	< 0.5 W	< 0.5 W
Response time	< 2 s	< 2 s
Frequency	76~81 GHz	76~81 GHz
Media-contracting materials	Process fittings: PP Antenna: PP Seal: FKM, EPDM, KALREZ	Process fittings: 316L Antenna: PEEK, PTFE Seal: FKM, EPDM, KALREZ
Process temperature	-40 °C ~ +200 °C	-40 °C ~ +200 °C
Process pressure	-1 bar ~ 2 bar	-1 bar ~ 20 bar
Resolution	1 mm	1 mm
Accuracy	± 2mm	± 2mm
Repeatability	± 1 mm	± 1 mm
Signal output	4 ~ 20 mA/ HART	4 ~ 20 mA/ HART
Display and Adjustment	LCD display, tank side display and tank side hub	LCD display, tank side display and tank side hub
Protect level	IP67	IP67
Electrical connection	2 × M20*1.5(Cable diameter 9 ~ 13 mm) ½NPT	2 × M20*1.5(Cable diameter 9 ~ 13 mm) ½NPT
Ex information	EX ia IIC T6 Ga Ex d ia [iaGa]IIC T6/T2 Gb	EX ia IIC T6 Ga Ex d ia [iaGa]IIC T6/T2 Gb Ex iaD tD A21 IP67T80°C/T290°C

PIR6400 with plastic antenna



PIR6400 in flange version



Application	Applicable for continuous level measurement of aggressive liquids with lower demands on pressure and temperature ranges.	Applicable for continuous level measurement for extremely aggressive liquid in storage containers, reactors or process vessels.
Measuring range	0 ~ 30m	0 ~ 30m
Process fitting and beam angle	Flange from DN80,3" Mounting strap Beam angle 3°	Flange from DN50,2" ; Beam angle 6° Flange from DN80,3" ; Beam angle 3°
Power	< 0.5 W	< 0.5 W
Response time	< 2 s	< 2 s
Frequency	76~81 GHz	76~81 GHz
Media-contracting materials	Process fittings: PP Antenna: PP Seal: PP,PTFE	Process fittings: 316L Antenna:PTFE,PFA,PP
Process temperature	-40 °C ~ +130 °C	-40 °C ~ +200 °C
Process pressure	-1 bar ~ 2 bar	-1 bar ~ 16bar
Resolution	1 mm	1 mm
Accuracy	± 2mm	± 2mm
Repeatability	± 1 mm	± 1 mm
Signal output	4 ~ 20 mA/HART	4 ~ 20 mA/HART
Display and Adjustment	LCD display, tank side display and tank side hub	LCD display, tank side display and tank side hub
Protect level	IP67	IP67
Electrical connection	2 × M20*1.5(Cable diameter 9 ~ 13 mm) ½NPT	2 × M20*1.5(Cable diameter 9 ~ 13 mm) ½NPT
Ex information	EX ia IIC T6 Ga Ex d ia [iaGa]IIC T6/T2 Gb	EX ia IIC T6 Ga Ex d ia [iaGa]IIC T6/T2 Gb Ex iaD tD A21 IP67T80°C/T290°C

PIR6400 with hygienic fittings



PIR6400 compact radar

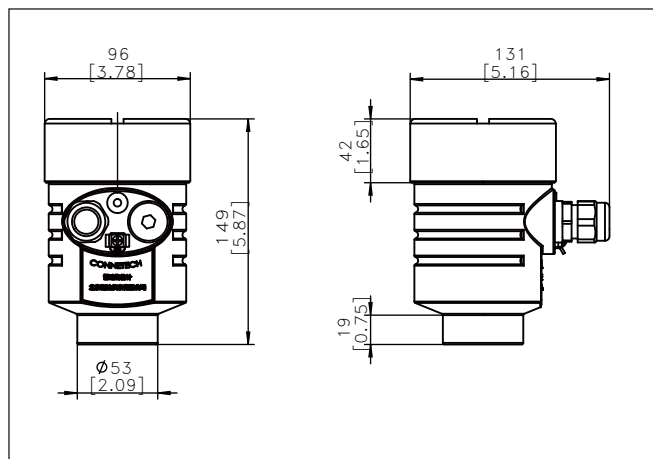


Application	Applicable for continuous level measurement of liquid in food and pharmaceutical sectors.	Applicable for continuous level measurement of water, wastewater, river, open channel, wet wells, lift station and simple chemical tanks
Measuring range	0 ~ 30m	0 ~ 30m
Process fitting and beam angle	Flange clamp 2" Mounting strap DRD connection Beam angle 6°	Thread G1½ Mounting strap Beam angle 8°
Power	< 0.5 W	< 0.5 W
Response time	< 2 s	< 2 s
Frequency	76~81 GHz	76~81 GHz
Media-contracting materials	Antenna: PTFE Seal: FKM, EPDM	Antenna: PP
Process temperature	-40 °C ~ +200 °C	-40 °C ~ +80 °C
Process pressure	-1 bar ~ 16 bar	-1 bar ~ 2bar
Resolution	1 mm	1 mm
Accuracy	± 2mm	± 2mm
Repeatability	± 1 mm	± 1 mm
Signal output	4 ~ 20 mA/HART	4 ~ 20 mA /HART /RS485
Display and Adjustment	LCD display, tank side display and tank side hub	Standard: RS485 Optional: Bluetooth or HART
Protect level	IP67	IP68/IP67
Electrical connection	2 × M20*1.5(Cable diameter 9 ~ 13 mm) ½NPT	Thread G1
Ex information	EX ia IIC T6 Ga Ex d ia [iaGa] IIC T6/T2 Gb Ex iaD tD A21 IP67T80°C/T290°C	EX ia IIC T6 Ga

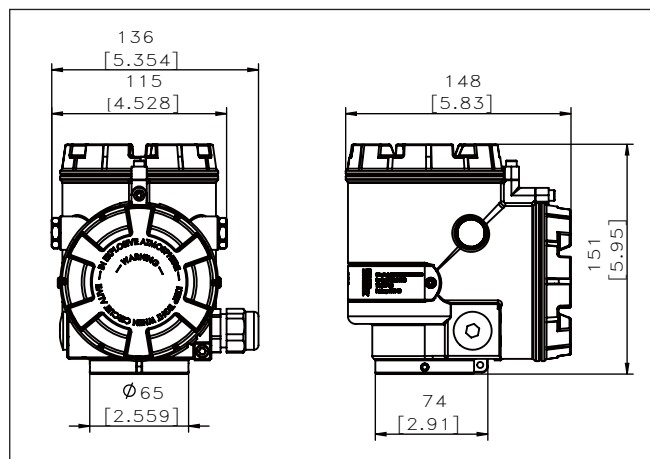
Housing version

The housings are available as double chamber version in plastic, stainless steel or aluminium. They are available with protection ratings up to IP 67 (1 bar).

Single chamber housing



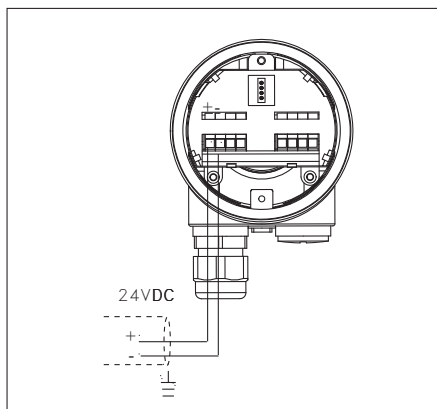
Double chamber housing



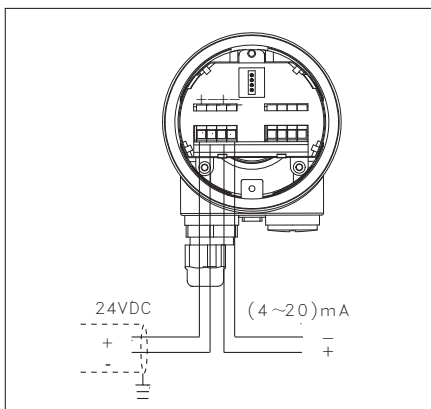
Electric connection

The instruments are available in different electronics versions. 4 ... 20 mA/HART in two and four-wire version with 24VDC and four-wire with 220VAC.

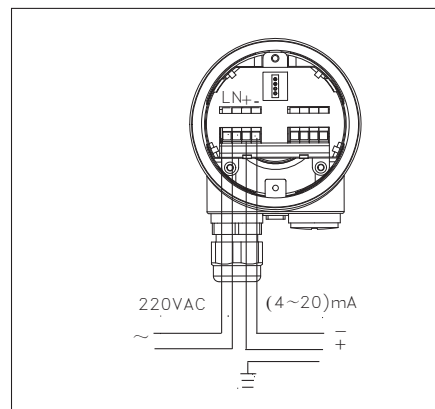
24V DC.Two-wire



24V DC.Four-wire



220V AC.Four-wire

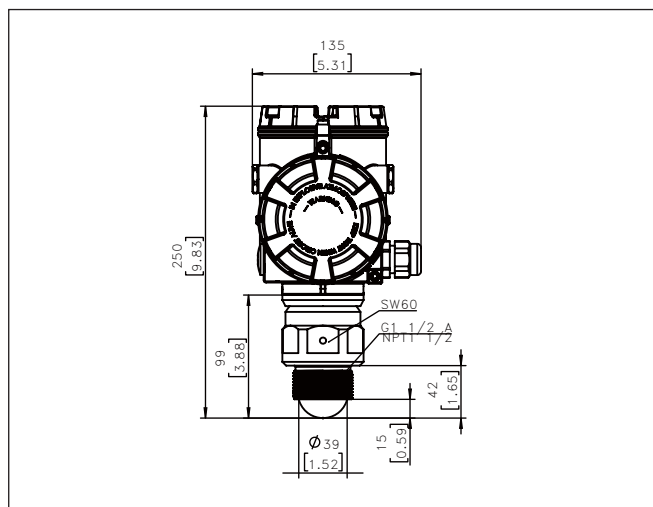


Operation

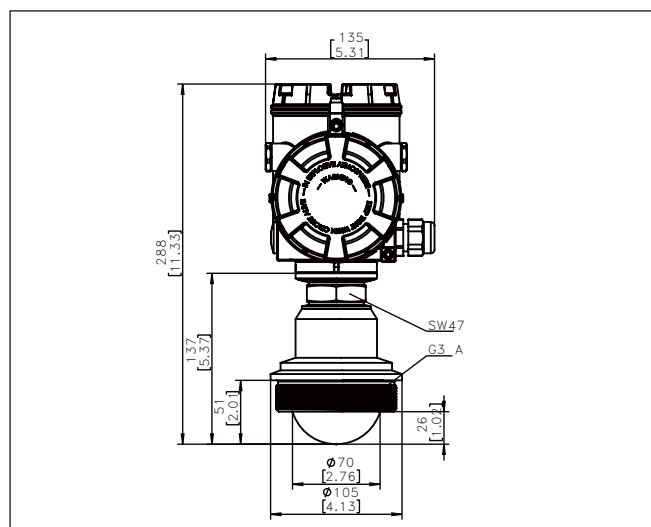
The adjustment of the instrument is carried out via the LCD display, tank side display, tank side hub and HART communicator.

Dimensions

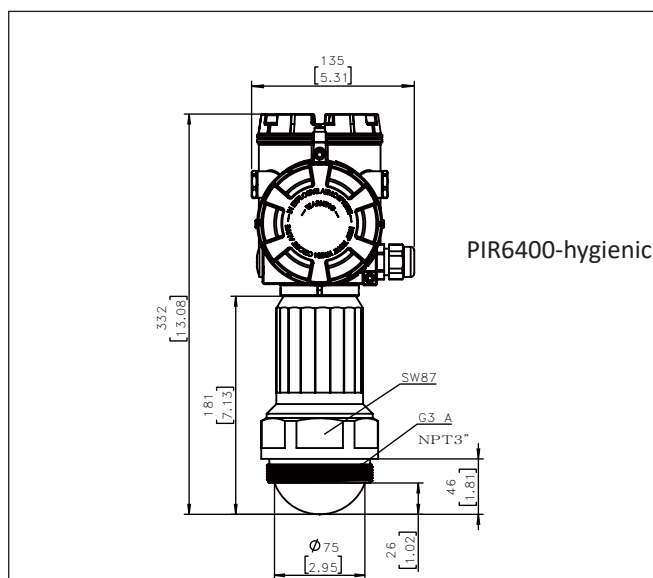
PIR6400 with 40 rod antenna



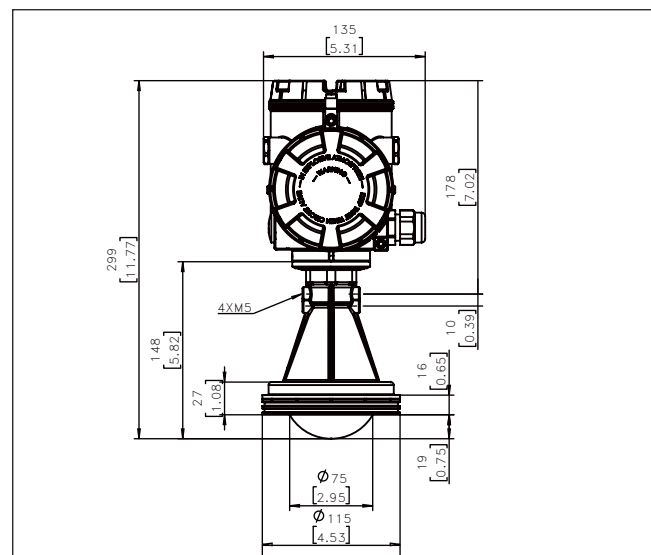
PIR6400 with thread G3 antenna



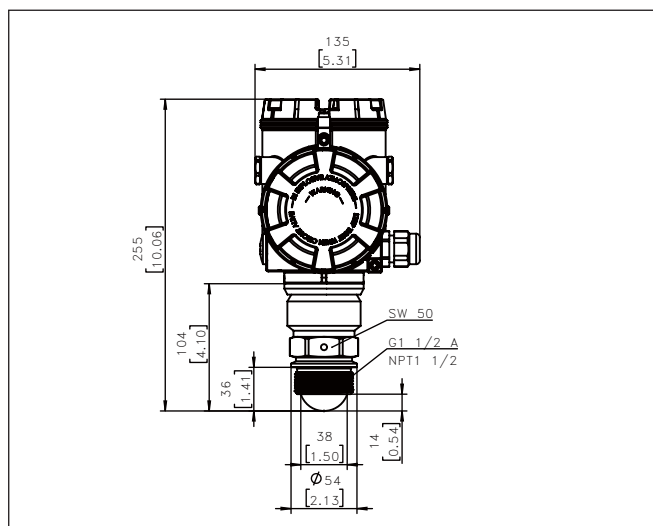
PIR6400 with 80 rod antenna



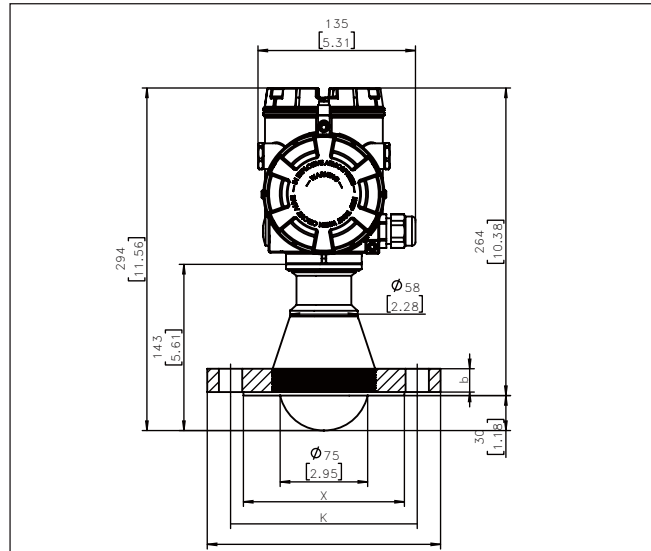
PIR6400 with plastic horn antenna



PIR6400 with thread G11/2 antenna

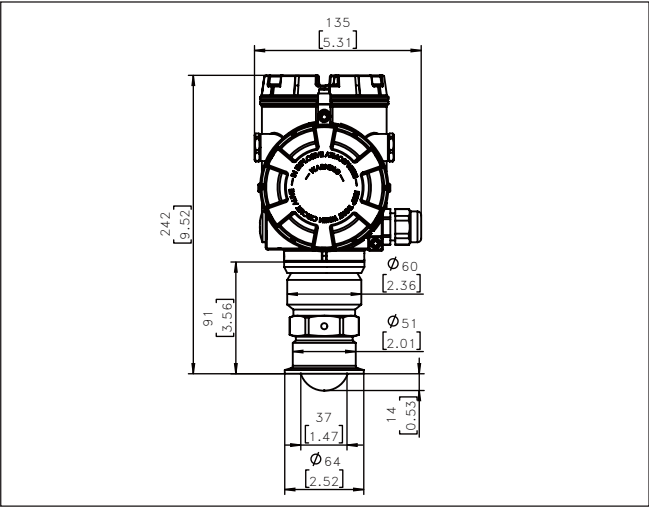


PIR6400 with flange antenna

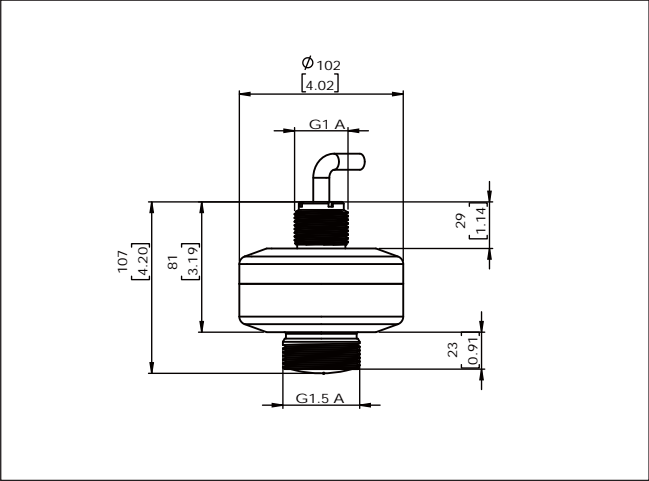


PIR6400 80GHz RADAR LEVEL TRANSMITTER

PIR6400 with hygienic antenna



PIR6400 wire type



Ordering code

PIR6400 radar level transmitter with rod antenna

PIR6400									
	1	2	3	4	5	6	7	8	9



1 | LANGUAGE

A	English
I	Chinese
S	Spanish
T	Customized

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
DX	Ex d ia [iaGa]IIC T6/T2 Gb
TT	Customized

3 | ANTENNA VERSION / MATERIAL

A	Rod antenna/PTFE
J	Rod antenna/PFA

4 | PROCESS FITTING

TG	Thread G1½
TH	Thread G3
FC	Flange DN50
FD	Flange DN80
FE	Flange DN100
FK	Flange DN150
AM	Flange ASME 2"
AN	Flange ASME 3"
AP	Flange ASME 4"
AR	Flange ASME 6"
TT	Customized

5 | SEALING MATERIAL/TEMPERATURE/PRESSURE

M	FKM/-40...+130°C/-1...2bar
N	FKM/-40...+200°C/-1...2bar
O	EPDM/-40...+130°C/-1...2bar
X	KALREZ 6230/-15...+130°C/-1...2bar
Z	KALREZ 6375/-15...+130°C/-1...2bar
T	Customized

6 | ELECTRONICS

H	Two-wire 4...20mA/HART; 24 VDC
B	Four wire 4...20mA/HART; 220 VAC
I	Four wire 4...20mA/HART; 24 VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

7 | HOUSING/PROTECTION

A	Single chamber/ Aluminum / IP67
B	Double chamber/ Aluminum / IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316L SS/ IP67

8 | CABLE ENTRY / CABLE GLAND/ CONNECT CABLE

M	M20x1.5 / with/ without
N	½NPT/ without/ without

9 | LCD DISPLAY

X	Without display
A	With display

Ordering code

PIR6400 radar level transmitter with thread version antenna

PIR6400									
	1	2	3	4	5	6	7	8	9



1 | LANGUAGE

A	English
I	Chinese
S	Spanish
T	Customized

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
DX	Ex d ia [iaGa]IIC T6/T2 Gb
TT	Customized

3 | ANTENNA VERSION / MATERIAL

T	Thread version antenna 316L+PTFE
V	Thread version antenna/316L+PEEK

4 | PROCESS FITTING

TG	Thread G1½
TH	Thread G3
TD	Thread NPT1½
TI	Thread NPT3
TT	Customized

5 | SEALING MATERIAL/TEMPERATURE/PRESSURE

A	FKM/-40...+130°C/-1...20bar
B	FKM/-40...+200°C/-1...20bar
F	EPDM/-40...+130°C/-1...20bar
R	KALREZ 6230/-15...+130°C/-1...20bar
S	KALREZ 6230/-15...+200°C/-1...20bar
G	KALREZ 6375/-15...+130°C/-1...20bar
H	KALREZ 6375/-15...+200°C/-1...20bar
T	Customized

6 | ELECTRONICS

H	Two-wire 4...20mA/HART; 24 VDC
B	Four wire 4...20mA/HART; 220 VAC
I	Four wire 4...20mA/HART; 24 VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

7 | HOUSING/PROTECTION

A	Single chamber/ Aluminum / IP67
B	Double chamber/ Aluminum / IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316L SS/ IP67

8 | CABLE ENTRY / CABLE GLAND/ CONNECT CABLE

M	M20x1.5 / with/ without
N	½NPT/ without/ without

9 | LCD DISPLAY

X	Without display
A	With display

Ordering code

PIR6400 radar level transmitter with plastic horn antenna

PIR6400									
	1	2	3	4	5	6	7	8	9



1 | LANGUAGE

A	English
I	Chinese
S	Spanish
T	Customized

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
DX	Ex d ia [iaGa] IIC T6/T2 Gb
TT	Customized

3 | ANTENNA VERSION / MATERIAL

B	Horn antenna $\phi 75\text{mm}$ /PP
U	Horn antenna $\phi 75\text{mm}$ /PTFE

4 | PROCESS FITTING

FD	Flange DN80
FE	Flange DN100
FK	Flange DN150
AN	Flange ASME 3"
AP	Flange ASME 4"
AR	Flange ASME 6"
TT	Customized

5 | SEALING MATERIAL/TEMPERATURE/PRESSURE

C	PP/-40...+80°C/-1...2bar
I	PTFE/-40...+130°C/-1...2bar
T	Customized

6 | ELECTRONICS

H	Two-wire 4...20mA/HART; 24 VDC
B	Four wire 4...20mA/HART; 220 VAC
I	Four wire 4...20mA/HART; 24 VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

7 | HOUSING/PROTECTION

A	Single chamber/ Aluminum / IP67
B	Double chamber/ Aluminum / IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316L SS/ IP67

8 | CABLE ENTRY / CABLE GLAND/ CONNECT CABLE

M	M20x1.5 / with/ without
N	1/2NPT/ without/ without

9 | LCD DISPLAY

X	Without display
A	With display

Ordering code

PIR6400 radar level transmitter with flange version antenna

PIR6400									
	1	2	3	4	5	6	7	8	9



1 | LANGUAGE

A	English
I	Chinese
S	Spanish
T	Customized

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
DX	Ex d ia [iaGa] IIC T6/T2 Gb
TT	Customized

3 | ANTENNA VERSION / MATERIAL

F	Flange with encapsulated antenna/PP
D	Flange with encapsulated antenna/PTFE
G	Flange with encapsulated antenna/PFA

4 | PROCESS FITTING

FD	Flange DN80
FE	Flange DN100
FK	Flange DN150
AN	Flange ASME 3"
AP	Flange ASME 4"
AR	Flange ASME 6"
TT	Customized

5 | SEALING MATERIAL/TEMPERATURE/PRESSURE

C	PP/-40...+80°C/-1...2bar
D	PP/-40...+80°C/-1...16bar
I	PTFE/-40...+130°C/-1...16bar
Y	PTFE/-40...+200°C/-1...16bar
P	PFA/-40...+130°C/-1...16bar
Q	PFA/-40...+200°C/-1...16bar
T	Customized

6 | ELECTRONICS

H	Two-wire 4...20mA/HART; 24 VDC
B	Four wire 4...20mA/HART; 220 VAC
I	Four wire 4...20mA/HART; 24 VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

7 | HOUSING/PROTECTION

A	Single chamber/ Aluminum / IP67
B	Double chamber/ Aluminum / IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316L SS/ IP67

8 | CABLE ENTRY / CABLE GLAND/ CONNECT CABLE

M	M20x1.5 / with/ without
N	½NPT/ without/ without

9 | LCD DISPLAY

X	Without display
A	With display

Ordering code

PIR6400 radar level transmitter with hygenic antenna

PIR6400									
	1	2	3	4	5	6	7	8	9



1 | LANGUAGE

A	English
I	Chinese
S	Spainsh
T	Customized

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
DX	Ex d ia [iaGa]IIC T6/T2 Gb
TT	Customized

3 | ANTENNA VERSION / MATERIAL

H	Hygenic antenna /316L+PTFE
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4 | PROCESS FITTING

CA	Clamp 2" DIN32676 ISO2852
CB	Clamp 3" DIN32676 ISO2852
CC	Clamp 4" DIN32676 ISO2852
TT	Customized

5 | SEALING MATERIAL/TEMPERATURE/PRESSURE

HY	PTFE/-40...+130°C/-1...10bar
HL	PTFE/-40...+200°C/-1...10bar
T	Customized

6 | ELECTRONICS

H	Two-wire 4...20mA/HART; 24 VDC
B	Four wire 4...20mA/HART; 220 VAC
I	Four wire 4...20mA/HART; 24 VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

7 | HOUSING/PROTECTION

A	Single chamber/ Aluminum / IP67
B	Double chamber/ Aluminum / IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316L SS/ IP67

8 | CABLE ENTRY / CABLE GLAND/ CONNECT CABLE

M	M20x1.5 / with/ without
N	½NPT/ without/ without

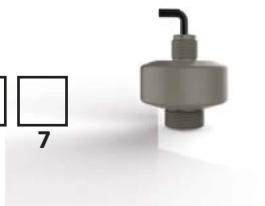
9 | LCD DISPLAY

X	Without display
A	With display

Ordering code

PIR6400 compact radar level transmitter

PIR6400							
	1	2	3	4	5	6	7



1 | VERSION

D	Max. 8m
R	Max. 15m
U	Max. 30m

2 | APPROVAL

XX	Standard
CX	Ex ia IIC T6 Ga
TT	Customized

3 | ANTENNA MATERIAL

Z	PP
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4 | ELECTRONICS

H	18~36VDC/4...20mA/HART
U	18~36VDC/RS485/4...20mA/HART
T	Customized

5 | COMMISSIONING

A	RS485/HART
B	RS485/HART/Bluetooth
T	Customized

6 | CABLE LENGTH

M	5M
N	10M
T	Customized

7 | PROTECTION

R	IP67
S	IP68