LEVEL Meters

Radar
Guided Wave Radar
Ultrasonic

PULS 60Y series
FLEX 80Y series
SON 60Y series

PULS

Non-contact measurement under all process conditions

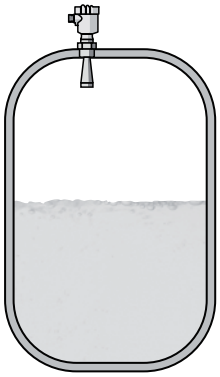
Measuring principle

Extremely short microwave impulses are emitted by the antenna system to the measured product, reflected by the product surface and received again by the antenna system. The time from emission to reception of the signals is proportional to the level in the vessel. A special time spreading procedure enables the reliable and precise measurement of the extremely short signal running times. The radar sensors are available in different C and K-band frequency ranges, this ensures the optimum solution for the different applications. The proven ECHOFOX signal processing analysis the reflection in the vessel based on long-standing experience and detects the level signal reliably. The adaptation to the respective application is really simple through the selection of the application parameters.

Applications

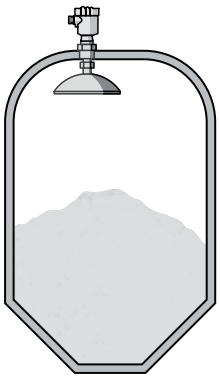
Level in liquids

Two different emitting frequencies are available for these applications. The compact, high frequency K-band sensors PULS 61Y, 62Y and 63Y are particularly suitable for applications where high accuracy is required. Since even with small antenna sizes, an excellent signal focusing is reached, hence mounting on small mounting openings is possible. The low frequency C-band sensors PULS 65Y and 66Y can penetrate foam and strong condensation and are thus particularly suitable for arduous process conditions. Unaffected by steam, gas composition, pressure and temperature changes, radar sensors detect the product surface of different products reliably and ensure thus an optimum process.



Level in bulk solids

The high frequency sensors PULS 67Y and 68Y in K-band technology are used for these applications. Thanks to the very good focusing of the signals, the level is detected reliably independent of silo installations or buildup on the vessel wall. A high sensitivity electronics optimized to the requirements of the bulk solids measurement, enables a reliable level measurement of different products up to a distance of 75 m. The measuring principle is unaffected by strong dust generation, filling noise, air turbulences by pneumatic filling and temperature fluctuations and ensures a reliable and maintenance-free operation of the systems. The application area covers applications in the food processing industry and the plastic processing up to the steel generation and mineral rock processing.



Overview

Instrument type	Measuring range Accuracy	Process fitting	Process tempe-rature	Process pressure
PULS 61Y Liquids in small vessels under simple process conditions 	up to 35 m, +/- 2 mm	Thread G1½, 1½ NPT, mounting strap, compression flanges from DN 80, 3"	-40 … +80 °C	-1 … +3 bar (-100 … +300 kPa)
PULS 62Y Storage containers, reactors and process vessels with various process conditions 	up to 35 m, +/- 2 mm	Thread from G1½, 1½ NPT, flanges from DN 50, 2"	-196 … +450 °C	-1 … +160 bar (-100 … +16000 kPa)
PULS 63Y Aggressive liquids or with hygienic requirements 	up to 35 m, +/- 2 mm	Hygienic fittings, boltings, flanges from DN 50, 2"	-196 … +200 °C	-1 … +16 bar (-100 … +1600 kPa)
PULS 65Y Liquids under simple process conditions 	up to 35 m, +/- 8 mm	Thread from G1½, 1½ NPT, flanges from DN 50, 2"	-40 … +150 °C	-1 … +16 bar (-100 … +1600 kPa)
PULS 66Y Storage tanks and process vessels with different process conditions 	up to 35 m, +/- 8 mm	Flanges from DN 50, 2"	-60 … +400 °C	-1 … +160 bar (-100 … +16000 kPa)
PULS 67Y Bulk solids for smaller to average vessel heights 	up to 15 m, +/- 2 mm	Mounting strap, compression flanges from DN 80, 3"	-40 … +80 °C	-1 … +2 bar (-100 … +200 kPa)
PULS SR 68Y Bulk solids for average to large vessel heights 	up to 30 m, +/- 2 mm	Thread G1½, 1½ NPT, flanges from DN 50, 2"	-40 … +250 °C	-1 … +100 bar (-100 … +10000 kPa)
PULS 68Y Bulk solids for average to large vessel heights 	up to 75 m, +/- 2 mm	Thread G1½, 1½ NPT, flanges from DN 50, 2"	-196 … +450 °C	-1 … +160 bar (-100 … +16000 kPa)
PULS 69Y Bulk solids for smaller or very large vessels 	up to 120 m, +/- 5 mm	Mounting strap, compression flange from DN 80, 3", flanges from DN 80, 3"	-40 … +200 °C	-1 … +3 bar (-100 … +300 kPa)

PULS 61Y

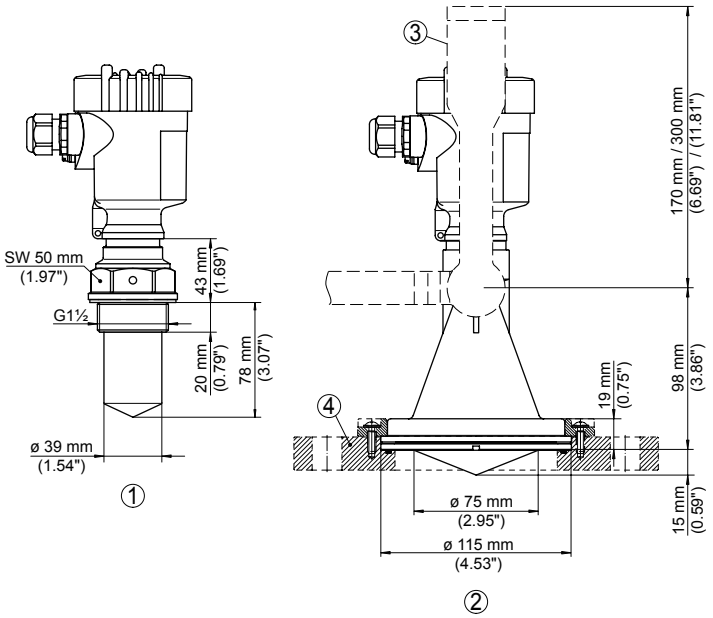
Radar sensor for continuous level measurement of liquids

Application area
The PULS 61Y is a radar sensor for continuous level measurement of liquids under simple process conditions. The PULS 61Y is an economical solution through its simple and versatile mounting possibilities. The encapsulated antenna system ensures a maintenance-free operation.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of process conditions

Technical data

Measuring range:	up to 35 m
Process fitting:	thread G1½, 1½ NPT mounting strap compression flanges from DN 80, 3" adapter flanges from DN 100, 4"
Process temperature:	-40 … +80 °C
Process pressure:	-1 … +3 bar (-100 … +300 kPa)
Accuracy:	+/- 2 mm
SIL qualification:	optionally up to SIL2



1 Version with encapsulated antenna system (ø 40 mm)
2 Version with plastic horn antenna (ø 80 mm)
3 Mounting strap
4 Adapter flang

For further information (process fittings, options and others), please contact Yokogawa.

Approval
- **XX** without
- **XM** Ship approval
- **CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6
- **CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
- **CI** IEC Ex ia IIC T6
- **DX** ATEX II 1/2G, 2G EEx d ia IIC T6
- **DI** IEC Ex d ia IIC T6
- ***** For FM and CSA, please contact Yokogawa.

Version / Material / Process temperature
- **A** with encapsulated horn antenna (ø40mm) / PVDF / -40...+80°C
- **B** with plastic horn antenna (ø80mm) / PP / -40...+80°C

Process fitting / Material
- **XX** without
- **GP** Thread G1½ PN3, DIN3852-A / PVDF
- **NP** Thread 1½NPT PN3, ASME B1.20.1 / PVDF
- **XG** Counter nut G1½ / PPH
- **CA** Clamp 2" PN3 (ø64mm) DIN32676, ISO2852 / 316L
- **CB** Clamp 3" PN3 (ø91mm) DIN32676, ISO2852 / 316L
- **RA** Slotted nut DN50 PN3, DIN11851 / 316L
- **RB** Slotted nut DN80 PN3, DIN11851 / 316L
- **XC** Mounting strap, length: 170mm / 316L
- **XD** Mounting strap, length: 300mm / 316L
- **YD** Compression flange suitable for flanges 3" 150lb, DN80 PN16 / PP-GF30
- **AE** Adapter flange DN100 PN16 / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)
- **AH** Adapter flange DN150 PN16 / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)
- **FK** Adapter flange 4" 150lb, ASME / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)
- **FM** Adapter flange 6" 150lb, ASME / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)
- **UC** Adapter flange DN100 10K, JIS / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)
- **UE** Adapter flange DN150 10K, JIS / PP-GF30, seal: FKM (SHS FPM 70C3 GLT)

Electronics
- **H** Two-wire 4...20mA/HART®
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic 2-chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2 bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection
- **M** M20x1.5 / with / without
- **N** ½NPT / without / withour

Display/adjustment module PLICSCOM
- **X** without
- **A** mounted

Additional equipment
- **X** without

PS61Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

VEGAPULS 62Y

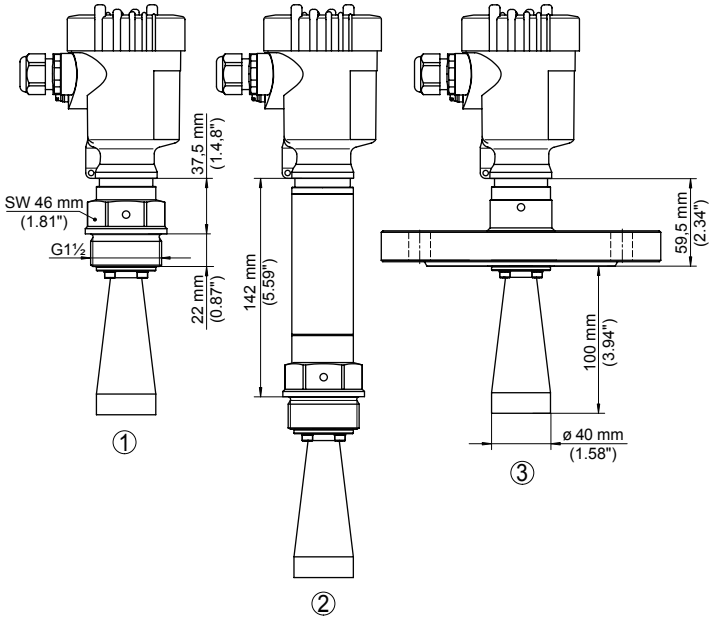
Radar sensor for continuous level measurement of liquids

Application area
The VEGAPULS 62 is a universally implementable radar sensor for continuous level measurement of liquids. It is suitable for level measurement in storage containers, reactors and process vessels, even under difficult process conditions. With its various antenna versions and materials, VEGAPULS 62 is the optimal solution for almost all applications and processes. Its wide temperature and pressure range makes project planning simple.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of pressure, temperature, gas and steam

Technical data

Measuring range:	up to 35 m
Process fitting:	thread from G1½, 1½ NPT flanges from DN 50, 2"
Process temperature:	-196 … +450 °C
Process pressure:	-1 … +160 bar (-100 … +16000 kPa)
Measuring accuracy:	+/- 2 mm
SIL qualification:	optionally up to SIL2



1 Threaded version
2 Threaded version with temperature adapter up to +250 °C
3 Flange version

Antenna-ø	Length	Beam angle
40 mm	100 mm	20°
48 mm	120 mm	15°
75 mm	216 mm	10°
95 mm	430 mm	8°
245 mm (parabolic)	138 mm	3°

For further information (process fittings, options and others), please contact Yokogawa.

Approval
- **XX** without
- **XM** Ship approval
- **CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6
- **CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
- **CI** IEC Ex ia IIC T6
- **DX** ATEX II 1/2G, 2G EEx d ia IIC T6
- **DI** IEC Ex d ia IIC T6
- **CK** IEC Ex ia IIC Ga,Ga/Gb,Gb + Ex t IIIC T...Da,Da/Db,Db
- **DK** IEC Ex d IIC Ga/Gb,Gb + Ex t IIIC T... Da,Da/Db,Db
- **RX** IEC Ex t IIIC T* Da,Da/Db,Db

***** For FM and CSA, please contact Yokogawa.

Version / Material
- **B** with horn antenna (ø40mm) / 316L
- **C** with horn antenna (ø48mm) / 316L
- **D** with horn antenna (ø75mm) / 316L
- **E** with horn antenna (ø95mm) / 316L
- **K** with parabolic antenna (ø245mm) / 316L
- **F** with ½"-standpipe / 316L

Process fitting / Material
- **GA** Thread G¾ PN40, DIN3852-A / 316L
- **NA** Thread ¾NPT PN40, ASME B1.20.1 / 316L
- **GD** Thread G1½ PN40, DIN3852-A / 316L
- **ND** Thread 1½NPT PN40, ASME B1.20.1 / 316L
- **GB** Thread G1½ PN100, DIN3852-A / 316L
- **NB** Thread 1½NPT PN100, ASME B1.20.1 / 316L
- **FC** Flange DN50 PN40 Form C, DIN2501 / 316L
- **FD** Flange DN80 PN40 Form C, DIN2501 / 316L
- **FE** Flange DN100 PN16 Form C, DIN2501 / 316L
- **FK** Flange DN150 PN16 Form C, DIN2501 / 316L

Seal / Process temperature
- **2** FKM (SHS FPM 70C3 GLT) and PTFE / -40...+130°C
- **3** FFKM (Kalrez 6375) and PTFE / -20...+130°C
- **F** FFKM (Kalrez 6375) and PEEK / -20...+250°C
- **H** Graphite and ceramic / -196...+450°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic 2-chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP67
- **W** Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection
- **M** M20x1.5 / with / without
- **N** ½NPT / without / without

Display/adjustment module PLICSCOM
- **X** without
- **A** mounted

Additional equipment
- **X** without

PS62Y.									

Length standpipe / Total length
316L (200-5850 mm) per 100 mm

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

PULS 63Y

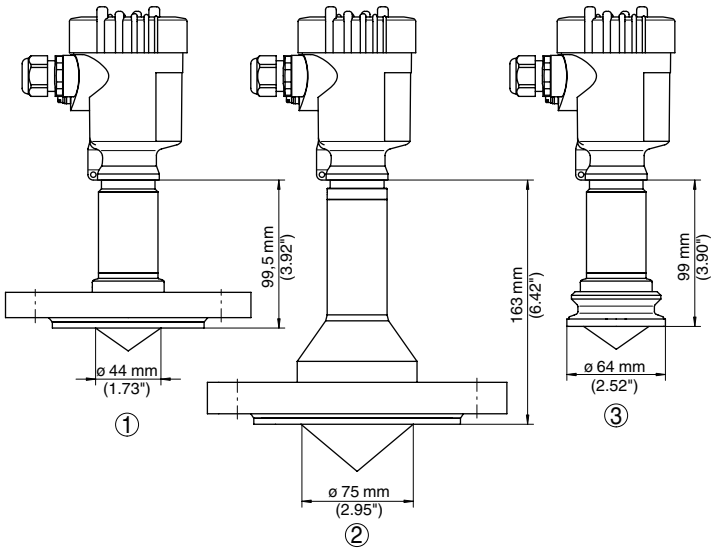
Radar sensor for continuous level measurement of liquids

Application area
The PULS 63Y is a radar sensor for continuous level measurement of aggressive liquids or with hygienic requirements. It is suitable for applications in storage tanks, process vessels, dosing vessels and reactors. The encapsulated antenna system of PULS 63Y protects the PULS 63Y against pollution and ensures a maintenance-free permanent operation. The front-flush mounting ensures an optimum cleanability even with high hygienic requirements.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Exact measuring results independent of process conditions

Technical data

Measuring range:	up to 35 m
Process fitting:	hygienic fittings slotted nuts flanges from DN 50, 2"
Process temperature:	-196 … +200 °C
Process pressure:	-1 … +16 bar (-100 … +1600 kPa)
Accuracy:	+/- 2 mm
SIL qualification:	optionally up to SIL2



1 Flange version DN 50
2 Flange version DN 80
3 Clamp version 2"

For further information (process fittings, options and others), please contact Yokogawa.

Approval

XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6
CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
CI IEC Ex ia IIC T6
DX ATEX II 1/2G, 2G EEx d ia IIC T6
DI IEC Ex d ia IIC T6
CK IEC Ex ia IIC Ga,Ga/Gb,Gb + Ex t IIIC T...Da,Da/Db,Db
DK IEC Ex d IIC Ga/Gb,Gb + Ex t IIIC T... Da,Da/Db,Db
RX IEC Ex t IIIC T* Da,Da/Db,Db

***** For FM and CSA, please contact Yokogawa.

Version / Material / Process temperature

N Hygienically encapsulated horn antenna / PTFE / -40...+200°C
J Hygienically encapsulated horn antenna / PTFE / -196...+200°C
R Hygienically encapsulated horn antenna / PTFE (8mm) / -40...+200°C
V Hygienically encapsulated horn antenna / PTFE and FKM / -20...+130°C
E Hygienically encapsulated horn antenna / PTFE and EPDM / -40...+130°C

Process fitting / Material

CA Clamp 2" PN16 (ø64mm) DIN32676, ISO2852 / 316L
CB Clamp 3" PN10 (ø91mm) DIN32676, ISO2852 / 316L
CC Clamp 4" PN10 (ø119mm) DIN32676, ISO2852 / 316L
RA Slotted nut DN50 PN16, DIN 11851 / 316L
RB Slotted nut DN80 PN16, DIN 11851 / 316L
LB Hygienic fitting with tension flange DN32 PN16 / 316L
LA Hygienic fitting F40 PN16; with compression nut / 316L
TB Varivent Form F DN25 (1"), D=50mm / 316L
QB for NEUMO BioControl D50 PN16 / 316L
FC Flange DN50 PN40 Form C, DIN2501 / 316L
FD Flange DN80 PN40 Form C, DIN2501 / 316L
FE Flange DN100 PN16 Form C, DIN2501 / 316L
FK Flange DN150 PN16 Form C, DIN2501 / 316L
FM Flange DN150 PN40 Form C, DIN2501 / 316L
LM Flange DN150 PN40 Form V13, DIN2501 / 316L
AE Flange 2" 150lb RF, ASME B16.5 / 316L
AI Flange 3" 150lb RF, ASME B16.5 / 316L
AK Flange 4" 150lb RF, ASME B16.5 / 316L
AM Flange 6" 150lb RF, ASME B16.5 / 316L

Electronics

H Two-wire 4...20mA/HART®
B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
P Profibus PA
F Foundation Fieldbus

Housing / Protection

K Plastic single chamber / IP66/IP67
R Plastic 2-chamber / IP66/IP67
A Aluminium single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2 bar)
W Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection

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

Display/adjustment module PLICSCOM

X without
A mounted

Additional equipment

X without

PS63Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

PULS 65Y

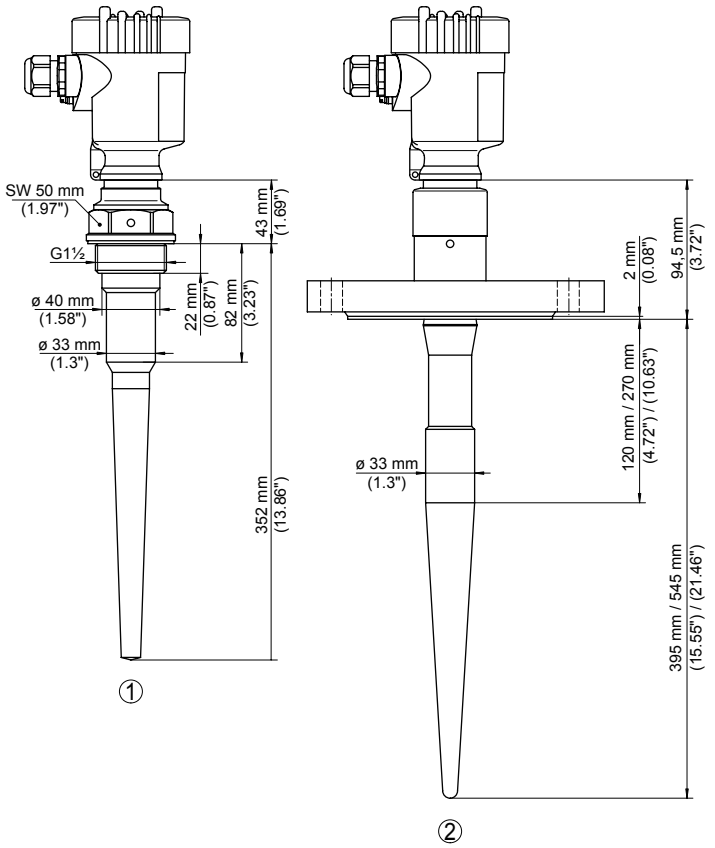
Radar sensor for continuous level measurement of liquids

Application area
The PULS 65Y is a radar sensor for continuous measurement of liquids under simple process conditions. It is particularly suitable for level measurement in vessels with small process fittings and under simple process conditions. The slim rod antenna enables the installation in small vessel openings.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of process conditions

Technical data

Measuring range:	up to 35 m
Process fitting:	thread from G1½, 1½ NPT flanges from DN 50, 2"
Process temperature:	-40 … +150 °C
Process pressure:	-1 … +16 bar (-100 … +1600 kPa)
Accuracy:	+/- 8 mm
SIL qualification:	optionally up to SIL2



1 Threaded version G1½
2 Flange version DN 80

For further information (process fittings, options and others), please contact Yokogawa.

Approval

XX without

XM Ship approval

CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6

CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval

CI IEC Ex ia IIC T6

DX ATEX II 1/2G, 2G EEx d ia IIC T6

DI IEC Ex d ia IIC T6

***** For FM and CSA, please contact Yokogawa.

Version / Material / Process temperature

K Rod antenna for socket length: 50mm / PVDF and PTFE / -40...+130°C

L Rod antenna for socket length: 100mm / PTFE / -40...+130/+150°C

M Rod antenna for socket length: 250mm / PTFE / -40...+130/+150°C

Process fitting / Material

GD Thread G1½ PN16, DIN3852-A / 316L

GP Thread G1½ PN3, DIN3852-A / PVDF

ND Thread 1½NPT PN16, ASME B1.20.1 / 316L

NP Thread 1½NPT PN3, ASME B1.20.1 / PVDF

FC Flange DN50 PN40 Form C, DIN2501 / 316L, PTFE plated

FD Flange DN80 PN40 Form C, DIN2501 / 316L, PTFE plated

FE Flange DN100 PN16 Form C, DIN2501 / 316L, PTFE plated

FK Flange DN150 PN16 Form C, DIN2501 / 316L, PTFE plated

AE Flange 2" 150lb RF, ASME B16.5 / 316L, PTFE plated

AI Flange 3" 150lb RF, ASME B16.5 / 316L, PTFE plated

AJ Flange 3" 300lb RF, ASME B16.5 / 316L, PTFE plated

AK Flange 4" 150lb RF, ASME B16.5 / 316L, PTFE plated

AM Flange 6" 150lb RF, ASME B16.5 / 316L, PTFE plated

Electronics

H Two-wire 4...20mA/HART®

B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz

I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC

P Profibus PA

F Foundation Fieldbus

Housing / Protection

K Plastic single chamber / IP66/IP67

R Plastic 2-chamber / IP66/IP67

A Aluminium single chamber / IP66/IP68 (0.2 bar)

D Aluminium double chamber / IP66/IP67 (0.2 bar)

W Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection

M M20x1.5 / with / without

N ½NPT / without / without

Display/adjustment module PLICSCOM

X without

A mounted

Additional equipment

X without

PS65Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

PULS 66Y

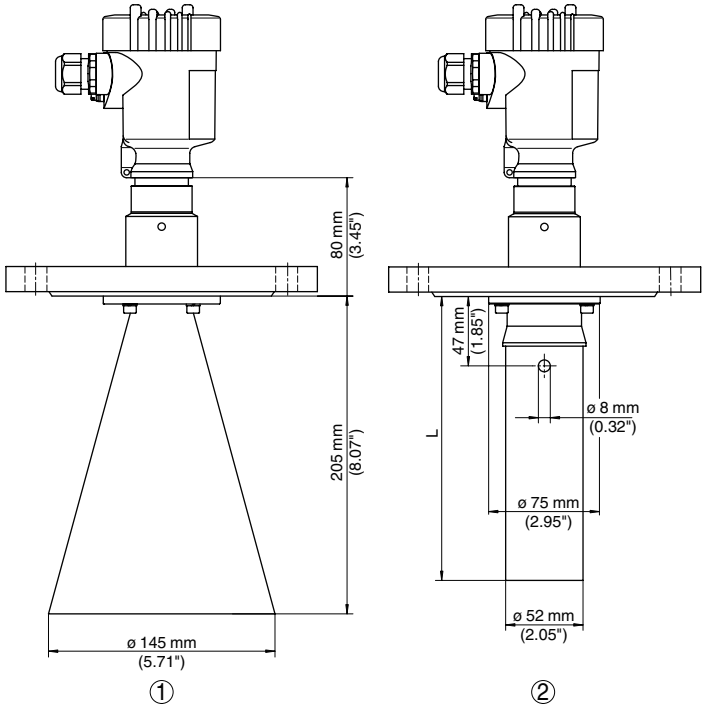
Radar sensor for continuous level measurement of liquids

Application area
The PULS 66Y is a sensor for continuous level measurement of liquids under arduous process conditions. It is suitable for applications in storage tanks, process vessels or standpipes. The PULS 66Y can be used universally thanks to different antenna versions.

Your benefit
– Maintenance-free operation through non-contact measuring principle
– High plant availability, because wear and maintenance-free
– Reliable measurement independent of process conditions

Technical data

Measuring range:	up to 35 m
Process fitting:	flanges from DN 50, 2"
Process temperature:	-60 … +400 °C
Process pressure:	-1 … +160 bar (-100 … +16000 kPa)
Accuracy:	+/- 8 mm
SIL qualification:	optionally up to SIL2



1 Version with horn antenna ø 145 mm
2 Version with standpipe antenna

Antenna-ø	Length	Beam angle
75 mm	75 mm	38°
96 mm	113 mm	30°
145 mm	205 mm	20°
195 mm	296 mm	17°
240 mm	380 mm	14°

For further information (process fittings, options and others), please contact Yokogawa.

Approval

XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6
CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
CI IEC Ex ia IIC T6
DX ATEX II 1/2G, 2G EEx d ia IIC T6
DI IEC Ex d ia IIC T6
CK IEC Ex ia IIC Ga,Ga/Gb,Gb + Ex t IIIC T...Da,Da/Db,Db
DK IEC Ex d IIC Ga/Gb,Gb + Ex t IIIC T... Da,Da/Db,Db
RX IEC Ex t IIIC T* Da,Da/Db,Db

***** For FM and CSA, please contact Yokogawa.

Version / Material

A for standpipe / 316L
D with horn antenna (ø75mm) / 316L
E with horn antenna (ø96mm) / 316L
H with horn antenna (ø145mm) / 316L
K with horn antenna (ø140mm) / enamel
I with horn antenna (ø195mm) / 316L
J with horn antenna (ø240mm) / 316L
F with standpipe (ø52mm) / 316L

Process fitting / Material

FC Flange DN50 PN40 Form C, DIN2501 / 316L
FD Flange DN80 PN40 Form C, DIN2501 / 316L
FE Flange DN100 PN16 Form C, DIN2501 / 316L
FK Flange DN150 PN16 Form C, DIN2501 / 316L
FL Flange DN200 PN16 Form C, DIN2501 / 316L
FI Flange DN250 PN16 Form C, DIN2501 / 316L
AE Flange 2" 150lb RF, ASME B16.5 / 316L
AI Flange 3" 150lb RF, ASME B16.5 / 316L
AK Flange 4" 150lb RF, ASME B16.5 / 316L
AM Flange 6" 150lb RF, ASME B16.5 / 316L
AN Flange 8" 150lb RF, ASME B16.5 / 316L
AP Flange 10" 150lb RF, ASME B16.5 / 316L
JL Flange 10" 150lb RJF, ASME B16.5 / 316L

Seal / Process temperature

2 FKM (A+P GLT FPM 70.16-06) / -40...+150°C
3 FFKM (Kalrez 6375) / -20...+150°C
G Graphite and ceramic / -60...+250°C
H Graphite and ceramic /-60...+400°C

Electronics

H Two-wire 4...20mA/HART®
B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
P Profibus PA
F Foundation Fieldbus

Housing / Protection

K Plastic single chamber / IP66/IP67
R Plastic 2-chamber / IP66/IP67
A Aluminium single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2 bar)
W Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection

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

Display/adjustment module PLICSCOM

X without
A mounted

Additional equipment

X without

PS66Y.									

Length standpipe / Total length

316L (500-5950 mm) per 100 mm

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

PULS 67Y

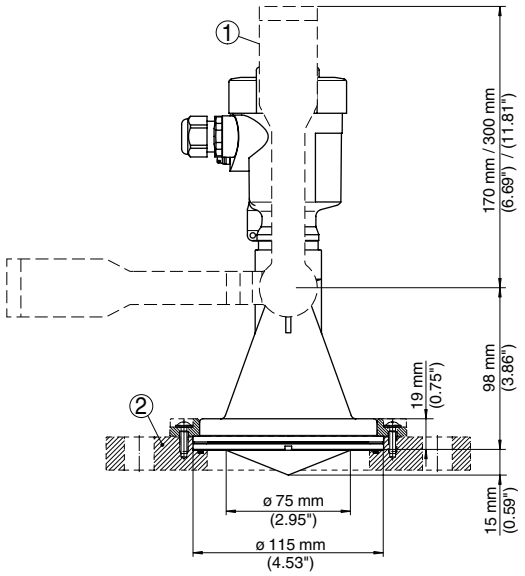
Radar sensor for continuous level measurement of bulk solids

Application area
The PULS 67Y is a sensor for continuous level measurement of bulk solids under simple process conditions. It is suitable for smaller silos and vessels. The PULS 67Y is an economical solution through its versatile and simple mounting options. The encapsulated antenna system ensures maintenance-free permanent operation even with strong buildup.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of vapour, dust and noise

Technical data

Measuring range:	up to 15 m
Process fitting:	mounting strap compression flanges from DN 80, 3"
Process temperature:	-40 … +80 °C
Process pressure:	-1 … +2 bar (-100 … +200 kPa)
Accuracy:	+/- 2 mm
SIL qualification:	optionally up to SIL2



1 Mounting strap
2 Adapter flang

For further information (process fittings, options and others), please contact Yokogawa.

Approval
XX without .....
RX ATEX II 1D, 1/2D, 2D Ex t IIIC T* Da, Da/Db, Db .....
RX IEC Ex t IIIC T* Da,Da/Db,Db .....
For FM and CSA, please contact Yokogawa.
Version / Material / Process temperature
B with plastic horn antenna (ø80mm) / PP / -40...+80°C .....
Process fitting / Material
XX without .....
XC Mounting strap, length: 170mm / 316L .....
XD Mounting strap, length: 300mm / 316L .....
YD Compression flange suitable for flanges 3" 150lb, DN80 PN16 / PP-GF30 .....
AE Adapter flange DN100 PN16 / PP-GF30, seal: FKM (SHS FPM 70C3 GLT) .....
AH Adapter flange DN150 PN16 / PP-GF30, seal: FKM (SHS FPM 70C3 GLT) .....
AD Adapter flange DN200 PN16 / PP-GF30, seal: FKM (SHS FPM 70C3 GLT) .....
FK Adapter flange 4" 150lb, ASME / PP-GF30, seal: FKM (SHS FPM370C3 GLT) .....
Electronics
H Two-wire 4...20mA/HART® .....
B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz .....
I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC .....
P Profibus PA .....
F Foundation Fieldbus .....
Housing / Protection
K Plastic single chamber / IP66/IP67 .....
R Plastic 2-chamber / IP66/IP67 .....
A Aluminium single chamber / IP66/IP68 (0.2 bar) .....
D Aluminium double chamber / IP66/IP68 (0.2 bar) .....
W Stainless steel double chamber / IP66/IP68 (0.2bar) .....
Cable entry / Cable gland / Plug connection
M M20x1.5 / with / without .....
N ½NPT / without / without .....
Display/adjustment module PLICSCOM
X without .....
A mounted .....
Additional equipment
X without .....

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

YOKOGAWA

PULS SR 68Y

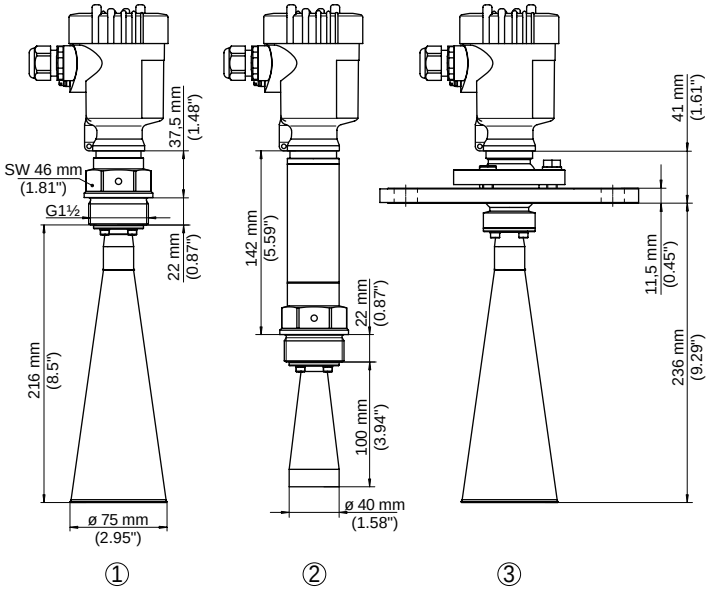
Radar sensor for continuous level measurement of bulk solids

Application area
The PULS SR 68Y is a radar sensor for continuous measurement of bulk solids even under difficult process conditions. It is particularly suitable for level measurement in high silos and large bunkers. The PULS SR 68Y is an economical solution thanks to the simple setup and the reliable, maintenance-free operation.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of vapour, dust and noise

Technical data

Measuring range:	up to 30 m
Process fitting:	thread from G1½, 1½ NPT flanges from DN 50, 2"
Process temperature:	-40 … +250 °C
Process pressure:	-1 … +100 bar (-100 … +10000 kPa)
Accuracy:	+/- 2 mm



1 Threaded version with horn antenna
2 Threaded version with horn antenna and with temperature adapter
3 Version with horn antenna and swivelling holder

Antenna-ø	Length	Beam angle
40 mm	100 mm	20°
48 mm	120 mm	15°
75 mm	216 mm	10°
95 mm	430 mm	8°

For further information (process fittings, options and others), please contact Yokogawa.

Approval
- **XX** without
- **CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6
- **CI** IEC Ex ia IIC T6
- **DX** ATEX II 1/2G, 2G EEx d ia IIC T6
- **DI** IEC Ex d ia IIC T6
- **CK** IEC Ex ia IIC Ga,Ga/Gb,Gb + Ex t IIIC T...Da,Da/Db,Db
- **DK** IEC Ex d IIC Ga/Gb,Gb + Ex t IIIC T... Da,Da/Db,Db
- **RX** ATEX II 1D, 1/2D, 2D Ex t IIIC T* Da, Da/Db, Db
- **RX** IEC Ex t IIIC T* Da,Da/Db,Db

***** For FM and CSA, please contact Yokogawa.

Version / Material
- **B** with horn antenna (ø40mm) / 316L
- **C** with horn antenna (ø48mm) / 316L
- **D** with horn antenna (ø75mm) / 316L
- **E** with horn antenna (ø95mm) / 316L
- **K** with parabolic antenna (ø245mm) / 316L

Process fitting / Material
- **GD** Thread G1½ PN40, DIN3852-A / 316L
- **ND** Thread 1½NPT PN40, ASME B1.20.1 / 316L
- **FC** Flange DN50 PN40 Form C, DIN2501 / 316L
- **FD** Flange DN80 PN40 Form C, DIN2501 / 316L
- **FE** Flange DN100 PN16 Form C, DIN2501 / 316L
- **AE** Flange 2" 150lb RF, ASME B16.5 / 316L
- **AI** Flange 3" 150lb RF, ASME B16.5 / 316L
- **AK** Flange 4" 150lb RF, ASME B16.5 / 316L
- **1O** Swivelling holder with flange DN50 PN16 / 316L
- **1P** Swivelling holder with flange DN80 PN16 / 316L
- **1Q** Swivelling holder with flange DN100 PN16 / 316L
- **1F** Swivelling holder with flange 2" 150lb / 316L
- **1G** Swivelling holder with flange 3" 150lb / 316L
- **1H** Swivelling holder with flange 4" 150lb / 316L
- **GB** Thread G1½ PN100, DIN3852-A / 316L
- **NB** Thread 1½NPT PN100, ASME B1.20.1 / 316L

Seal / Process temperature
- **2** FKM (SHS FPM 70C3 GLT) and PTFE / -40...+130°C
- **3** FFKM (Kalrez 6375) and PTFE / -20...+130°C
- **F** FFKM (Kalrez 6375) and PEEK / -20...+250°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Two-wire Profibus PA
- **F** Two-wire Foundation Fieldbus

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic 2-chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2 bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection
- **M** M20x1.5 / with / without
- **N** ½NPT / without / without

Display/adjustment module PLICSCOM
- **X** without
- **A** mounted

Additional equipment
- **X** without

PSSR68Y.									

Only typical specifications are indicated in this table. For more specifications and detailed information, please contact Yokogawa.

YOKOGAWA

VEGAPULS 68Y

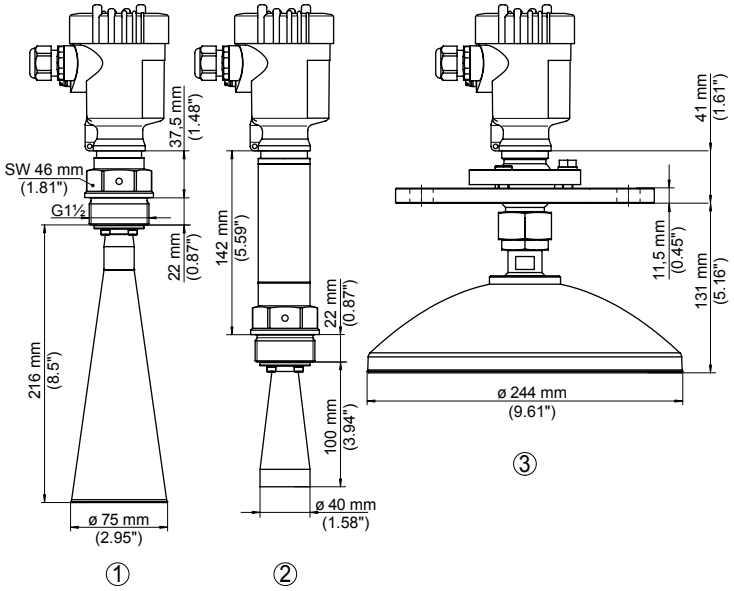
Radar sensor for continuous level measurement of bulk solids

Application area
The PULS 68Y is a radar sensor for continuous measurement of bulk solids also under difficult process conditions and with large measuring ranges. The sensor is ideal for level measurement in high silos, large bunkers, stone crushers and in the furnace. The 68Y with different antenna versions and materials is the optimum solution for virtually all applications and processes. Through the wide temperature and pressure range, the sensor can be used universally and enables a simple planning.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of vapour, dust and noise

Technical data

Measuring range:	up to 75 m
Process fitting:	thread from G1½, 1½ NPT flanges from DN 50, 2"
Process temperature:	-196 … +450 °C
Process pressure:	-1 … +160 bar (-100 … +16000 kPa)
Accuracy:	+/- 2 mm
SIL qualification:	optionally up to SIL2



1 Threaded version with horn antenna
2 Threaded version with horn antenna and with temperature adapter
3 Version with parabolic antenna and swivelling holder

Antenna-ø	Length	Beam angle
40 mm	100 mm	20°
48 mm	120 mm	15°
75 mm	216 mm	10°
95 mm	430 mm	8°
245 mm (parabolic)	138 mm	3°

For further information (process fittings, options and others), please contact Yokogawa.

Approval

XX without
CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6
CK ATEX II 1G, 1/2G, 2G EEx ia IIC T5+ATEX II 1/2 D IP6X T
CI IEC Ex ia IIC T6
DX ATEX II 1/2G, 2G EEx d ia IIC T6
DI IEC Ex d ia IIC T6
CK IEC Ex ia IIC Ga,Ga/Gb,Gb + Ex t IIIC T...Da,Da/Db,Db
DK IEC Ex d IIC Ga/Gb,Gb + Ex t IIIC T... Da,Da/Db,Db
RX ATEX II 1D, 1/2D, 2D Ex t IIIC T* Da, Da/Db, Db
RX IEC Ex t IIIC T* Da,Da/Db,Db

***** For FM and CSA, please contact Yokogawa.

Version / Material

B with horn antenna (ø40mm) / 316L
C with horn antenna (ø48mm) / 316L
D with horn antenna (ø75mm) / 316L
E with horn antenna (ø95mm) / 316L
K with parabolic antenna (ø245mm) / 316L

Process fitting / Material

GD Thread G1½ PN40, DIN3852-A / 316L
ND Thread 1½NPT PN40, ASME B1.20.1 / 316L
FC Flange DN50 PN40 Form C, DIN2501 / 316L
FD Flange DN80 PN40 Form C, DIN2501 / 316L
FE Flange DN100 PN16 Form C, DIN2501 / 316L
AE Flange 2" 150lb RF, ASME B16.5 / 316L
AI Flange 3" 150lb RF, ASME B16.5 / 316L
AK Flange 4" 150lb RF, ASME B16.5 / 316L
1O Swivelling holder with flange DN50 PN16 / 316L
1P Swivelling holder with flange DN80 PN16 / 316L
1Q Swivelling holder with flange DN100 PN16 / 316L
1F Swivelling holder with flange 2" 150lb / 316L
1G Swivelling holder with flange 3" 150lb / 316L
1H Swivelling holder with flange 4" 150lb / 316L

Seal / Process temperature

2 FKM (SHS FPM 70C3 GLT) and PTFE / -40...+130°C
3 FFKM (Kalrez 6375) and PTFE / -20...+130°C
F FFKM (Kalrez 6375) and PEEK / -20...+250°C
H Ceramic graphite / -196...+450°C

Electronics

H Two-wire 4...20mA/HART®
B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
P Profibus PA
F Foundation Fieldbus

Housing / Protection

K Plastic single chamber / IP66/IP67
R Plastic 2-chamber / IP66/IP67 (0.2bar)
A Aluminium single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP67
W Stainless steel double chamber / IP66/IP68 (0.2bar)

Cable entry / Cable gland / Plug connection

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

Display/adjustment module PLICSCOM

X without
A mounted

Additional equipment

X without
K Rinsing connection
V Rinsing connection with reflux valve

PS68Y.									

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

PULS 69Y

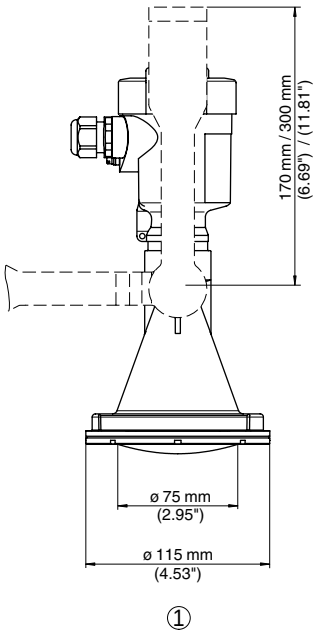
Radar sensor for continuous level measurement of bulk solids

Application area
The PULS 69Y is a sensor for continuous measurement of bulk solids under different process conditions. It is ideal for level measurement in very high silos, large bunkers and segmented vessels. Thanks to the very good signal focussing a simple setup and reliable measurement is ensured. The PULS 69Y can be equipped with an encapsulated plastic antenna or a lens antenna integrated in the metal flange. This enables the optimum adaption to different application areas.

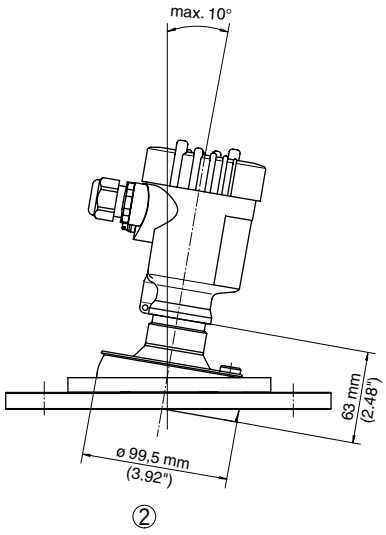
Your benefit
- Maintenance-free operation through non-contact measuring principle
- High plant availability, because wear and maintenance-free
- Reliable measurement independent of vapour, dust and noise

Technical data

Measuring range:	up to 120 m
Beam angle:	4°
Process fitting:	flanges from DN 80, 3"
Process temperature:	-40 … +200 °C
Process pressure:	-1 … +3 bar (-100 … +300 kPa)
Accuracy:	±5 mm



①



②

① Plastic horn antenna with mounting strap
② Metal jacketed lens antenna with swivelling holder

For further information (process fittings, options and others), please contact Yokogawa.

Scope

A Europe
I worldwide

Approval

X for Ex-free area
C ATEX II 1G, 1/2G, 2G Ex ia IIC T6
D ATEX II 1/2G, 2G Ex d ia IIC T6
E ATEX II 1/2G, 2G Ex d IIC T6
R ATEX II 1D, 1/2D, 1/3D, 2D IP66
C IEC Ex ia IIC T6
D IEC Ex d ia IIC T6
E IEC Ex d IIC T6
R IEC Ex t IIIC T... IP66

Version / Material

B with plastic horn antenna / PP
C Metal jacketed lens antenna with rinsing air connection / PEEK

Process fitting / Material

XX without
XC Mounting strap, length: 170mm / 316L
XD Mounting strap, length: 300 mm / 316L
YD Compression flange suitable for flanges 3" 150lb, DN80 PN16 / PP-GF30
AA Adapter flange DN100 PN16 Form B, DIN / PP-GF30
AD Adapter flange DN150 PN16 Form B, DIN / PP-GF30
AL Adapter flange 4" 150lb FF, ASME / PP-GF30
AM Adapter flange 6" 150lb FF, ASME / PP-GF30
SD Swivelling holder with flange 4" 150lb / 316L
SE Swivelling holder with flange 6" 150lb / 316L
SA Swivelling holder with flange DN100 PN16 Form B, DIN / 316L
SJ Swivelling holder with flange DN125 PN16 Form B, DIN / 316L
SB Swivelling holder with flange DN150 PN16 Form B, DIN / 316L
FA Flange DN80 PN16 Form B, DIN / 316L
FB Flange DN100 PN16 Form B, DIN / 316L
FC Flange DN150 PN16 Form B, DIN / 316L
FD Flange 3" 150lb FF, ASME / 316L
FE Flange 4" 150lb FF, ASME / 316L
FF Flange 6" 150lb FF, ASME / 316L

Seal / Process temperature

C PP / -40...+80°C
D FKM (SHS FPM 70C3 GLT) and PP / -40...+80°C
A FKM (SHS FPM 70C3 GLT) and PEEK / -40...+130°C
B FKM (SHS FPM 70C3 GLT) and PEEK / -40...+200°C

Electronics

H Two wire 4...20mA/HART®
B Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
I Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
P Two-wire Profibus PA
F Two-wire Foundation Fieldbus

Supplementary electronics

X without

Housing / Protection

K Plastic single chamber / IP66/IP67
R Plastic double chamber / IP66/IP67
A Aluminum single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2bar)
W Stainless steel double chamber / IP66/IP68 (0.2 bar)

Cable entry / Connection

M M20x1.5 / Cable gland PA black ø5-9mm (standard)
N ½NPT / Blind plug

Display/adjustment module PLICSCOM

X without
A Mounted

Additional equipment

X without

Certificates

X no
M yes (e.g. FDA; test certificates NACE) further add. prices possible

PS69Y.												

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

Guided Wave Radar / FLEX 80Y series

FLEX

Universal sensors for liquids and bulk solids

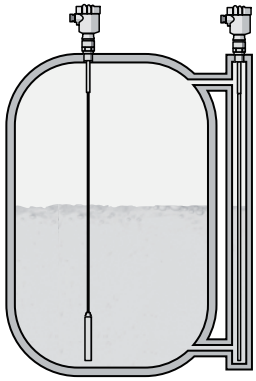
Measuring principle

High frequency microwave pulses are coupled on a cable or rod and guided along the probe. The pulse is reflected by the product surface. The time from emission to reception of the signals is proportional to the distance of the level. The instruments are already preset to the ordered probe length (0 % and 100 %). In many cases, a setup on site is not necessary. In any case you carry out the setup of FLEX without medium. The shortenable, bare cable and rod versions can be simply adapted to the local conditions, if necessary.

Applications

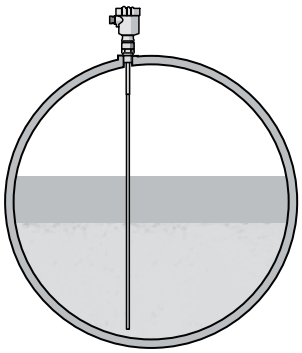
Level in liquids

Density fluctuations, steam generation or strong pressure and temperature fluctuations do not influence the measuring result. Also buildup on the probe or the vessel wall do not influence the measure-ment. This makes the FLEX simple in planning and commissio-ning. An ideal application is level measurement in a bypass tube or standpipe where even products with a dielectric constant of 1.4 can be measured reliably. Weld joints, buildup and corrosion inside the tube do not influence the accuracy of the level measurement. Also in case of overfilling up to the process fitting, your measurement is safe. FLEX 81Y offers also a special solution for ammonia applications.



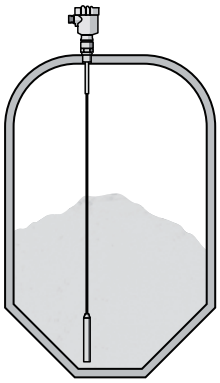
Interface measurement in liquids

Non-conductive products only reflect the energy of the microwave partly. The energy that is not reflected passes the medium and is reflected at the phase interface to a second liquid. This effect is used by the interface measurement. You can simply select this function on FLEX via the adjustment tools. By doing so, you get reliably the total level as well as the level of the lower menu in your vessel. Typical applications are interface measurements in storage tanks, separators and pump sumps. Generally the FLEX determines the level of the water layer below a non-conductive medium. The FLEX is independent of the density of the medium, this means for you a reliable, maintenance-free and precise measurement.



Level in bulk solids

Typical process proporties in bulk solids are strong dust and noise generation, buildup or condensation and of course material cones. With the FLEX you have the ideal measurement for your silo or bunker for such conditions. Also typical product properties such as, e.g. the moisture content, the mixture ratio or the granulation size are not important and make the planning really simple. The intelligent software gives you high measurement certainty and a well monitored probe. Even in products with small dielectric constant (from 1.1), a reliable measurement is ensured thanks to the "thinking" processing.



Overview

Instrument type	Measuring range Accuracy	Process fitting	Process tempe-rature	Process pressure
FLEX 81Y Liquids 	Rod probe up to 6 m Coax probe up to 6 m Cable probe up to 75 m +/- 2 mm	Thread from G¾, ¾ NPT, flanges from DN 25, 1“	-40 … +200 °C -60 … +150 °C for volatile substances, e.g. Ammonia	-1 … +40 bar (-100 … +4000 kPa)
FLEX 82Y Bulk solids 	Rod probe up to 6 m Cable probe up to 75 m +/- 2 mm	Thread G¾, ¾ NPT, flanges from DN 25, 1“	-40 … +200 °C	-1 … +40 bar (-100 … +4000 kPa)
FLEX 83Y Liquids with hygienic requirements and in aggressive media 	Rod probe up to 4 m Cable probe up to 32 m +/- 2 mm	Flange from DN 25, 1“, hygienic fittings	-40 … +150 °C	-1 … +16 bar (-100 … +1600 kPa)
FLEX 86Y Liquids and bulk solids under extreme process conditions 	Rod probe up to 6 m Coax probe up to 6 m Cable probe up to 75 m +/- 2 mm	Thread G1½, 1½ NPT, flanges from DN 50, 2“	-196 … +450 °C	-1 … +400 bar (-100 … +40000 kPa)

FLEX 81Y

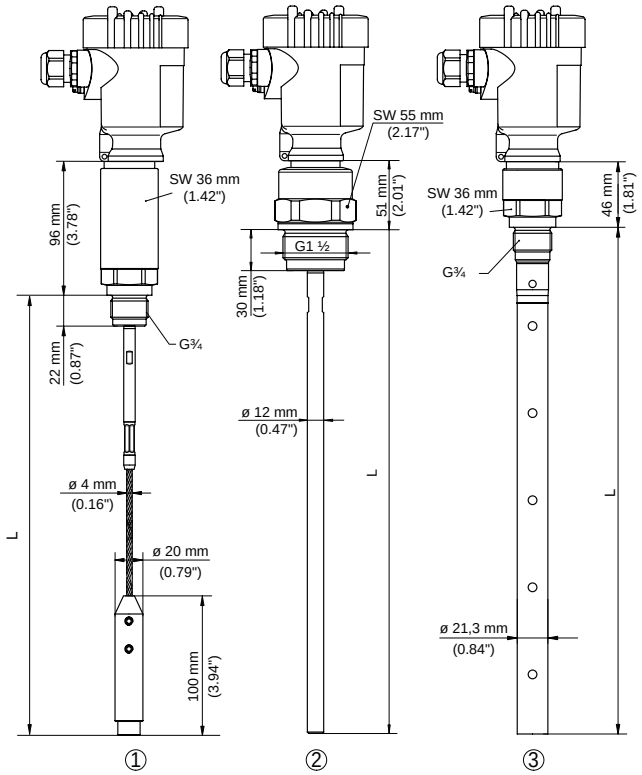
TDR sensor for continuous level and interface measurement of liquids

Application area
The FLEX 81Y level sensor measures maintenance-free all kind of liquids. Even in applications with vapour, buildup, foam generation and condensation, the sensor delivers precise and reliable measured values. The FLEX 81Y is the economical solution for various level and interface measurements.

Your benefit
- The guided adjustment enables a simple, time-saving and reliable setup
- Comprehensive diagnostic possibilities ensure a maintenance-free operation and hence a high plant availability
- Shortenable probes offer a simple standardisation and highest flexibility in the planning

Technical data

Version:	exchangeable cable (ø 2 mm, ø 4 mm) exchangeable rod (ø 8 mm, ø 12 mm) coax (ø 21.3, mm, ø 42 mm)
Measuring range:	cable probe up to 75 m rod probe up to 6 m coax probe up to 6 m
Process fitting:	thread from G¾, ¾ NPT flanges from DN 25, 1"
Process temperature:	-40 … +200 °C -60 … +150 °C for volatile substances, e.g. Ammonia
Process pressure:	-1 … +40 bar (-100 … +4000 kPa)
Accuracy:	+/- 2 mm



1 Cable version für process temperature -20 … +200 °C
2 Rod version
3 Coax version

For further information (process fittings, options and others), please contact Yokogawa.

Scope
- **A** Europe
- **I** Worldwide

Approval
- **X** for Ex-free area
- **C** ATEX II 1G, 1/2G, 2G Ex ia IIC T6
- **D** ATEX II 1/2G, 2G Ex d ia IIC T6
- **E** ATEX II 1/2G, 2G Ex d IIC T6
- **R** ATEX II 1D, 1/2D, 1/3D, 2D IP66
- **C** IEC Ex ia IIC T6
- **D** IEC Ex d ia IIC T6
- **E** IEC Ex d IIC T6
- **R** IEC Ex t IIIC T* IP66
- ***** For FM and CSA, please contact Yokogawa.

Version / Material
- **B** Exchangeable cable (ø2mm) with gravity weight / 316
- **E** Exchangeable rod (ø8mm) / 316L
- **F** Exchangeable rod (ø12mm) / 316L
- **L** Coax (ø21.3mm) with multiple hole / 316L
- **P** Coax (ø42.2mm) with multiple hole / 316L

Process fitting / Material
- **TA** Thread G¾ PN6, DIN3852-A / 316L
- **TS** Thread ¾NPT PN6, ASME B1.20.1 / 316L
- **TB** Thread G¾ PN40, DIN3852-A / 316L
- **TC** Thread G¾ PN40, DIN3852-A / Alloy C22 (2.4602)
- **TI** Thread G1½ PN40, DIN3852-A / 316L
- **DA** Flange DN25 PN40 Form C, DIN2501 / 316L
- **DD** Flange DN50 PN40 Form C, DIN2501 / 316L
- **DF** Flange DN80 PN40 Form C, DIN2501 / 316L
- **AK** Flange 1" 150lb RF, ASME B16.5 / 316L
- **AB** Flange 2" 150lb RF, ASME B16.5 / 316L
- **AC** Flange 2" 300lb RF, ASME B16.5 / 316L

Seal / Second line of defense
- **A** FKM (SHS FPM 70C3 GLT) / without / -40...+80°C
- **F** FKM (SHS FPM 70C3 GLT) / without / -40...+150°C
- **D** FFKM (Kalrez 6375) / without / -20...+150°C
- **L** FFKM (Kalrez 6375) / with / -20...+200°C
- **J** Borosilicate glass / with / -60...+150°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **A** Two-wire 4...20mA/HART® with SIL qualification
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Supplementary electronics
- **X** without
- **Z** Additional current output 4...20mA

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic double chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2 bar)

Cable entry / Connection
- **M** M20x1.5 / Cable gland PA black
- **N** ½NPT / Blind plug

Display/Adjustment module PLICSCOM
- **X** Without
- **A** Mounted

Certificates
- **X** no
- **M** yes (e.g. FDA, NACE) further add. prices possible

FX81Y. | | | | | | | | | | | | |

Length (from seal surface)

Rod ø8 mm/316L (300-6000 mm) per 100 mm
Rod ø12 mm/316L (300-4000 mm) per 100 mm
Coax ø21.3mm/316L (300-6000 mm) per 100 mm
Coax ø42.2mm/316L (300-6000 mm) per 100 mm

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

VEGAFLEX 82Y

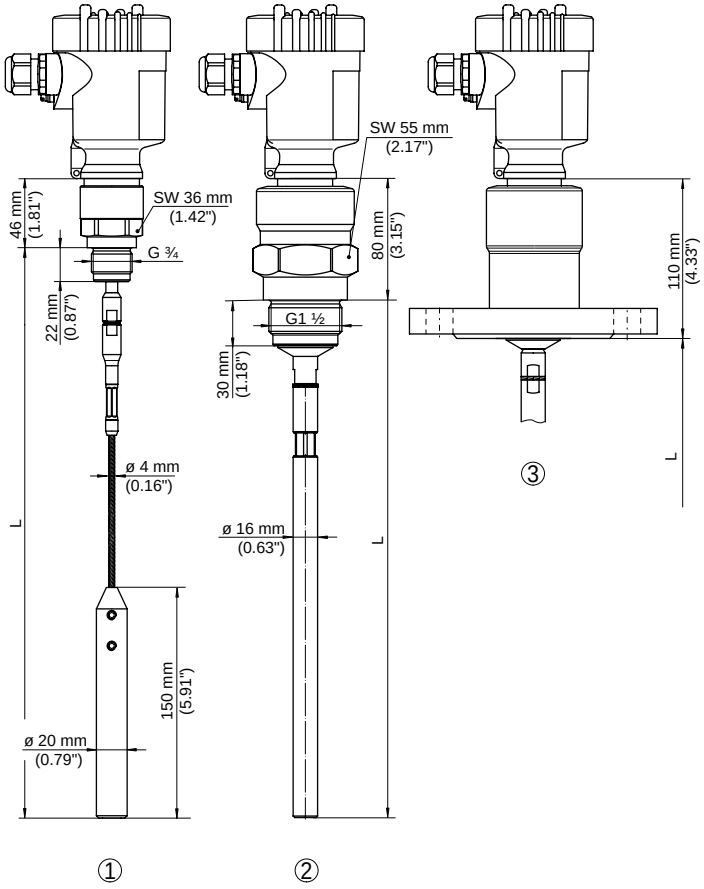
TDR sensor for continuous level measurement of bulk solids

Application area
The FLEX 82Y level sensor measures maintenance-free light and heavy-weight bulk solids. Even in applications with strong dust generation, condensation or buildup, the sensor delivers precise and reliable measured values. The FLEX 82Y is an economical and reliable solution for your application.

Your benefit
- The guided adjustment enables a simple, time-saving and reliable setup
- Shortenable probes offer a simple standardisation and highest flexibility in the planning
- Virtually all bulk solids can be measured with the automatic probe end tracking

Technical data

Version:	exchangeable cable probe (ø 4 mm, ø 6 mm, ø 11 mm) exchangeable rod probe (ø 16 mm)
Measuring range:	cable probe up to 75 m rod probe up to 6 m
Process fitting:	thread from G¾, ¾ NPT flanges from DN 25, 1"
Process temperature:	-40 … +200 °C
Process pressure:	-1 … +40 bar (-100 … +4000 kPa)
Accuracy:	+/- 2 mm



1 Cable version
2 Rod version
3 Flange version

For further information (process fittings, options and others), please contact Yokogawa.

Scope
- **A** Europe
- **I** Worldwide

Approval
- **X** for Ex-free area
- **C** ATEX II 1G, 1/2G, 2G Ex ia IIC T6
- **D** ATEX II 1/2G, 2G Ex d ia IIC T6
- **E** ATEX II 1/2G, 2G Ex d IIC T6
- **R** ATEX II 1D, 1/2D, 1/3D, 2D IP66
- **C** IEC Ex ia IIC T6
- **D** IEC Ex d ia IIC T6
- **E** IEC Ex d IIC T6
- **R** IEC Ex t IIIC T* IP66
- ***** For FM and CSA, please contact Yokogawa.

Version / Material
- **A** Exchangeable cable (ø4mm) with gravity weight / 316
- **F** Exchangeable cable (ø6mm) with gravity weight / 316
- **H** Exchangeable rod (ø16mm) / 316L

Process fitting / Material
- **TB** Thread G¾ PN40, DIN3852-A / 316L
- **TD** Thread ¾NPT PN40, ASME B1.20.1 / 316L
- **TF** Thread G1 PN40, DIN3852-A / 316L
- **TG** Thread 1NPT PN40, ASME B1.20.1 / 316L
- **TI** Thread G1½ PN40, DIN3852-A / 316L
- **TH** Thread 1½NPT PN40, ASME B1.20.1 / 316L
- **DD** Flange DN50 PN40 Form C, DIN2501 / 316L
- **DF** Flange DN80 PN40 Form C, DIN2501 / 316L
- **DM** Flange DN100 PN16 Form C, DIN2501 / 316L
- **AB** Flange 2" 150lb RF, ASME B16.5 / 316L
- **AD** Flange 3" 150lb RF, ASME B16.5 / 316L

Seal / Process temperature
- **F** FKM (SHS FPM 70C3 GLT) / -40...+150°C
- **K** FFKM (Kalrez 6375) / -20...+200°C
- **H** EPDM (A+P 75.5/KW75F) / -40...+150°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **A** Two-wire 4...20mA/HART® with SIL qualification
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Supplementary electronics
- **X** without
- **Z** Additional current output 4...20mA

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic double chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2 bar)

Cable entry / Connection
- **M** M20x1.5 / Cable gland PA black
- **N** ½NPT / Blind plug

Display/Adjustment module PLICSCOM
- **X** Without
- **A** Mounted

Certificates
- **X** no
- **M** yes (e.g. FDA, NACE) further add. prices possible

FX82Y.												

Length (from seal surface)

Cable ø4 mm/316 (500-75000 mm) per 100 mm
Cable ø6 mm/316 (500-75000 mm) per 100 mm
Rod ø16 mm/316L (300-6000 mm) per 100 mm

Only typical specifications are indicated in this table. For other specifications and detailed information, please contact Yokogawa.

FLEX 83Y

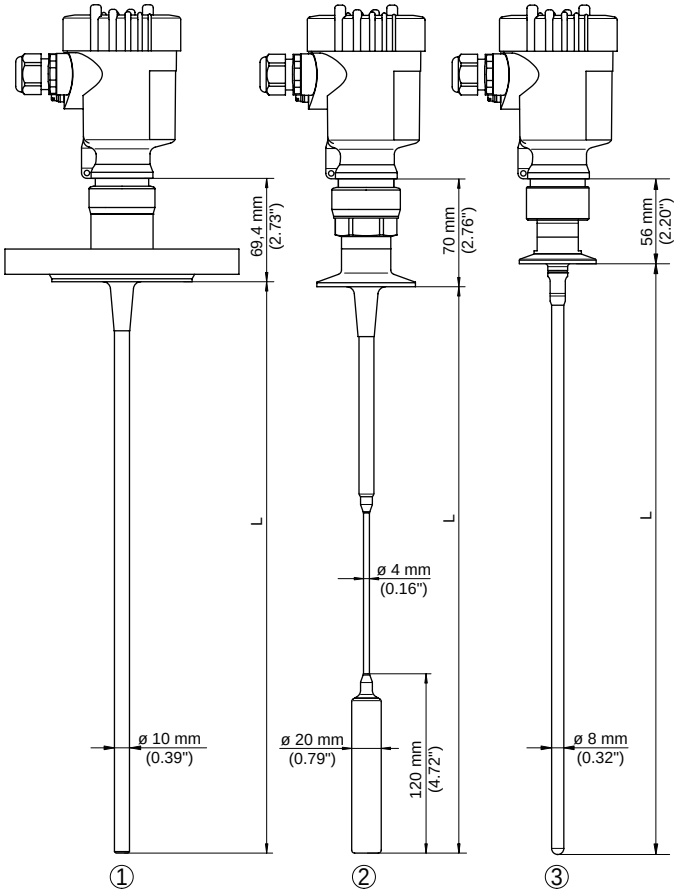
TDR sensor for continuous level and interface measurement of liquids

Application area
The FLEX 83Y level sensor measures maintenance-free agressive liquids or liquid media with highest hygienic requirements. Even in applications with vapour, buildup, foam generation and condensation, the sensor delivers precise and reliable measured values. The FLEX 83Y is the economical and ideal solution for your application.

Your benefit
- The guided adjustment enables a simple, time-saving and reliable setup
- The gap-free hygienic design ensures simple and reliable cleanability
- The maintenance-free operation increases the plant efficiency

Technical data

Version:	cable (ø 4 mm) rod (ø 8 mm, ø 10 mm)
Measuring range:	cable probe up to 32 m rod probe up to 4 m
Process fitting:	flanges from DN 25, 1" hygienic fittings
Process temperature:	-40 … +150 °C
Process pressure:	-1 … +16 bar (-100 … +1600 kPa)
Accuracy:	+/- 2 mm



1 Version / Material:
Rod (ø 10 mm) / PFA

2 Version / Material:
Cable (ø 4 mm) with gravity weight / PFA

3 Version / Material:
Exchangable rod (ø 8 mm) / 1.4435
(Basle Standard 2)

For further information (process fittings, options and others), please contact Yokogawa.

Scope
- **A** Europe
- **I** Worldwide

Approval
- **X** for Ex-free area
- **C** ATEX II 1G, 1/2G, 2G Ex ia IIC T6
- **D** ATEX II 1/2G, 2G Ex d ia IIC T6
- **R** ATEX II 1D, 1/2D, 1/3D, 2D IP66
- **C** IEC Ex ia IIC T6
- **D** IEC Ex d ia IIC T6
- **R** IEC Ex t IIIC T* IP66
- ***** For FM and CSA, please contact Yokogawa.

Version / Material
- **B** Cable (ø4mm) with gravity weight / PFA
- **E** Rod (ø10mm) / PFA
- **F** Exchangeable rod (ø8mm) / 1.4435 (BN2), (Ra<0.76 µm)
- **H** Exchangeable rod (ø8mm) / 1.4435 (BN2), electropolished (Ra<0.38µm)

Process fitting / Material
- **LI** Clamp 1" PN16 (ø50.5mm) DIN32676, ISO2852 / 1.4435 (BN2)
- **LJ** Clamp 1½" PN16 (ø50.5mm) DIN32676, ISO2852 / 1.4435 (BN2)
- **LA** Clamp 2" PN16 (ø64mm) DIN32676, ISO2852 / 1.4435 (BN2)
- **PA** Clamp 2" PN16 (ø64mm) DIN32676, ISO2852 / PTFE-TFM 1600
- **LG** Slotted nut DN50 PN25, DIN11851 / 1.4435 (BN2)
- **PI** Flange DN25 PN40, DIN2501 / PTFE-TFM 1600
- **P7** Flange DN50 PN6 Form C, DIN2501 / 1.4435 (BN2)
- **PJ** Flange DN50 PN40 Form C, DIN2501 / PTFE-TFM 1600
- **PM** Flange DN100 PN16 Form C, DIN2501 / PTFE-TFM 1600
- **PO** Flange 2" 150lb RF, ASME B16.5 / PTFE-TFM 1600
- **PQ** Flange 3" 150lb RF, ASME B16.5 / PTFE-TFM 1600

Seal / Process temperature
- **X** without / -40...+150°C
- **E** FFKM (Kalrez 6221) / -20...+150°C
- **C** EPDM (Freudenberg 70, EPDM 291) / -20...+130°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **A** Two-wire 4...20mA/HART® with SIL qualification
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Supplementary electronics
- **X** without
- **Z** Additional current output 4...20mA

Housing / Protection
- **K** Plastic / IP66/IP67
- **A** Aluminium / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2 bar)
- **R** Plastic double chamber / IP66/IP67

Cable entry / Connection
- **M** M20x1.5 / Cable gland PA black
- **N** ½NPT / Blind plug

Display/Adjustment module PLICSCOM
- **X** Without
- **A** Mounted

Certificates
- **M** yes (e.g. FDA; EN 10204-3.1; NACE)
- **X** no

FX83Y.											

Length (from seal surface)

Cable ø4 mm / PFA isolated (500-32000 mm) per 100 mm
Rod ø10 mm/PFA insulated (300-4000 mm) per 100 mm
Rod ø8 mm/1.4435 Ra < 0.76 µm (BN2) (300-4000 mm) per 100 mm

Only typical specifications are indicated in this table. For other specifications and detailed information, please contact Yokogawa.

FLEX 86Y

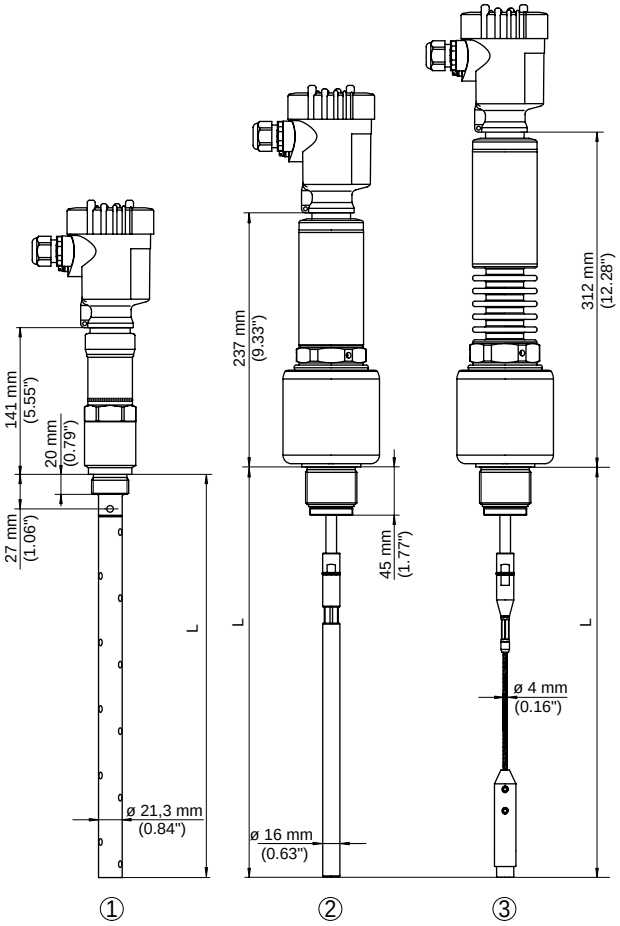
TDR sensor for continuous level and interface measurement of liquids

Application area
The FLEX 86Y level sensor measures maintenance-free all liquids under extreme pressure and temperature conditions. Even in applications with buildup, foam generation and condensation, the sensor delivers precise and reliable measured values. In saturated steam applications, a special reference probe ensures a density-independent measurement. The FLEX 86Y offers an economical level and interface measurement for your application.

Your benefit
- The guided adjustment enables a simple, time-saving and reliable setup
- Comprehensive diagnostic possibilities ensure a maintenance-free operation and hence a high plant availability
- The maintenance-free operation increases the plant efficiency

Technical data

Version:	exchangebale cable (ø 2 mm, ø 4 mm) exchangeable rod (ø 16 mm, ø 8 mm) coax (ø 42 mm, ø 21.3 mm)
Measuring range:	cable probe up to 75 m rod probe up to 6 m coax probe up to 6 m
Process fitting:	thread from G¾ , ¾ NPT flanges from DN 25, 1"
Process temperature:	-196 … +450 °C
Process pressure:	-1 … +400 bar (-100 … +40000 kPa)
Accuracy:	+/- 2 mm



1 Version: -20 … +250 °C; coax
2 Version: -196 … +280 °C; rod
3 Version: -196 … +450 °C; cable

For further information (process fittings, options and others), please contact Yokogawa.

Scope
- **A** Europe
- **I** Worldwide

Approval
- **X** for Ex-free area
- **C** ATEX II 1G, 1/2G, 2G Ex ia IIC T6
- **D** ATEX II 1/2G, 2G Ex d ia IIC T6
- **E** ATEX II 1/2G, 2G Ex d IIC T6
- **R** ATEX II 1D, 1/2D, 1/3D, 2D IP66
- **C** IEC Ex ia IIC T6
- **D** IEC Ex d ia IIC T6
- **E** IEC Ex d IIC T6
- **R** IEC Ex t IIIC T* IP66
- ***** For FM and CSA, please contact Yokogawa.

Version / Material
- **A** Exchangeable cable (ø4mm) with gravity weight / 316
- **E** Exchangeable rod ø8 mm) / 316L
- **H** Exchangeable rod (ø16mm) / 316L
- **P** Coax (ø42.2mm) with multiple hole / 316L

Process fitting / Material
- **TE** Thread G¾ PN100, DIN3852-A / 316L
- **TM** Thread G1 PN100, DIN3852-A / 316L
- **TN** Thread G1½ PN400, DIN3852-A / 316L
- **TO** Thread 1½NPT PN400, ASME B1.20.1 / 316L
- **DD** Flange DN50 PN40 Form C, DIN2501 / 316L
- **DF** Flange DN80 PN40 Form C, DIN2501 / 316L
- **DJ** Flange DN100 PN40 Form C, DIN2501 / 316L
- **HA** Flange DN50 PN40 Form B1, EN1092-1 / 316L
- **AB** Flange 2" 150lb RF, ASME B16.5 / 316L
- **AL** Flange 2" 600lb RF, ASME B16.5 / 316L
- **AM** Flange 3" 600lb RF, ASME B16.5 / 316L

Seal / Second line of defense / Process temperature
- **3** PEEK-FFKM (Kalrez 6375) / with / -20...+250°C
- **1** Ceramic graphite / with / -196...+280°C
- **2** Ceramic graphite / with / -196 ... +450°C

Electronics
- **H** Two-wire 4...20mA/HART®
- **A** Two-wire 4...20mA/HART® with SIL qualification
- **B** Four-wire 4...20mA/HART®; 90...253V AC; 50/60Hz
- **I** Four-wire 4...20mA/HART®; 9.6...48V DC; 20...42V AC
- **P** Profibus PA
- **F** Foundation Fieldbus

Supplementary electronics
- **X** without
- **Z** Additional current output 4...20mA

Housing / Protection
- **K** Plastic single chamber / IP66/IP67
- **R** Plastic double chamber / IP66/IP67
- **A** Aluminium single chamber / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2bar)
- **W** Stainless steel double chamber / IP66/IP68 (0.2 bar)

Cable entry / Connection
- **M** M20x1.5 / Cable gland PA black
- **N** ½NPT / Blind plug

Display/Adjustment module PLICSCOM
- **X** Without
- **A** Mounted

Certificates
- **X** no
- **M** yes (e.g. FDA, NACE) further add. prices possible

FX86Y.												

Length (from seal surface)

Cable ø4 mm / 316 (500-60000 mm) per 100 mm
Rod ø8 mm/316L (300-6000 mm) per 100 mm
Rod ø16 mm/316L (300-4000 mm) per 100 mm
Coax ø21.3mm/316L (300-6000 mm) per 100 mm
Coax ø42.2mm/316L (300-6000 mm) per 100 mm

Only typical specifications are indicated in this table. For other specifications and detailed information, please contact Yokogawa.

Ultrasonic / SON 60Y series

SON

Non-contact measurement with ultrasonics

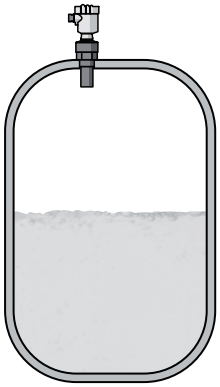
Measuring principle

Short ultrasonic impulses in the range of 35 to 70 kHz are emitted by the transducer to the measured product, reflecte by the product surface and received again by the transducer. The pulses are spread with sound velocity. The time from emission to reception of the signals is proportional to the level in the vessel. The proven ECHOFOX signal processing analysis the reflection in the vessel based on long-standing experience and detects the level signal reliably. The adjustment of the sensors is very simple without changing the level.

Applications

Level in liquids

Sensors with higher frequencies are used for measurement of liquids. Independent of product properties they deliver a continuous measuring signal and are ideal for water/waste water applications and the measurement of weak acids and lyes. Sensors with respective approval are available for applications in gas-Ex areas.



Level in bulk solids

Sensors with low frequencies and bigger transducers are used for measurement in bulk solids. Typical applications are level measurement of bulk solids containers, bulk solids silos with average size dimensions and open heaps. Approved sensors are available for applications in dust-Ex areas.

Overview

Instrument type	Measuring range Accuracy	Process fitting	Process tempe-rature	Process pressure
SON 61Y Liquids and bulk solids in small vessels 	Liquids: 0.25 … 5 m Bulk solids: 0.25 … 2 m +/- 10 mm	Thread G1½, 1½ NPT	-40 … +80 °C	-0.2 … +2 bar (-20 … +200 kPa)
SON 62Y Liquids and bulk solids in small vessels 	Liquids: 0.4 … 8 m Bulk solids: 0.4 … 3.5 m +/- 10 mm	Thread G2, 2 NPT	-40 … +80 °C	-0.2 … +2 bar (-20 … +200 kPa)
SON 63Y Liquids and bulk solids in all industries 	Liquids: 0.6 … 15 m Bulk solids: 0.6 … 7 m +/- 10 mm	Compression flang DN 100, mounting strap	-40 … +80 °C	-0.2 … +1 bar (-20 … +100 kPa)

SON 61Y

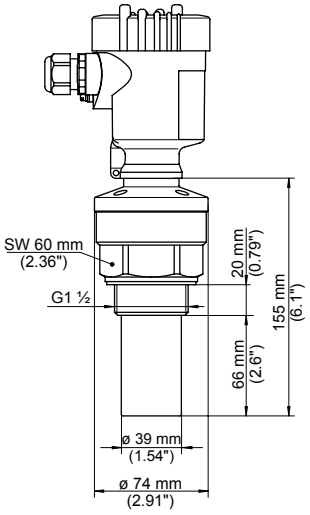
Ultrasonic sensor for continuous level measurement

Application area
The SON 61Y is an ultrasonic sensor for continuous level measurement of liquids or bulk solids. Typical applications are the measurement of liquids in storage tanks or open basins. The sensor is also suitable for the detection of bulk solids in small vessels or open containers. The non-contact measuring principle is independent of product features and allows a setup without medium.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- Reliable measurement independent of product features
- Price-favourable solution for simple applications

Technical data

Measuring range:	in liquids: 0.25 … 5 m in bulk solids: 0.25 … 2 m
Process fitting:	thread G1½, 1½ NPT
Process temperature:	-40 … +80 °C
Process pressure:	-0.2 …+2 bar (-20 … +200 kPa)
Accuracy:	+/- 10 mm
SIL qualification:	optionally up to SIL2



Beam angle 11°

For further information (process fittings, options and others), please contact Yokogawa.

Approval
XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G Ex ia IIC T6
CM ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + Ship approval
CI IEC Ex ia IIC T6
***** For FM and CSA, please contact Yokogawa.

Version / Process temperature
A Seal EPDM / -40...+80°C
B Seal FKM (Viton) / -20...+80°C

Process fitting / Material
G Thread G1½ PN2, DIN3852-A-B / PVDF
N Thread 1½NPT PN2, ASME B1.20.1 / PVDF
A Clamp 2" DN50 PN2 (ø64mm) DIN32676, ISO2852 / 316L
B Clamp 3" DN65 PN2 (ø91mm) DIN32676, ISO2852 / 316L
C Clamp 3½" DN80 PN2 (ø106mm) DIN32676, ISO2852 / 316L
D Clamp 4" DN100 PN2 (ø119mm) DIN32676, ISO2852 / 316L
J Slotted nut 2", DN50 PN2, DIN11851 / 316L
K Slotted nut 3", PN2, DIN11851 / 316L
L Slotted nut DN80 PN2, DIN11851 / 316L
M Slotted nut 4", DN100 PN2, DIN11851 / 316L

Electronics
H Two-wire 4...20mA/HART®
V Four wire 4...20mA/HART®
P Two-wire Profibus PA
F Two-wire Foundation Fieldbus

Housing / Protection
K Plastic single chamber / IP 66/IP 67
R Plastic double chamber / IP 66/IP 67
A Aluminium single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP 66/IP 68 (0.2 bar)
W Stainless steel double chamber / IP 66/IP 68 (0.2 bar)

Cable entry / Plug connection
M M20x1.5 / without
N ½NPT / without

Display/adjustment module PLICSCOM
X without
A mounted

Additional equipment
X Without

SN61Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

SON 62Y

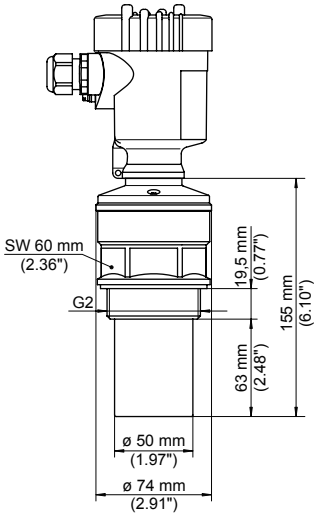
Ultrasonic sensor for continuous level measurement

Application area
The SON 62 is an ultrasonic sensor for continuous level measurement of liquids and bulk solids. Typical applications are the measurement of liquids in storage vessels or open basins. The sensor is also suitable for the detection of bulk solids in small vessels or silos. Application areas can be found in all industries. The non-contact measuring principle is unaffected by product features and allows a setup without medium.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- Reliable measurement independent of product features
- Price-favourable solution for simple applications

Technical data

Measuring range:	in liquids: 0.4 … 8 m in bulk solids: 0.4 … 3.5 m
Process fitting:	thread G2, 2 NPT
Process temperature:	-40 … +80 °C
Process pressure:	-0.2 …+2 bar (-20 … +200 kPa)
Accuracy:	+/- 10 mm
SIL qualification:	optionally up to SIL2



Beam angle 11°

For further information (process fittings, options and others), please contact Yokogawa.

Approval
XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G Ex ia IIC T6
CM ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + Ship approval
CI IEC Ex ia IIC T6
***** For FM and CSA, please contact Yokogawa.

Version / Process temperature
A Seal EPDM / -40...+80°C
B Seal FKM (Viton) / -20...+80°C

Process fitting / Material
G Thread G2 PN2, DIN3852-A-B / PVDF
N Thread 2NPT PN2, ASME B1.20.1 / PVDF

Electronics
H Two-wire 4...20mA/HART®
V Four wire 4...20mA/HART®
P Two-wire Profibus PA
F Two-wire Foundation Fieldbus

Housing / Protection
K Plastic single chamber / IP 66/IP 67
R Plastic double chamber / IP 66/IP 67
A Aluminium single chamber / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP 66/IP 68 (0.2 bar)
W Stainless steel double chamber / IP 66/IP 68 (0.2 bar)

Cable entry / Plug connection
M M20x1.5 / without
N ½NPT / without

Display/adjustment module PLICSCOM
X without
A mounted

Additional equipment
X Without

SN62Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

SON 63Y

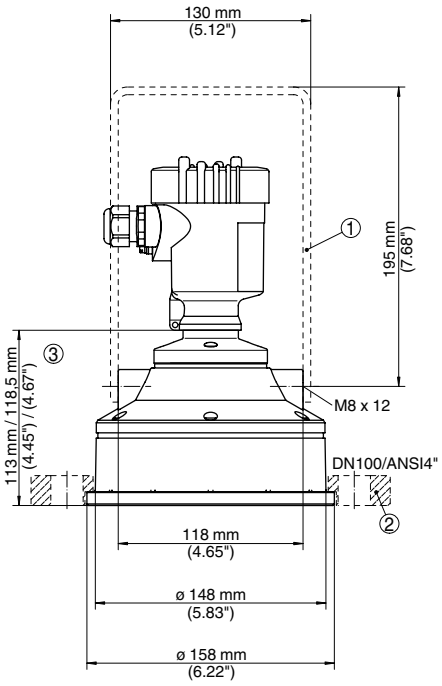
Ultrasonic sensor for continuous level measurement

Application area
The SON 63Y is an ultrasonic sensor for continuous level measurement of liquids and bulk solids. Typical applications are the measurement of liquids in storage tanks and open basins. The sensor is suitable for continuous level measurement of bulk solids in small up to average-size vessels. The non-contact measuring principle is independent of product features and allows a setup without medium.

Your benefit
- Maintenance-free operation through non-contact measuring principle
- Reliable measurement, independent of product features
- Proven measurement technology for standard applications

Technical data

Measuring range:	in liquids: 0.6 … 15 m in bulk solids: 0.6 … 7 m
Process fitting:	compression flange DN 100 mounting strap
Process temperature:	-40 … +80 °C
Process pressure:	-0.2 …+1 bar (-20 … +100 kPa)
Accuracy:	+/- 10 mm
SIL qualification:	optionally up to SIL2



1 Mounting strap
2 Compression flang
3 Dimension for Aluminium housing/adapter

Beam angle 6°

For further information (process fittings, options and others), please contact Yokogawa.

Approval
XX without .....
XM Ship approval .....
Version / Process temperature
A Seal EPDM / -40...+80°C .....
Process fitting / Material
X without .....
A Compression flange suitable for flange DN100 PN16 / PPH .....
B Compression flange suitable for flange DN100 PN16 / 316L .....
C Mounting strap / Stainless steel (1.4301) .....
D Compression flange suitable for flange 4" 150lb, ASME / PPH .....
E Compression flange suitable for flange 4" 150lb, ASME / 316L .....
F Compression flange suitable for flange DN100 10K, JIS / PPH .....
G Compression flange suitable for flange DN100 10K, JIS / 316L .....
Electronics
H Two-wire 4...20mA/HART® .....
V Four wire 4...20mA/HART® .....
P Two-wire Profibus PA .....
F Two-wire Foundation Fieldbus .....
Housing / Protection
K Plastic single chamber / IP 66/IP 67 .....
R Plastic double chamber / IP 66/IP 67 .....
A Aluminium single chamber / IP66/IP68 (0.2 bar) .....
D Aluminium double chamber / IP 66/IP 68 (0.2 bar) .....
W Stainless steel double chamber / IP 66/IP 68 (0.2 bar) .....
Cable entry / Plug connection
M M20x1.5 / without .....
N ½NPT / without .....
Display/adjustment module PLICSCOM
X without .....
A mounted .....
Additional equipment
X Without .....

SN63Y.								

Only typical specifi cations are indicated in this table. For other specifi cations and detailed information, please contact Yokogawa.

1. The Y series (SN60Y, FX80Y and SN60Y) are manufactured by VEGA for Yokogawa.
2. For further information and inquiry, please contact Yokogawa.

Yokogawa Engineering Asia Pte. Ltd.
5 Bedok South Road, Singapore 469270, Singapore
TEL: (65)-6241-9933 FAX: (65)-6241-2606

Yokogawa Australia Pty. Ltd.
Tower A, 112-118 Talavera Road, Macquarie Park NSW 2113, Australia
TEL: (61)-2-8870-1100 FAX: (61)-2-8870-1111

Yokogawa (Thailand) Ltd.
799 Rama 9 Road, Bangkapi, Huaykwang, Bangkok 10310 Thailand
TEL: (66)-2-715-8600 FAX: (66)-2-715-8688

Yokogawa India Ltd.
Plot No.96, Electronic City Complex, Hosur Road, Bangalore - 560 100, India
TEL: (91)-80-4158-6000 FAX: (91)-080-2852-1442

Yokogawa Middle East & Africa B.S.C.(c)
P.O. Box 10070, Manama, Building 577, Road 2516, Busaiteen 225, Muharraq, Bahrain
TEL: (973)-17358100 FAX: (973)-17336100