EcoStruxure Process Instrumentation

se.com

Life Is On | Schneider Electric

Contents

The impact of control

A single innovative instrument can give you better process control and improve the performance of any one of your production assets: personnel, equipment, energy use, or inventory. Employing multiple instruments can positively impact the performance of all areas of your enterprise.

Schneider Electric's process instrumentation is allied with various industry-leading brands that result in systems, software, and services that dramatically improve your operation's economic, safety, and environmental performance. In addition, the deployment of multiple, advanced measurement systems will enhance the availability and utilization of all the assets on which your success depends.

For decades, Process Instrumentation has driven the development of various breakthrough measurement technologies: the first d/p cell, the dual-phase Digital Coriolis Mass Flowmeter, the PH10 and PH12 Smart pH sensors, and the Magnetic Flowmeter.

Schneider Electric sets the industry standard for performance in a wide variety of measurement technologies:

- Pressure transmitters that provide best-in-class accuracy levels and the longest warranties in the industry
- Flowmeter technologies: Magnetic, Vortex shedding and Coriolis that provide unparalleled solution for liquids, gases and steam
- Process analytical sensors that revolutionize pH and conductivity measurement
- Temperature transmitters providing accurate and reliable measurements in the harshest of environments
- Level measurement including buoyancy and radar devices for the widest choice of installation and applications
- Wireless Instruments provide long-range wireless, WirelessHart Mesh network over the cloud datalogger with independent or battery powered.

Process Instrumentation provides accurate, reliable measurement and analysis of pressure, flow, level, temperature, positioner, and process analytical variables so you have the process control you need for maximum integration and interoperability — all at competitive prices, low cost of ownership, and 24-hour worldwide support from a single source.

Pressure product portfolio

Schneider Electric pressure transmitters

Gauge pressure

IGP05S
IGP105S
IGP50S

Absolute pressure

IAP05S
IAP10S
IAP50S

Multivariable

IMP10S
FLW10S

Differential pressure

IDP05S
IDP10S
IDP50S

Accessories

Seals

Manifolds

Remote seals

Pressure measurements

Reliable data is key in the new industrial world

Technology landscape is changing, and industrial end-users need to produce more with less, to prevent downtimes in plant and to be able to collect the right data to predict potential failure in the process. Cloud computing, Artificial Intelligence, Predictive and Conditional Maintenances, all these IT technologies are entering the industrial world, and to be successful in today's market, where business variables can literally change minute to minute, things like safety, reliability and especially profitability have to be controlled in real-time.

Collecting the right data and being sure they are reliable and accurate, is mandatory to improve process efficiency.

Improve profitable reliability

Schneider Electric Pressure Transmitters family covers a broad range of pressure applications, including Gauge, Differential, Absolute and Multivariable pressure. This portfolio covers customers' needs for pressure measurements but also for flow and level measurements in conjunction with accessories.

With advanced FoxCal technology, Schneider Electric Pressure Transmitters are offering you the best accuracy on the market, up to 0,025% reading, as well as the best 400:1 turndown. In addition, reliable silicon strain-gauge sensor technology and field-proven simplified and durable packaging offer you an excellent high stability, expressed as a percentage of URL per year.

Pressure measurements

A new generation of pressure transmitters

With the acquisition of the Foxboro brand, Schneider Electric is committed to provide the best instrumentation products and services to our customers. With this multi-tiered pressure transmitter line, you select the perfect fit for your application with TÜV SIL2/SIL3 safety as standard.

Optimize your pressure transmitter investments without any compromise on quality

This new pressure transmitter family has been designed to make your process more profitable by providing you the opportunity to select your transmitter at the best ratio of performance/price for your application, with the added value to reduce your inventory as opposed to a competitive offering.

Premium Performance Transmitters with FoxCal™ technology are ideal for challenges such as differential head measurement for wide-ranging flows, or demanding applications requiring a high level of accuracy and a high stability. Accuracy leads the industry at ±0.025% of reading and stability better than ±0.015% URL per year for ten years.

Advanced Performance Transmitters, with an accuracy of ±0.05% of reading from 100% up to 4% of URL and integrated FoxCal technology, make the selection of sensor range very easy. This wide accuracy helps to standardize on one pressure transmitter, eliminating erroneous sensor selection, reducing inventory, and allowing fast replacement with less downtime.

Value Performance Transmitters, with an accuracy of ±0.075% of span, offer robustness, experience, and safety to guarantee precise and reliable measurements, even at high pressures. These pressure transmitters, in their low power version drawing no more 3 mA, can be installed in remote locations, with a limited power budget coming from solar panels or battery sources.

With Patented FoxCal technology and TÜV SIL2/SIL3 safety coupled with high accuracy and reliability, the Schneider Electric multi-tiered pressure transmitter family is the perfect solution to optimize your investments and realize additional savings.

Designed by experience for robustness and reliability

- Patented FoxCal technology
- State-of-the-art accuracy as a % of reading
- 400:1 turndown capabilities
- High Speed Response Time
- TÜV Safety Certification
- Latest communication protocol offerings
- Predictive maintenance

Pressure measurements

FoxCal™: Multiple Calibration Technology

FoxCal technology is the opportunity to standardize on one transmitter throughout a production facility to offer enormous cost, maintenance, and operational advantages.

Innovative FoxCal technology

Where traditional suppliers have a static calibration approach with a traditional 2-point calibration technology, Schneider Electric invented FoxCal dynamic technology including 11 calibration curves in 1 transmitter. These 11 curves are stored permanently in the sensor memory. The pressure transmitter with FoxCal can automatically transition to the best calibration curve based on the transmitter's input.

Improved process accuracy

With FoxCal, accuracy has been improved to the best level on the market with an accuracy expressed as a percentage of reading and maintained from 100% up to 4% of URL.

Reduced inventory cost

Enhanced turndown performance along with fewer sensor ranges selection is impacting drastically your inventory stock. Using transmitters with FoxCal technology can reduce your inventory stock by 2/3. A wide range of applications that normally would use multiple different transmitters now needs only one, which means fewer spare parts and reduced inventory.

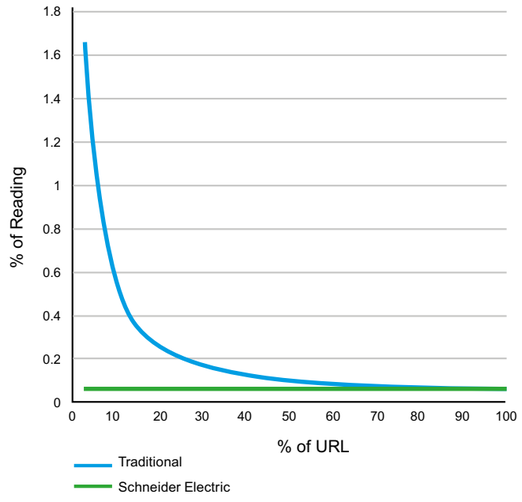
Speed up maintenance operations

Factory calibration and field calibration for specific applications are no longer required for zero-based ranges. This significantly allows faster replacement on site and saves precious time during maintenance operations.

Wide rangeability for an easy sensor selection

FoxCal technology makes the selection of sensor range very easy. Due to the wide reference accuracy turndown and automatic transition to the most appropriate calibration curve, one transmitter with FoxCal dynamic technology can cover 3 to 4 ranges of a traditional pressure transmitter. This wide accuracy helps to standardize on one pressure transmitter, eliminating erroneous sensor selection.

Accuracy of transmitters



Schneider Electric Pressure Advanced and Premium Transmitters maintain the same percentage of reading accuracy from 100% up to 4% of URL. Traditional transmitters begin to degrade at a much higher percentage.

Pressure measurements

Integration and design to fit your needs

Stop compromising between plant safety and plant availability

With Schneider Electric Pressure Transmitters, safety is standard, not an option! In addition to the traditional agency certifications, these transmitters have TÜV SIL2/SIL3 certification as standard. The same transmitter can now be deployed for standard and safety applications. A red or yellow cover can be ordered to identify a pressure transmitter dedicated to safety loops. Per IEC61508, Schneider Electric Pressure Transmitters can be used in SIL2 safety functions in 1oo1, single mode, or in SIL3 safety functions in 1oo2, dual mode.

Easy integration into your system

To guarantee an easy integration in your system, Schneider Electric transmitters and associated configuration files have been tested in dedicated interoperability laboratories. Schneider Electric Pressure Transmitters are available with analog and digital communication protocols such as HART/4-20 mA, FOUNDATION Fieldbus, low power version (1 to 5 Vdc), and Modbus. As a step forward, our Pressure Transmitters are already compatible with Field Device Interface technology.

Improve your maintenance diagnostics

To enhance maintenance startup, embedded diagnostics have been improved with the latest digital communication protocol versions. In addition, two time-clocks have been integrated: one to keep track of the number of days the transmitter has been in service in the field, the second one to plan your own maintenance operations. This is a key parameter for predictive maintenance.

Electrical safety classifications

Schneider Electric transmitters may be specified with any of a wide range of agency certifications. These include intrinsic safety, non-incendive, explosionproof, and flameproof ratings for divisions and zones. Certifications that meet FM, CSA, IECEx, ATEX requirements are available, as well as local certifications (INMETRO, EAC, NEPSI, KC …). To ease customers' selection, fast replacement, and stock all around the world, Schneider Electric pressure transmitters can carry multiple certifications on a single product, and TÜV SIL2/SIL3 certification as standard.

Pressure measurements

One transmitter, three measurements with multivariable pressure transmitters

Improve profitability

Multivariable transmitters provide measurements of absolute pressure and differential pressure, sensor and electronics temperatures, and process temperature (from an external RTD). By replacing three dedicated instruments (differential pressure, absolute pressure, and temperature transmitters) with a single device that can measure multiple values and calculate flow. Multivariable transmitters can typically reduce cost of a mass flow installation by around 40 percent. In addition to minimizing the number of devices, users can continue to do savings due to fewer process penetrations and fewer shut-off valves, less wiring, and fewer I/O modules needed to transfer measurement data to a centralized system. It all helps to realize significant savings on installation time, cutting costs further, without compromising on reliability and measurement accuracy. Additionally, a DTM (Device Type Manager) file provides convenient transmitter setup for an easy configuration, with no need for a dedicated software.

Improve accuracy

Installing just one instrument minimizes the impact on flow and any negative effects on measurement accuracy. With improved sensor technology and calculation feature embedded, the transmitter can compensate any variations in temperature, pressure, density or viscosity to offer an accurate reading.

Multivariable for multiple savings

The multivariable transmitter IMP10S transmits digital process measurements of absolute pressure, differential pressure, and process temperature, as well as internal sensor and electronics temperatures. It is an ideal solution when several individual measurements are to be brought into a system for monitoring, control, or calculation, and is available with HART or Modbus digital communications.

Solve the multivariable flow equation

Using measured process pressure and temperature, the FLW10S continuously calculates process fluid density thanks to comprehensive flow equations embedded. When used with any of a variety of differential pressure producing primary flow devices, the transmitter calculates highly accurate pressure and temperature-compensated mass or volumetric flow rate. The transmitter provides full dynamic compensation for all variables affecting the flow rate calculation.

With this impressive meter, differential pressure at full flow can be as low as 0.12 kPa (0.5 inH2O or 1.2 mbar) and as high as 210 kPa (840 inH2O or 2.1 bar).

Our FLW10S multivariable flow transmitter measures absolute pressure, differential pressure, and process and transmitter temperatures, as well as calculating mass flow rate.

Selection guide

Absolute and gauge pressure transmitters



Model		IAP05S	IGP05S	IAP10S	IGP10S	IAP50S	IGP50S
Type		Absolute	Gauge	Absolute	Gauge	Absolute	Gauge
Design		Direct connect	Biplanar	Direct Connect	Biplanar	Direct connect	Biplanar
Reference accuracy	4-20 mA HART	±0.075% span		±0.050% reading		±0.025% reading	
	FOUNDATION FIELDBUS	n/a		±0.050% reading		±0.025% reading	
	Modbus	±0.075% span		±0.050% reading		n/a	
	Low power 1 to 5 V DC	±0.1% span		n/a		n/a	
FoxCal technology (patented)		No Traditional 2 point calibration		Yes 11 calibration curves embedded		Yes 11 calibration curves embedded	
Communication protocols		4-20 mA HART, Modbus Low Power (draw less than 3 mA)		4-20 mA HART, FOUNDATION FIELDBUS, Modbus		4-20 mA HART, FOUNDATION FIELDBUS	
Stability — long term drift		< ±0.05% URL/yr for 5 yrs		< ±0.03% URL/yr for 10 yrs		< ±0.015% URL/yr for 10 yrs	
Response time		up to 100 ms		up to 100 ms		up to 100 ms	
Turndown ratio		up to 400:1		up to 400:1		up to 400:1	
Display for visualisation and configuration		Yes (standard for low power version)		Yes (in option)		Yes (in option)	
Temperature range		-40 °C (-40°F) to 85 °C (185 °F) optional: -50 °C (-58 °F)		-40 °C (-40 °F) to 85 °C (185 °F) optional: -50 °C (-58 °F)		-40 °C (-40 °F) to 85 °C (185 °F) optional: -50 °C (-58 °F)	
Ingress protection rating		IP66/IP67, NEMA 4X		IP66/IP67, NEMA 4X		IP66/IP67, NEMA 4X	
Housing material		Aluminium and 316 Stainless Steel		Aluminium and 316 Stainless Steel		Aluminium and 316 Stainless Steel	
Diaphragm material		316L ss or Hastelloy C		316 ss, Co-Ni-Cr, Monel, tantalum, Hastelloy C or gold-plated 316L SS		316 ss, Co-Ni-Cr, Monel, tantalum, Hastelloy C or gold-plated 316L SS	
Fill fluid		Silicone, Fluorinert		Silicone, Fluorinert		Silicone, Fluorinert	
Conduit connections		1/2 NPT or M20		1/2 NPT or M20		1/2 NPT or M20	
Transient and reverse polarity protections		Yes, standard		Yes, standard		Yes, standard	
Certifications and approvals		FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC		FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC		FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC	
ATEX and IECEx multimarking		Yes		Yes		Yes	
Safety certification		TÜV SIL2/SIL3 (HART) as standard		TÜV SIL2/SIL3 (HART) as standard		TÜV SIL2/SIL3 (HART) as standard	
Warranty		2 years standard, 5 years optional		5 years standard, up to 17 years optional		5 years standard, up to 17 years optional	
Special process connections	Sanitary	Yes		Yes		Yes	
	Pulp and paper	Yes		Yes		Yes	
	High pressure	up to 30,000 psi/2068 bar		n/a		n/a	
Remote seals and closed-coupled seals		Yes		Yes		Yes	
Specifications		PSS 2A-1S05 A		PSS 2A-1S10 A		PSS 2A-1S50 A	

Selection guide

Differential pressure transmitters (continued)

Model		IDP05S	IDP10S	IDP50S
Type/design		Differential - Traditional Low Profile 1 and 2	Differential - Traditional Low Profile 1 and 2	Differential - Traditional Low Profile 1 and 2
Reference accuracy	4-20 mA HART	±0.075% Span	±0.050% Reading	±0.025% Reading
	FOUNDATION FIELDBUS	n/a	±0.050% Reading	±0.025% Reading
	Modbus	±0.075% Span	±0.050% Reading	±0.025% Reading
	Low power 1 to 5 V DC	±0.1% Span	n/a	n/a
FoxCal technology (patented)		No Traditional calibration	Yes 11 calibration curves embedded	Yes 11 calibration curves embedded
Communication protocols		4-20 mA HART, Modbus, Low Power (draw less than 3 mA)	4-20 mA HART, FOUNDATION FIELDBUS, Modbus	4-20 mA HART, FOUNDATION FIELDBUS, Modbus
Stability — long term drift		< ±0.05% URL/yr for 5 yrs	< ±0.03% URL/yr for 10 yrs	< ±0.015% URL/yr for 10 yrs
Response time		up to 125ms	up to 125 ms	up to 125ms
Turndown ratio		up to 400:1	up to 400:1	up to 400:1
Display for visualisation and configuration		Yes (standard for low power version)	Yes (in option)	Yes (in option)
Temperature range		-40 °C (-40 °F) to 85 °C (185 °F) optional: -50 °C (-58 °F)	-40 °C (-40 °F) to 85 °C (185 °F) optional: -50 °C (-58 °F)	-40 °C (-40 °F) to 85 °C (185 °F) optional: -50 °C (-58 °F)
Ingress protection rating		IP66/IP67, NEMA 4X	IP66/IP67, NEMA 4X	IP66/IP67, NEMA 4X
Housing material		Aluminium and 316 Stainless Steel	Aluminium and 316 Stainless Steel	Aluminium and 316 Stainless Steel
Diaphragm material		316L ss or Hastelloy C	Traditional: 316L ss, Co-Ni-Cr, Monel, Tantalum, Hastelloy C, or gold-plated 316L ss Low profile structures: 316L ss or Hastelloy C	Traditional: 316L ss, Co-Ni-Cr, Monel, Tantalum, Hastelloy C, or gold-plated 316L ss Low profile structures: 316L ss or Hastelloy C
Fill fluid		Silicone, Fluorinert	Silicone, Fluorinert	Silicone, Fluorinert
Conduit connections		1/2 NPT or M20	1/2 NPT or M20	1/2 NPT or M20
Transient and reverse polarity protections		Yes, standard	Yes, standard	Yes, standard
Certifications and approvals		FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC	FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC	FM, CSA, IECEx, ATEX, INMETRO, EAC, NEPSI, KC
ATEX and IECEx multimarking		Yes	Yes	Yes
Safety certification		TÜV SIL2/SIL3 (HART) as standard	TÜV SIL2/SIL3 (HART) as standard	TÜV SIL2/SIL3 (HART) as standard
Warranty		2 years standard, 5 years optional	5 years standard, up to 17 years optional	5 years standard, up to 17 years optional
Special process connections	Sanitary	Yes	Yes	Yes
	Pulp and paper	Yes	Yes	Yes
Remote seals and closed-coupled seals		Yes	Yes	Yes
Specifications		PSS 2A-1S05 A	PSS 2A-1S10 A	PSS 2A-1S50 A

Selection guide

Multivariable pressure transmitters

Model	IMP10S	FLW10S
Type	Multivariable	Multivariable for Massflow
Communication protocol	HART, Modbus	HART
Accuracy	AP and DP: ±0.05% Span	AP and DP: ±0.05% Span Flow rate ±1.0% of flow rate for typical head class meter applications
Stability — long term drift	< ±0.05% URL/yr for 5 yrs	< ±0.05% URL/yr for 5 yrs
Display for visualisation and configuration	Yes (in option)	Yes (in option)
Temperature range	-40 °C (-40 °F) to 85 °C (185 °F)	-40 °C (-40 °F) to 85 °C (185 °F)
Ingress protection rating	IP66/IP68 and NEMA 4X	IP66/IP68 and NEMA 4X
Housing material	Aluminium and 316 Stainless Steel	Aluminium and 316 Stainless Steel
Diaphragm material	316L ss or Hastelloy C	316L ss or Hastelloy C
Fill fluid	Silicone, Fluorinert	Silicone, Fluorinert
Conduit connections	1/2 NPT or M20	1/2 NPT or M20
Transient and reverse polarity protections	Yes	Yes
Upper range limit — maximum	5,300 psi/365 bar	5,300 psi/365 bar
Certifications and approvals	FM, CSA, ATEX, IECEx	FM, CSA, ATEX, IECEx
Warranty	5 years standard	5 years standard
Bypass manifolds	Yes	Yes
Specifications		

Wireless information network solutions

Wireless is a driving technological force in today's world. Schneider Electric's wireless information network solutions are committed to improving customer operational efficiencies through digitized information using innovative technology and solutions. Our wireless offerings are easy to use, cost effective, safe, secure, expandable, and sustainable. We continuously develop innovative wireless offerings with common look and feel, and a rich user experience across the wireless portfolio.

Process solutions Instrument Area Network (IAN)

For short ranges (60 meters) our Instrument Area Network Offering allows for wireless architecture with seamless integration into such platforms as Wireless HART MESH, Ethernet/IP, PLCs, and RTU types of environments.

Remote monitoring solutions (Accutech)

For mid-range distances up to one and a half kilometers, the Accutech offering provides robust and reliable wireless communications. Most notably for the Oil & Gas and Water & Wastewater market but also applicable to many other industries requiring communications of an intermediate range.

Tank level solutions (Centeron)

For applications requiring long range communications, the Centeron offering includes cellular 4G/5G capabilities as well as satellite devices measuring level with tracking capability. WebView, the data hub provides cloud-based features for monitoring and enterprise applications.

Data Logger 4G LTE

Data Logger 4G LTE is an ultra-low-power, fully-autonomous wireless telemetry device that operates best-of-class sensors. The sampled sensor data is collected, transmitted securely, and then stored on a private cloud server or a customer's on-premises server.

Instrument area network wireless portfolio

Temperature

WRT10 – Temperature

Gauge

WGP10 – Gauge Pressure

Absolute

WAP10 – Absolute Pressure

Differential

WDP10 – Differential Pressure

Concentrator

WCC10 – Central Concentrator

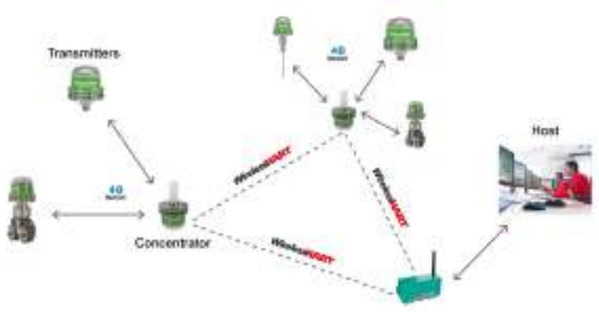
Looking for the lowest cost and easiest-to-use industrial wireless solution with the longest battery life?

Wireless measurement is no longer just a novelty and has become a driving force for gathering information in a more cost-effective way. Wired solutions are inherently expensive to install and implement. Many desired measurement points are cost prohibitive when one considers a cabled solution. Wireless alleviates the need for copper wires, conduit, conduit racks and trenching … costly and labor-intensive activities.

Customers want wireless instrumentation to be easy and simple. They do not want to change batteries every six months. They want good, reliable signal and reception without having to order special antennas. They want easy integration into their PLC, SCADA, and DCS systems. And they want all this for a low price.

Instrument Area Network (IAN) is easy and simple and the most cost-effective reliable wireless sensing technology on the market today. IAN has an extremely long battery life of 10 years, which is guaranteed and warranted. Because IAN uses Bluetooth Low Energy technology, the radio is off 99.9% of the time which conserves battery life. And when the BLE radio does wake up to communicate, it is sending very small packets of information. The transmission doesn't take that long and the chances of having to re-transmit are greatly reduced because of the small packet size. Small packet size also contributes to IAN's high reliability. IAN's ease of pairing devices makes installation and setup occur in a few minutes, not hours like the competition.

So, if you want to increase process operational efficiencies, increase worked productivity, maximize asset performance, improve plant and worker safety, monitor in-plant and outside-of-plant environmental parameters, and comply with regulatory requirements, using an open architecture that is easy to use for you as a customer, Instrument Area Network is the solution.



WCC10 - Central Concentrator

Selection guide

Wireless

Model	WRT10 (Wireless Temperature)
Communications protocols	Wireless BLE 4.0
RF characteristics	2.4 GHz spread spectrum, ISM license-free band 58 mW maximum operational RF transmit power BLE RF link margin: TX Power: +5dBm, RX Sensitivity: -97 dBm
Input types	RTD (Pt100, ASTM A, 4 Wire Thermocouple (Type J)
RTD range	-200 °C to +885 °C
Thermocouple range	-100 mV to +100 mV
Distance to concentrator	15 meters
Housing	Polycarbonate and 300 Series Stainless Steel
Display	Via WiFi Connection on Concentrator
Factory mounted thermowells and sensors	Yes
Sensor construction	Fixed ½" NPT, Spring-Loaded for Thermowell insertion
Configuration	Via WiFi Connection on CC, Web Page
Reporting updates	Selectable between 1 and 60 seconds Shipped at 16 seconds Corresponding to a report rate of 1/30 Hz
Accuracy	±1 °C for 0 °C to 100 °C
Diagnostics	Pairing LEDs, Status, Link, Sensor Type, Update
Battery warranty	10 year battery life per published specification
SIL2 certifications	None
Certifications and approvals	ATEX Intrinsically Safe Certified:II 1 G Ex ia IIC T4 Ga, II 1 D Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54 North America Intrinsically Safe Certified: Canada: Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54 United States: Class I Zone 0 AEx ia IIC T4 Ga, Zone 20 AEx ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54
Specifications	PSS-2A-1B5 A

Model	WGP10 (Wireless Gauge Pressure)	WAP10 (Wireless Absolute Pressure)
Type/design	Gauge pressure in-line	Absolute pressure in-line
Communications protocols	Wireless BLE 4.0	Wireless BLE 4.0
RF characteristics	2.4 GHz spread spectrum, ISM license-free band 58 mW maximum operational RF transmit power BLE RF link margin: TX Power: +5 dBm, RX Sensitivity: -97 dBm	2.4 GHz spread spectrum, ISM license-free band 58 mW maximum operational RF transmit power BLE RF link margin: TX Power: +5 dBm, RX Sensitivity: -97 dBm
Reference accuracy	0.25% of Full Scale, across -40 °C to +80 °C	0.25% of Full Scale, across -40 °C to +80 °C
Distance to concentrator	15 meters	15 meters
Reporting updates	Selectable between 1 and 60 seconds Shipped at 16 seconds Corresponding to a report rate of 1/30 Hz	Selectable between 1 and 60 seconds Shipped at 16 seconds Corresponding to a report rate of 1/30 Hz
Upper range limits	0.21 MPa, 30 psi, 2.1 bar or kg/cm2 2.1 MPa, 300 psi, 21 bar or kg/cm2 7 MPa, 1000 psi, 70 bar or kg/cm2	0.21 MPa, 30 psia, 2.1 bar or kg/cm2
Temperature range	-40° and +80° C; -40° and +176 °F	-40° and +80° C; -40° and +176 °F
Fill fluid	Silicone Oil	N/A
Process temperature range	-46 °C to +121 °C, -51 °F to +250 °F	-46 °C to +121 °C, -51 °F to +250 °F
Process wetted materials	316L SS	N/A
Process connections	N/A	None, (Both covers tapped for ½ NPT) ¼" NPT, ½" NPT
Ingress protection rating	IP54 as defined by IEC60529	IP54 as defined by IEC60529
Housing	Polycarbonate and 300 Series Stainless Steel	Polycarbonate and 300 Series Stainless Steel
Vibration specification	1G constant acceleration input over a frequency range of 5 to 200 Hz	N/A
Certifications and approvals	ATEX Intrinsically Safe Certified:II 1 G Ex ia IIC T4 Ga, II 1 D Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54; North America Intrinsically Safe Certified: Canada: Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54; United States: Class I Zone 0 AEx ia IIC T4 Ga, Zone 20 AEx ia IIIC T135°C Da, -40 °C ≤ Ta ≤ +80 °C, IP54	ATEX Intrinsically Safe Certified:II 1 G Ex ia IIC T4 Ga, II 1 D Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54; North America Intrinsically Safe Certified: Canada: Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54; United States: Class I Zone 0 AEx ia IIC T4 Ga, Zone 20 AEx ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54
Battery warranty	10 year battery life per published specification	10 year battery life per published specification
Calibration certificate	Embedded in end node memory Accessed via WiFi on CC	Embedded in end node memory Accessed via WiFi on CC
Remote seals and closed-coupled seals	Yes	Yes
Diagnostics	Pairing LEDs, status, link, sensor type, update	Pairing LEDs, status, link, sensor type, update
Configuration	Via WiFi Connection on CC Web Page	Via WiFi Connection on CC Web Page
Specifications	PSS-2A-1B5 A	PSS-2A-1B5 A

Model	WDP10 (Wireless Differential Pressure)
Type/design	Differential pressure
Communications protocols	Wireless BLE 4.0
RF characteristics	2.4 GHz spread spectrum, ISM license-free band 58 mW maximum operational RF transmit power BLE RF link margin: TX Power: +5dBm, RX Sensitivity: -97 dBm
Reference accuracy	0.25% of full scale, across -40 °C to +80 °C
Distance to concentrator	15 meters
Reporting updates	Selectable between 1 and 60 seconds Shipped at 16 seconds Corresponding to a report rate of 1/30 Hz
Upper range limits	50 kPA, 200 inH2O, 500 mbar 210 kPA, 30 psi, 2100 mbar 2.1 Mpa, 300 psi, 21 bar
Temperature range	-40° and +80 °C, -40° and +176 °F
Process temperature range	-46 °C to +121 °C, -51 °F to +250 °F
Ingress protection rating	IP54 as defined by IEC60529
Housing	Polycarbonate and 300 Series Stainless Steel
Certifications and approvals	ATEX Intrinsically Safe Certified:II 1 G Ex ia IIC T4 Ga, II 1 D Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54 North America Intrinsically Safe Certified: Canada: Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54 United States: Class I Zone 0 AEx ia IIC T4 Ga, Zone 20 AEx ia IIIC T135 °C Da, -40 °C ≤ Ta ≤ +80 °C, IP54
Battery warranty	10 year battery life per published specification
Calibration certificate	Embedded in end node memory, accessed via WiFi on CC
Remote seals and closed-coupled seals	Yes
Diagnostics	Pairing LEDs, status, link, sensor type, update
Configuration	Via WiFi connection on CC web page
Specifications	PSS-2A-1B5 A

Model	WCC10
Communications protocols	BLE 4.0 to wireless HART central concentrator (CC)
End node capacity	8
Distance from end node to concentrator	15 meters
Distance from concentrator to wireless HART gateway	50+ meters
RF characteristics	2.4 GHz spread spectrum, ISM license-free band 58 mW maximum operational RF transmit power BLE RF link margin: TX Power: +5 dBm, RX Sensitivity: -97 dBm WiFi: TX Power: +15 dBm, RX Sensitivity: -90 dBm WHART: TX Power: +10 dBm, RX Sensitivity: -96 dBm
Housing	Polycarbonate and 300 Series Stainless Steel
Diagnostics	Pairing LEDs, status, link, sensor type, update
Configuration	Via WiFi connection on CC web page
Display	WiFi connection to smartphone or tablet web page Displays end nodes for push/flash OEM tag Short tag and long tag Software version Status and link Sensor type Period Measurement Engineering units Zero function
Battery warranty	5 year battery life per published specification

Accutech wireless product portfolio

Base Radio

BR10 – Div 1, Zone1, Base Radio

BR20 – Div 2, Zone 2, Base Radio

BR21 – Div 2, Zone 2, Base Radio

Level

GL10 – Gauge Level

SL10 – Submersible Level

FL10 – Float Level

I/O

AI10/AV10 – Analog Input

SI10 – Switch Input/Output

4AO/8SW/4AO-8SW – Analog and Discrete Output Modules

Pressure

GP10 – Gauge Pressure

DP20 – Differential Pressure

Temperature

RT10 – RTD Temperature

TC10 – Thermocouple Temperature

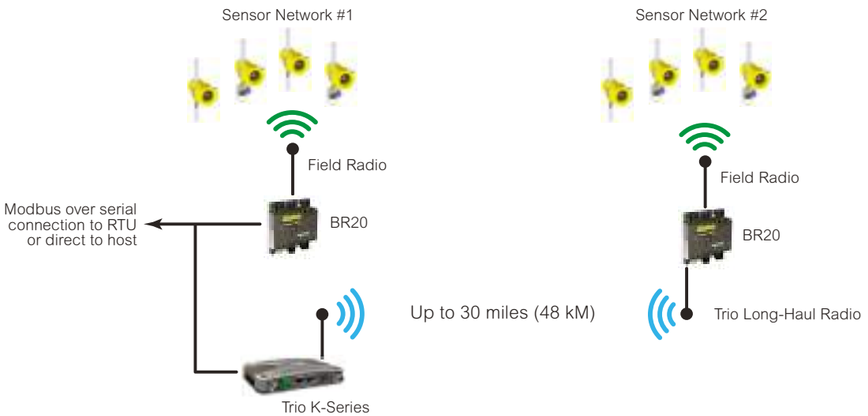
Flow

TM10 – Turbine Meter Totalizer

Rapid deploy wireless instrumentation solutions for telemetry and remote SCADA

Accurate measurement is vital to gain process knowledge. Companies are increasingly forced to measure process variables that are difficult to reach and expensive to support. Distance, hazardous environments, and absence of power are just a few of the hurdles faced.

With operational efficiency as the primary goal, the deployment of self-powered wireless instrumentation provides the knowledge you need at an affordable price.



Where traditional instruments struggle with operation and budget goals, Accutech wireless instrumentation provides the solution.

With a wide range of available instruments for temperature, pressure, flow, level, and more, Accutech is suited to many industrial applications, including upstream Oil & Gas and remote plant applications in Water & Wastewater.

Accurate field instruments are self-contained with power, radio, and sensor, making them easy to install. The high-performance, license-free radio, and long-lasting battery reduce support costs while delivering your valuable data.

Take ownership of your field instrument network

Installation of a complete wireless instrument network cannot be easier, with push button configuration, integrated link tests, and rugged compact designs.

Reliable, self-powered, spread-spectrum radios (900 MHz and 2.4 GHz) provide effective network connectivity and long-term service. Tested for use in hazardous locations, Accutech field instruments can function in extreme temperatures.

Flexible wireless communication

Accutech networks use 900 MHz or 2.4 GHz license-free, frequency-hopping, spread-spectrum radios, offering superior ranges of up to 3,000 ft (~1,000 m) using standard integrated antennas. Extended-reach options include external directional antennas and an integrated Trio™ long-haul data radio that offers 256-bit AES encryption.

Easily configured, highly scalable deployment

Each Accutech base radio can support 100 field instruments with up to 1 sec sampling on instruments. For extended scalability 256 base radios can coexist. Push button configuration and simple link test features allow entire networks to be deployed in hours.

Ease of use, low maintenance

Standard Accutech field units include a single D Cell Lithium Thionyl battery that offers up to ten years of service, depending on data rates and battery options. Advance notification is provided several weeks before a new field-replaceable battery is required.

Accutech instrumentation offers a versatile selection of instruments and base radios with performance-enhancing options that can satisfy any application.

A toolset for challenging applications

Accutech is available in a versatile selection of instruments and base radios with performance-enhancing options that can satisfy any application. Optional external sensor configurations allow installation in below-ground areas or on process equipment that is hard to reach. External high-gain antennas are available for complex environments where considerable obstructions require ultra-long reach.

With this kind of flexibility, Accutech becomes a key element in any challenging application:

- Wireless Wellhead monitoring and control (including plunger arrival)
- Tank level measurement (with dual float liquid interface option)
- Environmental monitoring (storm water, irrigation, reservoirs)
- Pressure measurement in any process, from 5 psi to 15,000 psi bar
- Monitoring remote sites with discrete input switches
- Delivering 4-20 mA signals from third-party analog instruments

Maximize return on investment while improving efficiency and safety

Engineered for challenging applications, Accutech networks help to reduce costs and lessen holes in your operational data monitoring.

- Reducing installation costs: Reduce cabling, trenching, and conduit costs.
- Increased productivity: Monitor process variables you could not before. Quick configuration, instant connectivity, and little maintenance.
- Enhanced safety: Integrated field units tested for harsh locations enable data point monitoring in tough environments.

Industry standard connectivity

Accutech supports industry standard Modbus protocol and 4-20mA, providing interoperability with a wide range of industrial equipment and host systems.

Certified and durable

With NEMA 4X packaging, Accutech products are designed for demanding applications and are certified CSA Class 1, Div 1, and ATEX/IECEx (-ia and -d). A push button interface enables configuration in hazardous environments.

Configure and monitor from base radio

Accutech Manager configuration and management software provides a user-friendly commissioning interface for Accutech networks, offering remote configuration and firmware upgrades, enhanced diagnostics, field unit authentication to base radio, and trending/data collection.

Tested for use in harsh locations, Accutech field instruments can function in extreme environments of temperature and humidity and come with a three-year warranty.

Selection guide

Accutech

BR10

Base Radio

- Supports 100 field units with 915 MHz or 2.4 GHz radio
- Serial Modbus via RS-485
- Remote antenna option
- 10-30 V DC input power
- CSA Class 1, Div 1 (xp)
- ATEX/IECEx -d
- Data Sheet*: BR10

BR20

Base Radio

- DIN rail mount
- Supports 100 field units with 915 MHz or 2.4 GHz radio
- Optional Trio data radio for long-haul connectivity with host
- Serial Modbus via RS-485
- 11-30 V DC input power
- CSA Class 1, Div 2
- ATEX/IECEx -n
- Data Sheet*: BR20

BR21

Base Radio

- DIN rail mount
- Supports 100 field units with 915 MHz or 2.4 GHz radio
- Optional Trio data radio for long-haul connectivity with host
- Ethernet Modbus Port: 10/100 BASE-T LAN Ethernet
- 11-30 V DC input power
- CSA Class 1, Div 2
- ATEX/IECEx -n
- Data Sheet*: BR20

AI10/AV10

Current/Voltage Multi-Input Field Unit

- Accuracy: ±0.1% of full scale reading at reference conditions
- Dual current (4-20 mA) or voltage (0-10 V) analog inputs
- Includes dual contact closure inputs
- Remote antenna option
- NEMA 4X enclosure
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: AI10/AV10

DP20

Differential Pressure Field Unit

- Accuracy: ±0.2% of URL
- Available in five different pressure ranges:
  - ±100 in H_2O
  - ±300 in H_2O
  - -25 psi to +25 psi
  - -25 psi to +100 psi
  - -25 psi to +300 psi
- NEMA 4X housing
- Remote antenna option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: DP20

FL10

Float Level Field Unit

- For use with Siemens 2,000 series probes
- 1/4" and 1/2" resolution options
- Lengths up to 30'
- Single float or dual float for liquids interface
- NEMA 4X housing
- Remote antenna option
- CSA Class 1, Div 1 (IS)
- Available in North America only
- Data Sheet*: FL10

GL10

Gauge Level Field Unit

- Accuracy:
  - ±0.25% of full scale at 20 °C (68 °F)
  - ±0.5% of URL
- 15 psig and 30 psig max pressure options
- Specific gravity correction and multiple units of measure selection
- NEMA 4X housing
- Remote antenna and remote sensor option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: GL10

GP10

Gauge Pressure Field Unit

- Accuracy:
  - ±0.25% of full scale at 20 °C (68 °F)
  - ±0.25% of URL (15,000 psig)
  - ±0.3% of URL (2,500 and 5,000 psig)
  - ±0.5% of URL (5, 15, 30, 100, 250, 1,000, and 10,000 psig)
- 5, 15, 30, 100, 250, 1,000, 2,500, 5,000, 10,000, 15,000 psig
- NEMA 4X housing
- Remote antenna and remote sensor option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: GP10

RT10

RTD Temperature Field Unit

- Electronics accuracy: ±0.1% of reading
- 4-wire 100 or 1,000 ohm DIN RTD
- Integrated RTD or junction box option for customer-supplied RTD
- NEMA 4X housing
- Remote antenna and remote sensor option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: RT10

SI10

Switch Input Field Unit

- Dual contact closure switch input with counter function
- Counter frequency up to 5 Hz
- Optional dual switch dry contact outputs capable of switching 1 A @ 30 V
- Remote antenna option
- NEMA 4X housing
- CSA Class 1, Div 1 (IS) for models without outputs; Div 2 with outputs
- ATEX/IECEx -ia for models without outputs; IECEx -d for models with outputs
- Data Sheet*: SI10

SL10

Submersible Level Field Unit

- Submersible hydrostatic pressure sensor
- Accuracy: ±0.5% of URL
- Pressure ratings up to 30 psi (2 Bar), lengths to 15 m (75')
- Vent to atmosphere or to tank
- Remote antenna option
- NEMA 4X housing
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: SL10

TC10

Thermocouple Temperature Field Unit

- Types B, C, E, J, K, L, N, S, T, U
- Electronics accuracy: ±0.1% of full scale reading
- Integrated single T/C or junction box option that supports dual customer supplied T/Cs
- NEMA 4X housing
- Remote antenna option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: TC10

TM10

Turbine Meter totalizer Field Unit

- Interfaces many 2-wire magnetic pickups
- Instantaneous flow and totalized values
- Frequency 1 Hz to 10 KHz
- NEMA 4X housing
- Remote antenna option
- CSA Class 1, Div 1 (IS)
- ATEX/IECEx -ia
- Data Sheet*: TM10

4AO/8SW/4AO-8SW

Output Modules

- Direct connection between Accutech base radios and DCS or process control systems
- Provides analog and discrete outputs from associated field units
- DIN rail-mounted
- Stackable (25 max, 100 AO, 200 DO)
- Three models available:
  - 4-channel analog output
  - 8-point contact closure
  - Combination of 4-channel analog/ 8-contact
- Data Sheet*: 4AO/8SW/4AO-8SW

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Tank level solutions product portfolio

Cellular monitors

Digital Cellular
Residential Propane

4G LTE
Industrial Gauge

4G LTE Internal and
External Pressure

4G LTE Radar

4G LTE Cellular Float

Encompass monitors

Float

Radar

Pressure

Propane

Encompass gateways

Ethernet Gateway

4G LTE Gateway

Satellite monitor

Level Track
Satellite Monitor

Modem

UST-V Verizon LTE Modem Kit for
underground storage tank monitoring

Stay connected to your customer's inventory

Imagine this: your delivery operation is running at maximum efficiency. Run outs are eliminated, emergency runs are a thing of the past, and your trucks deliver more product in less time — and they always come home empty. Now imagine automatically generated orders and the efficiently loaded trucks are routed and dispatched in minutes.

When you rely on Schneider Electric's powerful suite of tools, these scenarios become reality. Our tank monitoring products enable you to stay connected to your customers inventory by instantly providing tank-level information when you need it.

OptiFill™ uses that information to automatically decide which tanks should be filled, and it automatically dispatches and routes your trucks within minutes — substantially decreasing your hands-on dispatching efforts.

Tank monitoring

Schneider Electric's tank monitoring fuels your decisions by creating a central point for your data. It includes powerful tools, targeted information, and sophisticated analytics that allow you to increase your efficiencies. You can even generate reports that show you the key performance indicator of percentage of tank filled by customer by regions, and more. Your managers can easily evaluate and track your delivery items performance over time, quickly comparing various performance measurements.

With our tank monitoring, you'll know the exact status of every tank, whenever you need it, wherever you are. The system uses state-of-the-art radio and sensor technology to help your whole company quickly and accurately tack product levels in your customers or your own bulk storage tanks, using our simple, secure WebView™ interface.

By logging into WebView, you can easily review current and historical tank level information as well as track your progress towards achieving a more efficient delivery operation. The systems' various reports and alerts keep you up to date on changing tank levels so you can eliminate run outs and schedule deliveries only when it's efficient to do so.

We offer a wide change or wireless tank monitors and communication tools that support monitoring of lube oils, gasoline, diesel, waste oil, propane, chemicals, and water-based products. Our system communicates data via cellular, satellites or ethernet technology so even your most remote locations are always accessible. These choices offer maximum flexibility so you can choose the perfect balance of cost and performance for your business.

Industries that we operate in

- Fuels
- Lubricants
- Oil & gas production
- Propane
- Heating oil
- Wastewater
- Agriculture
- Chemicals

Improve your operational efficiencies by monitoring bulk tanks with the Encompass System

Encompass

With Encompass™, you can better manage and maximize your resources. You'll know when to deliver and when to pick up — avoiding costly run outs, lost business, emergency deliveries, and short fills. It allows you to increase your profitability through more efficient operations and better forecasting, with greater insight into production changes. The bottom line: it can help you be more proactive instead of reactive, allowing you to protect, even grow, your business.

Schneider Electric's Encompass uses RF tank monitors and gateways to track your tank levels at bulk facilities or multi-tank sites and provide immediate readings, letting you know exactly when and where to make deliveries. This helps eliminate inefficient partial fills, costly emergency deliveries, and much-dreaded run outs.

Our solution includes a mobile app for Apple® and Android™ devices. The app taps into detailed data for each of your sites through WebView in a summary form.

You can select a site and drill down through its hierarchy, similar to how you would in WebView. Each tank has its own summary data, including tank name, current fill level for a product, average daily usage, and days remaining. There is also a useful real-time mode for more frequent reporting, allowing you to get an updated reading while you are on-site. This is particularly useful for before and after delivery for a specific tank.

Our free mobile app provides fast access to key tank-level data and supports the "poll now" feature in Encompass monitors.

Increase capacity, compound your results

	Actual	OptiFill	Improvement
Number of site stops	900	538	362 fewer stops
Total tanks filled	1317	847	470 fewer tank fills
Average % delivered	47%	75%	60% increase in average fill amount

470 fewer fills x 263 average gallons delivered/filled =
123,610 gallons of additional capacity

Total delivered: 347,000 gallons over a one-year comparison period of 96 tanks.

Instantly know the answer to this common daily question: “Which tanks do I fill at which sites?”

OptiFill

OptiFill’s delivery optimizer unlocks the true power of your tank monitoring system. It processes tank level data collected from your monitored tanks using a sophisticated algorithm to determine which tanks need to be filled now, and which can wait until later. With OptiFill, your tank fills are maximized, allowing you to make 50 percent fewer stops while delivering the same amount of product.

Delivery optimization is especially crucial for multi-tank sites. If you have a single tank at a single site, it is easy to plan delivery when the tank reaches 20 percent, but what if you have four tanks at a site? What if you have 700 four-tank sites? How do you determine which tanks at which sites to fill now, and which to fill later, all while achieving minimal total cost and maximum asset utilization?

In the past, dispatchers spent hours making educated guesses to do the same work that OptiFill does accurately and automatically, all in less than 10 minutes.

What OptiFill means to your business:

- Efficient deliveries: increase the amount delivered per tank by up to 50 percent.
- Better capacity utilization: increase your fleet’s delivery capacity by up to 50 percent.
- Lower dispatching costs: complete daily dispatching faster and more effectively.
- Increased revenue: turn increased fleet capacity into additional revenue and lower costs.

Data Logger 4G LTE

Bring modularity and flexibility to the world of remote data acquisition

Simplicity

The Schneider Electric Data Logger 4G LTE is an ultra-low-power, fully-autonomous wireless telemetry device that operates best-of-class sensors. The sampled sensor data is collected, transmitted securely, and then stored on a secure cloud-server or a customer's on-premises server. Data Loggers are remotely configurable, and data can be visualized and managed via Schneider Electric's web-based IIot Platform. Data can also be integrated into SCADA and other software systems.

Benefits

- EcoStruxure™ Process Instrumentation's Data Logger 4G LTE offers simplified installation, integrated diagnostics, long battery lifetime, remote communication options, and low overall maintenance for remote location installations.
- Dominant IIoT solution in the infrastructure market for creating cyber-secure, plug-and-play, affordable smart infrastructure networks.

Experience the benefits of the Data Logger 4G LTE

SCADA and software

From cloud-based hosting and an intuitive user-interface to secured and streamlined SCADA connectivity, the Data Logger delivers data directly where it is needed. Integrating with models, analytics, and business intelligence solutions has never been easier.

Autonomous operation and redundant communication

Operates Best of Class Sensors. Redundant communication concurrently supports LTE (4G), 3G, 2G and Bluetooth connectivity.

Rugged design

Molded polycarbonate enclosure with IP 68/NEMA 6P waterproofing rating allows for installation in the most corrosive and aggressive of environments, in both industrial and commercial applications.

Cybersecurity and alerts

Data Loggers are embedded in every layer from the ground up with the most advanced cyber-security technology, including sensor authentication and data encryption. Receive alerts in case of an urgent event.

Reduced cost of ownership

Low-power and predictive analysis algorithms result in up to 30% extended battery life.

Rapid deployment and scalability

The Data Loggers are sensor-agnostic, utilizing various configurations of sensors and samplers. They are easily installed and operating within minutes.

EcoStruxure IIOT

To transfer all output data, the device is connected to the Schneider Electric Data Logger for a complete remote solution. The Schneider Electric datalogger is an IIoT solution for creating cybersecure, plug-and-play, affordable smart infrastructure networks.

Applications

- Water abstraction
- Water production
- Water distribution
- Revenue metering
- Irrigation

Specifications

Data and software	
Data hosting	Secure cloud or on-premises
Cybersecurity	TLS 1.2 Protocol
Software integration	REST API
SCADA integration	CSV, DNP3[1], OPC-UA[1], FTP[1]
Management platform	Web-based from desktop, tablet, and mobile
Data export options	CSV (Reports)
Device memory	8 GB
Data communication	Two-way
Alarm threshold	Up to 4 per data stream
Alert notification	SMS, email, voice
System health check	Included

Power	
Primary power supply	Internal lithium battery (field-replaceable and non-rechargeable), 3.9 V DC 3 A
Internal battery capacity	32 Ah
Operational run time	Up to 5+ years[2]
Battery status notifications	Included
External power	Solar and line power; automatic power source switching
Voltage input	6-24 V DC

Data and software	
Sensor ports	3 ports; supports up to 12 sensors using cable splitters
Sensor position	External Hard-Wired
Serial interfaces	RS485, RS232, SDI-12
Serial protocols	Modbus RTU, ASCII
Serial channels	Up to 16
Analog channels	Up to 4 (4-20 mA, 0-24 V)
Discrete channels	Dry contact, open collector Up to 5 total inputs (up to 2 pulse counting) 39 Hz max pulse frequency Up to 5 outputs, 0 V/2.8 V Maximum 3 outputs to be used at the same time.
Sensor power supply output	350 mA, 3.6 V/12 V

[1] Minimum Order Quantity (MOQ) - 100 devices.

[2] Battery lifetime depends on sensor power consumption and sampling and transmission frequency.

Specifications

Connectivity	
Communication	Cellular (4G/3G/2G), LoRaWAN,
Interfaces	Bluetooth
SIM card(s)	Dual SIM slots
Cellular roaming	Multi-network global SIM(s); data plan included supporting 180+ countries
Configuration	Remotely (over-the-air)
Upgrades	USB PC connection (internal)
Data transmission	Periodic, data-dependent
Antenna	External antenna support with backup internal antenna
Built-in GPS	Included

Mechanical enclosure	
LED indicator	Included
Dimensions (W x H x D)	13.2 cm x 16.5 cm x 7.3 cm/(5.2 in. x 6.5 in. x 2.9 in.)
Weight	0.9 kg (2.0 lbs)
Enclosure material	Polycarbonate (UL 94V-0 and UV-resistant)
Ingress protection	IP 68/NEMA 6P
Operating temperature	-40 °C to 80 °C (-40 °F to 176 °F)
Storage temperature	-40 °C to 80 °C (-40 °F to 176 °F)

Approvals and certifications	
Safety	EN 61010-1 2010/IEC 61010-1
FCC	FCC Part 15 Subpart B, class B
EMC	EN 301 489-1 V2.1.1 2017/EN 301 489-7 V1.3.1 2005
Spurious emissions	EN 301 511 V12.5.1 2017
Radiated emissions	EN 301 908-1 V11.1.1 2016
IP68/NEMA6P	EN 60529:1992+A2:2013 IEC 60529:1989/AM1:1999
CE	Approved

Flowmeter product portfolio

Magnetic flowmeters

IMT30A, IMT31A and IMT33A

9500A

9600A

8400A

8500A

9700A

6500W/IMT65W

Vortex flowmeters

84CN

84CF

84CW

84CS

Coriolis flowmeters

CFT34A

CFS300A, CFS400A, CS700A

Magnetic flowmeters

The flexible solution for most flows

Magnetic flowmeters are designed to fit a wide range of applications, including water, slurries, chemicals, pharmaceuticals, and foodstuffs, in a wide range of industries. Schneider Electric magnetic meters are a reliable flow measurement solution with a lower cost of ownership and maintenance, with field-proven stability to maximize the availability of flow measurement.

For most applications, a Schneider Electric magnetic flowmeter with DC excitation is the ideal solution.

This efficient system comprises a threaded body, wafer body, or sanitary magnetic flowtube coupled to an intelligent magnetic flow transmitter.

Our transmitters boast such desirable features as automatic/manual empty pipe detection, bidirectional measurement, contact inputs for remote operability, and relay outputs for alarm functionality. You also receive flexible configuration to fit your control scheme, easy programming, and durable, modular construction.

In addition, our flowmeters provide continuous diagnostic and self-tests, with the capability to identify coating and corrosion of the electrode, or change of flow profile. With the new, unique feature 'virtual reference grounding' grounding electrodes or rings can be left out, simplifying and reducing installation costs while eliminating the risk of the accuracy being affected by an unstable ground on-site.

Our flowtubes are available in a wide range of sizes (0.1" to 80", 3 mm to 2,000 mm) with an extensive variety of industrial and sanitary options.

These flowtubes can be used with most conductive fluids, including hard-to-handle liquids and slurries. Retained, reinforced PFA liners withstand even severe process temperature swings to 180°C (356°F) and process pressures from full vacuum to 40bar (580psi).

You also get a wide variety of mounting options, line sizes, and configurations.

IMT30A Transmitter

IMT31A Transmitter

Our complete magnetic flowmeter family sets an industry standard for wide-ranging excellence.

IMT33A Transmitter

9700A Magnetic Flow Sensor

The breakthrough technology for your toughest flow problems

Schneider Electric's flow expertise stretches from the process industry's first mag flow system in 1954 to DC pulsed mag transmitters in 1983. Today, we are developing even better answers for your flow future.

The IMT33A transmitter squelches noise and boosts performance on your worst flows such as slurries, cement, or Pulp & Paper applications.

The result is a clean, accurate, and reliable measurement where solids or additives generate unacceptably high process signal noise, including chemical additives, slurries, and high-consistency or pulsating flows.

Schneider Electric's flow solutions provide online, intelligent diagnostics and help, simple, menu-driven software configuration, compatibility with most of Schneider Electric's electromagnetic flow tubes, high accuracy and fast response, plus durability and ease of use.

IMT33A Transmitter

FlowExpertPro Flowmeter Sizing

Need some help to select the right magnetic flowmeter for your process? Visit www.FlowExpertPro.com for easy sizing and selection.

Selection guide

Magflow flowmeters




Model	9500A IMT30A/IMT31A/IMT33A	9600A IMT30A/IMT31A/IMT33A	9700A IMT30A/IMT31A/IMT33A	8500A IMT30A/IMT31A/IMT33A
Applications	Water & Wastewater, Power	Sanitary flowmeter used for Food & Beverage, Pharmaceutical, Cosmetics	Slurries and pastes with high solids content, abrasive and aggressive products, clean liquids	Volumetric dosing of additives, chemical injection, acids, alkaline, abrasive slurries, aggressive media
Size	1" to 80"; DN25 to DN2000	1/10" to 6"; DN2.5 to DN150	3/8” to 80” (DN10 - DN2000)	1/10” to 4” (DN2.5 - DN100)
Accuracy	0.5% ±1 mm/s IMT30A down to 0.3% ±1 mm/s... IMT31A 0.2% ±1 mm/s... IMT33A	0.5% ±1 mm/s IMT30A down to 0.3% ±1 mm/s... IMT31A 0.2% ±1 mm/s... IMT33A	up to ±0.2% of mv +1 mm/s IMT33A up to ±0.3% of mv +1 mm/s IMT31A up to ±0.5% of mv +1 mm/s IMT30A	up to ±0.15% of mv +1 mm/s IMT33A up to ±0.3% of mv +1 mm/s IMT31A up to ±0.5% of mv +1 mm/s IMT30A
Liners	Hard rubber	Reinforced PFA	PFA, PTFE, ETFE, PU Hard/soft rubber	Ceramic
Electrode material	Hastelloy C, stainless steel, titanium	Hastelloy C and B2, stainless steel, titanium, tantalum, platinum, tantalum-tungsten	Hastelloy, stainless steel, titanium, tantalum, low-noise electrodes, platinum	Fused in-place Cermet electrode or platinum button with platinum wire
Fittings	EN 1092-1, JIS, ASME B16.5, AWWA	DIN 11850/11866, DIN 11851, DIN 11864-2A, DIN 32676, ISO 2037, ISO 2852, SMS 1145, Tri-Clamp	EN 1092-1, ASME B16.5, JIS	EN 1092-1, ASME B16.5, JIS
Temperature range	-5 °C to +80 °C/+23 °F to +176 °F	-40 °C to +140 °C/-40 °F to +284 °F	-40 °C to +180 °C/-40 °F to +356 °F	-40 °C to +180 °C/-40 °F to +356 °F
Minimum conductivity	5 µS/cm (water ≥ 20 µS/cm)	5 µS/cm	≥ 1 µS/cm	≥ 1 µS/cm
Communication protocols	4-20 mA, HART, FF[1], Modbus	4-20 mA, HART, FF[1], Modbus	4-20 mA, HART, FF[1], Modbus	4-20 mA, HART, FF[1], Modbus
Certifications and approvals	ATEX, IECEx, FM, CSA, NEPSI KTW, ACS, NSF 61 Drinking Water Approvals	CSA, 3-A Sanitary Approval, FDA, EHEDG	CE, ATEX, FM, CSA, IECEs, NEPSI	CE, ATEX, FM, CSA, IECEs, NEPSI, FDA
Specific features	Virtual Grounding option Continuous device and process diagnostics	Continuous device and process diagnostics	Virtual grounding option, continuous device and process diagnostics, low-noise electrode	FDA approved, vacuum resistant, continous device and process diagnostics, virtual grounding option
Specifications	9500A PSS 1-6H4 A IMT30A PSS 1-6H3 A IMT31A PSS 1-6H2 A IMT33A PSS 1-6H1 A	9600A PSS 1-6H5 A IMT30A PSS 1-6H3 A IMT31A PSS 1-6H2 A IMT33A PSS 1-6H1 A	9700A PSS_1-6H6 A IMT30A PSS_1-6H3 A IMT31A PSS_1-6H2 A IMT33A PSS_1-6H1 A	8500A PSS_1-6H8 A IMT30A PSS_1-6H3 A IMT31A PSS_1-6H2 A IMT33A PSS_1-6H1 A

[1] FF = FOUNDATION Fieldbus

Selection guide

Magflow flowmeters (continued)

Model	8400A IMT30A/IMT31A/IMT33A	6500W IMT65W
Applications	Mixing, batching, dosing, filtration, pump control; water flow monitoring, circulation and treatment	District metering of potable water and custody transfer measurement
Size	3/8” to 6” (DN10 - DN150)	1” to 24” (DN25 - DN600)
Accuracy	up to ±0.3% of mv +2 mm/s IMT33A up to ±0.4% of mv +1 mm/s IMT31A up to ±0.5% of mv +1 mm/s IMT30A	up to ±0.2% of mv + mm/s IMT65W
Liners	PFA	Rilsan® thermoplastic polyamide
Electrode material	Hastelloy	Hastelloy, Stainless Steel
Fittings	EN 1092-1, ASME B16.5, JIS	EN 1092-1, ASME B16.5, JIS, Gas Threaded Connection
Temperature range	-25 °C to +120 °C/-13 °F to +248 °F	-5 °C to +70 °C/+23 °F to +158 °F
Minimum conductivity	≥ 5 µS/cm	≥ 20 µS/cm
Communication protocols	4-20 mA, HART, FF, Modbus	Pulse, Modbus
Certifications and approvals	ATEX Zone 2 max.	Custody transfer: OIMLR49 and MID Annex III (MI-001); Drinking water approvals: ACS, DVGW, NSF, UBA and WRAS
Specific features	Vacuum resistant, continuous device and process diagnostics, virtual grounding option	Battery-powered water meter with optional data logger for wireless operation, multi-power unit for mains power connection and battery back up
Specifications*	8400A PSS_1-6H7 A IMT30A PSS_1-6H3 A IMT31A PSS_1-6H2 A IMT33A PSS_1-6H1 A	6500W/IMT65W PSS_1-610H A

*Please use this term in our search window on www.schneider-electric.com to access more product details

Vortex flowmeters

The industry's most popular vortex meter choice

Schneider Electric's 84C Series intelligent vortex flowmeters are proven to be the best choice for meeting many of the accuracy, dependability, and cost challenges your process can present.

Forget about specifying different models for liquid, gas, and steam measurements. With the Schneider Electric vortex flowmeter, a single sensor design handles the majority of your measurement needs. And, with the introduction of the 84C having the option of built-in temperature compensation for mass flow of saturated steam or custom liquids, the 84C family of vortex meters provides an even higher-value solution for your measurement needs. Therefore, you simplify ordering, reduce inventories, and cut overall costs. Even after years of hard use, you continue to receive predictable, long-term, accurate performance, with a minimum cost of ownership.

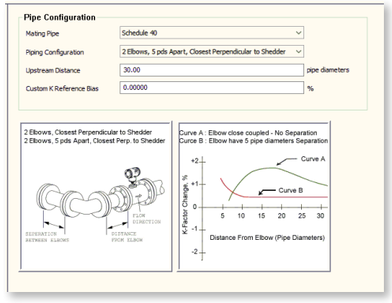
The 84C is available with Modbus RTU or HART 7 communication. The Modbus implementation is done over 2-wire RS-485 multidrop serial connection allowing you to free up cabinet space and to run faster compared to HART. It is available with explosion- and flame-proof electrical certifications making this meter an ideal device for the upstream Oil & Gas industry. The Modbus DTM with its easy 7-step configuration wizard will get you up and running in 2 minutes.

The 84C vortex flowmeter with temperature compensation is the best solution for mass flow measurement of saturated steam or custom liquids, reducing the cost of ownership.

Smart, durable design

The unique shape of the shedding element has no moving parts to wear out and degrade accuracy. The 84C, with optional built-in Pt1000 RTD temperature sensor, provides best-in-class accuracy for compensated mass flow of saturated steam.

Patented "Direct Sense™" vortex sensing places the sensor in the process and at the correct location for the widest rangeability and best low-flow performance. The robust sensor (backed by a lifetime warranty) stands up to harsh processes, as does the rugged, epoxy-coated housing. An optional isolation manifold will allow you to replace the entire sensor assembly without shutting down your process and maintaining process pressure and temperature conditions.



Built-in configuration tools for real-world applications

Trending you can customize

Intelligence in every model

All Schneider Electric intelligent vortex flowmeters possess excellent low-flow rate characteristics, wide rangeability, and online diagnostics. They also include a K-factor correction for temperature effects and compensation for piping effects to provide the most accurate measurement possible.

Like many Schneider Electric instruments, they can be remotely interrogated or configured by your choice of PC software based on FDT/DTM standard or any hand-held terminal using DD files.

A choice of versions

Our flanged-body and wafer-body vortex flowmeters measure liquid, gas, or steam at process temperatures up to 430 °C (800 °F). Our sanitary intelligent vortex flowmeter is the only 3-A sanitary vortex meter in the market authorized for applications that require crevice-free design to enable inline cleaning.

The 84CS sanitary vortex flowmeter is suitable for hygienic applications and CIP cycles.

FlowExpertPro Flowmeter Sizing

Searching for a great vortex meter? Look no further than Schneider Electric. Visit www.FlowExpertPro.com for help with sizing and selection of a vortex flowmeter that meets your liquid, gas, or steam flow measurement needs.

Selection guide

Vortex flowmeters

Model	84CF (Flanged)	84CN (Threaded/Male NPT)	84CW (Wafer)	84CS (Sanitary)
				
Applications	Gas, liquid, or steam applications (clean single-phase fluid). General purpose flowmeter for virtually any process industry. Chemical, Oil & Gas, Energy Industries, Utilities.	Gas, liquid, or steam applications (clean single-phase fluid). Direct replacement for turbine, magnetic flow, and orifice meters. Chemical, Oil & Gas, Energy Industries.	Liquid, gas, or steam applications (clean single-phase fluid). General purpose flowmeter for virtually any process industry. Chemical, Oil & Gas, Energy Industries, Utilities.	Liquid, gas, or steam applications (clean single-phase fluid). Hygienic design for Food & Beverage and Pharmaceutical sanitary applications. Wide range of temperature and pressure, ideal for CIP/SIP skid application.
Size	3/4" to 12"; DN15 to DN300	1" to 2"; DN25 to DN50	3/4" to 8"; DN15 to DN200	2" to 3"; DN50 to DN80
Accuracy	±0.5% of reading in liquids ±1.0% of reading in gas and steam ±1.4% of reading in saturated steam	±0.5% of reading in liquids ±1.0% of reading in gas and steam ±1.4% of reading in saturated steam	±0.5% of reading in liquids ±1.0% of reading in gas and steam ±1.4% of reading in saturated steam	±0.5% of reading in liquids ±1.0% of reading in gas and steam ±1.4% of reading in saturated steam
Flowtube material	316 or 304 Stainless Steel	316 or 304 Stainless Steel	316 Stainless Steel or Nickel alloy CW2M (equivalent to Hastelloy C-4C)	316 Stainless Steel tube and 316L Stainless Steel shedder bar
Fittings	Flange ANSI RF, ANSI RTJ, EN 1092-1 Pressure rating ranging from ANSI Class 150 to 1500, DIN PN16 to PN160	Male NPT threaded	Wafer (flangeless) Centering for ANSI Class 150, 300, 600 and Metric PN 63, PN 100; Centering for Metric PN 16 and PN 40; Centering for ANSI Class 600; Centering for Metric PN 16; Centering for Metric PN 40 Wafer (flangeless) Centering for ANSI Class 150, 300, 600 Centering for Metric PN 16, 40, 63, 100	3-A I-line coupling mates with Cherry Burrell 15 WI, SI (DIN 11851) coupling with external knuckle thread, per DIN 405, Part 1; RJT coupling per BS 1864, with external Whitworth thread, 6 TPI; 3-A Tri-clamp type quick -disconnect ferrule, mates with Tri-Clover 14 WMP or equivalent; ISS (ISO 2853) coupling with external Trapezoidal thread, 8 TPI
Temperature range	-20 °C to +200 °C/0 °F to +400 °F +150 °C to +430 °C/+300 °F to +800 °F Temp. comp. devices: +150 °C to +260 °C/+300 °F to +500 °F	-20 °C to +200 °C/-4 °F to +400 °F +150 °C to +430 °C/+300 °F to +800 °F Temp. comp. devices: +150 °C to +260 °C/+300 °F to +500 °F	-20°C to +200 °C/0°F to +400 °F +200°C to +430 °C/+400°F to +800 °F Temp. comp. devices: +150 °C to +260 °C/+300 °F to +500 °F	-18 °C to +177 °C/0 °F to +350 °F Temp. comp. devices: +150 °C to +260 °C/+300 °F to +500 °F
Communication protocols	4-20 mA, HART 7, Modbus RTU	4-20 mA, HART, Modbus	4-20 mA, HART	4-20 mA, HART
Certifications and approvals	ATEX, IECEx, FM, CSA, NEPSI, INMETRO, EAC, KOSHA	ATEX, IECEx, FM, CSA, NEPSI, INMETRO, EAC	ATEX, IECEx, FM, CSA, NEPSI, INMETRO, EAC, KOSHA	ATEX, IECEx, FM, CSA, NEPSI approved with no cracks or crevices wetted-parts
Specific features	Optional: temperature compensated vortex	Temperature compensated vortex	Temperature compensated vortex	Temperature compensated vortex
Specifications*	PSS 1-8A8 A	PSS 1-8A8 A	PSS 1-8A8 A	PSS 1-8A8 A

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Coriolis mass flowmeters

When it comes to selecting a flowmeter for your application, Schneider Electric's mass flow meters cover all bases. Our family of Coriolis flow meters range from small to large, for high pressure, cryogenic temperatures, and high temperatures. The meter's diagnostics software monitors a series of process and auxiliary values in order to ultimately confirm the condition of the process medium. Our Coriolis mass flow meters can even generate intelligent warning messages when a certain proportion of gas bubbles or solids is exceeded, providing valuable information about the process itself.

When constant parameters such as medium, temperature, or pressure undergo sudden changes, a reliable and accurate mass flowmeter is needed. Schneider Electric offers superior mass flowmeters with a unique straight tube design for minimal pressure drop, highly viscous, corrosive, and slurry applications. Whatever your process requires, you can count on Schneider Electric's Coriolis mass flowmeters for design and quality.

Typical applications

- Measurement of liquids, gases, and liquids with entrained gas
- Bulk loading
- Oil & Gas
- Food & Beverage
- Chemical
- Pharmaceutical
- Petrochemical
- Power plants
- Pulp & Paper

High overall pressure drop of a flowmeter installed results in higher investment costs in more powerful pumps, for energy consumption. Important for the offshore and marine markets, the greater the weight of these more powerful pumps, the more weight is added to the platform or vessel. To reduce overall system pressure drop the correct flowmeter can play a vital part in achieving this. Our CFS400A has a unique four straight tube design with an optimized flow splitter giving it a low pressure drop. It also has a very high flow rate at up to 4,600 t/h/169,000 lb/min.

A powerful transmitter for standard and challenging applications

The CFT34A is an electronic device ideal for all high-tech measuring tasks. It flaunts its technological strengths when entrained gas is present, providing continuous measurement with gas entrainment from 0% to 100% and back. It also offers excellent zero-level state-of-the-art density measurement. The CFT34A is compatible with the CFS300A, CFS400A, CFS600A, and CFS700A Coriolis flow tubes and features push button and optical keys in its standard configuration. The transmitter is approved according to cFMus, ATEX, IECEx, EAC, NEPSI, and INMETRO. The transmitter is available in compact and remote mount design and has state-of-the-art measurement capability, providing exceptional density measurement. Its high-level diagnostics providing condition-based monitoring and its robust design make it a valuable tool for measurements which are not affected by gas entrainment. In the unlikely event that the electronics develop a fault, the complete electronics module can be conveniently replaced on site. Due to redundant storage, the data is simply transferred from the backplane memory of the housing to the new transmitter resulting in only a short disruption of the process.

Repeatable 2-phase flow measurement

If your measurement of your mass flowmeter is interrupted because of gas entrainment in the medium, consider using Schneider Electric's Coriolis mass flowmeters instead. No matter if your process has unwanted entrained gas or if you need air inside your product, Schneider Electric's Coriolis mass flowmeters ensure stable and continued operation across a wide range of gas fractions and complex flow conditions.

Schneider Electric's 2-phase flow functionality offer a solution for flow conditions at a gas volume fraction (GVF) from 0 to 100%:

- Applications with entrained gas can simply be resolved
- Enhanced diagnostics with 2-phase signal
- Diagnostics in accordance with NAMUR NE 107 requirements
- Uninterrupted measurement with 0 to 100% gas entrainment

How it works

Regular oscillation of the tubes in the Coriolis mass flowmeter is desired. Air entrained in the liquid dampens this regular oscillation of the flow measuring tubes. As the air content rises, the oscillation can come to a complete stop. Powerful control algorithms overcome this challenge allowing the meter to maintain oscillation and continue to measure even during a complete transition from a 100% liquid phase to a 100% gas phase — Schneider Electric's Coriolis mass flow meter will continuously measure.

Coriolis flow meters can measure both the mass flow and density of any fluid, whether it has entrained air or not. Density temperature measurement of single-phase fluids (i.e. no entrained air is present) is common practice but for traditional mass flow meters it becomes challenging with entrained gas. In many applications where entrained gas is present, Schneider Electric's Coriolis mass flowmeters show excellent accuracy and repeatability for process control, batching, loading, offloading, and transfer measurement.

CFT34A Mass Flow Transmitter

Selection guide

Coriolis flowmeters

Model		CFS300A/CFT34A	CFS400A	CFS700A
Applications		For universal applications and process control	Dual or four straight tube design for bulk flows for custody transfer up to DN400/16”	For advanced applications, with single straight measuring tube
Accuracy	Liquid	±0.15%	≤0.1% (optional: ±0.05%)	±0.1%
	Gas	0.35%	≤0.35%	0.35%
	Density	±2 kg/m³	±1 kg/m³ (±2 kg/m³)	±2 kg/m³ (±0.5 kg/m³)
Outputs		Current, pulse/frequency, status	Current, pulse/frequency, status	Current, pulse/frequency, status
Inputs		Binary	Binary	Binary
Communication		HART®, FF, Profibus PA, Profibus DP, Modbus	HART®, FF, Profibus PA, Profibus DP, Modbus	HART®, FF, Profibus PA, Profibus DP, Modbus
Power supply		85 – 250 VAC; 11 – 31VDC; 20.5 – 26 VAC/DC	85 – 250 VAC; 11 – 31VDC; 20.5 – 26 VAC/DC	85 – 250 VAC; 11 – 31VDC; 20.5 – 26 VAC/DC
Protection category	Compact (C)	IP66, 67; NEMA4, 4X, 6	IP66, 67; NEMA4, 4X, 6	IP66, 67; NEMA4, 4X, 6
	Field (F)	IP66, 67; NEMA4, 4X, 6	IP66, 67; NEMA4, 4X, 6	IP66, 67; NEMA4, 4X, 6
	Wall (W)	IP65; NEMA4, 4X	IP65; NEMA4, 4X	IP65; NEMA4, 4X
Device, EN 1092-1		DN15 – 50	DN100 – 400	DN6 – 80
Connection, EN 1092-1		DN15 – 100	DN100 – 400	DN10 – 100
Device, ASME B16.5		1/2 – 2”	4 – 16”	1/4 – 3”
Connection ASME B16.5		1/2 – 4”	4 – 16”	1/2 – 4”
Pressure rating EN 1092-1		PN40, 63, 100	PN16, 40, 63, 100, 160	PN40, 63, 100
Pressure rating ASME B16.5		CL 150, 300, 600	CL 150, 300, 600, 900, 1500	CL 150, 300, 600
Secondary pressure containment		100 bar/1450 psi	40 bar/580 psi (opt. 150 bar/2175 psi)	100 bar/1450 psi
Measuring ranges		48 – 170000 kg/h	1560 – 4,600,000 kg/h	9.5 – 560,000 kg/h
Process temperature		-40 to +130 °C/-40 to +266 °F	-40 to +130 °C/-40 to +266 °F	-40 to +150 °C/-40 to +302 °F
Ambient temperature		-40 to +65 °C/-40 to +149 °F	-40 to +65 °C/-40 to +149 °F	-40 to +65 °C/-40 to +149 °F
Sensor materials		Stainless steel	Stainless steel, duplex, super duplex	Duplex steel, Hastelloy C22, titanium, tantalum
Protection category sensor		IP67, NEMA4X	IP67, NEMA4X	IP67, NEMA4X
Ex-approvals		ATEX, FM, CSA, NEPSI, IECEx, INMETRO, EAC	ATEX, FM, CSA, NEPSI, IECEx, INMETRO, EAC	ATEX, FM, CSA, NEPSI, IECEx, INMETRO, EAC
Sanitary and material approvals		3A, EHEDG	NACE	EHEDG, 3A, ASME Bioprocessing
Custody transfer		NTEP, Measurement Canada	OIML R117, INMETRO, NTEP, MI 005, MI 002, Measurement Canada	OIML R117, INMETRO, MI005

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Selection guide

Flow technologies




Model	Coriolis	Magnetic	Vortex	dP flow and Multivariable flow
Technology				
Type of measurement	Linear mass flow measurement Temperature measurement	Linear volumetric flow measurement	Linear volumetric flow measurement Mass flow measurement for steam and liquids	Square root volumetric flow measurement
Liquids				
Clean liquid	**Good**	**Good**	**Good**	**Good**
Dirty liquid	**Good**	**Good**	**Limited**	**Limited**
Corrosive liquid	**Limited**	**Good**	**Limited**	**Limited**
Low conductivity liquid <5 µS	**Good**	No	**Good**	**Good**
High viscosity	**Good**	**Good**	No	No
Gas				
Clean gas	**Good**	No	**Good**	**Good**
Dirty/corrosive gas	**Limited**	No	**Limited**	**Limited**
Steam	No	No	**Good**	**Good**
Special applications				
High temperature	**Good**	**Limited**	**Good**	**Limited**
Low temperature	**Good**	No	**Limited**	**Limited**
Low velocity	**Good**	**Good**	No	No
Abrasive slurries	**Good**	**Good**	No	No
Fibrous slurries	**Good**	**Good**	No	No
Dual-phase/emulsion	**Good**	**Limited**	No	No
Specifications				
Accuracy	0.1% to 2% optional 0.05%	0.15% to 2%	0.5% to 1% 1.4% for saturated steam mass flow	0.5% to 3%

Process analytical product portfolio

pH and ORP sensors

PH10 and ORP10

PH10 Smart

PH10 Smart with PC Interface

PH12

871A

871PH

Smart PH12

EP462A

Electrodeless and flowthrough conductivity sensors

871EC

871FT Sanitary

871FT Industrial

Calibration Plugs

Contacting conductivity sensors

871CR

871CR with Ball Valve Assembly

871CC

Transmitters and analyzers

876 Transmitters

875 Analyzers

Process analytical

The process analytical experts

Bring us your toughest analytical measurement challenges. We have the intelligent Schneider Electric analyzers, transmitters, sensors, and solutions you need.

Our analytical history displays an entire galaxy of significant technical firsts. Any survey would include our multi-measurement intelligent transmitters, flow-through conductivity sensors, sensor diagnostics, and more. Our unique, long-lived sensors are currently revolutionizing pH measurement.

Today, we supply more than just quality instrumentation. Our expert application specialists tackle challenges from feasibility studies for new processes to fine-tuning your existing application.

Model 876 family of loop-powered electrochemical transmitters

The Model 876 is a feature-rich but easy-to-operate family of transmitters for use with Schneider Electric's broad portfolio of electrochemical sensors. All members of the family are 2-wire loop-powered devices with galvanically isolated 4–20 mA analog and HART digital signal outputs. Calibration and configuration can be carried out using the local keypad/display interface, a HART handheld communicator, or PC-based Field Device Tool (FDT) certified DTM (Device Type Manager). The 876 Family is certified intrinsically safe for hazardous location installations. All 876s offer continuous sensor/transmitter diagnostics. The user interface has two levels of configurable passcode protection and complies with NAMUR standards and European EMC directive 2014/30/EU. The enclosure meets IP66 and NEMA 4X ratings.

Analyze or control the pH, oxidation-reduction potential (ORP), conductivity, or resistivity of your process with exceptional analytical solutions such as our 876 transmitter family.

The Model 876PH operates with either analog or Smart (digital) pH, ORP, or combination pH/ORP sensors or with analog ion-selective electrodes (ISEs). The Smart version, 876PH-S, can be operated in English, French, German, Italian, Spanish, Portuguese, or Russian and has a backlit LCD indicator.

The Models 876CR and 876EC operate with contacting and electrodeless conductivity sensors, respectively. Both have a wide selection of temperature and concentration curves and can be configured to switch between up to 3 measurement applications. The 876CR operates with contacting conductivity sensors with cell factors from 0.1 to 10 cm-1 and temperature and concentration curves for ultrapure water and a wide range of chemicals. The 876EC operates with a broad selection of immersion and flow-through electrodeless (toroidal) conductivity sensors.

Model 875 family of line-powered E-Chem analyzers

In addition to the analog measurement capabilities described above for the 876 Family, the Models 875PH, 875CR, and 875EC offer additional features in a line-power-based instrument. The 875 Family is offered in both panel- and field-mounted versions, all with a large backlit LCD display. 875 Analyzers offer dual analog outputs and optional HART digital. Dual, configurable relay contacts are also provided as well as digital inputs that allow remote control of hold and application switching features. The 875CR has dual, individually configurable conductivity channels.

For the lower wiring costs of a loop-powered instrument, turn to our popular 875 transmitter.

Process analytical

The sensors you seek

We offer the widest array of innovative pH and conductivity sensor technologies, materials, sizes, and geometries in the business. From ultrapure water to the most aggressive acids and bases, we can handle your process solution. Among our offerings: electrodeless conductivity, pH/ORP/ISE, flow-through conductivity, and contacting conductivity/resistivity sensors. Rely on Schneider Electric sensors to solve your most challenging applications. Our breadth of line drastically simplifies your requirements for installation, calibration, accessibility, troubleshooting, and maintenance.

The right fit for every application

Schneider Electric sensors provide the specific advantages for each required application:

- For pure and ultrapure water measurement, our 871CR sensors supply the highest possible accuracy.
- For aggressive chemicals or industries requiring unbroken process lines, our flow-through 871FT sensors offer an innovative, non-invasive conductivity solution.
- For pH measurement in aggressive chemical solutions, our pH reference technology with internal Nafion™ ion barrier protects the external junction from fouling and reduces maintenance.
- Simplify the calibration of any Schneider Electric electrodeless conductivity sensor loop by using our high-precision EP485 resistance calibration plugs. Precision calibration … in a shirt-pocket tool!

The pH benchmark

Our PH10 sensor line has revolutionized the field with its NAFION ion-barrier reference technology, rugged plastic construction, and non-metallic solution ground. With remarkable longevity in the harshest environments, plus outstanding ease of use in any application, PH10 sensors have become the industry standard for pH/ORP sensors. These innovative features are also available in 12mm smart and analog PH12 sensors.

Twice the life

PH10 sensors remain extremely accurate for double the service life of competitive sensors in high-temperature and temperature cycling applications up to 121° C (250 °F).

This unheard-of stability in the harshest process environments is due in part to the PH10's unique pH glass formulation. A flat glass design offers self-cleaning for longer service life. A domed glass version operates longer and more accurately at high temperatures.

The 12mm pH standard

The PH12 Series includes the process industry's first PEEK bodied sensor, making it the most durable 12mm pH sensor available anywhere. It is available with a flat membrane sensing electrode and no metallic wetted parts. Its nonmetallic solution ground is a standard feature, allowing for sensor diagnostics in a cost-effective platform.

Smart pH Measurement

Schneider Electric now offers a comprehensive portfolio of Smart pH and ORP measurement products. Smart sensors have integral electronics which process the analog signals internally and communicate conditioned pH, ORP, and temperature readings digitally to a transmitter or PC. Smart versions of PH10, PH12, and 876PH, as well as a Smart pH PC Interface make up the Schneider Electric Smart pH portfolio. Smart pH sensors have internal, non-volatile memory which contains factory data, such as date code and model number, calibration data, sensor history log, and diagnostic information. Smart sensors can be calibrated by a skilled technician in a lab and then swapped into service at a measuring point where calibration data will be uploaded from the sensor to the transmitter. With a Smart PH10 or PH12 sensor connected to a Smart 876PH, advanced features such as Sensor Service Prediction are enabled. Sensor Service Prediction uses calibration data and event timestamps in the sensor's history log to predict when maintenance such as cleaning or replacement will be required.

The sensors in our extraordinary PH10 family are designed to reduce probe replacements, cut maintenance calls — and improve your ROI.

Schneider Electric's unique 871FT sanitary electrodeless conductivity flow-through sensor

Smart PH10 and PH12 sensors coupled with the 876PH-S transmitter eliminate the need to bring pH buffer solutions to the field.

Schneider Electric analytical sensors provide unmatched ease of use, robustness, and application flexibility in almost any process solution.

For pH applications requiring a rugged, yet cost-effective sensor in a 12 mm form factor, the Schneider Electric PH12 provides the most durable materials and construction available.

Selection guide

Analytical pH and ORP sensors

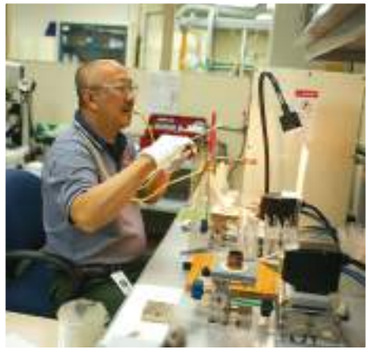







Model	PH10 Analog	PH10 Smart	ORP10	PH12	PH12 Smart	871A	871PH	EP462A
Sensor type	pH	pH	ORP	pH, ORP	pH, ORP	pH, ORP	pH, ORP	pH low conductivity
pH range	0 to 14	0 to 14	N/A	0 to 14	0 to 14	2 to 12	0 to 14	0 to 14
Maximum temperature	121 °C/250 °F	121 °C/250 °F	121 °C/250 °F	140 °C/284 °F	140 °C/284 °F	85 °C/180 °F	121 °C/250 °F	100 °C/212 °F
Installation type	Universal slip fit, submersion, inline, flow chamber, ball valve	Universal slip fit, submersion, inline, flow chamber, ball valve	Universal slip fit, submersion, inline, flow chamber, ball valve	PG 13.5 connection to accessories, inline, retractable, ball valve	PG 13.5 connection to accessories, inline, retractable, ball valve	Submersion, inline, flow chamber, ball valve	Submersion, inline, flow chamber, ball valve	Twist-lock, submersion, inline, flow chamber, ball valve
Electrode type	Domed or flat	Domed or flat	Flat	Domed or flat	Domed or flat	Flat	Domed or flat	Domed
Membrane type	Disposable	Disposable	Disposable	Disposable	Disposable	Disposable	Rebuildable	Disposable
Integral electronics	Yes, optional preamp	Yes, digital circuit	Yes, preamp	No	Yes, digital circuit	Yes, preamp	Yes, preamp	No
Features	High performance	High performance, digital communication, stores calibration and other data	High performance	12 mm form factor, available lengths 120 mm to 425 mm	12 mm form factor, available lengths 120 mm to 425 mm	Totally flat sensing surface	Small, inexpensive plug-in electrodes	Stable measurements in high-purity water, less than 20µS/cm
Specifications*	PSS 6-1C3 A	PSS 6-1C3 A	PSS 6-1C3 A	PSS 6-1C5 A	PSS 6-1C5 A	PSS 6-1C2 B	PSS 6-1C2 A	PSS 6-1C6 A
Data sheet*	FD-DS-A-009	FD-DS-A-001	FD-DS-A-009	FD-DS-A-007	FD-DS-A-007		FD-DS-A-008	

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Proprietary pH glass formulations used in all of our pH sensors provide superior performance in challenging applications.

Selection guide

Analytical electrodeless and flowthrough conductivity sensors



Model	871EC	EP307B	871FT
Sensor type	Small and large bore	Barrel geometry	Flowthrough
Intallation type	Invasive, insertion, immersion, retractable	Invasive, insertion, immersion, ball valve	Non-invasive, inline, sanitary tri-clamp, industrial
Line size	3" min/DN80	3" min/DN80	0.5" to 4"/DN15 to DN100
Calibrate inline	No	No	Yes
All thermoplastic	Yes	Yes	No
Specifications*	PSS 6-3C4 A		PSS 6-3Q1 A
Data sheet*		FD-DS-A-013	
Calibration plug accessory	Patented Calibration Plugs are accessories to the conductivity sensors in the above matrix. Versions of these plugs are available for all sensors. Calibration plugs contain a precision resistor to simulate a conductivity value. They optionally contain a second resistor to simulate temperature. Much easier to use than decade boxes or wet solutions, these plugs are truly a shirt pocket calibration tool with superb accuracy and repeatability. When coupled with the 871FT or EP307B sensor, they help facilitate an inline calibration without the need to remove the sensor from the process.		

* Please use this term in our search window on www.schneider-electric.com to access more product details.



Superior electrodeless conductivity sensor technology, coupled with unique calibration plugs, dramatically reduce your cost of ownership.

Selection guide

Analytical contacting conductivity and resistivity sensors


Model	871CR	871CC
Mounting	Insertion, Immersion, Retractable	Insertion, Immersion, Retractable
Installation type	Universal slip fit	Fixed installation type dictated by model code selection
Temperature compensation	1,000 ohm 3-wire platinum RTD	100 ohm 2-wire platinum RTD or 100 kohm 2-wire thermistor
Accuracy	0.1% of 0.1 cm^{-1} cell factor	2% of 0.1 cm^{-1} cell factor
Insertion lengths	Model code selectable	Fixed length
Specifications*	PSS 6-3C2 B	PSS 6-3C2 A

* Please use this term in our search window on www.schneider-electric.com to access more product details.

For measurement of pure and ultrapure water, Schneider Electric contacting conductivity sensors provide highly accurate cell constants and temperature sensors. Users in semiconductor, power generation, beverage, and other industries rely on Schneider Electric sensors for control of their critical water purity applications.

Selection guide

Analytical transmitters






Model	875PH	876PH	875EC	876EC	875CR	876CR
Measurements	pH, ORP, ISE	Analog pH, ORP, ISE, Combination pH/ORP Smart pH, ORP, Combination pH/ORP	Conductivity, Concentration	Conductivity, Concentration	Conductivity and Resistivity	Conductivity and Resistivity
2- or 4-wire	4-wire	2-wire	4-wire	2-wire	4-wire	2-wire
Power	V ac[3], 24 V DC	12.8 to 42 V DC	V ac[3], 24 V DC	14.7 to 42 V DC	V ac[3], 24 V DC	12.8 to 42 V DC
Menu-driven with help text	Yes	Yes	Yes	Yes	Yes	Yes
Inputs	1 Sensor, 1 Temp, pH/ORP	1 Sensor, 1 Temp, Combination pH/ORP[2] 1 Smart for pH, ORP, pH/ORP and Temp	1 Sensor, 1 Temp	1 Sensor, 1 Temp	2 Sensor, 2 Temp	1 Sensor, 1 Temp
Alarms	2	0	2	0	2	0
Certifications and approvals	Class 1, Div 2 Non-incendive	Class 1, Div 1 and 2 Intrinsically safe	Class 1, Div 2 Non-incendive	Class 1, Div 1 and 2 Intrinsically safe	Class 1, Div 2 Non-incendive	Class 1, Div 1 and 2 Intrinsically safe
Output	Dual 4-20 mA, HART	4-20 mA, HART	Dual 4-20 mA, HART	4-20 mA, HART	Dual 4-20 mA, HART	4-20 mA, HART
Multi-application		No	Yes	Yes	Yes	Yes
Custom curve			Multiple, auto-switching	Multiple, auto-switching	Multiple, auto-switching	Multiple, auto-switching
Specifications*	PSS 6-1A1 E	PSS 6-1A4 A	PSS 6-3N1 C	PSS 6-3N3 A	PSS 6-3A1 B	PSS 6-3A2 A
Data sheet*	FD-DS-A-016	FD-DS-A-005, FD-DS-A-001 (Smart)	FD-DS-A-012	FD-DS-A-006	FD-DS-A-011	FD-DS-A-004

Our analyzers provide menu selections for most common chemical concentration applications, and our long history in analytical measurements provides a knowledge base that can greatly assist in specifying the correct sensor for the job.

* Please use this term in our search window on www.schneider-electric.com to access more product details.
[1] S Smart version available in pH only.
[2] S Smart version available in pH only and one Smart pH sensor input.
[3] See PSS for AC voltage selections.

Temperature product portfolio

Temperature transmitters

RTT15S

RTT80

Thermowells

Sensors

Temperature measurements

Total solution

Schneider Electric is a total solution provider for industrial process temperature measurements. With two families of intelligent temperature transmitters and broad selections of sensors and thermowells, accurate and reliable measurements over a wide range of temperatures can be ensured in the harshest of environments. Inputs from Resistance Temperature Detectors (RTDs), Thermocouples (TCs), ohm, or mV sources are converted by Schneider Electric RTT15S, and RTT80 transmitters into scaled analog and digital outputs.

Full customization

Transmitters can be integrated with sensors and thermowells at the Schneider Electric factory and arrive at the measurement site configured with the desired output selections, temperature units, lower and upper range limits, and other configurable parameters.

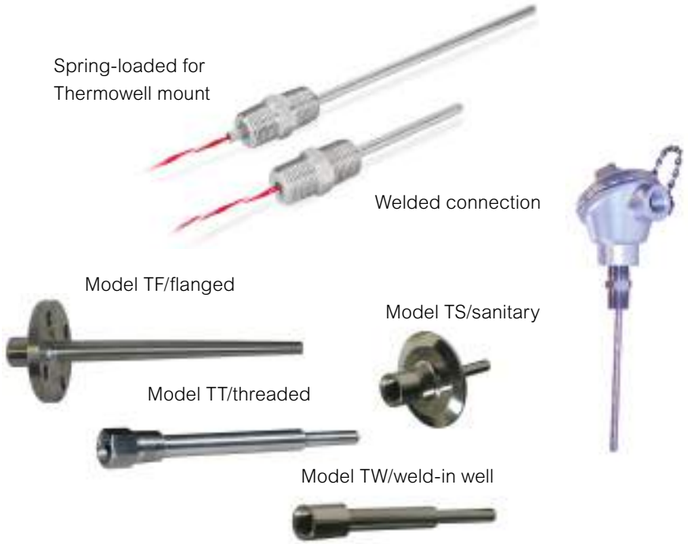
With Schneider Electric RTT15S and RTT80 temperature transmitters, you choose the intelligence level you need, as well as multiple configuration options.

Transmitters

Schneider Electric's two families of temperature transmitters offer a differentiated selection of features to satisfy a wide variety of industrial process applications. Intrinsically safe, explosion-proof, and flame-proof agency certifications enable installation in the most hazardous locations.

Sensors and thermowells

Highly accurate platinum RTDs and a variety of TCs covering wide temperature ranges can be combined with threaded, welded, flanged, or sanitary thermowells and integrated with any of Schneider Electric's transmitters or connection heads for remote deployment in compliance with hazardous location requirements.



RTT15S with optical buttons is operable through the glass cover of its explosion-proof housing.

RTT80 has advanced features such as hot backup, sensor drift and corrosion detection, and SIL safety certification.

Selection guide

Temperature transmitters

Model	RTT15S	RTT80
Output	4-20 mA and HART	4-20 mA, HART and FOUNDATION Fieldbus
Input types	RTD, TC, ohm, or mV	RTD, TC, ohm, or mV
Housing options	DIN module only or universal with optional explosion-proof rating	DIN module only, universal or dual compartment with optional explosion-proof rating
Display options	Optional red or white backlit with optional optical configuration buttons	Optional LCD
Factory-mounted thermowells and sensors	Yes	Yes
Configuration options	Optical button display, custom factory, DTM, Handheld	Custom factory, DTM, or Handheld
Digital accuracy	Pt100 ±0.1 ºC/TC (K) ±0.5 ºC	Pt100 ±0.14 ºC/TC (K) ±0.32 ºC
A/D accuracy (% of span)	0.05	0.03
Dual-channel capability	Dual 2-wire RTD, TC; average or difference	Dual 2- or 3-wire RTD, dual TC, TC/2- or 3-wire RTD; average, difference, switching, hot backup
Diagnostics	Sensor broken or shorted	Sensor broken or shorted, drift detection, sensor corrosion
SIL2 certifications	No	Yes
Certifications and approvals	FM, CSA, ATEX, IECEx, NEPSI, INMETRO	FM, CSA, ATEX, IECEx
Specifications*	PSS 2A-1F5 B	PSS 2A-1F8 B

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Selection guide

Temperature sensors and thermowells

PR and PRMTA Series RTD[1] Sensors	MT and PRMTA Series TC[2] Sensors	Thermowells
Highest accuracy (±0.13 °C/±0.23 °F)	Wide temperature ranges (-270 °C to +1300 °C/-454 °F to +2372 °F)	TT Series Thread: 1/2", 3/4" or 1" NPT
Platinum elements with 2-, 3-, or 4-wires	Types E, J, K, N, and T	TF Series Flanged: ANSI Class 150, 300 or 600
Custom linearization (Callendar van Dusen)	Lengths up to 914 mm (36") standard with custom longer lenghts	TW Series Welded: 1.05" and 1.315" OD for 3/4" and 1" pipe socket weld
Lengths up to 914 mm (36") standard with custom longer lengths	316 Stainless Steel or Nickel alloy sheaths	TS Series Sanitary: 3/4", 1", 1½", 2", and 4" Tri-Clamp
316 Stainless Steel or Nickel alloy sheaths	Welded connection or spring-loaded for thermowell mount	Straight, tapered, and stepped shanks available
Welded connection or spring-loaded for thermowell mount	MT Series Available in connection head for remote deployment	Lengths up to 914 mm (36") standard with custom longer lengths
PR Series available in connection head for remote deployment		316 Stainless Steel standard or other materials by request
PR Series* PSS 1-1B1 A PRMTA Series* PSS 3-3E1 A	MT Series* PSS 1-1B6 A PRMTA Series* PSS 3-3E1 A	T Series* PSS 3-3D1 A

* Please use this term in our search window on www.schneider-electric.com to access more product details.

[1] Resistance Temperature Detectors

[2] Thermocouples

Level product portfolio

Free-space radar, guided wave radar and buoyancy/displacer

LG01 Guided Wave

LR01 10 GHz

LR54 24 GHz

LR64 24 GHz

LR74 24 GHz

LR65 80 GHz

LR75 80 GHz

244LD LevelStar

167LP

Level, density, and interface measurements

The right measurements on the level

We apply superior Schneider Electric technology and experience to continuously measure the level, interface, or density of liquids in industrial processes. Based on the proven Archimedes buoyancy principle and utilizing no moving parts, our level transmitters are rugged and extremely reliable, requiring virtually no maintenance.

They also supply precise measurements, even at extreme process temperatures from -196 °C to +500 °C (-320 °F to +930 °F) and pressures from vacuum to 500 bar.

Our loop-powered buoyancy transmitters offer HART® and FOUNDATION™ Fieldbus communication. LCD displays and push buttons make calibration and adjustments easy. Their process-wetted materials available are carbon steel, stainless steel, Inconel, Duplex, and Hastelloy C. To withstand your challenging process environment the 244LD is available with ATEX, FM, CSA, EAC, NEPSI and INMETRO ratings, explosion-proof and intrinsically safe options. In addition, the safe buoyancy instrument is approved for SIL2 applications with a proof-test interval up to 5 years.

244LD LevelStar Buoyancy transmitter

Our level transmitter family

The 244LD LevelStar Buoyancy transmitter is the flagship product for the range of buoyancy transmitters offered. Its rugged design for extreme process temperatures makes it a top choice for all industrial process level measurements.

The 167LP Pneumatic transmitter is used for measuring level, interface, or density of liquids. The transmitter converts the lifting force of the displacer body to a pneumatic output. It is ideal for extreme process level measurements.

167LP Pneumatic transmitter

Selection guide

Buoyancy/displacer level

Model	244LD LevelStar	167LP LevelStar
Type/design	Sandwich mounted	Sandwich mounted
Measurements	Level, interface, density	Level, interface, density
Size	DN70/80/100 ANSI 3"/4"	DN80/100 ANSI 3"/4"
Accuracy	±0.2% at level, density, and interface measurement. Increased accuracy with customized adjustments.	Relative error <1%
Pressure range	Full vacuum up to 500 bar/7,250 psi	Full vacuum up to 250 bar/3,625 psi
Process temperature range	-196 °C to +500 °C (-320 °F to +932 °F)	-196 °C to +500 °C (-320 °F to +932 °F)
Ambient temperature range	-50 °C to +85 °C (-58 °F to +185 °F)	-50 °C to +90 °C (-58 °F to +194 °F)
Measuring range	Up to 50 m/165'	Up to 50 m/165'
Body material[1]	316L Stainless Steel, 321, Duplex Inconel® 625, 825 Carbon Steel Hastelloy C	316 Stainless Steel Carbon Steel Hastelloy C
Housing material	Aluminum and Stainless Steel	Aluminum
Certifications and approvals	ATEX ia/d, FM, CSA, EAC, NEPSI, INMETRO SIL2, NACE	ATEX ia/d NACE
Communication protocols	HART®, FOUNDATION™ Fieldbus	Pneumatic
Protection category	IP66	IP55/IP65
Accessories	Heating/cooling	Heating/cooling
Specifications*	PSS EML0171 G	PSS EML0110 A

[1] Others on Request.

* Please use this term in our search window on www.schneider-electric.com to access more product details.

Radar

Schneider Electric's radar level measurement devices offer accurate, reliable level measurement for the widest choice of installation and applications.

A complete radar lineup of guided wave and free space radars for solid and liquid applications offers state-of-the-art measurement technology combined with robust and durable design for a life cycle of reliability. Device features include unique 360-degree rotation, which allows for side or top mounting, making it much simpler to fit into an existing space. For greater ease, all radar instruments feature a user-friendly external display, offering easy, intuitive configuration for a new operator. To keep your plant safe, options include SIL2 certifications, dual seal technologies featuring Metaglas, remote displays to keep personnel from climbing tanks, and removeable electronics to ensure trouble free antenna installation.

Benefit to guided wave radar

The LG01 Guided Wave Radar transmitter is designed to be the most reliable style of radar available. Its never-lost signal performs continuous level measurement in a wide range of industries and applications. A modular design of housing and sensor ensures suitability for a variety of mounting positions and applications. It's a universal measurement device for liquids and solids.

Benefit to free space radar

A complete lineup of Frequency Modulated Continuous Wave (FMCW) free space radars incorporate advanced technology and algorithms to ensure easy setup and reliable, accurate, repeatable operation. FMCW technology allows additional reliability with up to 100 times more signals compared to a pulse burst radar.

Whether your application features challenges such as heavy dust, buildup, or corrosive material, Schneider Electric's complete offer supplies your application with accurate level measurement of ±2 mm/±0.08" over ranges up to 100 m/328 ft. LR75 and LR65 80 GHz radar technology features a radar beam that works in the most difficult applications including nozzles and tank top isolation valves. An ability to measure very low reflectivity material and a signal that avoids obstacles allow use in several applications. Popular 24 GHz radar featured in LR54, LR74, and LR64 is versatile and reliable using the optional Drop antenna to avoid problems with buildup and condensation. 10 GHz LR01 has a proven track record of working with agitation, vapors, and challenging foam applications. All radars are designed to be easy setup for measurement of liquids, pastes, solids, powders, and slurries in all process industries.

LR75 80 GHz

LR74 24 GHz

Selection guide

Level instrumentation

↑ Recommended
↔ Limited
↓ Not recommended

		Differential pressure (d/p)/hydrostatic	Gauge pressure/ hydrostatic	Multivariable	Buoyancy/displacer	Purged bubble tube	Guided wave radar	Free space radar
	Why choose this technology	• Low priced/economical • Most popular/well understood • Wide measurement range • Independent of obstacles • Same transmitter can be used for numerous applications (flow, filter monitoring)	• Similar technology to d/p cell • Most popular/well understood • Wide measurement range • Independent of obstacles • Same transmitter can also be used for pressure measurement	• Based on well-known d/p cell technology • One transmitter with three measurement outputs[11]	• Ability to measure density • Very robust and rugged • High Temp. (932 F) / High Pressure (7251 PSIG) • Not affected by vapor levels during interface measurement	• Economical • Versatile — doesn't require flanged tank connection • Keeps transmitter away from hot processes • Uses well understood d/p cell technology • No worry about process liquid crystallizing in tubing	• Easy mounting position • Independent of media • Wide measurement range • Quick and easy setup	• Easy mounting position • Independent of media • Wide measurement range • Quick and easy setup
	Contact/non-contact measurement	contact	contact	contact	contact	contact	contact	noncontact
Application	Liquid level measurement with changing density	↔[1]	↔[1]	↑	↔[3]	↓	↑	↑
		↔[7]	↔[7]	↔[7]	↑	↑[4]	↔ [12]	↔ [12]
	Density measurement	↔[6 7]	↔[6 7]	↔[6 7]	↑	↑[4]	↓	↓
Media conditions	Measuring volume	↔[2]	↔[2]	↔[2]	↑	↔	↑	↑
	Applications with foam	↑	↑	↑	↔	↑	↑	↔
	Solids	n/a	n/a	n/a	n/a	n/a	↑	↑
	High viscosity or waxy fluids	↔[1]	↔[1]	↔[1]	↔[3]	↔	↔	↑
	Slurries	↔[1]	↔[1]	↔[1]	↔	↔	↔	↑
	Wavy/turbulence	↑	↑	↑	↔	↔	↑	↑
	Corrosive media[15]	↔[1]	↔[1]	↔[1]	↑	↑	↔	↑
	Low dielectric <2.0	↑	↑	↑	↑	↑	↑	↑
	Temperature up to 572 °F (300 °C)	↑[8]	↑[8]	↑[8]	↑	↑	↑	↓
	Vacuum pressure	↑	↓	↑	↑	↓	↑	↑
	Pressure up to 1450 psig (100 barg)	↑	↑	↔	↑	↓	↓	↑
Install	Agitator/obstacles in way of measurement	↑	↑	↑	↔[5]	↑[9]	↓	↑
	Enclosed (not vented to atmosphere) vessel	↑	↔[10]	↑	↑	↓	↑	↑
Process Connection Conditions	Compatible with threaded connection	↑	↑	↑	n/a	↑	↑	↑
	Uses process flanged connection	↑	↑	↑	↑	↓	↑	↑
	Connects to diaphragm seal/pressure seal	↑	↑	↑	n/a	↓	n/a	n/a
	Installed with instrument/hydraulic tubing	↑	↑	↑	n/a	↑	n/a	n/a
	Manifold connection available	↑	↑	↑	n/a	↑	n/a	n/a
	Offers sanitary connection and fill fluids (tri clamp, tank spud)	↑	↑	↑	n/a	↓	↓	↓
	Top of tank connection/entry	n/a	n/a	n/a	↑[5]	↑	↑	↑
	Side/top of tank connection/entry	n/a	n/a	n/a	↔	↑	↑	↑
	Side/bottom of tank connection/entry	↑	↑	↑	↓	↑	n/a	n/a
	Bottom of tank connection/entry	↑	↑	↑	↓	↑	n/a	n/a

1. With diaphragm seal/pressure seal, use of capillaries may require heat trace
2. With symmetrical cylindrical vertical tank — use of 3rd party display device facilitates volume output
3. May require tank/chamber heating to avoid solidification
4. Refer to MI 020-328
5. Must use side chamber for installation; not recommended to use from top of tank install with agitator, obstacles
6. Requires use of two transmitters at known distance or dp or multivariable with diaphragm seals at known distance
7. Refer to mi 020-369
8. Do not direct mount transmitter next to high temperature process; remote mounting may be necessary to keep transmitter electronics below 185 °F
9. If it is impractical to immerse bubble tubes in the tank (because the tank has a mixer and/or baffles, or because the liquid is corrosive, etc.), The bubbles can be introduced through connections at the side of the tank. Bubble tube assembly should be located in area of representative liquid, and where liquid agitation is at a minimum
10. Requires use of two gauge or absolute transmitters - level calculation is completed in DCS or PLC
11. Recommend accessory: HIM smart HART loop interface and monitor available from Schneider Electric PN# HIM-HART
12. Must be coupled with differential pressure or mulitvariable transmitter and PID controller such as SCADAPack™ 4102

Selection guide

Radar level instrumentation

		LG01 Guided-Wave Radar	LR01 Free-Space Radar 10 GHz FMCW	LR54 Free-Space Radar 24 GHz FMCW	LR64 Free-Space Radar 24 GHz FMCW	LR74 Free-Space Radar 24 GHz FMCW	LR65 Free-Space Radar 80 GHz FMCW	LR75 Free-Space Radar 80 GHz FMCW
	Why choose this technology	• Liquid and solid applications • Applications with foam	• Liquid applications • Applications with foam	• Liquid applications	• Solids applications • Applications with larger solids material such as granulates or rocks • Installations with heavy buildup potential	• Liquid applications • Agitated and corrosive media • Dual safety seal requirements • High pressure / high temperature applications	• Solids applications • Applications with powders and dust • High and narrow silos installations • Installation close to tank wall	• Liquid applications • Very low dielectric constants • Applications with long nozzles and internal obstructions • Installation close to tank wall
	Contact/non-contact measurement	contact	noncontact	noncontact	noncontact	noncontact	noncontact	noncontact
Application	Liquid (clean) level	↑	↑	↑	↓	↑	↓	↑
Application	Interface (liquid/liquid)[1]	↔	↔	↔	↓	↔	↓	↔
Media conditions	Applications with foam	↑	↔	↔	↓	↔	↓	↔
Media conditions	High viscosity or waxy fluids	↔	↑	↑	↓	↑	↓	↑
Media conditions	Buildup/coating	↔	↔	↑	↑	↑	↑	↑
Media conditions	Slurries	↔	↑	↑	↓	↑	↓	↑
Media conditions	Wavy/turbulence	↑	↑	↔	↓	↑	↓	↔
Media conditions	Corrosive media	↔	↑	↔	↓	↑	↓	↔
Media conditions	Low dielectric <2.0	↑	↔	↔	↔	↔	↑	↑
Media conditions	Temperature up to 392 °F (200 °C)	↑	↑	↓	↓	↑	↑	↑
Media conditions	Pressure up to 1450 psig (100 barg)	↓	↓	↓	↓	↑	↓	↓
Media conditions	Solids — rocks and granulates	↑	↓	↓	↑	↓	↔	↓
Media conditions	Solids — powders and dusty atmosphere	↑	↓	↓	↔	↓	↑	↓
Installation	Agitator/obstacles in way of measurement	↓	↑	↔	↔	↔	↓	↓
Installation	High, long narrow nozzles	↔	↓	↔	↔	↔	↑	↑
Installation	Small tank height 8" (20cm)	↓	↓	↔	↓	↔	↓	↑
Installation	Stilling wells and bypass chambers	↑	↑	↑	↓	↑	↓	↔
Installation	Open pit/open air[2]	↑	↓	↑	↑	↑	↑	↑
Installation	Mount outside and measure through non-conductive (plastic) tanks[2]	↓	↔	↑	↓	↑	↓	↑
Installation	Side of tank connection/entry	↓	↑	↓	↓	↓	↓	↓

1. All radar can be used as part of an interface system - must be coupled with differential pressure or mulitvariable transmitter and pid controller such as SCADAPack™ 4102

2. When using any type of radar in an open vessel, check local regulations for rules/laws regarding potential stray radar emissions

Selection guide

Radar

	LG01	LR01
Application	For liquids and solids in storage and process applications	For liquids in storage and process applications
Frequency range	L-band/1 GHz	X-band/10 GHz
Dielectric constant	≥1.4 (TBF 1.1)	≥1.8 (TBF 1.1)
Measuring range	0 to 40 m/0 to 130 ft	0 to 30 m/0 to 98 ft
Accuracy	±3 mm/±0.1”	±5 mm/±0.2”
Repeatability	±1 mm/±0.04”	±1 mm/±0.04”
Converter	C (compact), F (field remote)	C (compact), F (field remote)
Housing material	Aluminum, stainless steel	Aluminum, stainless steel
Ingress protection	IP 66, 67; NEMA 4X	IP 66, 67; NEMA 4X
Antenna installation*	LPR and TLPR*	TLPR*
Antenna type (material), size (beam angle — if applicable)	Double rod, single rod, single rod (segmented), coaxial, double cable, single cable Ø2 mm/.08”, single cable Ø4 mm/.15”	Metallic Horn: (316L) DN65/2.5” (for bypass chamber), Metallic Horn: (316L) DN80-200/3-8” (32-12°) Wave Horn: (PP or PTFE) 043 mm/1.69” (20°), Metallic Wave Guide: (316L) 030 mm/1.18”
Process connection	Thread: G½, G¾, G1, G1½, ½ NPT, ¾ NPT, 1 NPT, 1½ NPT	Thread: G1½, G2, 1½ NPT, 2 NPT; Flange: DN50- 200, 2-8”, 50-200A
Gasket	FKM/FPM, Kalrez® 6375, EPDM, PFA	FKM/FPM, Kalrez® 6375, EPDM, PFA
Ambient temperature	-40 to +80 °C/-40 to +176 °F	-40 to +80 °C/-40 to +176 °F
Process temperature	-60 to +300 °C/-58 to +572 °F (higher on request)	-60 to +250 °C/-76 to +482 °F (higher on request)
Process pressure	-1 – 40 barg/-14.5 – 580 psig (higher on request)	-1 – 40 barg/-14.5 – 580 psig
Power supply	11.5-30 V DC (Exi), 13.5 – 36 V DC (Exd), 2-wire	11.5-30 V DC (Exi), 13.5 – 36 V DC (Exd), 2-wire
Output	2-wire: 4-20 mA (HART® 6), FOUNDATION™ Fieldbus, PROFIBUS PA	2-wire: 4-20 mA (HART® 6), FOUNDATION™ Fieldbus, PROFIBUS PA
Accessories	Weather protection	Antenna extensions of various shapes and lengths, heating/cooling systems for metallic horn antennas, weather protection
Options	METAGLAS® dual safety sealing probe made of Hastelloy® C-22 or probe with a PVC, PVDF or PP protective sheath	METAGLAS® dual safety sealing
Approvals	ATEX, IECEx, cFMus, ÒÛÐÍ×ô, INMETRO, NACE, CRN	ATEX, IECEx, cFMus, ÒÛÐÍ×ô, INMETRO, NACE, CRN
SIL approval	SIL2	SIL2
PSS link	PSS EML3010 A-(en)	PSS EML3010 A-(en)

* LPR (Level Probing Radar): The antenna can be installed in a closed tank as well as outside. The antenna needs to point
**Approval pending

Selection guide

Radar (continued)

	LR54	LR74
Application	For liquids in basic process applications	For agitated and corrosive liquids applications
Frequency range	K-band/24 GHz	K-band/24 GHz
Dielectric constant	≥1.4 (TBF 1.1)	≥1.4 (TBF 1.1)
Measuring range	0 to 100 m/0 to 328 ft	0 to 100 m/0 to 328 ft
Accuracy	±2 mm/±0.08”	±2 mm/±0.08”
Repeatability	1 mm/±0.04”	1 mm/±0.04”
Converter	C (compact), F (field remote)**	C (compact), F (field remote)**
Housing material	Aluminum, stainless steel	Aluminum, stainless steel
Ingress protection	IP66, 68; 0.1 barg/1.45 psig	IP66, 68; 0.1 barg/1.45 psig
Antenna installation*	LPR and TLPR*	LPR and TLPR*
Antenna type (material), size (beam angle — if applicable)	Metallic Horn: (316L) DN40-200/1.5-8” (17-5°) Drop (PP): DN80/3” (9°), DN100/4” (7°), DN150/6” (5°)	Metallic Horn: (316L) DN40-200/1.5-8” (17-5°) Drop (PEEK): DN80/3” (9°), Drop (PTFE): DN80/3” (8°), DN100/4” (7°), DN150/6” (4°)
Process connection	Thread: G1, G1½, 1 NPT, 1½ NPT; Flange: DN40-200, 1½ – 8”, 40-200A	Thread: G1½, 1½ NPT; Flange: DN40-200, 1½ – 8”, 40-200A
Gasket	FKM/FPM, EPDM, Kalrez® 6375	FKM/FPM, EPDM, Kalrez® 6375
Ambient temperature	-40 to +80 °C/-40 to +176 °F	-40 to +80 °C/-40 to +176 °F
Process temperature	-50 to +130 °C/-58 to +266 °F	-50 to +200 °C/-58 to +392 °F (higher on request)
Process pressure	-1 – 16 barg/-14.5 – 232 psig	-1 – 100 barg/-14.5 – 1450 psig (higher on request)
Power supply	12 – 30 V DC (Exi), 16 – 36 V DC (Exd), 2-wire	12 – 30 V DC (Exi), 16 – 36 V DC (Exd), 2-wire
Output	2-wire: 4-20 mA (HART® 7), FOUNDATION™ Fieldbus**, PROFIBUS PA**	2-wire: 4-20 mA (HART® 7), FOUNDATION™ Fieldbus**, PROFIBUS PA**
Accessories	Antenna extensions in metal or PP, purging system, flange plate protection made of PP, weather protection, mounting brackets	Antenna extensions in metal or PTFE, purging/heating/cooling systems for metallic horn antennas, flange plate protection made of PTFE or PEEK, weather protection, mounting brackets
Options	M12 4-pin connector eliminates mis-wiring and speeds install	METAGLAS® dual safety sealing; M12 4-pin connector eliminates mis-wiring and speeds install
Approvals	ATEX, IECEx, cQPSus, NEPSI, NACE, CRN - ASME B31.3**	ATEX, IECEx, cQPSus, NEPSI, NACE, CRN - ASME B31.3**
SIL approval	Developed acc. to SIL2/3, IEC 61508 – 2010. The SIL approval is in the process of validation by TÜV Süd, Germany.**	Developed acc. to SIL2/3, IEC 61508 – 2010. The SIL approval is in the process of validation by TÜV Süd, Germany.**
PSS link	PSS 2A-7A5 A en	PSS 2A-7A3 A en

* LPR (Level Probing Radar): The antenna can be installed in a closed tank as well as outside. The antenna needs to point

**Approval pending

Selection guide

Radar (continued)

	LR75	LR64	LR65
Application	For liquids in narrow tanks with internal obstructions	For solids from granulates to rocks	For powders and dusty atmosphere
Frequency range	W-band/80 GHz	K-band/24 GHz	W-band/80 GHz
Dielectric constant	≥ 1.4 (TBF 1.1)	≥1.4 (TBF 1.1)	≥1.4 (TBF 1.1)
Measuring range	0 to 100m/0 to 328 ft	0 to 100m/0 to 328 ft	0 to 100m/0 to 328 ft
Accuracy	±2 mm/±0.08”	±2 mm/±0.08”	±2 mm/±0.08”
Repeatability	±1 mm/±0.04”	±1 mm/±0.04”	±1 mm/±0.04”
Converter	C (compact)	C (compact)	C (compact)
Housing material	Aluminum, stainless steel	Aluminum, stainless steel	Aluminum, stainless steel
Ingress protection	IP66, 68; 0.1 barg/1.45 psig	IP66, 68; 0.1 barg/1.45 psig	IP66, 68; 0.1 barg/1.45 psig
Antenna installation*	LPR and TLPR*	LPR*	LPR*
Antenna type (material), size (beam angle — if applicable)	Lens (PEEK): DN20; 3/4” (15°), DN25; 1” (10°), DN40; 1.5” (8°), DN70; 2.75” (4°)	Metallic Horn: (316L) DN80...200; 3...8” (9...5°); Drop (PP): DN80; 3” (9°), DN100 4” (7°), DN150; 6” (5°); Drop (PTFE): DN80; 3” (8°), DN100; 4” (7°), DN150; 6” (4°)	Lens (PEEK): DN40; 1.5” (8°), DN70; 2.75” (4°)
Process connection	Thread: G3/4, G1, G11/2, G3, 3/4 NPT, 1 NPT, 11/2 NPT, 3 NPT Flange: DN50...200, 2...8”, 50...200A	Thread: G1, G1½, 1 NPT, 1½ NPT; Flange: DN80-200, 3-8”, 80-200A	Thread: G1½, G3, 1½ NPT, 3 NPT Flange: DN50-200, 2-8”, 50-200A
Gasket	FKM/FPM, EPDM, Kalrez® 6375	FKM/FPM, EPDM, Kalrez® 6375	FKM/FPM, EPDM, Kalrez® 6375
Ambient temperature	-40 to +80°C/-40 to +176°F	-40 to +80 °C/-40 to +176 °F	-40 to +80 °C/-40 to +176 °F
Process temperature	-50 to +200°C/-58 to +392°F	-50 to +130 °C/-58 to +266 °F	-50 to +200 °C/-58 to +392 °F
Process pressure	-1 – 40 barg/-14.5 – 580 psig	-1 – 16 barg/-14.5 – 232 psig	-1 – 40 barg/-14.5 – 580 psig
Power supply	12 – 30 V DC (Exi), 16 – 36 V DC (Exd), 2-wire	12 – 30 V DC (Exi), 16 – 36 V DC (Exd), 2-wire	12 – 30 V DC (Exi), 16 – 36 V DC (Exd), 2-wire
Output	2-wire: 4-20 mA (HART® 7), FOUNDATION™ Fieldbus**, PROFIBUS PA**	2-wire: 4-20 mA (HART® 7), FOUNDATION™ Fieldbus**, PROFIBUS PA**	2-wire: 4-20 mA (HART® 7), FOUNDATION™ Fieldbus**, PROFIBUS PA**
Accessories	Antenna extensions in metal, purging system, flange plate protection made of PEEK, weather protection, mounting brackets	Antenna extensions, slanted flange, purging system, weather protection, mounting brackets	Antenna extensions, slanted flange, purging system, weather protection, mounting brackets
Options	M12 4-pin connector eliminates mis-wiring and speeds install	M12 4-pin connector eliminates mis-wiring and speeds install	M12 4-pin connector eliminates mis-wiring and speeds install
Approvals	ATEX, IECEx, cQPSus, NEPSI, NACE, CRN - ASME B31.3**	ATEX, IECEx, cQPSus, NEPSI, NACE, CRN - ASME B31.3**	ATEX, IECEx, cQPSus, NEPSI, NACE, CRN - ASME B31.3**
SIL approval	Developed acc. to SIL2/3, IEC 61508 – 2010. The SIL approval is in the process of validation by TÜV Süd, Germany.**	Developed acc. to SIL2/3, IEC 61508 – 2010. The SIL approval is in the process of validation by TÜV Süd, Germany.**	Developed acc. to SIL2/3, IEC 61508 – 2010. The SIL approval is in the process of validation by TÜV Süd, Germany.**
PSS link	PSS 2A-7A4 A en	PSS 2A-7A1 A en	PSS 2A-7A2 A en

* LPR (Level Probing Radar): The antenna can be installed in a closed tank as well as outside. The antenna needs to point

**Approval pending

Positioner product portfolio

Smart positioners

SRD998

SRD991

SRD960

Electro-pneumatic Positioners

SRI983

SRI986

SRI990

Pneumatic positioners

SRP981

Valve positioners

Get the most of your valve

Schneider Electric instruments are in operation at more than a million different facilities throughout the world. We are producing control valve positioners of the highest quality since 1961 and offer the widest range of valve positioners to complement any application in any industry. Our quality and performance solutions for valves are made to optimize your CapEx and OpEx.

- Highest performance
- Easy to use
- Reliability and robustness
- Premium technologies
- Partial Stroke Test (PST)
- Widest application coverage universal solution

Smart positioner

SRD998

Intelligent Control Valve Positioner SRD998

The SRD998 offers a larger choice of pneumatic performance including high flow versions and up to 10 bars air supply and output pressure is available. High output pressure allows the positioner to work at a higher torque on the actuator and valve; therefore, smaller actuator sizes can be used. Very high flow capacity versions allow you to realize savings since small volume boosters are not necessary.

Robust and reliable design

- Savings in maintenance and spares with innovative modular design
- Reduced accidental damage during commissioning with a single user dedicated compartment for cabling and configuration
- Increased lifetime thanks to a 2-stage filtering system and overpressure protection of the internal I/P

User friendly interface

- Fast commissioning with one “Turn and Push” rotary selector and intuitive menu
- Increased comfort of use with large backlit full text display
- Reduced installation and shutdown time thanks to online troubleshooting with local help files

User-friendly interface

- Designed to be mounted to control any valve in any application
- Inventory and installation cost reduced with integrated high air flow capacity versions (up to Cv 0.85)
- Seamless DCS integration

Modular optional choices

- Plug & play 4-20mA position feedback (optional)
- Backlighted LCD display
- Remote mounting up to 10m

Smart positioner

SRD998

Designed to protect

With a single user dedicated compartment for cabling and configuration, the pneumatic and electronic parts remain isolated to avoid accidental

Fast commissioning

With a “Turn and Push” selector and intuitive menu, this positioner provides fast, local configuration and easy troubleshooting.

Sustainability

Sustainability of the new SRD998 is achieved thanks to the increased life-time and an innovative modular design enabling the engineer to simply and easily change the defective part.

Full valve compatibility

Proven in use with direct mechanical linkage, the new SRD998 is supplied with the largest range of mounting kits without size or model restriction to support any revamps.

SRD998 with Basic Diagnostics

Full interoperability and seamless integration into DCS

Communication protocol

HART 7

- Continuous diagnostic status monitoring
- Long 32-character tag for seamless reference to applications in the plant

Basic diagnostics

- Auto diagnostics with local alert pictograms according to NAMUR NE107 (Good, Maintenance, Alarm, or Out of Specifications)
- Easy access to local Help file for troubleshooting through the rotary selector
- Configuration is also possible anytime using a local HIM or via the DTM

SRD998 with Advanced Diagnostics

Full interoperability and integration into DCS for improved process performance, online diagnostics for predictive and proactive maintenance

Communication protocol

HART 7

- Continuous diagnostic status monitoring
- Long 32-character tag for seamless reference to applications in the plant

Advanced Diagnostics

- Best-in-Class DTM (Device Type Manager)
- Online monitoring of key parameters allows the adapted maintenance on the right valve assembly.
- Advanced Diagnostic with SRD998 will support the planning effort for maintenance since several control valves parameters can be monitored online for predictive and proactive maintenance.
- Comprehensive graphical data for Proactive and Predictive Valve maintenance (EDD for Host using EDD Technology).

Smart positioners

SRD960 Positioner Intelligent Valve Control - Ex d

The SRD960 offers the most advanced technology available on the market today. This includes among others an infrared interface for wireless operation and configuration, a multi-lingual full-text graphic LCD, and an availability with the choice of all in the process automation applied communication protocols. It offers enhanced applications and methods to analyze recorded stroke data. All the diagnostics features can be easily configured and display by the Positioner DTM (VALcare). The Positioner DTM enables to edit a complete “health” report of the valve with all data of configuration and diagnostics. The SRD960 has also the capability to control a Partial Stroke Test (PST) that offers operators a tool to identify the trouble proof function of ESD (Emergency Shut Down) valves.

SRD991 Intelligent Valve Control

The SRD991 offers the most advanced technology available on the market today. This includes among others an infrared interface for wireless operation and configuration, a multilingual full-text graphic LCD, and an availability with the choice of all in the process automation applied communication protocols. It offers enhanced applications and methods to analyze recorded stroke data. All the diagnostics features can be easily configured and display by the Positioner DTM (VALcare). Moreover, the Positioner DTM enables to edit a complete “health” report of the valve with all data of configuration and diagnostics. The SRD991 has also the capability to control a Partial Stroke Test (PST) that offers operators a tool to identify the trouble proof function of ESD (Emergency Shut Down) valves.

Valve Diagnostics for Predictive Maintenance

The valve diagnostic software is available as Device Type Manager (DTM) for integration into control systems based on the Field Device Tool (FDT) technology such as the Foxboro I/A Series System. It is designed to support methods for evaluation of valve health, operation and configuration. The DTMs support the communication protocols HART, Profibus PA and FOUNDATION Fieldbus H1.

- Predictive maintenance capabilities
- Intelligent alarm management
- Self-surveillance in accordance with NE107
- Service management
- Histograms for valve position and response history
- Data collected up to 60 months
- Data stored inside the positioner memory
- Determination of stem friction to prevent leakage and stuck stem
- Histogram for friction-history

Analog and traditional positioners

- SRP981 — the result of more than 50 years’ experience with pneumatic positioners
- SRI986 — more than 1 million applications worldwide
- SRI983 — the classic explosion-proof solution
- SRI990 — the analog positioner — easy operation and compact design

Our traditional range of positioners, SRP981, SRI986, and SRI983, are the results of 50 years’ experience in the field. These positioners are designed for operation of pneumatic valve actuators with pneumatic (SRP981) or 4-20mA (SRI986 and SRI983) control signals. They are used to reduce the adverse effects of valve friction for higher thrust and shorter positioning time. Extraordinary reliability and economy are reached with our durable pneumatic components, even under difficult climatic conditions.

The analog positioner SRI990 with analog input 4 to 20 mA is designed to operate pneumatic valve actuators. It offers easy adjustment by means of switches and potentiometers. The modular structure of this positioner series enables conversion from an analog to an “intelligent” positioner by exchanging the electronics.

Model	SRI990	SRI986	SRI983	SRP981
Analog valve control with fast control behavior	√	√	√	√
Valve action and rotation configurable by DIP switches	√			
Gain and damping independently adjustable	√	√	√	√
Switch for pneumatic test	√			
Load	300 Ohm	200 Ohm	260 Ohm	
Easy mounting to all linear and rotary actuators	√	√	√	√
Easy local mechanical configuration		√	√	√
Mechanical adaptations by setting screws		√	√	√
Independent adjustment of zero and span	√	√	√	√
Electrical adaptation of zero and span by potentiometer	√			
Electrical I/P converter separate from pneumatic unit			√	
Input signal	4 – 20 mA	4 – 20 mA / 0 – 20 4 – 20 mA mA or 0 – 10 V		0.2 to 1 bar (3 to 15 psig)
ATEX approved	√	√	√	√
Basic device without electrical parts				√
Split range				√
Up to 4-fold possible	2 Fold Possible	3 Fold Possible		4 fold possible

PST positioner with SOV monitoring

A Partial Stroke Test (PST) application with solenoid valve (SOV) monitoring offers the highest level of safety, in avoiding any spurious trips and testing of the SOV.

Schneider Electric provides Partial Stroke Testing solutions with SRD991 and SRD960 positioners for Safety Systems and Emergency Shutdown (ESD) applications.

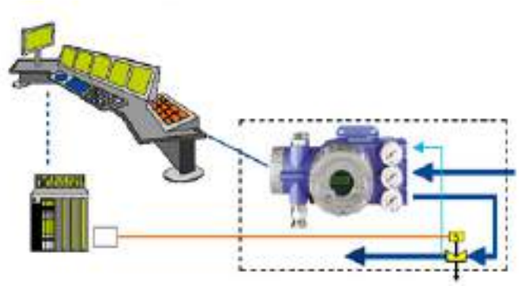
Benefits

- Test interval of the ESD valves extended up to 5 years
- Increased safety in testing the SOV
- Spurious trip kept to the lowest level

About valve positioners

We have been producing On-Off and Modulating Control valve positioners of the highest quality since 1961 and offers the widest range of valve positioners, from pneumatic and analogue devices to the most advanced smart positioners with Hart, Profibus or Fieldbus communication, to work alongside any application in any industry.

One particular application is Partial Stroke Testing. PST is a method where the ESD valve is typically moved 10-20% and returned to its original position in a short period of time. As the most common dangerous failure mode in a static ESD valve is “failure to move,” On-line Partial Stroke Testing generated by the smart positioner SRD991 (intrinsic safety application) and SRD960 (Explosion-proof application) is the key to safety. Moreover, the PST positioner can offer operators a tool to enable predictive maintenance on the ESD valves with data history and friction analysis.



The test can be easily executed via the FDT/ DTM based configuration and diagnostic tool VALcare® and Valve Monitor.

Customer benefits and value

On critical Emergency Shutdown Valves controlled by a solenoid valve, Schneider Electric provides a solution to check not only the valve status and the friction of the final element, but also the SOV in charge of cutting air to the actuator in case of emergency shutdown.

Moreover, the positioner is now pneumatically designed not to impair the spurious trip of the final element.

Premium diagnostics, the PST status and the SOV status are available through HART communication. And finally, the cost of implementation has been reduced since it only requires a limited number of input/output from the SIS.

Accessories

Attachment kits

Positioners can be mounted onto any actuator/ valve thanks to a wide range of attachment kits. We have the right solution for all linear actuators (diaphragm, piston or cylinder). For any rotary actuator we can provide the coupling part and mounting bracket.

Remote mounting versions

The RMU998 Remote Mounting Units are intended for use in case of:

- High vibrations
- Extreme temperature
- Mounting limitation (valve too small or direct positioner mounting)
- Positioner inaccessible when mounted to the valve/actuator

The remote mount option consists of two components, the SRD991 or SRD998 intelligent valve positioner configured for remote mount operation, and a choice of two potentiometer units RMU998-V (Side Mounting) and RMU998-W (Top Mounting).

Need more accessories…

IP26 — Compact Field Rugged Current to Pneumatic Converter

- Accurate and reliable
- Reduced inventory thanks to the dual certification IS/XP (ATEX, FM, CSA)
- Easy fit for universal replacement
- Achieve operational saving
- Extreme low temperature version -55 °C (-67 °F) available

Volume Boosters Series VBS

More and more end user specs requesting fast response/movements and this on large actuators. The purpose of the booster is to achieve higher air flow that is not reachable by using a positioner alone. The global system will have a better performance by being able to reach requested stroking times. Schneider Electric offers a large choice of boosters with direct or remote mounting covering a Cv range from 1,4 up to 7.

Filter Regulators Series FRS

A positioner needs always a filter regulator, to regulate the pressure so that it doesn’t exceed maximum allowed pressure supply to the positioner and to have a filtration barrier in case of rupture in the pneumatic loop.

Schneider Electric offers a large choice of filters in aluminum or 316Stainless Steel housings with high flow versions to best match your application.

Smart positioners

Model		SRD998 BD Standard performance	SRD998 AD High performance	SRD960	SRD991
Protection	Weatherproof	√	√	√	√
	Intrinsically safe	√	√		√
	Flameproof/explosion proof			√	
Input communication	4-20 mA and HART 5			√	√
	4-20 mA and HART 7	√	√	HART 7	HART 7
	Foundation Fieldbus H1			√	√
	Profibus PA			√	√
	4-20 mA (only)				√
HMI	LCD	√	√	√	√
	Language	14 embedded	14 embedded	3 embedded by model code	3 embedded by model code
	Backlighted LCD		√	√	
	Autocalibration	√	√	√	√
Diagnostics	Basic diagnostics	√	√		
	Advanced diagnostics		√	√	√
	Premium diagnostics			√	√
	Valve signatures			√	√
	PST			√	√
Options	Position feedback 4-20mA		√	√	√
	Digital input/output			√	√
	Limit switches (inductive or mechanical)			√	√

Model		SRD998 BD Standard performance	SRD998 AD High performance	SRD960	SRD991
Housing material	Aluminum (low copper)	√	√	√	√
	Stainless steel 316L				√
Pneumatic pressure	Max. air supply pressure	6 bar (90psi)	10 bar (150psi)	6 bar (90psi)/ opt. 7 bar	6 bar (90psi)/ opt.10 bar in st. steel
Airflow capacity @ 6 bar	Up to 14,000 nL/h	√	√	√	√
	Up to 42,000 nL/h		√		
	Up to 52,000 nL/h		√		
Certifications	ATEX	√	√		√
	IECEx	√	√		√
	FM/CSA			√	√
	EAC	√	√	√	√
	INMETRO	√	√	√	√
	NEPSI	√	√	√	√
	PESO	√	√		√
	TIIS	√	√		
	KOSHA	√	√		√
Ambient conditions	Protection class	IP66	IP66/Type 4x (-50° C on request)	IP66/Type 4x	IP66/Type 4x
	Temperature range	-40°…+80 °C	-40°…+80° C (-50° C on request)	-40°…+80 °C	-40°…+80 °C
Accessories	Volume boosters direct	√	√	√	√
	Volume booster remote	√	√	√	√
	Remote mounting	√	√	√	√
	Gauges	√	√	√	√

Electro-pneumatic positioners

Model		SRI990	SRI983	SRI986
Protection	Weatherproof	√	√	√
	Intrinsically safe	√		√
	Flameproof/explosion proof		√	
Options	4-20 mA (only)	√	√	√
	Position feedback 4-20 mA	√		√
	Limit switches (inductive or mechanical)	√		√
Housing material	Aluminum (low copper)	√	√	√
	Stainless steel 316L	√		
Pneumatic pressure	Max. air supply pressure	6 bar (90psi)/ opt. 7 bar	6 bar (90psi)	6 bar (90psi)
Airflow capacity @ 6 bar	Up to 14,000 nL/h	√	√	√
	Up to 20 000 nL/h	√		
Certifications	ATEX	√	√	√
	IECEx	√		
	FM/CSA	√	√	√
	EAC	√	√	√
	INMETRO	√	√	√
Ambient conditions	Protection class	IP66/Type 4x	IP54 (opt. IP65)	IP54 (opt. IP65)
	Temperature range	-40°…+80 °C	-40°…+80 °C	-40°…+80 °C
Accessories	Volume boosters direct	√		√
	Volume booster remote	√		√
	Gauges	√		√

Pneumatic positioner

Model		SRP981
Protection	Weatherproof	√
	Intrinsically safe	√ (options)
	Flameproof/explosion proof	
Options	4-20 mA (only)	
	0.2 – 1 bar (3 – 15 psi)	√
	Position feedback 4-20 mA	√
	Limit switches (inductive or mechanical)	√
Housing material	Aluminum (low copper)	√
Pneumatic pressure	Max. air supply pressure	6 bar (90psi)
Airflow capacity @ 6 bar	Up to 14,000 nL/h	√
	Up to 52,000 nL/h	
Certifications	ATEX	√ (ATEX constructive Design)
	IECEx	
	FM/CSA	
	EAC	
	INMETRO	
Ambient conditions	Protection class	IP54 (opt. IP65)
	Temperature range	-40°…+80 °C
Accessories	Volume boosters direct	√
	Volume booster remote	√
	Gauges	√

Process Instrumentation - Valves

A single innovative field device can provide better process control and improve the performance of any one of your production assets: personnel, equipment, energy use, or inventory. Employing multiple instruments can positively impact the performance of all areas of your enterprise.

Schneider Electric field devices are allied with various industry-leading brands that result in systems, software, and services that dramatically improve your operations' economic, safety, and environmental performance. In addition, the deployment of multiple advanced measurement systems will enhance the availability and utilization of all the assets on which your success depends.

Description

No matter the application, Schneider Electric enables you to drive your process at its best. Our portfolio of general service and severe service valves cover today's toughest demands for valve performance.

General Service Control Valves

Whether at high pressures, in corrosive media, or subzero fluids, our family of plug valves reliably address the vast majority of requirements at low energy consumption through low torque designs.

Severe Service Control Valves

Longer service life and reduced cost of ownership are made possible through highly engineered anti-cavitation control valves that neutralize detrimental wear and tear. A range of material, pressure and temperature options maximize flexibility for severe service applications.

Ball Valves

Long life in tough applications, including corrosive fluids and cryogens make our ball valves the hallmark of our valve portfolio. Customers worldwide can fully customize the ball valves to international design and performance standards.

Butterfly Valves

Ideal for precision throttling and on-off applications, our butterfly valves provide performance and long-term value through low friction and small torque, bidirectional sealing, intrinsic fire-proof structure and dead zone free design.

SRD998 Valve Positioner

The intelligent positioner SRD998 is designed to operate pneumatic valve actuators. Enhanced functionalities enable a significant reduction in commissioning time and reduction of the total installation cost.

- Fast commissioning with user-friendly LCD, rotary selector and intuitive menu
- Full valve compatibility with improved control performance
- Seamless DCS integration based on HART® 7

SRD998 Valve Positioner

Benefits

- Easy to use
- Fast commissioning
- User-friendly
- Reliable and robust

Applications

- Oil & Gas
- Water & Wastewater
- Mining, Metals & Minerals
- Power Generation
- Food & Beverage
- Severe vibration and temperature applications

Model code	Description	Size	ANSI Rating
VTX10	Quick change trim single seat general service control valve	DN15/½" – DN400/16"	Class 150 – Class 300
VTX30	Quick change trim cage general service control valve	DN15/½" – DN400/16"	Class 150 – Class 300
VTX50	Pressure balanced cage general service control valve	DN80/3" – DN400/16"	Class 600 – Class 1500
VTX70	Rotary eccentric plug general service control valve	DN25/1" – DN350/14"	Class 150 – Class 600
VTX90	V-ball general service control valve	DN25/1" – DN500/20"	Class 150 – Class 300
MVR20	Multistage axial flow severe service control valve	DN25/1" – DN80/3"	Class 900 – Class 2500
MVR40	Multipath and multistage severe service control valve	DN25/1" – DN300/12"	Class 150 – Class 2500
BAV90	General service ball valve	DN15/½" – DN600/24"	Class 150 – Class 300
TVT60	High performance butterfly valve	DN50/2" – DN800/32"	Class 150
TVT80	Triple offset butterfly valve	DN80/3" – DN1400/56"	Class 150 – Class 300
TVT80-Cryo	Low temperature triple offset butterfly valve	DN80/3" – DN800/32"	Class 150 – Class 300

Valves product portfolio

VTX10 General Service Control Valve

MVR20 Severe Service Control Valve

BAV90 Ball Valve

TVT60 Butterfly Valve

SRD998 Valve Positioner

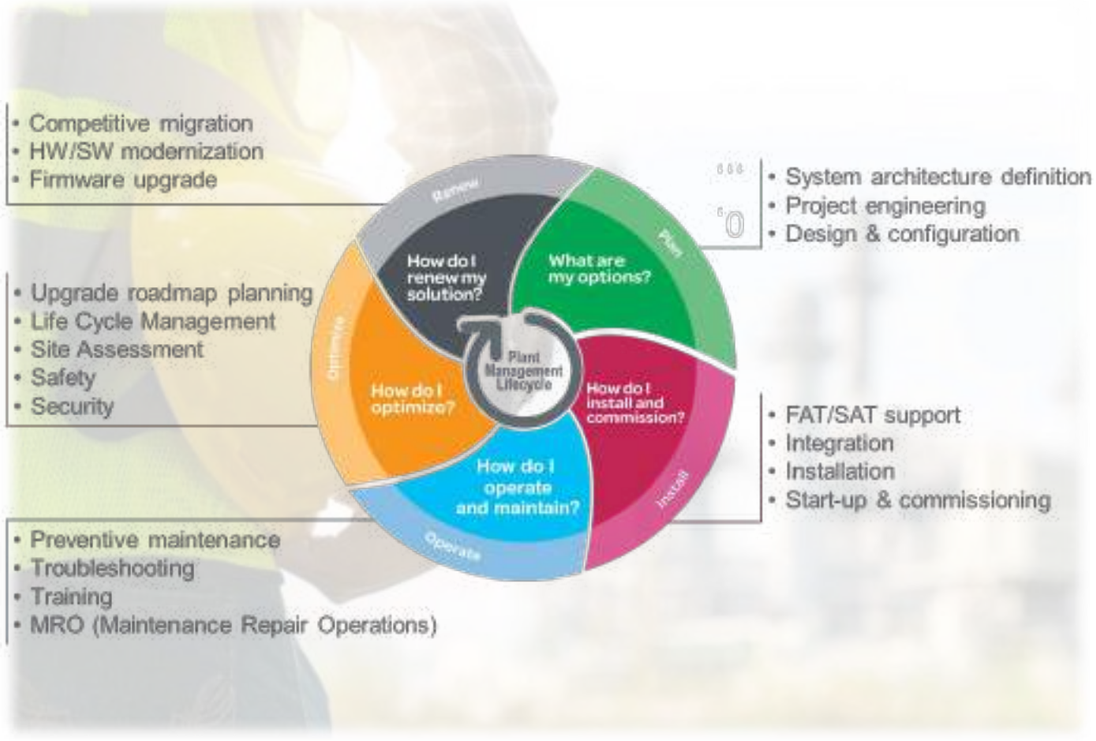
TVT80 Triple Offset Butterfly Valve

VTX70 Rotary Eccentric Plug General Service Control Valve

VTX90 V-Ball General Service Control Valve

Service offering

Process instrumentation



Your challenges

- Maximize your plant safety
- Optimize your process performance
- Manage your assets
- Increase your productivity
- Improve your TCO

Our solutions

- Proactive and collaborative support
- Leveraging Schneider Electric factory experts
- Implementing assets performance analysis
- Providing medium/long-term recommendations
- Large-scale service offerings proposition

Schneider Electric is at your side to identify your needs across your plant's lifecycle.

For more information, do not hesitate to contact us: fieldservicespi@se.com

Measuring up to the future

Schneider Electric instruments offer complete, bi-directional communications in multiple protocols, including fieldbus. You receive a seamless integration of our world-renowned systems and services into a single, unified automation and information platform that covers all facets of your field and plant operations.

The result: significant increases in utilization and productivity of your people, equipment, energy use, and inventory; powerful new functionality; and major savings in time and costs for commissioning, startup, operations, and maintenance.

The story of Schneider Electric is never-ending. So, no matter what challenges your future may bring, our commitment to excellence and ongoing innovation means you can trust that Schneider Electric instrumentation will measure up.

Life Is On | Schneider Electric™

Want to stay informed of current and future developments? Need in-depth spec sheets and equipment drawings? Access the information you want anytime at se.com

Schneider Electric
38 Neponset Avenue
Foxboro, Massachusetts 02035 USA

998-20934418_GMA-US