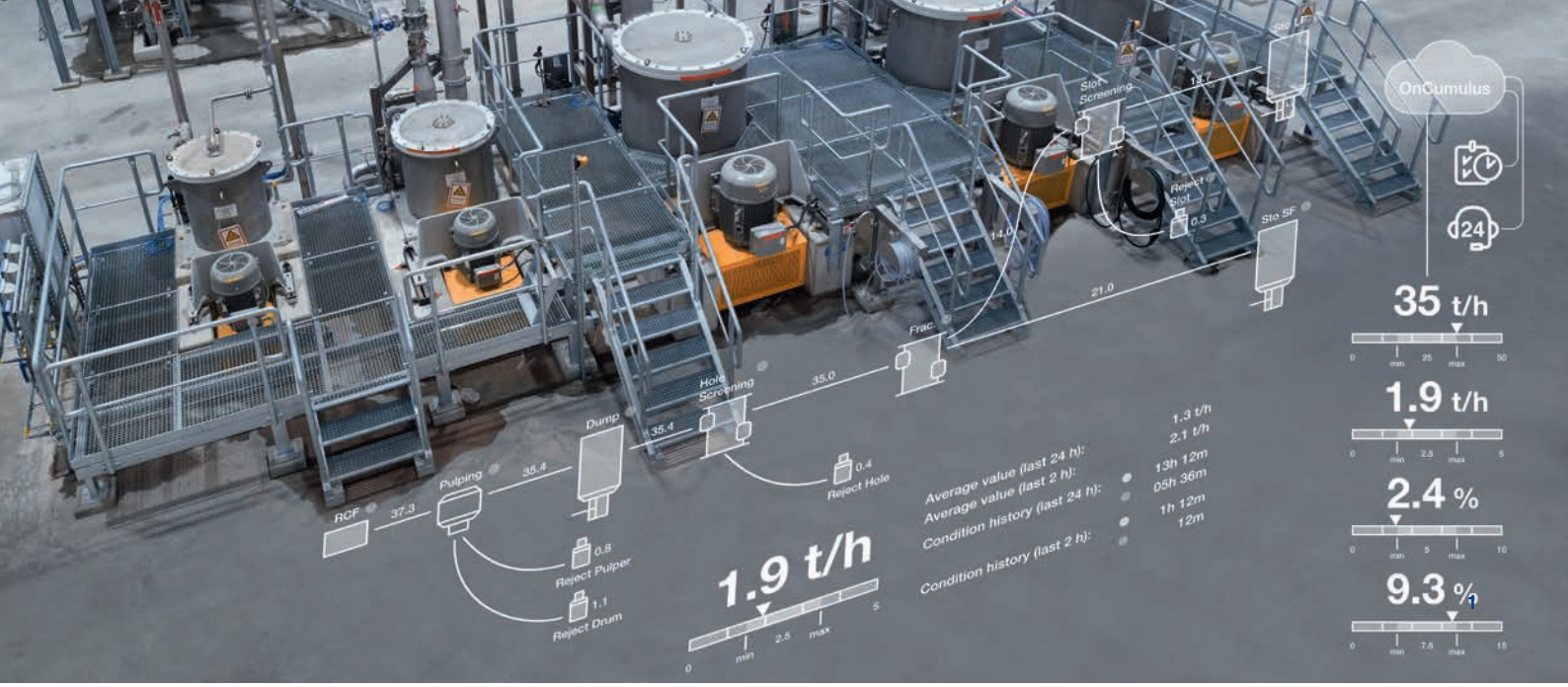
voith.com

VOITH

Comprehensive equipment from a single source OnControl.FieldInstruments

OnControl.FieldInstruments
Content



Integrated concept for plant automation

Voith offers an integrated solutions package for your plant automation. Customers therefore benefit from simplified order processing, leaving the entire instrumentation handling to Voith. This ensures flexible on-time delivery, adapted to the customer's actual needs.

All field instruments in one package

Field instruments are an essential part of any plant and have a crucial impact on proper functioning. The right selection of field instruments is the foundation stone for the digitalization of any machine and plant. They also play a key role in Industry 4.0 as the artificial "eyes and ears" of machines for which they capture information about machine condition and performance.

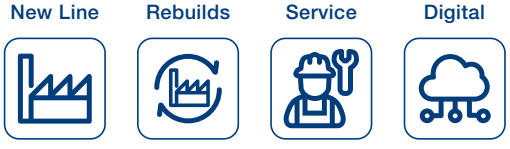
However, newly designed facilities are often equipped with field instruments from various suppliers, requiring a substantial coordination effort from the customer: Quotations have to be obtained and compared, orders have to be tracked and deliveries checked. This demands a lot of resources and creates an exceeding number of interfaces.

Voith's field instruments portfolio that consists of various process sensors such as flow measurements and control valves complemented by BTG Consistency solutions, forms an optimum overall solution for the entire production line.

One partner for all your requirements

Voith offers a large variety of valves and sensors. The customer thus saves resources and benefits from the knowledge of Voith experts as well as partnerships with leading technology companies. Thanks to the different variants produced exclusively for Voith, the best possible solution can be selected for each process segment.

Voith's extensive process and application know-how ensures an optimal equipment selection according to the customer's needs. After compiling a portfolio of field instruments, all subsequent steps up to commissioning of the products can be handled by Voith. In addition, delivery times and consistently high product quality are guaranteed.

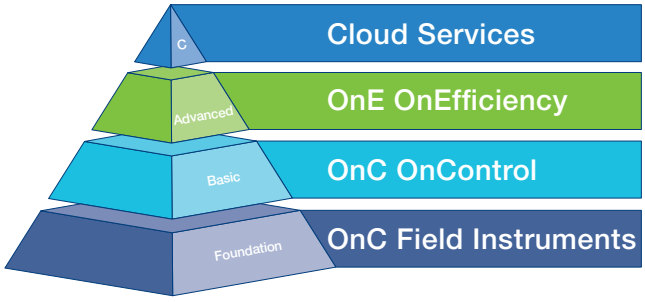


Get ready for a data driven future

1 Voith offers all kinds of field instruments for diverse industries.

2 Whatever your concern, Voith engineers will take care of it.

Get the right foundation for you plant with the full range of Voith Field Instruments



To reduce production costs and increase the efficiency of your plant we combine the FieldInstrument package with our innovative software solutions OnControl and OnEfficiency.

Smooth process guaranteed

Standardized instrumentation from one supplier eases the integration of devices into the control system and enables uniform documentation. Another advantage is efficient maintenance and spare parts inventory. Consequently, customers benefit from a reliable supplier with guaranteed delivery times and a consistently high quality of field instruments, who assists in a smooth start up of the entire system right on schedule.

As a full-line provider, Voith delivers holistic approaches tailored to customers' needs – regardless of whether you need solutions for automation, asset management or service via remote or Webshop. From Voith you get everything coordinated from a single source.

Shut off and control valves

Voith's portfolio includes shut off and control valves. The first ones are available as ball valves as well as metal seated and soft seated butterfly valves, the latter are offered as butterfly valves and segment ball valves.

The metal seated butterfly valves can be used for stock, water and reject applications, and offer good control performance: Stock consistencies of up to 18 % are reliably controlled. In addition, the metal seated butterfly valves and segment ball valves can be used to control the flow of steam. Both types are available for use at high differential pressures and as low noise versions.

Level and pressure transmitters

Voith offers a wide range of level and pressure transmitters applicable in all industry sectors using water, steam, paper suspensions, coating colors or chemical additives. Due to the robust materials used for the measuring cell, such as special ceramic material or stainless steel, the pressure transmitters can also be used at high temperatures or with corrosive materials, such as sodium hydroxide solution.

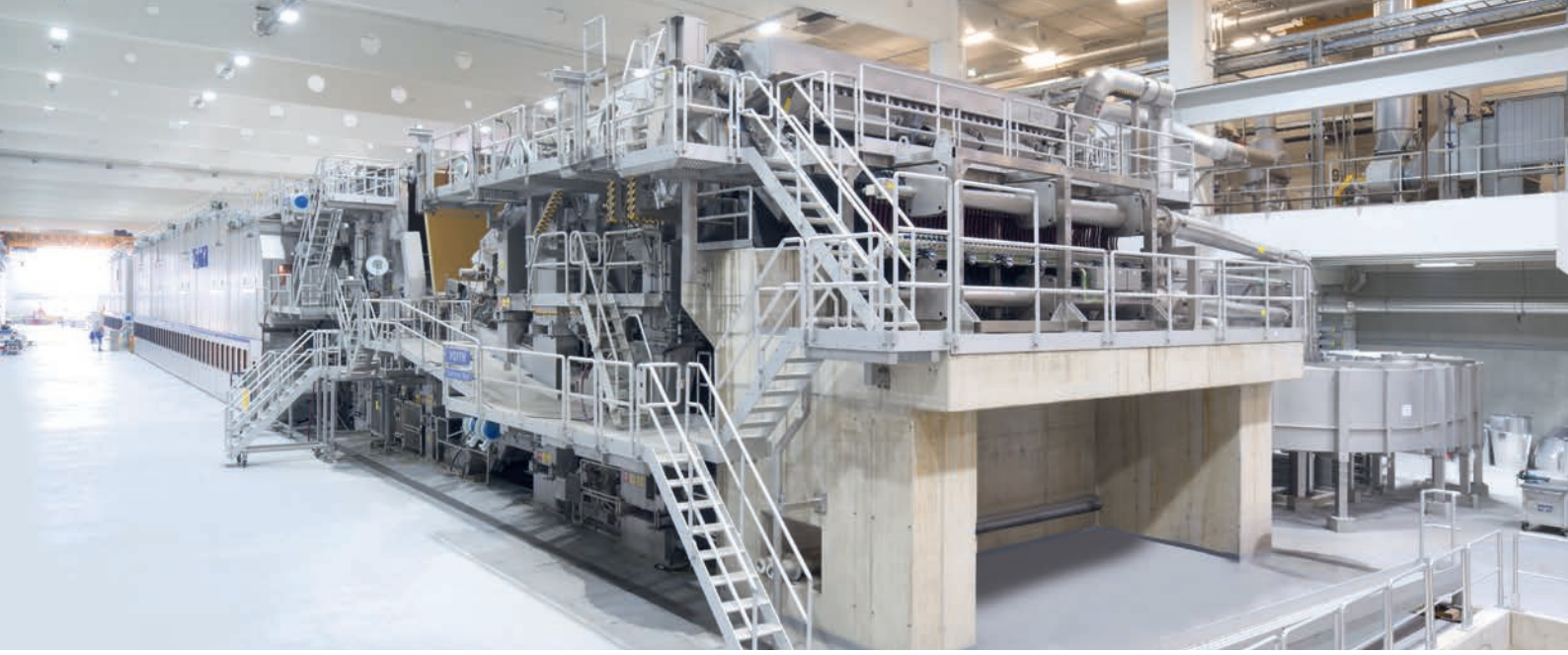
In addition, the special ceramic material in particular features high abrasion resistance, making the transmitters ideal for use in a recovered paper stock preparation unit, from pulping all the way to the headbox. Due to the wide range of level and pressure transmitters differentiated according to measuring methods and materials, a suitable product is available for every application.

Flow and temperature

The product portfolio also includes sensors for flow and temperature measurement, allowing them to be used along the entire production line. Various measuring methods, magnetic-inductive, differential pressure and vortex, are available. This ensures that a suitable device is supplied to any operating location.

Partnership based on innovation

Voith works closely with its partner companies in research and development. This allows customer requirements for new products or product modifications to be implemented more efficiently and precisely.



1. OnC BallValve
Compact, sturdy shut off valve

OnC BallValves from Voith are perfect for many industrial applications. They are extremely durable and work to achieve perfect on/off functionality over a very long time.

Application

The OnC BallValve 500 range is suitable for shutting off the flow of water, liquids, fiber or stock suspensions and chemicals. Modular designs with a hand lever, pneumatic actuator and limit switches are available.

The ball valves are shut off valves with a full bore, no-maintenance spindle seal and a simple, direct assembly for pneumatic actuators. The compact devices are available in sizes DN15 to DN100 with pneumatic or manual actuation via hand lever.

Both versions can be ordered with a pre-assembled limit switch box, which is also used for the OnC DiscValve butterfly valves.

Product benefits

+ **Modular design**
+ **Compact dimensions**
+ **Easy maintenance**
+ **Additional O-ring seal in spindle, making it also suitable for vacuum applications**
+ **Highest quality materials**
+ **Cutting edge production methods**
+ **Excellent price-performance ratio**

1.1 Ball valve three-part thread or welding ends

BV500.PKI-I/.PKI-A

For on-off function. Three-part ball valve with floating precision ball of high flow capacity.

- DIN ISO 5211 mounting pad for direct actuator mounting
- Maintenance-free stem seal
- Actuator, switchbox and solenoid valve for direct mounting onto valve
- Operation with pneumatic actuator, double- or single-acting, open or closed with spring force
- DN15 – 50; PN63 / DN65 – 80; PN40
- Female thread connection Rp1/2" – Rp3" (ISO 7/1)
- Optional welding ends type BV500.PKI-A

1.2 Ball valve flanged

BV500.PKW

For on-off function. Flanged ball valve with floating precision ball of high flow capacity.

- DIN ISO 5211 mounting pad for direct actuator mounting
- Compact space saving design
- Maintenance-free stem seal
- Actuator, switchbox and solenoid valve for direct mounting onto valve
- Operation with pneumatic actuator, double- or single-acting, open or closed with spring force
- DN15 – 50, DN80; PN40 DN65 – 100; PN16
- Flange connection according to DIN EN

1.3 Ball valve two-part for PN100 high pressure

BV500.PKN

For on-off function. Two-part ball valve with floating precision ball of high flow capacity.

- Maintenance-free stem seal
- Actuator, switchbox and solenoid valve for direct mounting onto valve
- Operation with pneumatic actuator, double- or single-acting, open or closed with spring force
- Female thread connection Rp1/2" to Rp2" (ISO 7/1)
- Pressure rating PN100

OnC BallValve 500 PKI

OnC BallValve 500 PKW

OnC BallValve 500 PKN

1.4 Ball valve three-part thread or welding ends

BV500.HKI-I / .HKI-A
For manual on-off function. Three-part ball valve with floating precision ball of high flow capacity including hand lever.

- DN15 – 50; PN63 / DN65 – 80; PN40
- Female thread connection Rp1/2" – Rp3" (ISO 7/1)
- Optional welding ends type BV500.HKI-A

1.5 Ball valve flanged

BV500.HKW
For manual on-off function. Flanged ball valve with floating precision ball of high flow capacity including hand lever.

- DN15 – 50, DN80; PN40
  DN65 – 100; PN16
- Flange connection according to DIN EN

OnC BallValve 500 HKI

OnC BallValve 500 HKW

1.6 Ball valve two-part for PN100 high pressure

BV500.HKN
For manual on-off function. Two-part ball valve with floating precision ball of high flow capacity including hand lever.

- Female thread connection Rp1/2” to Rp2” (ISO 7/1)
- Pressure rating PN100

1.7 Ball valve with limit switch box

BV500.HKI / .HKW / .HKN
For manual ball valves a VS500 limit switch box including proximity switches can be delivered.

The same limit switch box is used for Voith automatic valves.

OnC BallValve 500 HKN

OnC BallValve 500 HKI / HKW / HKN

1.8 Ball valve three-part thread or welding ends in 3 versions

BV520.3BSP / BV520.3BWS / BV520.3BWL

For on-off function. Three-part ball valve with floating precision ball of high flow capacity.

- DIN ISO 5211 mounting pad for direct actuator mounting
- Maintenance-free stem seal
- Actuation with manual lever or pneumatic actuator, switchbox and solenoid valve for direct mounting onto the actuator
- Pneumatic actuator, double- or single-acting with spring close or spring open
- DN15 – 50; PN63 / DN65 – 80; PN40
- Female thread connection Rp1/2" – Rp3" (ISO 7/1)
- Optional short welding ends type BV520.3BWS or long welding ends BV520.3BWL

1.9 Ball valve flanged

BV520.2CFI or BV520.2CFA

For on-off function. Flanged ball valve with floating precision ball of high flow capacity.

- DIN ISO 5211 mounting pad for direct actuator mounting
- Compact space saving design
- Maintenance-free stem seal
- Actuation with manual lever or pneumatic actuator, switchbox and solenoid valve for direct mounting onto the actuator
- Pneumatic actuator, double- or single-acting with spring close or spring open
- DN15 – 50 + DN80; PN40 / DN65 + 100; PN16
- Flange connection according to DIN EN BV520.2CFI or BV520.2CFA in ANSI dimensions

OnC BallValve BV520.3BSP

OnC BallValve BV520.2CFL

1.10 Ball valve two-part for PN100 high pressure

BV520.2HPT
For on-off function. Two-part ball valve with floating precision ball of high flow capacity.

- Maintenance-free stem seal
- Actuation with manual lever or pneumatic actuator, switchbox and solenoid valve for direct mounting onto the actuator
- Pneumatic actuator, double- or single-acting with spring close or spring open
- Female thread connection Rp1/2” to Rp2” (ISO 7/1)
- Pressure rating PN100

1.11 Ball valve with limit switches

BV520. all types
For manual ball valves proximity switches with M18 thread can be delivered. The limit switches are covered with a robust stainless steel protection cover.

This function is used to monitor the position of manual valves e.g. for drain valves of tanks.

OnC BallValve BV520.2HPT

OnC BallValve BV520.x

2. OnC SegmentValve
Control valves for all applications

The OnC SegmentValve equipment range from Voith can be used to control all kinds of conditions, such as flow, pressure, temperature, and liquid level by fully or partially opening or closing.

Application

Their popularity among customers derives from the especially rugged construction and the many options available that make them suitable for a variety of process applications. Simple to use and at the same time highly configurable, they offer the best conditions for applications from stock preparation to the dryer section, as well as for any control that requires reliable operation in the long term.

These valves are available in diameters DN25 to DN700 and suitable for water, steam and stock or rejects up to medium consistency.

Product benefits

+ Suitable for high consistencies
+ A wide range of options for every requirement
+ Low noise version
+ V-port version for medium consistencies
+ Modular design

2.1 Ball segment valve wafer

SV500.KVT / .KVTW / .KVX / .KVXW
Control and on-off function. The valve types KVT and KVTW are a sandwich wafer design version with centrically mounted shaft, while KVX and KVXW dispose of an eccentrically mounted shaft.

- Diameter DN25 – DN250
- Low noise version for high differential pressure
- Abrasion-resistant surfacing (stellite) available
- Wafer versions according to DIN EN

Application:
Water, stock or rejects up to medium consistency (18 % as well as steam > 200 °C with eccentric shaft.

2.2 Ball segment valve flanged

SV500.KVTF / .KVXF
Control and on-off function. Type SV500.KVTF is a flanged version with a centrically mounted shaft, while KVXF is flanged with an eccentric design.

- Diameter DN25 – DN700
- Various seat rings available
- Abrasion-resistant surfacing (stellite) available
- Flange versions according to DIN EN
- Optional ANSI drillings possible

Application:
Water, stock as well as steam > 200 °C with eccentric shaft.

2.3 Ball segment valve with V-groove

SV500.KVMW
This ball segment valve is for use at high fibre concentrations of up to 15 % consistency. The V-groove design prevents dewatering at small opening angles.

Application:
Control valve after MC pump.

OnC SegmentValve KVT / KVTW / KVX / KVXW

OnC SegmentValve KVTF / KVXF

OnC SegmentValve KVMW

2.4 Ball segment valve low noise

SV500.KVTW LN / .KVXW LN / .KVTF LN / .KVXF LN
Especially designed for control purposes at high differential pressures. The ball segment is equipped with a low noise trim to distribute the pressure drop across the valve, lessen pressure recovery and reduce noise as well as potential cavitation damage usually generated in standard models.

- Wafer design KVTW / KVXW LN DN50 – 250; PN20 – 50
- Flanged design KVTF / KVXF LN DN50 – 400; PN20 – 50

Application:
Gases, steam, water and thin stock.

2.5 Ceramic slide valve

Type SSV
Control and on-off function.

- Ceramic slide valve DN10 – 40
- Pressure rating PN10 – PN40
- High wear resistance
- PTFE packing for lowest friction to ensure highest performance in positioning
- Long lifetime, maintenance-free

Application:
Chemical dosing, filler dosing, all paper additives dosing for minimum quantities.

2.6 Ceramic ball valve

Type KSV / KST
Control and on-off function.

- Ceramic ball valve DN15 – 200
- Full ceramic lined valve
- Pressure rating PN10 – PN40
- Body materials according to application
- High wear resistance due to full ceramic ball and lining of wetted parts
- Longer service intervals, less maintenance
- Replaceable spare and wear parts

Application:
Filler dosing, reject control, high differential pressures.

OnC SegmentValve
Low noise version

OnC SlideValve Ceramic
Type SSV

OnC BallValve Ceramic
Type KSV / KST

3. OnC DiscValve
Metal and soft seated butterfly valves

OnC DiscValves are used for shut off and control functions. They stand out due to the cost efficient design and wide range of application areas.

Application

OnC DiscValve 500 series butterfly valves comprise a stainless steel housing and metal or PTFE seats. The valves are suitable for shut off and control functions of all kinds of liquids, steam, and gases in a wide temperature range of up to 550 °C. Thanks to the special shape of the disc, the triple eccentric design allows the use of a strong stainless steel valve seat. The seat is resistant to high flow velocities and guarantees a good seal even under tough operating conditions. It is replaceable and available in various materials. The valves are supplied tested and ready to operate and can be equipped with manual or pneumatic actuators and positioners or limit switch boxes. The low noise version control valve is equipped with a additional noise reducer. Evaporation and cavitation problems can thus be prevented and a lower noise level achieved.

OnC DiscValve 550 soft seated butterfly valves have a cast iron or alternatively stainless steel housing and are fitted with EPDM, NBR, FKM or PTFE liners. They are suitable for shut off applications of water, white water, waste water, air, vacuum and coating colors. The valves can be fitted with manual or pneumatic actuators and positioners or limit switch boxes.

Product benefits

- **+ Triple eccentric specially fabricated seat for low wear and high sealing capacity (DV500)**
- **+ Parts easy to replace**
- **+ Modular structure and reduced inventory**
- **+ Low noise version**
- **+ Disc and shaft made of stainless steel**
- **+ Self-lubricating bearings**

3.1 High-performance butterfly valve metal seated

DV500.MTV / .VSS
Control and on-off functions.

- Diameter DN80 – DN1200
- Low noise for high differential pressures
- With solid metal seat ring, alternative PTFE seating ring with carbon reinforcement for e. g. vacuum application
- Wafer, lugs and flange versions according to DIN EN

Application:
Stock, water, steam and vacuum.

3.2 High-performance butterfly valve metal seated low noise

DV500.VSS LN
Especially designed for control at high differential pressures. The valve is designed to handle a wide range of liquids, gases and steam at temperatures of up to 550 °C or 1,022 °F. With the low noise trim, flushing and cavitation problems can be eliminated and a lower noise level is achieved.

- Diameter DN80 – DN600
- PN10 – 25
- For high differential pressures
- Wafer and lugs versions according to DIN EN

Application:
Gases, steam and water.

3.3 Butterfly valve lugs

DV500.MTV / .VSS
All butterfly valves can also be supplied with lugs for mounting between flanges according to DIN EN standards.

ANSI drillings are available.

OnC DiscValve MTV / VSS

OnC DiscValve VSS
For low noise

OnC DiscValve MTV / VSS
With lugs

3.4 Butterfly valve flanged

DV500.MTVF
Alternatively, the butterfly valves can be equipped with flanges according to DIN EN.

Optional ANSI drillings are available.

3.5 Soft seated butterfly valve

DV550.PZD
One-piece, blow-out-proof, streamlined designed, absolutely tight sealing and centrical mounted soft seated butterfly valve. The automatic butterfly valve can be actuated double or single acting.

- Diameter DN25 – DN600
- PN6 / 10 / 16 / 25 / 40, ASME / ANSI 125 / 150
- Seat EPDM, FKM, NBR, PTFE
- Valve body cast iron or stainless steel

Application:
Water distribution and supply, water treatment, most fluids of general services.

3.6 Soft seated butterfly valve, manually operated

DV550.HZD
The soft seated butterfly valve OnC DiscValve 550 can be provided with either manual hand lever or gear box.

- Manual hand lever for sizes DN25 – DN300
- Manual gear box for sizes DN25 – DN1000

OnC DiscValve MTVF

OnC DiscValve PZD

OnC DiscValve HZD

4. OnC KnifeGateValves
Shut-off valves for various media

Shut-off valves in the design as knife gate valves are used for reliable on / off and throttling function of various media. They are designed for a wide range of applications in some of the most corrosive, erosive and abrasive industrial environments.

Application

OnC KnifeGateValves 500 series are wafer style valves casted as monoblock with raised face and ribs in larger diameters for extra body strength.The slide plate has a cutting edge to cut through blockages caused by media with a high solid content such as cellulose, sludge, pulp, biomass, water, ash, granulate and various types of impurities.

The valve design is modular and allows selection of different materials and actuation types, as well as the associated automation accessories for adaptations to the process requirements. The OnC KnifeGateValves also have a short overall length compared to a conventional gate valve, which is much larger in size. As a result, a knife gate valve is much lighter and requires less installation space.

Product benefits

+ Various material compositions (stainless steel, cast iron, nitrile, Viton®, PTFE, etc.)
+ Low pressure loss, full opening
+ Variable diameters (DN50 – DN1200)
+ Manual and automatic actuation
+ Silicone-free
+ Leakage rate class VI

4.1 OnC KnifeGateValve uni-directional design

KV500.NG (Normal Gate)

The OnC KnifeGateValve KV500.NG is a uni-directional valve designed forisolation application where solid-liquid-mixes, corrosive, abrasive, viscous liquid, abrasive slurries, pulp stock and dry materials are involved. The design of the body and seat ensures non clogging shut off. The body is made of single casting, and it has cast jaws without welding on pressure-containing parts to make it even more rugged. The design incorporates a rigid fabricated yoke that will accommodate hand wheel or pneumatic actuators. Internal cast wedges and gate guides allow for tight shut off.

- Diameter DN50 – DN1200
- PN10, PN6, PN4
- Seat: Resilient or metal to metal
- Version with triangle and pentagon shape available

Application:

Pulp stock, sludge, slurry, biomass.

4.2 OnC KnifeGateValve bi-directional design

KV500.TG (Throughgoing Gate)

The OnC KnifeGateValve KV500.TG is a bi-directional valve specially designed for media with high consistency, to handle high-density paper stock, wood chips, plastic pellets, etc., which makes the valve suitable for a wide range of demanding applications in industries like pulp and paper, power, chemical, waste and water treatment, etc. The double seat design in the OnCKnifeGateValve KV500.TG model assures a non-clogging shut off on either normal or reverse flow. The body is made of full lug-style, split cast body with reinforced ribs for additional strength. The port design allows greater flow capacity and lower pressure drop. The gate design eliminates unbalanced forces on the valve plate andallows trouble-free opening and closing of the valve.

- Diameter DN50 – DN900
- PN10, PN4, PN4, PN2.5
- Seat: Resilient or metal to metal

Accessories:

- Air Booster valve with Namur interface to ensure fast actuation for big valves
- Namur mounted solenoid valves
- M12 connection box VS510 for the interface of 2 cylinder switches or proximity switches for open and close position and a optional Namur solenoid valve
- 2 cylinder switches or proximity switches with M12 connectors

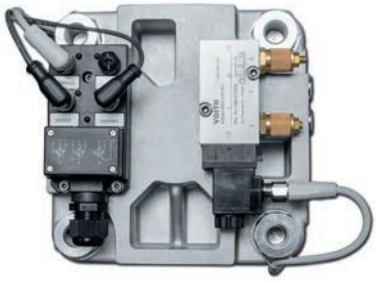
Application:

Stock at high consistency's, rejects. This gate is particularly adapted inpaper mills for secondary fiber applications with high contaminants (e. g.staples).

OnC KnifeGateValve uni-directional design

OnC KnifeGateValve bi-directional design

Pneumatic cylinder top view with mounted accessories



5. Valve accessories
Perfect-fit accessoires for Voith valves

Voith offers a broad range of valves for all kinds of application. Along with this large portfolio comes a selection of various actuators, positioners and a limit switch boxes suitable for several valve types.

Application

The OnC SegmentValve, OnC DiscValve and OnC BallValve series are supplied completely assembled and tested. The modular system allows the same components to be used for different valve types.

Limit monitoring is solved via inductive limit switches that are installed preassembled in the limit switch box. The limit switch boxes are used for all kind of valves.

For control valves, different versions of positioners can be selected with all interfaces needed. The actuators are available separately as additional accessories. Spare and wear parts are available on request.

Product benefits

+ **Modular structure reduces spare parts inventory**
+ **Structurally identical positioners and limit monitoring for all product families**
+ **Structurally identical actuators for ball valves and soft seated butterfly valves**
+ **Structurally identical actuators for segmented ball valves and metal seated butterfly valves**

5.1 Pneumatic actuator type A

A-DA / A-SC / A-SO

Voith actuators are designed for optimal function in control for both on-off applications as well as standard applications. Type A pneumatic actuators are specifically made to fit the Voith range of butterfly valves type DV500 and ball segment valves type SV500. The actuators are available in three versions:

- Double-acting type A-DA
- Single-acting type A-SC for spring to close
- Single-acting type A-SO for spring to open

5.2 Pneumatic actuator

VD500

Suitable for ball valves type BV500 and soft seated butterfly valves DV550. Pneumatic twin piston actuator, rack and pinion principle with self-centering piston guide. Air supply pressure 2 to 8 bar, standard sizing 5.5 bar.

- Type AD double acting
- Type AS single acting with spring return springs in safety cage
- Namur interface for solenoid direct mounting
- With optional hydraulic end position damping
- Limit switch box and Namur solenoid valve or Positioners are optionally available
- Cylinder aluminum anodized, blots in stainless
- Torque range 16 – 4 000 Nm

5.3 Pneumatic actuators

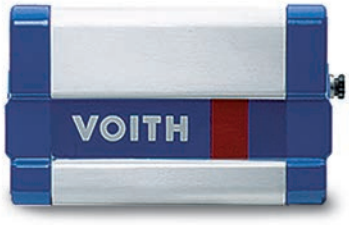
VD520

Suitable for ball valves type BV520 and actuation of any other Butterfly, valve- or device type with a rotary movement. Pneumatic twin piston actuator, rack and-pinion principle with self-centering piston guide. Air supply pressure 2 to 8 bar, standard sizing 5.5 bar.

- Double acting
- Single acting with captive safety springs
- Namur interface for solenoid valve direct mounting
- Limit switch box and Namur solenoid valve or Positioners are optionally available
- Housing aluminum hard-anodized and PE-coated, screws out of stainless-steel
- Torque range 3 – 13.000 Nm

Pneumatic actuator type A

OnC ValveDrive VD500



OnC ValveDrive VD520

5.4 Electrical actuator

Electrical drives can be ordered alternatively to pneumatic actuators. Different versions are available.

- Unique Oden gear system providing extremely high efficiency
- Easy and fast mounting without need for alignment to the valve spindle
- No back-up accumulators or sensitive electromechanical components
- Modern electronics with unique gear technology for extrem accuracy and compactness

5.5 OnC ValvePos VP450

VP450

The electro pneumatic smart positioner is a control accessory of a pneumatic actuated control valve. It is used for linear or rotary part-turn actuators. VP450 is based on microprocessor technology and its piezo technology allows for very fast and precise positoning. In the steady state, the positioner require neither compressed air.

- Excellent cost-performance ratio
- I/P module with piezo valve technique
- Robust aluminum housing with a small footprint
- Signal: 4 – 20 mA HART
- Optional position feedback signal or limit switches

5.6 OnC ValvePos VP500

VP500

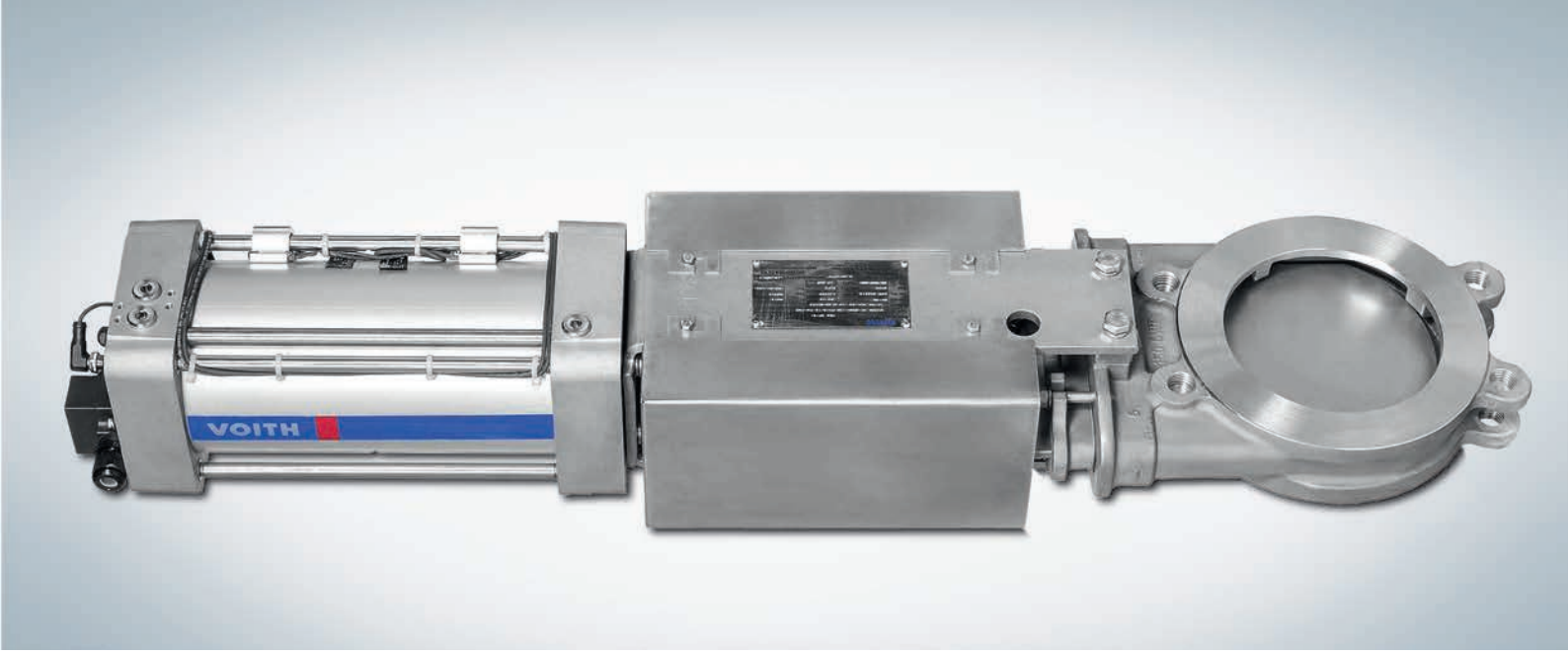
The VP500 smart digital positioner provides flexible and cost-effective valve control. They are suitable for use even under harsh conditions and designed for linear, part-turn, and single or double-acting pneumatic actuators. The VP500 is able to help reduce cost with its unique electro-pneumatic system, providing unsurpassed low air consumption at steady state.

- Auto-adjust to reduce commissioning time
- I/P converter with low air consumption
- Signal: 4 – 20 mA HART, Profibus PA
- Optional position feedback signal or limit switches

Electric actuator

Valve positioner VP450

Valve positioner VP500



5.7 OnC ValveSwitch

VS500

This limit switch box can be used for the manual and pneumatic ball valves BV500, ball segment valves SV500, as well as disc valves DV500 and DV550. These patented systems have self-adjusting limits. Cable glands and integrated terminals are provided for the signals of two limit switches and one solenoid valve in case of direct mounting. The inside mounted inductive proximity switches in two- or three-wire technique, 24 V DC PNP are wired to internal terminals. The OnC Valve Switch is available in two shaft versions.

5.8 Valve switch

VS520

This limit switch box can be used for the manual and pneumatic ball valves BV520, ball segment valves SV500, as well as disc valves DV500. The limits can be easily adjusted. Cable glands and integrated terminals are provided for the signals of two limit switches and one solenoid valve in case of direct mounting. The inside mounted inductive proximity switches in two- or three-wire technique, 24 VDC PNP are wired to internal terminals. The OnC Valve Switch VS520 is available in two versions, for direct mounting of AD520 actuators without a bridge and with a extended shaft for SV500 and DV500 valves using a control actuator.

5.9 M12 Connection box

VS510

The distribution box enables the connection of sensors and actuators to a control system with plug-in and pre-assembled cables. It is robust and guarantees safe operation in various areas of application.

- On-off valve applications with box on valve
- Ports for limit switches (open and closed valve position), local mounted solenoid valve
- Three- or two-wire limit switches
- Internal spring clamp terminal strip for wires from 0.8 mm^2 – 1.5 mm^2
- 4 ports of M12 female 5-pole
- Cable gland PG11/13.5
- Housing material PBT UL 94 V-0, black

Valve switch VS500

OnC ValveSwitch VS520

M12 connection box VS510

6. OnC AirValve
High air flow rates for all applications

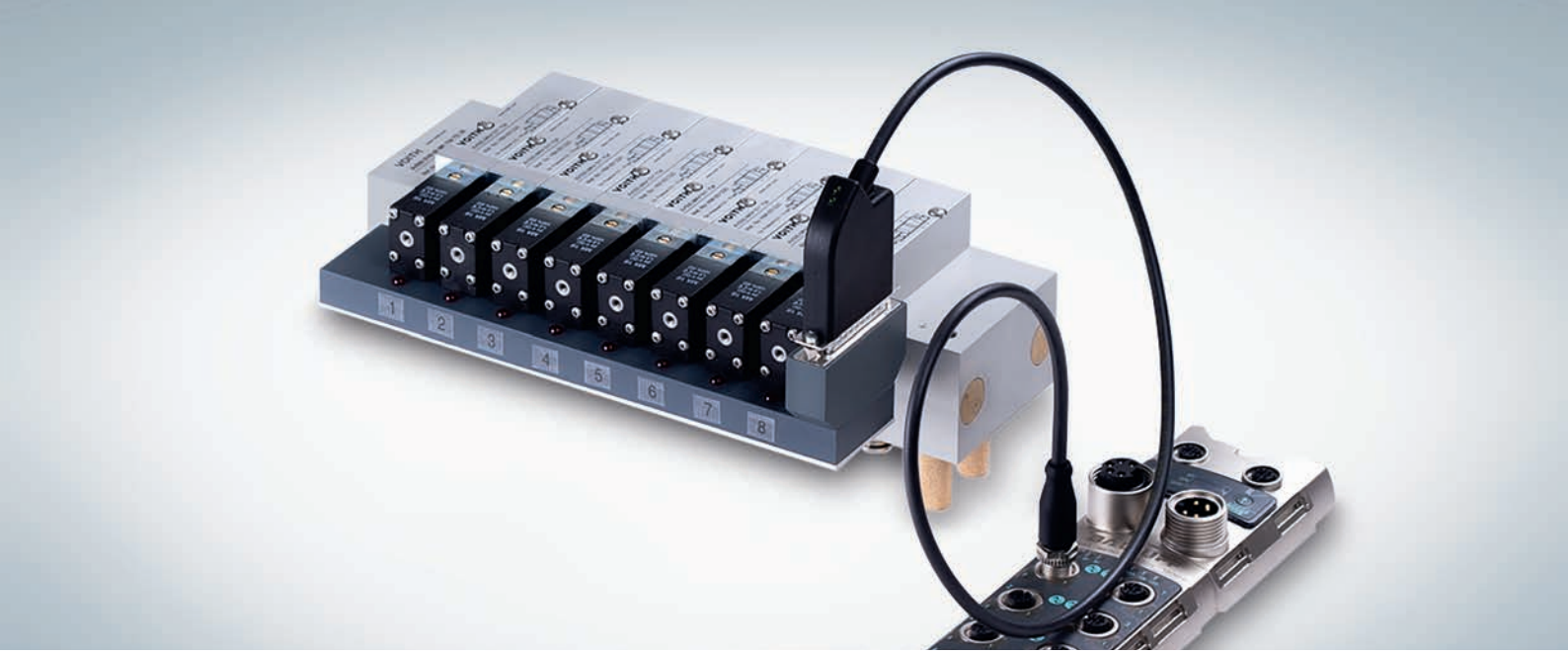
OnC AirValve products are used to pre-control pneumatic actuators of process valves. Customers are very satisfied with their high air flow rate for quick on-off actuation even under harsh conditions.

Application

The OnC AirValve product portfolio is complementary to the process valves. Voith supplies different on-off valves with either built-on Namur solenoid valves or solenoid valve blocks. These blocks contain 8 or 16 solenoid valves which are normally integrated into cabinets. Those are mounted in the field near the process valves. For the tubing between the solenoid valves and the process valve actuators, Voith tube bundles with welding beads protection are recommended as they contain two tubes in one. The Namur interface of the process valves pneumatic actuator eases direct mounting of the solenoid valve onto the actuator. Thus, installation costs are decreased and pneumatic and electric installation simplified. For all rotary actuators the switchbox VS500 is the perfect addition to connect the solenoid coil cable.

Product benefits

+ **Robust Namur solenoid valves with high protection class IP67**
+ **High air flow rate to ensure fast operation of large process valves**
+ **Solenoid valve blocks with 8 or 16 stations as an alternative to Namur valves**
+ **Special pneumatic tubes in polyamide (PA12) for harsh environments featuring welding beads protection to minimize tube defects during plant installation**
+ **Assembled and tested Solenoid Valve Box in stainless steel available**



6.1 Solenoid Valve Cabinet 8 stations

AV500.SVB 08 MK 704TDSZ
AV500.SVB 08 MK 704TDSSZ
The compact and the innovative standard solenoid valve cabinet includes 8 pieces of 5/2-way single solenoid valves and is equipped with push-in fittings for PA tube 8 x 1 or with cutting ring fittings for 8 mm metal pipes.

- Stainless steel cabinet
- Protection class IP66
- Tested and ready for operation
- Numbered valve terminals
- High air flow rate of 1 250 l/min
- Single air shut off for each valve
- Optional IO-link interface

6.2 OnC AirValve 500 single solenoid 5/2-way

AV500.MH 510
These single solenoid 5/2-way valves are actuated by permanent signals and equipped with air spring returns.

- Connection G1/4“
- High air flow rate of 1 250 l/min
- Coil 24 V DC
- Temperatures -10 to 60 °C
- Manual override
- Used for solenoid valve blocks

6.3 OnC AirValve 500 double solenoid 5/2-way

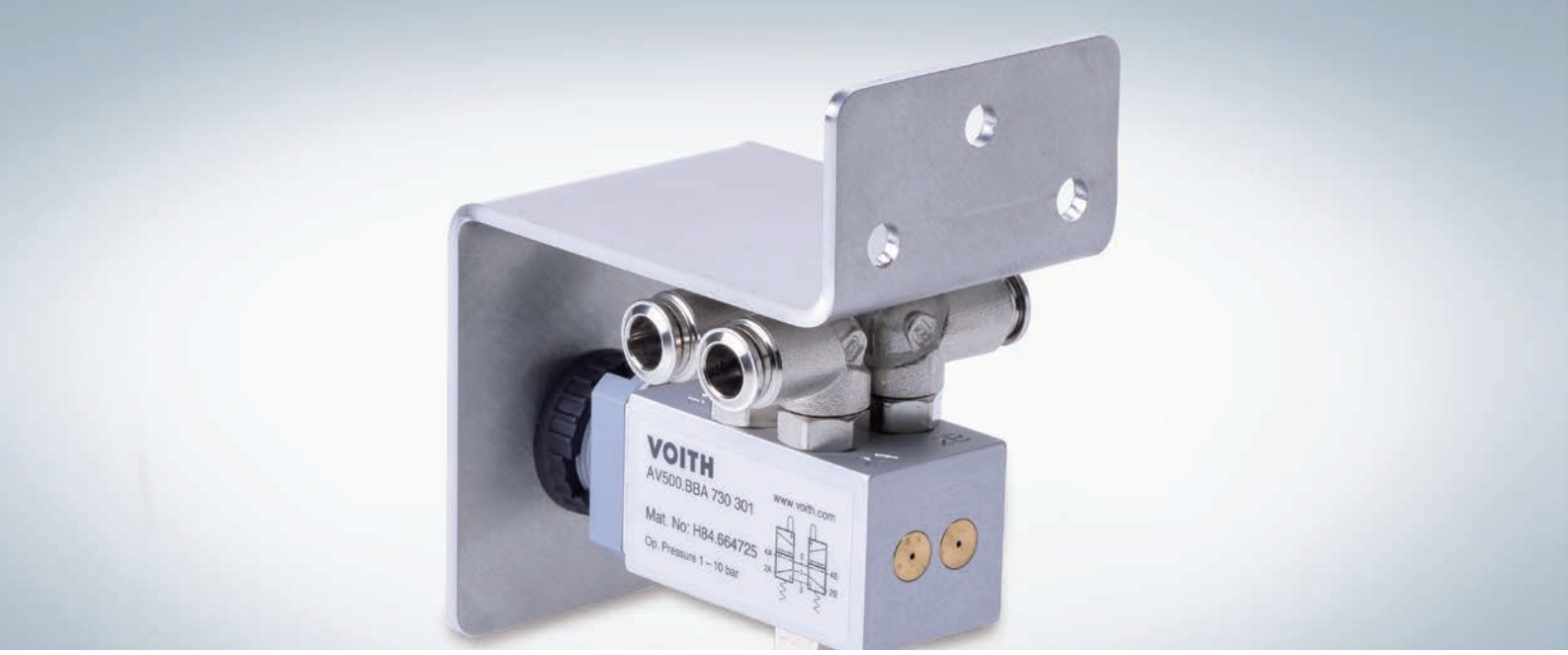
AV500.MH 520
The double solenoid 5/2-way solenoid valve is actuated by impulse. It’s position is kept until an electrical signal is applied to the opposite side even when not attached to an electrical source.

- Connection G1/4“
- High air flow rate of 1 250 l/min
- Coils 2 x 24 V DC
- Temperatures -10 to 60 °C
- Manual override
- Used for solenoid valve blocks

OnC ValveBlock 500

OnC AirValve MH 510

OnC AirValve MH 520



6.4 OnC AirValve 500 Namur 3/2-way

AV500.MNH 310

The 3/2-way Namur solenoid valve is actuated by a permanent signal and usually closed. Its interface is according to Namur standards, with exhaust air recirculation. The valves are equipped with air spring returns.

- Air supply G1/4“ or G1/2“
- High air flow rate from 1 250 / 3 000 l/min
- Namur interface for direct mounting
- Epoxi-coils 24 V DC
- Manual override

6.5 OnC AirValve 500 Namur 5/2-way

AV500.MNH 510

This 5/2-way Namur solenoid valve is actuated by a permanent signal. The interface is designed according to Namur standards. All valves are equipped with an air spring return.

- Air supply G1/4“ or G1/2“
- High air flow rate of 1 250 or 3 000 l/min
- Namur interface for direct mounting
- Epoxy-coils 24 V DC
- Manual override

6.6 OnC AirValve 500 pneumatically actuated 5/2-way spool valve

AV500.P520

The pneumatically actuated 5/2-way spool valve is actuated by a double pilot air impulse.

- Air supply G1/2“
- High air flow rate of 3 000 l/min

Application:

Booster valve for big on-off valves.

OnC AirValve MNH 310

OnC AirValve MNH 510

OnC AirValve HZD

6.7 Lever actuated 5/2-way spool valve

AV500.HVR
Lever actuated 5/2-way spool valve, indexed with locking function for high temperature application. The user can put a padlock in the drilling of the extended spool and thereby lock the valve. The lever is sealed against the valve by using a metal ball.

Accessory:
Inductive sensor for position monitoring

Application:
Paper Machine Pneumatics, typically used for doctor control in the drying sections.

6.8 High air flow regulator

AV500.D181
The high air flow regulators are specially designed for high temperature application in the paper machine dryer section. In particular the flow regulators are used for the fine adjustment of airflow in the tail threading blowpipes. The flow regulators are available in block form with up to 3 flow regulators on one manifold block

Application:
Paper Machine Pneumatics, dryer section.

6.9 Manually actuated 7/3-way valve

AV500.BBA
Manually actuated 7/3-way valve, indexed. Used as pilot valve for stock sampling device including flushing function. In the middle position “Off” the sample valve as well as the flush valve is closed. Actuating the lever into “Sample” position, opens the sample valve, operating it into the “Flush” position opens the flush water valve. There are two independent 5/2-way valves in the same valve body. Therefore the product can also be used for other similar applications.

Application:
Pilot valve for pneumatic sampling valves.

OnC AirValve AV500.HVR

OnC AirValve AV500.D181

OnC AirValve AV500.BBA

6.10 OnC AirTube 500

AT500

Tube bundles with welding beads protect content of one or more serially numbered plastic tubes. The stranded tubes are sheathed with a polyester foil and asphalt crepe tape as well as aluminium tape. A seamless extruded blue plastic jacket follows at the end. The robust construction of these tubes prevents damages during installation and maintenance work.

Tube materials PA 12-PHL and copper tubes are available.

- Protection against flying sparks and welding beads in particular
- Protection against mechanical impacts
- Protection against harsh environments
- Wide temperature range
- Single tube 6 x 1 mm or 8 x 1 mm or 14 x 1,5 mm
- Double tube 2 x 6 x 1 mm or 2 x 8 x 1 mm
- Also available without welding beads protection

OnC AirTube 500

6.11 Fittings and function fittings

All pneumatic devices need high quality and robust fittings to secure the proper function. This fittings are especially selected for quick and easy installation using a push in system and a O-ring system for the seal. This allows to install the fittings without a Teflon tape or sealant. Thus protect the pneumatic devices from blockages and pollution and ensure a total tightness.

We supply all relevant fittings for tubing and function fittings for quick exhaust and air throttling for our pneumatic equipment.

- Push in tube fittings straight and orienting elbow in full metal version
- Flow control silencers
- Quick exhaust valves
- Orienting flow regulator for actuators

Pneumatic fittings and function fittings

7. Compressed air preparation
Innovative and compact modules

The preparation of instrument air is very important for the overall performance of pneumatic components like positioners and solenoid valves. Therefore, the Voith portfolio includes especially designed modules for air preparation.

Application

Voith modules for compressed air preparation are innovative, compact and protected against dust, dirt particles and moisture by their modular design. Complementary new air distributors for the instrument air have been launched that are suitable for almost every application. High flow filter regulators maintain a constant air pressure and protect the equipment against pollution. Guaranteed functionality, attractive design and absolute pressure-tightness of all the freely combinable modules make the difference.

Modular equipment architecture allows to combine all modules to a unique air preparation system.

Product benefits

+ Shut off ball valve to isolate downstream equipment
+ Air filters for particles of 3 µm or 5 µm
+ Pressure regulator, according to customer needs
+ Filter regulator with cleaning and regulating functionality
+ Oil mist lubricators for smooth functioning
+ Accessories, pressure gauges, mounting brackets and coupling kit for individual devices
+ Modular and flexible
+ Scalable system with different module sizes
+ Air preparation systems in single or double versions
+ Design according to the needs of various air consumers
+ High performance and lower weight synthetic material
+ High functionality and absolute pressure tightness

7.1 OnC AirDistributor Cabinet

AV500.RVB 012 SZ
AV500.RVB 012 SSZ
Complete air distribution box equipped with a pressure regulator 0.5 – 10 bar, main shut off valve, distribution block with 12 outlets and pressure gauge. Outlets can be used to supply control valves or other pneumatic applications. Each outlet can be shut off individually from inside the box.

- Outlets equipped with push-in fittings for PA tube 8 x 1 or cutting ring fittings for 8 mm metal pipes (copper or stainless steel). All other dimensions optionaly available
- Stainless steel cabinet
- Protection class IP66

The air distributor cabinets are tested and ready for operation at delivery.

7.2 OnC AirFilter 500 / 520

AF500 / AF520
Single or double air filter system for instrument air. For protection of air consumers against dust and condensate. Different cartridges are available.

- High rate of flow and efficiency of dirt separation
- Operating pressure of 0 – 16 bar
- Air connection G1/2“, others optional

7.3 OnC AirRegulator 500 / 520

AR500 / AR520
Single or double air filter regulator system for instrument air. Air pressure control and protection of air consumers against dust and condensate. Different cartridges are available.

- Filter and regulator in one compact device
- Good regulation performance
- Replaceable filter cartridge
- Grade of filtration 3 µm or 5 µm
- High flowrate and effective dirt and condensate separation
- Automatic drain
- Operating pressure of 0 – 16 bar
- Air connection G1/2“, others optional

OnC AirDistributor Cabinet

OnC AirFilter 500 / 520

OnC AirRegulator 500 / 520

7.4 OnC AirRegulator 500

AR500

Precision filter regulator for individual air pressure control, e. g. in front of positioners for control valves. Filter and regulator functions in one compact device

- Replaceable filter cartridge
- Grade of filtration 3 µm or 5 µm
- Operating pressure of 0 – 16 bar
- Air connection G1/4“, others optional

7.5 OnC AirOiler 500

AO500

Oil mist lubricators ease the load on heavy-duty compressed air drives. The consistent fine oil mist ensures friction-free operation sequences and prevents abrasion and wear of moving parts.

- Proportional lubricator
- High flow rate
- Operating pressure 0-16 bar
- Air connection G1/4“, G1/2“ or others optional

7.6 OnC AirDistributor 512

AD512

Modular Air Distributor for multiple air consumers consisting of lockable shut off valve, filter regulator with automatic condensate drain and manifold block for 12 air consumers. Used for air supply of control valves or other air consumers.

- Air supply G1/2“
- 12 air connections for PA tube 8 x 1 mm or other dimensions on request
- Replaceable filter cartridge
- Grade of filtration 3 µm or 5 µm
- High flowrate and effective dirt and condensate separation
- Automatic drain
- Operating pressure 0 – 16 bar

OnC AirRegulator 500

OnC AirOiler 500

OnC AirDistributor 512

8. OnC FlowSens
Flow measurement for all applications

OnC FlowSens devices take care of sensing precisely the rate of fluid flow. They are the instrument of choice when high precision and extensive self-diagnosis functionalities are required.

Application

OnC FlowSens offers reliable flow measurements for all typical applications in the paper manufacturing industry.

The instruments are suitable for water, stock, steam, chemicals, and additives. Particular note should be made of the highly precise measurement it offers and its extensive self-diagnosis. Various measurement principles are used depending on the application. When dealing with typical liquid media like water or suspension the electromagnetic flow meter OnC FlowSens 604 is the standard choice. For abrasive media, a protective ring is used for the liner. The OnC FlowSens 605 is a special version with a fully ceramic liner for highly abrasive media. For steam or non-conductive fluids, such as condensate, the Vortex OnC FlowSens 620 shall be used.

Product benefits

+ **The most advanced measurement processing and diagnostics**
+ **A variety of material combinations available, including robust ceramic liner**

8.1 OnC FlowSens 601

FS601

- Electromagnetic flowmeter
- Diameter range DN10 – DN150
- Wafer design
- Liner, PFA
- Electrode material Hastelloy
- Accuracy 0.3 % with OnC UniCom

Application:

Covering volumetric flow applications in pulp, paper and water treatment with a minimum conductivity > 20 µS/cm.

8.2 OnC FlowSens 602

FS602

- Electromagnetic flowmeter
- Diameter range: DN25 – DN3000 with flanges
- Various liner options available: DN25 – DN150 polypropylene, DN200 – DN3000 ebonite hard rubber
- Various electrode materials available
- Accuracy 0.3 % with OnC UniCom 601

Application:

For water, wastewater and sludge applications.

8.3 OnC FlowSens 604

FS604

- Electromagnetic flowmeter
- Diameter range: DN2.5 – DN3000 with flanges
- Various liner options available, e. g. PTFE, PFA, ETFE
- Reinforced liner with stainless steel wire
- Various electrode materials available
- Accuracy 0.2 % with OnC UniCom 600

Application:

Covering volumetric flow applications in pulp, paper and water treatment with a minimum conductivity > 20 µS/cm.

OnC FlowSens 601

OnC FlowSens 602

OnC FlowSens 604

8.4 OnC FlowSens 605 ceramic liner

FS605

Flow tube with ceramic liner for high end applications that is specifically designed for abrasive media.

- Electromagnetic flowmeter
- Diameter range DN2.5 – DN300 with flanges
- Various electrode materials available
- Accuracy 0.2 % with OnC UniCom 600
- Also available in wafer design DN2.5 – DN100

Application:

- After MC pump at high consistencies
- Filler dosing
- Chemical dosing
- Coating colors

8.5 Signal converter for FS601 / 602 / 604 / 605

UC600

UC600W is a wall mount version with a polycarbonate housing.
UC600C offers a compact design, for mounting on a flow sensor.
UC600F is a field mount version with a die-cast aluminum housing.

- 3 x 100 % diagnostics of application, accuracy and instrument
- Large graphic display with piezoelectric buttons
- Quick and easy installation and start-up
- Excellent long-term stability
- Optimal zero point stability independent from product properties
- Integrated temperature and conductivity measurement
- Indication of erroneous measurement, e. g. because of gas bubbles
- Display of accuracy and linearity errors
- Output 4 – 20 mA HART, pulse, frequency or status output, limit switch or control input depending on the I/O version
- Options Profibus PA and DP
- Internal counters with a maximum of 8 counter places e. g. for counting volume or mass units

Application:

Conductive liquid media containing

- Solids < 70 % (vol)
- Gas > 5 % (vol)
- Fibers > 30 % (vol)

OnC FlowSens 605

OnC UniCom 600
Wall mount version

OnC UniCom 600
Field mount version

8.6 Signal converter for FS601 / 602 / 604 / 605

UC601

UC601W is a wall mount version with a die-cast aluminum housing. UC601C offers compact design, is mounted on the flow sensor and has a die-cast aluminium housing.

- Large graphic display with push buttons
- Quick and easy installation and start-up
- Excellent price-performance ratio
- Integrated temperature and conductivity measurement
- Diagnostic tools for device function and application check
- Output 4 – 20 mA HART, pulse, frequency, status output or limit switch
- Internal counters with a max. of 8 counter places e. g. for counting volume or mass units

Application:

Conductive liquid media containing

- Solids < 10 % (vol)
- Gas > 3 % (vol)
- Fibers > 0,5 % (vol)

OnC UniCom 601

Signal converter

8.7 OnC FlowSens 620 Vortex

FS620

The FS620 is a vortex flowmeter with integrated temperature sensor. It is best suited for flow measurement of non-conductive liquids, dry or humid gases, compressed air, saturated or superheated steam in supply processes. The integrated pressure and temperature sensors enable direct output of mass, nominal flow, energy and gross / net heat variables.

- Sandwich design (up to DN100 / 4")
- Flange design (up to DN300 / 12")
- Ideal sizing due to reduction of sensor size if needed
- Compact or remote electronics with robust field housing
- Integrated calculation for steam and hot water
- Build in pressure and temperature sensors for compensation
- Increased accuracy and stable measurements with advanced signal processing technology
- Signal 4 – 20 mA HART

OnC FlowSens Vortex 620

OnC FlowSens Vortex 620
Splitted version

9. OnC PressSens
Pressure and level transmitters

A reliable sensor system is essential for the efficient and malfunction-free operation of any production facility. OnC PressSens sensors are available with all commercial threaded and flanged mountings. Customized mountings for many applications are also available.

Application

OnC PressSens 182 with ceramic-capacitive sensor element and protected radial seal enables front-flush mounting of the sensor in pipes, vats and chests, tanks and storage towers. Thanks to the extremely abrasion-resistant ceramic, this sensor is ideal for use throughout recovered paper stock preparation lines: from pulping all the way to the headbox.

OnC PressSens 181 for applications with high temperatures and aggressive media such as caustic soda, a tough stainless steel diaphragm is used. Since the sensor element works with internal transmission fluid and special temperature compensation, the temperature influence is very slight and measurement error is minimized.

OnC PressSens 185 is used for differential pressure measurement. The high accuracy of 0.065 % and high long-term stability make OnC PressSens 185 suitable for all applications with highly precise measuring requirements.

Product benefits

+ **Modular system for all applications**
+ **Sturdy design with abrasion resistant special ceramic material**
+ **Only one transmitter for pressure and level**
+ **Easy to replace valve assembly for storage towers**
+ **Remote display and operation**
+ **Available with 4-20 mA HART, IO-Link and Profibus PA plus option for climate-compensated transmitters**

9.1 OnC PressSens 110

PT110

The electronic pressure transmitter with gauge combines the high visibility of a gauge with the advantages of an electronic pressure sensor.
It withstands vibrations, dynamic load changes, overpressure or temperature fluctuations. Programming options: hysteresis / window; NO / NC; output logic; current output; damping; calibration of displayed values; scalable, display unit; 2-point calibration.

- Measuring range -1 to 20 bar
- Medium Temperature -24 to 125 °C
- Accuracy < 0.2 %
- Analog output 4 – 20 mA or 0 to 10 V
- Switch function for pressure limit values
- Operating voltage 18 to 32 V DC

9.2 OnC PressSens 128

PT128

Universal pressure transmitter with ceramic measuring cell for measurement of gases, vapors and liquids up to 130 °C. Ex and hygiene approval, compact stainless-steel housing.

- Various process connections from G½", M30, G1" front flush and gauge
- Measuring range -1 to 60 bar
- 4 ... 20 mA three-wire PNP/NPN,
- IO-Link communication
- Protection rating IP69
- M12 cable connection
- Colored 360° status LED adjustable
- Wireless setup and diagnostics via Bluetooth with smartphone

9.3 OnC PressSens 129

PT129

Universal pressure transmitter with metallic measuring cell for measurement of gases, vapors and liquids up to 130 °C. Ex and hygiene approval, compact stainless-steel housing.

- Various process connections from G½", M30, G1" front flush and gauge
- Measuring range -1 to 1,000 bar
- 4 ... 20 mA three-wire PNP/NPN,
- IO-Link communication
- Protection rating IP69
- M12 cable connection
- Colored 360° status LED adjustable
- Wireless setup and diagnostics via Bluetooth with smartphone

OnC PressSens 110

OnC PressSens 128

OnC PressSens 129

9.4 OnC PressSens 138

PT138

Universal pressure transmitter with ceramic measuring cell for measurement of gases, vapors and liquids up to 130 °C. Compact stainless-steel housing with colored 360° display for on-site for easy operation.

- Various process connections from G½", M30, G1" front flush and gauge
- Measuring range -1 to 60 bar
- 4 ... 20 mA three-wire PNP/NPN,
- IO-Link communication
- Protection rating IP69
- M12 cable connection
- Wireless setup and diagnostics via Bluetooth with smartphone

9.5 OnC PressSens 139

PT139

Universal pressure transmitter with metallic measuring cell for measurement of gases, vapors and liquids up to 130 °C. Compact stainless-steel housing with colored 360° display for on-site for easy operation.

- Various process connections from G½", M30, G1" front flush and gauge
- Measuring range -1 to 1,000 bar
- 4 ... 20 mA three-wire PNP/NPN
- IO-Link communication
- Protection rating IP69
- M12 cable connection
- Wireless setup and diagnostics via Bluetooth with smartphone

9.6 OnC PressSens 181

PT181

Pressure transmitter with chemical seal for hot and chemically aggressive media. It demonstrates its capability especially in high temperatures and aggressive media. A wide range of metal diaphragm materials and coatings make this pressure transmitter an essential instrument across many applications.

- Measuring range -1 to 1 000 bar
- Diaphragm seal
- Process temperatur -90 to 400 °C
- Accuracy < 0.2 %

OnC PressSens 138

OnC PressSens 139

OnC PressSens 181

9.7 OnC PressSens 182

PT182

The pressure transmitter PT182 is the robust all-rounder with a ceramic measuring cell. The ceramic pressure sensor is resistant to thermal shock and handles temperatures up to 150 °C. The extremely high overload factor of 200 is unique to the market. Typically applications are measurement of gauge pressure, absolute pressure or vacuum. Measured products are gases, vapors and clean liquids.

- Measuring ranges -1 to 100 bar
- Smallest measuring range 0.025 bar
- Dry, ceramic-capacitive sensor element
- Process temperature -40 to 150 °C
- Accuracy < 0.1 %
- High overload and vacuum resistance 200 times

The front flush ceramic measuring diaphragm is highly abrasion resistant. Various process connections are available with all kind of flanges and threads. Typically applications are measurement of gauge, absolute pressure or vacuum measurement. Measured products are gases, vapors, liquids and also 2 phase liquids containing abrasive substances.

PT182 Headbox pressure

Precision pressure measurement for headbox with fixed cable and separated electronics. It must be very precise and is thus implemented redundantly. The optimal solution is the PT182 in absolutely front-flush and super-finished version, with a accuracy class 0.05 % and protection rating IP 68.

- Accuracy < 0.05 %
- Excellent long-term stability
- Absolutely front-flush mounting ceramic
- Process connection superfinished, mounting directly in headbox tender and drive side
- Sensor protection class IP68
- External electronics in stainless steel housing

OnC PressSens 182

OnC PressSens 182
Front flush

OnC PressSens 182
Headbox pressure

9.8 OnC PressSens 183

PT183
Pressure transmitter with metallic measuring cell for a wide application range. With its metallic measuring cell, the instrument delivers excellent measurement accuracy, even under a vacuum. For measurement of liquids and viscous products in a highly corrosive environment like chemicals.

The PT183 offers special advantages in applications with high pressures. The connection of 2 sensors as electronic differential pressure measurement opens new possibilities.

- Measuring range -1 to 1000 bar
- Process temperature -40 to 200 °C
- Accuracy 0.075 %

9.9 OnC PressSens 185

PT185
Differential pressure transmitter for all media with metallic measuring diaphragm for extremely small differential pressures through high precision measured value detection. High reliability through integrated overload system. Versatile use through a variety of measuring ranges and process fittings.

- Measuring range -40 to 40 bar
- Process temperature -40 to 120 °C
- Process pressure -1 to 400 bar
- Process fitting ¼-18 NPT acc. to IEC 61518
- High accuracy of 0.065 %
- Output 4 – 20 mA HART,
- Profibus PA

Application:
The PT185 is a universal differential pressure transmitter for measurement of liquids, gases and vapors.

- Differential pressure measurement for steam and condensate systems
- Level measurement in pressurized vessels
- Differential pressure monitoring on filters
- Flow measurement in combination with orifice blade or pitot tube for gases
- Flow measurement in combination with orifice blade for non conductive fluids like oil or condensate

OnC PressSens 183

OnC PressSens 185

OnC PressSens 185 with orifice blade

9.10 OnC PressSens 185-CSB

PT185-CSB

Differential pressure transmitter with chemical seal CSB (both side assembly) are suitable for level, interface, density, differential pressure and flow measurement. Through the assembly of the chemical seal CSB, applications in corrosive, high viscosity and hot products can be realized.

Flanges from DN 40, 2“ cells from DN 50, 2” of 316L, Alloy, Tantalum

Application:

- Differential pressure measurement headbox
- Level measurement of liquids and gases in pressurized vessels
- Level measurement deculator

9.11 OnC PressSens 185-CSS

PT185-CSS

Differential pressure transmitter with chemical seal CSB (one side assembly) are suitable for level measurement. Through the assembly of the chemical seal CSS, applications in corrosive, high viscosity and hot products can be realized.

Different versions of flange connections and materials are available

Application:

- Level measurement of liquids and gases in pressurized vessels
- Level measurement of separator in steam and condensate system
- Level measurement in tanks with corrosive, high viscosity and hot products

OnC PressSens 185-CSB

OnC PressSens 185-CSS

10. OnC LevelSens
Level measurement for harsh environments

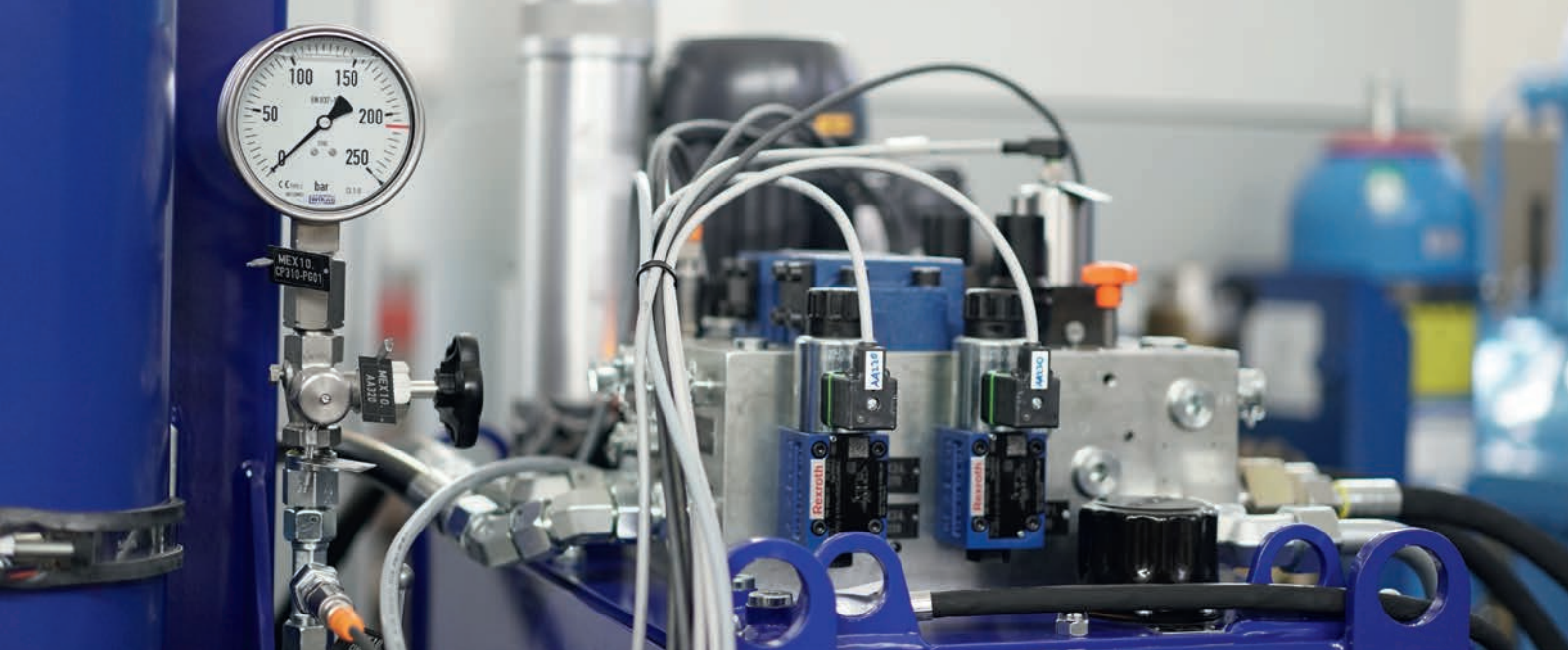
OnC LevelSens comprises transmitters for continous-level measurement and level switches using various physical measuring principles. Depending on the application involved, radar, vibration, capacitive and hydrostatic sensors from the OnC PressSens product group are used.

Application

This sensor measures levels of media such as water, steam, fiber suspensions, coating colors and chemical additives. OnC LevelSens 200 series uses radar to measure the level of suspensions, liquids or bulk materials in challenging applications. Extremely short microwave pulses are radiated from the antenna system onto the product to be measured, reflected by the surface and then received again. The distance, and therefore the level, are calculated from the time elapsed for this process. Interference signals are reliably balanced by electronic means, so that there is no need to calibrate with the vessel in full and empty state. The OnC LevelSens 300 series uses ultrasound and transmits short ultrasonic pulses of up to 80 GHz to the surface of the product. The distance and level are calculated from the time elapsed. In capacitive measurement, as used by the LevelSens 400 series, vessel and sensor form the two electrodes of a capacitor. The measurement is effected over the entire sensor length without dead band.

Product benefits

+ **Modular system for all applications**
+ **Non-contact measuring process**
+ **Unaffected by product characteristics**
+ **Simple commissioning without the need for calibration**
+ **Wear and maintenance-free**
+ **One operating module for all measurements systems**
+ **Available with 4-20 mA HART, Profibus PA, IO-Link**



10.1 OnC LevelSens 186

LT186

The LT186 is a submersible pressure transmitter for level measurement in wells, basins and open vessels. Thanks to the flexibility through different cable and tube versions, it can be used in various applications.

- Measuring range 0 to 25 bar
- Ceramic-capacitive sensor element
- Potted cable with inner capillaries
- Deviation < 0.1 %
- High overload resistance
- Process temperature -20 to 100 °C

10.2 OnC LevelSens 281

LT281

High frequency robust guided radar sensor, coaxial or cable rod for continuous level measurement and interface (separation layers) measurement of liquids of all kinds. This unique level sensor measures maintenance free all kind of liquids. Even in applications with vapor, buildup, foam and condensation, the sensor delivers precise and reliable measurement values.

- Measuring range max. 75 m
- Process temperature -60 to 200 °C
- Process Pressure -1 to 40 bar
- Connection G¾, ¾ NPT, flanges from DN 25, 1“
- 4 … 20 mA HART (2-wire), Profibus PA
- Protection rating IP68
- The guided radar measurement enables a simple, time-saving and reliable setup
- Probe length could be shortened afterwards, thus offer a simple standardization and highest flexibility in the engineering phase
- Comprehensive diagnostic capabilities ensure a maintenance free operation and hence a high plant availability
- No need for media specific calibration

Application:
Oil level measurement in hydraulic units or gear boxes

OnC LevelSens LT186

OnC LevelSens LT281

10.3 OnC LevelSens 221 / 231

LT221 / LT231

Compact 80 GHz radar sensor for non-contact level measurement of liquids and bulk solids. It is suitable for use in water treatment, storage tanks for additives as well as small bulk solids silos or open containers in all industrial areas

- Measuring range max 15 m
- Process temperature -40 to 80° C
- Process Pressure -1 to 3 bar
- Connection G1½, 1½ NPT, R1½
- 4 … 20 mA HART (2-wire)
- M12 cable connection
- Protection rating IP66/IP67
- Local display for easy operation (LT231)
- Wireless setup and diagnostics via Bluetooth with smartphone

10.4 OnC LevelSens 251 / 252

LT251 / LT252

The compact 80 GHz radar sensor is the ideal suited where a high degree of protection is required, like level measurement in water treatment, pumping stations and rain overflow basins, flow measurement in open channels, level monitoring on small bulk solids silos or bulk solids containers.

- Measuring range max 15 m
- Process temperature -40 to 80° C
- Process Pressure -1 to 3 bar
- Connection thread G1½, 1½ NPT, R1½
- Axial cable outlet (LT251)
- 4 … 20 mA HART (2-wire)
- Direct cable connection
- Protection rating IP66/IP68
- Wireless setup and diagnostics via Bluetooth with smartphone

10.5 OnC LevelSens 253

LT253

The compact 80 GHz radar sensor is the ideal suited where a high degree of protection is required, like level measurement in water treatment, in rivers and lakes, for flow measurement in open channels or level measurement in medium-sized bulk solids silos, segmented vessels or open heaps.

- Measuring range max 30 m
- Process temperature -40 to 80° C
- Process Pressure -1 to 3 bar
- Connection thread G1, 1 NPT, R1
- Axial cable outlet
- 4 … 20 mA HART (2-wire)
- Direct cable connection
- Protection rating IP66/IP68
- Wireless setup and diagnostics via Bluetooth with smartphone

OnC LevelSens LT221 / LT231

OnC LevelSens LT251 / LT252

OnC LevelSens LT253

10.6 OnC LevelSens 261

LT261
Two-wire radar sensor for continuous level measurement, two versions:

1. Encapsulated antena system, particularly for measurement of aggressive liquids in small vessels
2. Plastic horn antenna suitable for flow measurement in open flumes or gauge measurement in water bodies

- Measuring range 35 m maximum (115 ft)
- Process pressure with encapsulated antenna system for 1 to 3 bar or plastic horn antenna -1 to 2 bar
- Process temperature -40 to 80 °C

10.7 OnC LevelSens 267

LT267
This sensor is suitable for continuous level measurement of bulk solids. The mechanical construction and the electronics are optimized for this application.

- Measurement range 15 m maximum (49 ft)
- Process fitting flange DN80 or ANSI 2“, alternative mounting strap
- Process pressure -1 to 2 bar
- Process temperature -40 to 80 °C

OnC LevelSens 261

OnC LevelSens 267

10.8 OnC LevelSens 421 / 424

LS421 / LS424

Compact capacitive level sensor for level detection of water-based liquids. Typical applications are overfill and dry run protection. It can be used in thin pipelines. For level detection of very adhesive products use LT424 with front flush surface.

- Process temperature -40 to 115 °C
- Process pressure -1 …25 bar
- Connection thread ½ NPT, ¾ NPT, 1 NPT
- Transistor (NPN/PNP)
- IO-Link communication
- M12 cable connection
- LED status indication
- Protection rating IP66/IP67
- Wireless setup and diagnostics via Bluetooth with smartphone

OnC LevelSens LS421 / LS424

10.9 OnC LevelSens 463

LT463

Capacitive level sensor with PE or PTFE insulated electrode can be used universally for the measurement of non-abrasive liquids and bulk solids. The rod probe is fully insulated and the proven mechanical construction offers high functional safety.

- Process temperature -50 ... 200 °C
- Process pressure -1 ... 64 bar
- Connection thread from G½, ½ NPT, flanges from DN 50, 2”
- Output 4 – 20 mA Hart

Application:

- Conducting liquids
- Light bulk solids

OnC LevelSens 463

10.10 OnC LevelSens 464

LS464

Capacitive compact level switch with PTFE fully insulated rod electrode for adhesive products like stock or high viscous media.

- Overfill protection, e. g. in the bleaching or storage tower
- Highly corrosion resistant
- Exact switching point even with strong build-up
- Process pressure -1 to 64 bar
- Process temperature -50 to 200 °C
- Process connection thread from G ¾ A resp. ¾ NPT
- Flange from DN25 resp. ANSI 1“
- Electrode length of up to 6 m (20 ft)
- Output transistor (NPN/PNP), relay (DPDT)

OnC LevelSens 464

10.11 OnC LevelSens 551 / 553

LS551 / LS553

Vibrating level switch with small dimensions for use in liquids. It can be used as empty or full detector, as approved overfill protection, dry run protection or pump protection in vessels and pipelines. With tube extension for top mounting of tanks use LS553.

- For liquids (density: > 0.5 ... 2.5 g/cm³)
- Process temperature -40 to 150 °C
- Process pressure -1 ... 64 bar
- Process connection G½ / ½ NPT
- Transistor (NPN / PNP)
- IO-Link communication
- M12 cable connection
- LED status indication
- Protection rating IP67/IP68

10.12 OnC LevelSens 561 and 563 with extended shaft

LS561 / LS563

Vibrating tuning fork level switch. Ideal for overfill protection due to fail safe, high level alarm design. Works in the harshest environments with a broad selection approvals, fittings and outputs.

- Very high reproducibility
- Setup without adjustment
- Product-independent switching point
- Wear and maintenance-free
- Process pressure -1 to 64 bar
- Process temperatures -50 to 250 °C
- Dry-run protection chemical pumps (LS561)
- Overfill protection chemical tanks (LS563)

OnC LevelSens LS551 / LS553

OnC LevelSens 561 / 563

11. OnC PosSens
Reliable position sensors for industrial machinery

Continuous distance measurements and positions measurements are needed in many different applications for use in the areas of mechanical and plant construction, for hydro power and also in paper machinery where precise positioning is required.

High-quality product range with enormous versatility in sensors and systems for position measurement. Inductive sensors to monitor, regulate and automate sequences and statuses in the highest quality. Every sensor is optimized for its respective application: from standard to extended sensing distance, from temperature- and high-pressure resistant. They are always wear-free, resistant to dirt and short-circuit-proof.

Magnetostrictive sensors come into use wherever high reliability and precision is demanded in position and speed measurement. Reliable even over long stroke lengths and in harsh conditions.

Magnetic encoders for precise positioning and speed detection in very dynamic applications. The highly-precise, fast-response encoders are optionally equipped with magnetic linear or rotational measuring elements. They are appropriate for linear as well as rotational applications, for incremental or absolute position detection. Their rugged design makes them ideal in extreme ambient conditions. They also ensure high up-time of your machines and equipment.

Product benefits

+ **Contact-free, therefore wear- and maintenance-free**
+ **Resistant to shock, vibration and contamination**
+ **Hermetically sealed housing**
+ **Easy system integration via a wide range of available interfaces**
+ **Flexible installation and handling**

11.1 OnC PosSens 400

DS400

The DS400 series is a high-quality product range of displacement and distance sensors which offer a wide range of position measurements for various applications in different industries. It also comes with a host of compatible accessories like fastening equipment, cabling, signal converters and communication adapters.

- Magnetostrictive linear position sensors
- Inductive sensors standard, pressure-rated, full-metal
- Magnetic-field-resistant inductive sensors are insensitive to magnetic fields
- Inclination sensor with one or two measuring axis
- Magnetic Tape Linear Encoder

Characteristics:

- High accuracy and reliability
- Compact design and small footprint
- Long service lifetimes thanks to the high mechanical robustness
- Fast and flexible integration into machinery

OnC PosSens 400

12. Field instruments from BTG

Consistency

Consistency is the foundational parameter in all pulp and paper making processes to manage mass flow at target consistency and managing it correctly is critical. This applies to virgin pulp making, recycle fiber processing, mechanical pulping, stock preparation and paper machines.

Consistency is defined by the total content of dry solids in the pulp slurry, the slurry being made of water, fibers, fines and fillers. In other words, this is the weight of suspended solids per litre of liquid, and can be summarized as:

$$\text{Total consistency (\%)} = \frac{\text{dry weight of sample}}{\text{total weight of sample}} \times 100$$

BTG makes it easy

BTG is the market leader in consistency solutions. BTG is offering a portfolio of solutions, to meet all possible situations and challenges. The solutions are a combination of appropriate instruments, strong expertise, relevant service and right software. There is not one size fits all! Together with you, and depending on your situation and your objectives, our experts will define what is the best solution for you.

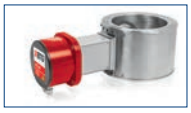
Instrument

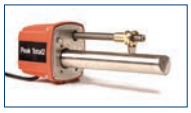
The challenges

- Do you have different measurement conditions in the mill?
- Do you want to utilize the technology that best fits your application?

BTG will assist you in selecting the right instrument for your location leveraging a full portfolio of sensor technologies and expertise in application best practices.

BTG offers a comprehensive range of equipment for consistency measurement, based on different technologies, to be chosen based on the application and on the conditions: Shear Force, Microwave and Optical.





Confirm

Expertise

The challenges

- Do you have a low trust in the measurement from your consistency instrument?
- Do you have poor results with your consistency control?

BTG experts combine technical and process knowledge to help you optimize the performance of your consistency control loops and associated elements.

In consistency measurement, the right hardware is a must. The right brainware is the difference.



Confidence

Reliability

The challenges

- Do you experience high variability in finished product quality?
- Are you concerned with instrument breakdowns and downtime?
- Does your team lacks maintenance skills for your consistency instrument?

BTG service specialists will help you maximize the reliability of your consistency instruments and provide ongoing training and support for your team.

Our service organization, locally available worldwide, guarantees that you will always get the help and support you need, from new installations to service and maintenance of our products. Our service engineers have access to, and knowledge of, the latest developments in the area of consistency monitoring and control. They also have the ability to realize extensive jobs, such as project engineering, planning, evaluation and test installations.

Constant

Full service

The challenges

- Do you need reliable consistency instruments available for control?
- Do you have lack resources to maintain your consistency instruments fleet and associated controls?

BTG offers support for the entire consistency loop including calibration, lab testing, and loop tuning/monitoring for maximal availability and accuracy of your consistency control fleet.

Convergence

13. OnC ConSens
Precise turbidity measurement

Water quality in paper manufacturing is a important parameter to control and stabilize the paper production. Closing the water systems in order to reduce the freshwater consumption need internal advanced treatments, control and monitoring of process water, thus reduce liquid discharges. In addition, savings on chemicals and operating costs for effluent treatment can be realized.

The OnC ConSens 720 is an optical turbidity measurement that can cover a wide range of different applications in different industries. It has predefined models that are pre-calibrated for typical applications in different measurement ranges. All optical sensing principles (90 °, 135 °and four-beam alternating light) are contained in this unique sensor.

Product benefits

+ One sensor for all applications, sensor fits all measuring ranges
+ Fast and easy commissioning, sensor comes pre-calibrated
+ Minimizes maintenance, intelligent design enables sophisticated self-cleaning capabilities
+ Optimizes stockholding, simplifies life cycle management

13.1 OnC ConSens 720
Optical turbidity sensor

CS720

The CS720 is a optical sensor for suspended solids and turbidity measurement in water, wastewater and utilities that allows unattended operation in a wide range of process conditions. Its unique design is extremely robust and it is also low-maintenance thanks to its self-cleaning functionality. Choose from different integrated analytical models to adapt the sensor to your specific application.

This sensor combines maximum process and data integrity with simple operation. It resists corrosion and moisture and enables lab calibration.

Measurement range:

- For formazin: 0 to 4000 FNU
- Display range up to 9999 FNU
- For sludge: 0 to 300 g/L
- The achievable measuring range depends very much on the media

Application:

- Solids content measurement in aeration, recirculation and sludge treatment
- Flocculent dosing based on water turbidity
- Turbidity measurement in the outlet of water clarification
- Disc filter filtrate monitoring
- White water solids concentration monitoring

13.2 Multi-channel signal converter for OnC ConSens 720

UC950

The OnC UniCom 950 digital multi-channel signal converter for optical turbidity sensors offers all the benefits of a first-class converter platform that is ingeniously simple yet offers maximum process reliability.

- 2 channels / 2 pcs. CS720 turbidity measurement
- Communication 4 – 20 mA HART, optional Profibus DP, Ethernet with web server
- Intuitive menu interface with graphical display
- Data logger function
- Optional digital inputs / outputs or current inputs for signal transfer from other devices
- Fast and easy adjustment of measured values

OnC ConSens CS720

OnC UniCom UC950

13.3 Installation and mounting set for OnC ConSens 720

Mounting set for OnC ConSens 720 (1) consisting of:

- Welded socket
- Adaptor
- Triclamp connector
- Gasket
- Blind cover
- Optional plug for welding socket

Optional:
Mounting set with ball valve (2) for easy retracting the sensor without draing the pipe.

OnC ConSens 720
Installation set (1), Optional: Mounting set with ball valve (2)

(1)

(2)

14. OnC TempSens
Precision temperature measurement

The OnC TempSens product family comprises sensors with large temperature ranges and fixed or seperate thermowell for all kinds of application. Featuring plug-in, screw-in, weld-in and flange connections, temperature sensors from Voith fulfill various requirements. Designed for best accuracy, highest reliability and excellent performance.

Application

OnC TempSens 400 temperature sensors are offered in different versions with various process connections. The adequate temperature transmitters are available as head-or-rail mounted version. Instruments with Profibus and IO-Link interface are also offered in addition to analog current output.

The measuring inserts TR 100 and TC 100 feature precision workmanship, high insulation resistance and good long-term stability. The measuring inserts made from mineral-insulated sheathed cable can be installed in all thermowells. Tolerance classes A and B to EN 60751 or 1/3 DIN B are included in the standard range.

Product benefits

+ **Complete range of temperature RTD sensors and transmitters**
+ **Cable and surface temperature sensors**
+ **Customized solutions for special applications**

14.1 OnC TempSens 400
Temperature sensors

OnC TS400

Wide range of different types of temperature sensors for all applications.

- Temperature sensor assemblies with replaceable measuring inserts
- Broad variety of process connections with screw-in, weld-in or flanged thermowells
- Measuring inserts RTD (Pt100) or thermocouple (K or J) in three- or four-wire connection
- Tolerance cl. A and B for Pt100
- Tolerance cl. 1 for thermocouples
- Transmitters head mounted or in rail version
- Signals 4 – 20 mA HART, Profibus PA, IO-link

14.2 OnC TempTrans 422
Two-wire temperature transmitter

OnC TT422 C / R

Multi range two-wire temperature transmitter for resistance thermometers Pt100 for industrial environments.

- Mounting into temperature sensor head (C) or on rail (R)
- Input for 3- wire Pt100
- Output 4 to 20 mA
- Range from -200 °C to +850 °C
- Accuracy ±0,1 °C
- Digital filtering of input signal
- Sensor break and short circuit detection
- Zero- and span- adjustment
- Output simulation
- PC-based configuration (USB)

14.3 OnC TempTrans 453
Two-wire HART temp. transmitter

TT453 C / R

Universal multi range two-wire HART temperature transmitter for resistance thermometers and thermocouples as well as potentiometer applications, for industrial environments.

- Mounting into temperature sensor head (C) or on rail (R)
- Input for 2/3 or 4- wire RTD, thermocouples and potentiometer
- Signal 4 to 20 mA HART
- Range from -200 °C to +850 °C
- High accuracy ±0,08 °C
- Digital filtering of input signal
- Sensor break and short circuit detection
- Built-in NFC for Bluetooth
- Output simulation
- PC-based configuration (USB)

OnC TempSens 400

OnC TempTrans 422 C / R and 453 C / R

15. OnC UniCom
Versatile sensor indicators

The OnC UniCom product range comprises various internal and external indicating and adjustment modules that keep the operating team up to date with all the important process information.

Application

Voith offers a broad range of versatile indicators and displays for signal processing and sensor adjustment. To ensure smooth operation, measuring instruments are employed to deliver a steady flow of up-to-date, objective information about the process to the control and regulation technology. Various hardware components as well as signal conditioning software process and integrate the measurement data. They convert the analogue or digital signals from the measuring instruments into information, i. e. measured values, that are displayed on indicating instruments or fed directly into the control system.

Product benefits

+ Uniform operating philosophy
+ Almost all languages available
+ Intuitive to operate
+ Analogue and digital display mode
+ Shows engineering unit

15.1 Display and control module

UC910

The extremely compact OnC UniCom 910 plug-in display and control module for storage of all settings and calibration data is ideal for permanent or temporary installation, and needs no power connection.

- Innovative technology OnC UniCom 910 control module
- Powered from the sensor: no separate supply required
- Convenient local display and control
- Plug-in mounting in four positions 90 ° displaced
- Permanent storage of calibration data and settings
- Illuminated display for easy reading
- Wide choice of units (e. g. mbar, bar, psi, Pa)
- Comprehensive service and diagnostics functions
- Many different languages selectable
- Optional bluetooth-function for wireless connection via smartphone (iOS / Android)

OnC UniCom 910

15.2 Signal conditioning instrument

UC991

Universal analog or digital programmable signal conditioning instrument.

- Big illuminated display
- Analog Input sensor 4 – 20 mA HART passive with two-wire supply from indicator to sensor
- Analog Input sensor 4 – 20 mA HART active
- Five or six level relays
- Fail safe relay possible
- 0/4 – 20 mA current output
- Dimensions 96 x 96 mm
- USB and Ethernet interface, RS232 for modem
- Data transmission via e-mail and SMS
- Counter (totalizer) function
- Front protection IP65
- Optional wall mounting with separate housing

15.3 Local Indicator for analog signals

DIS82

Measured value display in the field is often desired when measuring level, pressure or other process variables. The DIS82 is suitable for indication and adjustment of analogue sensors with HART protocol. The indicator can be connected to the 4 – 20 mA signal cable at any point. A separate voltage supply is not required.

- Universal 4 – 20 mA current loop field indicator
- No separate power supply needed (2-wire system)
- Robust aluminum field housing IP67 for mounting on the wall, rail or tube
- Local indication of measured values and parameter adjustment
- Plug in display UniCom 910 is used for indication

OnC UniCom 991

DIS82

16. Sensor accessories
The right add-on for every sensor

Certain mounting positions and applications are sometimes hard to realize with out the proper equipment: that is where the Voith sensor accessories come into play!

Application
A large range of accessories is available for the measuring instruments including various process connections, manifold valve blocks, and mounting sets.

The transmitter service valves allow to disconnect a pressure transmitter from the process without interrupting the process.

Product benefits

+ Complementary component to Voith product range
+ Supply from one source

16.1 Manifold valve blocks milled

Manifold blocks

Voith offers a large variety of valves and manifolds with different options. Two, three and five valve manifolds, manifold combinations and multi-way cocks for use on general applications for liquid, gas and steam service. They are suitable for shutting off the impulse lines and for mounting to pressure and differential pressure instruments. These manifold combinations and multi-way cocks are for (1/2 NPT) direct mounting according to DIN EN 61518 or for remote mounting. Process connections are with threads or with pipe fittings.

16.2 Manifold valve blocks forged

Manifold blocks

Process connections with compression fitting or welded connection.

- Multi-way cocks PN100, plug seal made of PTFE carbon
- Manifolds PN420, metal seated, PTFE packing for temperatures up to 200 °C (manifolds for direct mounting 120 °C at the transmitter / manifold interface)
- Graphite packing and sealing rings available for high temperature service
- Purge valves on manifold combinations suitable for temperatures up to 550 °C

16.3 Gauge valves and accessories

Gauge valves and accessories

This product group includes standardized gauge valves, gauge cocks, siphons and gauge supports as well as gauge protectors and gauge snubbers. Apart from the standard materials brass, carbon steel and stainless steel, other materials are available.

Manifold valve blocks milled

Manifold valve blocks forged

Gauge valves and accessories

16.4 Welding sockets and flanges for PT/LT

Process connections

Welding sockets are used to connect level and pressure sensors to the process. In some cases there is a difference between welding sockets for vessels and for pipelines. The welding sockets are used for certain types of instruments, depending on the version. Also, threaded flanges are available.

- Thread fittings and welding rings
- Tri-Clamp connections
- Hygienic fitting
- Bolting according to DIN EN
- Flange connections
- Welding dummies and plugs

16.5 Mounting sets for valve blocks and transmitters

Mounting sets

Included in these sets are mounting brackets with manifold accessories for mounting the manifold to a wall, a tube or a rack. Accessory kits with screws and bolts are supplementary available.

16.6 OnC TransValve 310 Transmitter service valve

TV310

The OnC TransValve TV310 is a ball valve retractable assembly for installation of a pressure and level transmitter on tanks or pipelines. This transmitter service valve makes it simple to disconnect the transmitter from the process for maintenance and cleaning purposes without interrupting the process or draining the tank.

- Nominal pressure PN10
- Flange-mount design: DN 80/3” ANSI 150
- Pipe-mount design: DN 100 to 450 (with pipe adapter)
- For PT182 transmitter with G1“ – Tubus version
- Locking device connectivity

Welding sockets and flanges PT/LT

OnC TransValve 310

Voith Group
St. Poeltener Str. 43
89522 Heidenheim, Germany

Contact:
Phone +49 751 83-2685
fieldinstruments@voith.com
www.voith.com/fieldinstruments