ADCATrol STEAM EQUIPMENT

CONDUCTIVITY PROBE SPS21

DESCRIPTION

The ADCATrol SPS21 conductivity probe is typically used in steam applications to measure the conductivity of superheated boiler water, condensate or feedwater. The probe is used in conjunction with an ADCATrol BCS controller and a VPC series TDS blowdown control valve.
Water contains impurities in the form of dissolved solids and solids in suspension, whose concentration increases during vaporization. Water treatment can reduce impurities to a certain degree, however these are not completely eliminated and, in certain conditions, might even increase. As steam production starts, there is an undesirable increase in boiler water TDS (Total Dissolved Solids) concentration. If not taken care of, the high concentration can lead to problems such as water foaming, reduced boiler performance and wet steam. Contamination of the steam may occur, resulting in system damage further ahead, such as corrosion, scaling, salt incrustations on heat transfer surfaces, among other problems.
Furthermore, the high concentration is harmful and is not acceptable in applications where steam is used for treatment of food, drinks and in sterilization processes.
For these reasons, a certain amount of boiler water must be discharged continuously or periodically to ensure TDS concentration is kept within the recommended parameters.

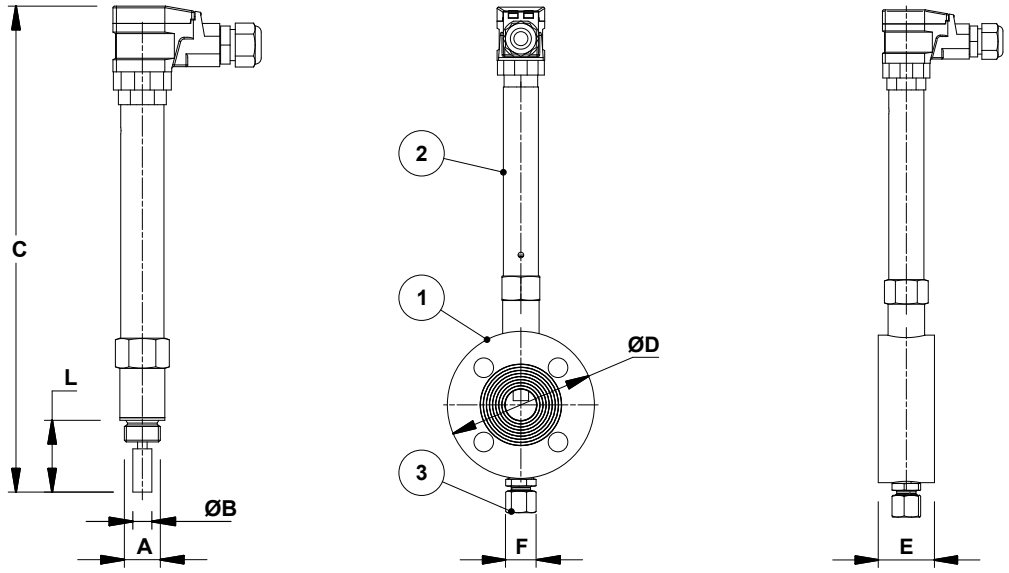


MAIN FEATURES

Compact stainless steel construction.
IP 65 protection.
Wide ambient temperature range up to 100 ºC.

OPTIONS AND ACCESSORIES:	Sensor chamber for sandwiching between flanges as per EN 1092-1 or ASME B16.5.
USE:	Measure conductivity of superheated boiler water, condensate and feedwater.
AVAILABLE MODELS:	SPS21.
SIZES:	1/2".
CONNECTIONS:	Male threaded ISO 228.
INSTALLATION:	Installation in pipes via a sensor chamber. See IMI – Installation and maintenance instructions.

TECHNICAL DATA	
Maximum operating pressure	32 bar
Maximum operating temperature	239 ºC
Maximum ambient temperature	100 ºC
Minimum distance to other metallic surfaces	20 mm
Type of protection	IP 65
Cable entry	M16 x 1,5 (PG 11)



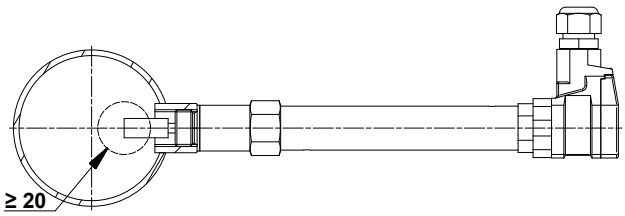
DIMENSIONS (mm)								
MODEL	**A**	**ØB**	**C**	**ØD**	**E**	**F ***	**L**	**WGT (kg) ****
SPS21	1/2"	11	281	115 (DN 25) / 105 (DN 20)	40	1/4"	41,5	0,55

* Optional. ** Probe only, without sensor chamber.

MATERIALS	
DESIGNATION	**MATERIAL**
Probe housing	Stainless steel
Probe rod	Stainless steel
Insulation	PTFE
Electrical connector	Polyamid
Sealing ring	Copper
F2132 sensor chamber	S355JR / 1.0045

MATERIALS	
POS. Nº	**DESIGNATION**
1	F2132 sensor chamber
2	SPS21 conductivity probe
3	Compression fitting for sample collection *

* Optional.

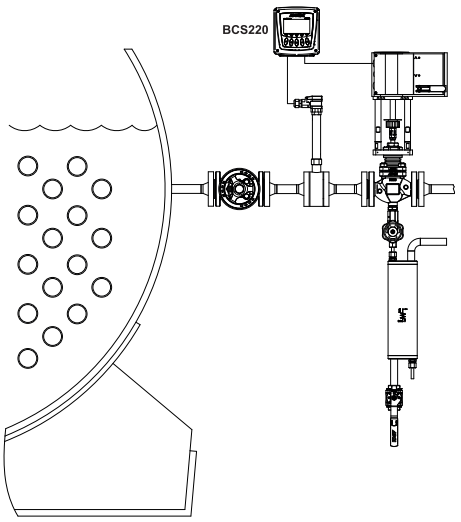


Remark: Probe can be fitted onto a “T” connection or onto the F2132 sensor chamber, providing that it is always in contact with water and wetted parts fully immersed, without air gaps. Any metallic parts near the probe must be at a minimum distance of 20 mm from the central electrode pole. Ensure the connection on the boiler is safely below the boiler low water level.

TYPICAL APPLICATIONS

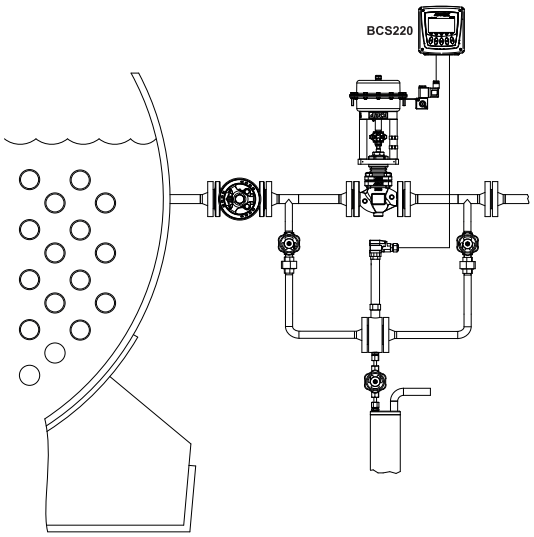
INSTALLATION WITH PROBE FITTED IN THE BOILER BLOWDOWN LINE (INLINE MEASUREMENT)

The VPC series TDS blowdown control valve is programmed to open periodically, in order to purge a certain amount of water and enable a representative sample of boiler water to reach the probe at saturated temperature.
The probe will then measure the electrical conductivity of the boiler water and the controller will compare it with the defined setpoint. If the measured value is below the setpoint the valve will close, otherwise it is kept open until the condition is satisfied. To avoid energy waste due to boiler stand-by, it is recommended to relate the blowdown operation to the burner firing system. It is also recommended to install a heat recovery system (flash vessel, heat exchanger, etc) before connecting the wasted water to the ADCA BEX blowdown expansion vessel.



INSTALLATION WITH PROBE FITTED IN THE BOILER BLOWDOWN LINE (BYPASS MEASUREMENT)

The needle valves are adjusted to ensure a very small continuous flow of water through the bypass and probe chamber. The controller continuously monitors the electrical conductivity of the boiler water, comparing it with the defined setpoints and triggering the valve to open and close accordingly.
To avoid energy waste due to boiler stand-by or low load, it is recommended to relate the blowdown operation to the burner firing system. It is also recommended to install a heat recovery system (flash vessel, heat exchanger, etc) before connecting the wasted water to the ADCA BEX blowdown expansion vessel.



INSTALLATION WITH PROBE FITTED IN THE CONDENSATE RETURN LINE

The controller is programmed to continuously monitor the electrical conductivity of condensate circulated back to the boiler feedwater tank, comparing it with the defined setpoint. A three-way valve is used to divert contaminated condensate if the measured value exceed the setpoint.
The probe chamber ensures that the probe is always in contact with water. It is recommended to install a heat recovery system (flash vessel, heat exchanger, etc) before connecting the wasted water to the ADCA BEX blowdown expansion vessel.

