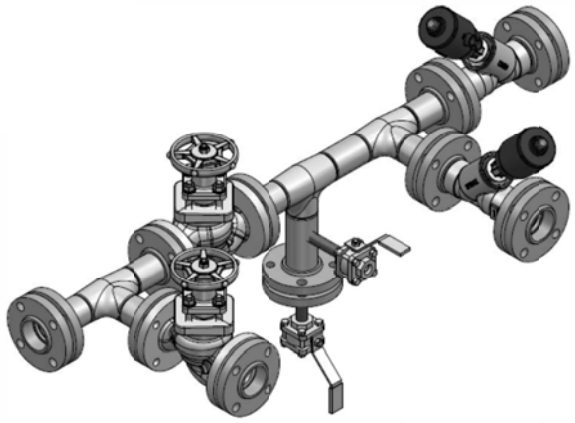
CCDS

Condensate Contamination Detection System

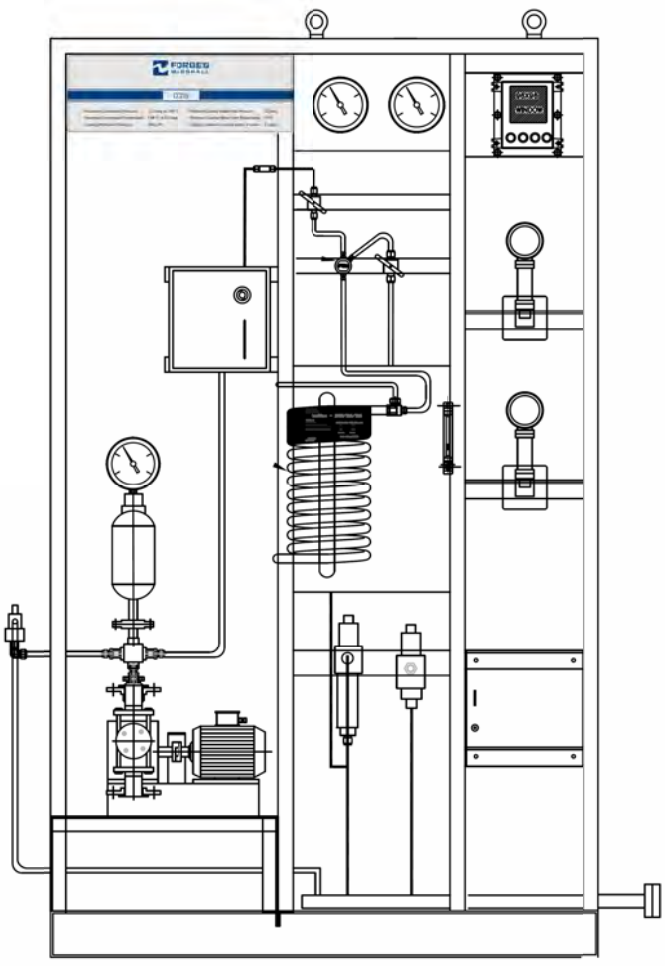
Forbes Marshall CCDS is a compact, ready to install, automatic & online condensate contamination detection system. CCDS is highly efficient & requires low maintenance. It continuously monitors the condensates being returned to boiler & diverts contaminated condensate to drain to ensure that contaminated condensate doesn't reach boiler.

Features and Benefits:

- Avoids boiler damages & product contamination.
- Maximize treated water & energy savings.
- Temperature compensation sensor gives accurate results regardless of condensate temperature.
- Fail-safe protection to ensure that unmonitored condensate does not flow to boiler.
- Fully automatic & continuous monitoring without manual intervention.
- High quality components requiring low maintenance.
- Fully assembled & tested, ready to install system.



CCDS PIPING WITH TWO 2-PORT ON-OFF VALVES



CCDS SAMPLING SYSTEM WITH SENSOR & TRANSMITTERS
(For PH + TDS based CCDS)

Precise Condensate Monitoring:
Forbes Marshall CCDS is designed to provide precise & accurate condensate contamination monitoring. Forbes Marshall microcontroller based 2-WIRE Transmitter, Field Mount Aqua SMARTPro series which assures reliable and continuous measurement of parameters like pH, Conductivity. Forbes Marshall Conductivity Sensor with built-in temperature sensor for automatic temperature compensation. Forbes Marshall pH Sensor a three diaphragm, liquid filled pH electrode, specially designed for pH measurement in pure and ultra pure condensate applications.

Efficient Condensate Recovery:
Whilst it is desirable to return the maximum amount of condensate to the boiler, it is essential to ensure that it is clean. Even low levels of contamination can cause foaming, scaling, or corrosion. The CCDS monitors condensate contamination & automatically diverts the condensate to drain instead of back to the boiler system.

Fail-safe Protection
Forbes Marshall CCDS is supplied with a pneumatically actuated, fail-safe, two 2-port on-off valves that diverts condensate flow to drain in case of power or air supply failure which ensures that unmonitored condensate should not flow to boiler.

Maximum Output for Minimum Footprint :
Forbes Marshall CCDS is supplied as a pre-configured, tested, pre-assembled unit. High quality low maintenance components. Minimal installation time. Trouble free commissioning. With its compact design and low weight, CCDS is easily installed, even in the tightest of spaces. Fits through standard doorway. Saves floor space.

Application Areas:

Pharma, Food, Suger, Paper,Textile, Breweries, Chemical, Petro chemical etc

Pressure and Temperature Limits:

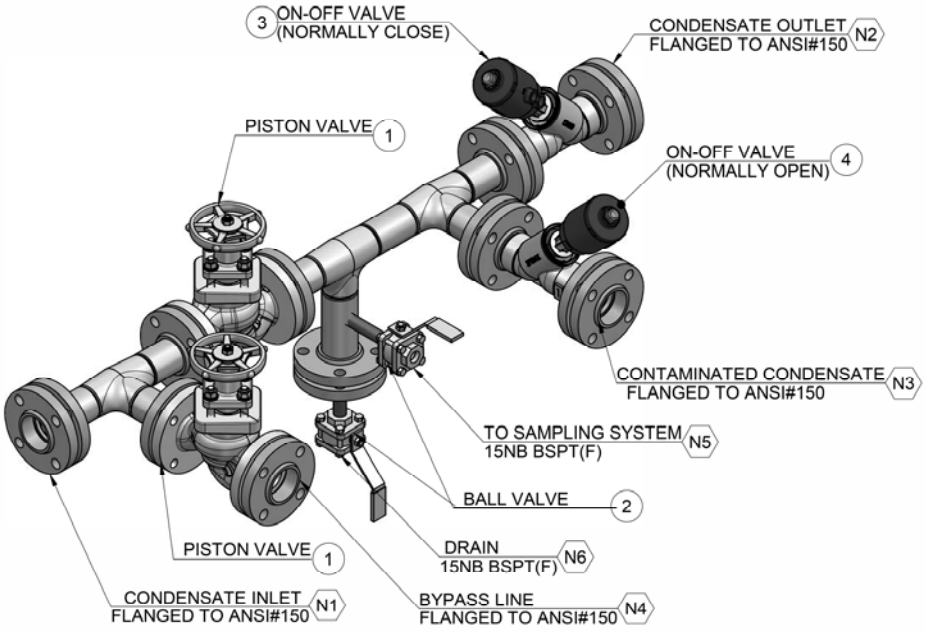
For TDS based CCDS:

Maximum Condensate Pressure : 3.0 barg at 125°C
Maximum Condensate Temperature : 125°C at 3.0 barg

For TDS+PH or PH based CCDS (i.e. with Sample cooler)

Maximum Condensate Pressure : 3.5 barg at 148 °C
Maximum Condensate Temperature : 148 °C at 3.5 barg
Minimum Cooling Water Inlet Flowrate : 350 LPH
Minimum Cooling Water Inlet Pressure : 2.0 barg
Maximum Cooling Water Inlet Temperature : 35 °C
Chloride content in Cooling Water : < 35 ppm

CCDS Piping:



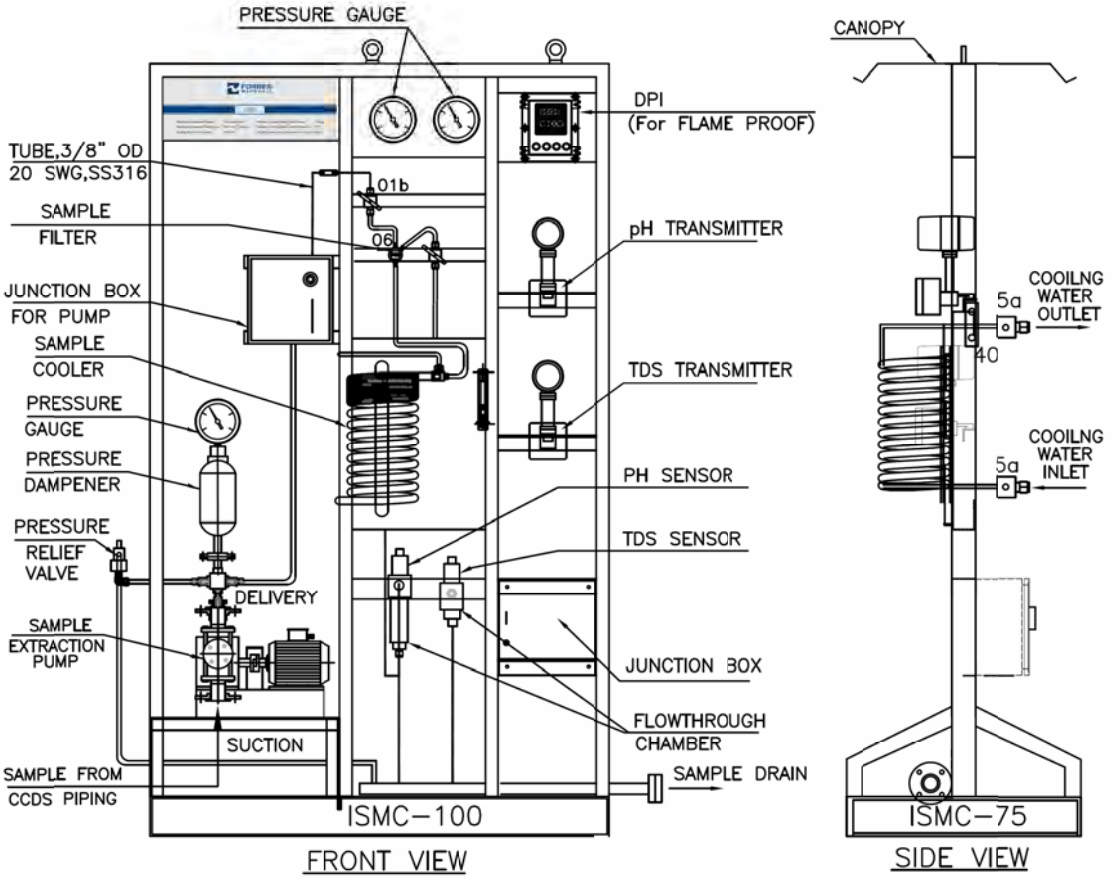
CCDS Piping Components:

Sr. No.	Description	Material		Remark
1	Piston Valve	Body/Bonnet	ASTM A216. Gr. WCB	Size-50NB to 150NB
		Piston	ASTM A276 Type 304	Size-40NB & 50NB
			ASTM A351 CF8	Size-80NB to 150NB
		Packing	Stainless Steel Reinforced Graphite	
2	Ball Valve	Body	ASTM A 105N	Size-15NB
		Ball	ASTM A 351 CF8M	
3 & 4	Pneumatic Actuated On-Off Butterfly Valve with Solenoid Valve	Body	ASTM A216 Gr. WCB,	Size-80NB to 150NB
		Disc	ASTM A351 CF8	
		Seat	Silicon	
	Piston Actuated On-Off Valve with Solenoid Valve	Body/Bonnet	AISI 316L	Size-40NB & 50NB
		TRIM	SS316	
		Packing	PTFE	
		Head	Die Cast Aluminium	
		Insulation	MgO	
5	Pipe		ASTM A106 Gr. B	
6	Flange		ASTM A515/516 Gr.70/ASTM A105	
7	Bolt		ASTM A 193 Gr. B7	
8	Nut		ASTM A 194 Gr. 2H	
9	Gasket	Spiral Wound Gasket	SS304+Graphite x CS (OD Ring)	

CCDS Piping Battery Limit End Connections:

Condensate Inlet Condensate Outlet Condensate Bypass Contaminated Condensate	Flanged end as per ASME B16.5, Class 150, SORF with mating Flanges	Flange Material ASTM A515/516 Gr.70 / IS 2062 Gr. B
Condensate to Sampling System	Screwed BSPT (F)	Ball Valve End ASTM A105

Sampling System for PH+TDS or PH CCDS:



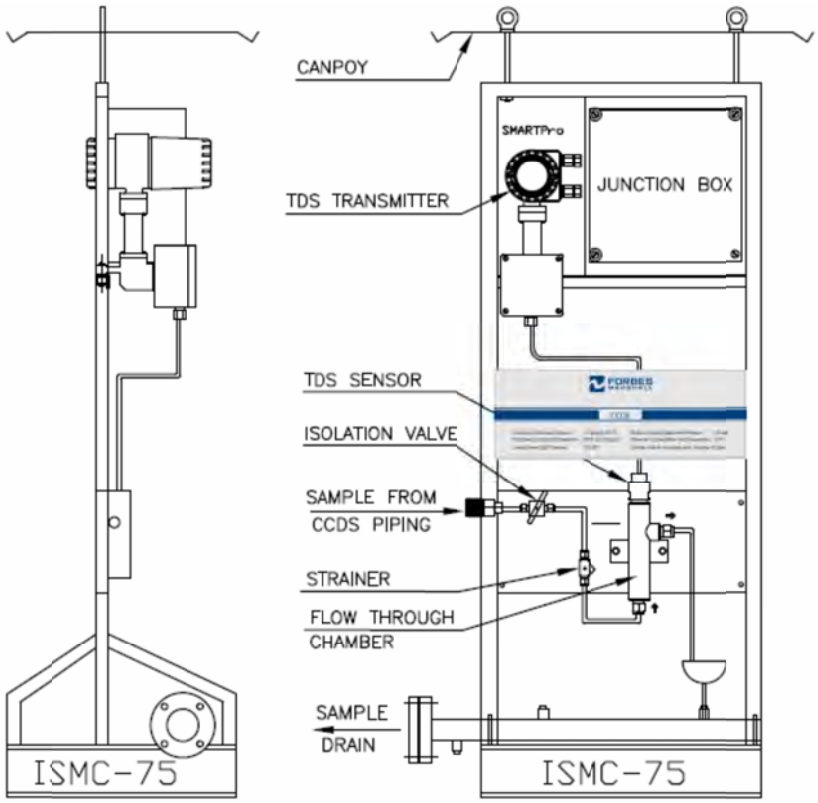
Sampling System Components for PH+TDS or PH CCDS:

Sr. No.	Description	Material	PH+TDS CCDS	PH CCDS
1	TDS Transmitter	Die-cast Aluminum Housing	✓	-
2	pH Transmitter	Die-cast Aluminum Housing	✓	✓
3	TDS Sensor	Body & Electrodes SS316	✓	-
4	pH Sensor	Liquid Filled Glass Tube with Ceramic Diaphragms	✓	✓
5	TDS Sensor Cable	Low-noise, co-axial shielded cable	✓	-
6	pH Sensor Cable	Low-noise, co-axial shielded cable	✓	✓
7	TDS Flowthrough Chamber	SS316	✓	-
8	pH Flowthrough Chamber	SS316	✓	✓
9	Sample Isolation Needle Valve	SS316	✓	✓
10	Sample Filer	SS316	✓	✓
11	Coil in Coil Type Heat Exchanger	SS316	✓	✓
12	Coolant Isolation Ball Valves	Body-SS304, Ball-SS316,Seat-PTFE	✓	✓
13	Temperature Gauge (Capillary Type)	Case-SS304 with SS304/SS316 internals	✓	✓
14	Pressure Gauge	Case-SS304 with SS304/SS316 internals	✓	✓
15	Temperature Switch	Die-cast Aluminum Housing	✓	✓
16	Solenoid Valve	SS316	✓	✓
17	Regulating Valve	SS316	✓	✓
18	Rotameter	Measuring cone-Borosilicate Glass, Wetted Parts-SS316	✓	✓
19	Sample line	3/8" OD, SS316 Tube	✓	✓
20	Sample Extraction Pump Assembly		✓	✓
	- Plunger Type Pump, SS316	Wetted Parts-SS316	✓	✓
	- 'Y' Type Inlet Strainer	SS316	✓	✓
	- Pressure Relief Valve	SS316	✓	✓
	- Discharge Pressure Dampener	SS316	✓	✓
	- Discharge Pressure Gauge	Case-SS304 with SS304/SS316 internals	✓	✓
21	Junction Box- Sample Extraction Pump		✓	✓
22	Junction Box with relay logic & power supply to Transmitters/TS/SOV		✓	✓
	Junction Box for Power Supply to TS/SOV/DPI (for Flameproof CCDS only)			
23	Digital Process Indicator with relay logic (for Flameproof CCDS only)		✓	✓
24	Open Frame Free Standing Panel	CRCA Powder Coated	✓	✓

Sampling System for PH+TDS or PH CCDS Battery Limit End Connections :

Sample Inlet (Pump Suction)	15NB ANSI#150, SORF Flange	SS316
Sample Drain Header Outlet	25NB ANSI#150, SORF Flange	ASTM A105
Cooling Water Inlet	¾" NPT(M)	SS304
Cooling Water Outlet	¾" NPT(M)	SS304

Sampling System for TDS CCDS:



Sampling System Components for TDS CCDS:

Sr. No.	Description	Material
1	TDS Transmitter	*Die-cast Aluminum Housing*
2	TDS Sensor	Body & Electrodes SS316
3	TDS Sensor Cable	Low-noise, co-axial shielded cable
4	TDS Flowthrough Chamber	SS316
5	Sample Isolation Needle Valve	SS316
6	Sample Filer -'Y' Type Strainer	ASTM A105, Screen-SS304
7	Sample line	3/8" OD, SS316 Tube
8	Junction Box with relay logic & power supply to Transmitters	
9	Digital Process Indicator with relay logic (for Flameproof CCDS only)	
10	Open Frame Free Standing Panel	CRCA Powder Coated

Sampling System for TDS CCDS Battery Limit End Connections :

Sample Inlet	½" NPT(F)	SS316
Sample Drain Header Outlet	25NB ANSI#150, SORF Flange, SS316	ASTM A105

CCDS Piping Sizes :	40NB , 50NB, 80NB, 100NB & 150NB

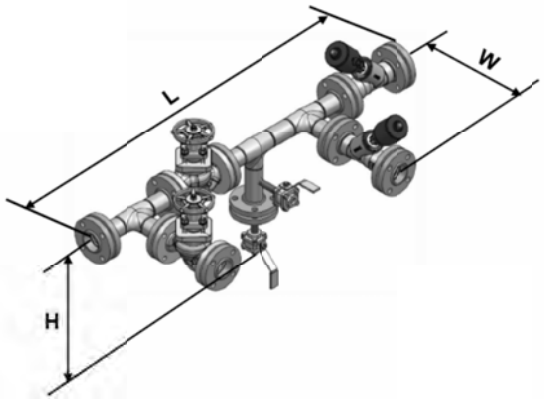
CCDS Type :

Type	TDS Range		pH Range	Weather Proof	Flameproof
	7 to 70 ppm	70-700 ppm	0 – 14 pH	(Standard)	(Gas Group IIA/IIB,T3)
TDS based CCDS	**✓**	**✓**	**-**	**✓**	**✓**
PH based CCDS	**-**	-	**✓**	**✓**	**✓**
PH+TDS based CCDS	**✓**	**✓**	**✓**	**✓**	**✓**

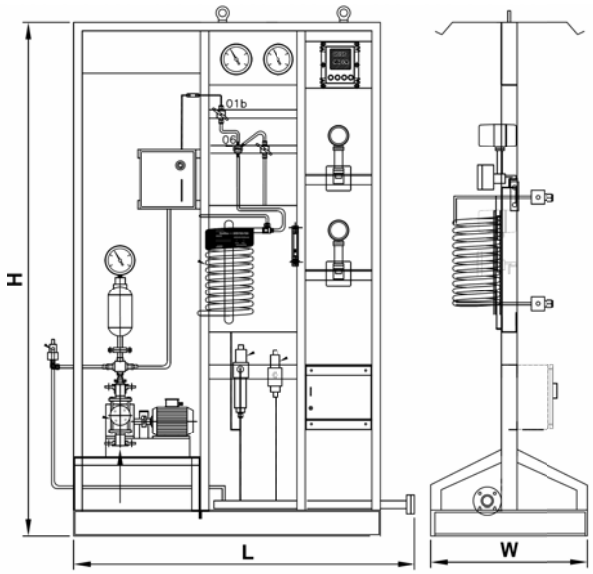
Overall Dimensions:

CCDS Piping :

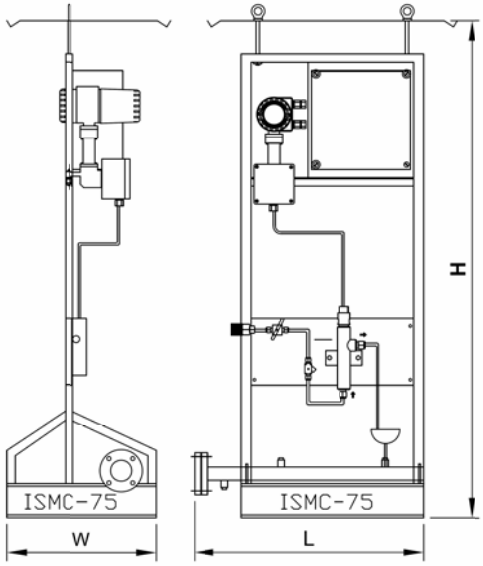
Piping Size	Overall Dimensions, mm (Approx)
40NB	1300L x 500W x 450H
50NB	1400L x 500W x 450H
80NB	1600L x 500W x 550H
100NB	1700L x 600W x 600H
150NB	2100L x 700W x 600H



Sampling System for PH+TDS or PH CCDS



Sampling System for TDS CCDS



CCDS Type	Overall Dimensions, mm (Approx)	CCDS Type	Overall Dimensions, mm (Approx)
PH+TDS or PH CCDS	1800L x 2100W x 700H	TDS CCDS	750L x 450W x 1600H

Electric and Pneumatic Supply:

Power Supply: 230VAC / 50Hz
Instrument Air Supply: 4-6 bar(g)

Power Supply to Sample Extraction Pump:

Weather Proof : 1-Phase, 4-Pole, 230VAC / 50Hz
Flame Proof : 3-Phase, 4-Pole, 380VAC / 50Hz

Piping Work:

All piping work is fabricated using modern welding techniques, approved welders and qualified welding procedures. Flanged products are used where possible for easy maintenance.

How to Order:

Forbes Marshall Condensate Contamination Detection System (CCDS), 50NB ANSI#150 Condensate Line, PH+TDS based, TDS range 70-700ppm, Weather Proof (Standard).

For further details, please contact Forbes Marshall.

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