



Pulse Radar, 138 C/K
Sensing the pulse of Industry

Contents

Features & Benefits	4
Measuring Principle	5
Product Specifications	6
Beam Angle	8
Dead Band & Measuring Range	9
General Arrangement	10
Mechanical Details	11
Mounting Precautions	12
Antenna Selection	13
Ordering Code	14
Proven Track Record	16
Site Photographs	18
Customer Appreciation- Our Success Stories	20
Projects handled	21
Product Overview	22

About SBEM

SBEM was established in 1974 and is INDIA's MARKET LEADER IN LEVEL INSTRUMENTATION. With a beginning in providing Oil companies, with Tank Level Gauging solutions, SBEM has evolved into an organisation offering multiple products based on multiple technologies. SBEM has established itself as a Flow measurement solutions provider.

LEADING-EDGE PRODUCTS

Level Domain:

Pulse Radar
Guided Wave Radar
Ultrasonic
Hydrostatic
Magnetostrictive
Servo
Float & Tape
Capacitance
Conductivity
Float/Displacer
Float & Board
Rotary Paddle
Acoustic Rod

Flow Domain:

Electromagnetic
Ultrasonic

SBEM is an ISO - 9001 certified company, with a DSIR approved R & D Centre. SBEM's core strength is its ability to custom design solutions for each application and customer from every industry including:

Thermal Power

Public Health Engineering

Steel

Cement

Oil Refineries & Gas

Sugar

Edible Oil

Indian Navy

Anything to everything in LEVEL SOLUTIONS

Mission:

To provide Continuous Value Addition to our Customers by offering Reliable, Cost effective and Customized Solutions

Vision:

To become the Preferred Partner and Solution Provider in the Process Control and Automation Industry

SBEM in a capsule:

- 100% indigenous Level Measuring instruments since 1978
- SBEM is now aggressively moving into the Flow measurement domain & has both Electromagnetic & Ultrasonic Flow Meters on offer
- One of first SSI's to obtain ISO 9001 certification in India
- Largest number of installed Tank Farm Management Systems in India
- The only 100% indigenous Servo Gauge in 1992
- Integration of Radar Gauges (other makes) with SBEM Tank Farm Management systems
- Indigenously developed phased Capacitance Level Transmitters and Ultrasonic Switches for Indian Naval Submarines
- Pioneered Magnetostrictive Probes for Automotive LPG Dispensing Stations (ALDS)
- Accurate Magnetostrictive Level Probes for Retail Outlet Automation

What sets us apart from our competition is our extensive application engineering knowledge garnered over 3 decades + of successful supply to users and installations in India and abroad.

Pulse Radar, Series 138



138 C51

138 K55

138 K56

138 K57

138 K59

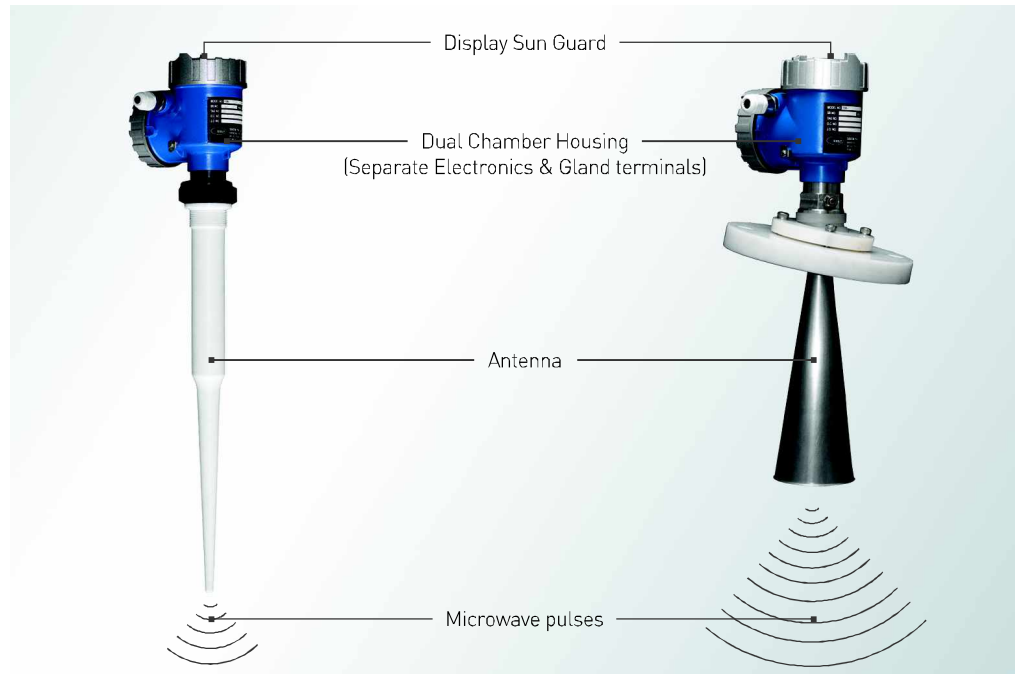
138 K58

Features

- High reliability
- Easy to install
- Narrow Beam Angle
- Maximum measuring range up to 70m
- Best Accuracy of ± 3 mm
- Display Resolution of 1 mm
- High sensitivity for detection of weak echoes in solid applications and from turbulent surfaces
- Penetrate foam, heavy vapours & heavy dust
- Measurement independent of product properties
- Analog 4-20 mA superimposed with HART output for remote operation through SBEM's HARTMATE configuration software
- 2 Wire technology reduces wiring costs
- Level to Volume conversion through HARTMATE configuration software; with 64 points conversion table
- Suitable for process temperatures from -40°C to 200°C & process pressures up to 40 kg/cm^2
- To compensate for the angle of repose of solids, an optional "Aiming device" is available
- For extremely dusty conditions or media tending to create build-up, special "Air purge connection" to be selected
- Horn antenna can be provided with protective PTFE cover which prevents dust from sticking to the radiating portion of antenna
- Dual chamber construction helps isolation of electronics from gland terminals
- False echo storage function to select only true echoes for accurate level measurement
- Graphical display
- No moving parts
- Maintenance free
- For control room indication, Model 176 may be used and for tank side indication in field, Model 103HTL may be used (Optional).

Your Benefits

- Suitable for both solids and liquids
- With wide range of antennas, solution for all applications including foaming, fuming, heavy vapours /dust, pressurized tanks etc.
- Prompt installation and commissioning assistance
- Well qualified engineers to understand your requirement after site survey and provide solution for every application



Measuring Principle

Microwave signals are generated and transmitted via an antenna. These signals travel through the antenna propagating the signal into the atmosphere. The signals then travel to the target and are reflected back to the instrument. Time of Flight is measured to determine distance (level).

Applications

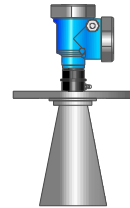
- ▣ Coal Bunkers
- ▣ Fly Ash Silos
- ▣ Iron Ore Silos
- ▣ Coke Silos
- ▣ Cement Silos
- ▣ Food grains
- ▣ Sugar Bins
- ▣ Evaporators & Batch Pans
- ▣ Acid Tanks
- ▣ Dolomite
- ▣ Coarse Coal
- ▣ Feed Coal
- ▣ Charcoal bins
- ▣ DRI product bins

Industries

- ▣ Power
- ▣ Cement
- ▣ Steel
- ▣ Chemicals & Fertilizers
- ▣ Sugar
- ▣ Food
- ▣ Edible Oil

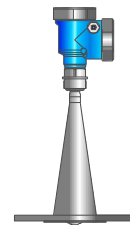
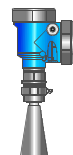


Models Liquids 6.3 GHz



Model	138C51	138C52	138C53
Application	Liquid Level measurement, preferably for corrosive media under moderate fuming and foaming conditions.	Liquid Level measurement, preferably for corrosive media under moderate fuming and foaming conditions and certain temperature or pressure limits	Liquid level measurement in dams, reservoir, Storage tanks / process vessel under high temperature or pressure limits
Max. Range	30m	30m	30m
Accuracy	+/- 10mm	+/- 10mm	+/- 10mm
Process Connection	1½" BSP	PTFE Loose flange with stud end	Flanged SS 316
Antenna Material	PP/PTFE	PTFE	SS 316/PTFE
Process Temperature	-40 to 120°C	-40 to 150°C	-40 to 200°C
Process Pressure	≤ 3kg/cm ²	≤ 16kg/cm ²	≤ 40kg/cm ²
Operating Frequency	6.3 GHz	6.3 GHz	6.3 GHz
Output	4 - 20 mA, 2 Wire [HART-Optional]	4 - 20 mA, 2 Wire [HART-Optional]	4 - 20 mA, 2 Wire [HART-Optional]
Dead band	400mm	400mm	400mm

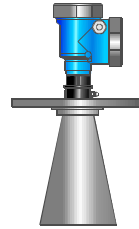
Models Liquids 26 GHz



Model	138K55	138K56	138K57
Application	Liquid Level measurement, preferably for corrosive media acidic applications with moderate fumes	Liquid Level measurement, Palm oil, fatty acids, mild corrosive liquids, oil and water separator under high temperature or pressure limits	Storage tanks / process vessels under high temperature or pressure limits
Max. Range	10m	30m	20m
Accuracy	≤ 3mm	≤ 3mm	≤ 3mm
Process Connection	1½" BSP	1½" BSP	Flanged SS 316
Antenna Material	PTFE	SS 316/PTFE	PTFE
Process Temperature	-40 to 130°C	-40 to 200°C	-40 to 150°C
Process Pressure	≤ 3kg/cm ²	≤ 40kg/cm ²	≤ 16kg/cm ²
Operating Frequency	26 GHz	26 GHz	26 GHz
Output	4 - 20 mA, 2 Wire [HART-Optional]	4 - 20 mA, 2 Wire [HART-Optional]	4 - 20 mA, 2 Wire [HART-Optional]
Dead band	250mm	400mm	Nil

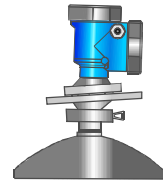
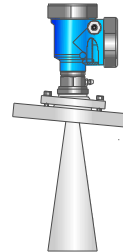


Models Liquids 6.3 GHz



Model	138C54
Application	Storage tanks / Process vessels under high temperature or pressure conditions
Max. Range	70 m
Accuracy	+/- 20 mm
Process Connection	Flanged SS 316
Antenna Material	SS 316 / PTFE
Process Temperature	-40 to 200° C
Process Pressure	≤ 40 kg/cm ²
Operating Frequency	6.3GHz
Output	4 to 20 mA, 2 Wire (HART - Optional)
Dead band	400 mm

Models Solids 26 GHz



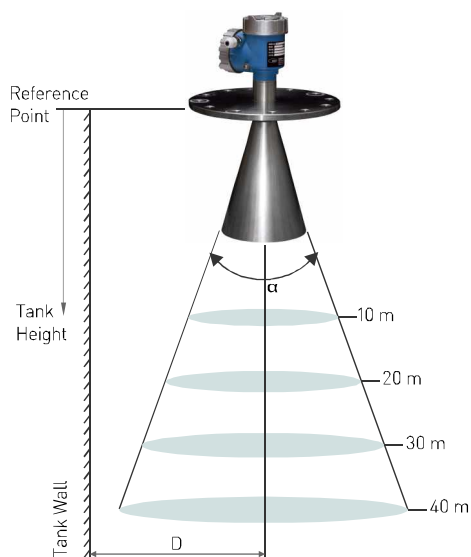
Model	138K58	138K59
Application	Coal, Cement, fly ash, Clinker, Gypsum, Storage tanks / Process vessels in dusty media, with or without aiming device.	Product with low dielectric constant and Large tank height, Storage tanks / Process vessels under heavy dusty media
Max. Range	70 m	70 m
Accuracy	≤ 15 mm	≤ 15 mm
Antenna Material	Flanged SS 316 / 1 1/2" BSP	Flanged SS 316 / 1 1/2" BSP
Process Connection	SS 316 / PTFE	SS 316 / PTFE
Process Temperature	-40 to 200° C	-40 to 200° C
Process Pressure	≤ 16 kg/cm ²	≤ 16 kg/cm ²
Operating Frequency	26GHz	26GHz
Output	4 to 20 mA, 2 Wire (HART - Optional)	4 to 20 mA, 2 Wire (HART - Optional)
Dead band	400 mm	400 mm

SPECIFICATIONS (Common to all models)

- Power Supply: 16 - 36 VDC
- Display Resolution: 1 mm
- Updation interval: 1 sec
- Terminations: Suitable for conductor Size 1.5 mm²
- Material
 1. Housing: Aluminium, polyurethane painted
 2. Window: Polycarbonate
 3. Ground Terminals: Stainless Steel
- Housing: Dual chamber/ IP 67
- Cable Entry: 1/2" NPT

Beam Angle

The Beam Angle (α) is defined as the angle at the point where the energy density of radar waves becomes half the value of the maximum energy density at centre. This path must be clear (no obstacles) for measurement.



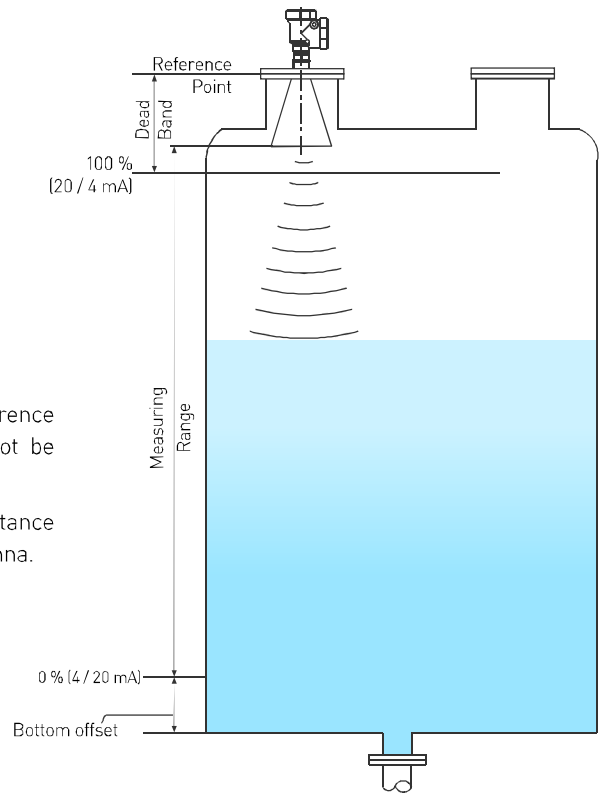
Model	Horn Dia./ Flange	Maximum Measuring Range	Beam Angle (α)
138 C51	-	30 m	24°
138 C52	-	30 m	24°
138 C53	Ø 100 mm Ø 200 mm Ø 250 mm	30 m	20° 16° 14°
138 C54	Ø 150 mm Ø 200 mm	70 m	20° 16°
138 K55	-	10 m	22°
138 K56	Ø 48 mm Ø 78 mm Ø 98 mm	30 m	18° 12° 8°
138 K57	DN 50 Flange DN 80 Flange DN 100 Flange	20 m	18° 12° 8°
138 K58	Ø 48 mm Ø 78 mm Ø 98 mm Ø 123 mm	70 m	18° 12° 8° 6°
138 K59	-	70 m	4°

Tank Height from the flange (reference point), m	Recommended MINIMUM clearance from the tank wall 'D' , mm									
	$\alpha = 4^\circ$	$\alpha = 6^\circ$	$\alpha = 8^\circ$	$\alpha = 12^\circ$	$\alpha = 14^\circ$	$\alpha = 16^\circ$	$\alpha = 18^\circ$	$\alpha = 20^\circ$	$\alpha = 22^\circ$	$\alpha = 24^\circ$
3	120	165	220	330	380	435	490	540	595	650
6	220	325	425	645	745	855	965	1070	1175	1290
9	325	485	640	960	1120	1280	1440	1595	1760	1930
12	430	640	850	1270	1485	1700	1920	2130	2345	2565
15	540	786	1060	1585	1855	2120	2390	2660	2930	3200
20	710	1055	1410	2115	2470	2825	3180	3540	3900	4265
25	890	1325	1760	2635	3080	3530	3975	4420	4870	5330
30	1060	1585	2110	3165	3695	4230	4770	5300	5840	6390
35	1240	1845	2460	3690	4310	4930	5560	6180	6815	7450
40	1410	2105	2810	4215	4920	5630	6350	7065	7785	8515
45	1585	2365	3160	4745	5535	6340	7140	7945	8760	9575
50	1760	2630	3510	5270	6150	7040	7940	8830	9730	10640
55	1940	2895	3860	5795	6760	7740	8730	9710	10695	11700
60	2110	3155	4210	6320	7380	8445	9520	10595	11670	12765
65	2275	3425	4560	6845	7990	9145	10310	11475	12645	13883
70	2460	3680	4910	7370	8600	9850	11110	12355	13615	14890

Dead Band & Measuring Range

Dead Band is the zone below the top reference point within which measurement cannot be made.

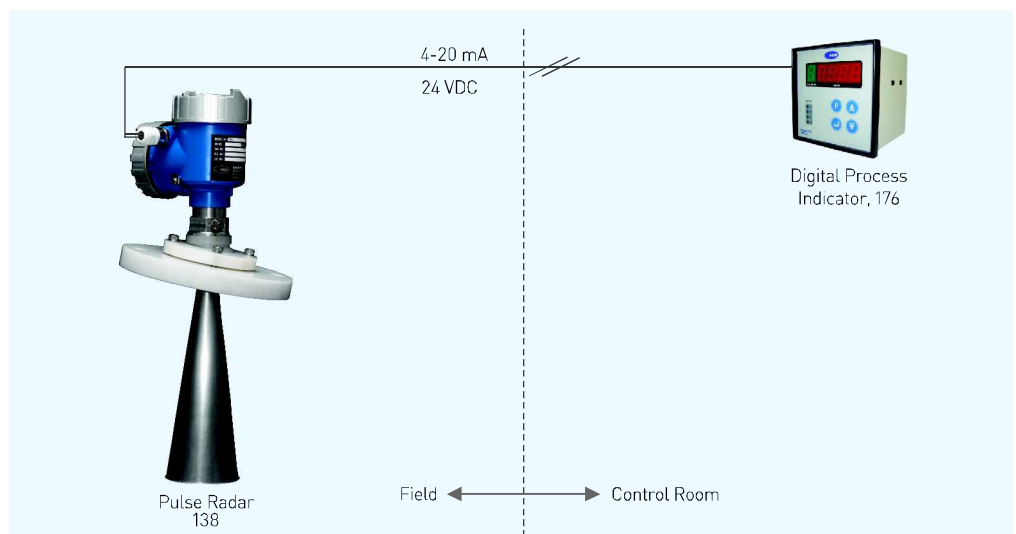
Measuring range is the maximum distance measurable from the face / tip of the antenna.



General Arrangement

4-20 mA Analogue Output

The system shows a 138 Pulse Radar with 4 - 20 mA output & requires only a single pair of wires and an auxiliary power supply (24 VDC) for its operation. Digital Process Indicator, Model 176 with built in 24 VDC power supply eliminates use of a separate power supply unit. Up to 4 nos. relay outputs (optionally) are available in 176 Digital Process Indicator which can be used further for operation of digital devices like motors, pumps, valves, etc. Analogue and digital (MODBUS) output are available optionally in 176.

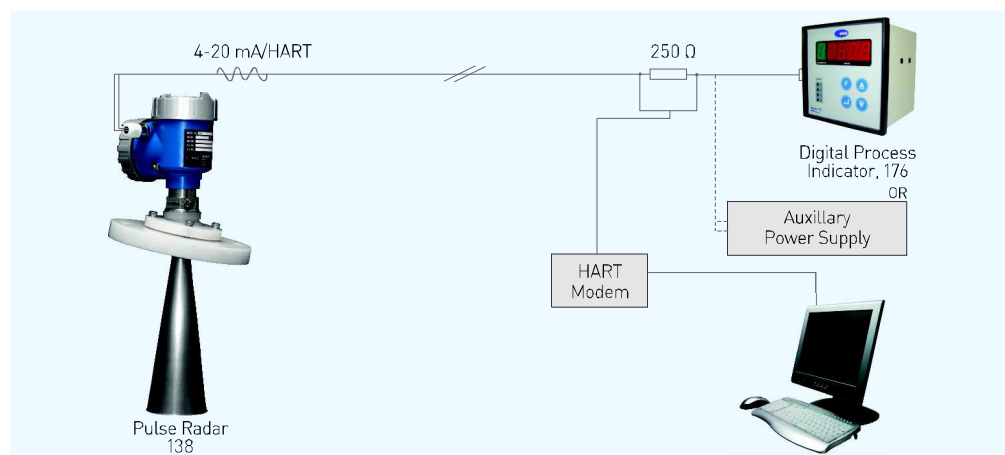


General Arrangement

4-20 mA with Digital (HART) Output

One transmitter in one loop (Point - to - Point mode of operation)

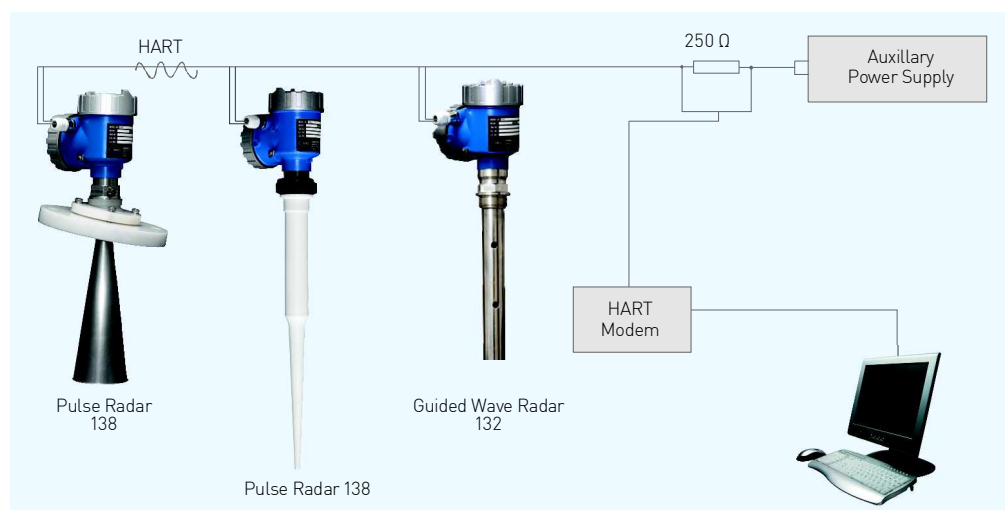
The system shows a 138 Pulse Radar in point-to-point mode of operation and requires only a single pair of wires and an auxiliary power supply (24 VDC) for its operation. Digital Process Indicator, Model 176 with built in 24 VDC power supply eliminates use of a separate power supply unit. Up to 4 nos. relay outputs (optionally) are available in Digital Process Indicator which can be used further for operation of digital devices like motors, pumps, valves, etc. The HART compatible software is installed in the computer which enables it to act as the master to communicate with (send commands to / read data from) the 138 Model through the HART Modem. The HART Modem is connected to the computer through USB port or serial port.



Multiple digital (HART) transmitters in one loop (Multidrop mode of operation)

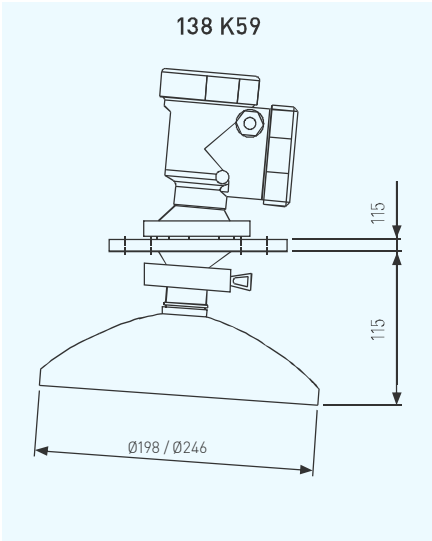
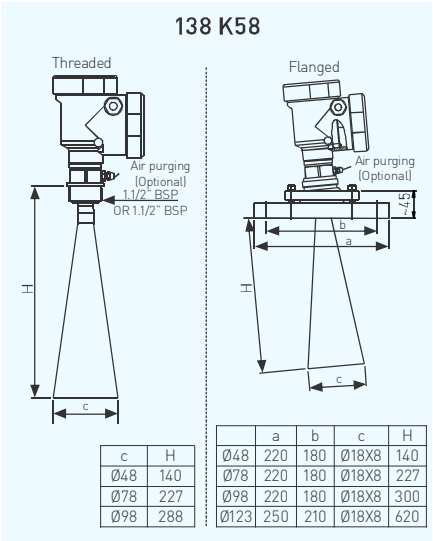
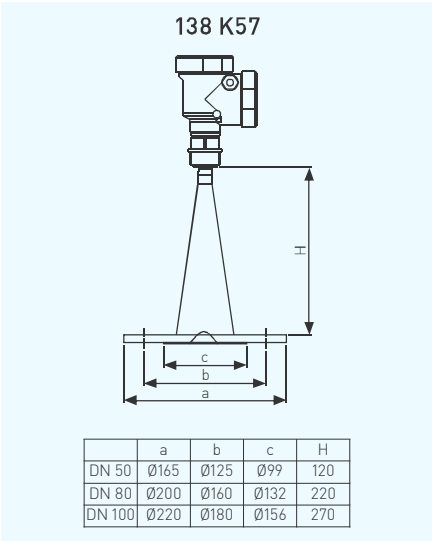
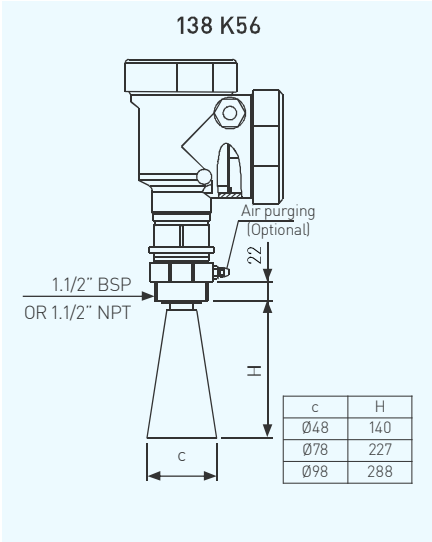
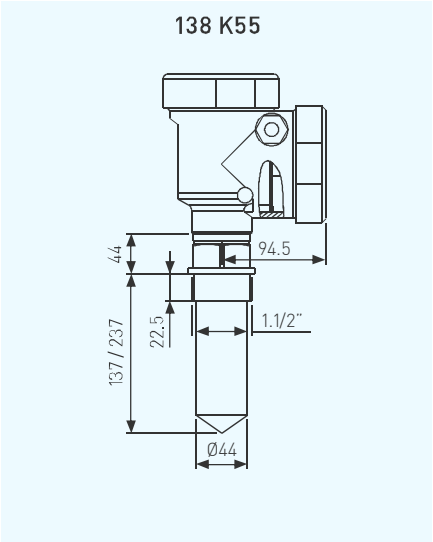
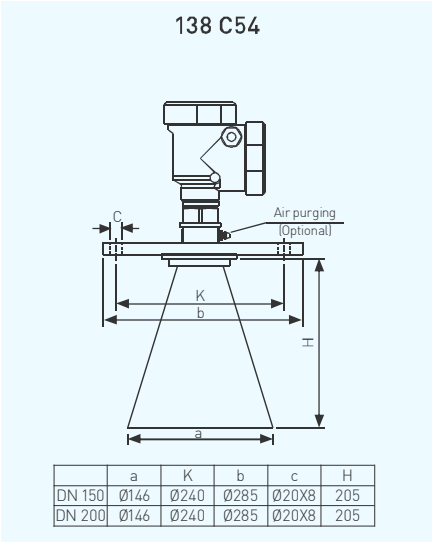
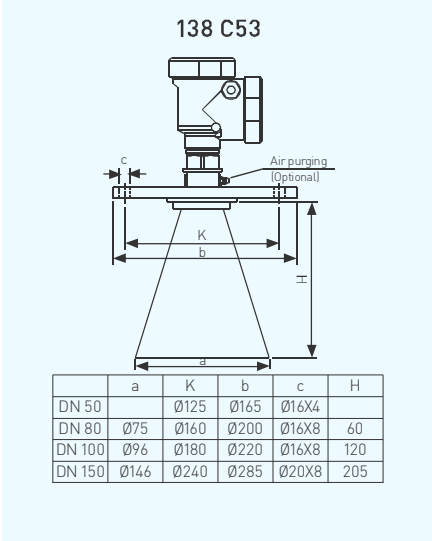
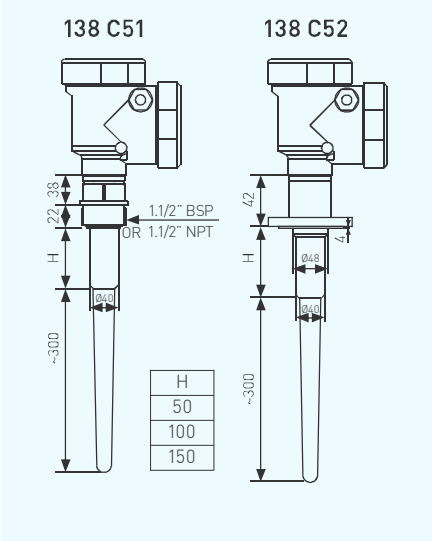
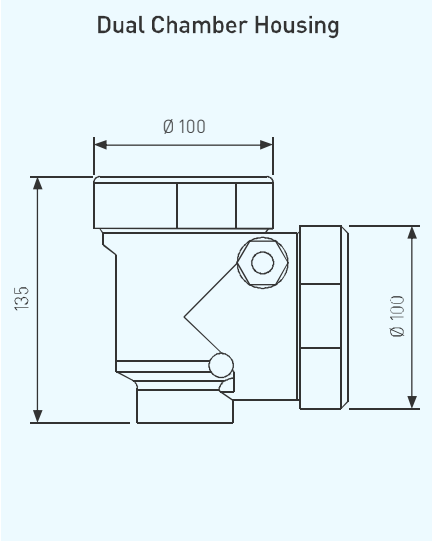
The multidrop mode of operation requires only a single pair of wires and an auxiliary power supply for up to 15 transmitters, 138/ 136/ 132 in one loop. All process values are transmitted digitally. In multidrop mode, all field device (138/ 136/ 132) polling addresses are > 0 , and the current through each device is fixed to a minimum value (typically 4 mA). The system shows various type of transmitters in multidrop mode of operation and requires only a single pair of wires and an auxiliary power supply (24 VDC) for its operation. The HART compatible software is installed in the computer which enables it to act as the master to communicate with (send commands to / read data from) the transmitters through the HART Modem. The HART Modem is connected to the computer through USB port or serial port.

A maximum of 15 transmitters can be connected to one HART modem.



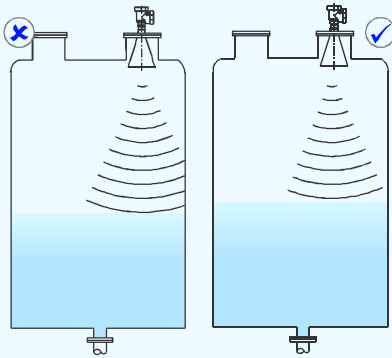
Maximum 15 field instruments (SBEM Pulse Radar, 138 &/or 136 ULT &/or 132 GWR) in one loop

Mechanical Details



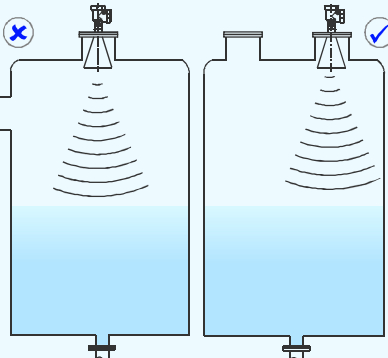
Mounting Precautions

Position



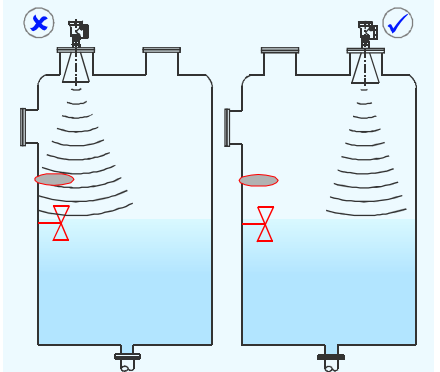
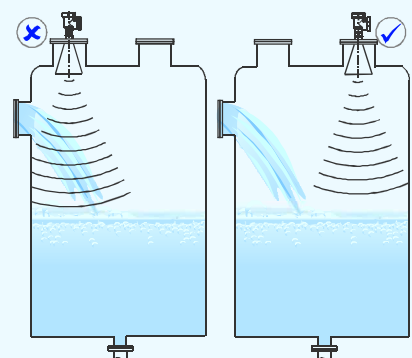
The necessary beam should not touch the tank wall. Please refer Beam Angle on page 8

Position



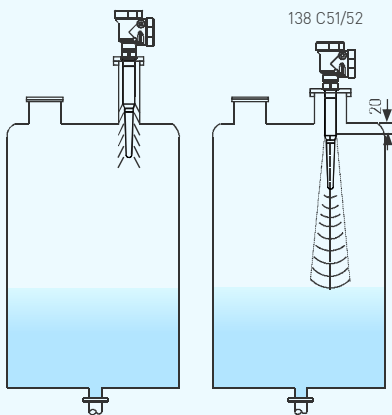
Do not position at the tank centre line. It causes multiple reflections and results into incorrect measurement. Recommendation, especially for dome shaped tanks.

Obstructions



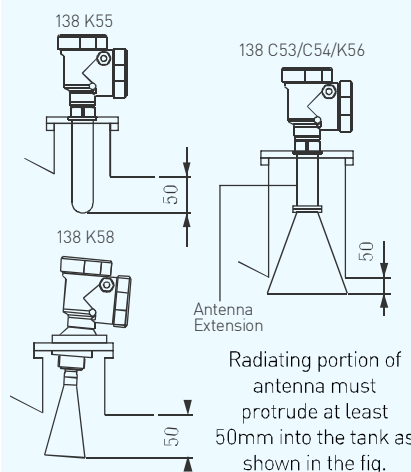
Inflow path, objects (e.g. ladders, cooling pipes etc.) or uneven tank wall surface should not protrude into sensing cone of pulse radar.

Exposure of antenna tip/ face into the tank



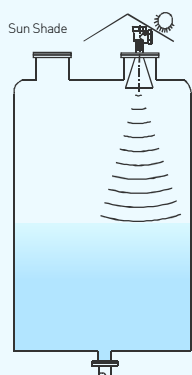
Radiating portion of antenna must protrude at least 20mm into the tank as shown in the fig.

Exposure of antenna tip/ face into the tank



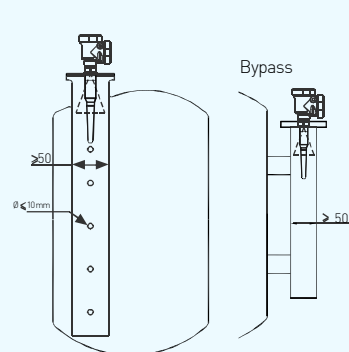
Radiating portion of antenna must protrude at least 50mm into the tank as shown in the fig.

Direct Sunlight



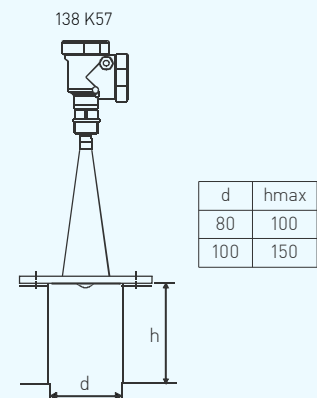
Make sure that the Pulse Radar is protected against direct sunshine.

Use in still pipes



Rod type antenna, when used with still pipes, the minimum diameter of the still pipe must be ≥ 50 mm. For Horn type antenna, it must be $>$ horn diameter.

Maximum nozzle height



Antenna Selection

It is essential for specific application, installation requirements to be evaluated and the correct antenna type be selected. The SBEM range of radar antenna include:

- Horn and Parabolic antennas - suited for solid applications like coal, cement, food grains, etc.; also well suited for liquid applications
- Rod antenna - specifically suited for very aggressive products - corrosive and highly condensing products

- Wave guide antenna - suitable for bullet tanks and small containers (Refer leaflet for 132 GWR)

Basic Criteria for Antenna selection

- Service - Solid/Liquid
- Beam Angle
- Measuring Range
- Dead Band
- Process Connection
- Mounting requirements
- Operating conditions

For free space applications, it is essential that the horn extends below the nozzle. The general rule for diameter selection is "the larger, the better," as a larger diameter of the antenna generates a narrower beam.

- "Aiming Device" to compensate for the angle of repose of the solid material
- "Air purge connection" for extremely dusty conditions or media tending to create build-up



138 K59



The parabolic antenna is the largest free space antenna with the smallest beam angle. It is ideal where the location of the nozzle is close to tank walls. The parabolic antenna is also an excellent choice on products with a low reflectivity.

- "Aiming Device" available
- "Air purge connection" available
- Smallest beam angle of 4°

The rod antenna is ideal for tanks where only small diameter nozzles are available and tanks containing condensing products (or heavy water condensation) or corrosive products, as the rod is easy to clean and has good "drip-off" properties. The "inactive" length of the antenna should extend below the nozzle (see P-9)



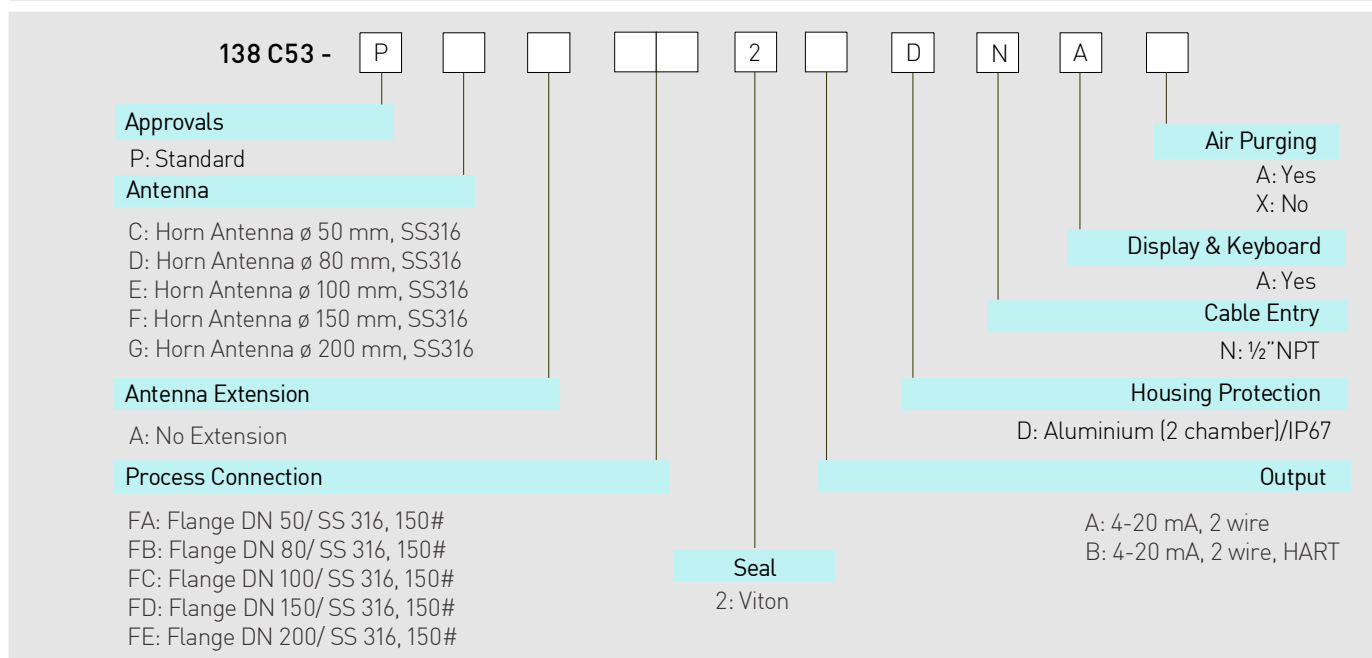
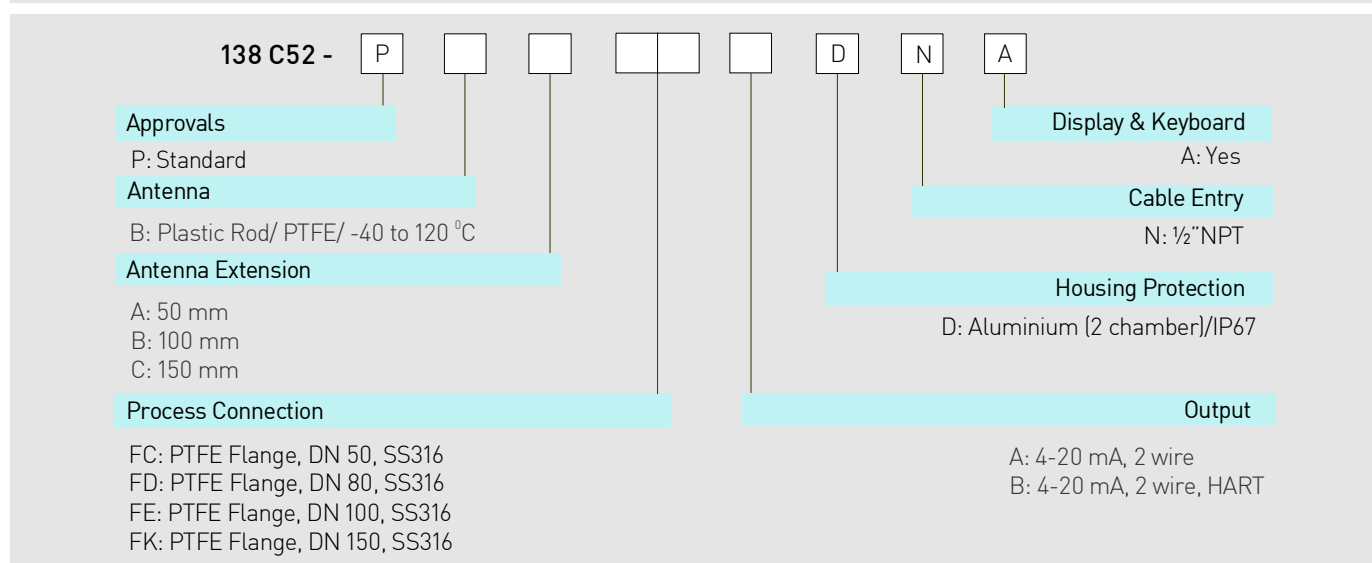
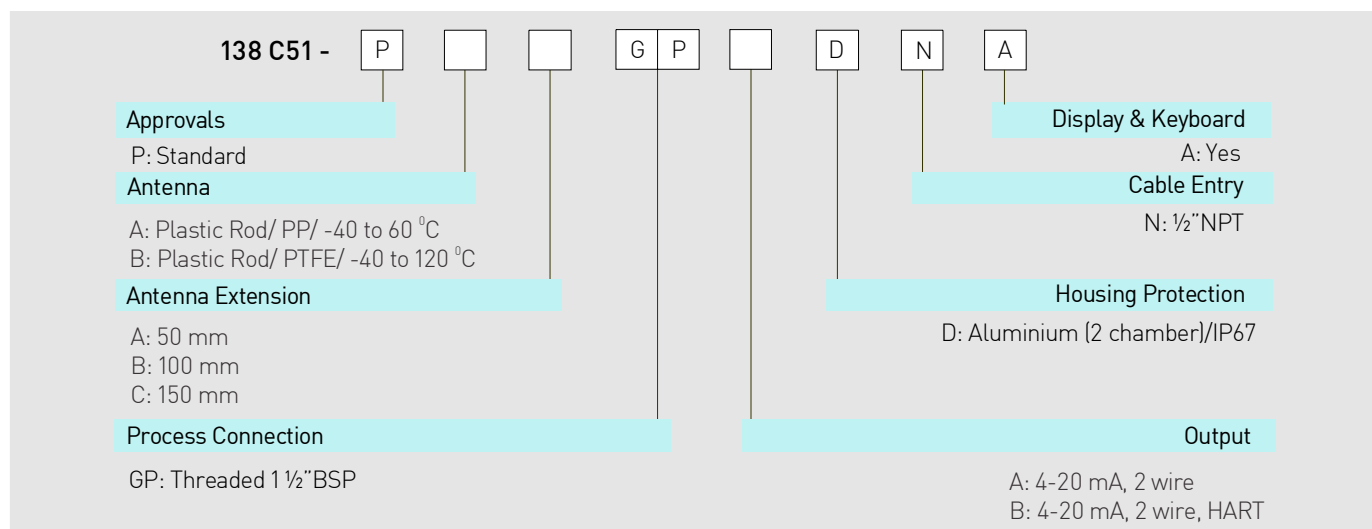
138 K57



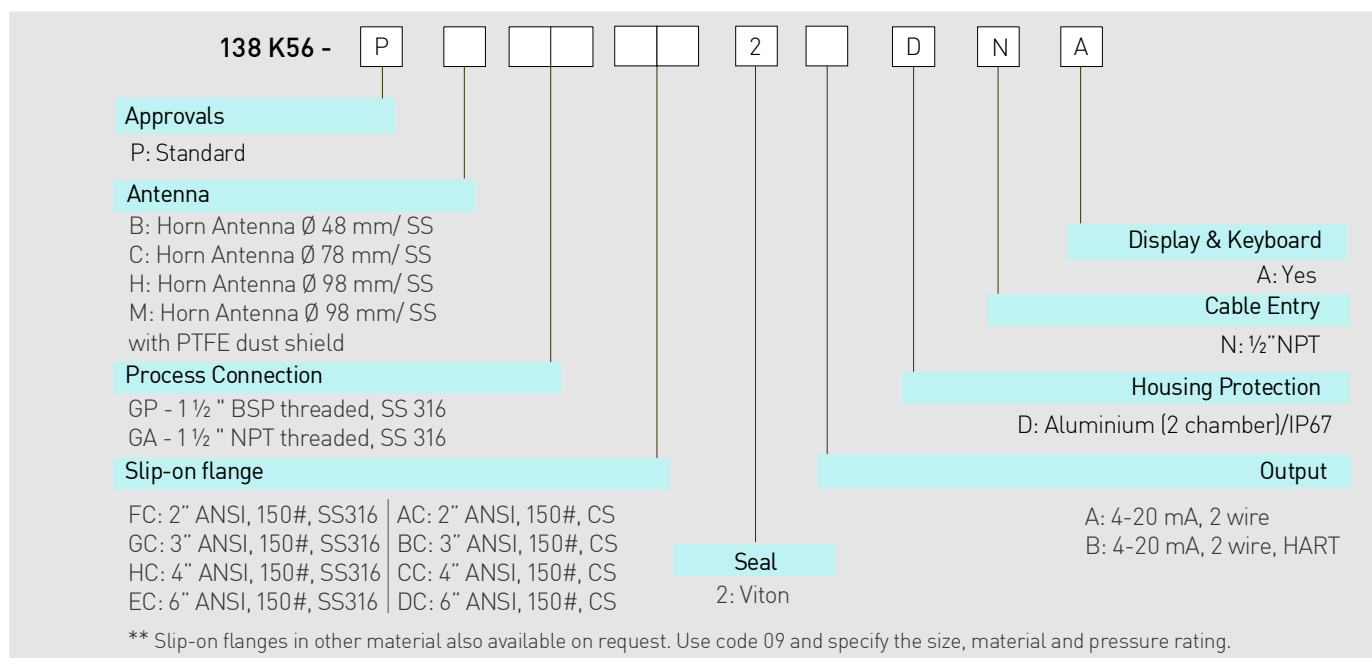
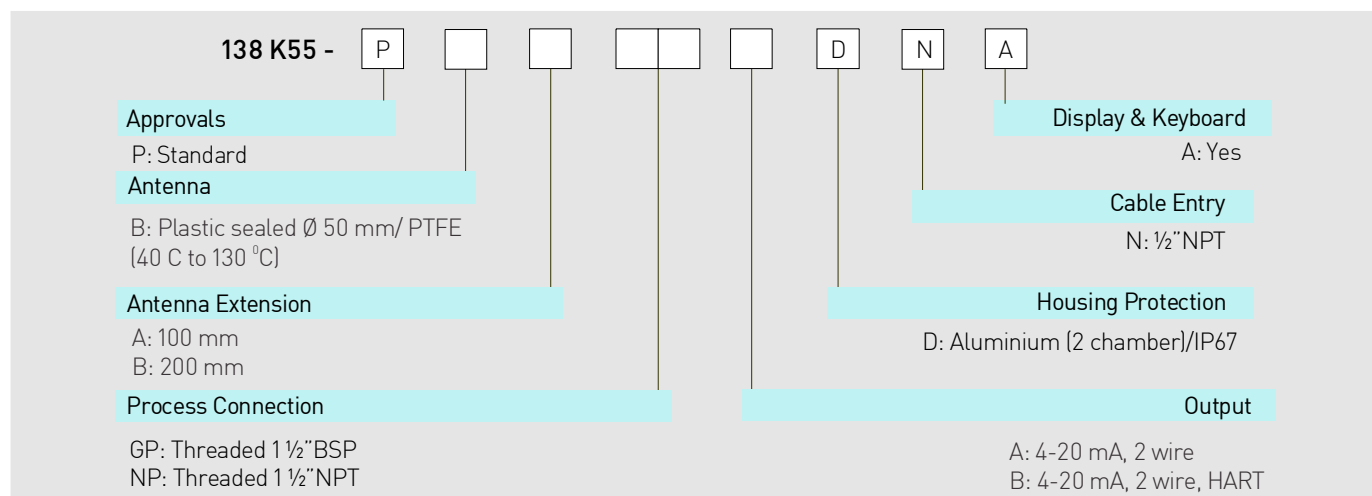
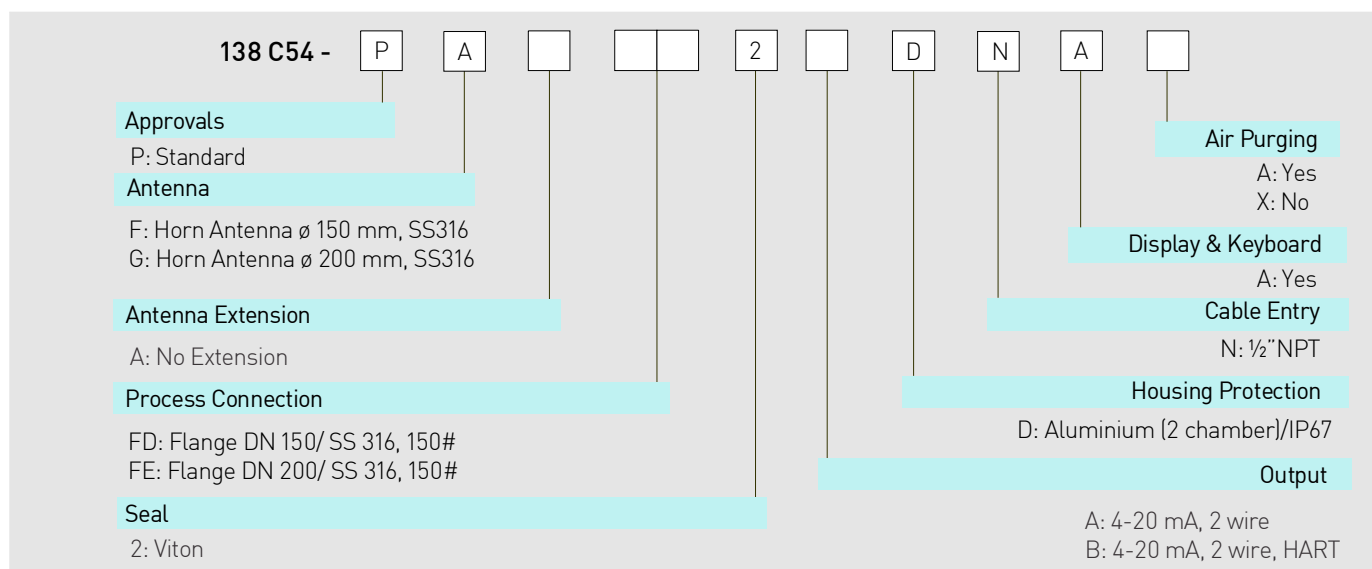
Most suitable antenna type for moderate operating conditions and small tanks. Also works in corrosive duties.

- High Accuracy of $\leq 3\text{mm}$
- No dead band

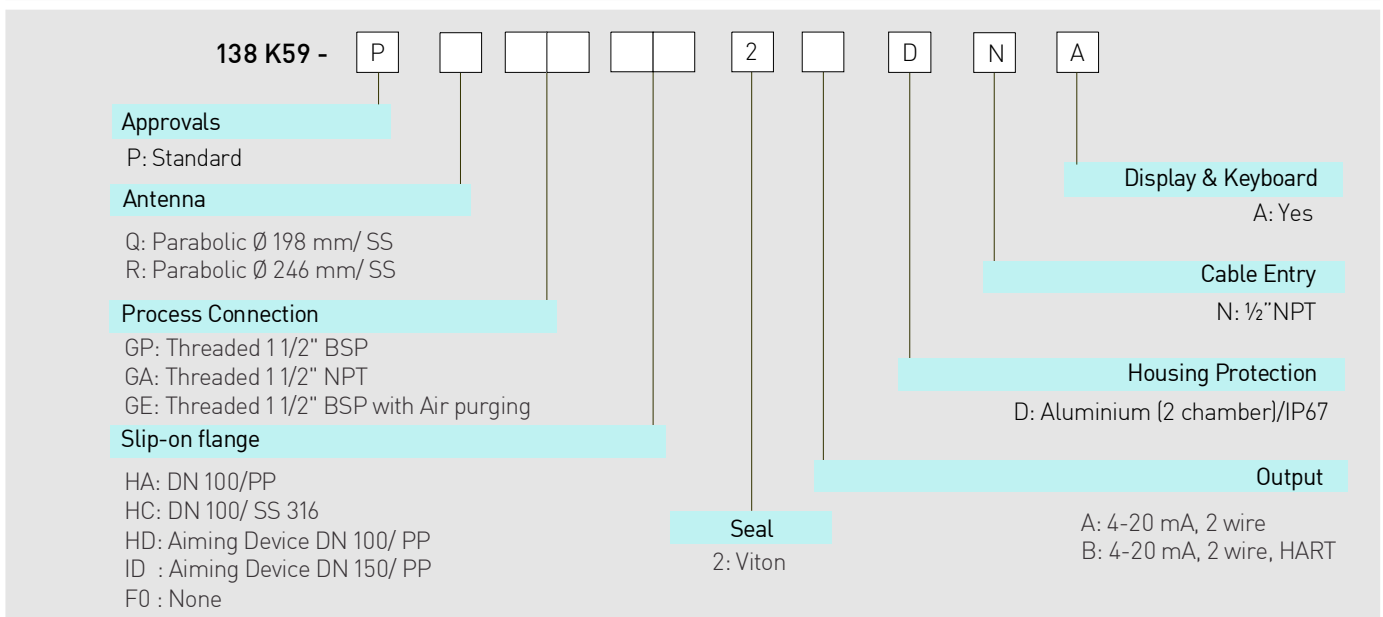
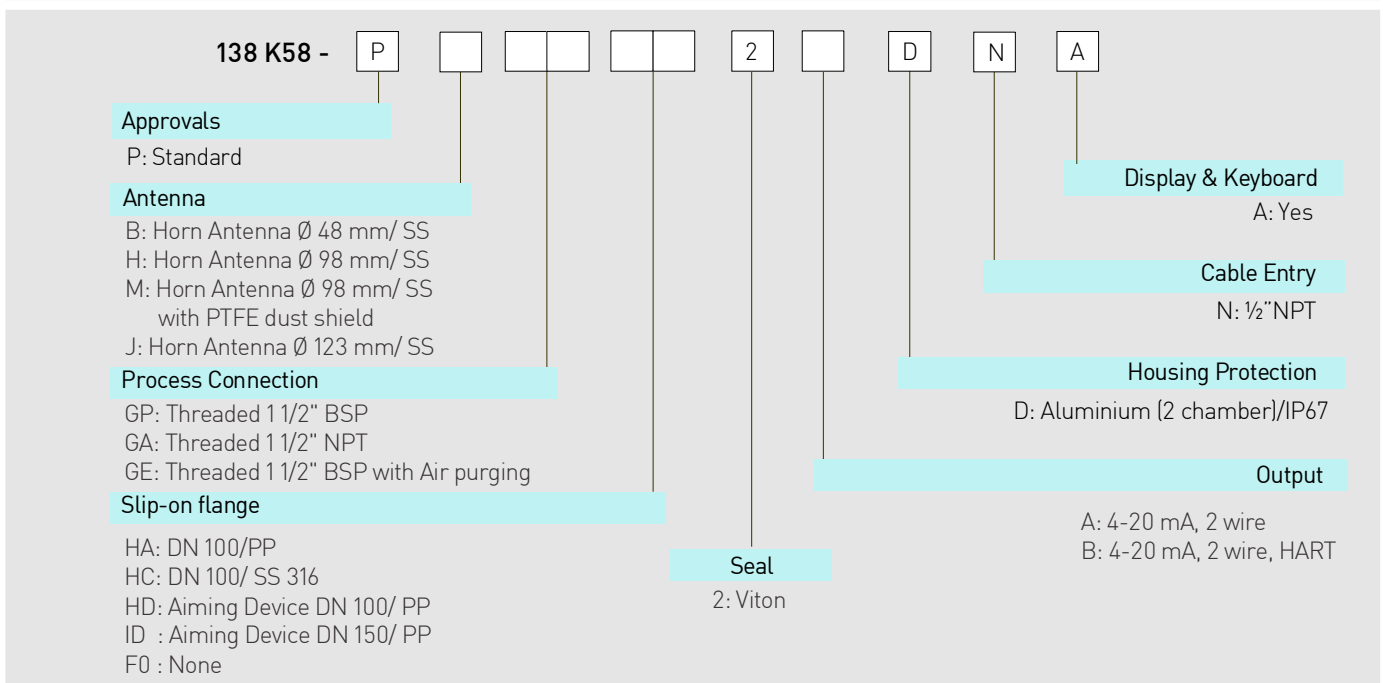
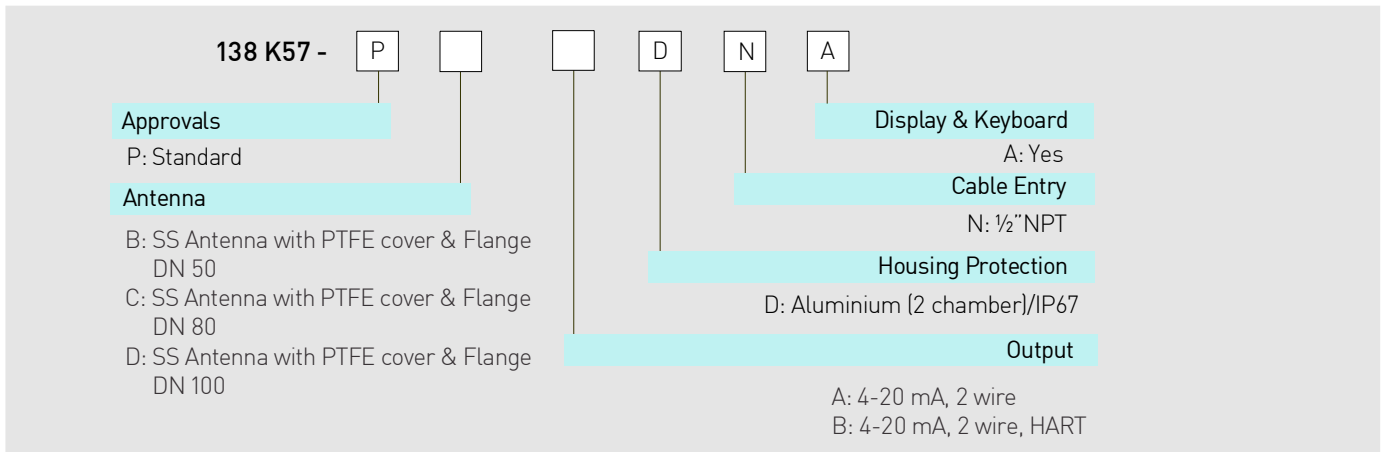
Ordering Code



Ordering Code



Ordering Code

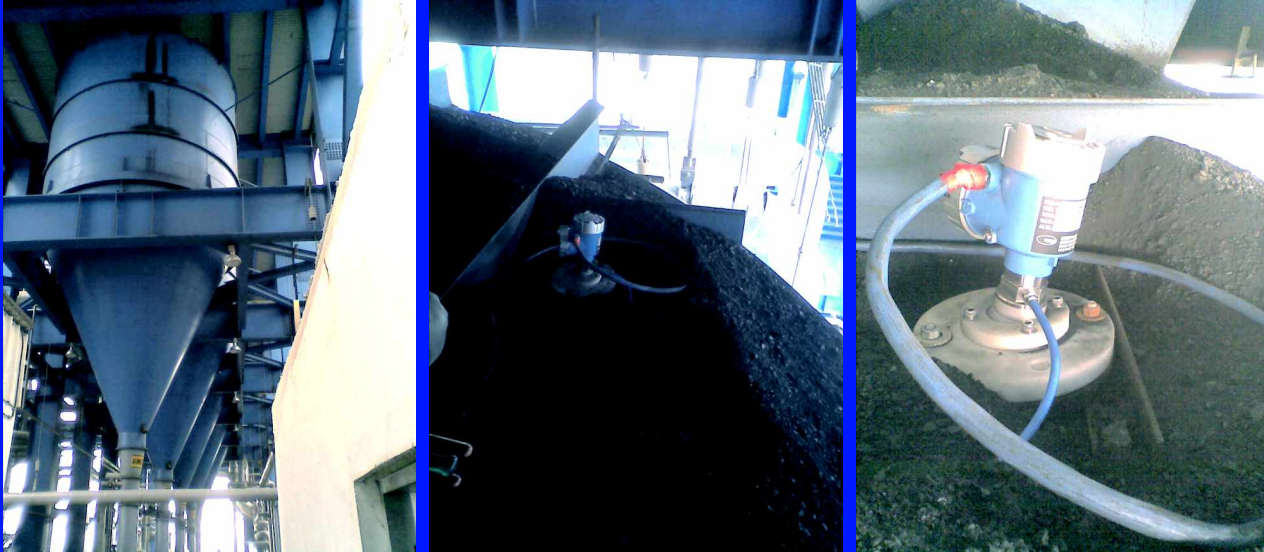


Proven Track Record

Sr. No	Client Name	Item Codes	Application	End User	Date of Supply
1	24HR Ind'l Resources, Philippines	138 K58	Coal Bunker	24HR Ind'l Resources	4/9/2012
2	Aarti Steels Ltd.	138 K58	Coal Bunker	Aarti Steels Ltd.	16/12/2012
3	ABB Ltd., Bangalore	138 K58, 138 K56	Coal Bunker	Coastal Energen Private Ltd. (CEPL)	24/12/2011 05/09/2012
4	Adani Power Ltd.	138 K58	Coal Bunkers and Fly Ash	Adani Power Ltd.	[Trial -12/07/2010] 19/02/2011 21/07/2011 31/01/2012
5	Advanced Systek Pvt. Ltd.	138 K56	Water	HPCL- Ghatkesar	07/02/2011
6	Avantha Power & Infrastructure Ltd.	138K58	Fly Ash	Avantha Power & Infrastructure Ltd.	17/02/2012
7	Babulal Jain & CO.	138 K58	Coal Bunker	Not known	24/02/2012
8	BGR Energy System (India) Ltd.	138K55	Bulk Acid Storage Tanks, HCL	APGENCO Ltd. (1X500 MW Kakatiya TPP)	18/09/2012
9	Bhushan Steel Ltd.	138 K55	Liquid Ammonia Water & Tar	Bhushan Steel Ltd.	Under execution
10	Clariant Chemicals (India) Ltd.	138 C55	H2SO4	Clariant Chemicals (India) Ltd.	05/10/2012
11	Dalkia India Ltd.	138 C51	H2SO4	Kanhan Water works for Nagpur Municipal Corporation	30/09/2012
12	Enmas GB Power Systems Projects Ltd.	138 K58	Coal Bunker	Sarda Metals & Alloys Ltd. Vizag,	27/12/2011
13	Enviro Bulk Handling Systems Pvt. Ltd.	138 K58	Fly Ash	Not known	18/03/2011
14	Enviro-Abrasion Resistant, Pune	138 K58	Coal Bunker	JSPL, Raigarh	27/06/2009
15	Fowler Westrup (India) Pvt. Ltd.	138 K58	(i) Rice Silo (ii) Grain and De Oiled Rice Brawn silos	Iskcon	02/02/2012 14/02/2012
16	Grauer and Weil (India) Ltd.	138 K56		BARC Tarapur	Under execution
17	HEG Ltd.	138 K58	Coal Bunker	HEG LIMITED Graphite Division Plant	23/06/2012
18	Hind Electrical Co., Vapi	138 C53	Chemical	Sabero Organics, Gujarat	22/06/2012
19	Honeywell Automation India Ltd.	138K56, 138K58	(i) Water (ii) Coal, Dolomite, Iron Ore, DRI Fines, DRI Lumps	(i) HPCL Ennore TA Project (ii) Abhijeet Group (2 x 30 MW CPP + DRI Plant)	24/09/2012 09/02/2012 05/11/2012 One under execution
20	Indorama Synthetics (I) Ltd.	138 K58	Coal Bunker	Indorama Synthetics (I) Ltd.	28/12/2011 One under execution
21	ION Exchange (I) Ltd.	138K55	Bulk Acid Storage Tanks & Acid Dosing /Mixing Tanks in DM Water Plant	MPGENCO Ltd. (2 X 250 MW, Satpura Thermal Power Station)	31/10/2011
22	JSW Steel Ltd.	138 K58	Coal Bunker	JSW Steel	25/02/2012 30/09/2011 27/04/2010 22/8/2009
23	KSE Ltd.	138K58		KSE Ltd.	07/07/2012
24	MAHAGENCO Ltd.	138 K58	Coal Bunker	MAHAGENCO Ltd., Paras Thermal Power Station, Paras	31/03/2011
25	Orissa Sponge Iron & Steel Ltd.	138K58	Sponge Iron	Orissa Sponge Iron & Steel Ltd.	Under execution
26	OSM Engineering Pneumatic	138 K58	Fly Ash		30/12/2010 14/07/2010
27	Parasakthi Cement Industries	138K58	Cement Silo	Parasakthi Cement Industries	16/11/2011 18/07/2012
28	Pretech Automation Pvt. Ltd.	138 K58	Soap Noodles	Wipro	24/03/2012
29	Punjab State Power Corporation Ltd.	138 K58	Raw Coal Bunker	PSEB, Guru Nanak Dev Thermal Plant Bathinda - 151 002	Performance Certificate received
30	Reliance Energy Ltd.	138C53	Water	Reliance Energy Limited	31/03/2011
31	Reliance Infrastructure Ltd.	138C53	(i) FGD Service Water Tank & Sea Water Bearing Cooling Tank (ii) Fly Ash Slurry (iii) High-Tide & Low-Tide level measurement of Arabian Sea	Reliance Infrastructure Ltd.	22/10/2011 31/01/2011 27/04/2010

Our Multi- Speciality Product Having Presence Across Various Sectors

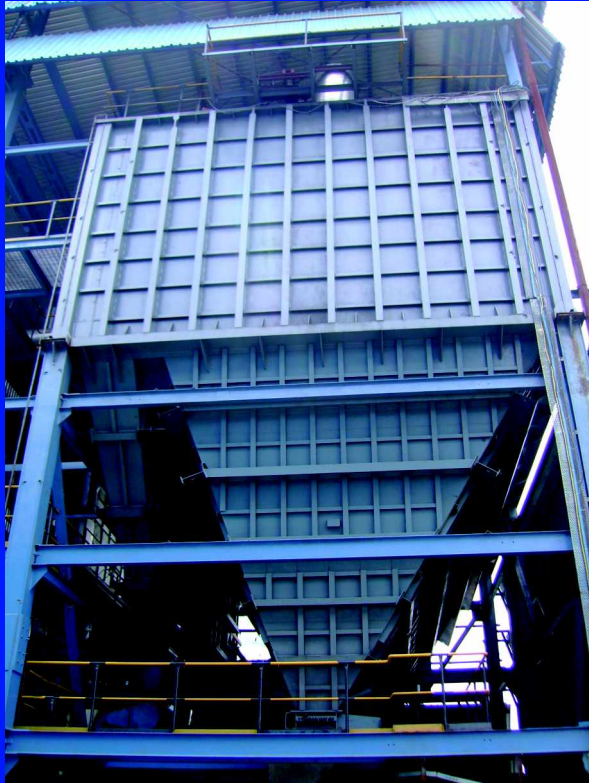
Adani Power Limited, Mundra - Coal Bunker



Adani Power Limited, Mundra - Fly Ash Silos



JSW Limited, Tarapur Coal Bunker



NTPC-SAIL Power Company Pvt. Ltd.



MSP Metallica Ltd. -
Filter Cake
(Iron Ore Fines Magnetic)




Reliance Power, Dahanu



Customer Appreciation- Our Success Stories

Our biggest motivation is customer satisfaction. Words of appreciation from our customers not only make us happy, but drive us

for further innovation and better service. A token of appreciation from our customers- our hard earned reward.

 **ADANI**

Adani Power Limited
Village : Tundra & Siracha,
Taluka : Mundra,
District : Kutch,
Gujarat - 370 435, India.


01 Dec 2010

TO WHOMSOEVER IT MAY CONCERN


This is to certify that the SBEM make Pulse Radar, Model 138 K58 are commissioned on coal bunker and fly ash silo @ M/s Adani Power Ltd., Mundra on 12 July 2010.

The performance of the transmitters is continuously verified and found satisfactory till date.

For Adani Power Ltd.


Rajesh M. Bhanarkar
Sr. Manager (O & M) C & I
Mobile: 09687660404

Registered Office: Adani House, Near Mitakhali Circle, Navrangpura, Ahmedabad 380 009, Gujarat, India
Fixed: 91-(2838)-226600
Fax: 91-(2838)-226601
Email: info@adaniigroup.com
Website: www.adaniigroup.com

 **ENVIRO-ABRASION RESISTANT ENGINEERS PVT. LIMITED**

Address: "ENVIRO HOUSE", Sector 26,
Plot No F/12, Near Sambhaj Chowk,
Nigdi - Pradhikaran, Pune - 411 044
Tel. No. : +91-20-27641747, 27641757,
27641462, 27641463
Fax : +91-20-27650318
E-mail : info@enviroabrasion.com

26 Nov 2010


TO WHOMSOEVER IT MAY CONCERN

This is to certify that the two SBEM make Pulse Radar (Radar type bunker level transmitters), Model 138 K58 are commissioned on coal bunkers @ M/s Jindal Steel & Power Ltd., Tanmar, Raigarh on 14 May 2010. Which were supplied against system P.O. No. P0904000010 dt 10.04.2009.

The performance of the transmitters is continuously verified and found satisfactory till date.

For Enviro Abrasion Resistant Engineers Pvt. Ltd.



Pradip Rana
HOD- Purchase
97300 79849


N.R. Pandit
G.M.-Purchase

Factory : Gat No 1605, Plot No. 1-12, Dehu Alandi Road, Chikhali, Pune - 412 114.
Tel. No.: +91-20-27495551/52/57 Fax : +91-20-27495558
Website: www.enviro-abrasion.com

DATED
NSIC - CRISIL SE 28

स्टील ऑथॉरिटी ऑफ इण्डिया लिमिटेड
(भारत सरकार का उपक्रम)
बिलाई इस्पात संयंत्र
बिलाई 490 001 (छत्तीसगढ़)
e-mail : sailbsp@sancharnet.in

 **Steel Authority of India Limited**
(A Govt. of India Enterprise)
BHILAI STEEL PLANT
BHILAI - 490 001 (Chhattisgarh)
फैक्स / FAX : 0788-2222890, 2223491


No. INST/OPR/3.10/12/196
Dated: 28/06/2012

TO WHOMSOEVER IT MAY CONCERN


This is to certify that the SBEM make Pulse Radar, Model 138 K58 is installed on sinter bunker - junction house 32, @ Bhilai Steel Plant, Steel Authority of India Ltd. (SAIL), Bhilai, Chhattisgarh on 04/04/2012, vide letter No. BSPL/DEMO dated 2nd March 2012.

The performance of the transmitter is continuously verified and found satisfactory till date.

for STEEL AUTHORITY OF INDIA LTD.
BHILAI STEEL PLANT


(Piyush Kumar)
DGM I/c (Instn)
अवकाशदाता प्रमुख
आयोजना एवं मापन विभाग
भिलाई इस्पात संयंत्र

आप हमारे साथ बिस्वी में भी एक सफल बन सकते हैं।
पंजीकृत कार्यालय : इस्पात भवन, कोठी रोड, नई दिल्ली - 110 003 Regd. Office : Ispat Bhawan, Lodhi Road, New Delhi - 110 003

 **JSW Energy Limited**

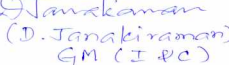
Village - Nandiwade Post - Jaigad,
Tal. & Dist - Ratnagiri - 415 614,
Maharashtra, India
Phone : 02357-242 501 to 505
Fax : 02357-242 508
Website : www.jswin

Date : 4.4.12


TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s SBEM Pvt. Ltd., Pune has installed 2 Nos. Radar Level Gauges, Model 138 K58 at JSW Energy plant at Jaigad, Ratnagiri, on coal bunkers dated 26/11/2011.

The Performance of Radar Gauges are found working satisfactorily since installation.


(D. Janakiraman)
GM (I & C)
For JSW ENERGY LIMITED - Ratnagiri.

Regd. Office : Jindal Mansion,
S.A. Dr. G. Deshpande Marg,
Mumbai - 400 026
Phone : 022-2351 3000
Fax : 022-2352 6400

 **JINDAL** Part of O. P. Jindal Group

SBEM in a capsule:

- 100% indigenous Level Measuring instruments since 1978
- SBEM is now aggressively moving into the Flow measurement domain & has both Electromagnetic & Ultrasonic Flow Meters on offer
- One of first SSI's to obtain ISO 9001 certification in India
- Largest number of installed Tank Farm Management Systems in India
- The only 100% indigenous Servo Gauge in 1992
- Integration of Radar Gauges (other makes) with SBEM Tank Farm Management systems
- Indigenously developed phased Capacitance Level Transmitters and Ultrasonic Switches for Indian Naval Submarines
- Pioneered Switched Resistance and Magnetostrictive Probes for Automotive LPG Dispensing systems (ALDS)
- Accurate Magnetostrictive Level Probes for Retail Outlet Automation
- What sets us apart from our competition is our extensive application engineering knowledge garnered over 3 decades + of successful engineering and installations in India and overseas

Projects Handled in Thermal Power

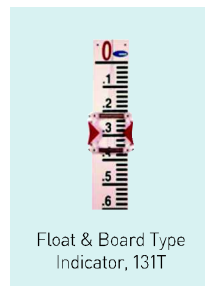
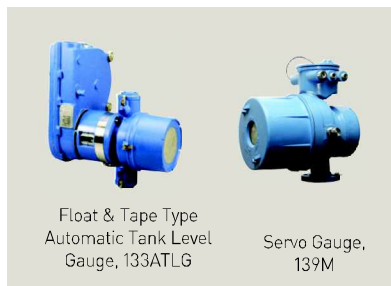
End User	Location
MAHAGENCO	Khaparkheda, Bhusawal, Koradi, Chandrapur, Paras, Parali
MPGENCO	Satpura, Malwa
APGENCO	Rayalseema
Punjab State Electricity Board	Bhatinda
Gujarat State Electricity Board	Ukai, Uttaran, Pipavav, Navi Naroli
NTPC Limited	Vindhyachal, Sipat, Barh, Korba, Ramagundam, Unchahar, Simadri
Damodar Valley Corporation (DVC)	Mejia, Durgapur, Koderma, Raghunathpur
Reliance Energy	Dahanu, Rosa, Krishnapatnam, Sasan
Essar Power	Mahan
Jaypee Power	Bina
Coastal Energen Pvt. Ltd.	Tuticorin
Abhijeet Power	Nagpur, Durgapur
Neyveli Lignite	Barsingsar
Pragati Power	Bawana
Jindal Steel & Power Ltd.	Tarapur, Dongamohua, Ratnagiri, Tamnar, Angul, Bellary
Aravalli Power	Jhajar
Lanco Infratech, Gurgaon	Udupi, Amarkantak, Wardha, Kondapalli, Anpara
Meenakshi Energy	Krishnapatnam
Gupta Energy	Chandrapur
GMR Energy Limited	Rajkheda
GVK Power	Punjab
Hindalco	Mahan, Lapanga, Hirakund, Moori, Ranchi
India Bulls	Amravati, Nasik
Adani Power	Mundra, Tiroda, Kawai

Other than Thermal Power, we have track record in the following segments

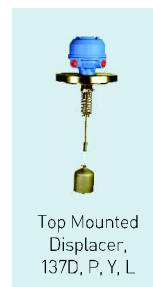
- PUBLIC HEALTH ENGINEERING
- OIL, REFINERIES & GAS
- SUGAR
- CEMENT
- STEEL
- EDIBLE OIL
- INDIAN NAVY

Application	SBEM Solution
Coal Bunkers	Pulse Radar, 138
Fly Ash Silos	Pulse Radar, 138
Travelling Water Screens	Hydrostatic Pressure Transmitters, 103 HPT, Ultrasonic Transmitters, 136 ULT
Gravity Filter beds	Loss of Head Level Indicator - Transmitters, 104 LOH
Flow Measurement	Electromagnetic Flow Meters, 151 MFM
Main Oil Tank	Guided Wave Radar Level Transmitters, 132 GWR
Various Tanks	Float, displacer, conductivity, capacitance type level switches
Ash Slurry	Ultrasonic Level Transmitters, 136 ULT
Ash Hoppers	RF Admittance type level switches, 114 RFS

Level Indicators & Transmitters



Level Switches



Open Channel Flow Meters



Closed Pipe Flow Meters



Tank gauging solutions

- ▣ Servo (139M) based, Float & Tape type level gauges (133ATLG) based, Magnetostrictive (134TM) based, etc.
- ▣ Tank farm management systems with field gauges, control room unit and SBTfMS software
- ▣ Site survey, project planning, detailed engineering, execution, installation & commissioning, support & training

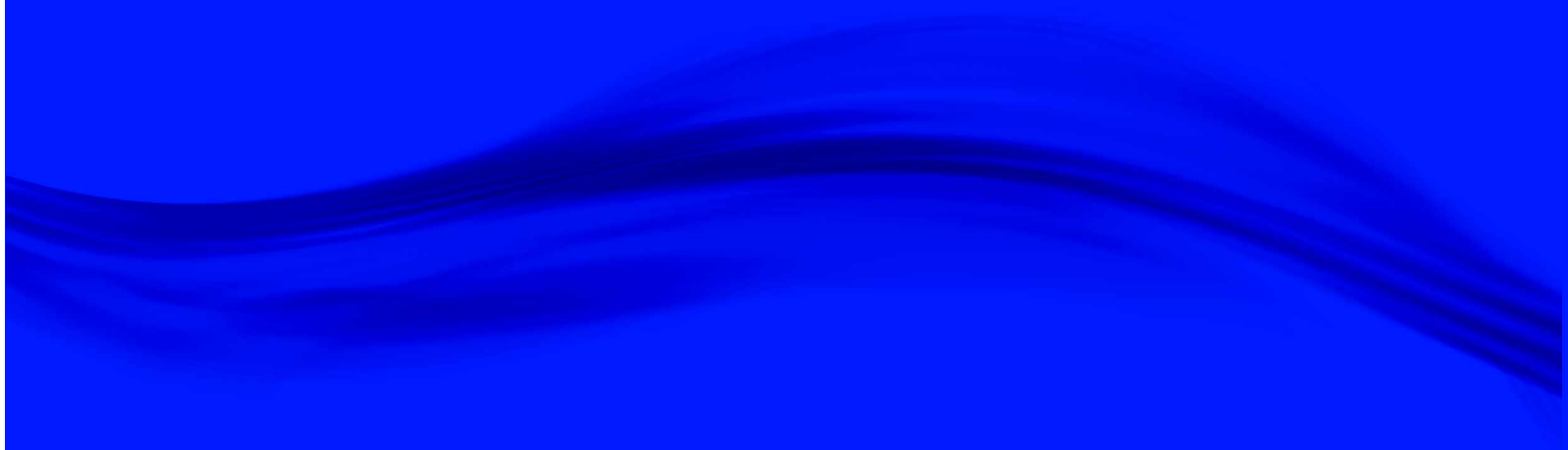
▣ Solutions for solids and liquids

▣ Multiple technologies

▣ Multiple segments

▣ Multiple parameters

▣ Multiple applications





SBEM Pvt. Ltd.

Head Office: 39' Electronic Co-operative Estate, Pune-Satara Road, Pune - 411 009
Tel. +91 20 41030100, 24220505, Fax +91 20 24215670, Email: sales@sbem.co.in

Works: 692/A Bibwewadi Industrial Estate, Pune-Satara Road, Pune - 411 039



Pune
Tel +91 20 41030100
pune@sbem.co.in

Mumbai
Tel +91 22 27823601
mumbai@sbem.co.in

Delhi
Tel +91 11 26560647
newdelhi@sbem.co.in

Chennai
Tel +91 44 24911235
chennai@sbem.co.in

www.sbem-india.com