A higher level of performance

Data Sheet

SULTAN

Dual Transducer Acoustic Wave Series

- Level, Flow, Positioning, Collision Protection -





Principle of Operation

The SULTAN Dual 34 unit emits high powered **acoustic wave** transmit pulses from two transducers which is reflected from the surface of the material(s) being measured. The reflected signals are processed using specially developed software to enhance the correct signal and reject false or spurious echoes.

The transmission of high powered acoustic waves ensures minimal losses through the environment where the sensors are located. Due to the high powered emitted pulse, any losses have far less effect than would be experienced by traditional ultrasonic devices. More energy is transmitted hence more energy is returned. Advanced receiver circuitry is designed to identify and monitor low level return signals even when noise levels are high. The measured signals are temperature compensated to provide maximum accuracy to the outputs and display.

Primary Areas of Application

• **Waste water / water:**
River level, wet wells, inlet screens, tanks, sumps, pump stations, water towers, dams, basin levels, chemical storage, etc.
• **Others:**
Food, Plastics, Grain, Chemicals, Paper, Irrigation.

Function

The Sultan 34 Dual is a non contact acoustic wave transmitter with flexibility, used for measuring level of liquids, slurries and solids with the versatility of measuring two different applications at once.

Universal Supply

3 Wire DC
4 Wire AC/DC

Certifications

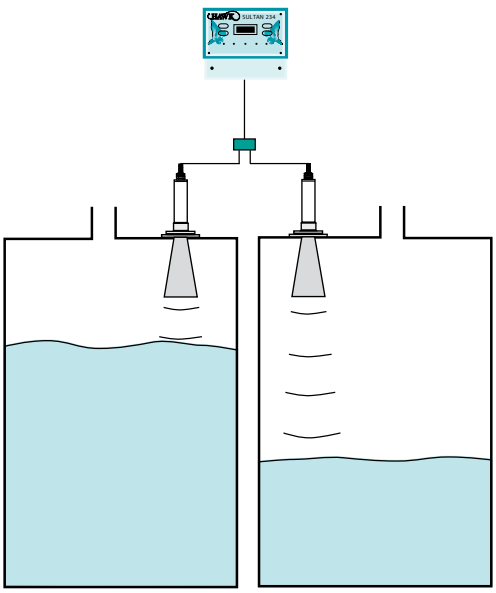
ATEX, SAA/IECEx, CE, CSA (FM pending)

Features:

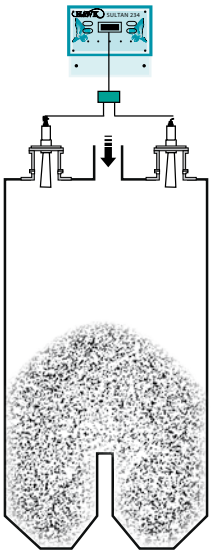
- One amplifier controls and powers two transducers.
- Differential and average level control
- Measures two different applications at once
- Non contact measurement
- Wide range of communications: DeviceNet, GosHawk, HART, Modbus, Profibus DP, Foundation Fieldbus & Profibus PA
- Pump Control x5 pumps
- Auto compensation for dust, steam and losses
- Protection class IP67, NEMA 4x (IP68 Transducer)
- Programmable fail safe mode
- High temp applications on request
- GSM/CMDA remote setup options/config

Typical Applications

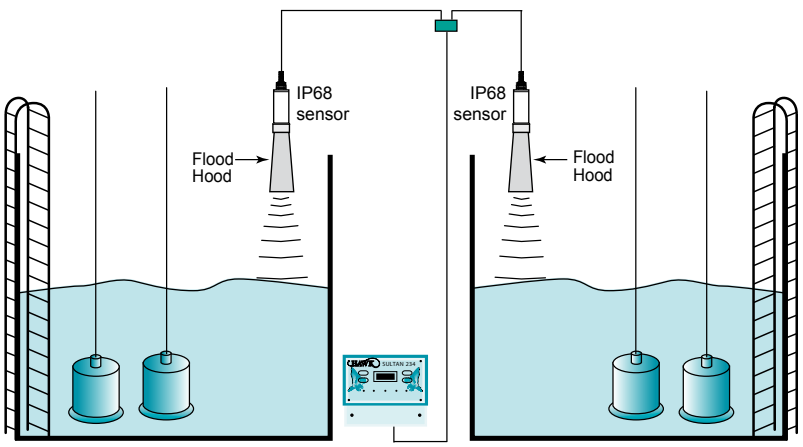
Storage Tanks
High/Low/Continous level
(Liquid/Chemical)



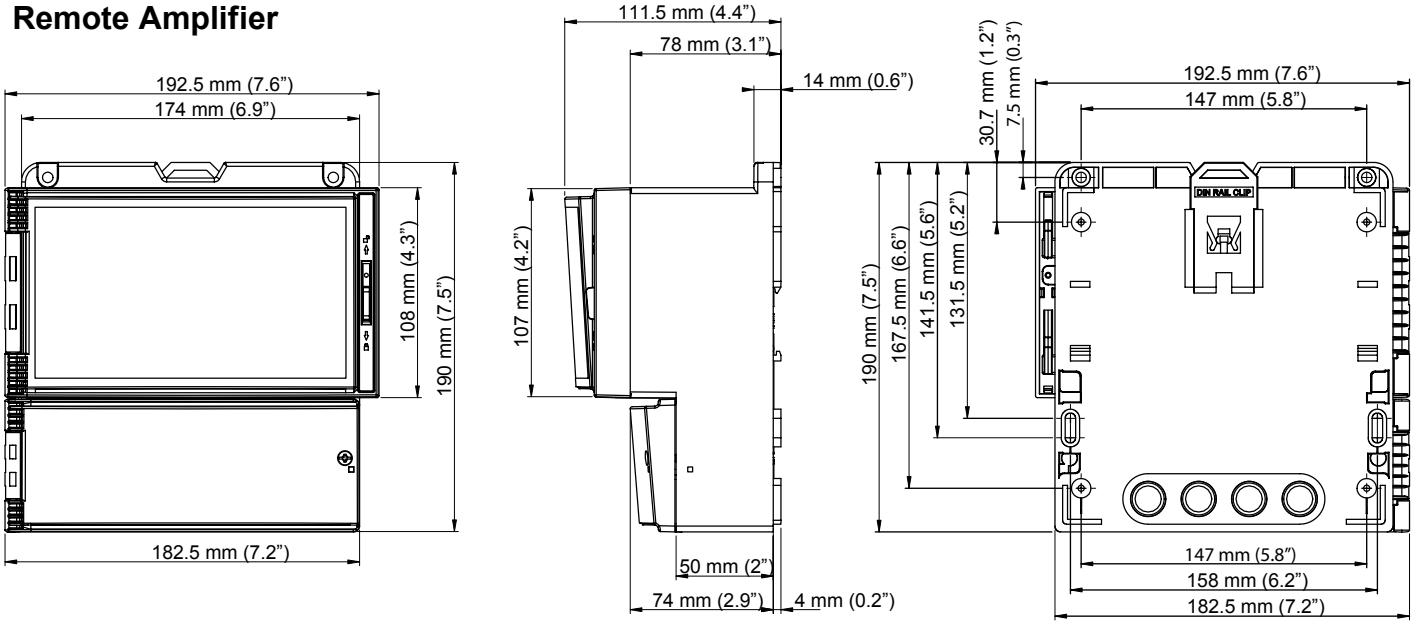
Dual Outfeed



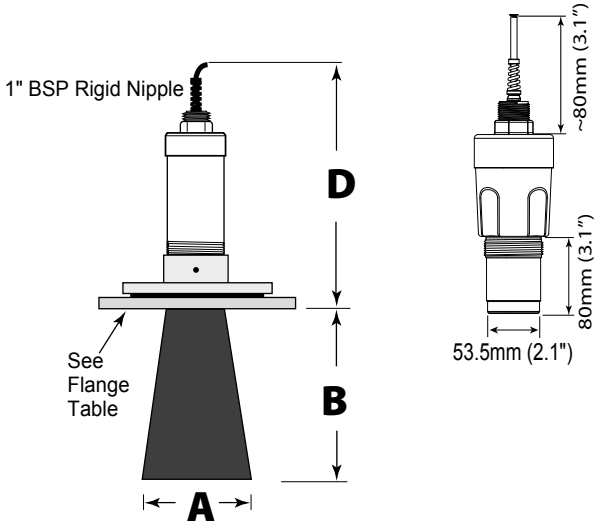
Sewage Wet Well
High/Low/Continous level



Remote Amplifier



Remote Transducers



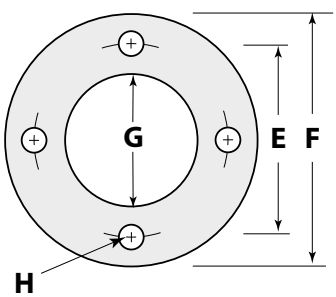
All horns must protrude into the main volume of the vessel by at least 50 mm (2 inches) past the lower end of the mounting nozzle.

Dimensions Table

Sensor Frequency	Selected Flange	A mm	A in	B mm	B in	C mm	C in	D mm	D in
5 kHz	10"	236	9.2	455	17.9	840	33.1	750	29.5
10 kHz	10" *8"	236 195	9.2 7.6	415 280	16.3 11.1	540 540	21.3 21.3	450 450	17.7 17.7
15 kHz	10" *8"	236 195	9.2 7.6	455 280	17.9 11.0	440 440	17.3 17.3	350 350	13.8 13.8
20 kHz	4"/*6"	98.5	3.9	280	11.0	390	15.4	300	11.8
30 kHz	4"/*6"	98.5	3.9	280	11.0	350	3.8	260	10.2

*6" and 8" are non standard. Please contact factory before selecting.

FLANGE



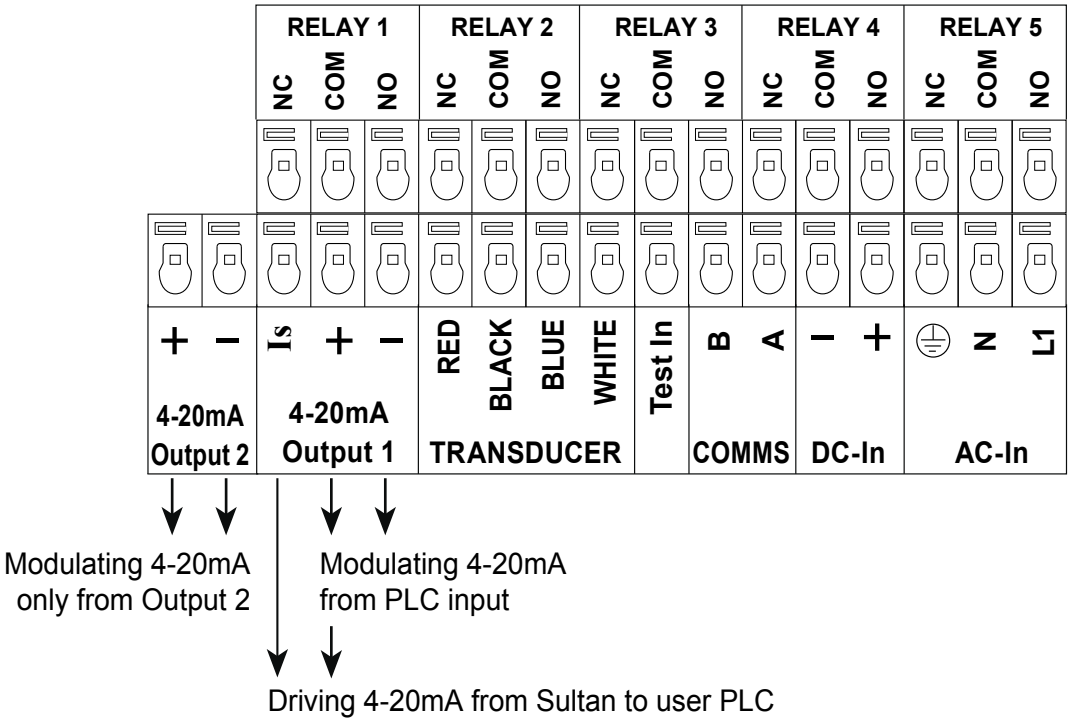
FLANGE TYPE:
FA = ANSI Flange
FJ = JIS Flange
FD = DIN Flange

STANDARD ANSI/DIN/JIS FLANGE DIMENSIONS

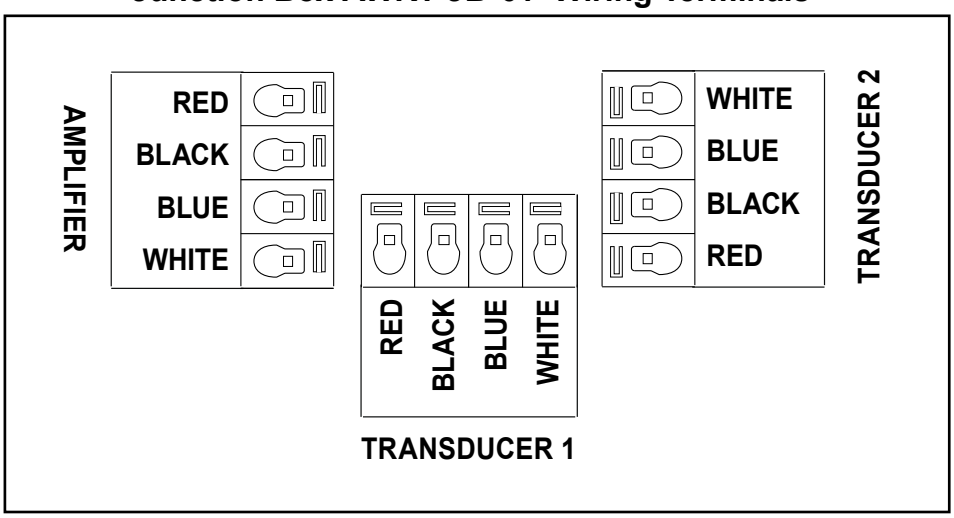
SIZE	FLANGE TYPE	E (PCD) mm	E (PCD) in.	F(OD) mm	F(OD) in.	G (ID) mm	G (ID) in.	H (Hole) mm	H (Hole) in.
4"	FA4	190.5	7.5	228	9.0	100	4	19	0.75
	FD4	180	7.0	220	8.7	100	4	18	0.7
	FJ4	175	6.9	210	8.4	100	4	15	0.6
10"	FA10	362	14.3	406	16.0	250	10	25	1.0
	FD10	355	14.0	405	15.9	250	10	26	1.0
	FJ10	355	14.0	400	15.7	250	10	23	0.9
8"	FA8	298.5	11.8	343	13.5	200	8	22	0.85
	FD8	295	11.6	340	13.4	200	8	22	0.85
	FJ8	290	11.4	330	13.0	200	8	19	0.75

Note: Other flange sizes available upon request.

Sultan 34 Dual Remote Wiring Terminal

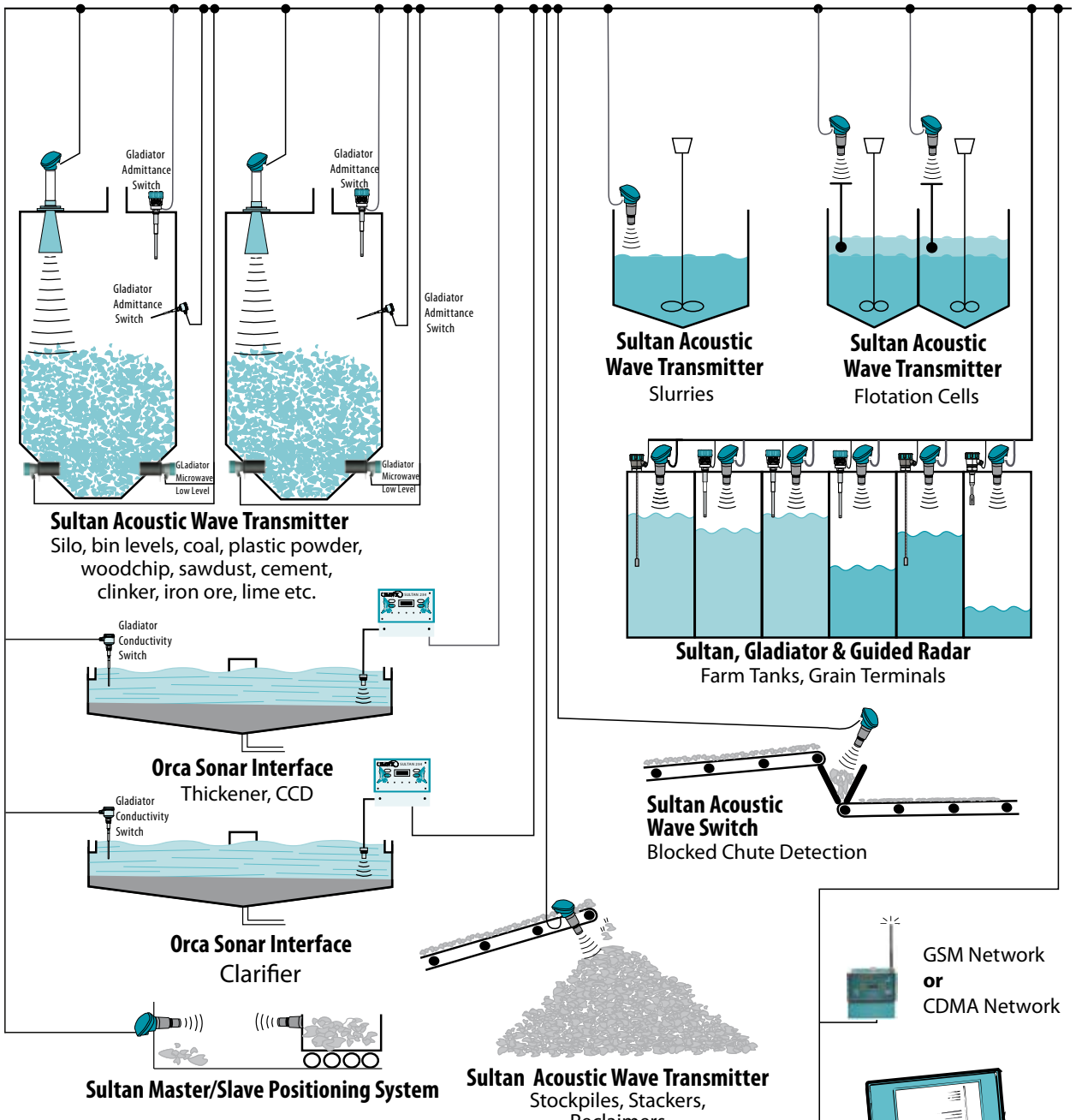


Junction Box AWRT-JB-01 Wiring Terminals



Communication Network Overview

MULTIDROP CONNECTION



GSM or CDMA Network

- Typically up to 31 transmitters or switches per string.
- Maximum 250 transmitters or switches.
- Using GSM/CDMA network, transmitters and switches can be monitored, calibrated remotely.
- Alarm status, diagnostics can be monitored.
- Support from factory engineering for customer application problems.

(Limited Modbus query rate for Switches only)

SULTAN DUAL 34 REMOTE ELECTRONICS

AWRD34 Dual Remote 3/4 Wire, Dual Input with 2 analogues. Housing Facia Display Connection Board/ Process Module, 2 Relays

HOUSING
S Standard polycarbonate electronics housing

POWER SUPPLY
B 24 VDC standard
C 48 VDC
U Universal DC or AC power supply (12-30 VDC or 90-265 VAC input)*

ADDITIONAL COMMUNICATIONS
S Switch only. 5 relays
X 2 x 4-20mA analogue outputs, includes Modbus comms
Analog 1: 4-20mA analogue driving/modulating output module
Analog 2: 4-20mA modulating output module

X This space is left intentionally blank

X Software option not required

APPROVAL STANDARD
X Not required
A22 ATEX Dust (Grp II Cat 3 D T85C IP67)

AWRD34	S	U	X	X	X	X

*Universal AC power supply has CSA General Locations approval.

Part Numbering

SULTAN AW REMOTE TRANSDUCER

AWRT Acoustic Wave Remote Transducer

TRANSDUCER FREQUENCY

50 50kHz for applications 0-5m, available 2" only
40 40kHz for applications 0-7m, available 2" only
30 30kHz for applications up to 11m for 2" and 15m for 3" (4" cone is required for 3" units)
20 20kHz for applications up to 20m, available in 3" only (4" cone is required)
15 15kHz for applications up to 30m, available in 3" only (10" cone is required)
10 10kHz for applications up to 40m, available in 3.5" only (10" cone is required)
05 5kHz for applications up to 60m maximum, available in 3.5" only (10" cone is required)

PROCESS TEMPERATURE - Facing material selection

T Standard Temperature Wet or dry atmosphere (teflon face)
Z Special Request

TRANSDUCER HOUSING MATERIAL

4 Polypropylene
6 Tefzel for 2" (standard). For 3" Teflon please contact us

THREAD STANDARDS (cone mounting thread does not need to be specified)

X Not Required (see flange & cone selection)
TB BSP (Must be used for thread sizes 30 or 50. For back cap mounting of flange.)
TN NPT

THREAD SIZES

X Not Required
20 2" thread for 50,40,30 kHz in Tefzel housing only
30 3" thread on the back cap for 30 & 20kHz only (For back cap mounting of flange, use TB option)

APPROVAL STANDARD

X Not required
A0 ATEX 0 (Areas II I GD IP67 EEx ia IIA T4) / IECEx Ex ia IIA T4 (Tamb -20C to +70C) (Intrinsically Safe)
A1 ATEX Encapsulated (Areas II 2 GD EE xm II IP68)
A20 ATEX Dust (Areas II 1 D T85C IP67)
A21 ATEX Dust (Areas II 2 D T85C IP67)
A22 ATEX Dust (Areas II 3 D T85C IP67)
GP CSA Equip Class 2, Pollution Deg.2, Meas. Cat.II (Ordinary locations)
RN CSA Class I, Div. 1/2, Group D; Zone 0; AEx/Ex ia IIA; T4. (Intrinsically Safe)
QN CSA Class II, Div. 1 Grp E,F&G; Ex mb II; T5(T100),T6(T85)
KN CSA Class II, Div. 2 Grp F&G; Class III

CONNECTION

S Screwtop unit with integral junction box (available only for 2" units)
C IP68 Sealed unit with 6 metre cable

Cable Length

6 6m cable standard
15 15m cable
30 30m cable
50 50m cable
X Not Required

MOUNTING ACCESSORIES

X Not Required
CS Cable Suspension for remote 50/40/30/20kHz

POSITION UNIT / CRANE MASTER SOFTWARE OPTIONS

X Not required

AWRT	10	T	4	X	X	X	C	6	X	X

FLANGE SELECTION

FLANGE
F Flange Selection

DIMENSION STANDARD
A ANSI
D Din
J JIS
Z Special Request

FLANGE SIZES
2N 2" NPT flange
2B 2" BSP flange
4 4" acoustically isolated flange
6 6" acoustically isolated flange
8 8" acoustically isolated flange
10 10" acoustically isolated flange
Z Special Request

FLANGE MOUNTING POSITION
A Cone Mounted
B Transducer Body Mounted
C Angle Flange

FLANGE MATERIAL
4 Polypropylene
6 Teflon
Z Special Request

F	A	4	A	-	4

JUNCTION BOX

AWRT-JB-01

AWRT-JB-01

LOCKING RING

LR
Not Required
4 For 4" and 6" flanges

Material
4 Polypropylene

LR	4	-	4

CONE SELECTION

CONE
C Focalizer Cone

CONE SIZE
02N Adaptor for 2" NPT Sensor to fit into 4" cone (included)
02B Adaptor for 2" BSP sensor to fit into 4" cone (included)
03 3" cone for 30,20 and 15kHz transducers with TB30 or TN30 threads
04 4" cone, 30 and 20kHz 3" transducer
08-15 8" cone, for 15kHz
08-10 8" cone for 10kHz
10-15 10" cone for15kHz
10-10 10" cone for 10kHz
10-05 10" cone for 5kHz

CONE MATERIAL
4 Polypropylene
6 Teflon
7 Carbon Fibre. Must be used with Carbon Fibre flange
7A Carbon Fibre - comes attached to Carbon Fibre ANSI flange
7D Carbon Fibre - comes attached to Carbon Fibre DIN flange
7J Carbon Fibre - comes attached to Carbon Fibre JIS flange
8 Polyurethane*
Z Special Request

C	04	-	4

REMOTE COMMUNCATIONS

HL HawkLink

TYPE
R Remote stand alone system with antenna

POWER SUPPLY
B 24VDC
U Universal 90-265VAC
X No power supply for E selection

NETWORK TYPE
G6 GPRS/TCP and CSD compatible, Quadband capability, GSM frequency 850, 900/1800,1900MHz

SIM CARD
S3 Australian Sim Card expires after 3 months
S12 Australian Sim Card expires after 12 months
Z Special Request

HL	R	U	G6	S3

* Polyurethane can be compressed to fit into the next smaller nozzel mounting size, e.g.. 8" polyurethane cone will compress into a 6" nozzel and so is 10" polyurethane in to 8" nozzel. Please confirm the maximum nozzel height allowed.

Specifications

Inputs
• 2 inputs

Frequency
5kHz, 10kHz, 15kHz, 20kHz, 30kHz, 40kHz, 50kHz

Operating Voltage
• 12 – 30Vdc (residual ripple no greater than 100mV)
• 90 – 265Vac 50/60Hz (optional)

Power Consumption
• <4W @ 24Vdc
• <10VA @ 240Vac

Isolated Analog Outputs
• Analog 1: 4 – 20mA analogue driving/modulating output module (750ohms @ 24Vdc User Voltage supply) or Internal driven 250ohms
• Analog 2: 4 – 20mA modulating output module (750ohms @ 24Vdc User Voltage supply only) (passive)

Communications
• Goshawk II

Relay Output: 2 Relays
• Form 'C' SPDT contacts, rated 0.5A @ 240V AC non inductive. All relays have independently adjustable dead bands

Blanking Distance
• 50kHz = 0.25 m (10")
• 40kHz = 0.30 m (12")
• 30kHz = 0.35 m (14")
• 20kHz = 0.45 m (17")
• 15kHz = 0.60 m (24")
• 10kHz = 1.0 m (39")
• 5kHz = 1.5 m (59")

Maximum Range
• 5m (16ft) 50kHz liquids
• 7m (22ft) 40kHz liquids
• 10m (33ft) 30kHz liquids, 5m (16ft) solids
• 20m (65ft) 20kHz liquids/slurries, 10m (33ft) solids
• 30m (98ft) 15kHz liquids/slurries, 20m (65ft) solids
• 50m (165ft) 10kHz liquids/slurries/powders/solids
• 60m (196ft) 5kHz liquids/slurries/powders/solids

Resolution
• 1 mm (0.04")

Sensor Accuracy
• +/- 0.25% of measured range

Operating Temperature
• Remote electronics -40°C (-40°F) to 80°C (176°F)
• Remote transducer -40°C (-40°F) to 80°C (176°F)

Transducer / Amplifier Separation
• Up to 500m using specified extension cable

Cable
• 4 conductor shielded twisted pair instrument cable
Conductor size dependent on cable length
BELDEN 3084A, DEKORON or equivalent
Max: BELDEN 3084A = 500m (1640 ft)

IMPORTANT
"USE SPECIFIED CABLE ONLY"

Maximum Operating Pressure
• +/- 7.5 PSI (+/- 0.5 Bar)

Beam Angle
• 7.5°without focaliser 30 kHz
• 6° with focaliser

Display
• 2 line x 12 digit alphanumeric LCD with back light

Keypad
• 4 keys = CAL, RUN, UP, DOWN

Memory
• Non-Volatile (No backup battery required)
• >10 years data retention

Enclosure Sealing
• Remote Electronics IP65 (Nema 4x)
• Remote Transducer IP68

Cable Entries
• Remote: 3 x 20mm, 1 x 16mm knock outs

Mounting
• Electronics
Screw mount
Din Rail
• Transducer
ANSI, JIS or DIN Flange
4 in/100mm to 10 in/250mm
1" BSP Nipple Mount

Typical Weight
Sultan AW System with appropriate flange and cone
5kHz Transducer 13kg, 28.6lb
10kHz Transducer 10kg, 22lb
15kHz Transducer 8kg, 17.6lb
20 or 30kHz (3") Transducer 3kg, 6.6lb
30 (2"), 40 or 50kHz Transducer 1kg, 2.2lb

Additional product warranty and application guarantees upon request.

Technical data subject to change without notice.

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