Commercial document	DC.HTC.DAT.001
SDT HATCHecker: Datasheet	

Description:

The **HATCHecker** is an ultrasound solution designed to test the

integrity of vessels for weathertightness.

Use **HATCHecker** to pinpoint the exact location of leaks in hatch

 covers.

The **HATCHecker** works with SDT's ergonomic

Flexible Sensor and the T-Sonic9 transmitter.

Specifications:

General		
Function		Ultrasound measurement device
Operable with		SDT FLEX ID2 & T-Sonic 9
Measurement interface		1 channel via a 7 pole LEMO connector
Maximum cable length	m (ft)	Up to 30 (98) (since v 3.1.535)
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Measuring range	dBµV	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	39.6 to 40.1
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz/ksps	64
ADC Resolution	bits	12
Firmware update		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010
Mechanical		
Housing material		ABS
Dimensions	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Weight	g (oz)	164 (5.78)

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CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

Battery/Utility connector		USB Mini-B 5-pin
Power		
Battery		2 AA size batteries
Autonomy		7 hours
Audio		
Operable with		SDT provided headset only
Headset		25 dB NRR Peltor quality headphones
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation FS.HTC.001-03
FU.HTC.001-01	HATCHecker w/o batteries (S/N 555 YYY XXXX)
FU.HTC.UGD.0001-01	HATCHecker - User's guide w/ datasheet
FU.TS09.001-02	T-Sonic 9 - US emitter device w/o batteries (S/N 545 YY NNNN)
FU.TS09.002-02	T-Sonic 9 - Remote control w/ batteries (S/N 547 YY NNNN)
FA.TS09.DVP	T-Sonic 9 - Protection holster EPDM 60° Black w/ magnetics
FAHOLSAC-01	DRAAGRIEM - Blue w/ logo SDT
SIBAT1,5VALK-AA (*8)	BATTERY Alkaline 1,5V AA (Maxell-Panasonic-Duracel-Sanyo)
FU.FLX2.001-03	FLEX2 - w/ ampli – Gooseneck 400 mm w/o sensor (S/N 002 YY NNNN)
FA.FLX2.R10.001-01	Removable sensor 10 mm for FLEX2 (plastic housing S/N CYYNNNN)
FA.FLX2.HND.003-01	FLEX2- Handle 400 mm w/ rubber
FUCABLSPLE7LE7-10	CABLE SPIRAL – LEMO7P<>LEMO7P L=6/18dm Black/Black
FUHDPH-21	HT52B-112 3M PELTOR CH-3 FLEX2 Listen only headphones w/ neckband
SICABUSBAUSBBM	SB2412 USB2.0 Cable usb type A<>USB type B5 mini,1.8m-black
FA.TS09.MMF.005-01	TS09-Attenuation tool functional test
FUTOOLSCRDRIV	IT3874 Screwdriver set w/ 6 bits - grey w/ led - no print
FU.HTC.CBOX.001-01	T6 Evolution plastic case blue/black locks - HATCHecker (w/logo SDT+foam)

NB: Additional details are available from the download section of SDT web site: www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not disassemble the instrument.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized services.
- Using any other headset or any sensor than the ones supplied with the instrument can cause internal damage to the equipment.
- Permanent hearing loss may occur if you use your headset at a high volume. Set the volume to a safe level.

Ver.	Editor	Nature of modification	Verified
4	CMA 2022/02/25	Safety recommendations, Updater and cable length	CGI
3	CMA 2021/03/01	Safety recommendations	RGO
2	CMA 2020/05/01	Added new info	CGR
1	CMA 2020/06/25	Original version	CGR

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

Ultrasound Solutions

Description:

SDT LEAKChecker is an ultrasound solution designed to find compressed air and vacuum leaks in noisy environments. Measure the level of the leak with LEAKChecker, and then estimate its cost impact with the LEAKReporter App, available for free on the App store. SDT LEAKChecker comes with a 16mm diameter replaceable ultrasound sensor.

Specifications:

General		
Function		Ultrasound measurement device
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Typical measuring range	dBµV	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	35 to 42
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz	64
ADC Resolution	bits	12
Minimum sensitivity	dB	-31dB (@40 kHz, 0 dB-1 V/µbar)
Sensitivity		Class I exceeding ASTM 1002-11 requirements for gas leak detection
Firmware update		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010

Mechanical		
Housing material		ABS
Dimensions Housing	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Flexible rod length (Removable sensor)	mm (in)	445(17,51)
Weight	g (oz)	350 (12.35 oz)
Battery/Utility connector		USB Mini-B 5-pin
Power		
Battery		2 AA size batteries
Autonomy		7 hours
Audio		
Operable with		SDT provided headset only
Headset		25 dB NRR Peltor quality headphones
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation FS.LKC.001-01
FU.LKC.001-01	LEAKChecker w/o sensor, w/o batteries (S/N (550) YY XXXX)
FU.LKC.UGD.001-01	LEAKChecker – User's guide w/ datasheet
FA.FLX2.R16.001-01	Removable sensor 16 mm for FLX2 (plastic housing)
SIRUBSENS18MMSI	RUBBER for sensor Ø 18mm NBR rubber
SIBAT1,5VALK-AA (*2)	BATTERY Alkaline 1,5V AA (Maxell-Panasonic-Duracel-Sanyo)
FUHDPH-21	HT52B-112 3M PELTOR CH-3 FLEX2 Listen only headphones w/ neckband
SICABUSBAUSBBM	SB2412 USB2.0 Cable usb type A<>USB type B5 mini,1.8m-black
FUTOOLSCRDRIV	IT3874 Screwdriver set w/ 6 bits - grey w/ led - no print
FU.LKC.CBOX.001-01	T6 Evolution plastic case blue/green locks - LEAKCecker (w/logo SDT+foam)

NB: Additional details are available from the download section of SDT web site: www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not disassemble the instrument.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized services.
- Using any other headset or any sensor than the ones supplied with the instrument can cause internal damage to the equipment.
- Permanent hearing loss may occur if you use your headset at a high volume. Set the volume to a safe level.

Ver.	Editor	Nature of modification	Verified
5	CMA 2022/02/25	Safety recommendation + updater	CGI
4	CMA 2021/03/01	Safety recommendations	RGO
3	CMA 2020/01/05	Add new info	RGO
2	CMA 2020/06/25	Revised version	CGR
1	AKP 2017/08/29	Original version	JPE
Ver.	Editor	Nature of modification	Verified

The information herein is believed to be accurate to the best of our knowledge.
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Ultrasound Solutions

Commercial document	DC.LBC.DAT.001
SDT LUBEChecker: Datasheet	

Description:

SDT LUBEChecker is an ultrasound solution designed to optimize bearing lubrication. This intuitive device ensures bearings receive the right amount of grease at intervals dictated by condition, not run time. SDT LUBEChecker uses SDT LUBESense1, a robust, repeatable sensor built to withstand harsh conditions.

Specifications:

General		
Function		Ultrasound measurement device
Operable with		SDT LUBESense1
Measurement interface		1 channel via a 7 pole LEMO connector
Maximum cable length	m (ft)	Up to 30 (98) (since v 3.1.535)
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Typical measuring range	dBµV	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	35 to 42
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz/ksps	64
ADC Resolution	bits	12
Firmware update		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010
Mechanical		
Housing material		ABS
Dimensions	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Weight	g (oz)	164 (5.78)
Battery/Utility connector		USB Mini-B 5-pin

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CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

Power		
Battery		2 AA size batteries
Autonomy		7 hours
Audio		
Operable with		SDT provided headset only
Headset		25 dB NRR Peltor quality heaphones
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation FS.LBC.001-01
FU.LBC.001-01	LUBEChecker w/o batteries (S/N (549) YYY XXXX)
FU.LBC.UGD.001-01	LUBEChecker – User's guide w/ datasheet
SIBAT1,5VALK-AA (*2)	BATTERY Alkaline 1,5V AA (Maxell-Panasonic-Duracel-Sanyo)
FUHDPH-21	HT52B-112 3M PELTOR CH-3 FLEX2 Listen only headphones w/ neckband
FU.LBC.DVC.001-02	LUBEChecker – Device cradle w/ hook & loop strap
FU.LBC.DVC.002-01	LUBEChecker – Device cradle magnetic
FU.SEN.LUBE.001-01	LUBESens1 w/o cable (Blue cover – S/N 540 YY XXXX)
FUCABLSPLE7LE7-10	CABLE SPIRAL – LEMO7P<>LEMO7P L=6/18dm Black/Black
FUSEACMAG-01	FLAT MAGNETIC foot D25*14
FUSEACMAG-02	CURVED MAGNETIC foot D30*23
FUSEACLUBE-03-A	LUBE ADAPTER for use w/ FUSCRS3-01 (M6-BSP 1/8'')
SICABUSBAUSBBM	SB2412 USB 2.0 Cable USB type A<>USB type B5 mini,1.8m-black
FUTOOLSCRDRIV	IT3874 Screwdriver set w/ 6 bits - grey w/ led - no print
FU.LBC.CBOX.001-01	T6 Evolution plastic case blue/yellow locks - LUBEChecker (w/logo SDT+foam)

NB: Additional details are available from the download section of SDT web site at www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not disassemble the instrument.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized services.
- Using any other headset or any sensor than the ones supplied with the instrument can cause internal damage to the equipment.
- Permanent hearing loss may occur if you use your headset at a high volume. Set the volume to a safe level.

Ver.	Editor	Nature of modification	Verified
5	CMA 2022/02/25	Safety recommandations, updater and cable length	CGI
4	CMA 2021/03/01	Safety recommendations	RGO
3	CMA 2020/01/05	Add new info	RGO
2	CMA 2020/06/25	Revised version	CGR
1	AKP 2017/08/31	Original version	JPE

The information herein is believed to be accurate to the best of our knowledge.
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Description:

SDT LUBExpert is an ultrasound solution designed to help you grease bearings right. It contains significant innovations for ultrasound driven lubrication of rolling element bearings. LUBExpert provides real-time feedback that guides lube-techs to a perfect, precision result. LUBExpert even alerts you when bearing conditions are evolving toward failure. Eliminate the guesswork and make over and under lubrication of bearings a thing of the past.

Specifications:

General	
Operable with external sensor	SDT LUBESense1 only
Software compatibility	Ultranalysis Suite 3
Built-in sensor	Laser pyrometer (temperature)
Supported languages	English, French, Dutch, German, Spanish, Italian, Russian, Turkish, Polish
Display	Graphic backlighted LCD
Keyboard	12 functions keys
System	
CPU	ARM9
CPU clock	400 MHz
Internal memory	DDR2, 256 Mb
Data memory	256 Mb
Dedicated firmware	Lubrication assistance algorithm
Signal processing	
ADC Resolution	16 bits
Raw sampling frequency	256 kHz
Amplification stage	step of 10 dB
Response time	<10 ms
Ultrasound measurement	
Reference calibrated voltage	V_0 = 1 µV = 0 dBµV
dB scale definition	X dBµV = $20\log(V/V_0)$ where V is measured
Typical measuring range	-13 to 99.9 dBµV
Resolution	0.1 digits
Ultrasound bandwidth	36.1 to 40.7 kHz
Filter	6th order Butterworth
Default mixer frequency	38.6 kHz (best audible rendering)
Residual audible bandwidth	250 Hz to 2.5 kHz
Indicators	RMS, MAX sub-RMS, Peak and Crest factor
Refresh rate of RMS	250 ms
Heterodyne audio rate (.wav)	8 K samples/s (dynamic version)
Temperature module (built-in)	

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www.sdtultrasound.com

Type	Non-contact infrared thermometer
Available units	Celsius, Fahrenheit, Rankine
Adjustable emissivity range	[0.01 to 1]
Measuring range	-70 °C to +380 °C (-94 °F to +716 °F)
Accuracy in a wide temperature range	± 0.5 °C (0°C to 50°C/-32°F to 122°F)
Field of view (attenuation of 50%)	10°: spot of 10 cm (1/3 ft) at a distance of 10 cm (1 ft)
Type of pointer	Red laser Class II IEC 60825-1-07 <1 mW, 655 nm — Laser Radiation Do not stare into beam Class 2 laser product
Cautions	• *Never look directly to the laser beam* • *Never point the laser beam at a person' eye* • *Do not aim the laser at specular reflective surfaces* • *Never view the laser using an optical instrument*

Data collector	
Memory capacity	More than 10,000 data distributed over more than 10,000 measurement locations

Environmental	
Connector	LEMO 7 female
Housing	Extruded aluminum, shockproof rubber protections
Dimensions	226 x 90 x 40 mm / 8.90 x 3.54 x 1.57 in (L x W x H)
Weight	830 g / 29.3 oz
Operating and storage temperature	-15 °C to +60 °C / 14 °F to 140 °F non-condensing
Communication	USB Mini
IP rating	IP 40
Approvals	EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU) LVD compliant (directive 2014/35/EU), battery charger

Power/charger	
Battery	Internal, rechargeable NiMH battery
Nominal capacity	4000 mAh
Voltage	4.8 V
Autonomy	~ 8 hours
Battery charger (Please only used the provided charger)	specific for SDT2XX/LUBEx NiMH battery pack Power supply: 230 or 110 VAC +15% /-10% -50/60Hz Output voltage: +4.0 or 8.5 V DC (depends on operating mode) Current: 1000 mA maximum Recharge time: 5 to 6 hours typical in fast mode / 12 to 14 hours typical in slow mode. Protection: temperature protected; limit set at 60°C / 140 °F

Audio	
Interface	jack ¼" (6.35 mm)
Operable with	provided headset only (Peltor)
Safety note	Compliant with directive 2003/10/EC, noise exposure, health and safety protection using SDT devices and

SDT Ultrasound Solutions

	provided headsets
Maximum audio output (protection)	+83 dB SPL with the provided headset
Headset	25 dB NRR with Peltor quality headphones
Warranty	
Lifetime warranty	Visit https://sdtultrasound.com/support/lifetime-warranty/ for details

NB: Further information can be found in the download section of the SDT website.

Ensure you regularly utilize the latest software and firmware versions to fully leverage new features. Kindly consult the user manual for detailed instructions on how to proceed.

In case of a prolonged period without use, please ensure a full battery charge.

Safety recommendations:

- Read and follow the user manual carefully.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not attempt to disassemble the instrument.
- Refrain from using the equipment in areas where its usage is prohibited such as Ex Zones.
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized service centers.
- Using any headset or other sensor than the ones supplied with the instrument can result in internal damage to the equipment.
- Inspectors should avoid listening at max volume for extended periods of time.

4	CMA 2023/08/16	Precision on the built-in pyrometer	CGI
3	CMA 2021/07/19	Harmonization	MCD
2	CMA 2021/06/04	New layout + additional specs	MCD
1	JPE 2013/07/13	Original version	MCD
Ver.	**Editor**	**Nature of modification**	**Verified**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT Ultrasound Solutions

Datasheet SDT RAPSODYBOX

Description:

SDT RAPsodyBox is a signal generator tool that can be used to repeatedly reproduce a series of scenario that can be encountered in industry.

These scenarios can be used to explain the use of SDT measurement devices and show their possibilities as well as analyze the expected behavior on the measurements during machine maintenance, lubrication, leak detection, tightness inspection …

SDT RAPsodyBox can also be used to reproduce specific recorded signals (using SDT instruments) encountered on the field (for demonstration and training purposes).
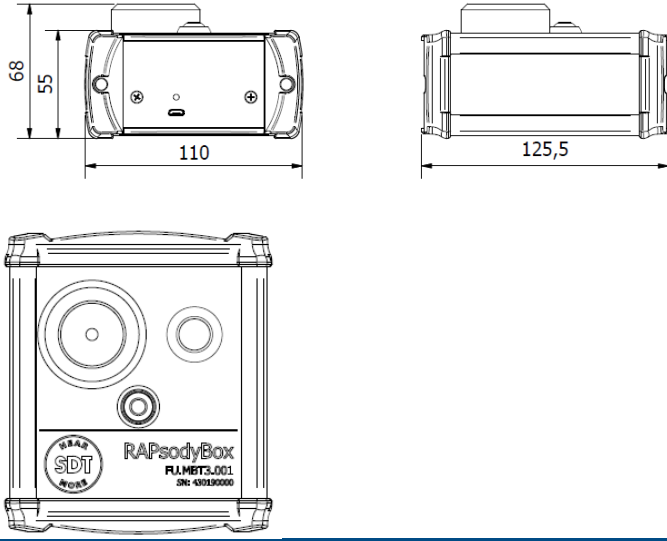
As the signals are known, the box also makes it possible to carry out a series of functional tests on the sensors and the devices to check and control the integrity of the measurements (for testing and conformity purpose).
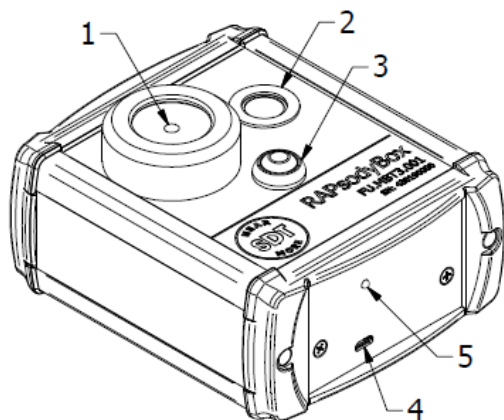
1. Structure borne transducer

2. Airborne resonant transducer

3. Push button

4. Micro USB type B

5. Status indicator light

Specifications:

General		
Function		Ultrasound signal generator
Software		SDT RapsodyBox on PC windows
Operable with		SDT devices
Transmitting sources		Contact and airborne
Power supply		Micro USB type B
Communication		USB or Bluetooth
Environmental		

Operating temperature range *for the System on chip BCM2835	°C (°F)	-40 to 85 (-40 to 30)
IP rating		40
Approvals		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Mechanical		
Housing material		Anodized aluminum profile / plastic lid: ABS
Dimensions	mm (in)	
Weight	g (oz)	520 (18)
Signal output (typical)		
Structure borne		
Resonant frequency	kHz	60
Thread		M6
Signal amplitude range	dB	50
Airborne		
Resonant frequency	kHz	40 ± 1
Bandwidth (attenuation of -6dB)	kHz	2 kHz
Transmitting sound level *at max volume		100 dB_{SPL} at 1 m
Total beam angle *(- 6 dB)*	°	55

Response curves:

Typical response curve of Structure borne transducer:

Typical Response [mm/s]
Normalized to 37 kHz
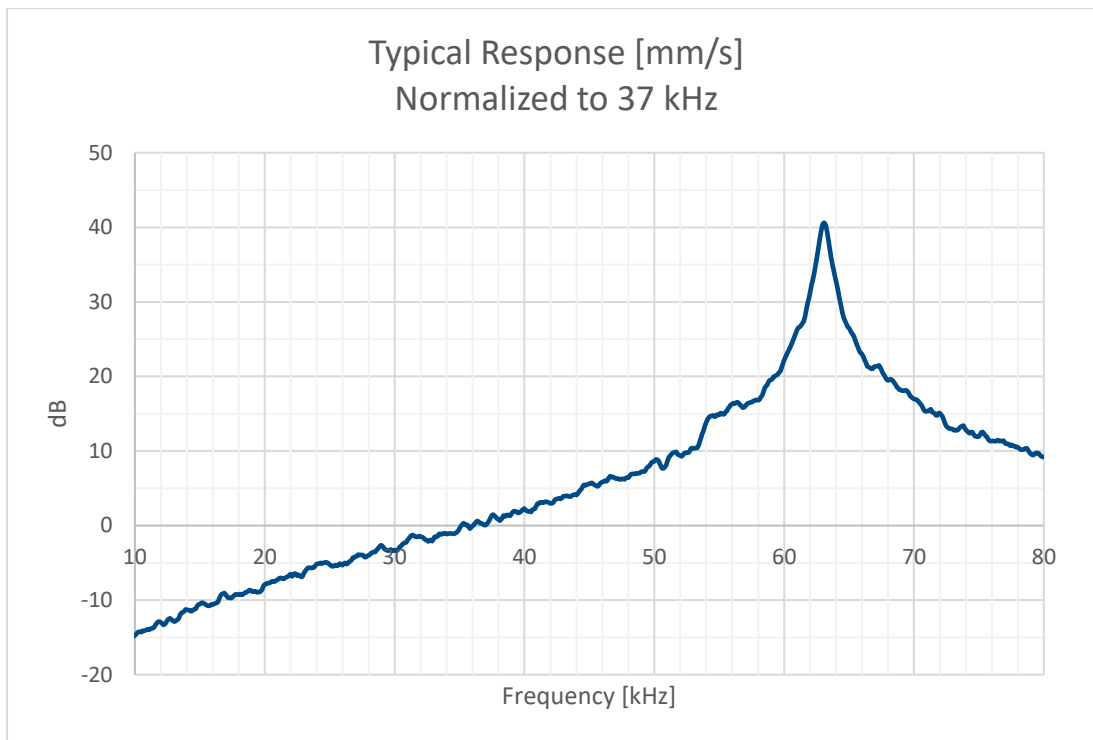
Typical response curve of airborne transducer:

Typical Response
Normalized to 40 kHz
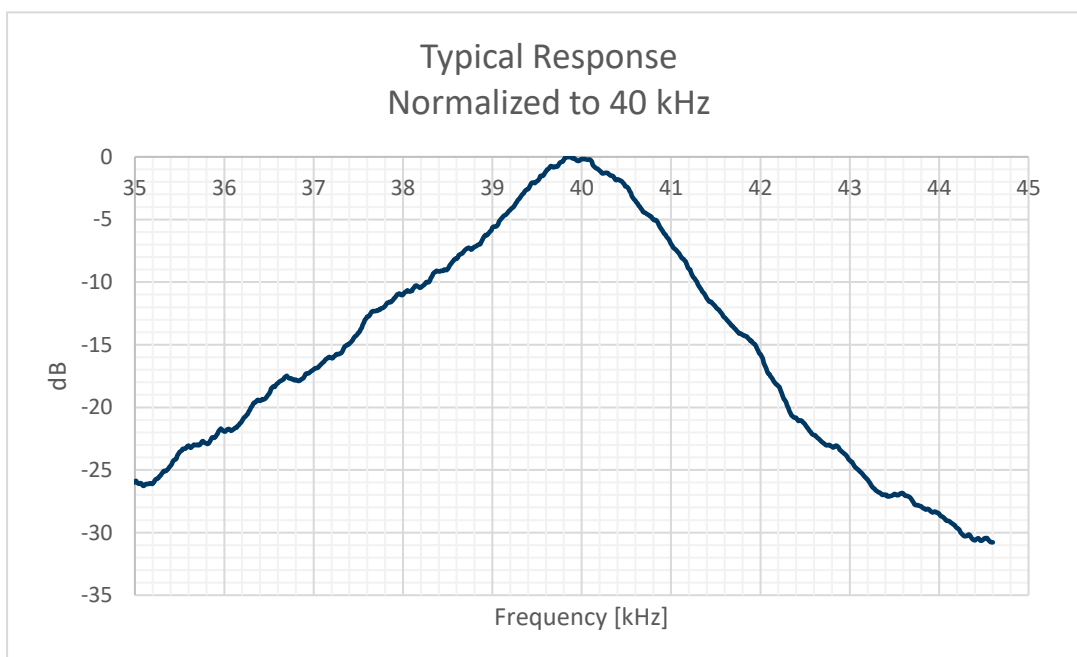
Safety recommendations:

• Do not expose the equipment to rough handling or heavy impacts

• Always read and follow the user manual

• Opening the housing of the instrument may result in hazardous mishandling and voids warranty

• The equipment should not be used in areas where there is a risk for explosion

SDT Ultrasound Solutions

• Do not expose the equipment to high humidity or direct contact with water

• All repair work must be performed by SDT or authorized services

• Using any other headset or any sensor than the one supplied with the instrument can cause internal damage

to the device

NB: Additional specifications could be found from the download section of SDT web site: www.sdtultrasound.com

Ver.	Editor	Nature of modification	Verified
3			
2	CMA 2021/07/19	Modified version	CGR
1	CMA 2020/08/24	Original version	CGR
Ver.	**Editor**	**Nature of modification**	**Verified**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT Ultrasound Solutions

Datasheet Remote Monitoring Box (FU.RMB.001)

Description:

Gather up to 10 sensors remote connections in an IP65 Box. This product is available for LEMO connectors. Corresponding cables must be ordered separately (see Part numbers below).

Specifications:

General		
Function		Remote Monitoring box
Designed for		SDT devices & sensors
Maximum input channels		10
Connector type		LEMO 7 Pins (female)
IP rating		IP 65
Material/housing		Plastic SB
Dimensions (Height x Width x Depth)	mm/”	200 x 159 x 112 mm / 7.9 x 6.3 x 4.4 “
Weight	g/oz	600 g / 21.2 oz
Operating temperature range	°C/°F	-25 to +60°C / -13 to +140°F
Maximum cable length	m/ft	30 m / 100 ft
-Panel to sensors		- FU.RMB.CABL.000-XX RMB - CABLE 7P, LE7F<>LE7M, L_{max}= 16,00m WITH CABLE GLAND - FU.RMB.CABL.010-XX RMB - CABLE 7P, LE7F<>LE7M IP65, L_{max} = 16,00m WITH CABLE GLAND - FUCABLMPLE7MLE7FXX-3 RMB - CABLE 7W - LE7M 90°<>LE7F W/ CABLE GLAND, L= xx dm - FU.RMB.CABL.001-XX RMB - CABLE COAX LE7F<>MS2, L_{max}= 16,00m WITH CABLE GLAND *When ordering, replace 'XX' by the cable length in decimeters.* *Example: FU.RMB.CABL.000-50 is 5 m long female Lemo7 to male Lemo7 with a cable gland.* *Avoid cables longer than needed, because of length signal attenuation and noise increase. Examples:* - *15 m Multipole cable: attenuation 2.5 dB, noise level increase +7 dB* - *20 m Coaxial cable: attenuation 1 dB, noise level increase +3 dB*
-Panel to collector		FUCABLSPLE7LE7-10 : LEMO7-LEMO7 Spiral L=6/18 dm

The information herein is believed to be accurate to the best of our knowledge.
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Ver.	Editor	Nature of modification	Verified
1	CMA 20/04/2021	New layout	CGR

The information herein is believed to be accurate to the best of our knowledge.
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SDT Ultrasound Solutions

Description:

Gather up to 12 sensors remote connections in an IP65 Box. This product is available for LEMO connectors. Corresponding cables must be ordered separately (see Part numbers below).

Specifications:

General		
Function		Remote Monitoring box
Designed for		SDT devices & sensors
Maximum input channels		12
Connector type		Panel mount LEMO 7 Pins (female)
IP rating (when closed)		IP 65
Material/housing		Stainless Steel (SS304)
Dimensions (Height x Width x Depth)	mm/"	180 x 240 x 150 mm / 7 x 9.45 x 5.9 "
Weight	kg/oz	3,4 kg / 120 oz
Operating temperature range	°C/°F	-25 to +60°C / -13 to +140°F
Maximum cable length	m/ft	30 m / 100 ft
-Cables: Panel to sensors		**FU.RMB.CABL.000-XX** RMB - CABLE 7P, LE7F<>LE7M, WITH CABLE GLAND, L= xx dm **FU.RMB.CABL.010-XX** RMB - CABLE 7P, LE7F<>LE7M IP65, WITH CABLE GLAND , L= xx dm **FUCABLMPLE7MLE7FXX-3** RMB - CABLE 7W - LE7M 90°<>LE7F W/ CABLE GLAND, L= xx dm **FU.RMB.CABL.001-XX** RMB - CABLE COAX LE7F<>MS2, WITH CABLE GLAND, L= xx dm **FU.RMB.CABL.100-XX** RMB Cable with Terminal Block Plug <> Lemo 7 male. ➔ Compatible with <u>FS.RMB.003-01</u>, this is a "field installable" version of FU.RMB.003 which allows the cable length to be adjusted on site. This version contains internal PCB with terminal block connectors to connect up to 12 cables. *When ordering, replace 'XX' by the cable length in decimeters.* *Example: FU.RMB.CABL.000-50 is 5 m long female Lemo7 to male Lemo7 with a cable gland.* *Avoid cables longer than needed, because of length signal attenuation and noise increase. Examples:* *15 m Multipole cable: attenuation 2.5 dB, noise level increase +7 dB* *20 m Coaxial cable: attenuation 1 dB, noise level increase +3 dB*
-Cables: Panel to collector		FUCABLSPLE7LE7-10 : LEMO7-LEMO7 Spiral L=6/18 dm

SDT International sa-nv • Bd de l'Humanité 415 • B-1190 Brussels (Belgium) • Tel: +32(0)2 332 32 25 • info@sdt.be • www.sdtultrasound.com • CE VAT: BE 0418.020.213
KBC BE35 4364 1311 1137 BIC KREDBEBB • BNP Paribas Fortis BE38 2930 3455 3172 BIC GEBABEBB18A • ING BE31 3631 0661 4255 BIC BBRUBEBB
CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

Ver.	Editor	Nature of modification	Verified
2	CGR 28/10/2021	Add informations for Custom length version	CMA
1	CGR 20/04/2021	New layout+ General Update (illustration, weight, cable length…)	CMA

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Description:

Keep your machines healthy and reduce energy costs with SDT 200 and its sensors, in a simple way. Locate air leaks, monitor, and listen to your bearings, safely inspect your electrical panels, and schedule repairs at your convenience, long before they cause you to shut down - all with ultrasonic technology.

Main features:

- Available in Standard or ATEX version
- Measures broadband ultrasound signals up to 100 kHz bandwidth
- Realizes data acquisition in static mode or in dynamic mode
- Uses long-duration time sampling and data streaming
- Integrates built-in pyrometer with a laser
- Includes a SQL database
- Insures full measurement traceability from Operator to sensor
- Warns the Operator when an alarm is triggered
- Is remotely controlled and operated

Specifications:

General		
Function		Handheld multifunction detector
Operable with		Provided sensors
Software compatibility		DataDump only
Versions		FUR200, FUR200A (ATEX)
ATEX marking		CE 0029 ⟨Ex⟩ II(1) G Ex ia II C T3/T2 Ga
Input interface		1 channel via 7 pole LEMO connector
Built-in sensors		Ultrasonic airborne sensor
		Pyrometer sensor
Display		Graphic LCD with backlighting (128 x 64 pixels)
Support languages		Multilingual
Keyboard		12 functions keys
Measuring frequency range	kHz	Up to 100
Signal amplification	dB	from 0 to +90 by step of +10
Typical measuring range	dB	-13 to + 99.9
Resolution	digits	0.1
Refresh RMS period time	ms	250
Raw sampling frequency	ksps	256
ADC Resolution	bits	16
Response time	ms	10
Auto power down	min	Customizable
Communication		USB interface

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CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

System features		
Firmware		Regular updates
Data logger		- 100 Measurement Nodes (measurement points)
		- Total 4000 Measurements (measurements data)
Max acquisition time per recording	s	10 seconds at 8 ksps
Recording format		.wav
Environmental		
Standard temperature range	°C (°F)	-15 to +48 (5 to 118), non-condensing
Ambient temperature range on ATEX version		-Class T2 / -15 °C to +60 °C / 5 °F to 140 °F
		-Class T3 / -15 °C to +48 °C / 5 °F to 118 °F
IP rating		IP 30
Approvals		EMC compliant (directive 2014/30/EU)
		ROHS compliant (directive 2011/65/EU)
		LVD compliant (directive 2014/35/EU)
		ATEX compliant (directive 2014/34/EU) ; for the concerned version
Mechanical		
Housing material		Extruded aluminum
Protective holster		Fluorosilicone, hydrocarbon-resistant
Dimensions	mm (in)	L x W x H : 226 x 90 x40 (8.9 x 3.5 x 1.6)
Weight	g (oz)	770 (27), battery and holster included
Audio connector		6.5 mm jack
Utility connector

(Cannot be used as a recharging port) | | USB Mini
(import/export data and update the firmware) |
| **Battery** | | |
| Battery pack

 for optimum performance, this battery pack is equipped with an electronic management system (includes digital serial number, capacity, and temperature management) | | Internal, rechargeable type NiMh |
Nominal capacity	mAh	4600
Voltage	V	4.8
Autonomy	hours	~ 8
Battery charger

(Please only used the provided charger)

 Battery charge of the SDT2XX ATEX must exclusively be performed outside potentially explosive environments. | | specific for SDT2XX NiMH battery pack
Power supply: 230 or 110 VAC +15% /-10% - 50/60Hz
Output voltage: +4.0 or 8.5 V DC (depends on operating mode)
Current: 1000 mA maximum
Recharge time: 5 to 6 hours typical in fast mode / 12 to 14 hours typical in slow mode |

SDT Ultrasound Solutions

		Protection: temperature protected; limit set at 60°C / 140 °F
Audio		
Operable with		provided headset only (Peltor) :25 dB NRR with Peltor quality heaphones
Safety note		Compliant with directive 2003/10/EC, noise exposure, health and safety protection using SDT devices and provided headsets
Maximum audio output (protection)	dB SPL	+83 with SDT provided headset
Ultrasound measurement		
Operable with		SDT provided sensors/ built-in sensor (intUS1) SDT ATEX sensors are only intended for use with ATEX instruments
Sensitivity		-65 dB/V/μbar at 40 kHz Class I exceeding ASTM 1002-11 requirements for gas leak detection with the built-in sensor
Reference calibrated voltage		V_0 = 1 μV = 0 dBμV
dB scale definition		X dBμV = $20\log(V/V_0)$ where V is measured then converted in X dBμV
Typical measuring range		from -10 dBμV to 109 dBμV using gain function *depending on the sensing capacity of the sensor
Sampling rate	ksps	8 (heterodyned)
Available filters		Determined from the sensor recognition
Indicators		RMS, Max RMS, Peak and Crest Factor
Refresh rate	ms	250
Audible rendering		Indirect via heterodyne method
Mixer frequency	kHz	Tunable, default mixer from the sensor recognition to provide the best audible rendering
Temperature module (on-board)		
Type		High precision non-contact infrared thermometer
Available units		Celsius, Fahrenheit, Rankine, Kelvin
Adjustable emissivity		[0.01 to 1], 1 by default
Measuring range	°C (°F)	-40 to +380 (-94 to +716)
High accuracy in a wide temperature range (0°C to 50°C--32°F to 122°F)	°C	± 0.5 °C
Field of view (attenuation of 50%)		10° : cover a spot of 10 cm (1/3 ft) at a distance of 10 cm (1 ft)
Type of source		Red laser Class II
Cautions		- *Never look directly to the laser beam* - *Never point the laser beam at a person' eye* - *Do not aim the laser at specular reflective surfaces*

SDT Ultrasound Solutions

		• *Never view the laser using an optical instrument*
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

NB: Additional details are available from the download section of SDT website

Compatibilities:

SDT 200 receiver is designed to work in combination with the provided sensors and the associated cables of predefined length.

Sensors denomination	type	Non-exhaustive pillar applications
RS1T (available in ATEX version) /RS2T	contact	Mechanical, steam trap
RS1NL 100-300-500 (available in ATEX version) RS2NL 100-300-500	contact	Mechanical, steam trap, valves, hydraulics
LUBESense1	contact	Lubrication
FLEX (available in ATEX version) /FLEX ID2	airborne	Leak, electrical, tightness
PARADISH 2 (available in ATEX version)	airborne	Electrical

In addition, SDT 200 receiver is compatible with SDT Datadump running on windows OS. The communication is ensured with the provided USB cable**.**

Make sure you always run the latest version of the software & firmware to take advantage of new features. Please refer to the user manual for instructions on how to proceed.

Safety recommendations:

• Do not expose the equipment to rough handling or heavy impacts

• Please read the user manual carefully before first use

• Opening the housing of the instrument may result in hazardous mishandling and voids warranty

• The equipment should not be used in areas where there is a risk for explosion

• Do not expose the equipment to high humidity or direct contact with water

• All repair work must be performed by SDT or authorized services

• Using any other headset or any sensor than the one supplied with the instrument can cause internal damage

to the device

Ver.	Editor	Nature of modification	Verified
4	CMA 2021/07/20	New layout	BDG
3	CMA 2021-22-01	Correction du nobo, ajout temp range atex T2/T3	CGR
2	BDK 2015-07-13	Ethernet not available on ATEX version	GEL
1	JPD	Original version	GEL
Ver.	Editor	Nature of modification	Verified

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Ultrasound Solutions

Description:

The SDT270 ultrasound detector features multiple significant innovations dedicated to the improvement of predictive maintenance programs. Manufactured by and for maintenance professionals, the SDT270's innovations show our commitment to the production of intelligent and progressive instruments.

Not only is the SDT 270 the first portable ultrasound detection device to include both a built-in temperature sensor and a laser tachometer, but it's also the first one to feature an onboard SQL database to capture and manage survey data.

Main features:

- Available in Standard or ATEX version
- Measures broadband ultrasound signals up to 100 kHz bandwidth
- Realizes data acquisition with a 256 kHz sampling frequency
- Uses long-duration time sampling and data streaming
- Integrates built-in thermometer and tachometer with a laser
- Includes a SQL database
- Includes an Operator logging in
- Insures full measurement traceability from Operator to sensor
- Warns the Operator when an alarm is triggered
- Is IP (Internet) addressable
- Is remotely controlled and operated
- Incorporates 2 measurement channels

Specifications:

General		
Function		Handheld multifunction data collector
Operable with		Provided sensors
Software compatibility		Ultranalysis Suite 3, DataDump,
Versions		FUR270, FUR270A (ATEX)
ATEX marking		CE 0029 (Ex) II(1) G Ex ia II C T3/T2 Ga
Input interface		2 channels via 7 pole LEMO connector
Built-in sensors		Ultrasonic airborne sensor
		Temperature sensor (optional)
		Tachometer (optional)
Display		Graphic LCD with backlighting (128 x 64 pixels)
Supported languages		Multilingual

Keyboard		12 functions keys
Measuring frequency range	kHz	Up to 100
Signal amplification	dB	from 0 to +90 by step of +10
Typical measuring range	dB	-13 to +99.9
Resolution	digits	0.1
Refresh RMS period time	ms	250
Raw sampling frequency	ksps	256
ADC Resolution	bits	16
Response time	ms	< 10
Auto power down	min	Customizable
Communication		USB interface Ethernet 10/100 Mbps (only on standard version, not available on ATEX version)
System features		
Firmware		Regular updates
Data logger (upgradable)		**SDT270 SS & SD with DataDump software:** • 100 measurement nodes for a total capacity of 4 000 measurements **SDT270 DD with DataDump software:** • 100 measurement nodes for a total capacity of 4 000 measurements • dynamic measurements: 6 675 seconds with US sensor **SDT270 SU used with Ultranalysis Suite 3:** • more than 10 000 measurement nodes with static data **SDT270 DU used with Ultranalysis Suite 3:** • static measurements: more than 10 000 measurement nodes • dynamic measurements: 6 675 seconds with US sensor
Recording formats		Static or Dynamic measurements (wavefiles, heterodyned signals at 8ksps)
Max acquisition time per recording	s	80 seconds at 8 ksps
Environmental		
Standard temperature range	°C (°F)	-15 to +60 (5 to 140), non-condensing
Ambient temperature range on ATEX version		-Class T2 / -15 °C to +60 °C / 5 °F to 140 °F -Class T3 / -15 °C to +48 °C / 5 °F to 118 °F
IP rating		IP 30
Approvals		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU) LVD compliant (directive 2014/35/EU) ATEX compliant (directive 2014/34/EU) ; for the concerned version

SDT Ultrasound Solutions

Type approval from Lloy's register (Certificate No. 17/30042 for Sherlog kit)		Application : Verification of marine, offshore, and industrial weather tightness of hatch covers, doors, ramps, and windows
Mechanical		
Housing material		Extruded aluminum
Protective holster		Fluorosilicone, hydrocarbon-resistant
Dimensions	mm (in)	L x W x H : 226 x 90 x40 (8.9 x 3.5 x 1.6)
Weight	g (oz)	830 (29.3), battery and holster included
Audio connector		6.5 mm jack
Utility connector (Cannot be used as a recharging port)		USB Mini (import/export data and update the firmware)
Battery		
Battery pack		Internal, rechargeable type NiMh
Nominal capacity	mAh	4000
Voltage	V	4.8
Autonomy	hours	~ 8
Battery charger (Please only used the provided charger) ⚠️ Battery charge of the SDT2XX ATEX must exclusively be performed outside potentially explosive environments.		specific for SDT2XX NiMH battery pack Power supply: 230 or 110 VAC +15% /-10% - 50/60Hz Output voltage: +4.0 or 8.5 V DC (depends on operating mode) Current: 1 000 mA maximum Recharge time: 5 to 6 hours typical in fast mode / 12 to 14 hours typical in slow mode Protection: temperature protected; limit set at 60°C / 140 °F
Audio		
Operable with		provided headset only (Peltor) :25 dB NRR with Peltor quality heaphones
Safety note		Compliant with directive 2003/10/EC, noise exposure, health and safety protection using SDT devices and provided headsets
Maximum audio output (protection)	dB SPL	+83 with SDT provided headset
Ultrasound measurement		
Operable with		SDT provided sensors/ built-in sensor (intUS1) SDT ATEX sensors are only intended for use with ATEX instruments
Sensitivity		Class I exceeding ASTM 1002-11 requirements for gas leak detection with the built-in sensor
Reference calibrated voltage		V_0 = 1 µV = 0 dBµV
dB scale definition		X dBµV = 20log(V/V_0) where V is measured then converted in X dBµV
Typical measuring range		from -10 dBµV to 109 dBµV using gain function *depending on the sensing capacity of the sensor
Sampling rate	ksps	8 (heterodyned)
Available filters		Determined from the sensor recognition
Indicators		RMS, Max RMS, Peak and Crest Factor

SDT Ultrasound Solutions

Refresh rate	ms	250
Audible rendering		Indirect via heterodyne method
Mixer frequency	kHz	Tunable, default mixer from the sensor recognition to provide the best audible rendering
Vibration measurement		
Compatible accelerometers		Any 100mV/g ICP accelerometer
Vibration units		Accelerometry [g] and velocity [mm/s, ips]
Measuring range		Up to 20 g peak
Available filters		[10 Hz-1 kHz] at 8 ksps [10 Hz-10 kHz] at 32 ksps
Indicators		RMS velocity, RMS acceleration, Peak acceleration, Crest Factor
Refresh rate	ms	250
Audible rendering		Direct
Temperature module (on-board)		
Type		High precision non-contact infrared thermometer
Available units		Celsius, Fahrenheit, Rankine, Kelvin
Adjustable emissivity		[0.01 to 1], 1 by default
Measuring range	°C (°F)	-70 to +380 (-94 to +716)
High accuracy in a wide temperature range (0°C to 50°C--32°F to 122°F)	°C	± 0.5 °C
Field of view (attenuation of 50%)		10° : cover a spot of 10 cm (1/3 ft) at a distance of 10 cm (1 ft)
Rotational speed module (on-board)		
Type		Optical sensor
Units		RPM/CPM and Hz
Type of source		Red laser Class II
Cautions		• *Never look directly to the laser beam* • *Never point the laser beam at a person' eye* • *Do not aim the laser at specular reflective surfaces* • *Never view the laser using an optical instrument*
Recommended measuring distance	mm (in)	50 to 2000 (2 to 80)
Measuring range		~10 to 99 999 RPM *a reflective band must be stick on the rotating part to perform a measurement
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

NB: Additional details are available from the download section of SDT website

SDT Ultrasound Solutions

Compatibilities:

SDT 270 receiver is designed to work in combination with the provided sensors and the associated cables of predefined length.

Sensors denomination	type	Non-exhaustive pillar applications
RS1T (in ATEX version) /RS2T	contact	Mechanical, steam trap
RS1NL 100-300-500 (in ATEX version) RS2NL 100-300-500	contact	Mechanical, steam trap, valves, hydraulics
LUBESense1	contact	Lubrication
FLEXEX (ATEX version) /FLEX ID2	airborne	Leak, electrical, tightness
PARADISH2 (Standard or ATEX version)	airborne	Electrical
TTS1/TTS2 (in ATEX version)	airborne, enclosed	Tightness for Tank tests
100mV/g ICP accelerometer (Hansford)	contact	Mechanical

In addition, SDT 270 receiver is compatible with SDT softwares running on windows OS. The communication is ensured with the provided USB cable.

Make sure you always run the latest version of the software & firmware to take advantage of new features. Please refer to the user manual for instructions on how to proceed.

Safety recommendations:

• Do not expose the equipment to rough handling or heavy impacts

• Please read the user manual carefully before first use

• Opening the housing of the instrument may result in hazardous mishandling and voids warranty

• The equipment should not be used in areas where there is a risk for explosion

• Do not expose the equipment to high humidity or direct contact with water

• All repair work must be performed by SDT or authorized services

• Using any other headset or any sensor than the one supplied with the instrument can cause internal damage

to the device

Ver.	Editor	Nature of modification	Verified
4	CMA 2021/07/20	New layout	BDG
3	CMA 2021-22-01	Correction du nobo, ajout temp range atex T2/T3	CGR
2	BDK 2015-07-13	Ethernet not available on ATEX version	GEL
1	JPD	Original version	GEL
Ver.	Editor	Nature of modification	Verified

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SDT **Ultrasound Solutions**

Description:

The SDT340 is the perfect platform for advanced Asset Health Evaluation by means of Ultrasound and Vibration synergy. The SDT340 offers an unbeatable performance level boosted by a high sample rate, a long acquisition time and supported by a well-scaled 4Gb data memory. The device benefits from the innovative ultrasound SDT FocUS Mode for an unparalleled impact detection of bearing and gearing faults. It incorporates the tools to conduct on-field first level diagnosis.

Key Performance specifications:

- 2 input channels
- Up to 100 kHz Bandwidth
- 256 kHz sample rate
- 10 minutes record length
- 6.5 GB data memory
- On-board temperature and rotational speed measurements
- 3.5" full color display 320x480

Key features:

- Tree database structure
- Quick and intuitive navigation through database nodes
- On-screen time waveform and spectrum
- Spanning and zooming functions for navigation through a record
- TWF and FFT 10 highest values table
- 4 Scalar indicators for ultrasound and vibration measurements
- Off-route and on-route data collection modes
- Recall of historical data in-the-field
- Dual Bluetooth for wireless audio and data streaming
- Signal play back

Specifications:

General		
Function		Handheld data collector
Operable with		Provided sensors
Input interface		2 channels via 7 pole LEMO connector
Display		Full color TFT 3.5" screen 320x480. Active area: width 48.96 mm (1.93") x height 73.44 mm (2.89")
Support languages		English, French, Dutch, German, Spanish, Italian, Russian, Turkish, Polish
Keyboard		14 functions keys
Measuring frequency range	kHz	Up to 100
Input type		Voltage
Amplification		6 stages of + 10 dB
Refresh RMS period time	ms	500 (default)
Max. sampling frequency	kHz/ksps	256
ADC Resolution	bits	16
Resolution on display		Max 4 digits
Auto power down	min	Never, 15, 30, 45, 60, 90
System features		
CPU	MHz	400 (ARM9)
RAM	MB	256
Available memory	GB	6.5
Firmware		Regular updates
Database		SQLite
Cumulated recording (based on the mounted SD card)	h	~30 hours at 32 kHz ~15 hours at 64 kHz ~7 hours at 128 kHz ~3.5 hours at 256 kHz
Max acquisition time per recording	s	600 seconds at 32 kHz 300 seconds at 64 kHz 150 seconds at 128 kHz 75 seconds at 256 kHz
Recording format		.wav
Environmental		
Operating temperature range	°C (°F)	-15 to +60 (5 to 140), non-condensing
IP rating		IP 42
Approvals		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU) LVD compliant (directive 2014/35/EU), applied to the AC/DC charger
Mechanical		
Housing material		Extruded aluminum, shock proof rubber protections
Dimensions	mm (in)	L x W x H : 221 x 93.5 x 44 (8.7 x 3.7 x 1.7)
Weight	g (oz)	720 (25.4), battery included
Audio connector		6.5 mm jack
Utility connector		USB type C (import/export data and update the firmware)

SDT Ultrasound Solutions

(Cannot be used as a recharging port)		
Battery		
Battery pack		Rechargeable and removable, type NiMh
Nominal capacity	mAh	3600
Voltage	V	4.8
Autonomy	hours	~ 7
Recharge time	hours	6-7
Charger station (Please only used the provided charger)		100 to 240 VAC, 50/60 Hz, 600-300 mA
Audio		
Operable with		SDT provided headset only (Peltor)
Safety Note		Compliant with directive 2003/10/EC, noise exposure, health and safety protection using SDT devices and provided headsets
Maximum audio output (protection)	dB SPL	+83 with SDT provided headset
Headset		25 dB NRR with Peltor quality heaphones
Bluetooth		
Type		Dual mode for data and audio streaming
Frequency band		2.4 GHz
Maximum data rate		1.6 Mbps
Transmitter power		Class 2 <4 dBm (audio) and <10 dBm (data)
Certification		Certified 4.2 audio module
Ultrasound measurement (black channel)		
Operable with		SDT provided sensors only
Compatible sensors (built-in preamplifier = +10 dB)		Contact type : RS2T, RS2T(IP65), RS2NL100-200-500, LUBSense1 Airborne type : FLEXID2, PARADISH2, AIRSense, ULTRASense, TTS2
Sensitivity		Class I exceeding ASTM 1002-11 requirements for gas leak detection with the appropriate sensor
Reference calibrated voltage		$V_0 = 1\ \mu V = 0\ dB\mu V$
dB scale definition		$X\ dB\mu V = 20\log(V/V_0)$ where V is measured then converted in X dBµV
Typical measuring range		from -10 dBµV to 109 dBµV using gain function *depending on sensors
Sampling rate	ksps	32 (heterodyned) 128 and 256 in FocUS Mode (non-heterodyned)
Available filters		Applied with the sensor recognition
Indicators		RMS, Max RMS, Peak and Crest Factor. RMS averaged over an acquisition
Refresh rate	ms	500
Spectral post-process method		FFT and envelope FFT
Audible rendering		Indirect via heterodyne method
Mixer frequency	kHz	Tunable, default mixer from the sensor recognition to provide the best audible rendering.
Vibration measurement (red channel)		
Compatible accelerometers		Any 100 mV/g ICP accelerometer
Vibration units		Accelerometry [g] and velocity [mm/s, ips]

SDT Ultrasound Solutions

Measuring range		0.01 g to 20 g (PEAK)
Sampling rate	ksps	32, 64
Available filters		[5 Hz-1 kHz] [10 Hz-1 kHz] (ISO 10816-3) [10 Hz-10 kHz]
Indicators		RMS velocity, RMS acceleration, Peak velocity, Peak acceleration, Crest Factor
Refresh rate	ms	500
Post-process spectral method		FFT
Audible rendering		Direct
Temperature module (on-board)		
Type		High precision non-contact infrared thermometer
Available units		Celsius, Fahrenheit, Rankine
Adjustable emissivity		[0.01 to 1], 1 by default
Measuring range	°C (°F)	-70 to +380 (-94 to +716)
High accuracy in a wide temperature range (0°C to 50°C--32°F to 122°F)	°C	± 0.5 °C
Field of view (attenuation of 50%)		10° : cover a spot of 10 cm (1/3 ft) at a distance of 10 cm (1 ft)
Rotational speed module (on-board)		
Type		Optical sensor
Units		RPM/CPM and Hz
Type of source		Red laser Class II IEC 60825-1-07 <1 mW, 655 nm — Laser Radiation Do not stare into beam Class 2 laser product
Cautions		• *Never look directly to the laser beam* • *Never point the laser beam at a person' eye* • *Do not aim the laser at specular reflective surfaces* • *Never view the laser using an optical instrument*
Recommended measuring distance	mm (in)	50 to 2000 (2 to 80)
Measuring range		~10 to 99 999 RPM *a reflective band must be glued on the rotating part to perform a measurement
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

NB: Additional details are available in the download section of the website

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT Ultrasound Solutions

Compatibilities:

SDT 340 receiver is designed to work in combination with the provided sensors and the associated cables of predefined length.

Sensors denomination	type	Non-exhaustive pillar applications
SDT RS2T (IP 50 & IP 65)	contact	Mechanical, steam trap
SDT RSNL100-300-500	contact	Mechanical, steam trap, valves, hydraulics
SDT LUBSense1	contact	Lubrication
SDT FLEXID2	airborne	Leak, electrical, tightness
SDT ULTRASense	airborne	Leak, electrical, tightness
SDT AIRSense	airborne	Leak, electrical, tightness
SDT PARADISH2	airborne	Electrical
SDT TTS2	airborne, enclosed	Tightness for Tank test
100mV/g ICP accelerometer, Hansford	contact	Mechanical

In addition, SDT 340 receiver is compatible with SDT softwares running on windows OS. The communication is ensured with the provided USB cable.

Software	Usage
UAS Lite (32-bits windows OS)	Simple
UAS 3 (64-bits only windows OS)	Advanced
SDT Updater	Update your firmware, also available in the software

Make sure you run the latest version of the software & firmware to take advantage of new features. Please refer to the user manual for instructions on how to update your instrument.

To get the maximum benefit of SDT340, contact us to get a second battery.

Safety recommendations:

• Do not expose the equipment to rough handling or heavy impacts

• Please read the user manual carefully before first use

• Opening the housing of the instrument may result in hazardous mishandling and voids warranty

• The equipment should not be used in areas where there is a risk for explosion

• Do not expose the equipment to high humidity or direct contact with water

• All repair work must be performed by SDT or authorized services

• Using any other headset or any sensor than the one supplied with the instrument can cause internal damage to the device

Ver.	Editor	Nature of modification	Verified
6	CMA 2022/01/07	Digits/resolution	MCD
5	CMA 2021/07/19	Table update	MCD
4	CMA 2021/02/23	New layout	MCD
3	MCD 2020/01/24	Change frequency range	CMA
2	MCD 2019/05/27	Add IP Rating	CMA
1	JPE 2018/09/07	Original version	AKP 2018/12/31

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT **Ultrasound Solutions**

Description:

SonaVu™ is a multi-frequency acoustic imaging camera that takes airborne ultrasound inspection to a new level. Equipped with 112 highly sensitive sonic sensors and a precision optical camera, SonaVu™ brings the power of super-human hearing to focus on its vibrant, color touch screen. It unlocks limitless applications for asset reliability, energy conservation, and safety including compressed air leak management, electrical asset reliability, and much more.
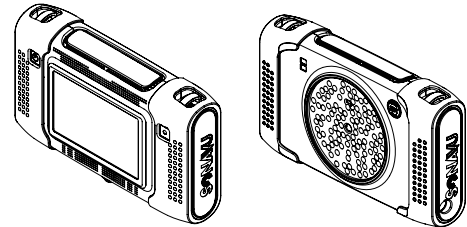
Specifications:

General		
Model name		SONAVU (FU.SVU.001-01)
Function		Ultrasound Camera
Sensor (Microphone)		112 Digital MEMS
Sample rate	k S/s	96
Resolution	bits	16
Full measurement frequency range	kHz	[1-47.5]
Microphone Sensitivity	dB FS	-41 (Full scale)
Signal-to-Noise Ratio	dBA	66
Detection distance (range sensor)	m (ft)	0.3 m to 50 m (1 to 164)
Gain	dB	0, +10, +20 or +30
Average function		Fast: update every 3 frames Slow: update every 10 frames
Measurement bandwidth/mode	kHz	Audible mode : 4kHz-20 kHz + direct audible output Ultrasound mode: 25 kHz-40 kHz + heterodyned audible output Custom mode: set up by user
Multisource Visualization mode		No
HMI (Human Machine Interface)		
Display		5" Color LCD + Touch control
Screen resolution	pixels	640 x 480, adjustable lighting
Buttons		Power button and Save button
Frame rate/response time	FPS	25
Camera View angle	°	Horizontal 66°, Vertical 54
Storable data		Video (.avi) and Image (.jpeg)
Internal memory	GB	~53 GB (7 days for continuous video storage)
Import/export data transfer		USB Flash drive (FAT 32)

Advanced analysis		PRPD graphs on display Insight platform for reporting
Supported languages		English, French, German, Spanish, Portuguese, Dutch, Turkish, Korean, Chinese, Japanese, Croatian, Russian
Environmental		
Operating temperature range	°C (°F)	-20°C to 50°C (-4°F to 122 °F)
Operating Humidity	%	10 ~ 85 %
IP rating		20
Camera lighting		2 LEDs
Mechanical and connection ports		
Dimensions	mm (in)	237 x 146 x 56 (9.3 x 5.7 x 2.2)
Weight	kg (lb)	1.2 (2.65)
Charging port/Power bank port		LEMO 3P-12V DC
External display port		HDMI
Export/firmware update port		USB
Audio output		1/8" (3.5mm) audio jack and Bluetooth
Power		
Battery		Lithium-ion battery pack
Battery Operating Time		4 hours (8 hours with the External battery)
Battery Charging Time		4 hours
Charging status		LED indicator
Legal		
Warranty		2 Years
Product certifications		Refer to the manual

Safety recommendation:

- **Read the user manual in its entirety prior to operating your SonaVu™ acoustic imaging camera.**
- Follow all instructions for safe operation, care, and maintenance of your SonaVu™.
- Never leave the instrument powered on while stored in the closed case or other enclosure. Doing so could cause the instrument to overheat. Overheating increases the risk of damage to the instrument or the possibility of a fire.
- Avoid subjecting SonaVu™ to high levels of vibration or shock which could damage the electronics and impact the highly sensitive sensor microphones.
- Do not drop your SonaVu™ nor expose it to any sudden impacts.
- When charging your SonaVu™ take care to avoid creating a tripping hazard from the power cord by maintaining a safe and neat workplace. This is both a personnel safety and an instrument care issue.
- Your SonaVu™ should only be stored in a cool, dry area. Avoid storage rooms that are hot, humid, dirty, dusty, or in direct sunlight. Also avoid storing your SonaVu™ in rooms where other chemicals are kept.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Avoid using your SonaVu™ in environments outside the prescribed temperature ranges listed on the specification section (-20°C to 50°C or -4°F to 122°F).
- Keep your SonaVu™ away from powerful magnets, power meters, and other similar sources.

SDT Ultrasound Solutions

- Use care when connecting and disconnecting cables and cords from the main body of your SonaVu™. When disconnecting, grip by the connector – never by the cable itself – and gently pull in a direction perpendicular to the plug. When connection, grip by the connector, align the plugs, and gently insert in a direction perpendicular to the plug. This will avoid unnecessary damage to the cable connection pins.
- Use caution in dirty environments. Avoid the introduction of foreign matter to your SonaVu™, especially around the sensor array, camera lens, and heat shield.
- Never disassemble or modify your SonaVu™ Acoustic Imaging Camera. Doing so automatically voids the warranty.
- In the unlikely event that your SonaVu™ does not work as expected, accurately document the details of the failure and contact SDT Ultrasound Solutions or an authorized service representative.
- Your SonaVu™ contains electronic components and lithium-ion batteries. SDT encourages its consumers to properly dispose/recycle unwanted batteries and end-of-life products in accordance with local Federal and state regulations. One solution is to contact MRM E-Cycling Management. Their mission is to bring manufacturers together to help provide convenient, environmentally responsible recycling opportunities to consumers: www.mrmrecycling.com.

5	CMA 2022/03/22	Safety recommendation	CGI
4	CMA 2021/09/08	Revision	CGI
3	CMA 2021/06/23	Additional info	KMI
2	CMA 2021/06/17	New layout	KMI
1	CMA 2021/03/02	Original version	KMI
Ver.	**Editor**	**Nature of modification**	**Verified**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

Commercial document   DC.TIC.DAT.001

SDT TIGHTChecker: Datasheet

Description:

The SDT TIGHTChecker is an ultrasound solution designed to verify the tightness of closed volumes. Use SDT TIGHTChecker to pinpoint the exact location of leaks in vehicles, buildings, tanks, and ships. The SDT TIGHTChecker works with SDT's ergonomic Flexible sensor and compact T-Sonic1 transmitter.

Specifications:

General		
Function		Ultrasound measurement device
Operable with		SDT FlexID2 and SDT T-Sonic1
Measurement interface		1 channel via a 7 pole LEMO connector
Maximum cable length	m(ft)	Up to 30 (98) (since v 3.1.535)
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Measuring range	dBµV	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	35 to 42
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz/ksps	64
ADC Resolution	bits	12
Firmware update		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010
Mechanical		
Housing material		ABS
Dimensions	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Weight	g (oz)	164 (5.78)
Battery/Utility connector		USB Mini-B 5-pin

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CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

Power		
Battery		2 AA size batteries
Autonomy		7 hours
Audio		
Operable with		SDT provided headset only
Headset		25 dB NRR Peltor quality heaphones
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation
FU.TIC.001	SDT TIGHTChecker
FUHDPH-1	Headphones
SIBAT1,5VALK-AA (*4)	BATTERY Alkaline 1,5V AA (Maxell-Panasonic-Duracel-Sanyo)
FUCABLSPLE7LE7-3	Spiral cable with 2 male 7-pole LEMO connectors
SICABUSBAUSBBM	USB Cable
FU.TIC.CBOX.001--01	Carrying case
FU.FLX2.001--01	SDT FLexID2
FU.T01.001--01	SDT T-Sonic1

NB: Additional details are available from the download section of SDT web site: www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not disassemble the instrument.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized services.
- Using any other headset or any sensor than the ones supplied with the instrument can cause internal damage to the equipment.
- Permanent hearing loss may occur if you use your headset at a high volume. Set the volume to a safe level.

Ver.	Editor	Nature of modification	Verified
5	CMA 2022/02/25	Safety recommendations /cable length (firmware >=3.1.508)	CGI
4	CMA 2021/03/01	Safety recommendations	RGO
3	CMA 2020/12/25	Kit content/add new info	CGR
2	CMA 2020/06/25	Revised version	CGR
1	AKP 2017/08/31	Original version	JPE
Ver.	Editor	Nature of modification	Verified

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

Ultrasound Solutions

Description:

The SDT TRAPChecker is an ultrasound solution designed to assess the condition of steam traps and valves.
The SDT TRAPChecker detects internal turbulence by defective steam traps and passing valves.

The SDT TRAPChecker works with SDT's RS2 Needle Contact Sensor.

Specifications:

General		
Function		Ultrasound measurement device
Operable with		SDT RS2 Needle Sensor
Measurement interface		1 channel via a 7 pole LEMO connector
Maximum cable length	m(ft)	Up to 30 (98) (since v 3.1.535)
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Typical measuring range	dBµV	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	35 to 42
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz/ksps	64
ADC Resolution	bits	12
Firmware update		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)
Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010
Mechanical		
Housing material		ABS
Dimensions	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Weight	g (oz)	164 (5.78)
Battery/Utility connector		USB Mini-B 5-pin

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Power		
Battery		2 AA size batteries
Autonomy		7 hours
Audio		
Operable with		SDT provided headset only
Headset		25 dB NRR Peltor quality heaphones
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation
FU.TPC.001	SDT TRAPChecker
FUHDPH-1	Headphones
FUCABLSPLE7LE7-10	Spiral cable with 2 male 7-pole LEMO connectors
SICABUSBAUSBBM	USB Cable
FU.TIC.CBOX.001--01	Carrying case
FU.SEN.RS2N.001-01	SDT RS2 Needle Contact Sensor.
FU.TPC.UGD.001-01	TRAPChecker - USER'S GUIDE W/ DATASHEET
SIBAT1,5VALK-AA	BATTERY ALKALINE 1,5V AA
FUTOOLSCRDRIV	Screw Driver (multi tools)
FU.TPC.CBOX.001-01	T6 EVOLUTION PLASTIC CASE

NB: Additional details are available from the download section of SDT web site at www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not disassemble the instrument.
- Do not use the equipment in areas where its use is prohibited (ex: Ex Zones).
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized services.
- Using any other headset or any sensor than the ones supplied with the instrument can cause internal damage to the equipment.
- Permanent hearing loss may occur if you use your headset at a high volume. Set the volume to a safe level.

Ultrasound Solutions

Ver.	Editor	Nature of modification	Verified
5	CMA 2022/02/25	Safety recommendations +firmware update >=3.1.508	CGI
4	CMA 2021/03/01	Safety recommendations	RGO
3	CGR 2021/01/04	Correction of Item Code of Kit Content/added new info	CMA
2	CMA 2020/06/25	Revised version	CGR
1	AKP 2017/08/29	Original version	JPE
Ver.	**Editor**	**Nature of modification**	**Verified**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT Ultrasound Solutions

Datasheet T-Sonic1 (FU.TSO1.001)
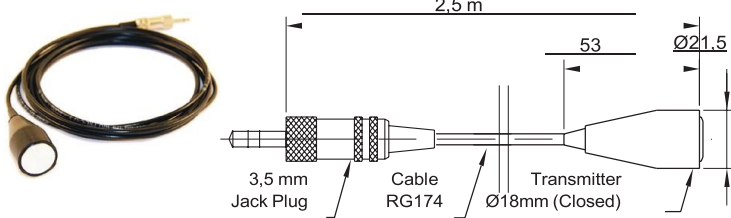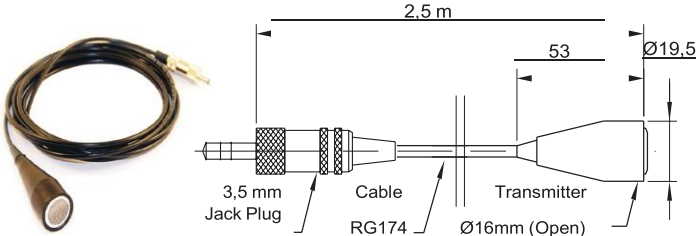
Description:

T-Sonic1 is a directional Ultrasound Transmitter including a single transducer. Designed for tightness inspection of constructions or industrial products, T-Sonic1 should be used in combination to SDT Ultrasound Receivers

Specifications:

General			
Transmitter frequencies		kHz	39.6 and 39.9
Wobulation period		ms	80
Transmitted Sound Pressure Level at 100 cm, Ref. 0 dB=20 µPa	Boost off	dB SPL	85
	Boost on		105
Beam angle with -6 dB of attenuation		°	60
Power supply			2 AA batteries
Autonomy with Alkaline batteries		hours	30
Environmental			
Operating temperature range		°C (°F)	-10 to +50 (14 to 122)
IP rating			30
Approvals			EMC (2014/30/EU) ROHS (2011/65/EU)
Mechanical			
Housing material			Acrylonitrile Butadiene Styrene (ABS)
Weight including batteries		g (oz)	122 (4.3)
Connector for external transducer			Jack 3.5
Dimensions			

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CBC BE03 7320 3539 8684 BIC CREGBEBB • BNP PARIBAS France FR76 3000 4023 2300 0113 8083 378 BIC BNPAFRPPNFE • General conditions on www.sdtultrasound.com

Optional accessories:

Reference	Designation
FUSEUSTC18/J3M	External Closed Transducer 18mm, cable 2.5m, jack 3.5 2,5 m 53 Ø21,5 3,5 mm Jack Plug Cable RG174 Transmitter Ø18mm (Closed)
FUSEUSTO16/J3M	External Open Transducer 16mm, cable 2.5m, jack 3.5 2,5 m 53 Ø19,5 3,5 mm Jack Plug Cable RG174 Transmitter Ø16mm (Open)

Safety recommendations:

Ultrasound at sufficient sound pressure levels can cause hearing damage even if it cannot be heard. Safety standards and guidelines have been developed with the goal of protecting against hearing damage in humans. Safety procedures for the protection of personnel are similar to those used for audible noise. The objective is to ensure that sound pressure levels do not exceed the recommended maximum permissible exposure level. SPL (Sound pressure Level) exposure limits differ somewhat for ultrasound and audio frequencies where 0 dB$_{spl}$ = 20 µPa.

In short:

- Reference 1 : Heath Canada :
  Max 110 dB$_{spl}$ for frequencies from 25 kHz to 50 kHz.
  This exposure limit is independent of time.
- Reference 2 : International standard EN 61010-1:
  max 110dB$_{spl}$ from 20 kHz to 100 kHz.

Laboratory measurements on several calibrated devices emitting in open air show that, in order to keep the level below 110 dB$_{spl}$

When using a T-Sonic 1 at its highest emission level, the operator shall either stay at a distance larger than 1.2 m (4 feet) from the transmitter, or wear ear protection. Earmuffs or headphones will fit, e.g. the provided headset used with SDT devices will also fit. If the transmitter is placed inside a closed volume and the operator stays outside checking for tightness, ultrasound outside the volume is so strongly attenuated that an operator outside the closed volume does not incur any risk.

SDT Ultrasound Solutions

Ver.	Editor	Nature of modification	Verified
4			
3			
2	CMA 2021/07/15	Revised version	CGR
1	AKP 2017/08/29	Original version	JPE
Ver.	Editor	Nature of modification	Verified

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

SDT Ultrasound Solutions

Datasheet T-Sonic9 (FS.TSO9.001)
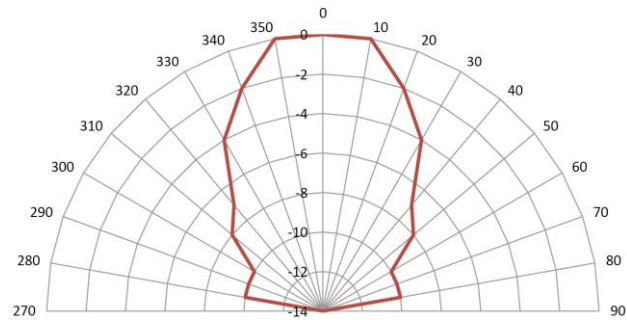
Description:

T-Sonic9 is a directional Ultrasound Transmitter including 9 transducers. Designed for tightness inspection of constructions or industrial products, T-Sonic9 should be used in combination to an Ultrasound Receiver as the SDT270 or the SDT200.

Figure1: Dimensions mm (in.)

Specifications:

General					
Transmitter frequencies		39.9 and 40.1 kHz	Wobulation period		80 ms
Power supply			USB Power Supply 5VDC @ 1A		
			6 AA batteries		
Transmitted Sound Pressure Level *at 1m, Ref. 0 dB*=20 µPa	Level 1	85 dB SPL	Battery lifespan *With Alkaline Batteries AA LR6*	Level 1	24h
	Level 2	95 dB SPL		Level 2	21h
	Level 3	101 dB SPL		Level 3	19h
	Level 4	105 dB SPL		Level 4	18h30
	Level 5	111 dB SPL		Level 5	11h
	Level 6	117 dB SPL		Level 6	5h30

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www.sdtultrasound.com

Beam Angle

Environmental

Operating temperature range	-10 to +50 °C (14 to 122 °F), Non-condensing
IP rating	40
Approvals	EMC (2014/30/EU), ROHS (2011/65/EU)

Mechanical

Housing material	Acrylonitrile Butadiene Styrene (ABS)-PC
Weight (including batteries)	400 g (14oz)

Wireless Communication (remote control)

Type	Bluetooth® 4.0 Certified ISM 2.4GHz module
Frequency band	2402 – 2480 MHz
Transmitter power max.	4 dBm
Using distance	20 m/65 ft

Kit content (FS.TSO9.001):

Reference	Designation
FU.TSO9.001	US transmitter device without batteries
FU.TSO9.002	Remote control
FA.TSO9.DVP	Protection holster EPDM with magnets
FAHOLSAC-01	Carrying strap
SICABUSBAUSBBM	Cable USB type A & mini USB – 1,8 m
SIBAT1,5VALK-AA	Battery alkaline 1,5 V AA
FA.TSO9.DM	User guide & datasheet
FATOOLSCRDRIV	Screwdriver set
SI.TSO9.MMF.010-01	Ultrasound attenuator disk (see user guide)

SDT Ultrasound Solutions

Safety recommendations:

Ultrasound at sufficient sound pressure levels can cause hearing damage even if it cannot be heard. Safety standards and guidelines have been developed with the goal of protecting against hearing damage. Safety procedures for the protection of personnel are similar to those used for audible noise. The objective is to ensure that sound pressure levels do not exceed the recommended maximum permissible exposure level. SPL (Sound pressure Level) exposure limits differ somewhat for ultrasound and audio frequencies where 0 dB$_{spl}$ = 20 µPa.

In short:

- Reference 1 : Heath Canada :
  Max 110 dB$_{spl}$ for frequencies from 25 kHz to 50 kHz.
  This exposure limit is independent of the exposure time.
- Reference 2 : International standard EN 61010-1:
  max 110 dB$_{spl}$ from 20 kHz to 100 kHz.

Laboratory measurements on several calibrated devices emitting in open air show that,
in order to keep the level below 110 dB$_{spl}$

When using a T-Sonic 9 at its highest emission level, the operator shall either stay at a distance larger than 3 m (10 feet) from the transmitter, or wear ear protection. Earmuffs or headphones will fit, e.g. the provided headset used with SDT devices will also fit. If the transmitter is placed inside a closed volume and the operator stays outside checking for tightness, ultrasound outside the volume is so strongly attenuated that an operator outside the closed volume does not incur any risk.

Ver.	Editor	Nature of modification	Verified
4	CMA 2022/03/25	Addition of the attenuator disk used for functional tests	CGR
3	CMA 2021/07/15	New layout, safety recommandations	CGR
2	JPE 2018/05/15	Revised version	CGR
1	AKP 2017/08/29	Original version	JPE
Ver.	Editor	Nature of modification	Verified

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

Description:

The SDT ULTRAChecker is an ultrasound solution specifically designed to utilize the complete range of second generation SDT ultrasound sensors, both airborne and structure borne, featuring a built-in preamplifier. With the audible rendering, it enables comprehension inspection, while the real-time display of RMS values, in either a bar graph or numerical format facilitates immediate diagnosis.

Specifications:

General		
Function		Ultrasound measurement device
Operable with		FlexID2, LUBESense1, RS2T, RS2N, AIRSense, ULTRASense, ParaDish2, RS2A, ExtUsAmp (cable for external transducers only, since v 3.1.508)
Measurement interface		1 channel via a 7 pole LEMO connector
Maximum cable length	m (ft)	Up to 30 (98) (since v 3.1.535)
Sensitivity		Class I exceeding ASTM 1002-11 requirements for gas leak detection with the appropriate sensor.
Display		160x128 pixels Color OLED
Keyboard		5 function keys
Measuring range	$dB\mu V_{RMS}$	-6 to 99.9 (reference 0 dB = 1 µV)
Resolution	digits	0.1
Measurement bandwidth	kHz	35 to 42
Signal amplification	dB	+30 to +102 by step of 6 dB
RMS period time		250 ms (main screen) / 3 sec (bar graph)
Sampling frequency	kHz/ksps	64, post-heterodyne
ADC Resolution	bits	12
Firmware update *A firmware update may be required to support the new SDT sensors*		Via SDT Updater https://sdtultrasound.com/support/software/
Environmental		
Operating temperature range	°C (°F)	-10 to +50 (14 to 122) non-condensing
IP rating		IP 42
Compliance		EMC compliant (directive 2014/30/EU) ROHS compliant (directive 2011/65/EU)

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www.sdtultrasound.com

Standards		EN 61326-1:2013, EN 55011:2016 + A1:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + IS1:2009 +A2:2010
Mechanical		
Housing material		ABS
Dimensions Housing	mm (in)	158x59x38.5 (6.22x2.32x1.51)
Weight	g (oz)	164 (5.78)
Output interface *The USB port can be utilized as a power source when used with an external battery*		USB Mini-B 5-pin/App/Web 6.35 mm audio jack (see SDT LEAKReporter app)
Power		
Battery		2 AA batteries
Autonomy* *Varies dependent on the battery and use*		7 hours
Audio		
Operable with		provided headset only (Peltor 3M)
Maximum audio output (limitation)	dB SPL	+83 with the provided headset
Headset (PPE)		25 dB NRR
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Kit content:

Reference	Designation FS.ULC.002-01
FU.ULC.001-01	ULTRAChecker w/o Batteries (S/N 557 YYY XXXX)
FU.ULC.UGD.001-01	ULTRAChecker – User's guide w/ datasheet
SIBAT1,5VALK-AA (x2)	BATTERY Alkaline 1,5V AA (Maxell-Panasonic-Duracel-Sanyo)
FU.SEN.UTS.001-01	ULTRASense US sensor (S/N 006 YY NNNN)
FU.SEN.RS2T.001-01	RS2T THREADED sensor w/o cable (black cover, S/N 532 YY XXXX)
FUCABLSPLE7LE7-10	CABLE SPIRAL – LEMO7P<>LEMO7P L=6/18dm Black/Black
SA.CP2.MMF.002-B	NEEDLE Assembly 133 mm CP2
FUSEACMAG-02	Curved magnetic foot D30*23
FUHDPH-21	HT52B-112 3M PELTOR CH-3 FLEX2 Listen only headphones w/ neckband
SICABUSBAUSBBM	SB2412 USB2.0 Cable usb type A<>USB type B5 mini,1.8m-black
FUTOOLSCRDRIV	IT3874 Screwdriver set w/ 6 bits - grey w/ led - no print
FU.ULC.CBOX.001-01	T6 Evolution plastic case blue/grey locks - ULTRAChecker (w/logo SDT+foam)

Accessories:

Reference	Designation
FU.SEN.LUBE.001	LUBESense1 w/o cable (Blue cover – S/N 540 YY XXXX)
FU.SEN.RS2N.001	RS2NL100 NEEDLE CONTACT PROBE W/O CABLE (NL=82mm - BLACK COVER - S/N 535 YY XXXX)

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FU.SEN.RS2N.002	RS2NL300 NEEDLE CONTACT PROBE W/O CABLE (NL=275mm - BLACK COVER - S/N 535 YY XXXX)
FU.SEN.RS2N.003	RS2NL500 NEEDLE CONTACT PROBE W/O CABLE (NL=470mm - BLACK COVER - S/N 535 YY XXXX)
FU.SEN.AIR.001	AIRSense – Airborne US Sensor (S/N 007 YY NNNN)
FU.PAR2.005	PARABOLIC SENSOR - PARADISH2 (LASER CLASS 2, <1mW) (S/N 524 YY XXXX)
FU.FLX2.001	FlexID2 - W/ AMPLI (NEW PCB) - GOOSENECK 400mm W/O SENSOR (S/N 002 YY NNNN) FA.FLX2.R16.001-01 : REMOVABLE SENSOR 16mm FOR FLX2 (PLASTIC HOUSING) S/N DYYNNNN FA.FLX2.R10.001-01 : REMOVABLE SENSOR 10mm FOR FLX2 (PLASTIC HOUSING) S/N CYYNNNN
FU.SEN.RS2A.001	RS2 - AIRBORNE OPEN SENSOR - IP40 W/O CABLE (BLACK COVER - S/N 537 YY XXXX)
FA.SENS.CABL.002	COILED CABLE 7P LE7<>J3M W/ PRE-AMPLIFIER FOR EXT. CUSTOMER US SENSOR (S/N 009 YY NNNN)

Note: Please note that additional details can be found in the download section of the SDT website at www.sdtultrasound.com

Safety recommendations:

- Read and follow the user manual carefully.
- Do not expose the equipment to rough handling or heavy impacts.
- Do not attempt to disassemble the instrument.
- Refrain from using the equipment in areas where its usage is prohibited such as Ex Zones.
- Do not expose the equipment to high humidity or direct contact with water.
- All repairs and calibrations must be performed by SDT or authorized service centers.
- Using any headset or other sensor than the ones supplied with the instrument can result in internal damage to the equipment.
- Inspectors should avoid listening at max volume for extended periods of time.

7	CMA 2023/07/17	Item volume, section safety recommendations	RGO
6	CMA 2023/05/23	Compatibility with RS2A + ExUsAmp and clarification	RGO
5	CMA 2022/02/25	Compatibility with Paradish2 (firmware >=3.1.508)	CGI
4	CMA 2021/03/01	Safety recommendations, max cable length	RGO
3	CGR 2021/01/04	Corrections, new info	CMA
2	CMA 2020/12/15	Added sensor compatibility	CGR
1	CMA 2020/06/25	Original version	CGR
Ver.	**Editor**	**Nature of modification**	**Verified**

The information herein is believed to be accurate to the best of our knowledge.
Due to continuous research and development, specifications are subject to change without prior notice.

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Commercial document	DC. VGL.DAT.001
Datasheet VIGILANT	

Description:

VIGILANT is a multi-channel monitoring system that can collect Ultrasound & Vibration data along with other process parameters to provide machinery health information & diagnostics. VIGILANT runs a secured embedded webserver for an easy configuration and for signal analysis & trending. Equipped with several means of communication, it offers an unmatched versatility to meet your needs. Access to the system is handled through any web browser so no software installation or license is required. Data collection is fully configurable by users, data are stored in the unit and displayed in customizable dashboards.

Features:

- VIGILANT unit available in two configurations (permanent or Mobility case)
- Designed for SDT CONMONSENSE Ultrasound Sensor (RSV)
- Extended compatibilities to standard sensors (accelerometer IEPE/ICP, Tachometer, Temperature)
- 8 dynamic acquisition channels (High sampling rate)
- 4 additional channels (Low sampling rate)
- On-board secured webserver included for configuration and visualization
- Easy installation
- Compatible with the most Industrial communication standards

Specifications:

General		
Function		Multi-channel acquisition system
Operable with		Provided sensors (voltage output)
Main dynamic inputs		8 channels (for vibration and ultrasound)
Auxiliary inputs		4 channels (ex: tachometer, temperature, etc.)
USB port		1 Host, used as power supply only
Status indicators		13xRGB LED
Power supply	V	20-26 V DC, 24 V DC nominal
Power consumption	W	<12
Internal battery (for safe shutdown o		Lithium-Po, 3.7 V 1300 mAh

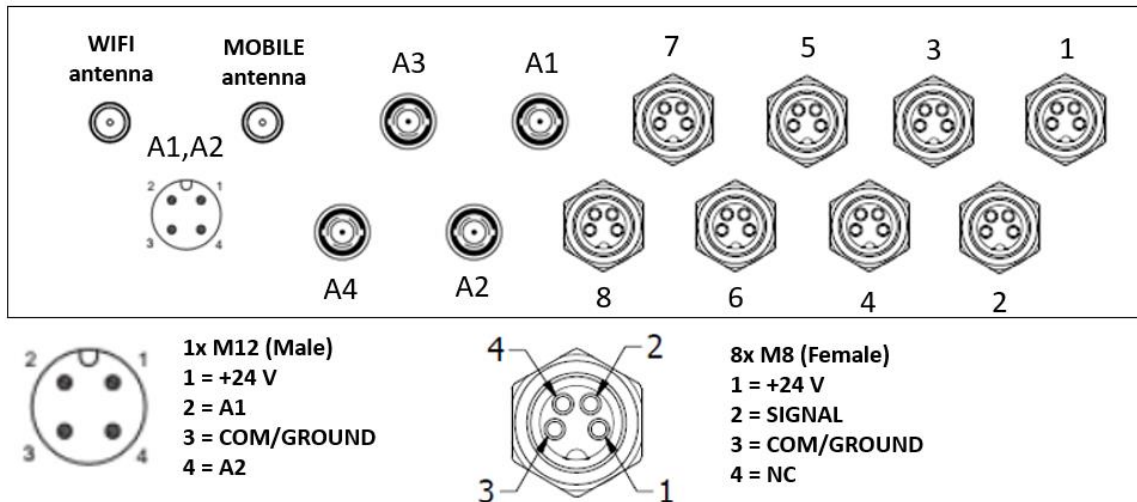| System features		
Configuration system		Integrated local webserver application
CPU		ARM Cortex™-A9 Quad Core (NVIDIA® Tegra™ 3)
Frequency clock	GHz	1.4
RAM	GB	1
Firmware		Free of charge, regularly updated (see user manual)
Storage capacity	GB	4, Micro-SD card, format ext3
Database system		SQLite
Network interface		Ethernet 10/100
Communication		DHCP/static configuration
Default IP access		192.168.0.150
Industrial communication		MODBUS TCP/IP (client and/or server) & OPC UA (option)
Backup option		FTP, Rsync or rest API
Mechanical features		
Mounting		Standard 35 mm DIN rail
Sensor interface		3-pole pluggable terminal block provided with the unit
Size of the unit	mm(inch)	Lxlxh: 162x95x27 (~6.38x3.74x1.06)
Weight of the unit	kg (oz)	0.55 (~19.4)
Operating temperature range	°C (°F)	-30 to +44.5°C (-22 to 111.2 °F), non-condensing
Humidity	%	95% RH
Approvals		EMC compliant (directive 2014/30/EU)
		WEEE compliant (directive 2012/19/EU)
		ROHS compliant (directive 2011/65/EU)
Signal acquisition		
		Main inputs (from 1 to 8)
Sampling rate	Hz	Up to 51200
DC range	V	± 24
AC range	Vpp	24
IEPE/ICP Sensors drive current		5.5mA @20V
ADC resolution	bits	16
Input configuration modes		Dynamic, Static, Digital, Pulse train
Harmonic distortion	dB	-70
Accuracy	%	1
Dynamic range	dB	110
Gain	dB	0 to 42, range of +6
Points type		Dynamic (preferred), Static, Tachometer
		Auxiliary inputs (A1, A2, A3 and A4)
Sampling rate	Hz	Up to 200
DC range	V	± 24
ADC resolution	bits	16
Power output	V	+24
Input configuration modes		Static, Pulse Train (A1 and A2 only)
Accuracy	%	1
Gain	dB	0 to 30, range of +6
Points type		Static, Tachometer (A1 and A2 only)
Signal processing		
Spectral lines	lines	Up to 12800
Time waveform samples	samples	128 up to 262016
Windows type		Hann, Hamming, Blackman, Rectangular

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Processing modes		Waveform, Spectrum & Waveform, Demodulation, Long Waveform, Order Tracking
Parameters		Mean, RMS, True Peak, True Peak to Peak, calculated Peak, calculated Peak to Peak, spectrum RMS, Peak extraction, Frequency extraction, Crest Factor, Kurtosis, Peak phase, Smax
Available filters		Butterworth, Bessel, Chebyshev
Number of averages		1 up to 32
Overlap	%	0 up to 99
Bearing database		Included 50 k bearing references
Warranty		
Lifetime warranty		Visit www.sdtultrasound.com for details

Additional specifications with the Mobility case:

Mobility case		
Function		Mobile acquisition system, design to travel to off-site assets
Composed of		1 Vigilant unit - pre-wired configuration - gateway for advanced communications - rugged, custom, waterproof case - AC/DC convertor
Connectivity options (Gateway Teltonika RUT 240 preconfigured)		- WIFI (access point) - WAN & LAN - MOBILE 3G/4G (LTE, SIM card not included) 2 antennas provided
Configuration (rear-panel)		8 x M8 Female 4 Pole for the main inputs 4 x BNC for the static inputs 1 x M12 (common with A1 & A2)
Power supply Default IP access	V	220 V AC with the provided AC/DC adaptor 10.8.2.150 (from the ethernet port of the case)

WIFI antenna   MOBILE antenna   A3   A1   7   5   3   1

A1,A2

A4   A2   8   6   4   2

1x M12 (Male)
1 = +24 V
2 = A1
3 = COM/GROUND
4 = A2

8x M8 (Female)
1 = +24 V
2 = SIGNAL
3 = COM/GROUND
4 = NC

Rear panel of the Mobility case

Accessories:

CONMONSENSE SENSORS & CABLES	
FU.SEN.RSV.001	RSV 0..10V HETERODYNE US COND - THREADED SENSOR IP65 W/O CABLE (~ VIGILANT) (RED - S/N 569)
FU.SEN.RSV.002	RSV 0..10V HETERODYNE US COND - AIRB. SENSOR CLOSED IP65 W/O CABLE (~VIGILANT) (RED - S/N 570)
FU.SEN.RSV.003	RSV 0..10V HETERODYNE US COND - AIRB. SENSOR OPEN IP40 W/O CABLE (~VIGILANT) (RED - S/N 571)
Cables with Straight M8 Connector – PUR RAL7021 -25°C.+90°C IP65 – STRAIGHT SHIELDED	
FU.RSC.CABL.01.015-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 1.5m
FU.RSC.CABL.01.030-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 3.0m
FU.RSC.CABL.01.050-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 5.0m
FU.RSC.CABL.01.100-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 10.0m
FU.RSC.CABL.01.200-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END 20.0m
FU.RSC.CABL.01.XXX-1	SENSOR-/ACTOR CABLE M8 4PF <> FREE END XX.Xm
Cables with 90° M8 Connector – PUR RAL7021 -25°C.+90°C IP65 – STRAIGHT SHIELDED	
FU.RSC.CABL.02.015-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 1.5m
FU.RSC.CABL.02.030-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 3.0m
FU.RSC.CABL.02.050-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 5.0m
FU.RSC.CABL.02.100-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 10.0m
FU.RSC.CABL.02.200-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END 20.0m
FU.RSC.CABL.02.XXX-1	SENSOR-/ACTOR CABLE M8 4PF 90° <> FREE END XX.Xm
Cables with straight M8 connector 4PM <> M8 4PF – PUR BLACK -25°C.+80°C IP65 – STRAIGHT SHIELDED (For the Mobility case)	
FU.RSC.CABL.05.015-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 1.5m
FU.RSC.CABL.05.030-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 3.0m
FU.RSC.CABL.05.050-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 5.0m
FU.RSC.CABL.05.100-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 10m
FU.RSC.CABL.05.200-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF 20m
FU.RSC.CABL.05.XXX-1	SENSOR-/ACTOR CABLE M8 4PM <> M8 4PF XX.Xm
MOUNTING ACCESSORIES AND OTHERS	

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FU.RSC.ACC.001	Configuration Interface. Change the gain and/or the mode of CONMONSENSE Sensors (see DC.RSC.DAT.015)
FA.RSC.ACC.002-01	CONMONSense - HEAT SINK - AISI303 Ø30,0 (M6) x74,5mm
FU.SEACMAG-01	Flat Magnetic Foot
FU.SEACMAG-02	Curved Magnetic Foot
FU.SEACMP1	Mounting pad
FA.RSC.ACC.001-01	Mounting Accessories/Brackets
ACCELEROMETERS (ICP/IEPE) & CABLES	
FU.SEN.ACC.001	HS-1001005006, 100 SERIES CONNECTOR ACCELEROMETER, TOP ENTRY 100mV/g, 2 PIN MS CONNECTOR, M6x1 MALE
FU.SEN.ACC.007	HS150 S 100 50 06 ACCELEROMETER MULTI-PURPOSE HIGH TEMP, SIDE ENTRY 100mV/g, 2 PIN MS CONNECTOR, M6
FU.ACC.CABL.04.100	AC334-10 - SENSOR CABLE MS2 STRAIGHT (ACC) <> FREE END 10,0m - SHIELDED - FEP BLUE -80°..+200°
FU.ACC.CABL.04.250	AC334-25 - SENSOR CABLE MS2 STRAIGHT (ACC) <> FREE END 25,0m - SHIELDED - FEP BLUE -80°..+200°
ACCELEROMETERS (ICP/IEPE) with TEMPERATURE & CABLES	
FU.SEN.ACC.011	HS-100T1005206, 100 SERIES ACCELEROMETER W/ TEMP, TOP ENTRY 100mV/g - 10 mV/ºC, 3 PIN MS CONNECTOR
FU.ACC.CABL.05.005	HS-AC440-05 - SENSOR-/ACTOR FEP CABLE MS3 FEM STRAIGHT (ACC & TEMP) - Length 5m - Free end
FU.ACC.CABL.05.020	HS-AC440-20 - SENSOR-/ACTOR FEP CABLE MS3 FEM STRAIGHT (ACC & TEMP) - Length 20m - Free end
TRIAXIAL ACCELEROMETERS (ICP/IEPE) & CABLES	
FU.SEN.ACC.012	HS-173R1005406, 173 SERIES TRIAXIAL ACCELEROMETER, TOP ENTRY 100mV/g - M12 CONN - M6x1 MALE STUD
FU.ACC.CABL.11.030	SAC-4P- 3,0-PUR/M12FS (1668111) - SENSOR-/ACTOR CABLE M12 4PF <> FREE END 3,0m - SHIELDED - PUR BLACK
TACHOMETER	
SITOMTACHO-10	MiniVLS 212 SPEED SENSOR PLAIN HOUSING 8-24Vdc 0,1...250.000rpm - 10°...+40°C IP67 M12 4P
FU.ACC.CABL.11.030	SAC-4P- 3,0-PUR/M12FS (1668111) - SENSOR-/ACTOR CABLE M12 4PF <> FREE END 3,0m - SHIELDED - PUR BLACK
POWER SUPPLY	
FU.VIG.PSU.001	VIGILANT - POWER SUPPLY UNIT 24V 60W DIN-RAIL MOUNT W/ WIRING
FU.VIG.PSU.002	VIGILANT - POWER SUPPLY UNIT 24V 30W DIN-RAIL MOUNT W/ WIRING

NB: Additional details are available from the download section of SDT web site: www.sdtultrasound.com

4	CMA 10/11/2022	Accessories added	CGI
3	CMA 2021/20/04	ERRATUM bins/KSPS in signal processing	RGO
2	CMA 2021/13/04	Minor revision	FBO
1	CMA 2021/10/03	Original version	FBO
Ver.	**Editor**	**Nature of modification**	**Verified**

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