

SCOUT220-IS

Product Datasheet

Bently Nevada* Asset Condition Monitoring



Description

SCOUT220-IS is an Intrinsically Safe portable data collector solution designed for hazardous environments. You can use this small form-factor, rugged device to take vibration recordings and upload the collected data for detailed analysis in System 1* Evolution.

The overall system consisting of the data collector and the industrial handheld is rated **ATEX Zone 1 / Zone 21** for non conductive dust, and **CSA Class 1 Zone 1**. The SCOUT220-IS data collector also gives you access to sites requiring hot work permits.



The data collector works in tandem with the S1 Collector app which runs on an industrial smartphone handheld device. You can collect vibration data, take pictures, send text messages, check your email, make phone calls and run other apps all on a single device.

The data collector uses Bluetooth to communicate with the industrial handheld which is also rated for hazardous environments. The S1 Collector app exchanges data with System 1 Evolution via Wi-Fi or a cellular network.

You can set up your routes in System 1 Evolution and sync up the data with the app using remote communication servers.

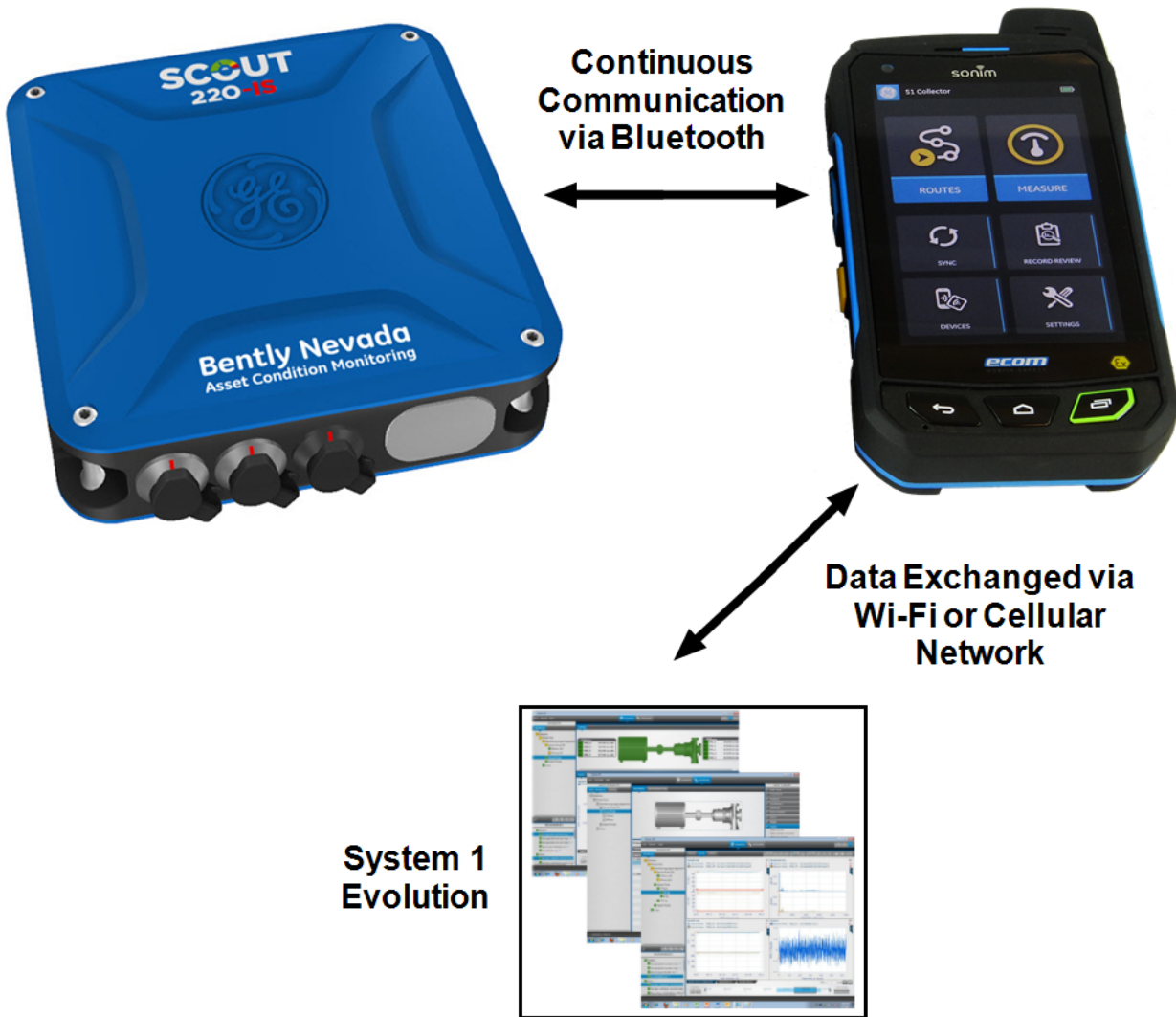
The industrial handheld eliminates the need for a PC or other software packages at the data collection site. It is the only device you need to receive routes and send collected data from the field.

You can take recordings from a predefined route as well as off-route recordings that are not part of a route sequence.



Off-route recordings may be necessary if a machine's vibration pattern does not meet your expectations.

The data collector has an anti-static neck strap with Sensor Keeper as well as detachable safety breakaways to protect you in case the cables are caught in rotating machinery. The integrated Sensor Keeper will retain your sensor while you walk or climb to reach other machines.



SCOUT220-IS Specifications

Sensors

Sensor input	2 Channels, Simultaneous sampling
Compatible sensor types	Accelerometer, Velocity & displacement
AC coupled range	16 V peak-peak Allows for ± 8 V sensor output swing (± 80 g)
DC coupled ranges	0 to 20 V, -10 to 10 V, -20 to 0 V
Connectors	2 x LEMO connectors for CH1 & CH2 1 X LEMO connector for Tach/Keyphasor All three cables have safety inline break-free connectors.
Analog to digital conversion	24-bit ADC
Sensor excitation current	0 mA or 2.2 mA (configurable), 24 V maximum 2.2 mA required power for IEPE/ICP-type sensors
Sensor detection	Measures sensor bias voltage Warns if short circuit or not connected

Tachometer

Optional IS Zone 0 rated laser Tach	Battery-powered handheld laser sensor Triggers when beam on reflective tape Range 10cm to 2 meters Speed 6 to 100K rpm
Optional Zone 2 rated laser Tach	Laser sensor powered by SCOUT220-IS Triggers when beam on reflective tape Range 10cm to 2 meters Speed 6 to 250K rpm
Other sensor types supported	Contact, TTL Pulse, Keyphasor*
Power supply to sensor	5 V, 40 mA Rated for Zone 2, 22 and Division 2 only
Input Impedance & max values	100 K Ω ± 28 V max
Tach/Keyphasor threshold	Auto, from -20V to +20V Requires ≥ 4 Vp-p signal

Speed range	6 RPM to 1200 000 RPM (0.1 Hz to 20 kHz)
Accuracy	$\pm (0.1 \% + 1 \text{ cpm})$

Parameter Indication

Dynamic signal range	> 95 dB typical at 400 line resolution
Harmonic distortion	Less than -70 dB typical Other distortions and noise are lower
Units	g or m/s ² in/s or mm/s mil or mm or μm 0-peak, peak-peak or RMS auto-scale by 1000x when required
Magnitude & cursors	Overall RMS value Waveform True pk-pk Dual cursors Digital readouts on chart
Base accuracy	$\pm 1\%$ of readings approximately 0.1 dB For DC level: % of full scale For AC signal: % of reading
High frequency attenuation	≤ 0.1 dB 100 Hz to 10 kHz ≤ 3 dB >10 kHz to 40 kHz Attenuation tolerances are in addition to base accuracy.
AC coupling attenuation	≤ 0.1 dB 10 Hz to <100 Hz ≤ 3 dB 1 Hz to <10Hz
Attenuation due to Integration	≤ 0.1 dB 10 Hz to <100 Hz ≤ 1.5 dB 1 Hz to <10 Hz Values apply to single integration (Acceleration to velocity) Double the values for double integration (Acceleration to displacement)

Spectrum Display

Fmax ranges	25, 50, 100, 125, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000, 6000, 8000, 10,000, 15,000, 20,000, 30,000, 40,000 Hz Or equivalent CPM values Or orders-based from 1X to 999X
Fmin possible range	0 to Fmax Instrument zeroes all spectral lines below Fmin.
Resolution	400, 800, 1600, 3200, 6400 lines 3200 lines max. for dual channel measurements
Frequency scale	Hz, CPM, Orders Linear scale with zooming
Amplitude scale	Acceleration, velocity, displacement Linear auto scaling
Window shapes	Hanning Rectangular
Overlap	(0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5) % Dependent on Fmax and number of lines
Number of averages	1, 2, 4, 8, 16, 32, 64, 128 Increases sampling time proportionally
Averaging types	Linear, exponential, peak hold
Demodulation bandwidths	23 bandwidth options From 125 Hz to 1250 Hz up to 16 kHz to 20 kHz
6Pack	Up to 40 kHz & 3200 lines (1 channel) Up to 20 kHz & 1600 lines (2 channels) Spectrum and waveform for low-frequency, high-frequency demodulation

Waveform Display

Number of samples	1024, 2048, 4096, 8192, 16,384
Time scale	10 ms to 256 seconds or orders based from 1 to 999 revs

Communication

Bluetooth	BT 4.0 Classic, not Bluetooth low energy
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Battery & Charger

Battery type	Custom Lithium Ion pack, 7.4 V, 4000 mAh Not user accessible but factory replaceable
Operating time	10 hours Typical on-route data collection
Charger type	Internal charging, automatic control External power pack 12 V DC, 3 A output
Charge rate	2 A nominal 3 hours for complete charge

Mechanical


Size	5.1" W x 5.1" L x 1.4" H 130 x 130 x 35 mm
Weight	1.5 lb ≈ 680g

Environmental Limits

Operating temperature	-4 °F to 140 °F (-20 to 60) °C 122 °F (50 °C) max when used in Ex hazardous areas
Storage temperature & humidity	-4 °F to 140 °F (-20 to 60 °C), 95% RH If storage exceeds 1 month: Up to 95 F (35 °C), 85% RH
Ruggedness drop & sealing	IP67 (Certificate Pending) Procedure: 26 drops Each drop at 4' (1.2 m) onto concrete Following MIL-STD-810F-516.5-IV
Ambient temperature for charging battery	0°C to 25 °C

Compliance & Certifications

For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

R&TTE/EMC	<p>EN 61000-6-2 EN 61000-6-4 EN 300 328 EN 301 489-1 EN 301 489-17</p> <p>EN 61326-1</p> <p>European Community Directives: R&TTE Directive 1999/5/EC</p> <p>(Through April 19, 2016): EMC Directive 2004/108/EC</p> <p>(From April 20, 2016): EMC Directive 2014/30/EU</p>
Intrinsically Safe data collector for hazardous locations	<p>ATEX/IECEX</p> <p> II 1 (1) GD II 3 (3) GD</p> <p>Ex ia [ia] IIC T4 Ga Ex ic [ic] IIC T4 Gc Ex ia [ia Ga] IIIB T135°C Da Ex ic [ic Gc] IIIB T135°C Dc</p> <p>CSA/NRTL/C</p> <p>Class I Division 1 Groups ABCD Class I Division 2 Groups ABCD Class II Division 1 Groups FG Class II Division 2 Groups FG</p> <p>Class I Zone 0, Ex/AEx ia [ia] IIC T4 Ga Class I Zone 2, Ex/AEx ic [ic] IIC T4 Gc Zone 20, Ex/AEx ia [ia Ga] IIIB T135°C Da Zone 22, Ex/AEx ic [ic Gc] IIIB T135°C Dc</p> <p>T4 @ Ta = -20°C to +50°C</p> <p>The installation must comply with the SCOUT200 Hazardous Location Installation Control Drawing, 111M0029, including all its footnotes and warnings.</p>

The above ratings include the following areas:

- Intrinsically safe Zone 0, 20 and Division 1
- Lower level protection of Zone 2, 22 and Division 2

Only the following restricted sensor types are certified for intrinsically safe use:

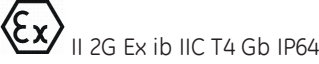

- SCOUT-powered sensors such as ICP/IEPE accelerometers
- Self-powered tachometers such as battery-powered handheld laser tachometers

You can use other types of sensors such as buffered outputs from instrumentation racks **only** in lower rated Zone 2, Division 2 areas. Refer to SCOUT200 Hazardous Location Installation Control Drawing, 111M0029, for details.



Industrial Handheld Specifications

ecom® Smart-Ex 01-A Part Number 109M8026
ecom® Smart-Ex 01-E Part Number 111M5763

Display	4" Gorilla Glass 2 Glove touch
Mobile	4G/LTE Quad Band UMTS and GSM
WiFi	802.11 a/b/g/n Dual band WiFi Direct WiFi Hotspot
BlueTooth	4.0 and LE
Cameras	8MP back 1MP front
Light	Camera flash LED torch
Sensors	GPS NFC
OS	Android 4.4
CPU	Quad core 1.2 GHz
Memory	1 GB RAM 16 GB internal storage
Battery	Li-Ion 3600 mAh Up to 40 hr talk time
Size	137 x 72 x 27 mm 370 g
Ruggedness	IP68 -20 to 55 °C
Hazardous Area Rating	  Class I, Division 1, Groups A-D T4 Class II & III, Division 1, Groups E-G T4




For the latest specifications and ratings of these industrial handheld devices, visit www.ecom-ex.com.

Ordering Information

For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

SCOUT220IS-AXX-BXX

- A:** Handheld Options
00 None
01 ecom Smart-Ex 01-A (North America)
02 ecom Smart-Ex 01-E (Europe)
- B:** Data Collector Approval Options
05 Multi Approvals (CSA, IECEx, ATEX)

 **The overall hazardous system rating is defined by the minimum rating of the data collector, industrial handheld and accessories.**

Metrology certification is available with your order.

Basic Kit

We offer SCOUT220-IS in a basic kit with the option to purchase the System 1 Evolution software and license separately. Additional accessories are also available.

Part Number	Description	Quantity
	S1 Collector app	1
109M2380	SCOUT220-IS Data Collector	1
109M8026	ecom Smart-Ex 01-A (North America, Australia and New Zealand)	1
or 111M5763	ecom Smart-Ex 01-E	
108M4044	AC power adapter	1
109M2382	DC car adapter	1
PLUS0230	Category A power plug, USA / Canada	1
PLSA0241	Category D power plug, South Africa / India	1

PLAU0228	Category M power plug, Australia / New Zealand / China	1
PLHK0245	Category G power plug, Hong Kong / UK	1
PLEU0229	Category C Power plug, Europe	1
109M2381	Top exit accelerometer	1
ACCL0561	Side exit accelerometer	1
109M2383	Coiled cable with breakaways LEMO	2
MAGF0104	Accelerometer magnetic base	2
109M2385-012	BNC to silver-LEMO cable The cable connects rack buffered outputs to CH1/CH2 inputs.	2
110M8172-012	BNC to black-LEMO cable The cable connects rack buffered Keyphasor to Tach input.	1
109M2384-01	Anti-static neck strap with Sensor Keeper	1
112M4551	Hard carrying case	1
109M1269-01	Installation & Operation Manual	1
109M1270-01	Quick start guide	1
Bently_Manuals	Bently Nevada product manuals on DVD The Bently_Manuals DVD contains the datasheet (109M0226), the Installation & Operation Manual (109M1269-01), and the quick start guide (109M1270-01).	1

Optional Accessories

3071/01	System 1 Evolution software and license
109M2387	Handheld, battery-powered laser Tach for IS Zone 1 Supplied with cable 109M2389
109M2389	5-meter laser Tach cable for 109M2387
108M4069	Laser Tach powered by SCOUT220-IS for Zone 2
CBL50216	5-meter laser Tach cable for 108M4069
113M5529-01	Reflective tape One roll, 60 cm (23.7 in)

All accessories included in the basic kit may also be ordered separately.

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