SCOUT220-IS & SCOUT240-IS

Product Datasheet

Bently Nevada* Asset Condition Monitoring

Description

SCOUT220-IS and SCOUT240-IS are **I**ntrinsically **S**afe portable data collector solutions designed for hazardous environments. You can use these small form-factor, rugged devices to take vibration recordings and upload the collected data for detailed analysis in System 1*.

The overall system consisting of the data collector and the industrial handheld is rated **ATEX Zone 1** / **Zone 21** (for gases and non-conductive dust), and **CSA Class 1 Zone 1**. The SCOUT220-IS and SCOUT240-IS data collectors also give you access to sites requiring hot work permits.

The data collectors work 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 the same handheld device.

The data collectors use Bluetooth to communicate with the industrial handheld which is also rated for hazardous environments. The S1 Collector app exchanges data with System 1* using Wi-Fi, a cellular network, or a USB cable.

You can set up your routes in System 1* 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 collectors have an anti-static neck strap with Sensor Keeper which retains your sensor while you walk or climb to reach other machines. The neck strap also has detachable safety breakaways to protect you in case the cables are caught in rotating machinery.

Continuous Communication via Bluetooth

Data Exchanged via Wi-Fi, Cellular Network, or USB connection

System 1*

Data Collector Specifications

Sensors

Sensor input Simultaneous sampling	SCOUT220-IS: 2 channels
	SCOUT240-IS: 4 channels
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 SCOUT240-IS includes a CH 2..4 breakout cable.
Analog to digital conversion	24-bit ADC
Sensor excitation current	0 mA or 2.2 mA (configurable), 24 V maximum 2.2 mA powers 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 & SCOUT240-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 KΩ ± 28 V max
Waveform display	± 20 V range
Threshold	± 20 V range ± 0.4 V accuracy

Auto-threshold mode	3 V pk-pk minimum signal 15 s max settling time
Hysteresis	0.2 V to 2.5 V user configurable
Speed range	Minimum: 60 rpm (1 Hz) Maximum: 1,200,000 rpm (20 kHz)
Signal pulse width	10 µs minimum 2% duty cycle (for auto-threshold)
Accuracy	± (0.1 % + 1 cpm) for speeds up to 5 kHz (300 kcpm) ± (0.3 %) for speeds above 5 kHz (300 kcpm)

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/s2 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 value: RMS, derived pk, derived pk-pk Dual cursors Digital readouts on chart
Base accuracy	For AC signal: ± 1% of readings For DC level: ± 1% of full scale (1% is approximately 0.1dB)
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, 60,000, 80,000 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, 12800 lines		
	Channels	220 max lines	240 max lines
	1	6400	12,800
	2	3200	6400
	3 or 4	N/A	3200

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 (2-3 channels) Spectrum and waveform for each of low-frequency, high-frequency, demodulation

Waveform Display

Number of samples	1024, 2048, 4096, 8192, 16,384, 32,768		
	Channels	220 max samples	240 max samples
	1	16,384	32,768
	2	8192	16,384
	3 or 4	N/A	8192

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

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 × 5.1" L × 1.4" H 130 × 130 × 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
Ambient temperature for charging battery	0°C to 25 °C
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	Drop spec MIL-STD-810F-516.5-IV 26 drops at 4' (1.2 m) onto concrete IP67 (Certificate pending)

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**.

RED/EMC	EN 61000-6-2 EN 61000-6-4 EN 300 328 EN 301 489-1 EN 301 489-17 EN 61326-1 **European Community Directives:** RED Directive 2014/53/EU EMC Directive 2014/30/EU
Intrinsically Safe **data collector** for hazardous locations	**ATEX/IECEx** ⬡ II 1 (1) GD II 3 (3) GD 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 **CSA/NRTL/C** Class I Division 1 Groups ABCD Class I Division 2 Groups ABCD Class II Division 1 Groups FG Class II Division 2 Groups FG 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 T4 @ Ta = -20°C to +50°C The installation must comply with the SCOUT2220/240 Hazardous Location Installation Control Drawing, **111M0029**, including all its footnotes and warnings.

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 SCOUT2220/240 Hazardous Location Installation Control Drawing, **111M0029**, for details.

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 5.1.1
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	⟨Ex⟩ II 2G Ex ib IIC T4 Gb IP64 ⟨Ex⟩ II 2D Ex ib IIIC T135 °C Db IP64 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**.

Cyber Security

The SCOUT220-IS and SCOUT240-IS solutions include an industrial handheld device that runs the Android operating system and uses USB, cellular, Bluetooth and Wi-Fi for communication. These solutions have features that reduce but do not eliminate cyber security risks.

We strongly recommend implementing additional cyber security protections such as the following:

- Controlling user access
- Scanning for viruses
- Applying timely updates
- Encrypting data
- Using mobile device management software

The recommended measures are at your discretion and responsibility. Some residual risk may remain.

Refer to SCOUT200 Series Installation and Operation Manual, part number **109M1269-01** for more information on cyber security.

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)
- **03** ecom tablet US/EU (North America & Europe)
- **04** ecom tablet AS/NZ (Australia & New Zealand)

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* software and license separately. Additional accessories are also available.

Part Number	Description	Quantity
	S1 Collector app	1
	SCOUT220-IS Data Collector	1

Either Smartphone		
109M8026 or	ecom® Smart-Ex 201-A (North America)	1
111M5763	ecom® Smart-Ex 201-E (Europe)	
OR Tablet		
113M9352-01 or	ecom® TAB- EX US/EU (North America/Europe)	
113M9352-02	ecom® TAB- EX AS/NZ (Australia/New Zealand)	
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
113M5585	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
117M1446	Belt Clip	1
112M4551	Hard carrying case	1
109M1269-01	Installation and 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 and Operation Manual (109M1269-01), and the quick start guide (109M1270-01110M9997-01).	1

SCOUT240IS-AXX-BXX

A: Handheld Options
- **00** None
- **01** ecom Smart-Ex 01-A (North America)
- **02** ecom Smart-Ex 01-E (Europe)
- **03** ecom tablet US/EU (North America & Europe)
- **04** ecom tablet AS/NZ (Australia & New Zealand)

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 SCOUT240-IS in a basic kit with the option to purchase the System 1* software and license separately. Additional accessories are also available.

Part Number	Description	Quantity
	S1 Collector app	1
	SCOUT240-IS Data Collector	1
Either Smartphone		
109M8026 or	ecom® Smart-Ex 201-A (North America)	
111M5763	ecom® Smart-Ex 201-E (Europe)	
OR Tablet		1
113M9352-01 or	ecom® TAB- EX US/EU (North America/Europe)	
113M9352-02	ecom® TAB- EX AS/NZ (Australia/New Zealand)	
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	3
ACCL0561	Side exit accelerometer	1
109M2383	Coiled cable with breakaways LEMO	4
113M5585	Accelerometer magnetic base	4
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
113M9350	Channel 2-4 breakout cable	1
109M2384-01	Anti-static neck strap with Sensor Keeper	1
117M1446	Belt Clip	1
112M4551	Hard carrying case	1
109M1269-01	Installation and 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 and Operation Manual (109M1269-01), and the quick start guide (109M1270-01110M9997-01).	1

Language Specific Warning Labels

110M9913	Magnet base label
110M9914	Sensor keeper side label
110M9915	Sensor keeper front label
111M7144	Hard carrying case label

Optional Accessories

3071/01	System 1* software and license
109M2387	Handheld, battery-powered laser **Tach** for IS Zone 1 This item does not include a cable. You must order part number 109M2389.
109M2389	1.2-meter laser Tach **cable** for 109M2387
108M4069	Laser **Tach** powered by SCOUT220-IS & SCOUT240-IS for Zone 2
CBL50216	5-meter laser Tach **cable** for 108M4069
113M5529-01	Reflective tape One roll, 60 cm (23.7 in)
111M5756	ecom® Smart-Ex 01-A
109M8034	ecom® Smart-Ex 01-E
113M9352-01	ecom® TAB- EX US/EU
113M9352-02	ecom® TAB- EX AS/NZ
113M9353-01	Tab Active tablet