

TECHNICAL DATA

## Watchman Online System

Models: i110 & i120



A Fluke Reliability Company

- ▶ 16-channel multiplexed or 8-channel simultaneous
- ▶ Up to 102.4kHz sample rate at 24-bit resolution
- ▶ Ethernet or wireless network connectivity



### FEATURES INCLUDE

Capture time waveform greater than 14M samples at rates up to 102.4kHz

Effective slow speed monitoring down to 5 RPM with 102kHz sample rate and 139-second long Impact Demod waveform, yielding 0.47 CPM spectral bin resolution

High-resolution, high-quality data at 24-bit resolution for emerging fault detection

Supports standard 2-wire IEPE accelerometer or 3-wire accel/temp type inputs

Measure vibration and bearing condition with built-in demodulator and process inputs

Two tachometer/trigger inputs for speed, data synchronization, and order-tracked spectra

### Smart vibration acquisition hardware for critical assets.

Improved speed, accuracy, and connectivity in a new compact and rugged design. Choose either high-speed ethernet communication where network cabling is available or 802.11 b/g/n Wi-Fi for remote locations.

The full-color VGA touchscreen makes setup straight-forward and enables at-machine interrogation of vibration data.

The i110 has 16 multiplexed input channels that can be used for dynamic vibration measurements or DC coupled process measurements. Provides most flexible option.

The i120 has 16 channels divided into 8 simultaneous dynamic vibration channels, collected in banks of 3, and 8 process channels. Ideal for applications where high-speed synchronized data measurements are important.

Both devices have 24-bit resolution, bearing condition measurements, ordered spectra options, and two tachometer / trigger channels.

## System Overview

System Overview	
Watchman Online Systems	Integrate with TRIO® portable data collection programs to incorporate all plant asset diagnostic health into a common database for analysis and reporting.
ALERT Online Engine™	Allows users to map assets and configure test intervals based on set periodicities, asset health status, as well as defined is-running test operating parameters.
Raw waveform post-processing for proprietary Impact Demod	Can provide effective spectral resolution of 0.47 CPM with an Impact Demod waveform duration of 139 seconds.
ExpertALERT™ automated diagnostic application	Screens incoming data to identify potential faults using advanced automation and a well-established rulebase of over 6000 diagnostics models. Analysts received a prioritized diagnostic results and plain-language repair action recommendations.
Watchman Reliability Portal™	Provides insights to asset health, risk to production, alerts & notifications to keep decision makers aware of problems.
Optional Watchman Professional Services	Manage your vibration program at scale and with Program Management.

## Inputs

i110 Analog Channels (Dynamic and Process)	
No. of Channels:	16
IEPE Interface:	3.6mA at 24Vdc nominal
Other Coupling:	AC or DC, configurable per channel (with optional DC offset removal)
Input Voltage Range:	20Vp-p
Measurements:	acceleration, bearing demod, (velocity by external software integration)
Gain Ranges:	gain steps 1, 2, 5, 10, 20, 50 and 100
High Pass Filters:	programmable 4th order with corner frequencies 0.5, 2, 10 and 100 Hz
Amplitude Accuracy:	+/-2% typical in passband
Demodulation Function:	digital demodulation for bearing assessment (HP and LP bandpass filter edges in programmable steps from 50Hz to 400kHz)
ADC:	24-bit
Sampling Rate <sup>1</sup> :	64Hz to 102.4kHz (channel dependent)
Bandwidth Ranges <sup>1</sup> :	0.25Hz-25Hz to 0.25Hz-40kHz
Data Block Lengths <sup>1</sup> :	64 to 250,000
Data Streaming Buffer:	14,250,000 samples <sup>2</sup>
Spectral Lines:	up to 51,200

i120 Dynamic Channels	
No. of Channels:	8, simultaneous (banks of 2 or 3)
IEPE Interface:	3.6mA at 24Vdc nominal
Other Coupling:	AC
Input Voltage Range:	20Vp-p
Bias/Gap Measurement:	+/-25V range for IEPE bias voltage and eddy probe gap measurement
Measurements:	acceleration, bearing demod, (velocity by external software integration)
Gain Ranges:	gain steps 1, 2, 5, 10, 20, 50 and 100
High Pass Filters:	programmable 4th order with corner frequencies 0.5, 2, 10 and 100 Hz
Amplitude Accuracy:	+/-2% typical in passband
Demodulation Function:	digital demodulation for bearing assessment (HP and LP bandpass filter edges in programmable steps from 50Hz to 400kHz)
ADC:	24-bit
Sampling Rate:	64Hz to 102.4kHz (channel dependent)
Bandwidth Ranges:	0.25Hz-25Hz to 0.25Hz-40kHz
Data Block Lengths <sup>1</sup> :	64 to 250,000
Data Streaming Buffer:	14,250,000 samples <sup>2</sup>
Spectral Lines:	up to 51,200

# Inputs

<b>i120 Process Channels</b>	
No. of Channels:	8, multiplexed
Ranges:	0 to +3V and 0 to +10V, jumper
Measurements:	DC coupled process measurement with auto mains pickup removal
<b>Triggers</b>	
No. of Channels:	2 (digital)
Coupling:	3.3V to 24V digital pulse
Available Functions:	external trigger, tachometer speed, ordered data (by digital phase-lock-loop), gated acquisition
Speed Range:	0.1Hz to 10kHz (with divide-by-N for gear tooth sensing)
Trigger Delays:	pre- and post-trigger delay to 32,768 samples
<b>Processing</b>	
Processor:	STM32F7 series with ARM Cortex M7 core
Memory:	64MB SDRAM, 32-bit wide
Non-volatile Storage:	128kB EEPROM for storage of network data, calibration data, etc.
Additional Storage:	32GB on-board flash drive (removable)
RTC:	real-time-clock for time-stamping of data
<b>Communication</b>	
Network (LAN):	100BaseT ethernet (RJ45 connector)
Network (WLAN):	802.11b/g/n Wi-Fi compatible (FCC, IC and ETSI compliant)
Wi-Fi Security Compliance:	hardware-disable capable
Speed (WLAN):	up to 54 Mbits/sec
Encryption:	WPA/WPA2 PSK (TKIP, AES)
Interface Port:	USB user port
<b>Indicators</b>	
LCD Display:	full VGA (640 x 480) color touchscreen display
<b>Mechanical</b>	
Enclosure:	DIN rail mount, aluminum rigid base
Dimensions (w x h x d):	29cm (11.5") x 15cm (6.0") x 3cm (1.2"), approx.
Weight:	1.0kg (2.2 lbs.), approx.
Cable Connection:	indirect connector, screw terminal
Enclosure option:	IP66 (NEMA 4) sealed enclosure
<b>External Power</b>	
Supply:	24Vdc (+/-10%)
Isolation	external power input isolation to 1500V
<b>Environmental and Compliance</b>	
Operating Temperature:	-20°C to +70°C (-4°F to +158°F)
General:	CE, RoHS
FCC:	CFR47 Part 15(c)
IC:	RSS-210
ETSI:	EN 300 328 V2.1.1

<sup>1</sup> Dynamic channels only

<sup>2</sup> Dependent on number channels, filters, triggers, etc. Longer waveform capture at 102.4kHz depending on network speed.

These specifications may be subject to change without notice.

**Fluke Corporation**  
PO Box 9090, Everett, WA 98206 U.S.A.

**For more information about Azima DLI or Fluke Reliability:**  
visit [www.flukereliability.com](http://www.flukereliability.com) or  
email the team at [azimasales@Fluke.com](mailto:azimasales@Fluke.com)

©2023 Fluke Corporation.  
Specifications subject to change without notice.  
10/2023 6014084a-en

**Modification of this document is not permitted without written permission from Fluke Corporation.**

TECHNICAL DATA

## SPRITE™ i800

### 8+8 Channel data acquisition hardware



A Fluke Reliability Company



#### MULTIPLE POWER OPTIONS AND 8+8 CHANNELS MAKES THIS THE MOST VERSATILE SPRITE YET

SPRITE is a custom engineered solution designed and installed by Fluke Reliability certified SPRITE experts.

The **SPRITE i800** is an 8 channel network device which can acquire 8 channels of vibration data in simultaneous banks of 3 and measure 8 DC signals collected one channel at a time. The i800 can be battery operated or connected to a power source. One-year battery life at twice-per-day data acquisition.

The **SPRITE i800** is enclosed in a compact and rugged, IP-66 rated enclosure. Other enclosures are available for custom applications. Practically unlimited numbers of SPRITE acquisition devices can be used simultaneously and managed via WATCHMAN Online Systems™ software.

#### WATCHMAN Online Systems™ Components:

##### Software components

- ExpertALERT™ software for configuration, integration, analysis and reporting (local or cloud)
- ALERT Online Engine™ 3.0 for managing data collection devices and communication
- Sybase SQL Anywhere 12 (full or mini version)
- SPRITE Configuration Utility
- SPRITE Dashboard Utility

##### Hardware components

- SPRITE™ i800 – 8 Simultaneous ICP Accelerometer plus 8 Multiplexed DC input acquisition device (supports ICP accelerometer, dynamic, and DC voltage signal ranges +/- 10V)
- Single or triaxial sensors per machine location, wired directly to i800 acquisition device
- Wireless 802.11 standard network connection
- IP-66 rated, NEMA4 enclosure
- WATCHMAN Online Systems server – Local network Windows Server (physical or virtual)
- ALERT Database Server – Fluke Reliability Data Center or Local Windows Server (physical or virtual)

##### Optional components

- SPRITE™ i1600 – 16-channel multiplexed data acquisition device (ICP accel., AC or DC coupled)
- SPRITE™ i400 – 4-channel simultaneous data acquisition device, battery-powered, wireless
- Optional: OPC Client Software (scalar information)
- Optional: Server internet access

## Technical specifications\*

### Dynamic Inputs (Channels 1-8):

No of Channels:	8, simultaneous (banks of 3)
Ranges:	+/- 10V
ICP Interface:	2.4mA @ 24Vdc
Other Coupling:	AC, configurable per channel
Measurements:	Acceleration, displacement, demodulation, velocity via software integration
Anti-Alias Filter:	Compound analog and digital filter
Bias/Gap Measurement:	+/- 25V range for ICP bias voltage and eddy probe gap measurement
Amplitude Accuracy:	+/-2% typical in passband
Demod Function:	Fluke Reliability's proprietary Impact Demod

### DC Inputs (Channels 1-8):

No of Channels:	8, multiplexed
Ranges:	0 to +3V and 0 to +10V, jumper selectable
Triggers:	One analog/digital, one digital/Namur

### Processing

ADC:	24 bit simultaneous, dynamic channels 16 bit multiplexed, DC channels
Sampling Rate:	64Hz to 102.4kHz (Dynamic Channels)
Bandwidth Ranges:	0.5Hz-25Hz to 0.5Hz-40kHz
Dynamic Range:	96dB (theoretical)
Block Lengths:	up to 250,000
Spectral lines:	up to 25,600

### Indicators:

LCD Display:	Backlit LCD, 7 lines x 21 characters
--------------	--------------------------------------

### Mechanical:

Protection:	NEMA 4, IP66
Enclosure:	Al Si 12 grade (LM24) Die-cast aluminum alloy, external antenna
Dimensions:	26cm x 16cm x 9cm
Cable entry:	16 glands, IP68, 3mm to 6.5mm
Weight:	7.5 pounds (without batteries or antenna)

### Environmental:

Temperature:	-20 C to +70 C
Compliance:	CE, RoHS

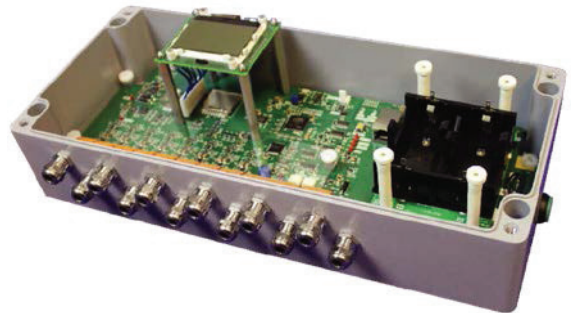
### Power:

Input Power:	Battery or DC power (10 to 30Vdc)
Battery Type:	Two x lithium 'D' cell type LSH 20 (transportable option available)
Battery Monitor:	Internal battery monitor and critical battery shutdown
Isolation:	1500V from DC power input

### Communications:

Network (LAN):	100BaseT Ethernet (CAT5/6)
Network (WLAN):	802.11 b/g/n Wi-Fi compatible
Addressing:	Static IP or DHCP
Speed:	Up to 54 Mbits/sec (depending on LAN or WLAN)
Encryption:	WEP, WPA/WPA2, PSK (TKIP, AES)
Wake-up Mode:	Programmable from one minute to one day via software interface

\*Technical Specifications are subject to change



**Fluke Corporation**  
PO Box 9090, Everett, WA 98206 U.S.A.

**For more information about Azima DLI or Fluke Reliability:**  
visit [www.flukereliability.com](http://www.flukereliability.com) or  
email the team at [azimasales@Fluke.com](mailto:azimasales@Fluke.com)

©2023 Fluke Corporation.  
Specifications subject to change without notice.  
10/2023 6014090a-en

**Modification of this document is not permitted without written permission from Fluke Corporation.**