ITA-100 Series

FEATURES

INPUT OPTIONS
16 channel multiplexed or 8 channel simultaneous data acquisition variants

HIGH-SPEED, HIGH RESOLUTION
Up to 102.4kHz sample rate at 24-bit resolution with real-time continuous data streaming option

STANDARD INPUTS
Supports standard 2-wire IEPE accelerometers and 3-wire accel/temp type

MEASUREMENTS
Measures vibration, bearing condition with built-in demodulator, and process values

TACH/TRIGGERS
Two tach/trigger inputs for speed measurement, data synchronisation and ordered spectra

CONNECTIVITY
Ethernet or wireless network options

DISPLAY
Full colour VGA touchscreen

LOW POWER
Low current consumption from nominal 24Vdc supply

EASY INSTALLATION
Compact format with screw or standard DIN rail mounting

LOCAL ALARMING
Relay outputs for local alarming

ITA-100 Series

The *ITA-100* series represents the next generation of the popular *ITA-1* series from Icon Research. The new devices maintain their predecessors' reputation for ruggedness and reliability while using latest technology to improve speed, accuracy and connectivity.

Choose from high-speed ethernet communication where network cabling is available or 802.11 b/g/n WiFi for more remote locations. The full colour VGA touchscreen for setup and local annunciation enables straightforward installation on your network and at-machine interrogation of vibration data.

There are two members in the ITA-100 series:

- The ***ITA-110*** has 16 multiplexed input channels that can be used for dynamic vibration measurement or DC coupled process measurement. Two tach/trigger channels are available.
- The ***ITA-120*** has 8 simultaneous input channels and 8 process channels for applications where high-speed synchronised data measurement is important. Two tach/trigger channels are provided.

Both devices have 24-bit resolution, bearing condition measurement, ordered spectra option and relay outputs.

ICON RESEARCH

ITA-110 TECHNICAL SPECIFICATION

INPUTS

Analog Channels (Dynamic and Process)

No of Channels:	16, multiplexed
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
Bias/Gap Measurement:	+/-25V range for IEPE bias voltage and eddy probe gap measurement
Measurements:	acceleration, bearing demod, (velocity by on-board hardware integrator or external software integration)
Gain Ranges:	gain steps 1, 2, 5, 10, 20, 50 and 100
High Pass Filters:	programmable 4th order with corner frequencies 0.5Hz, 2Hz, 10Hz and 100 Hz
Amplitude Accuracy:	±2% typical in passband
Demodulation Function:	digital demodulator for bearing assessment (HP and LP bandpass filter edges in programmable steps from 50Hz to 40kHz)
ADC:	24 bit
Sampling Rate:	64Hz to 102.4kHz
Bandwidth Ranges:	0.25Hz–25Hz to 0.25Hz–40 kHz
Data Block Lengths:	64 to 250,000
Spectral lines (equivalent):	up to 51200
Data Streaming Buffer Size:	14,250,000 samples
Real Time Rate:	continuous data streaming up to 102.4kHz rate
Process Measurement:	DC coupled process measurement option per channel with auto mains pickup removal (+/-10V range)

TRIGGERS

No of Channels:	2 (digital, isolated)
Coupling:	3.3V to 24V digital pulse
Available Functions:	external trigger, tacho speed, ordered data (by digital phase-lock-loop), gated acquisition
Tacho Speed Range:	0.1Hz to 10kHz
Trigger Delays:	pre- and post-trigger delay to 32768 samples

PROCESSING

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 flashdrive (removable)
RTC:	real-time-clock for time-stamping of data

COMMUNICATIONS

Network (LAN):	100BaseT ethernet (RJ45 connector)
Network (WLAN):	802.11b/g/n WiFi compatible (external antenna, 2.5dBi max)
Speed (WLAN):	up to 54 Mbits/sec
Encryption:	WPA/WPA2 PSK (TKIP, AES)
Interface Port:	USB user port

INDICATORS

LCD Display:	full VGA (640 x 480) colour touchscreen display
Relays:	2 x SPST isolated relay contacts for external LED's/indicators/alerts

MECHANICAL

Enclosure:	DIN rail mount, aluminium rigid base
Dimensions:	29cm (11.5") wide x 15cm (6.0") high x 3cm (1.2") deep, approx
Weight:	1.0kg (2.2 lbs) approx
Cable Connection:	indirect connector, screw terminal
Antenna Connection:	U.FL connector
Enclosure:	optional IP66 (Nema 4) sealed enclosure

POWER

External Power

Supply:	10Vdc to 30Vdc
Isolation:	external power input isolation to 1500V

ENVIRONMENTAL & COMPLIANCE

Operating Temperature:	-20ºC to +70ºC (-4ºF to +158ºF)
General:	CE, RoHS
FCC:	CFR47 Part 15(c)
IC:	RSS-210
ETSI:	EN 300 328 V2.1.1

ITA-120 TECHNICAL SPECIFICATION

INPUTS

Dynamic Channels

No of Channels:	8, simultaneous
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
Amplitude Accuracy:	±2% typical in passband
Demodulation Function:	digital demodulator for bearing assessment (HP and LP bandpass filter edges in programmable steps from 50Hz to 40kHz)
ADC:	24 bit
Sampling Rate:	64Hz to 102.4kHz
Bandwidth Ranges:	0.25Hz–25Hz to 0.25Hz–40 kHz
Data Block Lengths:	64 to 250,000
Spectral lines (equivalent):	up to 51200
Data Streaming Buffer Size:	14,250,000 samples
Real Time Rate:	continuous data streaming up to 102.4kHz rate (4 channels), 51.2kHz (8 channels)

Process Channels

No of Channels:	8, multiplexed
Ranges:	0 to +3V and 0 to +10V, jumper selectable
Measurement:	DC coupled process measurement with auto mains pickup removal

TRIGGERS

No of Channels:	2 (digital, isolated)
Coupling:	3.3V to 24V digital pulse
Available Functions:	external trigger, tacho speed, ordered data (by digital phase-lock-loop), gated acquisition
Tacho Speed Range:	0.1Hz to 10kHz
Trigger Delays:	pre- and post-trigger delay to 32768 samples

PROCESSING

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 flashdrive (removable)
RTC:	real-time-clock for time-stamping of data

COMMUNICATIONS

Network (LAN):	100BaseT ethernet (RJ45 connector)
Network (WLAN):	802.11b/g/n WiFi compatible (external antenna, 2.5dBi max)
Speed (WLAN):	up to 54 Mbits/sec
Encryption:	WPA/WPA2 PSK (TKIP, AES)
Interface Port:	USB user port

INDICATORS

LCD Display:	full VGA (640 x 480) colour touchscreen display
Relays:	2 x SPST isolated relay contacts for external LED's/indicators/alerts

MECHANICAL

Enclosure:	DIN rail mount, aluminium rigid base
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Enclosure:	optional IP66 (Nema 4) sealed enclosure

POWER

External Power

Supply:	10Vdc to 30Vdc
Isolation:	external power input isolation to 1500V

ENVIRONMENTAL & COMPLIANCE

Operating Temperature:	-20ºC to +70ºC (-4ºF to +158ºF)
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The ITA-100 Family

There are two members of the ITA-100 family.

The ITA-110 takes its input configuration from the long-running ITA-1, providing 16 multiplexed inputs. It is a low cost-per-channel surveillance device that can take both dynamic and process measurements. Its wide bandwidth and high resolution, combined with flexible input and triggering options, make it a powerful workhorse for the monitoring of virtually any type of machinery.

The ITA-120 provides 8 channels of simultaneous dynamic data acquisition and 8 independent process channels. The high-speed simultaneous input feature enables synchronised acquisition on multiple channels which is necessary for fast-moving transient data and orbit analysis. Real-time rate acquisition is supported where data is continually streamed with no data points lost.

Both devices offer bearing condition measurement, wireless and ethernet communications, flexible tach/triggering and a full colour VGA touchscreen for setup and local information. Flexible mounting options and simple network configuration make installation straightforward.

FLEXIBLE INPUTS

Both the ***ITA-110*** and the ***ITA120*** are compatible with standard IEPE accelerometers. A current of 3.6mA is supplied at a nominal voltage of 24V. Accelerometer bias voltage checking is incorporated. In addition, combo acceleration/temperature accelerometers can be accommodated by connecting the third wire to an adjacent channel on the ***ITA-110*** or to the process input pin on the channel of the ***ITA-120***.

Both devices offer three input options, namely IEPE, AC and DC coupling. Selection on the ***ITA-110*** is done by a three-way jumper, whereas the ***ITA-120*** has a single jumper and a dedicated process input pin per channel. IEPE enables direct connection of accelerometers, AC enables measurement of signals from other sources, and DC enables process measurements such as temperature and pressure to be carried out.

Eddy current probes can be connected to the ***ITA-120*** for the measurement of displacement, including gap voltage. Orbits are accommodated by connecting eddy current probes in pairs and using the phase-lock-loop function on the trigger input to compensate for variation in machine speed. Either trigger input can be coupled to any analog input channel by selection in software.

Bearing condition measurements can be carried out on both the ***ITA-110*** and the ***ITA-120*** using the built-in digital demodulation function, or enveloper. Both units support block mode data acquisition and high speed real-time data streaming.

NETWORK CONNECTIVITY

The ***ITA-100*** series provides both cabled 100BaseT ethernet (using CAT5/6 cable) and 802.11 b/g/n wifi network options, with full encryption. WiFi uses an external antenna with U.FL connector. Selection of the network type that is in use at a particular time is programmable. The WiFi function can be disabled in hardware in locations where use of WiFi is sensitive for security reasons. Network configuration is carried out using the front panel touchscreen. Network and sensor status can be interrogated at any time on the screen.

TACH/TRIGGER FUNCTIONS

The powerful tach and trigger functions offer a flexible range of options. In summary, these are:

- wide range tach speed function;
- trigger function with pre- and post-trigger delay, configurable with internal digital phase-lock-loop for ordered spectra and orbits;
- gated data acquisition enabling measurements depending on an incoming logic level.

The tach/trigger inputs are isolated. Isolated power is provided on the input connectors to enable powering of external tach/trigger devices directly from the ITA unit.

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