

FEBUS A1 v2 (DAS)

TECHNICAL DATASHEET

Version: 20240410



FEBUS A1 v2 (DAS)

DISTRIBUTED ACOUSTIC SENSING UNIT:



- > Vibration Monitoring
- > Single-ended
- > Phase and amplitude monitoring
- > Multi gauge length
- > Easy to install and easy to use
- > Optimized for harsh conditions
- > On-demand software and interface development



Pipeline leak detection
Third-party excavation



Earthquake prevention
Vertical Seismic Profiling



Impact Monitoring on Cables
Electric Partial Discharge



Intrusion Detection

1. PRESENTATION

FEBUS A1 v2 device provides state of the art acoustic sensing typically every 2 m along several tens of kilometers with optical fiber cable deployed on the infrastructure. The FEBUS A1 v2 device can be connected to optical fiber cables already in place. The only requirement is for the optical fiber to be single mode or “modern” multi-mode fiber (OM2 or further). This unique interrogator will provide **high performances for a wide range of applications** using the powerful and flexible FOLog user interface. FEBUS Optics offers, along with its FEBUS A1 v2, **personalized services** such as:

- > Implementation survey
- > Fiber-optic deployment (through experienced partner)
- > On-demand specific analysis modules and customized GUI (Guided User Interface)
- > Interoperability with SCADA or equivalent
- > 3-years warranty (part and labor) and optional maintenance plan

2. FEATURES AND PERFORMANCES

PERFORMANCES	
TYPE	Phase (Quantitative Acoustic Sensing)
N° OF CHANNELS	1 or 2 channels (simultaneous and synchronized)
NOISE FLOOR	1 piconstrain/√Hz (with standard fiber)
GAUGE LENGTH	Multiple gauge length in real-time (down to 1 m , no upper limit)
MAXIMAL DISTANCE RANGE	<ul style="list-style-type: none"> 50 km* @10 m gauge length 70 km* @20 m gauge length 80 km with LR option 100 km with LR option
CHANNEL SPACING	Down to 0.2 m
SAMPLING FREQUENCY	<ul style="list-style-type: none"> Up to 400 kHz (maximum possible depending on cable length) 100 kHz at 1 km cable length 5 kHz at 20 km cable length 1.2 kHz at 80 km cable length
LOW FREQUENCY RANGE	5 nanostrain/√Hz (@ 10^{-3} Hz) with correction
DYNAMIC RANGE	Up to 135 dB @1 Hz (PRF @100 kHz, relative to noise floor at 1 Hz)
OPTICAL FEATURES	
SENSOR CONFIGURATION	Single ended (no need for specific termination unit)
OPTICAL FIBER REQUIREMENT	Any SM fibers, MM fibers (OM2, OM3, OM4)
OPTICAL CONNECTORS	E2000/APC
SYSTEM	
DATA FORMAT	Non-proprietary HDF5
DATA TRANSFER	<ul style="list-style-type: none"> USB3 10 Gb/s Ethernet
STORAGE VOLUME	<ul style="list-style-type: none"> Internal Storage: 500 GB, External Storage (Options): <ul style="list-style-type: none"> USB data storage, 30 TB RAID5 (2 Gb/s max.) NAS, 30 TB to 220 TB RAID6 (10 Gb/s max.)
INTEROPERABILITY	ZeroMQ Streaming (Python and C examples provided)
TIME-REFERENCING	<ul style="list-style-type: none"> Synchronization through NTP, PTP or GPS External trigger input and trigger output
OPERATING SYSTEM	Linux
POWER INFORMATION	<ul style="list-style-type: none"> 200 W (depending on the configuration) 100-240 VAC @50-60 Hz
SIZE AND WEIGHT	<ul style="list-style-type: none"> 19", 4 U / 15 kg Rack depth: 20" or 50 cm
REMOTE FEATURES	
SUPPORT	VPN connection to FEBUS' facilities
DISPLAY & CONFIGURATION	VNC viewing or SSH (command line acquisition control possible)
DATA TRANSFER	SSH protocol
ENVIRONMENT	
OPERATING TEMPERATURE	5 °C to +40 °C, 80 % RH
STORAGE TEMPERATURE	-10 °C to +60 °C

* assuming 0.2 dB/km attenuation