

AVL AMPLIFIERS AND COMBUSTION MEASUREMENT SYSTEMS

FLEXIFEM INDI

COMBUSTION MEASUREMENT SYSTEM WITH INTEGRATED PIEZO AMPLIFIER

The FlexIFEM Indi is a complete combustion measurement device, combining signal amplification and powerful data acquisition, and is delivered with IndiCom Mobile™. One or two analog inputs for cylinder, injection line or manifold pressure signals and two digital inputs for injection or ignition timings enable to record all the necessary information, which is synchronized with the crank angle signal. An integrated GigaBit Ethernet interface supports the real time raw data transfer to a connected laptop or PC utilizing the data acquisition software IndiCom Mobile™. The FlexIFEM Indi device can also be operated in stand-alone mode providing real time processed results values on the integrated CAN bus interface.

FUNCTION SUMMARY

- Crank angle based data acquisition with real-time evaluation of indicating results
- Recorder (time based) measurement
- Oscilloscope mode and single measurement in real-time, multi-channel digital voltmeter
- Integration into ECU calibration software INCA (V6.2 onwards) via OHI interface
- Digital signal filtering
- Stand-alone mode (time-based and crank-angle based)
- Output channels for customized events and alarms
- CAN and DAC outputs for main cyclic results



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Technical Data / Product Name		FLEXIFEM INDI
GENERAL		
Weight		1.6 kg
Dimensions WxHxD		86 x 112 x 270 mm
Power supply		9.5 V ... 36 V DC or 100 ... 240 V AC via included AC adapter
Power consumption		Operation: 10 W; Startup: 20 W
Temperature range		-10°C...+50°C (+15°F.....+120°F)
SID (Sensor IDentification)		Yes (optional for 1-channel version)
DISPLAY		
Resolution		120 x 80
Dimensions WxHxD		60 x 40 mm
INPUTS		
Analog channels (piezo/voltage)*		1 or 2
Charge input range**		0 ... 14,400 pC
Voltage input range		-10 ... +10 V
Sampling Rate per channel		1 MHz
ADC resolution		16 Bit
LVDS for crank angle signal		Yes
Digital inputs for injection/ignition timings		Yes
INTERFACES		
DAC outputs		2
DAC output range		-10 ... +10 V
Digital outputs		4
Relays		1
OHI (for Etas Inca)		Yes
Gigabit Ethernet to PC (IndiCom)		Yes
Test bed connection (RS232 or TCP/IP)		Yes
Real-time CAN		Yes

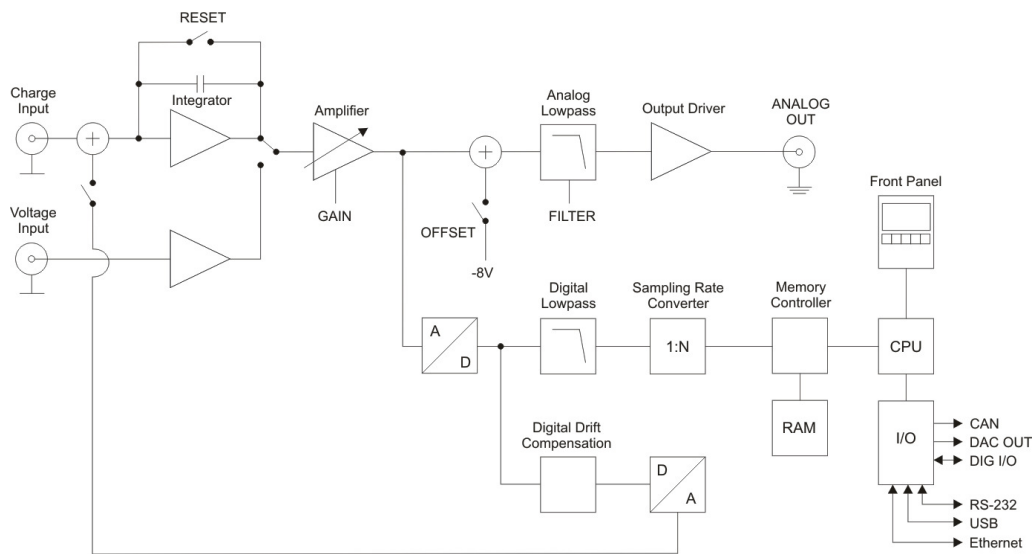
*: each input channel has an integrated charge amplifier, which can be by-passed

** : higher input range available on demand



FUNCTIONAL DESCRIPTION

The built-in analog-digital converter converts the analog signal at the integrated charge amplifier outlet into a digital data flow. A digital low pass filters high-frequency interferences from the signal whereby the signal-noise ratio is improved and anti-aliasing effects of the secondary sampling rate converter are avoided. The converter provides the data rate required for the several evaluation algorithms and for the streaming to IndiCom. The data are stored by a memory controller into a Random-access memory so that they can be accessed by the processor in any required order.



APPLICATION RANGE

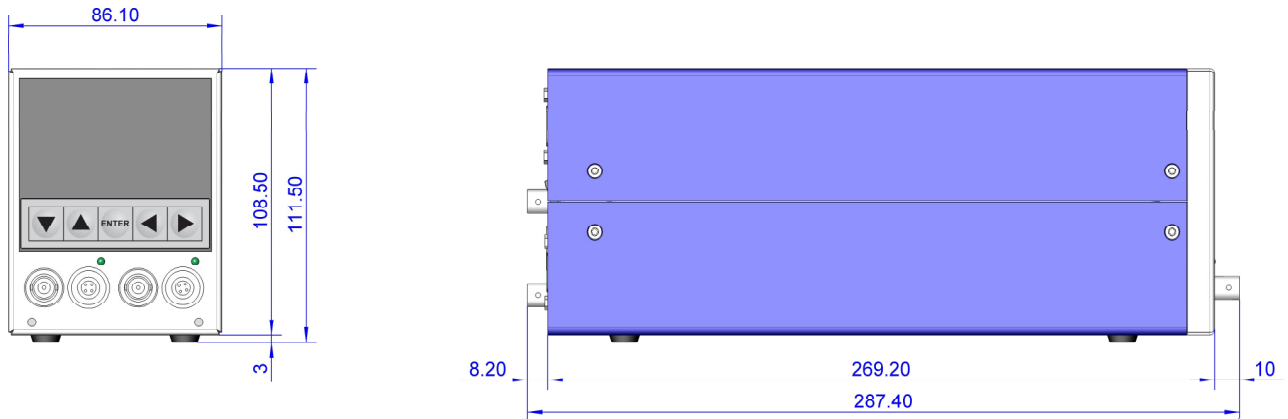
The FlexIFEM Indi is a powerful combustion analysis tool, offering the complete AVL indicating know-how and functionalities in a very attractive package, eligible for educational activities in engine indicating, for combustion monitoring during endurance tests or for combustion optimization tasks on small off-road engines.

YOUR BENEFITS AT A GLANCE

- Easy handling and installation thanks to integrated piezoelectric amplifiers and to stand-alone, time-based mode
- Flexible integration in any test environment thanks to real-time CAN, digital and analog outputs, and IndiCom test bed interface
- Quick combustion understanding and trouble-shooting thanks to integrated display
- Customizable software package and easy upgradeability



DIMENSIONS



COMPATIBILITY AND UPGRADE

- Requirements for laptop/PC (IndiCom):
 - Pentium 4 PC with 1.8 GHz, 1 GB RAM, CD-ROM drive, Gigabit Ethernet
 - Windows XP or Windows 7
- OHI interface requires Etas Inca V6.2 or higher
- Full upgrade path to IndiCom Top
- Stand-alone time-based knock meter operating mode requires optional Gasoline Package
- Stand-alone time-based noise meter operating mode requires optional Diesel Package

SCOPE OF SUPPLY

- 1x FlexIFEM Indi 601
- 1x Concerto Key "7-days dongle" license
- 1x patch cable, length 3 m
- 1x external power supply
- 1x connecting cable for power supply
- 1x or 2x ferrite clamp(s)
- 1x or 2x analog-in adaptor cable(s) (4-pin Fischer to BNC)
- 1x connection cable for CDM & trigger input
- 1x set user manuals, English
- 1x set data carrier

OPTIONS / EXTENSIONS

- SOFTWARE EXTENSIONS

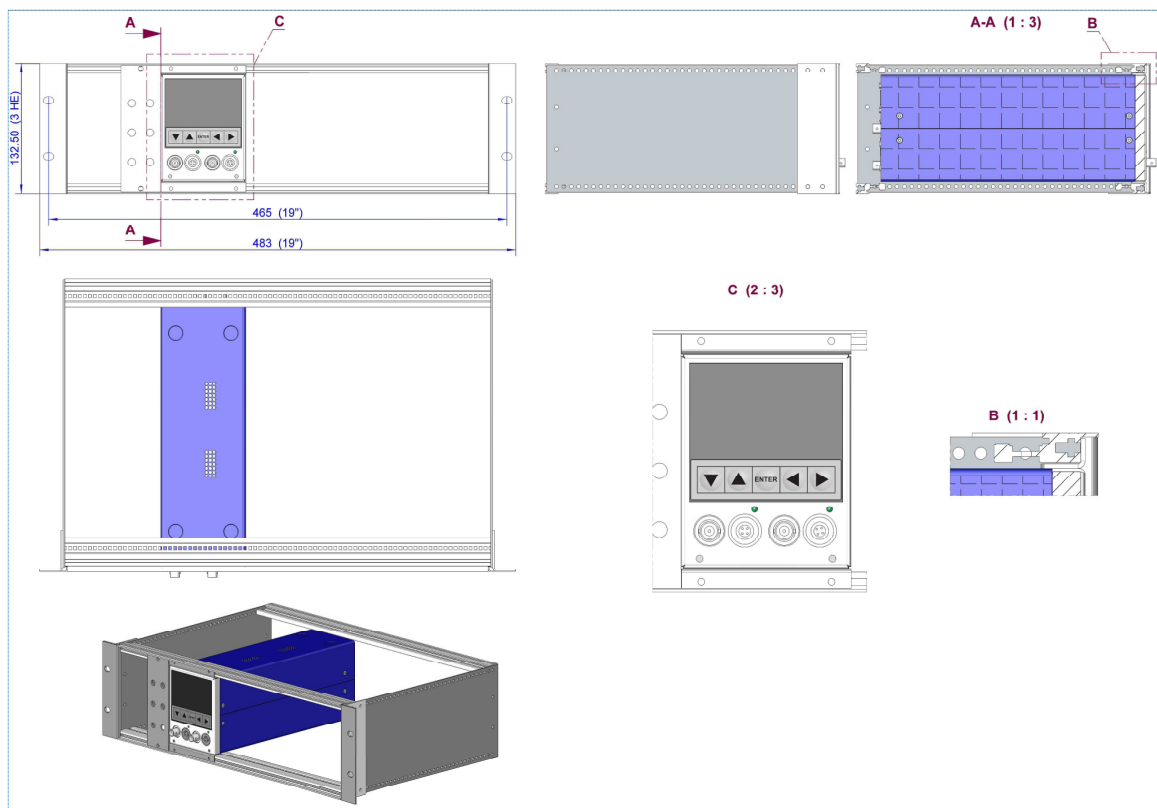
- **TI0601GASA.01:** Gasoline Package
- **TI0601DIEA.01:** Diesel Package
- **TI0601CSA.01:** Special Measurement Package
- **TI0601LTUA.01:** IndiCom Mobile to Top Upgrade

- SOFTWARE SUBSCRIPTION

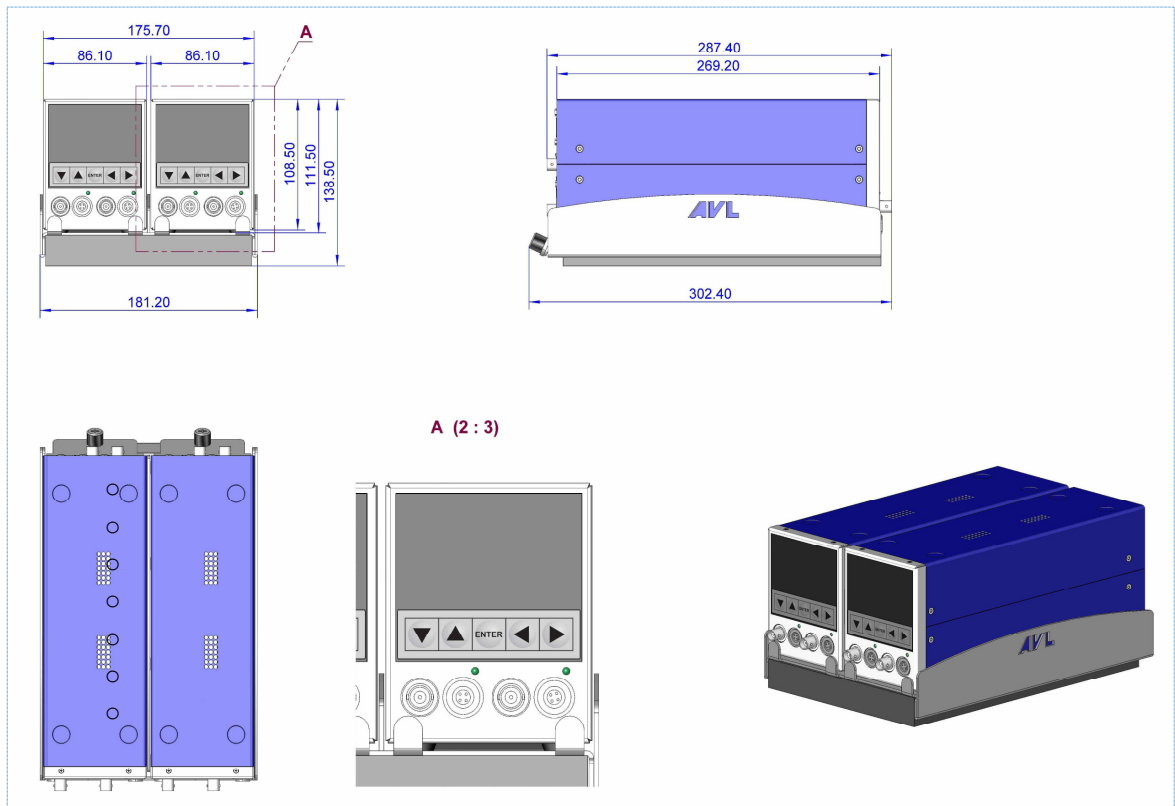
- **TI0601CSSA.01**: IndiCom Software Subscription for FlexIFEM Indi
- **TI0601CSWB.01**: Careline and Maintenance for FlexIFEM Indi

- ACCESSORIES

- **TI0601UPCA.01**: Universal Pulse Conditioner 389
- **TI0601UPCA.01**: Active Current Clamp
- **TI02RACKA.01**: Mounting rack for up to 4 FlexIFEM (requires mounting kit TI02RMAB.01 – 1 kit per device)



- **TI02MT2A.02:** Mounting tray for 2 FlexIFEM



- **TI02MT4A.02:** Mounting tray for 4 FlexIFEM

