



**DENVER**  
*metrología electrónica, S.L.*



## FrontDaq 20

High speed acquisition module with  
universal synchronized inputs and  
embedded webserver software

FrontDaq system is a high speed acquisition module (7680 Hz/channel) with 20 analogue synchronized inputs (1 A/D converter per channel) and 20 TTL inputs / outputs.

- Process: Voltage, current, resistance, strain gauges
- Temperature: Thermocouples, resistive probes
- 20 universal analogue inputs, 2 limits per channel,
- 4 analogue outputs, 20 TTL inputs / outputs
- 5 configurable triggers
- Communication: Ethernet TCP/IP, RS 232, USB (GSM / GPS in option)

## Description

FrontDaq system is a high speed acquisition module (7680 Hz/channel) with 20 analogue synchronized inputs (1 A/D converter per channel) and 20 TTL inputs / outputs.

All necessary configuration and management software (WEB server technology) are embedded into the plug-and-play system and allow remote control of the acquisition through any web browser: Setup, start, result display, monitoring and data exportation. FrontDaq 20 memory capacity (internal of 660,000 samples / channel and external via CF card, allows several months of data to be recorded. FrontDaq 20 meet therefore the various requirements of monitoring and survey applications on the field as well as on test bench.

FrontDaq 20 perform measurement, monitoring and recording of analogue and digital signals coming from sensors of physical or electrical values. These signals can be:

- Voltage: 0-10 V
- Current: 0-20 and 4-20 mA with external shunts
- Thermocouples: Type K/T/J/N/E/R/S/B with or without cold junction compensation
- Resistance: 2400  $\Omega$
- RTD: Temperature sensors (Pt100 / 500 / 1000) in 2, 3 or 4 wires
- Frequency: up to 10 kHz measuring frequency and counting
- Strain gauges

Fast and still accurate, FrontDaq 20 modules perform acquisition from every input simultaneously up to 7680 samples / s / channel, i.e. a period of 120  $\mu$ s. Measurement can be performed with different frequencies, resolutions, trigger conditions and types of inputs, making FrontDaq 20 perfect for measurement and control of very fast phenomenon.

Channels being synchronized, the scanning speed does not depend on the number of channels scanned and recorded. The instruments are freed from multiplexer constraints: regardless of the number of channels acquired, the speed will remain optimum. Additional FrontDaq 20 can be connected together to extend the number of inputs available and make a network.

Accurate monitoring and flexibility are ensured with:



- 2 limits per channel, 20 universal analogue inputs with 1 ADC 24 bytes per channel
- 4 analogue 0-10 V outputs
- 20 TTL inputs/outputs
- 5 programmable triggers
- Ethernet TCP/IP, RS 232, USB (GSM / GPS in option)

## Specifications

### Specifications and performances in temperature @23°C ±5°C

*Uncertainty is given in % of reading + fixed value.*

#### Resistive probes: Measurement

Type	Range	Resolution	Accuracy / 1 year ( < 150 samples / s )
Pt100	-220°C to +850°C	0.01°C	0.01°C
Pt500 (= 3851)	-220°C to +850°C	0.05°C	0.05°C
Pt1000 (= 3851)	-220°C to +400°C	0.03°C	0.03°C

#### Thermocouples: Measurement

Type	Range	Resolution	Accuracy / 1 year ( < 150 samples / s )
K	-180 to +1300°C	1.2°C	1.2°C
T	-250 to +400°C	1.1°C	1.1°C
J	-180 to +750°C	0.09°C	0.09°C
N	-270 to +1300°C	1.7°C	1.7°C
E	-40 to +900°C	0.7°C	0.7°C

Thermocouples type R, S, B: For specifications, refer to the instruction manual (Available on request)

### Specifications and performances in process @23°C ±5°C

#### DC voltage: Measurement

Range	Measuring range	Resolution	Accuracy / 1 year ( < 150 samples / s )
1 V	-15 m V à to1 V	100 nV	10 µV
10 V	-1 V to +10 V	50 µV	100 µV

Input impedance:

100 kΩ for 1 V range

14 kΩ for 10 V range

Temperature coefficient: < 6 ppm/°C beyond reference domain

#### DC current: Measurement

With or without loop supply

Range	Measuring range	Resolution	Accuracy / 1 year (< 150 samples / s)
0-20 mA	0 mA to 20 mA	100 nV	10 $\mu$ V
4-20 mA	4 mA to 20 mA	50 $\mu$ V	100 $\mu$ V

With external shunt

### Resistance: Measurement

Range	Measuring range	Resolution	Accuracy / 1 year (< 150 samples / s)
2400 $\Omega$	35 to 2400 $\Omega$	0.1 $\Omega$	0.1 $\Omega$

### Strain gauges: Measurement

Type	Range	Accuracy / 1 year (< 150 samples / s)
1 / 1	See voltage range	50 $\mu$ Str.
1 / 4		
1 / 2		

Temperature coefficient: < 5 %Str./ $^{\circ}$ C beyond reference domain

## Specifications and performances in process @23 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C

### Analogue output

Range	Measuring range	Accuracy / 1 year (< 150 samples / s)
0-10 V	0 V to +10 V	0.05% RDG

Maximum measuring current: < 5 mA

### TTL inputs / outputs

Type	Low limit	High limit
TTL input	0.8 V	2 V
TTL output	0.1 V @ 50 $\mu$ A	4.4 V @ 50 $\mu$ A
	0.36 V @ 8 mA	3.9 V @ 8 mA

TTL input: maximum voltage: 7 V

TTL output: maximum current:  $\pm$ 20 mA

Maximum admissible load: 50 k $\Omega$

### Further features

Scanning rate	FrontDaq 20 modules scan every channel
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	synchronously (1 ADC per channel) up to 7,680 samples / s / channel. The scanning rate totally independent of the number of channels under acquisition.
Alarms	Every channel can be configured with 2 alarms levels for monitoring purposes.
Linearization	Every channel can be scaled for sensor correction or scaling.

### General specifications

Size	211.5 x 194.7 x 57 mm
Weight	800 g
Power supply	12-28 V (9-32 V) - 1 A max
Battery (option)	Type: NiMh Battery life: 10 h
Communication ports	TCP/IP, USB, RS 232, RS 485, (GSM, GPS in option)
Storage capacity	Internal of 660,000 values External on CF card

### Environmental specifications

Reference range	23°C ±5°C (RH: 45 to 75 % condensing)
Operating reference range	-10 to 50°C (RH: 20 to 80 % condensing)
Storage temperature limits	-40°C to +80°C

## Models and accessories

### Instrument:

FD20-256            20-channel fast acquisition system with webserver

Delivered in standard with:

- User manual
- Power adapter
- Crossed Ethernet cable

Screwing connector interface board

- Installation CD with drivers and utilities
- Factory test report

### Accessories:

ACFD20-1	Screwing connector interface board			
12513-003	Additional power supply 90-264 V / 12 V			
ATFD20	Carrying case			
12513-010	Battery pack 12 / 24 V + charger (10 hours, NiMh)			
012513-035	ASP light / advanced counters (uncount, PWM...)			
012513-031	Multicurve data viewer			
VISULOG	Monitoring software 32 bits full version	1	3 179	3 179

### Software:

VISULOG	Monitoring & data processing software full version - 1 licence			
VISULOG-ETAL	Monitoring & data processing software full version - 1 licence + Calibration module			
VISULOG-PHARMA	Monitoring & data processing software full version - 1 licence + Module for advanced management of access rights, 21 CFR Part 11 compliant			
VISULOG-ETAL-PHARMA	Monitoring & data processing software full version - 1 licence + Calibration module + Module for advanced management of access rights, 21 CFR Part 11 compliant			

## Software licences:

- LIC VISU Additional license for VISULOG
- LIC VISU ETAL Additional license for VISULOG with ETAL optional module
- LIC VISU PHARMA Additional license for VISULOG with PHARMA optional module
- LIC VISU ETAL PHARMA Additional license for VISULOG with ETAL and PHARMA optional module
- LIC VISULOG WEB License for VISULOG WEB

## Certification:

- QMA11EN COFRAC certificate of calibration
- With all relevant data points where the device has been tested

## Packing information:

- Size 211.5 x 194.7 x 57 mm
- Weight 800 g