# Q.station 101

Controller

Q.bloxx is the ideal DAQ solution for widely distributed installations, electrical panels, and environmental enclosures. Q.bloxx measurement modules provide integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for quick system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the actual point of measurement.

- RS 485 fieldbus interface up to 24 Mbps: LocalBus up to 115.2 kbps: Modbus-RTU, ASCII

- Connectable to any Controller, e.g. Q.station, Q.gate or Q.pac

- Electromagnetic Compatibility according to EN61000-4 and EN55011

- Power supply 10 ... 30 VDC

- DIN rail mounting (EN60715)

Key Features

- **Very high data rates up to 100 kHz each channel**
  100 kHz at 8 channels (2 each UART line), 10 kHz at 128 channels

- **64 Q.bloxx modules connectable**

- **Ethernet interface for configuration and data output**
  1 Gig-E, TCP/IP, UDP, up to 16 MB/s Modbus TCP/IP, ASCII, High Speed Port
  Web server, web client and e-mail

- **Fieldbus interface**
  EtherCAT-Slave, 1024 variables read and write at 10 kHz
  1 x CAN (CAN-FD), 2 x USB 2.0, 4 MB/s

- **Synchronization and time stamp of measurement values**
  IRIG 2 based master slave principle on RS485 standard system synchronization ±1 µs applicable

- **Data buffer memory dyn. 500 MByte, stat. 4 GByte**
  expandable over USB (up to 1000000 measurements/s) and SD card

- **8 digital inputs / 4 digital outputs**
  direct connection of encoder for fast angle measurement frequency , PWM and counter measurements, state signals

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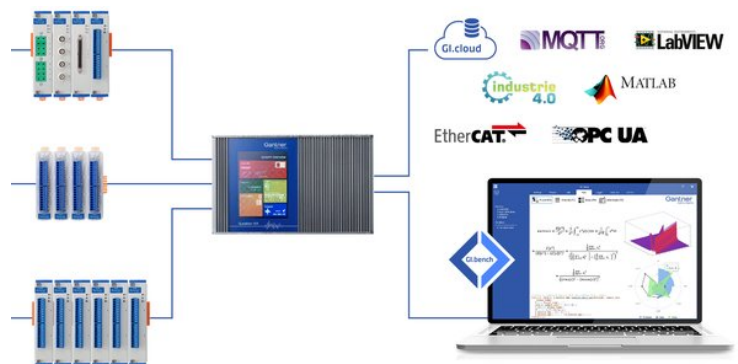
Controller

Technical Data

Micro Controller

Typ	Atom Z530; 1,6 GHz
RAM	1 GByte, 500 MByte available for data storage
Flash	4 GByte
Real Time Clock (RTC)	Battery buffered
Watchdog	Programmable
OS	Real-time Linux

Ethernet Interface

Number of channels	2048 Byte Data (512 variables read and 512 variables write)
Baud rate	1 Gigabit/s (1-Gig-E)
Data rate	Online and Block transfer to 16 MByte/s (32 variables at 100 kHz)
Protocols	TCP/IP, UDP, Modbus TCP (Master and Slave), ASCII, High Speed Port
	Webserver and WebClient
Isolation voltage	500 V

EtherCAT Interface-Slave

Electrical standard	Ethernet
Data rate	1024 Byte Data (253 variables read and 253 variables write)
Baud rate	100 Mbps
Cycle time	≥100 µs
isolation voltage	500 V

CAN-Interface

Channels	1
Electrical standard	CAN2.0
Baud rate	1 Mbps
Configuration	CAN DBC files
CAN-FD	Optional, with USB-Adapter

Module Slave Interface (UART)

Channels	4
Baud rate	9,6 kbps, to 48 Mbps (100.000 measurements/s)
Connectable devices	max. 16 modules at one UART
isolation voltage	500 V

USB Interface

Channels	2
Version	USB 2.0
Data rate	To 4 MByte/s (to 1.000.000 measurements/s)

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SD-Card Slot

Use	Interface for data logging, Interface for firmware update
	500 MByte RAM, 4 GByte Flash, 2 x USB, 4 MByte/s SD Card

Digital Inputs

Channels	8
Function	configurable counter, frequency-, PWM- and status Measuring, encoder input for measurement synchronization
Input voltage / Input current	max. 30 VDC / max. 1,5 mA
Lower / upper logic levels	< 1 V (low) / > 3,5 V (high)

Digital Outputs

Channels	4
Function	configurable, watchdog and dead-man function
Type of output	Open Drain p-channel MOSFET
Output voltage / Input voltage	max. 30 VDC / max. 100 mA

Synchronization of a Multi Controller System

Interface	RS485 Electrical standard
Mode	Master Slave Prinzip, IRIG 2 Electrical standard
	Synch. Master and Slave
Accuracy	System synchronization ± 1 µs

Power Supply

Input voltage	10 to 30 VDC. overvoltage and overcurrent protection
Power consumption	approx.. 12W

Electromagnetic Compatibility

According to	EN 61000-4 and EN 55011

Environmental

Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 % to 95 % at 50°C, non-condensing

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Functional Diagram

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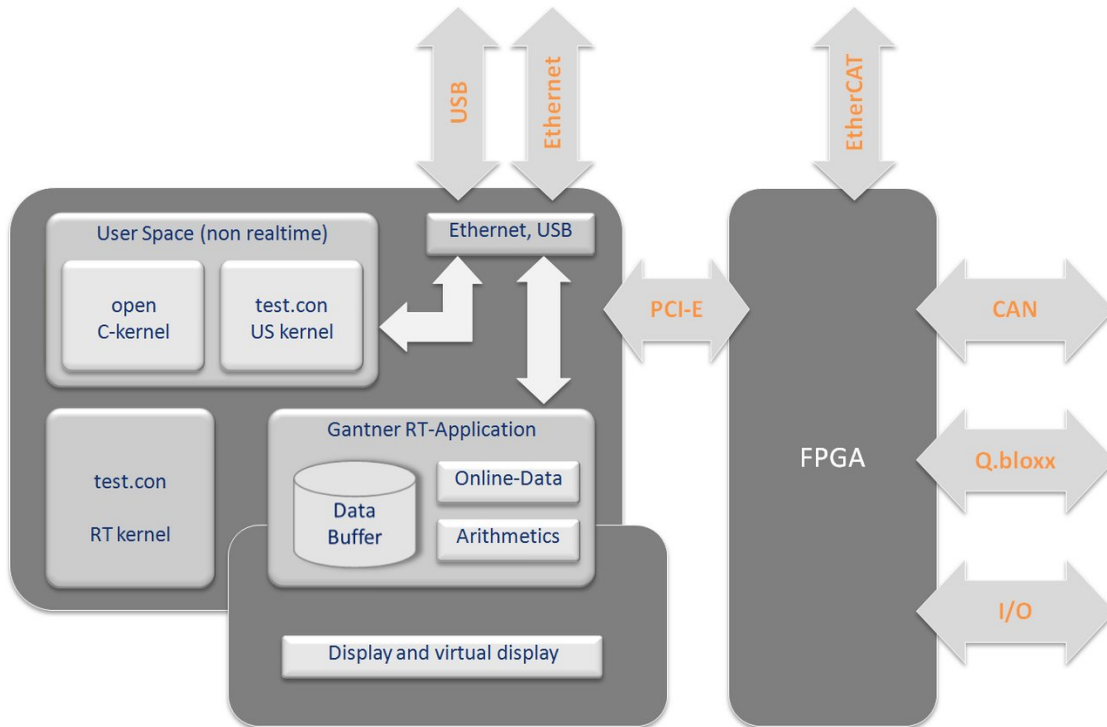
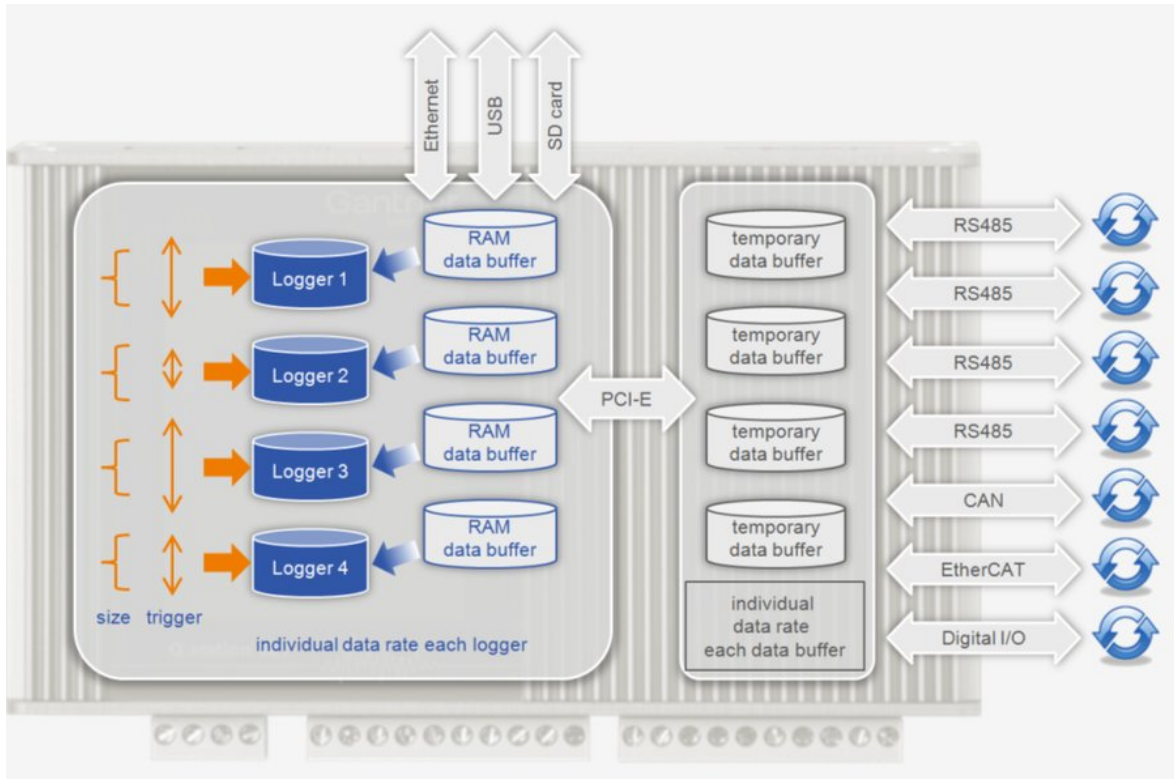Controller

Logging function

With Controller Q.station a very flexible and powerful data logging is possible.
Four data buffers (RAM) with different configurable data rates can be assigned to the measurement and I/O signals.

According to the configuration of up to 20 loggers occurs the logging of the buffer data at a selectable medium (intern. Flash, USB, SD-Card) with selectable logging rates, storage duration, start and stop trigger (auto start, condition, touch) with or without pre- and post-trigger.

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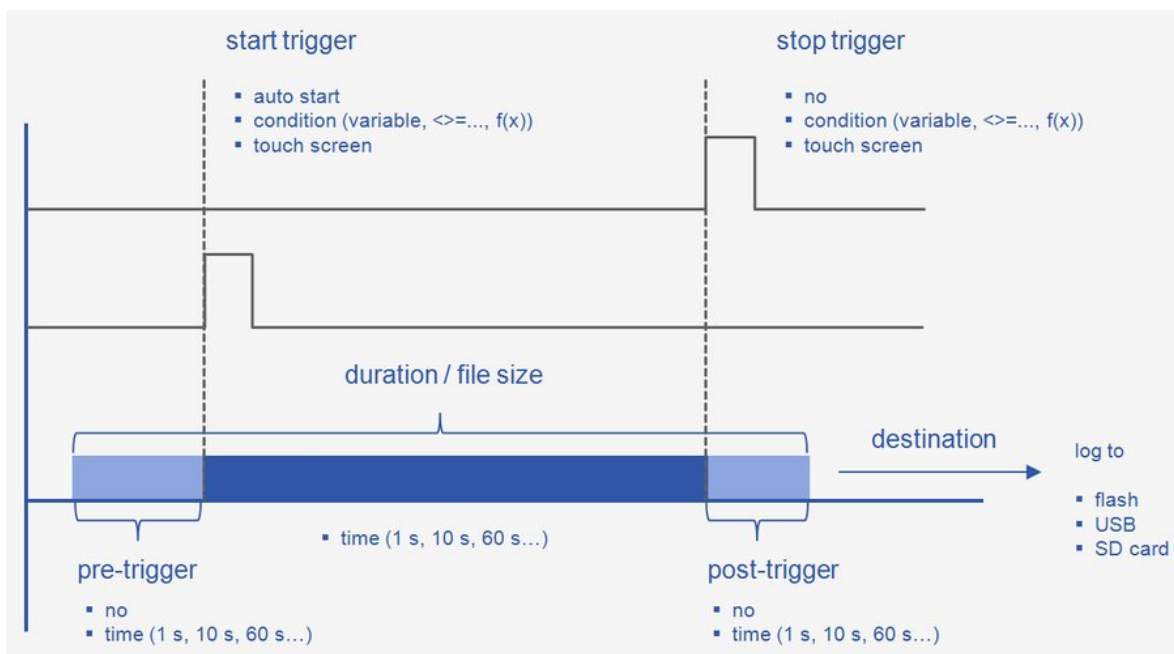
Examplary logger configuration with the software test.commander

```
⊟ 📁 Sample rate
   📝 Count:                          1
   ⊟ 📁 Sample rate #1
      📝 Name                         fast
      📝 Sample frequency             10000 Hz
      📝 Buffer size [Bytes]:         5000000
⊟ 📁 Logging settings
   📝 Number of separate loggers:     1
   ⊟ 📁 Datalogger #1
      📝 Name                         Logger 1
      📝 Logging to this buffer       activated
      📝 Data source                  #1 ... fast
      📝 Logging rate                 1000 Hz
      ⊟ 📝 File size                  Seconds
         📝 Value                     600
      ⊟ 📝 Logging duration           Seconds
         📝 Value                     600
      ⊟ 📁 Logging destinations
         📝 Count:                    2
         📝 1st priority              USB
         📝 2nd priority              SD-Card
      ⊟ 📝 Start trigger              condition
         📝 Variable                  Strain
         📝 Condition                 >
         📝 Value                     300
         ⊟ 📝 Pre-trigger             Seconds
            📝 Value                  60
      ⊟ 📝 Stop trigger               condition
         📝 Variable                  Strain
         📝 Condition                 <
         📝 Value                     100
         ⊟ 📝 Post-trigger            Seconds
            📝 Value                  30
```
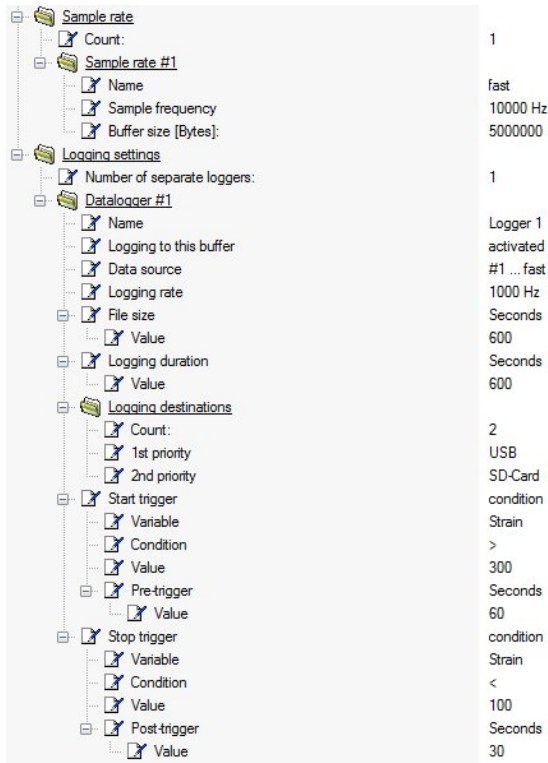
Software Add-On

Matlab	Available for 32/64-bit Versions, read buffer data
DasyLab	For DasyLab Versions > = 15, read buffer data, read/write online values
LabView	For Versions > =2016 (older versions upon request), Available in 32/64-bit, read buffer data, read/write online values
test.con	Simple graphical programming for edge computing devices

Plug-ins

Available plug-ins need GI.monitor for configuration, output files can be send automatically to configured receivers	
Rainflow	Cycle counting algorithm Rainflow HCM according to Colormann Seeger with matrix in .scv format
FFT	Frequency analysis with selectable window type, frequency range and channels of bins (resolution) with output in .scv format

Mechanical Information

Material	Aluminum
Measurements (W x H x D)	175 x 110 x 55 mm
Weight	approx. 900 g

Ordering Information

Article number	290124

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Gantner Instruments

Austria | Germany | France | Sweden | India | USA | China | Singapore

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