SPECTRUM
INSTRUMENTATION

# DN6.46x - 48 channel 16 bit digitizerNETBOX up to 3 MS/s

- **16, 24, 32, 40 or 48 channels with 200 kS/s up to 3 MS/s**
- **Software selectable single-ended or differential inputs**
- **Simultaneously sampling on all channels**
- **Separate ADC and amplifier per channel**
- **complete on-board calibration**
- **8 input ranges: ±50 mV up to ±10 V**
- **512 MSample/1 GSample standard acquisition memory**
- **Programmable input offset of ±5 V**
- **Window, pulse width, re-arm, spike, OR/AND trigger**
- **Features: Streaming, ABA mode, Multiple Recording, Gated Sampling**



LXI
LAN eXtensions for Instrumentation

- Ethernet Remote Instrument
- LXI Core 2011 compatible
- GBit Ethernet Interface
- Sustained streaming mode up to 70 MB/s

- Direct Connection to PC/Laptop
- Connect anywhere in company LAN
- Embedded Webserver for Maintenance/Updates
- Embedded Server option for open Linux platform

| Operating Systems | SBench 6 Professional Included | Drivers |
|---|---|---|
| • Windows 7 (SP1), 8, 10, Server 2008 R2 and newer<br>• Linux Kernel 2.6, 3.x, 4.x, 5.x<br>• Windows/Linux 32 and 64 bit | • Acquisition, Generation and Display of analog and digital data<br>• Calculation, FFT<br>• Documentation and Import, Export | • LabVIEW, MATLAB, LabWindows/CVI<br>• Visual C++, C++ Builder, GNU C++, VB.NET, C#, J#, Delphi, Java, Python<br>• IVI |

| Model | Single-Ended Channels | Speed | Differential Channels | Speed | Total Memory |
|---|---|---|---|---|---|
| DN6.461-16 | 16 | 200 kS/s | 16 | 200 kS/s | 1.0 GSample |
| DN6.461-24 | 24 | 200 kS/s | 24 | 200 kS/s | 1.5 GSample |
| DN6.461-32 | 32 | 200 kS/s | | | 2.0 GSample |
| DN6.461-40 | 40 | 200 kS/s | | | 2.5 GSample |
| DN6.461-48 | 48 | 200 kS/s | | | 3.0 GSample |
| DN6.464-16 | 16 | 1 MS/s | 16 | 1 MS/s | 1.0 GSample |
| DN6.464-24 | 24 | 1 MS/s | 24 | 1 MS/s | 1.5 GSample |
| DN6.464-32 | 32 | 1 MS/s | | | 2.0 GSample |
| DN6.464-40 | 40 | 1 MS/s | | | 2.5 GSample |
| DN6.464-48 | 48 | 1 MS/s | | | 3.0 GSample |
| DN6.465-16 | 16 | 3 MS/s | 16 | 3 MS/s | 1.0 GSample |
| DN6.465-24 | 24 | 3 MS/s | 24 | 3 MS/s | 1.5 GSample |
| DN6.465-32 | 32 | 3 MS/s | | | 2.0 GSample |
| DN6.465-40 | 40 | 3 MS/s | | | 2.5 GSample |
| DN6.465-48 | 48 | 3 MS/s | | | 3.0 GSample |

## General Information

The digitizerNETBOX DN6.46x series allows recording of up to 48 channels with 16 bit resolution and sampling rates between 200 kS/s and 3 MS/s.
All 16 and 24 channel models allow to switch each channel independently between single-ended and true differential input.
These Ethernet Remote instruments offer outstanding A/D features both in resolution and signal quality.
The 16 bit vertical resolution have four times the accuracy compared to 14 bit products and sixteen times the accuracy if compared with a 12 bit product.
The digitizerNETBOX can be installed anywhere in the company LAN and can be remotely controlled from a host PC.

## Software Support

### Windows Support

The digitizerNETBOX/generatorNETBOX can be accessed from Windows 7, Windows 8,Windows 10 (each 32 bit and 64 bit). Programming examples for Visual C++, C++ Builder, LabWindows/CVI, Delphi, Visual Basic, VB.NET, C#, J#, Python, Java and IVI are included.

### Linux Support

The digitizerNETBOX/generatorNETBOX can be accessed from any Linux system. The Linux support includes SMP systems, 32 bit and 64 bit systems, versatile programming examples for Gnu C++, Python as well as drivers for MATLAB for Linux. SBench 6, the powerful data acquisition and analysis software from Spectrum is also included as a Linux version.

### Discovery Protocol

The Discovery function helps you to find and identify any Spectrum LXI instruments, like the digitizerNETBOX and generatorNETBOX, available to your computer on the network. The Discovery function will also locate any Spectrum card products that are managed by an installed Spectrum Remote Server somewhere on the network.

After running the discovery function the card information is cached and can be directly accessed by SBench 6. Furthermore the qualified VISA address is returned and can be used by any software to access the remote instrument.

### SBench 6 Professional
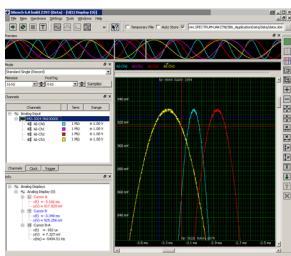
The digitizerNETBOX and generatorNETBOX can be used with Spectrum's powerful software SBench 6 – a Professional license for the software is already installed in the box. SBench 6 supports all of the standard features of the instrument. It has a variety of display windows as well as analysis, export and documentation functions.

- Available for Windows XP, Vista, Windows 7, Windows 8, Windows 10 and Linux
- Easy to use interface with drag and drop, docking windows and context menus
- Display of analog and digital data, X-Y display, frequency domain and spread signals
- Designed to handle several GBytes of data
- Fast data preview functions

### IVI Driver

The IVI standards define an open driver architecture, a set of instrument classes, and shared software components. Together these provide critical elements needed for instrument interchangeability. IVI's defined Application Programming Interfaces (APIs) standardize common measurement functions reducing the time needed to learn a new IVI instrument.

The Spectrum products to be accessed with the IVI driver can be locally installed data acquisition cards, remotely installed data acquisition cards or remote LXI instruments like digitizerNETBOX/generatorNETBOX. To maximize the compatibility with existing IVI based software installations, the Spectrum IVI

driver supports IVI Scope, IVI Digitizer and IVI FGen class with IVI-C and IVI-COM interfaces.

### Third-party Software Products

Most popular third-party software products, such as LabVIEW, MATLAB or LabWindows/CVI are supported. All drivers come with examples and detailed documentation.

### Embedded Webserver

The integrated webserver follows the LXI standard and gathers information on the product, set up of the Ethernet configuration and current status. It also allows the setting of a configuration password, access to documentation and updating of the complete instrument firmware, including the embedded remote server and the webserver.

## Hardware features and options

### LXI Instrument

The digitizerNETBOX and generatorNETBOX are fully LXI instrument compatible to LXI Core 2011 following the LXI Device Specification 2011 rev. 1.4. The digitizerNETBOX/generatorNETBOX has been tested and approved by the LXI Consortium.

Located on the front panel is the main on/off switch, LEDs showing the LXI and Acquisition status and the LAN reset switch.

### Front Panel

Standard BNC connectors are used for all analog input or output signals and all auxiliary signals like clock and trigger. No special adapter cables are needed and the connection is secure even when used in a moving environment.

Custom front panels are available on request even for small series, be it SMA, LEMO connectors or custom specific connectors.

### Ethernet Connectivity

The GBit Ethernet connection can be used with standard COTS Ethernet cabling. The integration into a standard LAN allows to connect the digitizerNETBOX/generatorNETBOX either directly to a desktop PC or Laptop or it is possible to place the instrument somewhere in the company LAN and access it from any desktop over the LAN.

### Boot on Power on Option

The digitizerNETBOX/generatorNETBOX can be factory configured to automatically start and boot upon availability of the input power rail. That way the instrument will automatically become available again upon loss of input power.

## Input Amplifier
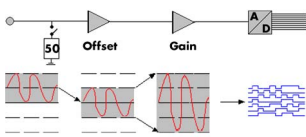
The analog inputs can be adapted to real world signals using a wide variety of settings that are individual for each channel. By using software commands the input termination can be changed between 50 Ohm and 1 MOhm, one can select a matching input range and the signal offset can be compensated for.

## Differential inputs

With a simple software command the inputs can individually be switched from single-ended (in relation to ground) to differential by combining each two single-ended inputs to one differential input. When the inputs are used in differential mode the A/D converter measures the difference between two lines with relation to system ground.

## Automatic on-board calibration

All of the channels are calibrated in factory before the board is shipped. To compensate for different variations like PC power supply, temperature and aging, the software driver provides routines for an automatic onboard offset and gain calibration of all input ranges. All the cards contain a high precision on-board calibration reference.

## Ring buffer mode
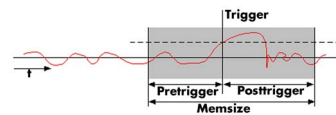
The ring buffer mode is the standard mode of all oscilloscope instruments. Digitized data is continuously written into a ring memory until a trigger event is detected. After the trigger, post-trigger samples are recorded and pre-trigger samples can also be stored. The number of pre-trigger samples available simply equals the total ring memory size minus the number of post trigger samples.

## FIFO mode

The FIFO mode is designed for continuous data transfer between remote instrument and PC memory or hard disk. The control of the data stream is done automatically by the driver on interrupt request. The complete installed on-board memory is used for buffer data, making the continuous streaming extremely reliable.

## Channel trigger

The data acquisition instruments offer a wide variety of trigger modes. Besides the standard signal checking for level and edge as known from oscilloscopes it's also possible to define a window trigger. All trigger modes can be combined with the pulsewidth trigger. This makes it possible to trigger on signal errors like too long or too short pulses. In addition to this a re-arming mode (for accurate trigger recognition on noisy signals) the AND/OR conjunction of different trigger events is possible. As a unique feature it is possible to use deactivated channels as trigger sources.

## External trigger I/O

All instruments can be triggered using an external TTL signal. It's possible to use positive or negative edge also in combination with a programmable pulse width. An internally recognised trigger event can - when activated by software - be routed to the trigger connector to start external instruments.

## Pulse width

Defines the minimum or maximum width that a trigger pulse must have to generate a trigger event. Pulse width can be combined with channel trigger, pattern trigger and external trigger.

## Multiple Recording
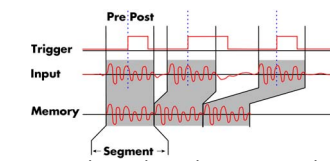
The Multiple Recording mode allows the recording of several trigger events with an extremely short re-arming time. The hardware doesn't need to be restarted in between. The on-board memory is divided in several segments of the same size. Each of them is filled with data if a trigger event occurs. Pre- and posttrigger of the segments can be programmed. The number of acquired segments is only limited by the used memory and is unlimited when using FIFO mode.

## Gated Sampling
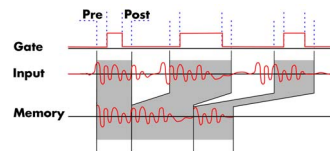
The Gated Sampling mode allows data recording controlled by an external gate signal. Data is only recorded if the gate signal has a programmed level. In addition a pre-area before start of the gate signal as well as a post area after end of the gate signal can be acquired. The number of gate segments is only limited by the used memory and is unlimited when using FIFO mode.
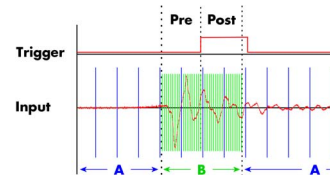
## Timestamp
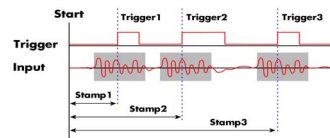
The timestamp function writes the time positions of the trigger events in an extra memory. The timestamps are relative to the start of recording, a defined zero time, externally synchronized to a radio clock, an IRIG-B a GPS receiver. Using the external synchronization gives a precise time relation for acquisitions of systems on different locations.
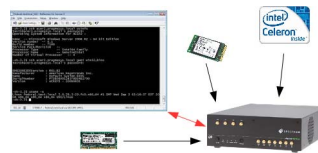
## ABA mode

The ABA mode combines slow continuous data recording with fast acquisition on trigger events. The ABA mode works like a slow data logger combined with a fast digitizer. The exact position of the trigger events is stored as timestamps in an extra memory.

## Option Embedded Server

The option turns the digitizerNETBOX/generatorNETBOX in a powerful PC that allows to run own programs on a small and remote data acquisition system. The digitizerNETBOX/generatorNETBOX is enhanced by more memory, a powerful CPU, a freely accessable internal SSD and a remote software development access method.

The digitizerNETBOX/generatorNETBOX can either run connected to LAN or it can run totally independent, storing data to the internal SSD. The original digitizerNETBOX/generatorNETBOX remote instrument functionality is still 100 % available. Running the embedded server option it is possible to pre-calculate results based on the acquired data, store acquisitions locally and to transfer just the required data or results parts in a client-server based software structure. A different example for the digitizerNETBOX/generatorNETBOX embedded server is surveillance/logger application which can run totally independent for

days and send notification emails only over LAN or offloads stored data as soon as it's connected again.

Access to the embedded server is done through a standard text based Linux shell based on the ssh secure shell.

**External clock I/O**

Using a dedicated connector a sampling clock can be fed in from an external system. It's also possible to output the internally used sampling clock to synchronise external equipment to this clock.

**Reference clock**
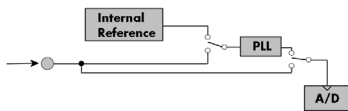


The option to use a precise external reference clock (typically 10 MHz) is necessary to synchronize the instrument for high-quality measurements with external equipment (like a signal source). It's also possible to enhance the stability of the sampling clock in this way. The driver automatically generates the requested sampling clock from the fed in reference clock.

# DN2 / DN6 Technical Data

## Analog Inputs

| | | |
|---|---|---|
| Resolution | | 16 bit (±32000 values) |
| Input Range | software programmable | ±50 mV, ±100 mV, ±250 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V |
| Input Type | software programmable | Single-ended or True Differential (individually programmable per channel) |
| Input Offset (single-ended) | software programmable | programmable to ±5 V in steps of 1 mV, not exceeding ±10 V input |
| ADC Differential non linearity (DNL) | ADC only | 465x: ±2 LSB, all others ±1 LSB |
| ADC Integral non linearity (INL) | ADC only | 465x: ±2 LSB, all others ±1 LSB |
| Offset error (full speed) | after warm-up and calibration | ≤ 0.1% of range ±0.2mV |
| Gain error (full speed) | after warm-up and calibration | ≤ 0.1% |
| Crosstalk: 100 kHz Signal, 50 ohm termination | all input ranges | ≤ -110 dB on adjacent channels |
| Analog Input impedance | fixed | 1 MOhm \|\| 25 pF |
| Analog input coupling | fixed | DC |
| Over voltage protection (active card) | all ranges | ±30 V |
| CMRR (Common Mode Rejection Ratio) | range ≤ ±500 mV | > 70 dB |
| CMRR (Common Mode Rejection Ratio) | range ≥ ±1V | > 46 dB |
| Channel selection (single-ended inputs) | software programmable | 1, 2, 4, 8 or 16 channels (maximum is model dependent) |
| Channel selection (true differential inputs) | software programmable | 1, 2, 4, 8 or 16 channels (maximum is model dependent) |

## Trigger

| | | |
|---|---|---|
| Available trigger modes | software programmable | Channel Trigger, External, Software, Window, Pulse, Re-Arm, Spike, Or/And, Delay |
| Trigger level resolution | software programmable | 14 bit |
| Trigger edge | software programmable | Rising edge, falling edge or both edges |
| Trigger pulse width | software programmable | 0 to [64k - 1] samples in steps of 1 sample |
| Trigger delay | software programmable | 0 to [64k - 1] samples in steps of 1 sample |
| Multi, Gate: re-arming time | | < 4 samples (+ programmed pretrigger) |
| Pretrigger at Multi, ABA, Gate, FIFO | software programmable | 4 up to [8176 Samples / number of active channels] in steps of 4 |
| Posttrigger | software programmable | 4 up to [8G - 4] samples in steps of 4 (defining pretrigger in standard scope mode) |
| Memory depth | software programmable | 8 up to [installed memory / number of active channels] samples in steps of 4 |
| Multiple Recording/ABA segment size | software programmable | 8 up to [installed memory / 2 / active channels] samples in steps of 4 |
| Trigger output delay | | One positive edge after internal trigger event |
| Internal/External trigger accuracy | | 1 sample |
| External trigger type (input and output) | | 3.3V LVTTL compatible (5V tolerant with base card hardware version > V20) |
| External trigger input | | Low ≤ 0.8 V, High ≥ 2.0 V, ≥ 8 ns in pulse stretch mode, ≥ 2 clock periods all other modes |
| External trigger maximum voltage | | -0.5 V up to +5.7 V (internally clamped to 5.0V, 100 mA max. clamping current) |
| Trigger impedance | software programmable | 50 Ohm / high impedance (> 4kOhm) |
| External trigger output type | | 3.3 V LVTTL |
| External trigger output levels | | Low ≤ 0.4 V, High ≥ 2.4 V, TTL compatible |
| External trigger output drive strength | | Capable of driving 50 ohm load, maximum drive strength ±128 mA |

## Clock

| | | |
|---|---|---|
| Clock Modes | software programmable | internal PLL, internal quartz, external clock, external divided, external reference clock, sync |
| Internal clock range (PLL mode) | software programmable | 1 kS/s to max using internal reference, 50kS/s to max using external reference clock |
| Internal clock accuracy | | ≤ 20 ppm |
| Internal clock setup granularity | | ≤1% of range (100M, 10M, 1M, 100k,...): Examples: range 1M to 10M: stepsize ≤ 100k |
| External reference clock range | software programmable | ≥ 1.0 MHz and ≤ 125.0 MHz |
| External clock impedance | software programmable | 50 Ohm / high impedance (> 4kOhm) |
| External clock range | | see „Dynamic Parameters" table below |
| External clock delay to internal clock | | 5.4 ns |
| External clock type/edge | | 3.3V LVTTL compatible, rising edge used |
| External clock input | | Low level ≤ 0.8 V, High level ≥ 2.0 V, duty cycle: 45% - 55% |
| External clock maximum voltage | | -0.5 V up to +3.8 V (internally clamped to 3.3V, 100 mA max. clamping current) (not 5V tolerant) |
| External clock output type | | 3.3 V LVTTL |
| External clock output levels | | Low ≤ 0.4 V, High ≥ 2.4 V, TTL compatible |
| External clock output drive strength | | Capable of driving 50 ohm load, maximum drive strength ±128 mA |
| Synchronization clock divider | software programmable | 2 up to [8k - 2] in steps of 2 |
| ABA mode clock divider for slow clock | software programmable | 8 up to 524280 in steps of 8 |

## Connectors

| | | | |
|---|---|---|---|
| Analog Inputs | | 9 mm BNC female (one for each single-ended input) | Cable-Type: Cab-9m-xx-xx |
| Trigger A Input/Output | programmable direction | 9 mm BNC female | Cable-Type: Cab-9m-xx-xx |
| Trigger B Input | | 9 mm BNC female | Cable-Type: Cab-9m-xx-xx |
| Clock Input/Output | programmable direction | 9 mm BNC female | Cable-Type: Cab-9m-xx-xx |
| Timestamp Reference Clock Input | | 9 mm BNC female | Cable-Type: Cab-9m-xx-xx |

## Option digitizerNETBOX/generatorNETBOX embedded server (DN2.xxx-Emb, DN6.xxx-Emb)

| | |
|---|---|
| CPU | Intel Quad Core 2 GHz |
| System memory | 4 GByte RAM |
| System data storage | Internal 128 GByte SSD |
| Development access | Remote Linux command shell (ssh), no graphical interface (GUI) available |
| Accessible Hardware | Full access to Spectrum instruments, LAN, front panel LEDs, RAM, SSD |
| Integrated operating system | OpenSuse 12.2 with kernel 4.4.7. |
| Internal PCIe connection | DN2.20, DN2.46, DN2.47, DN2.49, DN2.59, DN2.60    PCIe x1, Gen1 |
| | DN6.46, DN6.49, DN6.59 |
| | DN2.22, DN2.44, DN2.66    PCIe x1, Gen2 |
| | DN6.22, DN6.44, DN6.66 |

## Ethernet specific details

| | | |
|---|---|---|
| LAN Connection | | Standard RJ45 |
| LAN Speed | | Auto Sensing: GBit Ethernet, 100BASE-T, 10BASE-T |
| LAN IP address | programmable | DHCP (IPv4) with AutoIP fall-back (169.254.x.y), fixed IP (IPv4) |
| Sustained Streaming speed | | DN2.20, DN2.46, DN2.47, DN2.49, DN2.60    up to 70 MByte/s |
| | | DN6.46, DN6.49 |
| | | DN2.59, DN2.22, DN2.44, DN2.66    up to 100 MByte/s |
| | | DN6.59, DN6.22, DN6.44, DN6.66 |
| Used TCP/UDP Ports | | Webserver: 80    mDNS Daemon: 5353 |
| | | VISA Discovery Protocol: 111, 9757    UPNP Daemon: 1900 |
| | | Spectrum Remote Server: 1026, 5025 |

## Power connection details

| | |
|---|---|
| Mains AC power supply | Input voltage: 100 to 240 VAC, 50 to 60 Hz |
| AC power supply connector | IEC 60320-1-C14 (PC standard coupler) |
| Power supply cord | power cord included for Schuko contact (CEE 7/7) |

## Serial connection details (DN2.xxx with hardware ≥ V11)

| | |
|---|---|
| Serial connection (RS232) | For diagnostic purposes only. Do not use, unless being instructed by a Spectrum support agent. |

## Certification, Compliance, Warranty

| | |
|---|---|
| EMC Immunity | Compliant with CE Mark |
| EMC Emission | Compliant with CE Mark |
| Product warranty | 5 years starting with the day of delivery |
| Software and firmware updates | Life-time, free of charge |

## Dynamic Parameters

| | M2i.4620 M2i.4622 DN2.462 | M2i.4621 | M2i.4630 | M2i.4631 M2i.4632 | M2i.4640 | M2i.4641 M2i.4642 DN2.464 | M2i.4650 | M2i.4651 M2i.4652 DN2.465 |
|---|---|---|---|---|---|---|---|---|
| max internal clock | 200 kS/s | | 500 kS/s | | 1 MS/s | | 3 MS/s | |
| min external clock (special clock mode) | DC (DC) | | DC (DC) | | 1 kS/s (DC) | | 1 kS/s (DC) | |
| max external clock (special clock mode) | 200 kS/s (200 kS/S) | | 500 kS/s (500 kS/s) | | 1 MS/s (800 kS/s) | | 3 MS/s (2 MS/s) | |
| -3 dB bandwidth | >100 kHz | | >250 kHz | | >500 kHz | | >1.5 MHz | |
| Zero noise level (Range ≥ ±500 mV) | < 0.8 LSB rms | | < 0.9 LSB rms | | < 1.1 LSB rms | | < 3.0 LSB rms | |
| Zero noise level (Range < ±500 mV) | < 8 uV rms | | < 10 uV rms | | < 17 uV rms | | < 30 uV rms | |
| Test - sampling rate | 200 kS/s | | 500 kS/s | | 1 MS/s | | 3 MS/s | |
| Test signal frequency | 10 kHz | | 10 kHz | | 10 kHz | | 10 kHz | |
| SNR (typ) | 91.8 dB | 91.5 dB | 91.2 dB | 91.0 dB | 91.0 dB | 90.7 dB | 84.0 dB | 82.5 dB |
| THD (typ) | -102.0 dB | -101.7 dB | -101.8 dB | -101.6 dB | -101.5 dB | -100.8 dB | -94.5 dB | -90.1 dB |
| SFDR (typ), excl. harm. | 112.0 dB | 111.5 dB | 112.0 dB | 111.5 dB | 112.0 dB | 111.2 dB | 107.0 dB | 105.5 dB |
| ENOB (based on SNR) | 15.0 bit | 14.9 bit | 14.9 bit | 14.8 bit | 14.8 bit | 14.7 bit | 13.6 bit | 13.4 bit |
| ENOB (based on SINAD) | 14.9 bit | 14.8 bit | 14.8 bit | 14.7 bit | 14.7 bit | 14.6 bit | 13.5 bit | 13.3 bit |

Dynamic parameters are measured at ±5 V input range (if no other range is stated) and 1 MOhm termination with the sampling rate specified in the table. Measured parameters are averaged 20 times to get typical values. Test signal is a pure sine wave of the specified frequency with > 99% amplitude. SNR and RMS noise parameters may differ depending on the quality of the used PC. SNR = Signal to Noise Ratio, THD = Total Harmonic Distortion, SFDR = Spurious Free Dynamic Range, SINAD = Signal Noise and Distortion, ENOB = Effective Number of Bits. For a detailed description please see application note 002.

# DN6 specific Technical Data

## Environmental and Physical Details DN6.xxx

| | | |
|---|---|---|
| Dimension of Chassis without connectors or bumpers | L x W x H | 464 mm x 431 mm x 131 mm |
| Dimension of Chassis with 19" rack mount option | L x W x H | 464 mm x TBD mm x 131 mm (3U height) |
| Weight (3 internal acquisition/generation modules) | | 12.1 kg, with rack mount kit: TBD kg |
| Weight (4 internal acquisition/generation modules) | | 12.5 kg, with rack mount kit: TBD kg |
| Weight (5 internal acquisition/generation modules) | | 12.9 kg, with rack mount kit: TBD kg |
| Weight (6 internal acquisition/generation modules) | | 13.4 kg, with rack mount kit: TBD kg |
| Warm up time | | 10 minutes |
| Operating temperature | | 0°C to 40°C |
| Storage temperature | | -10°C to 70°C |
| Humidity | | 10% to 90% |
| Dimension of packing (single DN6) | L x W x H | 580 mm x 580 mm x 280 mm |
| Volume weight of Packing (single DN6) | | 19.0 kgs |

## Power Consumption

| | 230 VAC | |
|---|---|---|
| 16 channel versions, standard memory | 0.26 A | 60 W |
| 24 channel versions, standard memory | TBD | TBD |
| 32 channel versions, standard memory | TBD | TBD |
| 40 channel versions, standard memory | TBD | TBD |
| 48 channel versions, standard memory | TBD | TBD |
| 16 channel versions, 2 x 1 GSample memory | TBD | TBD |
| 24 channel versions, 3 x 1 GSample memory | TBD | TBD |
| 32 channel versions, 4 x 1 GSample memory | TBD | TBD |
| 40 channel versions, 5 x 1 GSample memory | TBD | TBD |
| 48 channel versions, 6 x 1 GSample memory | TBD | TBD |

## MTBF

| | |
|---|---|
| MTBF | TBD hours |

## Block diagram of digitizerNETBOX DN6
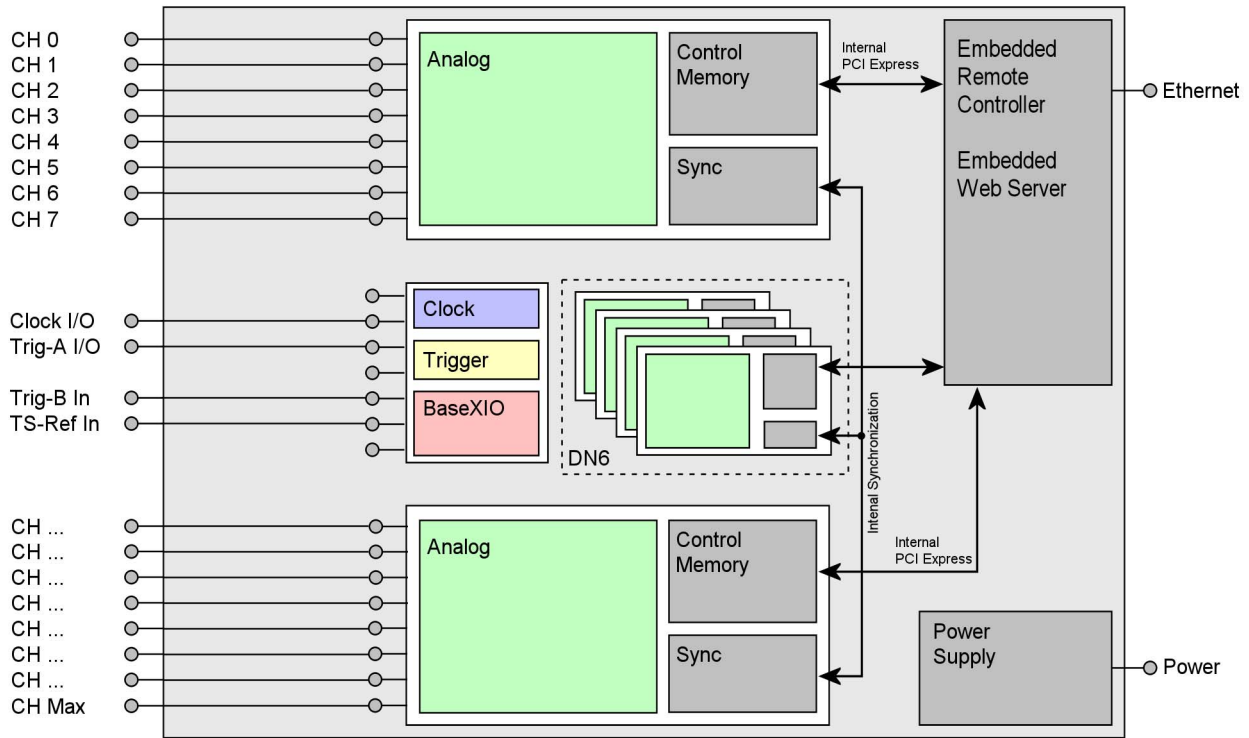


- The number of maximum channels and internal digitizer modules and existance of a synchronization Star-Hub is model dependent.

## Block diagram of digitzerNETBOX digitizer module DN6.46x
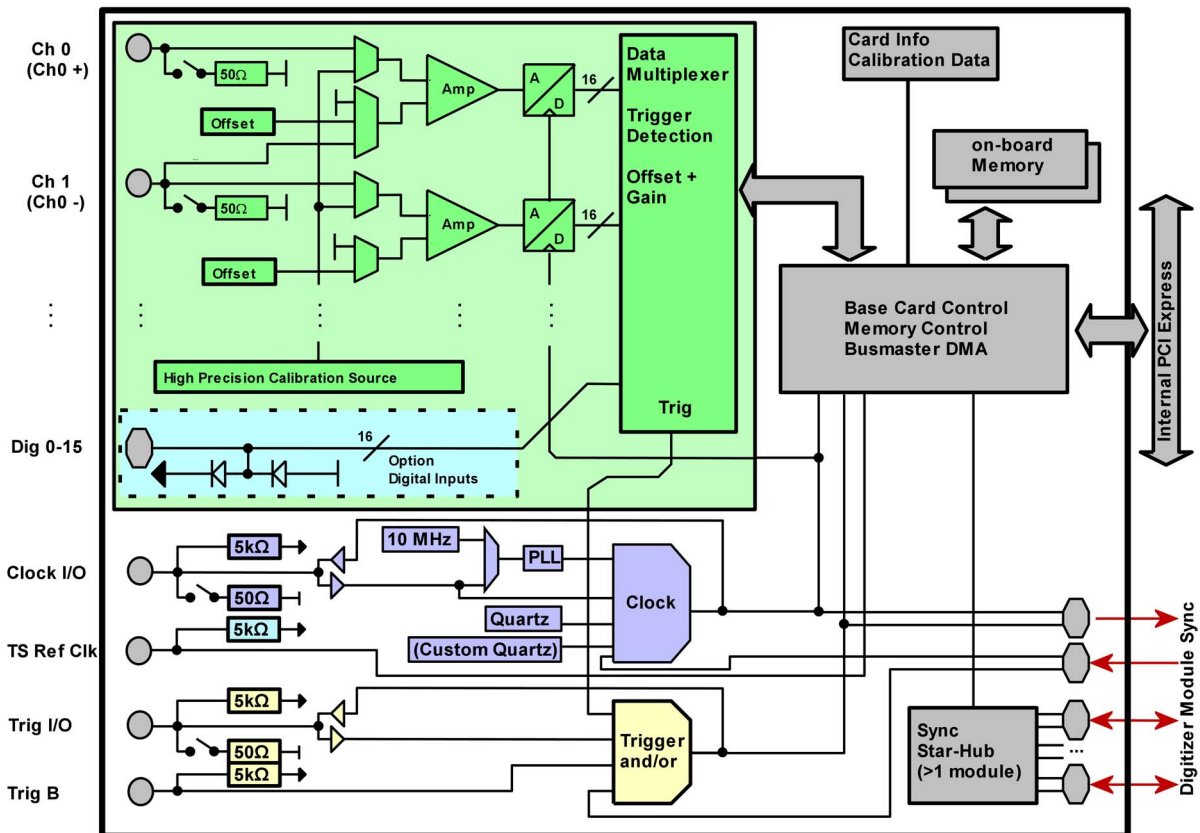
# Order Information

The digitizerNETBOX is equipped with a large internal memory for data storage and supports standard acquisition (Scope), FIFO acquisition (streaming), Multiple Recording, Gated Sampling, ABA mode and Timestamps. Operating system drivers for Windows/Linux 32 bit and 64 bit, drivers and examples for C/C++, IVI (Scope and Digitizer class), LabVIEW (Windows), MATLAB (Windows and Linux), .NET, Delphi, Java, Python and a Professional license of the oscilloscope software SBench 6 are included.

The system is delivered with a connection cable meeting your countries power connection. Additional power connections with other standards are available as option.

## *digitizerNETBOX* DN6 - Ethernet/LXI Interface

| Order no. | A/D Resolution | Single-Ended Channels | Differential Channels | Sampling Speed | Installed Memory | Available Memory Options |
|---|---|---|---|---|---|---|
| DN6.462-16 | 16 Bit | 16 channels | 16 channels | 200 kS/s | 2 x 512MS | 2 x 1GS |
| DN6.462-24 | 16 Bit | 24 channels | 24 channels | 200 kS/s | 3 x 512MS | 3 x 1GS |
| DN6.462-32 | 16 Bit | 32 channels | - | 200 kS/s | 4 x 512MS | 4 x 1GS |
| DN6.462-40 | 16 Bit | 40 channels | - | 200 kS/s | 5 x 512MS | 5 x 1GS |
| DN6.462-48 | 16 Bit | 48channels | - | 200 kS/s | 6 x 512MS | 6 x 1GS |
| DN6.464-16 | 16 Bit | 16 channels | 16 channels | 1 MS/s | 2 x 512MS | 2 x 1GS |
| DN6.464-24 | 16 Bit | 24 channels | 24 channels | 1 MS/s | 3 x 512MS | 3 x 1GS |
| DN6.464-32 | 16 Bit | 32 channels | - | 1 MS/s | 4 x 512MS | 4 x 1GS |
| DN6.464-40 | 16 Bit | 40 channels | - | 1 MS/s | 5 x 512MS | 5 x 1GS |
| DN6.464-48 | 16 Bit | 48channels | - | 1 MS/s | 6 x 512MS | 6 x 1GS |
| DN6.465-16 | 16 Bit | 16 channels | 16 channels | 3 MS/s | 2 x 512MS | 2 x 1GS |
| DN6.465-24 | 16 Bit | 24 channels | 24 channels | 3 MS/s | 3 x 512MS | 3 x 1GS |
| DN6.465-32 | 16 Bit | 32 channels | - | 3 MS/s | 4 x 512MS | 4 x 1GS |
| DN6.465-40 | 16 Bit | 40 channels | - | 3 MS/s | 5 x 512MS | 5 x 1GS |
| DN6.465-48 | 16 Bit | 48channels | - | 3 MS/s | 6 x 512MS | 6 x 1GS |

## Options

| Order no. | Option |
|---|---|
| DN6.xxx-Rack | 19" rack mounting set for self mounting |
| DN6.xxx-Emb | Extension to Embedded Server: CPU, more memory, SSD. Access via remote Linuxs secure shell (ssh) |
| DN6.xxx-2x1GS | Memory extension to 2 x 1 GSample for xxx-16 versions |
| DN6.xxx-3x1GS | Memory extension to 3 x 1 GSample for xxx-24 versions |
| DN6.xxx-4x1GS | Memory extension to 4 x 1 GSample for xxx-32 versions |
| DN6.xxx-5x1GS | Memory extension to 5 x 1 GSample for xxx-40 versions |
| DN6.xxx-6x1GS | Memory extension to 6 x 1 GSample for xxx-48 versions |
| DN6.xxx-BTPWR | Boot on Power On: the digitizerNETBOX/generatorNETBOX automatically boots if power is switched on. |

## Calibration

| Order no. | Option |
|---|---|
| DN6.xxx-Recal | Recalibration of complete digitizerNETBOX/generatorNETBOX DN6 including calibration protocol |

## BNC Cables

The standard adapter cables are based on RG174 cables and have a nominal attenuation of 0.3 dB/m at 100 MHz.

| for Connections | Connection | Length | to SMA male | to SMA female | to BNC male | to SMB female | |
|---|---|---|---|---|---|---|---|
| All | BNC male | 80 cm | Cab-9m-3mA-80 | Cab-9m-3fA-80 | Cab-9m-9m-80 | Cab-9m-3f-80 | |
| All | BNC male | 200 cm | Cab-9m-3mA-200 | Cab-9m-3fA-200 | Cab-9m-9m-200 | Cab-9m-3f-200 | |