ClipX Signal Conditioner

Clip. Measure. Control.

HBM

Clip. Measure. Control.

ClipX is the all-rounder for monitoring and measuring tasks in test benches, machines, and systems.

Production monitoring

- Quality control in production
- Fewer rejects due to traceable testing and measuring equipment

Monitoring of machines and systems

- Monitoring of a machine's operating status (remote control and monitoring)
- Prevention of system downtime (predictive maintenance)

Everything about industrial measurement technology can be found at:
www.hbm.com/signalconditioners

Industrial test benches

- Easy integration of the digital measurement chain owing to the use of modern automation interfaces
- Isochronous real-time connection to the test-bench control system

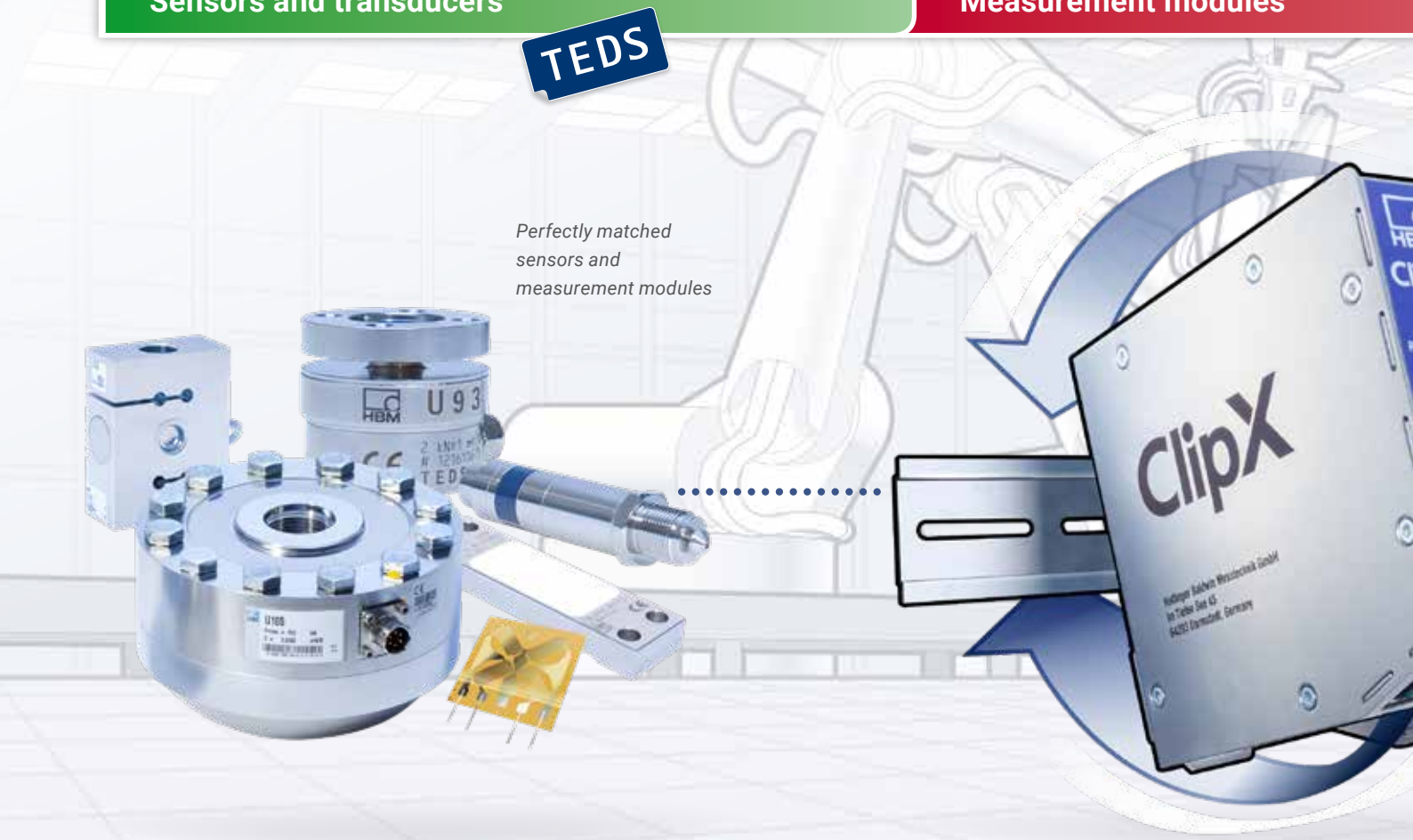
End-of-line test benches

- Precise product and component testing due to high-grade testing and measuring equipment
- Smart data pre-processing using internal calculation channels (Smart Functions) in the ClipX device

Digital and Analog Measurement Chains

With ClipX, you get a powerful next-generation signal conditioner, and HBM is available to you as a competent partner for complete measurement chains. All components are perfectly matched to each other – from the sensor through the electronics to the web interface – and provide precise and dependable measurement results.

Sensors and transducers | **Measurement modules**



Perfectly matched sensors and measurement modules

Measured quantities

Acquire force, strain, pressure, and torque with a guaranteed accuracy class of 0.01 due to HBM's working standard calibration. Sensors and amplifiers are perfectly matched to each other and provide interference-proof measurement results. The integrated web interface or, optionally, TEDS technology* (plug-and-measure) allows parameterization in a few seconds.

System configuration

Owing to the Plug and Play principle, up to six devices can be connected to each other and the measured data can be pre-calculated, depending on the application.
Modern automation interfaces allow easy connection to a PLC.

Open standard interfaces

Data processing

The responsive web interface makes configuring the ClipX via a PC, tablet, or smartphone an easy task.
The integrated health monitor ensures fast and convenient diagnosis.

Increased efficiency

ClipX is immediately operational due to its intuitive web interface. Precise and fast measuring equipment enables you to enhance the quality of your processes and save time and costs.

Easy System Integration

ClipX can be easily integrated into machines and systems. It is immediately ready for use, regardless of whether you are using individual stand-alone devices or measurement systems with up to 6 devices coupled via the ClipX bus.

Sensors and transducers

ClipX acquires force, strain, torque, pressure, displacement, temperature, current, and voltage.

Measurement modules

You can choose between ClipX modules with or without a fieldbus connection, depending on the application.

TEDS

The strengths at a glance

- Guaranteed accuracy class of 0.01 and 3.5 kHz measurement bandwidth
- High resolution of 24 bits, also for optimized partial-load operation
- Pre-processing of measured values owing to internal real-time calculation channels (maths, counter, analysis window, PID controller, etc.)
- Internal diagnosis: health monitoring and error memory
- 3D-STEP files facilitate machine and application modeling
- Traceability is ensured by an integrated calibration certificate
- EMC-tested measurement results due to carrier-frequency technology (CF) and high measurement bandwidth owing to DC sensor supply (DC)
- ePlan macros allow efficient control-cabinet design

Benefit from...

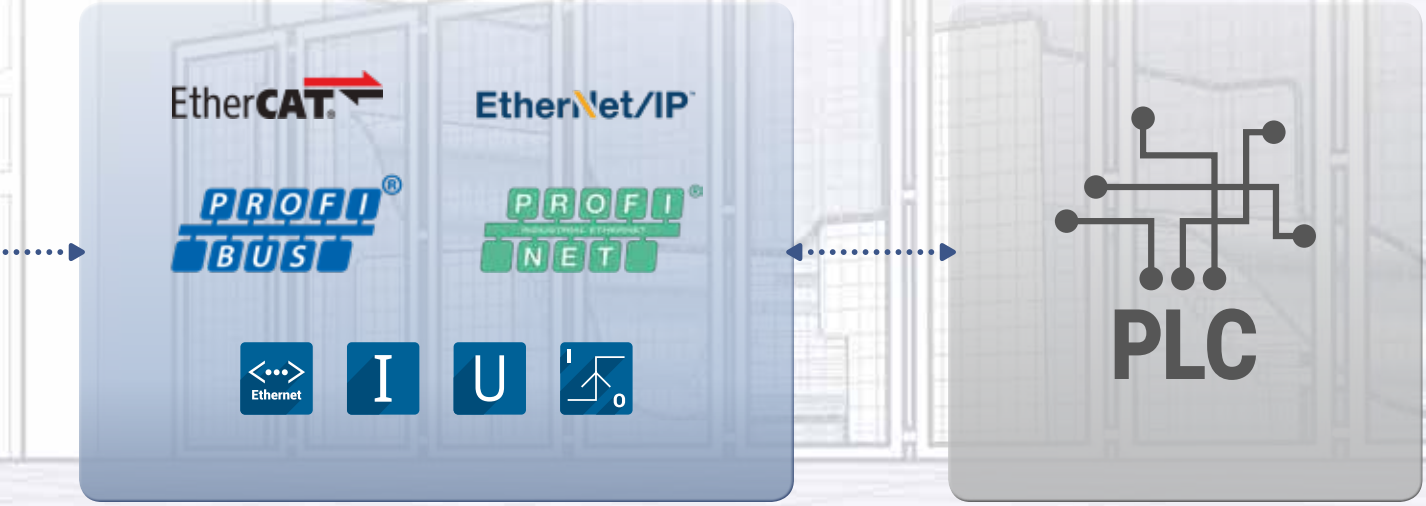
- Easy device parameterization
- Reliable diagnosis/remote maintenance
- Comprehensive process analysis

Fieldbuses

Modern automation interfaces enable ClipX to be connected to different types of control systems.

PLC connection

ClipX communicates with the PLC.



Interfaces

- Easy-to-use via the intuitive web interface
- Real-time interfaces using Ethernet-based fieldbuses and analog outputs (current and voltage) allow use in fast control tasks
- Ethernet interface with NTP synchronization* for PC control applications
- Secured by internal device diagnosis (health monitor) and three-level user administration

Intuitive web interface

ClipX comes with a modern web interface that is immediately operational without any software installation.

- Simple touchscreen operation with zoomable ClipX web interface and data monitoring
- Network capability due to standard Ethernet technology
- Ideal for remote maintenance via a company network or the Internet
- The web interface can be used on mobile devices via a WLAN router
- Multilingual user interface with integrated help

Easy to use

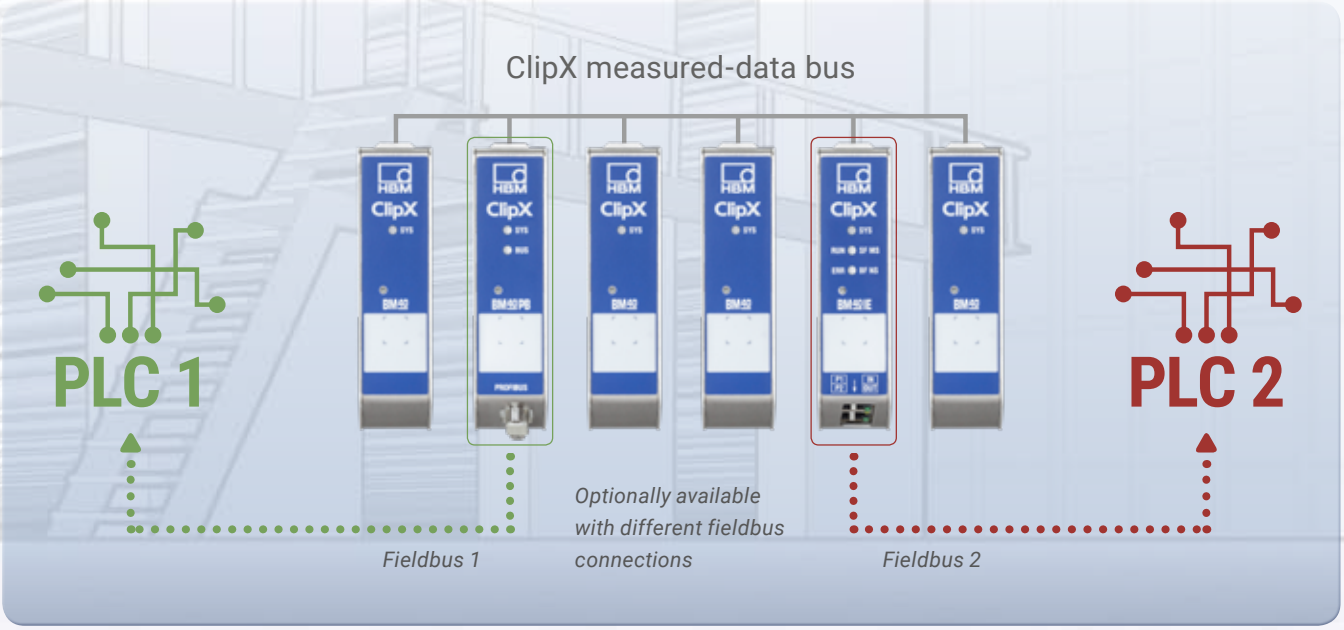
Whether you are a machine operator or installer, the configurable, three-level user administration (operator, service, administrator) always gives you access to all relevant device and diagnostic data. This cuts down the number of software tools you need, reduces complexity, and enables you to detect system faults at an early stage.

The web interface is easy to use by a touchscreen.

Flexible System Configuration

ClipX allows for an easy setup of both individual measurement chains and measurement systems with up to 6 quasi-synchronized devices in milliseconds – optionally linked via fieldbus. This enables you to use multiple fieldbuses in the application.

- Measured values including their status (diagnosis) are transmitted via the ClipX bus
- No head module is required
- Direct processing of all signals such as summation, peak values, or controls
- The multi-client capability enables all interfaces to be used in parallel and in real time
- Digital inputs and outputs can perform fast control and monitoring tasks (e.g. alarms)



The Industrial Internet of Things (IIoT)

ClipX already meets the requirements of the future IIoT.

- Smart devices owing to Smart Functions (diagnosis and analysis)
- Non-interacting, parallel operation of the PLC and the service interfaces
- High forward-compatibility and investment security

ClipX: The Facts

BM40	BM40PB	BM40IE
Without a fieldbus	Profibus slave (DPV1)	Profinet device (4 kHz data rate), EtherCAT® slave, (4 kHz data rate), Ethernet/IP™ slave (1 kHz data rate)

Standard interfaces:

- Parameterization (ClipX web interface) and for PC applications: Ethernet(TCP/IP) interface up to 100 Mbit/s

Sensor input:

- One switchable measurement input with TEDS technology* and internally stored calibration certificate, 19.2 kHz sample rate, 24-bit analog-to-digital conversion and filtering, up to 3.5 kHz measurement bandwidth, sensor supply optionally by DC or carrier frequency,
  Sensor inputs with 2-point, polynominal, or table-based scaling and accuracy class:

- SG full bridge (0.01)
- SG half bridge (0.1)
- Piezoresistive full bridge (0.01)
- DC 5 V DC sensor supply
- TF Carrier-frequency sensor supply (1200 Hz CF, 5 V)
- Potentiometric transducers (0.1)
- Pt100 (0.5 °C)
- Voltage signal (0.05)
- Current input (0.05)

Accuracy class specified in parentheses

Signal analysis (free parameterization):

- 3 peak values: Min, max, peak-peak, sample + hold function (52 µs acquisition time), 2 sample/hold values
- 4 adjustable limit values, 2 digital inputs, 2 digital outputs (1 ms response time)
- 1 analog output (mA/V), switchable (3.5 kHz bandwidth)

Internal calculation channels:

- Measured and analysis signals as well as fieldbus and Ethernet values can be used
- Algebra (+,-,*,/), logic blocks (AND, OR, ...), timer, counter, mean values (arithmetic, RMS), filter, PID controller, signal generators
- Scaling: Matrix compensation for multi-component sensors (2x2 to 6x6), coordinate conversion (polar/Cartesian)

ClipX bus:

- Measured-value bus for the transmission of signals and signal status between ClipX devices, up to max. 6 coupled devices, 1 kHz data rate

Parameter sets: (formulations)/device memory/diagnosis

- 10 internal parameter sets for storage of all device settings, three-level user administration (operator, service, administrator)
- An internal log file* enables diagnosis and error storage, an integrated health monitor allows monitoring of all signals and device functions
- Device LEDs on the front provide direct diagnostic information

EtherCAT® is a registered and licensed trademark of Beckhoff Automation GmbH
EtherNet/IP™ is a registered trademark of Open DeviceNet Vendor Association, Inc. (ODVA)

*available soon

Plan with HBM

Benefit from our worldwide service and support network and know-how for your solution.

Our competent team of engineers and technicians will support you with many services - at every stage of your test and measurement project.

More information at:
www.hbm.com/clipx

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- HBM calibration service
- Application consulting
- HBM Academy training
- Application-software development
- Digital measurement chains from a single source

www.hbm.com

HBM Test and Measurement
Tel. +49 6151 803-0
Fax +49 6151 803-9100
info@hbm.com

measure and predict with confidence

HBM public
S4880-2.0 en