

CTBENCH - Calibration training workbench



Workstation Frames		
TABTL19B	TowerLine workstation frame, 1880 x 750 mm table top, perforated back panel	1 x
Equipment Panels		
PANTL19	TowerLine device panel, 1.9 m	1 x
PANSOCKETLEU	Schuko sockets under device panel, 4 pcs	1 x
PANKOURBX	Cable casing set for instrument panel	1 x

Power Supply Units		
(S1) SU1	1-phase supply unit	1 x
Modules		
(1) ELPSL3	1-phase schuko socket outlets, 3 pcs	1 x
(2) DCF242R	Fixed DC power supply, 24 V, 2 A, 250 ohm series resistor	1 x
(3) POC6	Automatic pressure controller	1 x
(4) P1C	Pressure measurement module for MC6, - 1..1 bar	1 x
(5) P20C	Pressure measurement module for MC6, - 1..20 bar	1 x
(6) MC6WS	Advanced panel mounted calibrator and communicator	1 x
MC6DC	Documenting calibrator option for MC6	1 x
MC6FF	FOUNDATION Fieldbus communicator option for MC6	1 x
MC6HART	HART communicator option for MC6	1 x
MC6PCC	Pressure controller communication for POC6, for MC6	1 x
MC6TBC	Temperature block communication for FB/MB, for MC6	1 x
(7) USB1BE	USB connection	1 x
(8) DMMHPRO	Digital multimeter, 12 000 digits, TRMS	1 x
(9) VACUUMPSW	Vacuum pump switch	1 x
(10) ELPSL3	1-phase schuko socket outlets, 3 pcs	1 x
Accessories		
WHV820472	PB0004B vacuum pump including holder (WHV820472) for TowerLine workstation	1 x
INSTRSU	Instrument support	1 x
WHR855002	Hook set, 45 pcs	1 x
WTL839086	Suspension rail + pick-up boxes (WEL806211), fixed to perforated back panel	1 x
WSK91835008	Light rail, 2 x M900	1 x
CALABTRK	Process instrument kit for calibration training	1 x
FB	Field temperature block	1 x

WTL854482	Steel shelf, M1800, 1773 x 300 mm	1 x
CMX_PROFESSIONAL	Calibration software	1 x
WSK861956	LED light	1 x
WKV60641022	Drawer trolley, drawers 2 x 100, 2 x 150 mm	1 x
C20PU	Chair, black, polyurethane	1 x
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TABTL19B TowerLine workstation frame

- ESD powder painted steel frame
- L-shaped ergonomic legs, height 1920 mm
- Legs equipped with perforated uprights for placing accessories to different heights
- Versatile and adjustable accessories enable ergonomic and practical working environment
- Perforated back panel for accessories
- Vertical cable channels inside legs
- Horizontal cable channel below the table top at rear part
- Spacer bar between legs for stable construction
- Load capacity: 300 kg, evenly loaded
- Adjustment screws under legs to eliminate the roughness of the floor
- Table top with laminate surface, durable rounded plastic edges, colour light speckled grey
- Table top dimensions: 1880(W) x 750(D) mm



PANTL19 TowerLine device panel

- Panel for integrated electrical equipment
- Structure of the panel made of ESD powder painted steel
- Panel equipped with modular device system: devices can be easily added and removed
- Integrated modules are covered with polyester film to ensure long lifetime for the markings in the front panel
- Energy saving LED lighting integrated at the bottom of the panel
- Panel top can be opened
- Height from the table top can be freely chosen
- All connectors are located at the bottom of the panel which enables placing the panel against a wall
- Width: 1880 mm, max. 7 ¼ modules



PANSOCKETLEU Schuko sockets under device panel

- 4 pcs schuko sockets under device panel, 2 pcs at both ends

PANKOURBX Cable casing set for instrument panel

- Cable channel inside the panel for power cables
- Cable spiral inside the panel for data cables and compressed air tubes up to 10 bar
- Aluminium socket unit inside the panel, 8 pcs schuko sockets

SU1 1-phase supply unit

- Main switch for the workstation with START position
- Green indicator light
- Integrated emergency switch, reset from the main switch
- Automatic restart prevention system e.g. after power failure
- 16 A thermal overload protector
- Fault current protection 0.03 A for all devices connected to the supply unit
- Earth terminal screw
- Outlets for the device modules
- Dimensions: ½-module, 125(W) x 200(H) mm



ELPSL3 1-phase socket outlets

- 3 pcs earthed schuko socket outlets
- Dimensions: ¼-module, 62.5(W) x 200(H) mm



DCF242R Fixed DC power supply

- Output values: 24 V, 2 A, DC
- Optional output with 250 ohm series resistor. This output can be used for HART communication with process instruments
- Ripple: < 50 mVpp
- Output floating, can be connected in series or in parallel
- Overcurrent limiter, indicated by a LED



- Outputs from 4 mm safety terminals
- Dimensions: 1/4-module, 62.5(W) x 200(H) mm

Beamex® POC6 Automatic pressure controller

Beamex POC6 is an accurate and user-friendly automatic pressure controller, providing regulated output from vacuum to 100 bar (1450 psi). POC6 is designed for applications requiring automatic pressure testing and calibration. POC6 communicates with Beamex MC6 Workstation (optional). POC6 automatically regulates the pressure output signal according to commands from MC6 Workstation, enabling fully automated calibration of pressure transmitters and other pressure instruments.



Pressure/vacuum output

- Range:
 - ±1bar (±14.5 psi)
 - 1 to 6 bar (-14.5 to 87 psi)
 - 1 to 20 bar (-14.5 to 290 psi)
 - 1 to 70 bar (-14.5 to 1015 psi)
 - 1 to 100 bar (-14.5 to 1450 psi)
 - Special range within -1 to 100 bar (-14.5 to 1450 psi)

Features

- Display: 7.0" color LCD with touch screen
- Precision: < 0.015 % FS
- 1 year uncertainty: < 0.025 % FS
- Control stability: < 0.004 % FS
- Resolution: 4 to 6 digits
- Overpressure protection: Safety relief valve
- Max overpressure: Supply port 110 % FS
- Test port 105 % FS
- Power consumption: Max. 90 VA
- Communicates with Beamex MC6 Workstation, enabling fully automated pressure transmitter calibration

Pressure connection

- Pressure port: G 1/8" (ISO 228/1) female

Pressure/vacuum supply to the module

- This module requires external pressure and/or vacuum supply. Appropriate high pressure / low pressure / vacuum supply connecting kit with adapters is included.
- POC6 requires stable supply pressure 5...10% higher than its full range, no matter how low pressure needs to be controlled.
- Pressure media: Clean dry non-corrosive gases

Module dimensions: 312.5(W) x 200(H) mm

Notes

Beamex calibration bench comes with appropriate

hose set for connecting the instrument under test.

P1C Pressure measurement module for MC6 Workstation

P pressure measurement modules incorporate advanced pressure measurement technology resulting in only a few P modules being required to cover a wide pressure range with excellent uncertainty.

Barometric module PB measures the ambient barometric pressure. When the barometric module is incorporated in the system, the ranges of all other pressure measurement modules can be displayed both in gauge and absolute pressure.

The read out from P modules is displayed in the MC6 Workstation module.

Pressure measurement

Range	-1 to 1 bar g (-14.5 to 14.5 psi)
Resolution	0.00001 bar (0.0001 psi)
1 year uncertainty	± (0.015% FS + 0.025% Rdg)

Pressure connection

- Pressure port: G 1/8" (ISO 228/1) female
- 1/8" BSP male adapter (60° internal cone) is included, for connecting the Beamex 20 bar hose set.
- Pressure media: Dry clean air or other clean, inert, non-toxic, non-corrosive gases
- Max. overpressure: 2 bar (29 psi)
- The module is provided with internal safety valve for overpressure protection.

Module dimensions: 62.5(W) x 200(H) mm

Notes

Beamex calibration bench comes with pressure T-hose 20 bar (8009437) for connecting the instrument under test to the pressure source and to the pressure measurement module.



P20C Pressure measurement module for MC6 Workstation

P pressure measurement modules incorporate advanced pressure measurement technology resulting in only a few P modules being required to cover a wide pressure range with excellent uncertainty.

Barometric module PB measures the ambient barometric pressure. When the barometric module is incorporated in the system, the ranges of all other



pressure measurement modules can be displayed both in gauge and absolute pressure.

The read out from P modules is displayed in the MC6 Workstation module.

Pressure measurement

Range -1 to 20 bar (-14.5 to 290 psi)
Resolution 0.0001 bar (0.001 psi)
1 year uncertainty ± (0.01% FS + 0.025% Rdg)

Pressure connection

- Pressure port: G 1/8" (ISO 228/1) female
- 1/8" BSP male adapter (60° internal cone) is included, for connecting the Beamex 20 bar hose set.
- Pressure media: Clean, inert, non-toxic, non-corrosive gases or liquids
- Max. overpressure: 40 bar (580 psi)

Module dimensions: 62.5(W) x 200(H) mm

Notes

Beamex calibration bench comes with pressure T-hose 20 bar (8009437) for connecting the instrument under test to the pressure source and to the pressure measurement module.

Beamex® MC6 Workstation, Advanced workstation calibrator and communicator

Beamex MC6 Workstation is an advanced, high-accuracy panel mounted calibrator and communicator, which replaces several measurement devices. It offers calibration capabilities for pressure, temperature and various electrical signals. The MC6 Workstation also contains a full fieldbus communicator for HART, FOUNDATION Fieldbus and Profibus PA instruments.



MC6 Workstation measurement, generation and simulation functions

- Pressure measurement
- Voltage measurement and generation
- Current measurement and generation
- Resistance measurement and simulation
- RTD measurement (two simultaneous channels) and simulation
- TC measurement (two simultaneous channels) and simulation
- Frequency measurement and generation
- Pulse counting and generation
- Switch state sensing
- Built-in 24 VDC loop supply
- Field communicator for HART, FOUNDATION

Fieldbus and Profibus PA (option)

User-interface modes

- Meter – a simple and easy way to measure
- Calibrator – measure or generate/simulate two signals at a time
- Documenting Calibrator – perform automated, documented calibrations of process instruments (option)
- Data Logger – perform multichannel (up to 9 channels) data logging (option)
- Communicator – communicator for HART, FOUNDATION Fieldbus and Profibus PA instruments (option)
- Settings – manage settings of the MC6 Workstation

The MC6 Workstation has specifications for short-term accuracy and for 1-year total uncertainty.

Brief summary of the Accuracy figures:

- Pressure accuracy starting from $\pm(0.005\% \text{ FS} + 0.00125\% \text{ of reading})$
- Temperature – RTD temperature measurement accuracy starting from $\pm 0.011^\circ\text{C}$
- Electric – Current measurement accuracy starting from $\pm(0.75 \mu\text{A} + 0.0075\% \text{ of reading})$

Module dimensions: 250(W) x 200(H) mm

Standard accessories

- Accredited calibration certificate
- User guide
- Computer cable (USB)
- Test leads and clips
- CD-ROM with user manual, software tools and product information

DC, Documenting calibrator option for MC6

- Enables automated, documented calibrations of process instruments
- Allows MC6 to communicate with Beamex's calibration softwares CMX Light, CMX Professional and CMX Enterprise.

MC6FF, FOUNDATION Fieldbus communicator option for MC6

- Field communicator for FOUNDATION Fieldbus instruments
- Allows MC6 to calibrate FOUNDATION Fieldbus H1 transmitters (simultaneously measure/generate input and read the digital output), change transmitter configurations, and perform transmitter trimming.

- Requires Fieldbus Hardware Capability in MC6

MC6HART, HART communicator option for MC6

- Field communicator for HART instruments
- Allows MC6 to communicate with HART® instruments by supporting those HART® read/write commands typically used during the calibration process.

PCC, Pressure controller communication for POC6, for MC6

- Allows MC6 to communicate with Beamex® POC6 Automatic Pressure Controller making it possible to run fully automated pressure calibrations.
- Includes USB/RS232 adapter cable

TBC, Temperature block communication for FB/MB, for MC6

- Allows MC6 to communicate with Beamex® FB Field Temperature Block or Beamex® MB Metrology Temperature Block making it possible to run fully automated temperature calibrations.
- Includes USB/RS232 adapter cable

USB1BE USB connection

- USB connection between a laptop computer and a panel device
- Type B connector at the front panel
- Dimensions: ¼-module, 62.5(H) x 200(H) mm



DMMHPRO Digital multimeter

- Resolution: $\pm 12,000$ digits, 4½-place
- 3 connector jacks with patented automatic blocking sockets
- TRMS AC and AC / DC function
- Automatic and manual measuring range selection
- Automatic storage of measured values: DATA / MIN / MAX
- Large, light-blue illuminated display with extra-large characters (15 mm) and an analog bar graph for dynamic processes
- Measuring categories: 1000 V CAT III and 600 V CAT IV



- 16 multimeter functions
- Additional filter function and voltage measurement with reduced input impedance for limiting interference, e.g. for measurements at frequency converters
- Battery Charging Status - Power Saving Circuit
- Multimeter integrated with a quick-release mechanism, it can be used also as a portable instrument
- Standard accessories: 1 pair of safety measurement cables (1.5 m) with 4 mm test probes, 2 batteries, condensed operating instructions, CD ROM (operating instructions in English and German), DAkkS calibration certificate
- Dimensions: ½-module, 125(W) x 200(H) mm

DC voltage

Range 100 mV...1000 V
Best resolution 10 µV
Best accuracy ±0.05 % + 3 digits

AC voltage

Range 100 mV...1000 V
Best resolution 10 µV
Best accuracy ±0.5 % + 9 digits

DC current

Range 1 A...10 A
Best resolution 100 µA
Best accuracy ±0.9 % + 10 digits

AC current

Range 1 A...10 A
Best resolution 1 mA
Best accuracy ±1.5 % + 10 digits

Resistance

Range 100 Ω...40 MΩ
Best resolution 10 mΩ
Best accuracy ±0.2 % + 5 digit

Frequency

Range 100 Hz...30 kHz
Best resolution 0.01 Hz
Best accuracy ±0.05 % + 3 digit

Temperature (with type K thermocouple, not included in delivery)

Range -250 °C...+1372 °C
Best resolution 0.1 °C
Best accuracy ±1 % + 5 digit

VACUUMPSW Switch module for vacuum pump

- Switch for operating vacuum pump
- Dimensions: ¼-module, 62.5(W) x 200(H) mm



ELPSL3 1-phase socket outlets

- 3 pcs earthed schuko socket outlets
- Dimensions: ¼-module, 62.5(W) x 200(H) mm



PB0004B Vacuum pump

- Mains supply: 230 V 50 Hz (p/n 9427230), 110 V 60 Hz (p/n 9427110)
- Nominal motor rating: 0.1 kW
- Nominal motor speed: 2700 min⁻¹(50 Hz), 3200 min⁻¹(60Hz)
- Ultimate vacuum: 20 mbar absolute pressure
- Nominal displacement: 4 m³/h
- Dimensions: 133(W) x 141(H) x 230(D) mm (230 V 50 Hz), 148(W) x 141(H) x 230(D) mm (110 V 60 Hz)



WHV820472 Holder for vacuum pump

- Holder with two adjustable arms
- Structure made of ESD painted steel

INSTRSU Instrument support

- Support for different types of instruments (pressure transmitters, switches etc.)
- Properly fastened instruments makes calibration and repair work easier
- Includes a plate and a tube bracket that are compatible with standard device sizes
- Dimensions: 240(W) x 260(D) x 340(H) mm



WHR855002 Hook set

- Hook set, attached to perforated back panels
- 45 pcs hooks e.g. for tools



WTL839086 Suspension rail

- ESD powder painted steel construction
- Fixed to perforated back panel
- Load capacity 10 kg
- Width 634 mm



WEL806211 Pick-up box

- Plastic pick-up box
- ESD protected
- Max. 6 pcs for WTL839086 suspension rail
- Dimensions: 99(W) x 160(D) x 70(H) mm

WSK91835008 Light rail

- Rail can be used to attach light ergonomically above the workstation
- Structure made of ESD-painted steel
- Height and depth adjustment
- Width: 2 x M900



CALABTRK Process instrument kit for calibration training

Process instrument kit is applicable e.g. for following training areas

- Calibration of process instruments such as
 - Pressure transmitters, switches and gauges
 - Electrical converters, frequency meters
 - Temperature transmitters, thermocouples, RTDs
- HART, FOUNDATION Fieldbus
- Pressure and temperature calibration
- Documenting and management of calibrations



Contents

- Case
- Background material about calibration, does not include training exercises
- Pressure transmitters:
 - Conventional type: 0-1 bar gauge, 4-20 mA. Including pressure connector to MC6 hose set.
 - HART® type: 0-10 bar, 4-20 mA. Including pressure connector to MC6 hose set
- Temperature transmitter with Pt100 sensor
 - HART® type: 0-800 °C, 4-20 mA, PT100 (385)
 - Pt100 (385) sensor, 6 mm
- Temperature transmitter
 - Fieldbus type (FOUNDATION Fieldbus)
- Pressure switch
 - Pressure switch, adjustable switch set point 3-7 bar gauge. Including pressure connector to MC6 hose set
- Temperature sensors:
 - K-element, 3 mm, including K-element connector

Beamex® FB Series field temperature block

- Range / Display accuracy / Stability / Weight:
 - FB150: -25...150°C / ±0.2°C / ±0.01°C / 8.2 kg
 - FB350: 33...350°C / ±0.2°C / ±0.02...0.03°C / 7.3 kg
 - FB660: 50...660°C / ±0.35...0.5°C / ±0.03...0.05°C / 7.7 kg
- Size (L x W x H): 295 x 185 x 290 mm
- Computer interface: RS232
- Accredited calibration certificate
- Option: Built-in reference input (R model)
- Optional accessories:
 - Inserts
 - Transport case
 - Beamex® Smart Reference Probe (for R model)



WTL854482 Shelf

- Construction made of ESD powder painted steel
- Fixed to upright tubes
- Load capacity: 80 kg
- Dimensions: 1773(W) x 300(D) mm



Beamex® CMX Professional Calibration software

Calibration management software that assists in documenting, planning, analyzing and optimizing calibration work.

- Easy-to-use, modern software with many configuration possibilities
- Provides traceable and auditable calibration reports
- Meets regulatory requirements (ISO, FDA, etc.)
- Paperless documentation and calibration management
- Can be integrated into a maintenance management system (e.g. SAP, Maximo)
- Built-in communication with documenting calibrators
- Database for 1 000 / 5 000 / 10 000 positions
- Installation options for a network server or workstation
- Optional Software Service Agreement offers automatic software upgrades
- Available options: History Trend, Pocket PC interface, Report Design, Configurable user interface, Change Management incl. audit trail and electronic signature, Weighing instrument support, LDAP



WSK861956 LED light

- Excellent energy efficiency
- Long lifetime upto 50 000 hours
- Illuminance: 1800 lux, 1 meter
- Natural white colour, colour temperature 4000 K
- Dimmer 10-100 %



WKV60641022 Drawer trolley

- Drawers 2 x 100, 2 x 150 mm
- Drawers equipped with ball-rails
- Load capacity 30 kg / drawer
- Drawers open 75 %
- Central locking
- ESD-painted steel frame
- Four swivel wheels, two with brakes, diameter 100 mm
- Dimensions: 450(W) x 520(D) x 560(H) mm



C20PU Chair

- User-friendly and quick adjustability
- Large, ergonomically designed seat and backrest and lumbar support
- Black
- Polyurethane
- Height/backrest/tilt adjustment
- Castors with load-sensitive brakes
- Seat height: 440-620 mm

