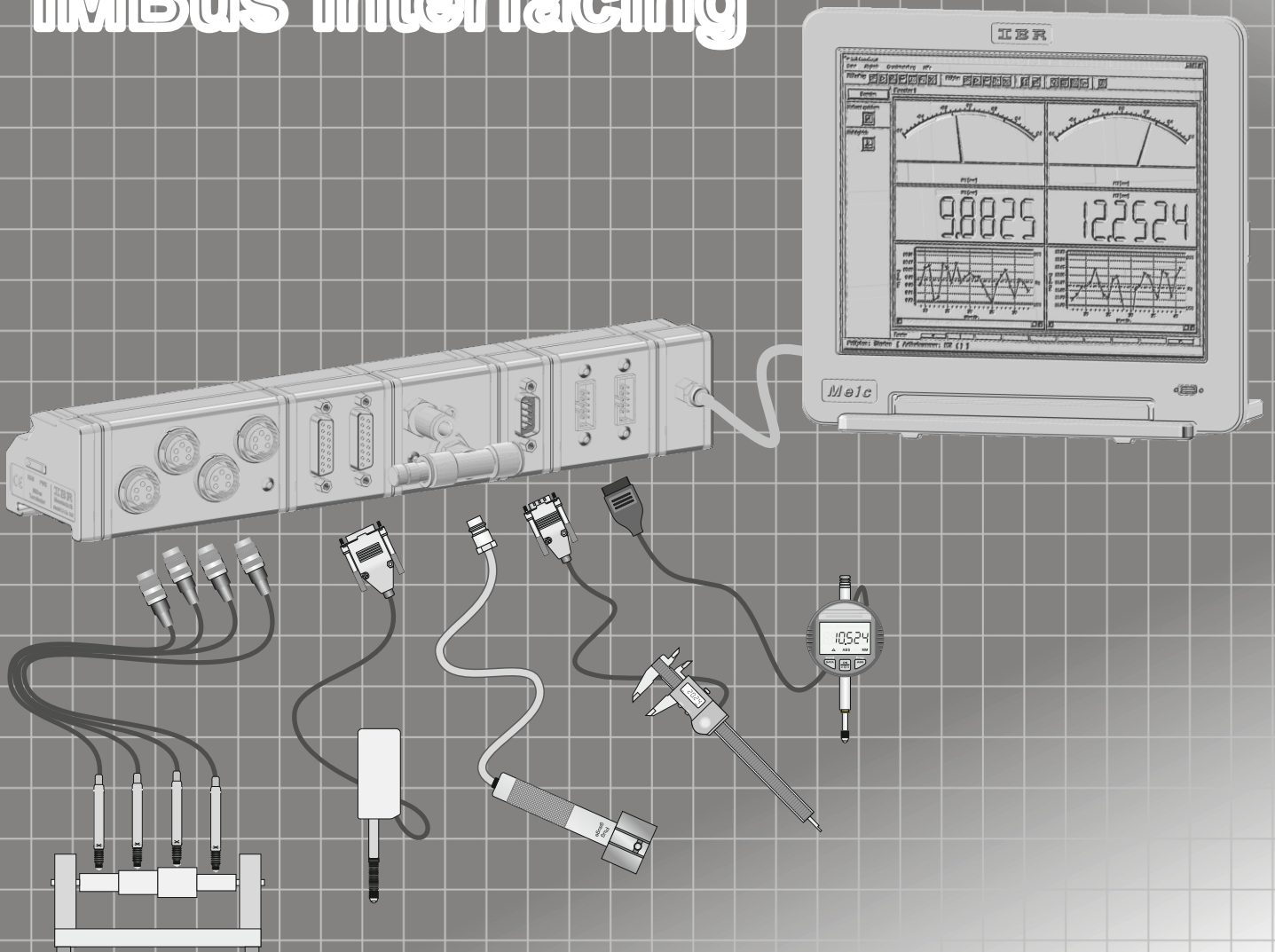# ProXnet
IMBus Interfacing

IMBus a universal measuring bus

The IMBUS is a technology step in metrology and interface technology. Powerful connection modules for all sensors and gauges as well as maximum flexibility for connection to computer and PLC interfaces characterise the IMBus - Series.
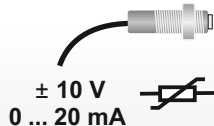
Features

- Connections for all inductive probe types

- Connections for all incremental probes, linear scales and rotary encoders

- Connections for all pneumatic gauge heads (air gauging)

- Connections for all analogue signals (current, voltage, ...)

- Connections for all serial interfaces (universally programmable transfer- and data format)

- Connections for all sensors with IBR ISi interface

- Connections for all parallel interfaces (BCD, binary, ...)

- Galvanically isolated outputs and inputs (PLC compatible)

- Flexible PC and PLC connection by USB, RS232, Ethernet, Wireless LAN, EtherCAT, Profibus and Profinet
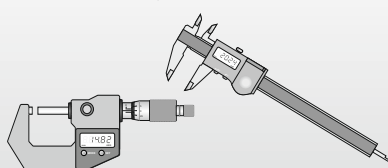
WLAN

EtherCAT

Profinet

Profibus

Ethernet

RS232

USB
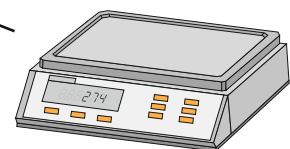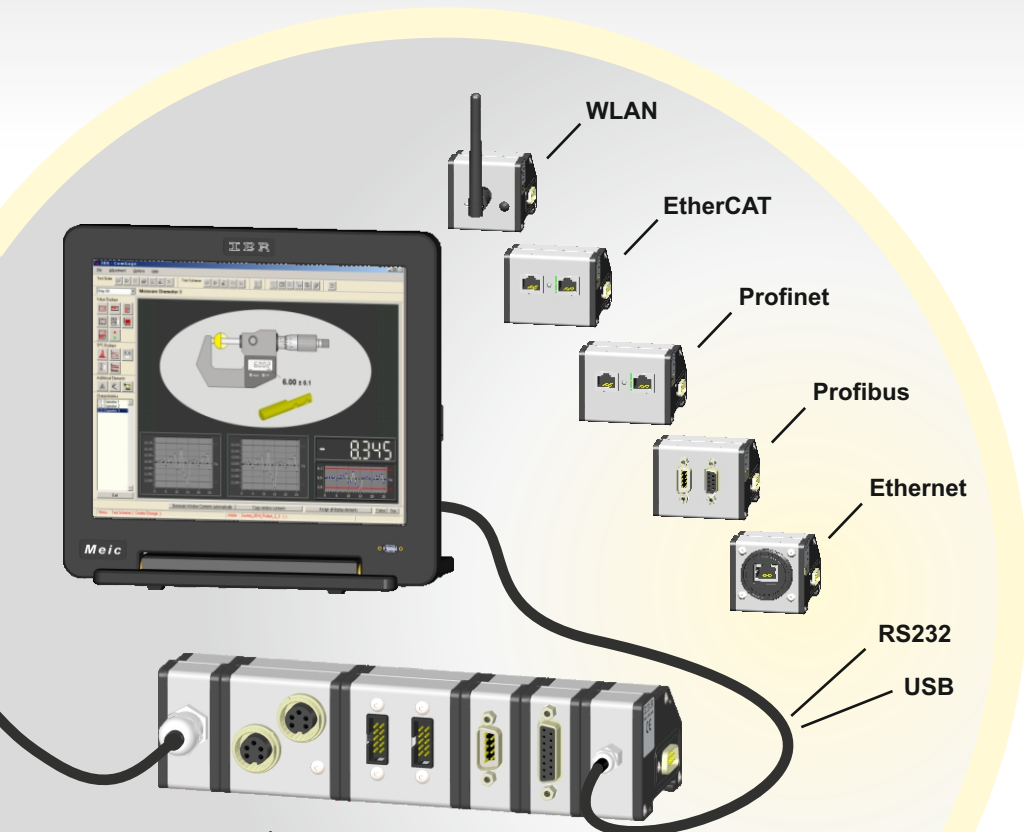
Parallel (Binary, BCD, ...)

± 10 V
0 ... 20 mA

Analog signals

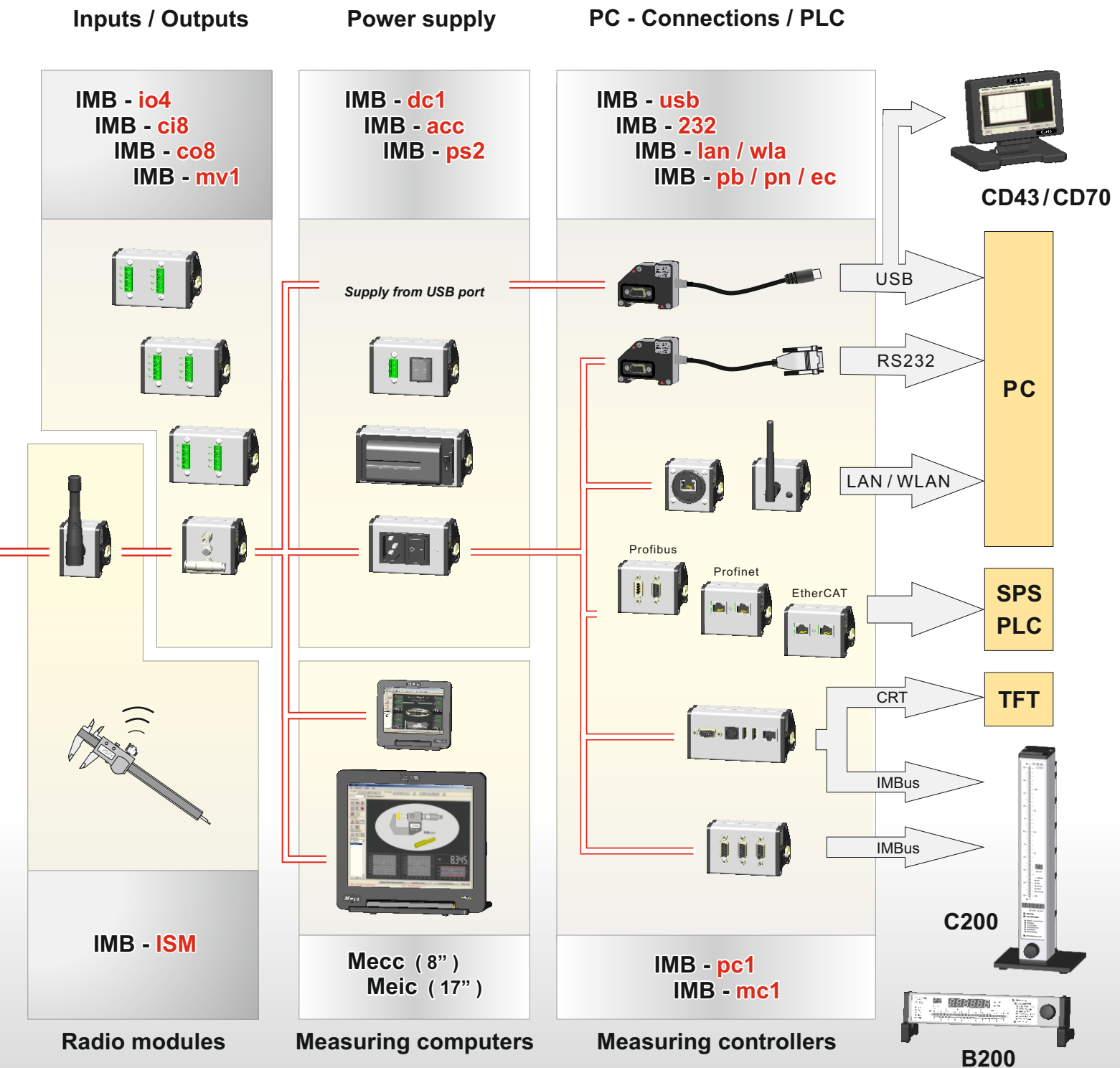Serial (Triple - I, Opto RS232, RS232, RS422, ...)

Mitutoyo Digimatic

IMBus - structure and module survey

The IMBUS is a innovative series of measuring and interface modules with great flexibility, developed for the high demands of industrial applications. The specially developed module case is very robust and can be installed easily without tools. The modules can be placed onto a table or can be clicked onto mounting rails. The electronics satisfies all demands of practice regarding flexibility, speed and resolution at maximum measuring accuracy. The address assignment on the IMBus occurs automatically (Plug & Play). The modular design of 1 to 512 connections and the possibility to connect the modules via cables with a maximum length of 1200 m (4000 ft) allow universal use of the IMBus.

A full range of software, for simple applications up to complex measuring applications with control sequences, completes the innovative IMBus series, thus turning it into a universal tool for collection, analysis and display of measuring data.

Inputs / Outputs

IMB - io4
IMB - ci8
IMB - co8
IMB - mv1

Power supply

IMB - dc1
IMB - acc
IMB - ps2

Supply from USB port

PC - Connections / PLC

IMB - usb
IMB - 232
IMB - lan / wla
IMB - pb / pn / ec

USB

RS232

LAN / WLAN

Profibus

Profinet

EtherCAT

CRT

IMBus

IMBus

CD43 / CD70

PC

SPS
PLC

TFT

C200

B200

IMB - ISM

Mecc (8")
Meic (17")

IMB - pc1
IMB - mc1

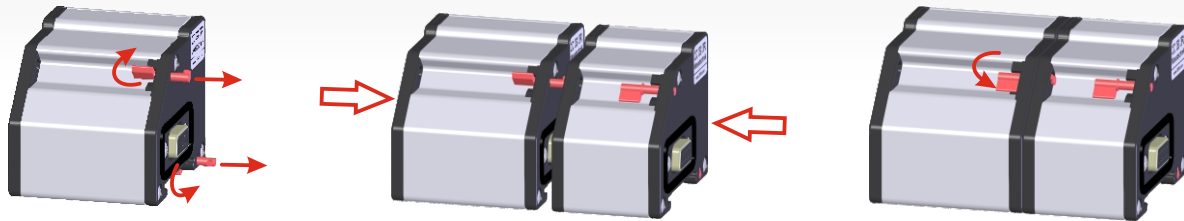**Radio modules**   **Measuring computers**   **Measuring controllers**
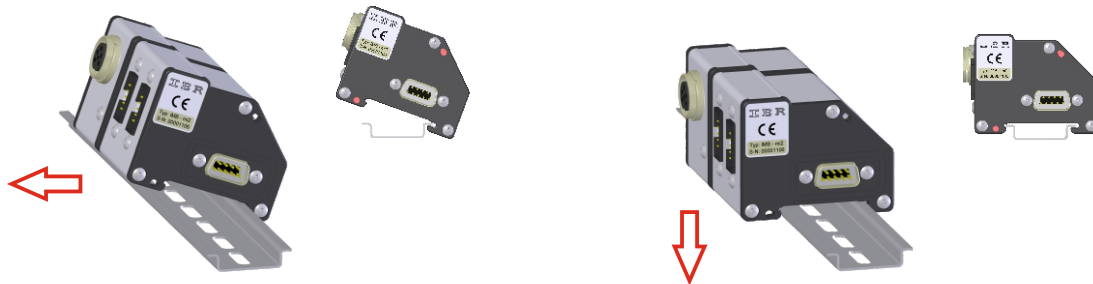
Connecting of IMBus modules

**Push the red levers of the first module out
and turn them up.
Connect the modules together.
Turn red levers down to lock the modules.**

Mounting on DIN mounting rail

Click modules onto DIN mounting rail.
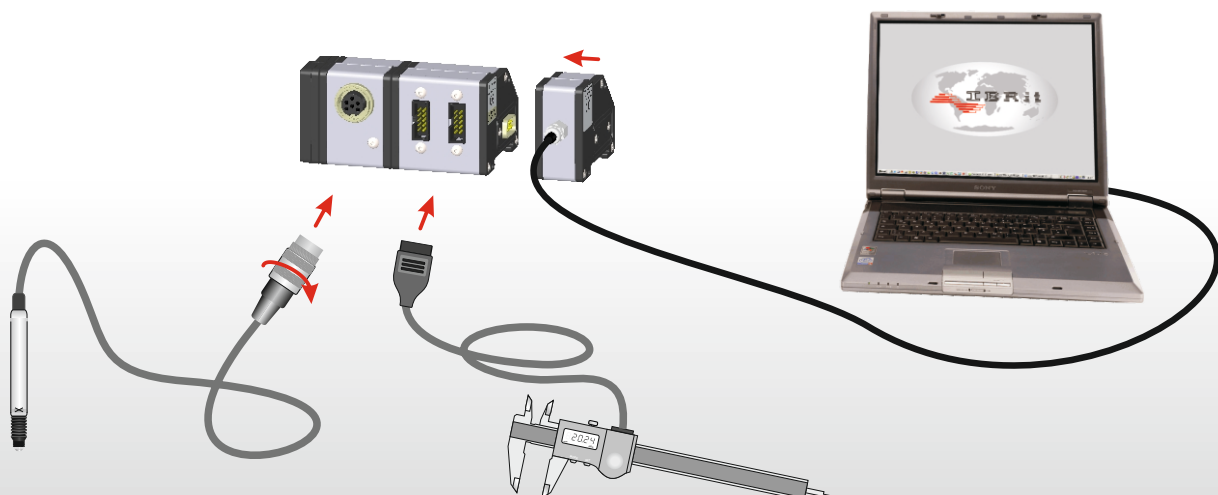(Modules are secured automatically
on the mounting rail by springs.)

Connect gauges and PC

**Connect IMBus connection module
(e.g. IMB - usb) to the first IMBus module
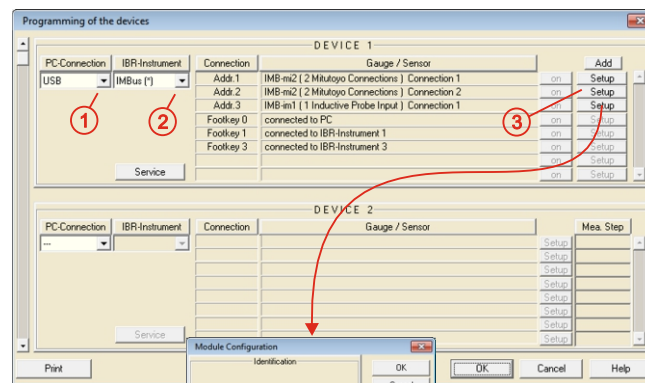and to the PC.
Connect and secure gauge and
sensor cables.**

Insert IBR Support CD for installation.
The installation occurs automatically and the window for setting up the connected instruments opens.

Selection of connected measuring and interface instruments :

①
Selection of PC connection to which the gauge or interface is connected.

②
Selection of connected instrument type.

Optional **③**
Configuration of measuring inputs e.g. resolution, direction, ...

Configuration of measuring input for inductive probe connection :
(On Digimatic inputs no settings are required)
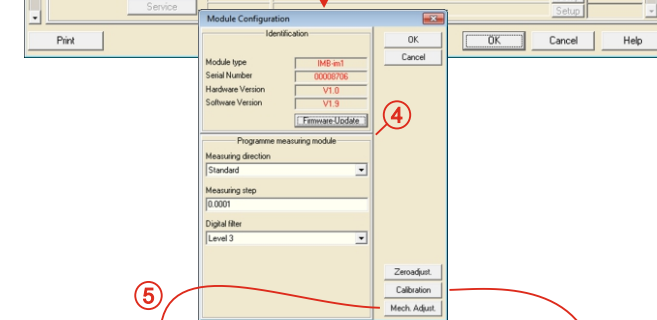
④
Selection of measuring direction, resolution and, if necessary, filter level.

⑤
Open window for mechanical adjustment of probes in the fixture.
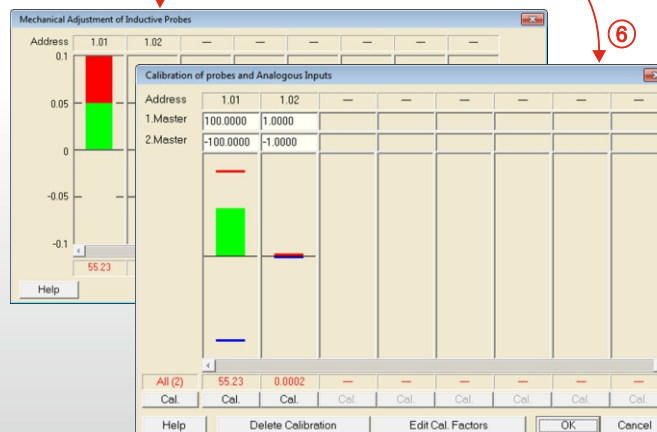
Optional **⑥**
Open window for calibration of probes. The measuring modules are already calibrated from manufacturer side. Module calibration is therefore required and recommended only for special applications.

The IMBus is now ready for work.

Inductive probes

Measuring modules for connection of inductive probes
The IMB-im modules are available for connection of all inductive probe types from all manufacturers. Standard stock type Tesa HB.
Resolution : 16 bits (± 3 mm / 0.1 µm, optional ± 1.5 mm / 0.05 µm)
Measuring rate : max. 2500 values / sec (complete values)
Digital technology with linearisation possibility (IMB-im1). **Bus synchronized for dynamic measurements with probe mixing.**

IMB - **im1**	IMB - **im2**	IMB - **im4**	IMB - **im8**
Art. No. F122 061	Art. No. F122 062	Art. No. F122 064	Art. No. F122 068

Incremental systems

Measuring modules for connection of incremental measuring systems (1 Vpp, 11 µApp, TTL)
Connection of 1 Vpp signals to IMB-dm modules, 11 µApp signals connectable by adapter F160 010. TTL - signals connectable to IMB-tc modules. Reference impulse and error signal detection. Connector pinout according to Heidenhain Standard. Bus synchronized for dynamic measurements with probe mixing.
Counter width : 24 bits / 32 bits (secure count method)
Interpolation on IMB-dm : 1 - 8192 programmable
Minimum edge distance on IMB-tc : 40 nsec
Measuring rate : max. 1920 values / sec

IMB - **dm1**	IMB - **dm2**	IMB - **dm4**	Adapter 11µA --> 1Vss
Art. No. F122 071	Art. No. F122 072	Art. No. F122 074	Art. No. F160 010

IMB - **tc1**	IMB - **tc2**	IMB - **tc4**	IMB - **tcdk**
Art. No. F122 111	Art. No. F122 112	Art. No. F122 114	Art. No. Fxxx xxx

Air gauging

Measuring module for connection of pneumatic gauge heads
The digital air/electronic converter IMB-ae1 allows connection of pneumatic gauge heads from all manufacturers. A special method for pneumatic adaption to different air jets and gaps leads to a minimal linearisation error on high precision measurements.
AE - FF : Filter unit with centrifugal separator (0.01 µm)
AE - FP : Precision pressure regulator
AE - FC1 : Simple pressure regulator with filter

AE - FF	AE - FP	IMB - **ae1**	AE - FC1
Art. No. F330 100	Art. No. F330 200	Art. No. F122 081	Art. No. F330 011

Radio modules

Radio module for ISM / IBRit-rf1 series
In combination with the ISM / IBRit-rf1 radio modules the IMB-ISM receiver module allows wireless connection of hand gauges and stationary gauges from all nameable gauge manufacturers to the IMBus.

IMB - **ISM**
Art. No. F122 121

IMBus - module survey

Analogue signals

Measuring modules for analogue voltages and currents
The IMB-ai modules allow the measurement of analogue voltages and currents. Standard stock type ± 10 V.
Resolution : 16 bits (± 10 V / 0.5 mV, ± 2 V / 100 µV)
Measuring rate : max. 2500 values / sec (complete values)
Bus synchronized for dynamic measurements.

IMB - ai1	IMB - ai2	IMB - ai4	IMB - ai8
Art. No. F122 041	Art. No. F122 042	Art. No. F122 044	Art. No. F122 048

ISi sensors

Interface modules for IBR ISi interface
The IMB-ISi1 modules allow connection of an ISi sensor bus for simple wiring. The IMB-ISi4 modules allow parallel connection of sensors with ISi interface for fast and synchronised data collection.

IMB - ISi1	IMB - ISi4
Art. No. F122 051	Art. No. F122 054

Mitutoyo Digimatic

Interface modules for gauges with Mitutoyo Digimatic output
The IMB-mi modules allow usage of the original connection cables from the gauge manufacturers.

IMB - mi2	IMB - mi4	IMB - mi8
Art. No. F122 022	Art. No. F122 024	Art. No. F122 028

Serial (RS232)

Universal serial interface modules
The IMB-sm modules can be loaded with drivers from the IBR gauge driver library for universal connection of gauges with serial interfaces (e.g. Opto RS232, ...).

IMB - sm1	IMB - sm2	IMB - sm4
Art. No. F122 011	Art. No. F122 012	Art. No. F122 014

Parallel (BCD, ...)

Universal parallel interface modules
The IMB-pm modules allow connection of gauges with parallel interfaces (e.g. BCD, binary, ...).

IMB - pm1	IMB - pm2	IMB - pm4
Art. No. F122 031	Art. No. F122 032	Art. No. F122 034

Switching modules

Switching modules with inputs and outputs
The IMBus input and output modules are all galvanically (2kV)
isolated. The inputs are compatible to PLC optocoupler inputs
and work in a wide voltage range.
The outputs are ESD protected, short-circuit-proof and provide
a high power driver.
Each input and output features a status LED.
The connections are done by pluggable terminal strips.

IMB - io4	IMB - ci8	IMB - co8
Art. No. F122 091	Art. No. F122 092	Art. No. F122 093

IMB - io4 :
4 optocoupler inputs (13 - 30 V)
4 power drivers (12 - 32 V / 1 A)
IMB - ci8 :
8 optocoupler inputs
(13 - 30 V)
IMB - co8 :
8 power drivers
(12 - 32 V / 1 A)

IMB - mv1
Art. No. F122 101

Pneumatic switching module
The 3/2 - Selector valve IMB - mv1 allows
switching of air pressure (max. 8 bar) and
vacuum (min. -0.9 bar) for controlling
e.g. pneumatic probes.

pb - adp	pn - adp
Art. No. F160 100	Art. No. F160 110

Profibus adapter / Profinet adapter
The adapters allow communication
between the measuring software and
a PLC unit via the IMBus by using
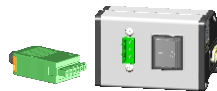Profibus or Profinet.

Power supply modules

IMB - ps2
Art. No. F121 020

**Switching power supply with wide voltage
input 100 - 240 VAC**
The switching power supply IMB - ps2 was specially
developed for the IMBus and features a wide
voltage input for worldwide usage.
On larger bus expansions power supply modules
can be easily added at any position within
the IMBus.

IMB - dc1
Art. No. F121 040

**DC voltage converter for input voltages
9 - 32 VDC**
On larger bus expansions power supply modules
can be easily added at any position within
the IMBus.

IMB - acc
Art. No. F121 030

Accumulator module for portable units
Available Accumulators :
1850 mAh and 5500 mAh.
The IMB - acc module allows easy and
fast exchanging of accumulators.

Measuring PC for IMBus

IMB - pc1
Art. No. F123 010

Measuring controller for IMBus
The IMB - pc1 is a compact computer module
specially designed for metrology.
Measuring and controlling operations can easily
be done in combination with IMBus modules and
ComGage Level 1 / Level 2 / Professional.
Operating system : Windows CE
Incl. measuring software : ComGage level 1
1x VGA output (1024 x 768)
2x USB ports for mouse, printer, ...
1x PS2 connector for keyboard
1x Ethernet interface

IMBus - module survey

IMB - usb

Art. No. F120 010

Connection module for IMBus to USB ports
Suitable for connection to USB 1.1, 2.0 and 3.0.
Incl. bus terminator and software CD.
!!! The connection module supplies power
for the IMBus from the USB port.

IMB - 232

Art. No. F120 020

Connection module for IMBus to serial ports
Suitable for connection to COM1 ... 8 of a PC
or to RS232 interfaces of other systems
(e.g. PLC).
Incl. bus terminator and software CD.

IMB - lan

Art. No. F120 030

IMB - wla

Art. No. F120 050

**Connection modules for IMBus to LAN / WLAN
networks**
Linking of IMBus into 10 / 100 Mbit corporate
computer networks by IMB - lan module.
Wireless linking of IMBus into 54 Mbit
WLAN networks by IMB - wla module with
wireless range of up to 100 m.
Ideal for usage in combination with
terminal servers. Static IP-Address
or assignment via DHCP.
Incl. bus terminator and software CD.
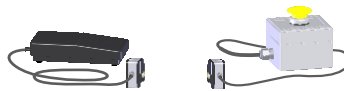
IMB - pb

Art. No. F120 040

IMB - pn

Art. No. F120 060

**IMB - ec**

Art. No. F120 070

**Connection modules for IMBus to
Profibus, Profinet or EtherCAT**
Automatic supply of current
measured values on Profibus,
Profinet or EtherCAT, incl. bus
terminator and software CD.

Art. No. F121 130 / F121 160

Foot and hand switches
Foot and hand switches with IMBus - adapter case
for inserting into IMBus. The switches affect only
the IMBus modules in front of the switch and
interrupt the switch signals to following modules.
This allows usage of several switches and
specific triggering of IMBus groups.
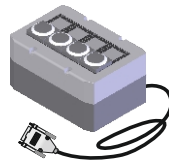
Art. No. F121 200

Command and status message box
The command and status message box IMB - mg1
is individually configurable and is connected to the
IMBus by an IMB - pm module.

Art. No. F335 001 / F335 002

**Temperature sensors for measuring
workpiece and ambient temperature**
The IBR temperature sensors IBRit - ts1 and
IBRit - ts2 were specially developed for usage
with the IMBus. They are connected to the
IMBus by an IMB - pm module (IBRit - ts1) or
by an IMB - ai module (IBRit - ts2) respectively.

Art. No. F121 300

Bus extension cables
The bus extension cables were specially developed
for high speed communication on the IMBus and
allow extending the IMBus up to 4000 ft (1200 m).

Technical data IMBus

EMC conformity	EN 50081-1 and EN 50082-2
Interface	RS485
Cable length	max. 4000 ft (1200 m)
Bus participants	max. 512 (8 x 64)
Address setting	automatic (plug & play)
Data throughput	approx. 4000 measuring values / sec on highest resolution (16 bits)
IMBus connections for	USB, RS232, LAN, WLAN, Profibus, Profinet, EtherCAT

Software support

IMB_Test

IMB_Test is a universal program for initialisation, calibration and test of all IMBus modules.

IBR_DDK.DLL

Universal Device Driver Kit for linking all IBR measuring and interface instruments in Windows 2000 ... 10 and CE programs. (Examples for VC++, VB, LabView, Delphi, ...)

IBR_SimKey

Program for data transfer of received measured values to Windows Programs (Excel, Access, ...) by the keyboard buffer. Reception of measured values occurs by the data key on the gauge.

IBR_VCP

COM port simulation program for software packages without USB, LAN and WLAN support. Simulation of older multiplexers (e.g. MUX50, MUX10, ...) for software packages without IMBus, ISi-Bus or ISM support.

IBREXDLL

Excel-Workbook for reading in, visualising and analysing measurement data in MS-Excel.

ComGage

Software for metrology and statistical process control in manufacturing facilities.