



Messtechnik GmbH & Co. KG



IMS
measuring probes

CD43, CD70
computer displays

SD1
sensor display



IMS measuring probe

IMS probe - a new generation of inductive measuring probes with integrated signal processing and digital interface.

The new IMS measuring probes are based on the reliable clearance-free ball bearings and the robust inductive measuring principle. But the sensible and sensitive analogue measuring signals are no longer transferred out of the case of the measuring probe via cables and then measured externally by electronics, instead they are processed and digitised directly inside the IMS measuring probes. An innovative measuring principle and highly integrated electronics make this milestone of new generation IMS measuring probes possible.









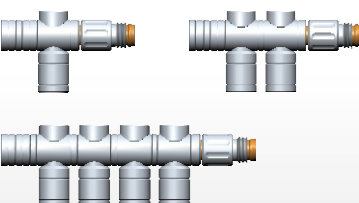


Comparison of ind. probes

Technical data :

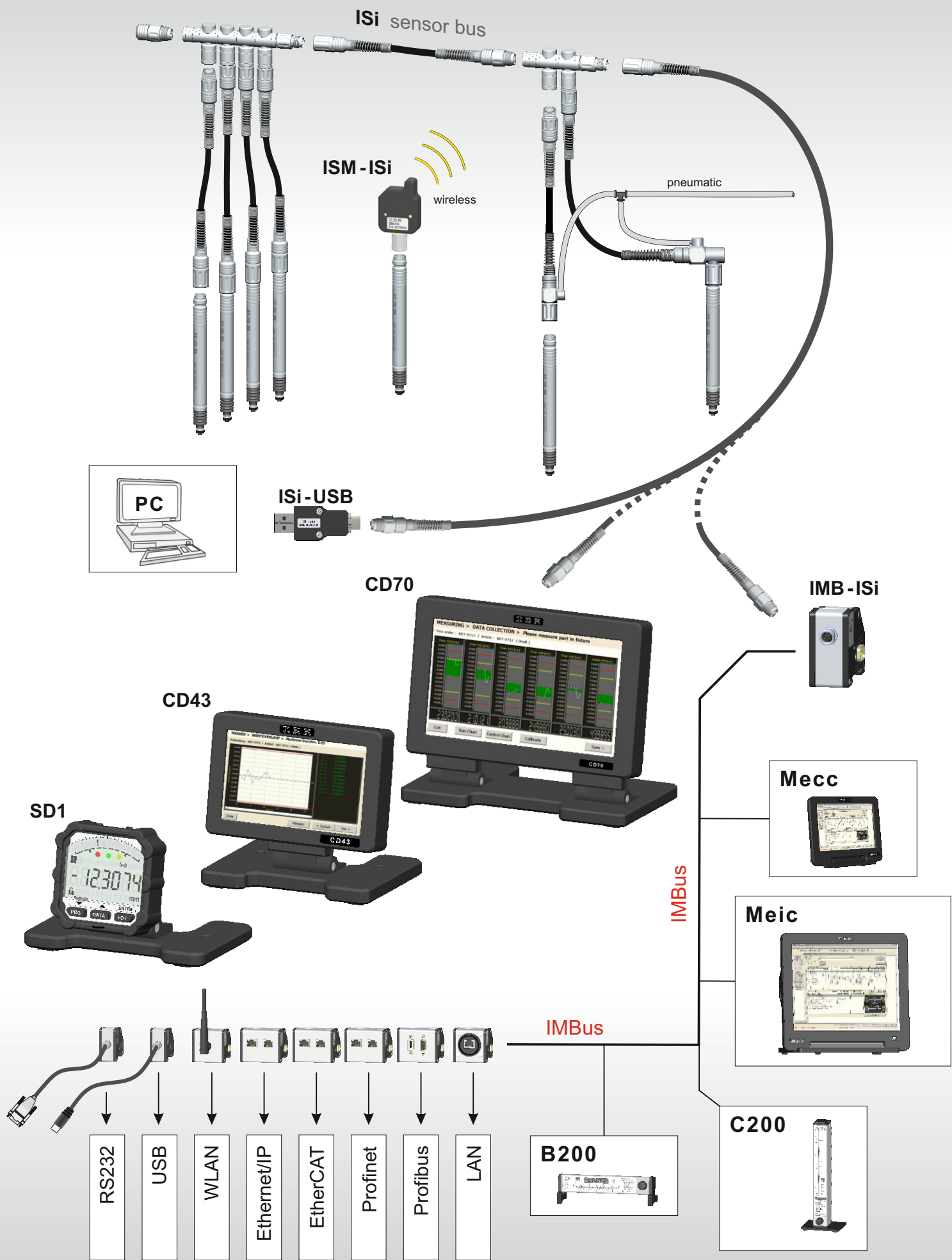
	old	new
Mechanical characteristics	Standard	IMS
Compact tube case, stainless steel 8h6	✓	✓
High protection class for rough environments	✓	✓
Clearance-free ball bearing for precise mea.	✓	✓
Gauge spindle Ø 4, gauge slide M2.5	✓	✓
Actuation by spring, compressed air, vacuum	✓	✓
Cable pluggable at measuring probe for simple mounting / exchange on fixtures	(rarely)	✓
Simple extension of cables without influence on measuring values		✓
Bus cables for drastic reduction of connection cables and wiring		✓
Characteristics of integrated electronics		
Optimal stable sensor signals without influence by cable / external interferences		✓
Individual error correction of each probe		✓
Adjustment tolerance of sensitivity [%]	0.3...0.6	< 0.05
Max. linearity error (+/- 2 mm)	< 24 µm	< ±1 µm
Temperature drift [ppm / °C]	100	20
No errors by external measuring electronics		✓
Integrated temperature measurement provides temperature of measuring probe / fixture		✓
Interface		
Simple wiring with ISi connection adapters and pluggable ISi extension cables to a bus with up to 16 probes / sensors (ISi bus)		✓
Identification of IMS measuring probes : Type, serial number, ..., next date of inspection can be requested directly from the probe		✓

Technical data : IMS measuring probes

Metrological characteristics	
Measuring range	1 mm / 5 mm / 10 mm
Resolution	0.1 µm (optional 0.01 µm)
Accuracy	< ±1 µm
Measuring rate	2500 measuring values / sec (0.1 µm)
Measuring force	0.7 N / (optional 0.4 ... 2.0 N)
Electrical characteristics	
Supply voltage	2.7 ... 3.6 V
Power consumption	2.8 µA / measurement per second
Characteristics of integrated temperature sensor	
Measuring range	-20 °C ... 80 °C
Resolution	0.25 K
Accuracy	±1.5 K
Environmental conditions	
Operation / Storage temp.	+32 ... +122 °F / -4 ... +158 °F

Type	Article
IMS -1S IMS -5S IMS -10S	IMS measuring probe, 1 mm / 5 mm / 10 mm measuring range, spring pushed / vacuum lifting 
IMS -5P IMS -10P	IMS measuring probe, 5 mm / 10 mm measuring range, pneumatically gaiter pushed 
IMS -5J IMS -10J	IMS measuring probe, 5 mm / 10 mm measuring range, pneumatically jet pushed 
IMS -5V IMS -10V	IMS measuring probe, 5 mm / 10 mm measuring range, vacuum lifting 
ISi -cca	ISi connection cable, axial 
ISi -ccap	ISi connection cable, axial, pneumatic 
ISi -ccr	ISi connection cable, radial 
ISi -ccrp	ISi connection cable, radial, pneumatic 
ISi -ca1 ISi -ca2 ISi -ca4	ISi connection adapter, single / double / quadruple 
ISi -USB	ISi connection adapter for USB 
ISM -ISi	ISi radio module for ISM band 

Capability of connection for IMS probes



SD1 universal sensor display

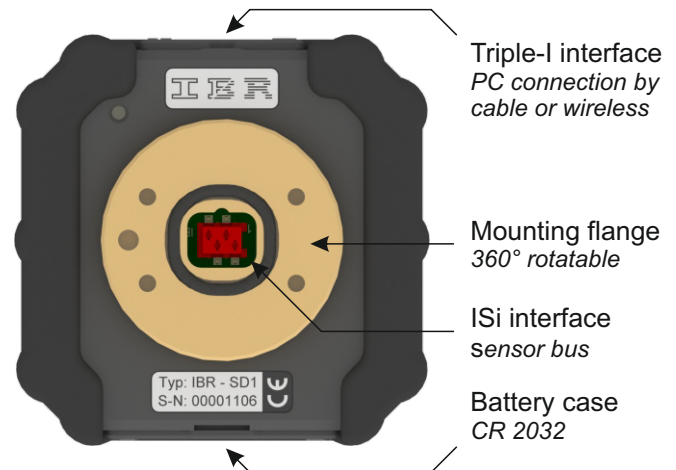
The sensor display unit **SD1** was especially developed for industrial use. The robust case with shock protection as well as a high protection class allow usage in rough manufacturing environment. The display is rotatable, a numeric display shows the measuring values with high resolution and an analogue display with coloured LEDs presents clearly the tolerance status of the component.

The sensor display SD1 features a large scope of operation and can be configured freely for the particular application as required by a windows software. Thereby functions can be removed or activated and settings can be preset.

Image : Front panel



Image : Back panel



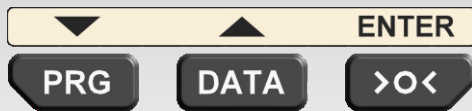
Technical data :

Mechanical characteristics	
Case	Plastic, rubber shock protection
Front plane	Acryl glass (scratch-proof coated)
Dimensions / Weight	(WxHxD) 60 x 59.5 x 21.7 mm / 95 g
Electrical characteristics	
Power supply	Battery (CR2032)
Battery lifetime	approx. 8000 h (SD1 incl. probe)
Measuring rate	adjustable, 2 ... 20 values / sec
LCD display	
Display type	Liquid crystal display, reflective
Numeric display	7 digits (10.5 mm)
Analogue display	53 segments
LEDs	
Tolerance display	3 LEDs : 1x red, 1x green, 1x yellow
Connections	
ISi interface	Bus connection for sensors, hand / foot switch, tolerance adapter, ...
Triple-I interface	Connection for IBR radio modules or cable with USB / RS232 / Digimatic / RS485 interface
Measuring systems	
Measuring range, resolution, precision, ... are defined by the connected measuring probe or sensor. Example : Measuring probe IMS-5S → Range 5mm, Resolution 0.1µm	
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F
Protection class	IP65 (CEI / IEC 529)
EMC according to EN50081 - 2 and EN50082 - 2	

Software functions :

Basic functions	
Unit / Measuring direction	mm, inch / positive, negative
Resolution	0.01 / 0.001 / 0.0001 mm
Measuring inputs	
Number / Factors	2 / ±0.001...±59.999 per measuring input
Combination	AA, AB, A+B
Measuring mode	
Static measurement	Yes / optional Hold mode
Dynamic measurement	Min, Max, TIR, Mean, Bore
Calibration	
Zero adjustment / Preset	with one master
Calibration	with two masters (gain & offset)
Forced calibration	by temperature change or elapsed time
Tolerance limits / Grading	
Tolerance type	Absolute tolerance limits or nominal size with relative tolerances
Number of grades	2 ... 30
Handling and communication	
Favorite buttons	freely definable for each button
Hand / foot switch	send measuring value, calibrate, ...
Tolerance adapter	output tolerance status / grade
Triple-I interface	measuring value output, programming
Password protection	for programming / for calibration
Configuration of analogue display	
Display mode	Bargraph / Single segment
Bargraph origin	Left / Center / Right
Special features	
Windows software for configuration of sensor display SD1	

SD1 short operating instruction :



Key function in programming menu

Key function in measuring mode



Key function in :	Measuring mode	Programming menu
PRG	Call programming menu	↓ Decrease flashing display (- 1)
> 2 sec.	Freely programmable favorite key	Exit programming menu
DATA	Data transfer Start / Stop dynamic measurement	↑ Increase flashing display (+ 1)
> 2 sec.	Freely programmable favorite key	- - -
>O<	Zero adjustment	ENTER Confirm flashing display
> 2 sec.	Freely programmable favorite key	Exit menu item

Windows configuration software IBR_SD1_PC.exe via cable and radio

User configuration of gauge functions [Type = SD1 / Ser.No. = 140021 / Fw. = V3.3]

Basic functions Selection of Unit Selection of Resolution Selection of measuring direction	Programmable : <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Settings in gauge mm 0.0001 positive	Menu name Unit rESol. dir. PoS.	<input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Help"/>
Calibration Zeroadjustment / Preset 2-Master calibration Temperature forced calibration Timer forced calibration	Programmable : <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Settings in gauge 0.0000 Master 1 0.5000 Master 2 -0.5000 Off Off	PrESet 2-CAL. dt.-CAL. tF.-CAL.	
Measuring inputs Measuring input A	Programmable : <input checked="" type="checkbox"/>	Settings in gauge <input checked="" type="checkbox"/> + A multiplied by 1.000	FActor	
Measuring modes	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Static	SET. OP.	
Grading mode Number of grades Display value on numeric display	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Off Measuring value	GrAdinG	
Tolerance limits <input checked="" type="radio"/> Nominal size with relative tolerance limits (e.g. 20 mm +0.02 / -0.01) <input type="radio"/> Absolute tolerance limits (e.g. 20.02 mm / 19.99 mm)	Programmable : <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Settings in gauge 0.0000 <input checked="" type="checkbox"/> 0.1000 -0.1000 Nominal size UT (+ Tolerance) LT (- Tolerance)	SET. Pnt. SET. tol.	
Tolerance LEDs Display colour Display output time	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Exceeding UT Red Undercutting LT Red 1 seconds	tol. LED	
Analogue display Mode of analogue display Origin of analogue display	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Bargraph Center	CoL. diS.	
Display control Freeze display on static measurement (hold)	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Edge triggered	hold	
Button functions Delay execution of button functions	Programmable : <input checked="" type="checkbox"/>	Settings in gauge 'DATA' button OFF 'CAL' button OFF	butt.dLY.	
Favorite buttons in measuring mode (button pressed for 2 sec)	Programmable : <input checked="" type="checkbox"/>	Settings in gauge 'PRG' button Delete zeroadjustment / cal. 'DATA' button Autom. data output on changing of mea. value (on / off) '>O<' button Switch gauge off	but. PrG. but. dAtA. but. CAL.	
External switch (e.g. ISI hand switch / foot switch) Assign function	Programmable : <input checked="" type="checkbox"/>	Settings in gauge Switch 1 Send measuring val Switch 2 Send measuring val	E.button	
Passcodes Passcode for programming menu (4 digits) Passcode for calibration (4 digits)	Programmable : <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Settings in gauge <input type="checkbox"/> Off <input type="checkbox"/> Off	P.C. ProG. P.C. CAL.	
Special parameters Auto-Power-Off time Measuring rate Output time of error messages on numeric display Data output over Triple-I interface	Programmable : <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Settings in gauge 10 minutes 10 values / second 1760 msec <input checked="" type="checkbox"/> Display value <input type="checkbox"/> Min <input type="checkbox"/> Max <input type="checkbox"/> Grade <input type="checkbox"/> Button number	Auto.oFF SA.-rAtE o.SELect.	

High precision dial gauge SD1 - IB5 / SD1 - IB10

The SD1 - IB5 / SD1 - IB10 is a high precision dial gauge with a free of clearance ball bearing and a linearized, inductive absolute measuring system. The dial gauge was specially designed for industrial use in rough manufacturing environment.

Type	Article
SD1 - IB5 / IB10	High precision dial gauge, spring pushed
SD1 - IB5P / IB10P	High precision dial gauge, pneumatically pushed
SD1 - IB5J / IB10J	High precision dial gauge, pneumatically pushed
SD1 - IB5V / IB10V	High precision dial gauge with vacuum lifting

Technical data : SD1 - IB5 / SD1 - IB10

Mechanical characteristics	
Case	Plastic, rubber shock protection
Front plane	Acryl glass (scratch-proof coated)
Dimensions / Weight	(WxHxD) 58 x 111 x 35.5 mm / 192 g
Electrical characteristics	
Power supply	Battery (CR2032)
Battery lifetime	approx. 8000 h
Metrological characteristics	
Measuring range	5 mm / 10 mm
Resolution	0.1 μ m
Accuracy	< ± 1 μ m
Measuring rate	adjustable, 2 ... 20 values / sec
Measuring force	0.7 N (optional 0.4 ... 2.0 N)
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F
Protection class	IP65 (CEI / IEC 529)
EMC according to EN50081 - 2 and EN50082 - 2	



Modular dial gauge SD1 with probe holder PH5

The SD1 with the probe holder PH5 is a modular dial gauge designed to work with IMS-5S measuring probes.

Type	Article
PH5	SD1 probe holder PH5 for IMS-5S measuring probe

Technical data : SD1 + PH5

Mechanical characteristics	
Case	Plastic, rubber shock protection
Front plane	Acryl glass (scratch-proof coated)
Dimensions / Weight	(WxHxD) 58 x 111 x 35.9 mm / 165 g
Electrical characteristics	
Power supply	Battery (CR2032)
Battery lifetime	approx. 8000 h
Measuring rate	adjustable, 2 ... 20 values / sec
Measuring system	
Measuring range, resolution, accuracy, ... are defined by the connected measuring probe or sensor. Example : Measuring probe IMS-5S \rightarrow Range 5mm, Resolution 0.1 μ m	
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F
Protection class	IP65 (CEI / IEC 529)
EMC according to EN50081 - 2 and EN50082 - 2	



Connection adapter for Compact display SD1

The SD1 in combination with connection adapter CC1 is a very compact display unit with ISi bus connection. The ISi bus allows the connection of 1 - 2 sensors plus foot and hand switch as well as the connection of tolerance outputs.

Technical data : SD1+CC1

Mechanical characteristics	
Case	Plastic, rubber shock protection
Front plane	Acryl glass (scratch-proof coated)
Dimensions / Weight	(WxHxD) 58 x 58 x 32.8 mm / 149 g
Electrical characteristics	
Power supply	Battery (CR2032)
Battery lifetime	approx. 6000 h (incl. 2 probes)
Measuring rate	adjustable, 2 ... 20 values / sec
Connections	
ISi interface	Bus connection for sensors, hand / foot switch, tolerance adapter, ...
Triple-I interface	Connection for IBR radio modules or cable with USB / RS232 / Digimatic / RS485 interface
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F
Protection class	IP65 (CEI / IEC 529)
EMC according to EN50081 - 2 and EN50082 - 2	

Type

Article

CC1 - Connection adapter

Connection adapter for ISi - Bus

CE1 - Extension adapter

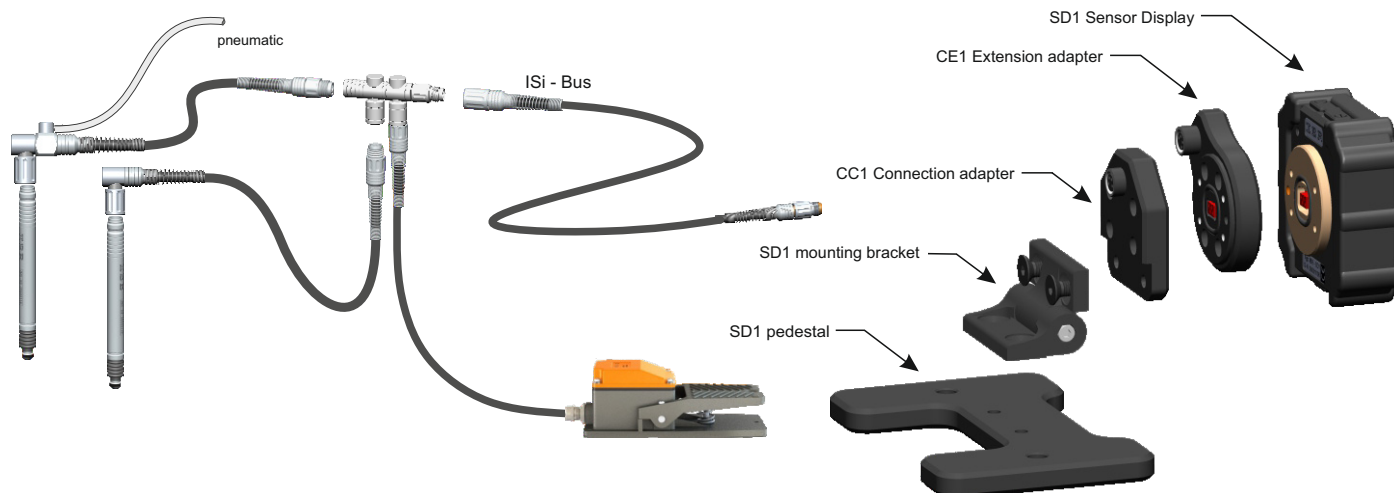
Extension adapter for ISi - Bus

SD1 - mounting bracket

Sleweable mounting bracket

SD1 - pedestal

Pedestal for compact display



Accessories for SD1 dial gauges and displays

Type

Article

3i - USB

Triple - I connection cable for USB interface



3i - 232
3i - 485

Triple - I connection cable for RS232 interface
Triple - I connection cable for RS485 interface
(Modbus)



3i - digi

Triple - I connection cable for Digimatic interface



ISM - 3i

Triple - I radio module for ISM band

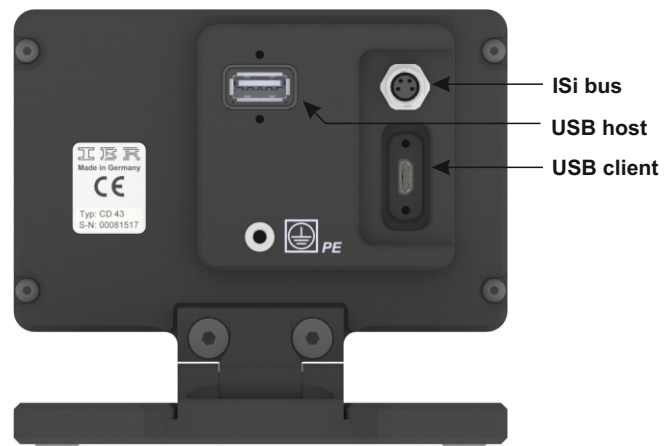
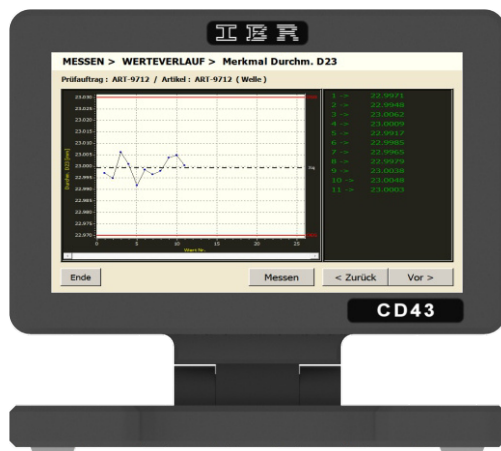


CD43 computer display for industrial use

The computer display **CD43** is a small and powerful display unit for measuring applications, which cannot be simply solved by using dial gauges. The robust aluminium case as well as a high protection class allow usage in rough manufacturing environment. The new sensor interface ISi bus allows connection of up to 16 measuring probes, sensors, hand- and foot switches. For fast and simple solving of measuring applications as well as for trend display of the production process, the CD43 is delivered with the user-friendly software ComGage Level 1.

Features

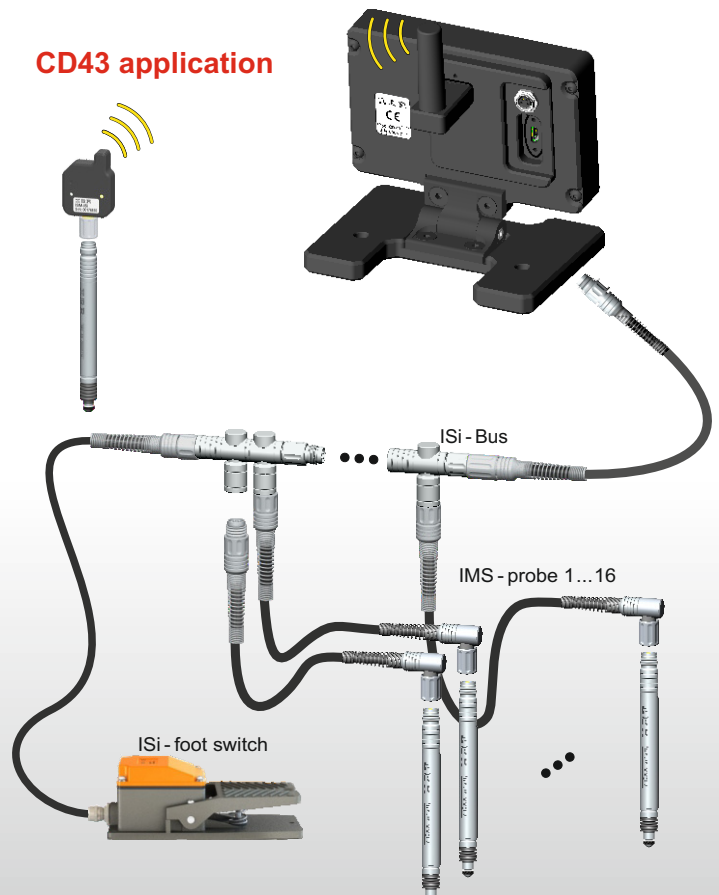
- Compact and robust construction with solid, sealed metal case (incl. connector caps for IP64), passive cooling and 4.3" TFT-Display (480 x 272) with touch screen, adjustable angle of tilt.
- ISi sensor bus for connecting 1...16 IMS probes, sensors, hand / foot switches, tolerance adapters.
- USB host (ISM-usb, IMB-usb, mouse, keyboard, USB stick) and USB client (data exchange with PC).



Technical data :

Mechanical characteristics	
Case with foot	Aluminium powder-coated
Dimensions / Weight	(WxHxD) 118 x 95 x 72.5 mm / 420 g
Protection class	Front side IP65, CEI / IEC 529
	Rear side IP64 with connector caps
Electrical characteristics	
External power supply	100 ... 240 VAC, 6 Watt
Max. power consumption	1.8 Watt (without sensors)
Computer characteristics	
Display	4.3" TFT, resolution 480 x 272 (adjustable angle of tilt)
Touch Screen	4 - wire analogue resistive
CPU	Vybrid VF61, 500 MHz
Memory	256 MB RAM, 512 MB Flash
Operating system	Windows CE 7
Measuring software	ComGage Level 1
Connections	
Standard PC connections	1 x USB client, 1x USB host
ISi interface	16 sensors / clients
IMBus	via IMB-usb
ISM radio modules	via ISM-usb
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F

CD43 application

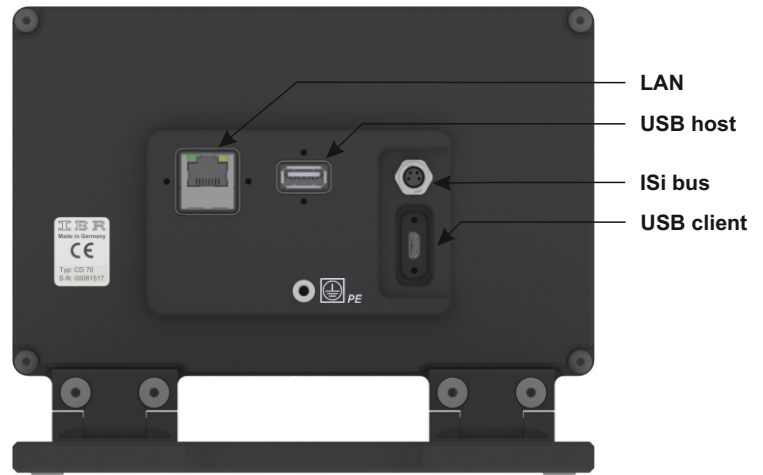
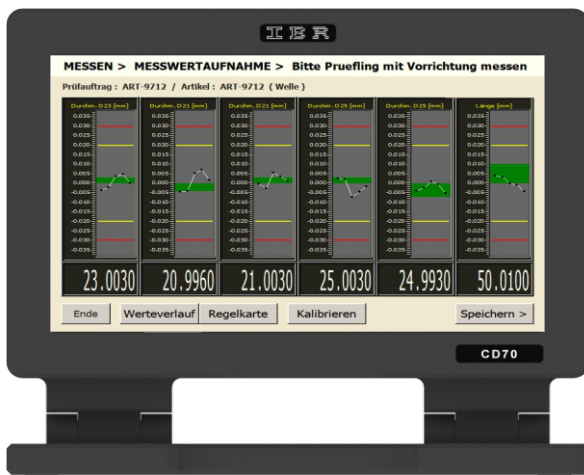


CD70 computer display for industrial use

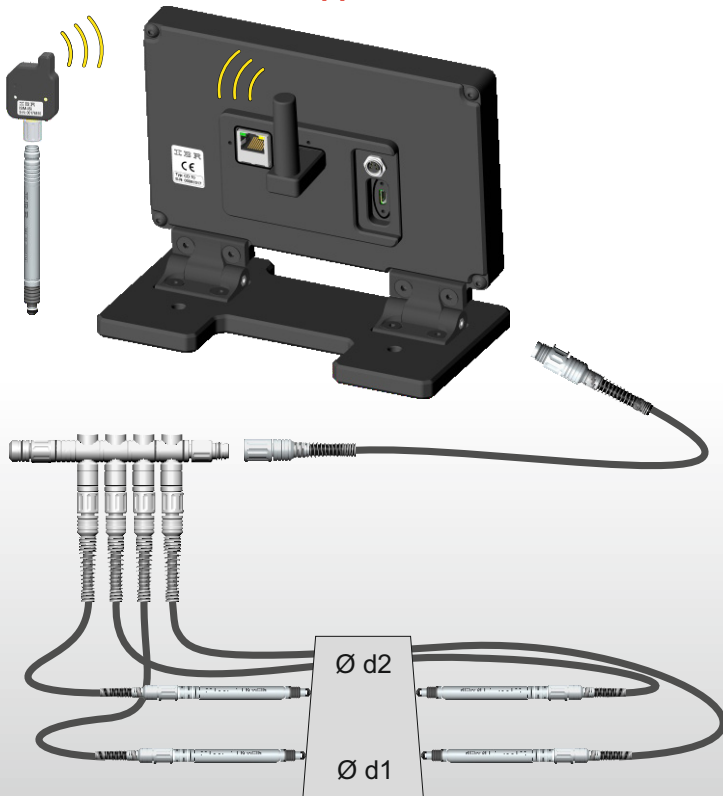
The computer display **CD70** is a compact and powerful display unit for measuring applications, which cannot be simply solved by classic gauges like e.g. column gauges and digital gauges. The robust aluminium case as well as a high protection class allow usage in rough manufacturing environment. The new sensor interface ISi bus allows connection of up to 16 measuring probes, sensors, hand- and foot switches. For fast and simple solving of measuring applications as well as for trend display of the production process, the CD70 is delivered with the user-friendly software ComGage Level 1. An upgrade to ComGage Level 2 is possible.

Features

- Compact and robust construction with solid, sealed metal case (incl. connector caps for IP64), passive cooling and 7.0" TFT-Display (800 x 480) with touch screen, adjustable angle of tilt.
- ISi sensor bus for connecting 1...16 IMS probes, sensors, hand / foot switches, tolerance adapters.
- USB host (ISM-usb, IMB-usb, mouse, keyboard, USB stick), USB client (data exchange with PC), LAN.



CD70 application



Technical data :

Mechanical characteristics	
Case with foot	Aluminium powder - coated
Dimensions / Weight	(W x H x D) 184 x 135 x 87.5 mm / 1.0kg
Protection class	Front side IP65, CEI / IEC 529
	Rear side IP64 with connector caps
Electrical characteristics	
External power supply	100 ... 240 VAC, 6 Watt
Max. power consumption	2.4 Watt (without sensors)
Computer characteristics	
Display	7.0" TFT, resolution 800 x 480 (adjustable angle of tilt)
Touch Screen	4 - wire analogue resistive
CPU	Vybrid VF61, 500 MHz
Memory	256 MB RAM, 512 MB Flash
Operating system	Windows CE 7
Measuring software	ComGage Level 1 / ComGage Level 2
Connections	
Standard PC connections	1 x USB client, 1x USB host, 1x LAN
ISi interface	16 sensors / clients
IMBus	via IMB - usb
ISM radio modules	via ISM - usb
Environmental conditions	
Operation / Storage temp.	+41 ... +113 °F / -4 ... +158 °F

ComGage Level 1 / Level 2

The software **ComGage Level 1 / Level 2** are universal programmes for fast solving of measuring applications. The software is easy to handle and is optimized especially for the computer displays CD43 and CD70 with touch operation.

Features

	ComGage Level 1	ComGage Level 2
Number of characteristics / Number of measuring inputs	8 / 60	20 / 60
Measurement of characteristics in freely definable groups with additional input of operator instructions	✓	✓
Input of formula for probe mixing (Support of all arithmetical and trigonometrical functions)	✓	✓
Static measuring mode with live display, as well as dynamic measuring modes : Min, Max, TIR, Mean, ...	✓	✓
Input of measuring value by touch / keyboard	✓	✓
Export functions for collected measuring values	xls, csv	xls, csv, QDAS
Reference information data input together with measuring values (Operator, Machine, ...)		✓
Trend display for collected measuring values (= run chart)	✓	✓
Statistical analysis by control charts, histograms, Cp/Cpk		✓
Control tasks by digital inputs / outputs as well as measuring value output via RS232 / radio modules	simple	advanced
Compatible to ComGage Professional	✓	✓

Image : Programming of characteristics

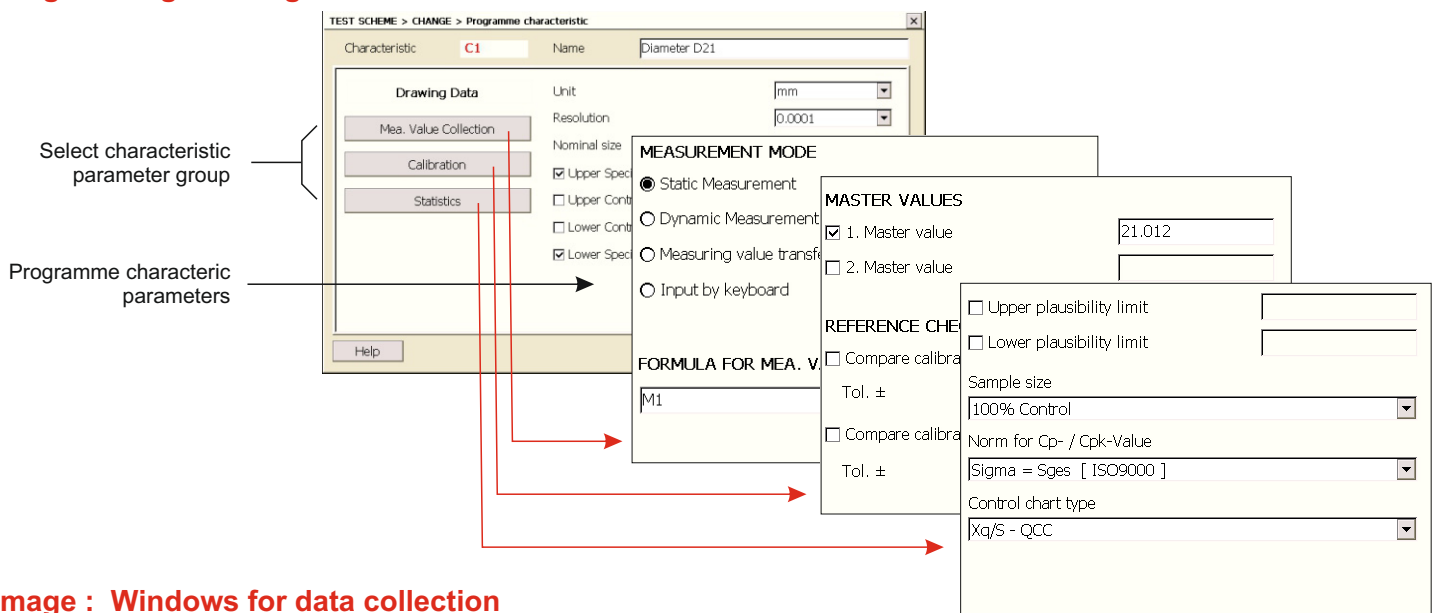
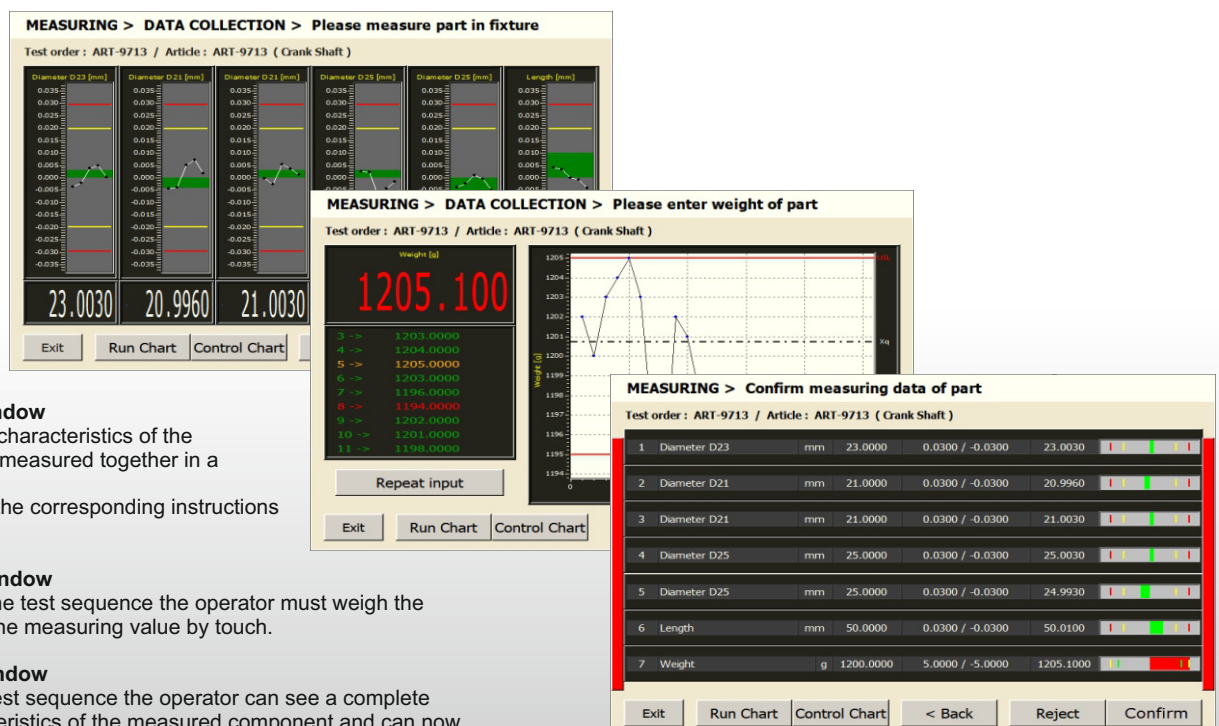


Image : Windows for data collection (Test sequence)



Description of 1st window

In the test sequence 6 characteristics of the component are initially measured together in a measuring fixture. The operator receives the corresponding instructions via window headline.

Description of 2nd window

In the second step of the test sequence the operator must weigh the component and enter the measuring value by touch.

Description of 3rd window

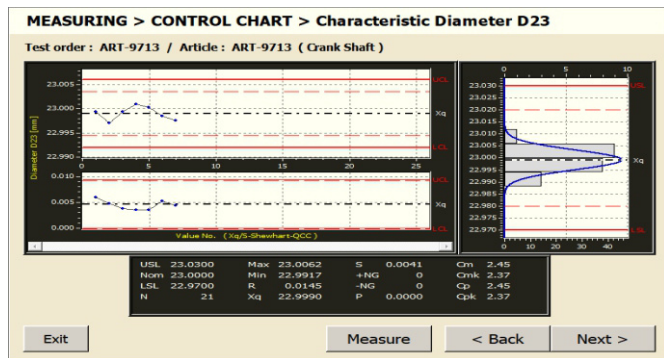
In the last step of the test sequence the operator can see a complete summary of all characteristics of the measured component and can now decide, whether the measuring values shall be stored inside the database.

ComGage Level 1 / Level 2

Online -SPC windows



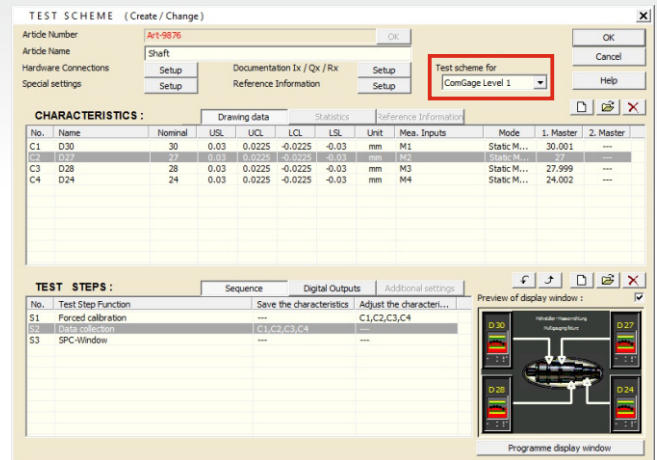
Run chart in ComGage Level 1 and Level 2



Control chart in ComGage Level 2

Programming of test schemes using ComGage Professional on PC

The ComGage Professional menu for programming test schemes allows to specify, that the new test scheme shall be executable with ComGage Level 1.



In contrast to the programming with ComGage Level 1 / 2, the programming menu of ComGage Professional allows programming of test steps with freely designable display windows and individual control of digital inputs / outputs.

For guiding the operator through the measuring sequence freely designable display windows can be created for ComGage Level 1 / 2. These display windows can contain pictures, lines and texts.

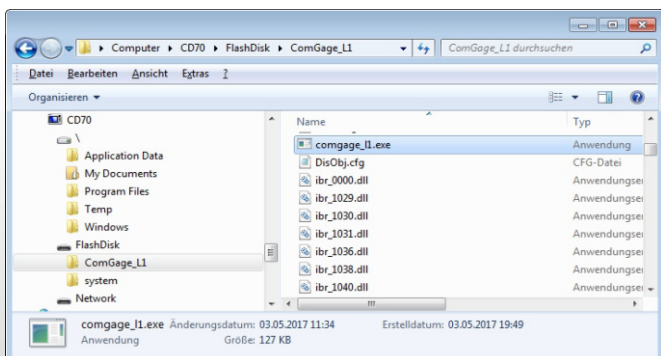
Administration, analysis and export of measured values by ComGage Professional

ComGage Professional allows creating test orders for test schemes created with ComGage Level 1 / 2. The test orders allow storage of measured data separately for production orders, production lots, ... and can be filled with measured data using ComGage Level 1 / 2.

The measured values collected with ComGage Level 1 / 2 can be exported or analysed using ComGage Professional afterwards.

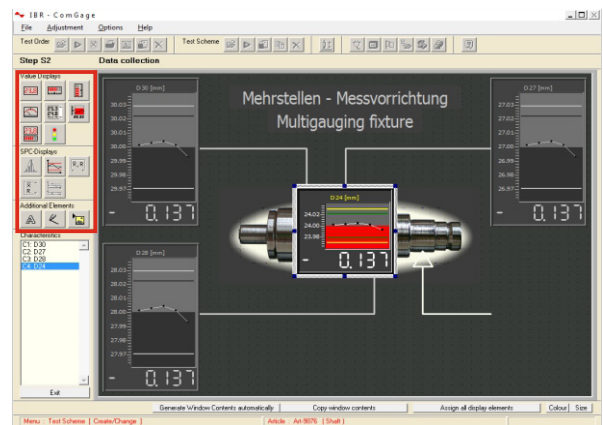
Access to flash memory of CD43 / CD70 computer displays via USB

On connection of a CD43 / CD70 via USB client connector (Micro-USB) to a Windows PC, the flash memory of the CD43 / CD70 computer display can be directly accessed via FTP.



This is also possible via the LAN interface of the CD70.

Step 1 : Add a display element



Step 2 : Place a display element



Software support

IBR_SD1_PC

IBR_SD1_PC Windows programme for configuration of SD1 sensor displays.

IMB_Test

IMB_Test is a universal program for initialisation, calibration and test of all ISi sensors.

IBR_DDK.DLL

Universal **D**evice **D**river **K**it for linking all IBR measuring and interface instruments in Win XP ... Win 11 and CE programs. (Examples for VC++, VB, LabView, Delphi, ... available)

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 ISi-Bus, IMBus & 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.

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