Explanations

In our catalogue you will find several pictograms beside the text description.
They should be helpful for a quick and easier explanation of the articles and their attributes.

Protection (IP-Code) acc. to DIN 40050 / IEC 60529 etc.

Icon	Description
IP 40	Protected against solid particles Ø > 1 mm
IP 41	Protected against solid particles Ø > 1 mm and drop water resistant
IP 44	Splash water resistant
IP 51	Drop water resistant
IP 52	Drop water resistant
IP 53	Dust and spray water resistant
IP 54	Dust and spray water resistant
IP 62	Dust and drop water proof
IP 63	Dust and spray water proof
IP 64	Dust and splash water proof
IP 65	Dust and jet water proof
IP 67	Water and oil tight (at times)
IP 68	Water and oil tight (permanent)
Ex	Article is explosion proof
UL	Article with UL-certificate (american safety norm)

Manufacturing process

Icon	Description
	Article with laser engraved scale / graduation
	Article with etched scale / graduation
	Article with printed scale / graduation (Pad print)
	Hardened
INOX	Stainless steel

Icons for data process

Icon	Description
RS232 C	RS232 data output by data cable
OPTO RS232 C	Opto RS232 data output
PROXIMITY	Proximity data output, inductive, contactless
	Data output by USB and data cable
VOCOM-S Duo-Datenausgang	Data output by USB and Mini USB (compatible with Mitutoyo Digimatic)
	wireless communication (WiFi) possible
	Software on CD-Rom

Several Icons

Icon	Description
ARTN⁰	Article-Number
	Reading / Resolution
KG	Weight in kg
	Cross section of the article
max.	Max. total accuracy(±)
	Repeatability (±)
	Individual measuring range
mm	Article dimension
UNIT	Measuring- and weighing-unit selectable or swichtable
	Corresponding battery included
	Corresponding battery included
LR41 1,5V	Corresponding cell battery included
LR44 1,5V	Corresponding cell battery included
CR1632 Lithium 3V	Corresponding lithium battery included
CR2032 Lithium 3V	Corresponding lithium battery included
	Accu
~ 230V	Power supply
	Laser protection class
	Magnet power
	Induction
	Laser wavelength
	Shock proof
	Stand out
mm/inch	Reading in mm and inch
cm/inch	Reading in cm and inch
ABS/INC	Article with ABS/INC measuring system
ABSOLUTE	Article with ABSOLUTE measuring function

> **ATTENTION**
> We charge transport and packing costs
> for articles marked with *!

About the Certification:
We are also able to quote all DIN measuring tools with a certificate to VDI/VDE/DGQ 2618. Measuring tools manufactured at works standard will be certificated according to this norm. The calibrations will be done by an external calibration laboratory. The delivery time for external calibration will take approx one week. Calibration orders can´t be cancelled and calibrated goods are excluded from sale of return. Whether you expect a calibration by laboratory of your choice, we are unable to guarantee for passing. Compensation of refund of costs are also impossible.

Norms, accuracy-classes, regulations

EC I	Article fulfils the respective EC Class standard
EC II	Article fulfils the respective EC Class standard
E1	Article fulfils the respective verification standard
CC	Workshop calibration certificate, inclusive
TC	Article with test certificate, marked with Ident.-No.
CE	Article with CE classification
MID CODE	Directive of the European Parliament and of the council on measuring instruments
T2	Article with strengths tolerances acc. to DIN 2275
T3	Article with strengths tolerances acc. to DIN 2275
ASTM	Article fulfils the respective American standard
BS	Article fulfils the respective British standard
JIS K	Article fulfils the respective Japanese standard
DIN	Article fulfills the respective DIN standard
DIN EN	Article fulfils the respective DIN EN standard
ISO	Article fulfils the respective ISO standard
DIN ISO	Article fulfils the respective DIN ISO standard
NORM	Article manufactured acc. to tolerances of workshop standard
TÜV GS	Article with seal: "TÜV/Geprüfte Sicherheit (GS)"
Vd TÜV	Article with seal: "TÜV"
IEC / EN	Article fulfils the respective norm standard

Art of package for each article

	Article will be packed in a carton box
	Article will be packed in a sturdy box (wood, plastic or aluminum)
	Article will be packed in a leatherette pouch
	Article will be packed in a PVC pouch
	Article will be packed in a sleeve
	Article will be sealed in a foil
	Article will be packed in a DIY plastic pouch with hanging card
	Article will be packed in a plastic film pouch with hanging card
	Article comes with wall hanging card
	Article will be packed in a blister packing
	Article will be packed a clear plastic box
	Carry bag, for outdoor use
	Article delivered on a pallet

Product specifications

	Caliper jaw length
	Measuring internal dimension
	Caliper jaws (cross shape)
	Caliper jaws (knife shape)
	Depth Gauge
	Thumbroll
	Fine adjustment
	Thread pitch
	Measering Inside
	Measuring outside
	Pointer rotation
	Setting gauge

**Workshop or „DAkkS"-Calibration
(German Calibration Service)**
Calibrated instruments available for extra charge.
Please send us your specific inquiry.

Quality categories

★★★★★	Product for highest demands
★★★★☆	Industry and craft
★★★☆☆	Craft
★★☆☆☆	DIY and training

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★★★★☆ V BLUE-LINE® Technical Reading Glass

- aplanatic lens with silicate glass optic,
  scratch-resistant and solvent-resistant
- highly polished metal-frame
- art. no. 60 0121 and 60 0122 handle made of black plastic, fine-grained
- art. no. 60 0132 metal frame and handle, highly polished finish
  and chromed

ARTNO 60 0121   ARTNO 60 0122   ARTNO 60 0132

ARTNO	size of lens ø mm	magnification	→mm←	KG	ARTNO suitable soft case
60 0121	65	4 x	245 x 114 x 23	0.146	60 09921
60 0122	90	2.5 x	245 x 114 x 23	0.252	60 09922
60 0132	45	3 x	139 x 16 x 12	0.060	-

★★★★☆ V BLUE-LINE® Watchmaker's Magnifier and Stone Magnifier

- biconvex silicate lens
- flame resistant plastic housing, with air hole to cope up with steaming

ARTNO	size of lense ø mm	magnification	type of lense	KG
60 0194	25	7 x	biconvex	0.008
60 0195	25	10 x	biconvex	0.010

★★★★☆ V BLUE-LINE® Precision Technical Magnifier

- **with LED-Light and exchangeable scales**
- tempered glass-lenses, housing made of aluminium / ABS / PE
- delivery with crosshair at:
  art.-no. 60 1126 = 10 - 0 - 10 mm scale, graduation 0.1 mm, scale-ø 26 mm
  art.-no. 60 1135 = 12 - 0 - 12 mm scale, graduation 0.1 mm, scale-ø 35 mm
- adjusting by focus-ring, exchangeable measuring scales
- attachable LED unit, bright, white LED light,
  incl. 3x 1.5 V battery (type LR41, art.-no.: 60 9279)

ARTNO 60 1126   ARTNO 60 1135

Exchangeable Scales

- tempered glass lenses, please mention type code and outside diameter!

type 1   type 2   type 3   type 4

type 5   type 6   type 7   type 8

type 9   type 10   type 11   type 12   type 13
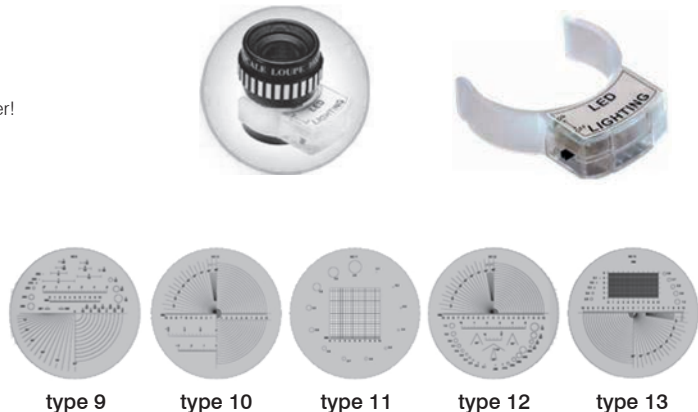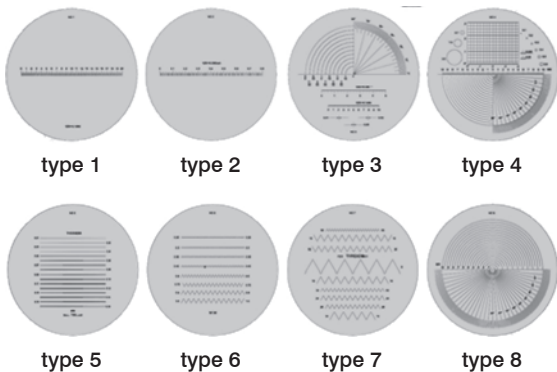
ARTNO	size of lens ø mm	magnification	→mm←	KG
60 1126	18.5	10 x	95 x 70 x 65	0.044
60 1135	21.0	10 x	95 x 70 x 65	0.074

9a

SILVER-LINE® LED Handheld Magnifier

- **with different lenses versions**
- silicate glass optic, scratch-resistant and solvent-resistant
- with high power LED
- rugged ABS-plastic housing
- incl. 1x 1.5 V battery (type AAA, art.-no.: 60 9283)

ART N⁰ 60 0165

ART N⁰ 60 0160

ART N⁰	size of lense ø mm	magnification	type of lense	mm	KG
60 0160	55	4 x	aspheric	165 x 80 x 30	0.100
60 0161	30	8 x	aplantic	165 x 80 x 30	0.135
60 0165	16.3	15 x	biconvex	165 x 80 x 30	0.139

SILVER-LINE® Precision Technical Magnifier

- **with exchangeable scales**
- aplanatic glass lens, tempered, housing made of polyamide
- incl. measuring scale 20 mm with 0.1 mm graduation
- adjusting by focus-ring, exchangeable measuring scales

ART N⁰ 60 0169
(without measuring magnifier)

ART N⁰ 60 0197
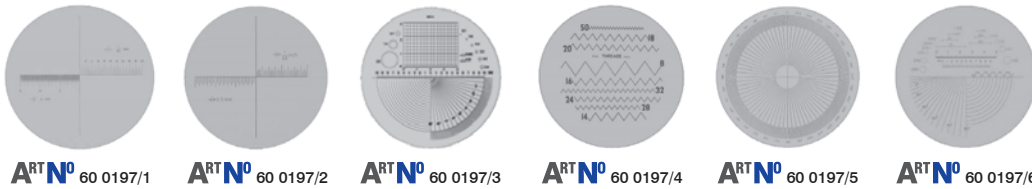
Handle with LED Lighting Unit

- incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)

Exchangeable Scales

- aplanatic glass lenses, tempered, with different scale applications

ART N⁰ 60 0197/1   ART N⁰ 60 0197/2   ART N⁰ 60 0197/3   ART N⁰ 60 0197/4   ART N⁰ 60 0197/5   ART N⁰ 60 0197/6

ART N⁰	size of lens ø mm	magnification	mm	KG
60 0197	22.8	7 x	85 x 50 x 47	0.097

ART N⁰ LED lighting unit	mm	KG
60 0169	165 x 80 x 30	0.166

BLUE-LINE® LED Handheld Magnifier

- **very popular model**
- ailicate glass optic, scratch-resistant and solvent-resistant
- with high power LED, rugged ABS-plastic housing
- incl. 3x battery 1,5 V (type AAA, art.-no.: 60 9283) and with soft case

ART N⁰	size of lense ø mm	magnification	type of lense	mm	KG
60 0166	30	10 x	aplantic	38 x 105 x 25	0.070
60 0167	21	15 x	aplantic	38 x 105 x 25	0.070

Precision Magnifiers

⭐⭐⭐⭐☆ **V**BLUE-LINE® **LED Handheld Magnifier**

- **with additional LED light in the handle**

- aspheric high tech lens made of PMMA, scratch-resistant and solvent-resistant
- rugged ABS-plastic housing
- incl. 1x 1.5 V battery (type AAA, art.-no.: 60 9283), with soft case and hand strap

ᴬʳᵀ Nᴼ	size of lense ø mm	magnification	type of lense	→▢mm←	KG
60 0170	42	5 x	aspheric	60 x 132 x 25	0.075

⭐⭐⭐⭐☆ **V**BLUE-LINE® **Tube Microscope**

- **designed for quality control applications for instant surface examinations during the production process**
- **fine adjustable focus, high brilliance**

- precision achromatic lens with silicate glass optic
- sturdy metal housing, with or without measuring scale available
- lighting unit (art.-no. 60 0712) must be ordered separate, please
- art.-no. 60 0712 incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)
- incl. soft case

ᴬʳᵀ Nᴼ 60 0710 ᴬʳᵀ Nᴼ 60 0712

ᴬʳᵀ Nᴼ	measuring scale mm	magnification	type of lense	→▢mm←	KG
60 0710	-	40 x / 50 x / 60 x	achromatic	160 x 35 x 25	0.094
60 0711	0.02 / 1	40 x / 50 x / 60 x	achromatic	160 x 35 x 25	0.086
60 0712	-	-	-	45 x 152 x 32	0.112

⭐⭐⭐⭐⭐ **V**SILVER-LINE® **Technical Stand Magnifier**

- **with measuring scale**
- **for precise measurements between scale lines, spaces, etc.**

- adjustable aplanatic lens
- black chromed metal housing
- stainless steel scale, with clear graduation

More scales as spare part are available on request!

TC
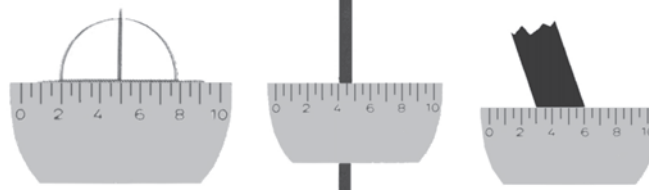
ᴬʳᵀ Nᴼ	size of lense ø mm	magnification	length of scale mm	👁 mm	possibility of reading mm	KG	ᴬʳᵀ Nᴼ CC
60 0178	20	10 x	10	0.10	0.025	0.038	60 9470
60 0180	20	8 x	10	0.10	0.025	0.038	60 9470
60 0179	20	6 x	20	0.10	0.025	0.038	60 9470

★★★★☆ V BLUE-LINE® **Precision Folding Magnifier**

- **popular technical folding magnifier**

- compound triple lens, aplanatic lens precision glass optic
- polished chrome plated metal housing, with loop
- metal lens frame, wrapped with black rubber
- incl. leather case

TC
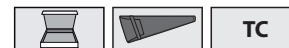
ART N⁰	size of lense ø mm	magnification	type of lense	⟶ mm ⟵	KG
60 0150	18	10 x	aplanatic	35 x 23 x 18	0.036

★★★★★ V SILVER-LINE® **Precision Folding Magnifier**

- **proven technical folding magnifier**

- precision glass optics
- satin chrome plated brass housing, with loop
- black lacquered metal lens frame

ART N⁰ 60 0159

ART N⁰ 60 0153

TC

ART N⁰	size of lense ø mm	magnification	type of lense		⟶ mm ⟵	KG
			aplanatic	biconvex		
60 0153	20.3	10 x	✓	-	39 x 39 x 34	0.031
60 0159	30	4 x + 6 x = 10 x	-	✓	42 x 27 x 56	0.056

★★★★★ V BLUE-LINE® **Linen Tester**

- biconvex lens, optically ground silicate glass
- precision brass body, satin chromed

ART N⁰	size of lense ø mm	magnification	height mm	cut-out mm	KG
60 0200	12.5	12 x	23	10 x 10	0.013
60 0201	14.5	10 x	27	15 x 15	0.020
60 0202	17.5	8 x	33	20 x 20	0.037
60 0204	31.5	5 x	53	30 x 30	0.122

★★★☆☆ V BLUE-LINE® **Magnifier with LED Lamp**

- **in pocket size**
- **with 3 magnifying lenses**

- 3x, 5x and 7x magnification
- with one extra bright LED lamp
- in a rugged ABS-plastic housing
- incl. 2x 3 V battery (type CR2032, art.-no.: 20 02093)
- with a storage case

3x

5x

7x

LED

CR2032 Lithium 3V

ART N⁰	magnification	field of view mm	⟶ mm ⟵	KG
60 1230	3 x / 5 x / 7 x	50 x 50 / 25 x 20 / 25 x 20	117 x 61 x 9	0.038

Magnifier Lamps

★★★★☆ **V BLUE-LINE® Headband Magnifier with LED Lamp**

- **total new model with powerful LED light**
- **patented design**
- **ideal for technical repair, camera, watch & clock repair, electronic repair, artworkers, dentist, etc.**

- made of ABS-plastic with sticky buckle tape for adjustment
- with 4 different lenses with special surface treatement
- light can be adjusted by up-down 45° or left-right 25°, removeable unit
- adjustable special function buckle band
- incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)

ART N⁰	magnification	field of view mm	working distance mm	KG
60 0220	1 x / 1.5 x / 2 x / 2.5 x	100 x 50	100 - 650	0.120

★★★★☆ **V BLUE-LINE® Professional LED Illuminated Magnifier**

ART N⁰ 60 0350

- **with articulated arm**
- **adjustable at any position, with 360° rotation**

- metal body, powder coated, insulation lamp housing made of rugged plastic
- with extra large and precision glass lens, 3 dpt., with built-in trafo
- with table clamp, cable inside of the arm, overload category CAT I
- with extra bright LED's, mounted around the lens

ART N⁰ 60 0354

ART N⁰	voltage	magnification	field of view mm	total throat mm	KG
60 0350	230	1.75 x	ø 127	900	2.200
60 0354	230	1.75 x	190 x 160	900	3.800

Accessories for Illuminated Magnifiers

ART N⁰	article description	suitable for art.-no.
60 0337	table clamp	60 0350 + 60 0354

Machine- and Workbench Lamps

★★★★★ **BLUE-LINE**® **LED Machine- and Workbench Lamps • IP65**

- **water- and coolant proof acc. to DIN 40050 / IEC 60529**
- **with flexible gooseneck**
- **extra bright LED illumination**

- double-head light case for heat dissipation
- head light housing in a ball joint housing, rotatable 310°, 220° swiveling
- On/Off pressure switch, special tempered glass
- flicker-free light even when vibrations in a unsteady place
- square base for fixing on bench or table with 4 holes
- with 230 V built-in trafo in the base, overload category CAT II
- the version with 24 V is without trafo, overload category CAT III

Accessories find on page 279
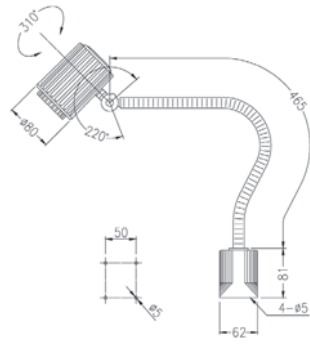
A^{RT}N⁰	voltage	bulb	lenght of arm mm	hole distance in base mm	4 bores in base ø mm	KG
60 0604	230	12 V / 2.3 W	465	50 x 50	5	1.650
60 0605	230	12 V / 2.3 W	620	50 x 50	5	1.800
60 0606	24	24 V	465	50 x 50	5	1.520
60 0607	24	24 V	620	50 x 50	5	1.670

★★★★★ **SILVER-LINE**® **Quartz Halogen Machine- and Workbench Lamps • IP54**

- **complete insulated, splash water resistant lamp acc. to DIN 40050 / IEC 60529**
- **halogen lamp with multi-position swiveling base and articulated arms permits positive and convenient adjustment to any lighting direction**
- **perfect illumination by halogen light**
- **for various applications**

- special tempered glass, with bayonet coupling
- head light housing in a ball joint housing, rotatable 310°, 220° swiveling
- head light housing made of elocated aluminium, with ribbed surface, offers a high efficiency of heat dissipation
- columns extruded from aluminium, anodized for scratch prevention
- joints and base are made of engineering plastic, durable and well resistant to electric shocks and high temperature
- with square base for mounting on bench or table, etc.
- with 230 V built-in trafo in the base, overload category CAT II

Accessories find on page 279
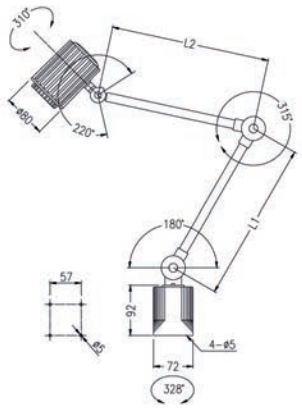
A^{RT}N⁰	voltage	watt	length of arms mm	hole distance in base mm	4 bores in base ø mm	KG
60 0554	230	20	220 x 220	57 x 57	5	4.500
60 0555	230	20	280 x 280	57 x 57	5	4.700
60 0556	230	20	380 x 380	57 x 57	5	5.000

Accessories for LED Machine- and Workbench Lamps

for series art. no. 60 0604 - 60 0607

ᴬᴿᵀ N⁰	article description
60 9360	magnetic plate, ø 90 mm, hole distance 50x50 mm, M4
60 9368	table clamp, hole distance 50x50 mm, M4
60 9364	table plate, 210x125x20 mm, hole distance 50x50 mm, M4
60 9365	wall bracket, hole distance 50x50 mm, M4
60 9373	trafo 120/230 V / 20 W, for internal connection
60 9392	LED bulb, 24 V
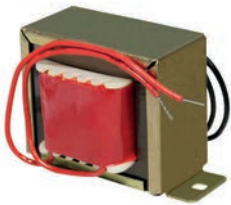
ᴬᴿᵀ N⁰ 60 9373   ᴬᴿᵀ N⁰ 60 9360   ᴬᴿᵀ N⁰ 60 9368   ᴬᴿᵀ N⁰ 60 9365   ᴬᴿᵀ N⁰ 60 9364

Accessories for Quartz Halogen Machine- and Workbench Lamps

for series art. no. 60 0554 - 60 0556

ᴬᴿᵀ N⁰	article description
60 9361	magnetic plate, ø 90 mm, hole distance 57 mm, M4
60 9362	wall bracket, hole distance 57 mm, M4
60 9369	table clamp, hole distance 57 mm, M4
60 9350	grid, made of aluminium
60 9373	trafo 120/230 V / 20 W, for internal connection
60 9382	halogen bulb, 24 V / 20 W
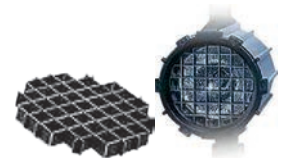
ᴬᴿᵀ N⁰ 60 9373   ᴬᴿᵀ N⁰ 60 9361   ᴬᴿᵀ N⁰ 60 9369   ᴬᴿᵀ N⁰ 60 9350
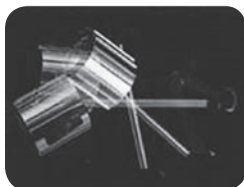
convenient base positioning   *effective heat dissipation*   *convenient bulb replacement*

Work Lamps and Head Lamps

⭐⭐⭐⭐⭐ **V** BLUE-LINE® Accu Work Lamp, with LED • IP54

- **splash water resistant lamp, acc. to DIN 40050 / IEC 60529**
- **modern work lamp, designed for universal working places**
- **rechargeable**

- sturdy, acid- and oil-resistant housing, 360° revolving hook
- with rubber covered handle, On/Off pressure switch
- with built-in magnet
- 27 bright white LED's and 1 red control LED
- incl. 230 V DC charger and 12 V car adapter

ART N⁰	quantity of LED's	LED light colour	mm	KG
60 0020	27 + 1	white	170 x 29 x 29	0.640

⭐⭐☆☆☆ **V** BLUE-LINE® LED Work Lamp   **NEW**

ART N⁰ 60 0025SET   ART N⁰ 60 0025

- **modern work lamp**
- **designed for universal working places**

- sturdy housing
- with rubber covered handle
- with hand strap, ON/OFF pressure switch
- 52 bright white LED´s at the side
  and one LED at the top
- incl. 3x 1.5 V battery (type AA)

Option
- **art. no. 60 0025SET**
  contents 12 pcs. of LED working lamps

magnetic bottom

ART N⁰	quantity of working lamps	quantity of LED's	LED light colour	mm	KG
60 0025	1 pcs.	52 + 1	white	280 x 42 x 42	0.225
60 0025SET	12 pcs.	52 + 1	white	280 x 42 x 42	2.700

⭐⭐⭐⭐☆ **V** BLUE-LINE® LED Head Lamp • IP54

- **splash water resistant lamp, acc. to DIN 40050 / IEC 60529**
- **professional head lamp**
- **with extra bright LED light**
- **with optimized collimator for a deeper, brighter beam, even in outdoor area**
- **this model will convince every technician as well as rescue service,
  in maintenance, hobby, etc.**

- durable, shock- and splash water resistant housing
- with rubber-covered lenshead
- lens head adjustable, swivel in a wide range
- flexible, tough and adjustable head belt, all-weather resistant
- On/Off pressure switch, extremly bright and white light colour
- incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)

ART N⁰	watt	colour of housing	LED colour light	mm	KG
60 0821	3	black	white	70 x 75 x 50	0.155

9c

⭐⭐⭐⭐⭐ **V BLUE-LINE®** LED Head Lamp • IP67   NEW

- **watertight and explosion-proof head lamp**
- **acc. to all international standards, ATEX / UL / IECEx**
- **intrinsically safe head lamp for use in hazardous locations**

- durable, impact-resistant construction, watertight up to 1 m
- explosion-proof for gas/dust, acc. to ATEX-1354X
- with rotatable head, angle adjustable by max. 90°
- with clear and bright CREE XP-G2 LED
- flexible, tough and adjustable head belt, all-weather resistant
- with locking mechanism on battery compartment, On/Off-switch
- with focus and flood reflector, built-in gas release vent
- light output 75 m/150 m, low/high light mode, adjustable
- incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)
  with operation manual

ART N0	luminous flux low / high lm	watt	beam distance max. m	quantity LED	colour of housing	LED light colour	→mm←	KG
60 1521	75 / 150	3	150	1	yellow	white	85 x 60 x 45	0.160

⭐⭐⭐⭐⭐ **V BLUE-LINE®** LED Flashlight • IP67   NEW

- **watertight and explosion-proof head lamp**
- **acc. to all international standards, ATEX / UL / IECEx**
- **intrinsically safe head lamp for use in hazardous locations**

- durable, impact-resistant construction, watertight up to 1 m
- explosion-proof for gas/dust, acc. to ATEX-1354X
- rubber covered lens head, with clear and bright CREE XP-E LED
- with device for helmet attachment or belt clip (art.-no. 60 1595 / 60 1596 / 60 1599)
- with lockable On/Off-switch, extreme bright, white light-colour
- light output 47 m/114 m, low/high light mode, adjustable
- valve design helps to hydrogen gas released
- incl. 4x 1.5 V battery (type AA, art. no.: 60 9282)
  with operation manual

ART N0	luminous flux low / high lm	watt	beam distance max. m	quantity LED	colour of housing	LED light colour	→mm←	KG
60 1505	47 / 114	3	114	1	yellow	white	175 x 47 x 47	0.200

⭐⭐⭐⭐☆ **V BLUE-LINE®** rechargeable LED Flashlight • IP64   NEW

- **water resistant, rechargeable Flashlight**
- **with charging station by USB cable**
- **wide and professional scope, for industry, off-shore, marine, construction, road construction etc.**

- durable, impact-resistant construction, water resistant up to 1 m
- rubber covered lens head, with clear and bright CREE XP-E LED
- with device for helmet attachment or belt clip (art.-nos. 60 1595 / 60 1596 / 60 1599)
- with lockable On/Off-switch, extreme bright, white light-colour
- light output up to 156 m, 1 red LED when charging, 1 blue ring light at charging station
- power supply by charger or at PC/Laptop with USB adapter
- with charging station, USB adapter cable, charger 110-240 V, 50/60 Hz, AC/DC
- incl. 2x lithium battery (type 14500LI)
  with operation manual

ART N0	luminous flux low / high lm	watt	beam distance max. m	quantity LED	colour of housing	LED light colour	→mm←	KG
60 1508	156	3	129	1	yellow	white	172 x 47 x 47	0.165

Flashlights, Accessories for LED Flashlights

★★★★☆ **V** BLUE-LINE® **LED Flashlight • IP54**

- **splash water resistant torch, acc. to DIN 40050 / IEC 60529**
- **thanks to the LED technology almost no replacement of the lamp needed**
- **LED's with approx. 100000 hrs. durability**

- sturdy, acid-and oil-resistant aluminium housing
- On/Off pressure switch
- extremly bright and white LED colour light
- with knurled grip for safe and nonslip handling,
  incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)
- delivery with hand strap and pouch with belt-holder

ART N⁰	watt	luminous flux	colour of housing	LED light colour	lighting range m	mm length x ø mm	KG
60 1805	3	120	black	white	120	120 x 28	0.140

★★★☆☆ **V** BLUE-LINE® **rechargeable LED Flashlight** `NEW`

- **handy, rechargeable flashlight**
- **accu power bank, with USB and micro USB data port**
- **application range at industry, crafts, etc.**

- sturdy, acid and oil resistant aluminium housing
- lockable On/Off button
- extreme bright and white LED light
- can also be used as a charger for smart phone
- charging by PC/Laptop or in car/truck by USB adapter
- incl. micro USB charging cable and storage bag
- incl. built-in lithium battery
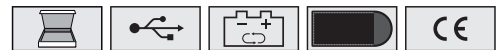
backside   *Smart-Phone charging*

ART N⁰	watt	luminous flux	colour of housing	LED light colour	lighting range m	mm	KG
60 1806	3	40 - 50	black	white	100	113 x 22 x 22	0.095

Accessories for LED Flashlights

- **helmet attachment or belt clip**
  suitable for art. no. 60 1505 + 60 1508

- art. no. 60 1595: helmet attachment with clip
- art. no. 60 1596: helmet attachment with fixing screw
- art. no. 60 1599: belt clip with powerful fixing

ART N⁰ 60 1595   ART N⁰ 60 1596

ART N⁰ 60 1599

ART N⁰	mm	KG	ART N⁰	mm	KG	ART N⁰	mm	KG
60 1595	115 x 26 x 36	0.030	**60 1596**	115 x 26 x 36	0.040	**60 1599**	90 x 23 x 21	0.015

Borescopes

VDIGI PLUS-LINE ® ★★★★★

Image/Video Borescope
with 3.5" TFT colour monitor • IP65/IP57

- **for quick, visual inspection and documentation, useful in hard to reach places**
- **IP57 protected housing, interchangeable water- and cooling waterproof hoses acc. to IP65, available in different diameters and length**
- **with 4 high bright white LEDs, USB data port, 2 GB memory card, with multifunctional keyboard**

- rugged plastic housing, industry quality, scratch resistant display
- backside with 2 heavy duty magnet stripes and with M8 thread for tripod installation
- camera (CMOS) with resolution 640x480 pixel, high bright LEDs, with dimmer, USB-port
- digital zoom, still image storage format (JPG), video recording (MPG-4) AV-out (PAL + NTSC)
- Time/Date, On/Off button, 20 languages selectable (with device-type VGA only!)
- incl. power supply, charger, 3.7 V lithium-polymer battery, AV cable, USB cable, cleaning set
- with operation manual and rugged carrying case
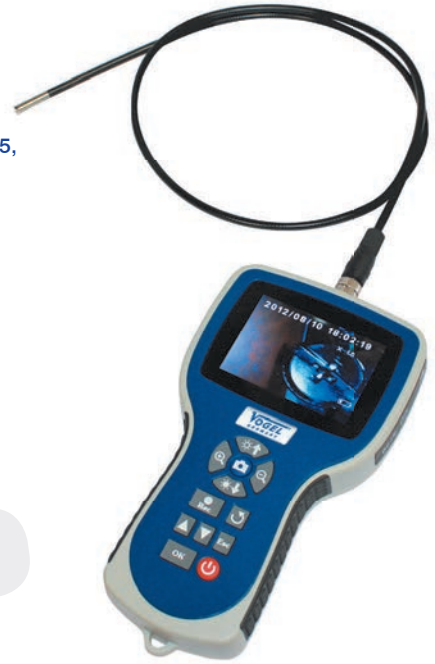
More devices and hose lengths are available on request!

ART N⁰ 62 0120

IP 65   IP 57   ~ 230V   CE   TC

ART N⁰	hose mm	hose-ø mm	hose type			field of view °	depth of field mm	→mm←	🧲	KG
			flexible	semi rigid	VGA					
62 0076	1000	4.0	✓	✗	✓	67°	15 - 100 mm	220 x 120 x 35	✗	0.390
62 0176	1000	4.25	✗	✓	✓	67°	15 - 100 mm	220 x 120 x 35	✗	0.390
62 0120	1000	5.5	✓	✗	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.410
62 0121	1000	5.8	✗	✓	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.410
62 0220	2000	5.5	✓	✗	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.500
62 0221	2000	5.8	✗	✓	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.500
62 0320	3000	5.5	✓	✗	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.580
62 0321	3000	5.8	✗	✓	✓	67°	15 - 100 mm	220 x 120 x 35	✓	0.580

9d

Accessories and Spare Parts

- device, 2 way-adapter, cabel, mirrors, pick-up magnets
- mirrors and magnets can be screwed on to lens head
- more hose types up to 30 meter available on request

More hose types and hose lengths are available up to 30 meter, on request

rigid endoscope, protection class IP67, can be srewed on the device „4", with stainless tube 0° view direction and with 90° tube (stainless, rotatable 360°)

360°

with 2 tubes

9

backside with magnetic plate

device

4

controller 2-way-adapter

5

side view direction (90°)

90° hose

6

front view direction (0°)

0° hose

7

front- and side view, combined (0° and 90°)

0° and 90° hose

8

mirror

1

pick-up magnet

2
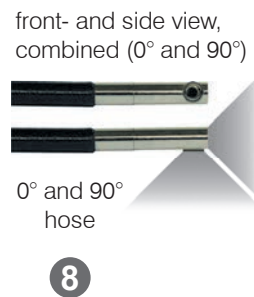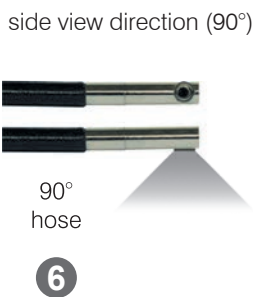
ART N0	type	view direction °	hose mm	hose-ø mm	hose type			2-way system	mirror °	KG
					flexible	semi rigid	VGA			
62 0002	4	X	X	X	X	X	✓	X	X	0.450
62 99001	5	0	1000	5.5	✓	X	X	✓	X	0.540
62 99002	5	0	2000	5.5	✓	X	X	✓	X	0.590
62 99012	6	90	1000	5.5	✓	X	✓	X	X	0.095
62 99013	7	0	1000	5.5	✓	X	✓	X	X	0.095
62 99014	7	0	1000	5.8	X	✓	✓	X	X	0.095
62 99015	8	0 and 90	1000	5.8	✓	X	✓	X	X	0.095
62 99022	7	0	2000	5.5	✓	X	✓	X	X	0.175
62 99023	7	0	2000	5.8	X	✓	✓	X	X	0.175
62 99032	7	0	3000	5.5	✓	X	✓	X	X	0.225
62 99033	7	0	3000	5.8	X	✓	✓	X	X	0.225
62 99056	7	0	5000	5.5	✓	X	✓	X	X	0.360
62 99057	7	0	5000	5.8	X	✓	✓	X	X	0.360
62 99063	7	0	1000	4.0	✓	X	✓	X	X	0.065
62 99067	7	0	1000	4.25	X	✓	✓	X	X	0.095
62 99330	2	X	X	4.0 / 4.25	X	X	X	X	X	0.018
62 99333	1	70 / 90 / 110	X	4.0 / 4.25	X	X	X	X	35 / 45 / 55	0.066
62 99530	2	X	X	5.5 / 5.8	X	X	X	X	X	0.018
62 99533	1	70 / 90 / 110	X	5.5 / 5.8	X	X	X	X	35 / 45 / 55	0.066
62 9903	9	0 and 90	300	4 = 0° 5 = 90°	X	X	✓	X	45	0.220
62 9905	9	0 and 90	300	6 = 0° 7 = 90°	X	X	✓	X	45	0.235

Voltage Testers

V BLUE-LINE® Voltage Detector • IP44

- **non-contact type, rapid detection of live conductors to e.g.
  cable connections, cable reels, sockets, electrical outlets, switches, etc.**
- **particulary well-suited for professional use and as well for hobby**

- sturdy ABS-plastic housing, with clip, dustproof and spray water resistant
- contactless and safe testing, works at a distance of 4 mm
- protected against voltage loads up to 1000 V AC
- overload category CAT III 1000 V
- capacitive process
- incl. 2x 1.5 V battery (type AAA, art.-no.: 60 9283),
  with operation manual

art.-no. 64 0357
- with acoustical signal and built-in LED lamp on top, measuring range 12 V - 1000 V

ART N⁰	V AC	display	mm l x ø	KG
64 0350	110 - 1000	optical	142 x 25	0.022
64 0357	12 - 1000	optical and acoustical	160 x 25	0.045

V DIGI PLUS-LINE® Electr. Digital Miniature Current Clamp • IP44

- **the manual/automatic test range selector enables versatile and reliable testing**
- **use in the service sector, in industry or in the installation**
- **whether you want to measure a direct current as shown in the
  picture to check that a battery's load current will be sufficient,
  or the load is pulling too much and causing leakage**
- **the included readiness-bag keeps the device and its
  attachments safe, even in harsh areas or on the road**

- protected housing made of sturdy ABS-plastic, dustproof and spray water resistant
- LCD display with clear reading
- voltage up to 600 V, current AC/DC up to 600 A
- overload category CAT III 600 V, conductivity with acoustical signal, resistance 0-60Ω
- with diode test, with 1x testing lead set
- incl. 3x 1.5 V battery (type AAA, art.-no.: 60 9283)
- incl. readyness bag,
  with operation manual

ART N⁰	V AC/DC	A AC/DC	mm	KG
64 0364	- 600 V AC/DC	- 600 A AC/DC	208 x 75 x 35	0.340

⭐⭐⭐⭐⭐
V *SILVER-LINE*® **Two Pole Voltage Tester • IP65, with LED's** **NEW**

⭐⭐⭐⭐⭐
V *DIGI PLUS-LINE* **Two Pole Voltage Tester • IP65, with LCD display** **NEW**

ART N⁰ 64 0332 ART N⁰ 64 0333

- the professional appearance is underlined by the mix of materials used in the plastic housing and the rubber handle
- display window made of break proof plastic, scratch resistant

- sturdy ABS-plastic housing, water- and coolant proof acc. to DIN 40050 / IEC 60529
- single pole phase testing, two pole phase sequence testing, autom. load for FI/RCD test
- autom. measurement range, autom. resistance: Is ~ 30mA ED(DT) = 30 sec.
- incl. 2x 1.5 V battery (type AAA, art.-no.: 60 9283), with operation manual

art.-no. 64 0332
- operation panel: finger tip contact, continuity test 0-500 kOhm, with acoustical signal

art.-no. 64 0333
- resistance test 0-2000 Ω, continuity test 0-150 Ω, with acoustical alarm
operation panel: On/Off button, data hold button, finger tip contact
display: LCD 3½ digit, LCD for phase/rotary field
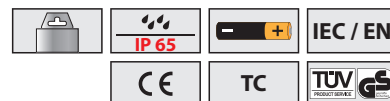
ART N⁰	V AC / DC	phase indicating	overload category	mm	KG
64 0332	6 - 1000 AC / 6 - 1400 DC	> 100 V AC	CAT IV 1000 V	238 x 70 x 30	0.200
64 0333	3 - 1000 AC / 4 - 14000 DC	> 100 V AC	CAT IV 1000 V	238 x 70 x 30	0.200

⭐⭐⭐⭐☆
V *BLUE-LINE*® **Two Pole Voltage Tester • IP44**

- with 8 LED's, user-friendly design
- for measuring AC / DC, two practical functions in a single device
- the instrument has met with the approval for many customers working in the electrical- and tools branch

- sturdy ABS-plastic housing with rubber handle, dustproof and spray water resistant
- protected against voltage loads from 6 up to 400 V AC / DC
- DC and AC voltage tests with polarity indication can be performed safely
- power supply by test object
- overload category CAT III 1000 V
- with operation manual

ART N⁰	V AC / DC	display	mm	KG
64 0356	6 - 400	8 LED's	120 x 60 x 30	0.100

Multimeters

★★★★★ VDIGI PLUS-LINE® Electr. Digital Multimeter • IP44

- with LED lamp and with non-contact voltage tester
- very useful instrument, especially in the field of electro-technic

- housing is made of tough, demage-resistant ABS-plastic, dustproof and spray water resistant
- large LCD display for clear reading
- current DC and AC up to 10 A
- diode test, transistor test function, conductivity test, with acoustical signal
- incl. 1x measuring lines and with readiness bag
- incl. 2x 1.5 V battery (typ AAA, art.-no.: 60 9283), with operation manual

| | | IP 44 | | IEC / EN | CE | TÜV GS | TC |

ART N°	AC/DC	overload protection	resistance	mm	KG
64 0382	0 - 600 V	CAT III / 600 V	2 MΩ	140 x 70 x 35	0.220

★★★★☆ VDIGI PLUS-LINE® Electr. Digital Multimeter • IP44   **NEW**

ART N° 64 0384

- with solar charger on top of instrument
- very useful instrument, especially in the field of electro-technic

- housing is made of tough, demage-resistant ABS-plastic, dustproof and spray water resistant
- large LCD display clear reading, digit height 19 mm
- current DC and AC up to 20 A
- incl. thermo probe for temperature measurements
- diode test, transistor test function, conductivity test, with acoustical signal
- with battery test function
- with frequency function
- with decimal digits change
- incl. 2x measuring lines and readiness bag
- incl. rechargeable accu and charger cable, with operation manual

solar charger

with stand

power plug

alligator clips

USB cable for charging   *measurement probes*   *temperature probe*

| | | IP 44 | | IEC / EN | CE | TC |

ART N°	AC	DC	overload category	resistance	mm	KG
64 0384	0 - 750 V	0 - 1000 V	CAT III / 600 V CAT IV / 1000 V	60 MΩ	167 x 90 x 50	0.320

IP-Protection types overview acc. to EN 60529 (IP • International Protection)

1. Index

Degree of protection against
foreign objects/particles and dust

IP **4..**   Protection against penetration of solid
       foreign objects von ≥ 1 mm.

IP **5..**   Protection against harmful dust
       deposits (dust protected).

IP **6..**   Protection against penetration
       of dust (dust-proof).

2. Index

Degree of protection against water

IP **..0** no protection
IP **..2** Protection against dripping water up to 15° tilt housing.
IP **..4** Protection against water spray from any direction.
IP **..5** Protection against water jets from any direction.
IP **..6** Protection against powerful water jets from any direction.
IP **..7** Protection against temporary immersion in water.
IP **..8** Protected from ingress of water during immersion
       for indefinite period.

Tolerance limits acc. to EC-Measuring Directive 2004/22

Pocket Tapes / Steel Rules

Length	m	1	2	3	4	5	8	10
Tolerance EC I	mm	± 0.3	± 0.4	± 0.5	± 0.6	± 0.7	± 1.0	± 1.2
Tolerance EG II	mm	± 0.7	± 0.9	± 1.1	± 1.3	± 1.5	± 2.1	± 2.5

Folding Rules

Length	m	1	2	3
Tolerance EC II	mm	± 1.0	± 1.2	± 1.4
Tolerance EG III	mm	± 1.8	± 2.2	± 2.6

Thickness tolerances for feeler gauges and feeler gauge rolls

nominal thickness mm	0.000 – 0.024	0.025 – 0.039	0.040 – 0.062	0.063 – 0.124	0.125 – 0.159	0.160 – 0.199	0.200 – 0.249	0.250 – 0.314	0.315 – 0.389	0.400 – 0.499	0.500 – 0.629	0.630 – 0.799	0.800 – 0.999	1.000 – 1.249
Tolerance T2 µm	± 2	± 3	± 4	± 5	± 6	± 7	± 8	± 9	± 11	± 12	± 14	± 17	± 19	± 24
Tolerance T3 µm	± 1.5	± 2	± 3	± 4	± 5	± 5	± 6	± 7	± 8	± 9	± 10	± 12	± 13	± 17

Measuring categories CAT I up to CAT IV

CAT I: approved for measurements on circuits that are not directly
       connected to the power grid. (e.g. specially protected devices)

CAT II: approved for measurements on circuits which are electrically
       connected directly to the low voltage grid.
       (e.g. household appliances)

CAT III: approved for measurements in building installation
       (e.g. as distribution, wiring, sockets, switches)

CAT IV: approved for measurements at the source of low-voltage
       installations (e.g. as meters, mains terminals, primary overcurrent
       protection devices)

Any questions?
We are pleased to advise!

Outbuilding
Electrical substation

Distributor

Meter

CAT I	CAT II	CAT III	CAT IV

Underground cable
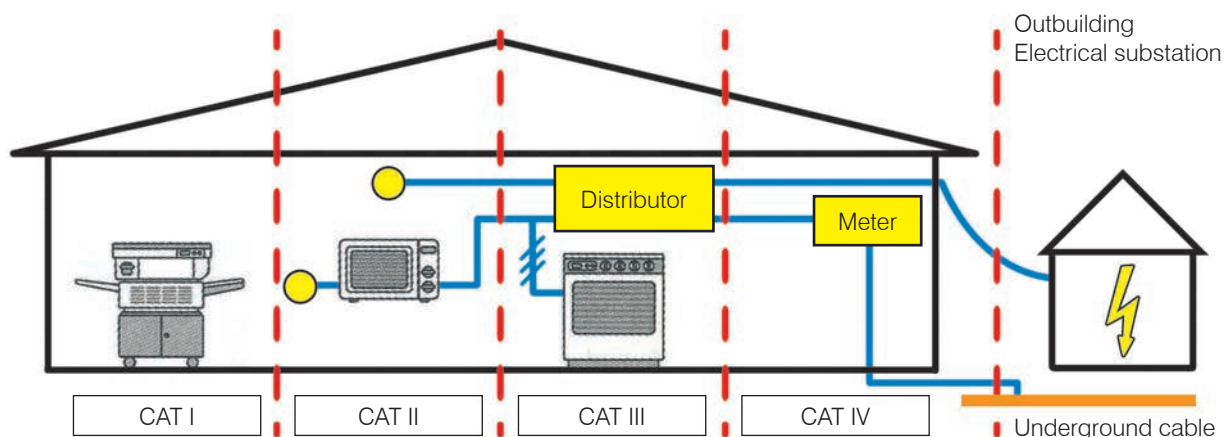
★★★★★
ⅤBLUE-LINE® Magnet Field Detector, non contact **NEW**

- with LED lamp, non contact
- easy and quick contact-free detection of magnetic-fields
- all permanent and synthetic magnetic fields are indicated
  by the tip lighting up
- the built-in magnet-field sensor allows a reliable check
  proper function of hydraulic
  and pneumatic valves, relays and contactors

- rugged ABS-plastic housing, with clip
- safe and contactless testing, works at a distance of 4 mm
- optical red LED display, with built-in permanent magnet for a quick self test
- incl. 2x 1.5 V battery (type AAA, art.-no.: 60 9283),
  with operation manual

			IEC / EN CE

ARTN⁰		mm length x ø	KG
64 0376	all magnetic fields	160 x 25	0.045

★★★★★
ⅤBLUE-LINE® Brake Fluid Tester, DOT 3, DOT 4, DOT 5.1 · IP44 **NEW**

- fast and accurate check on the water content in the brake fluid
- thanks to various measuring ranges, user-friendly operation and compact
  design, the device is ideal for use in garages and motorcycle workshops

- check brake fluids DOT 3, DOT 4, DOT 5.1
- acid- and laugenfestes Gehäuse, mit Clip
- visual indicating via 3 LED's
- measuring point illumination
- incl. 2x 1.5 V battery (type AAA, art.-no. 60 9283)
  with operation manual

		IP 44	IEC / EN CE

ARTN⁰		mm length x ø	KG
64 0372	DOT 3 / DOT 4 / DOT 5.1	152 x 23.5	0.040

★★★★★
ⅤSILVER-LINE® Car Tester, Voltage Tester for 3-48 V • IP40

- with integrated piercing probe
- perfect instrument for fault diagnostics in cars, trucks, etc.

- rugged ABS plastic housing, dust proof
- LED's with indicating 12 V / 24 V / 48 V
- power supply via test object
- protection class III, IEC/EN 61010-1
- with operation manual

	IP 40	IEC / EN	CE	TC	TÜV G$

ARTN⁰	AC / DC	mm	KG
64 0366	3 - 48 V	145 x 25 x 16	0.250

V DIGI PLUS-LINE ® **Electr. Digital Thermometer** **NEW**

- **for quick and exact measurement of temperatures**
- **with external temperature probe, type K (art. no. 64 9303)**

- rugged, ABS-plastic housing, with insulating peel
- large LCD display, 3 ½ -digit, with clear reading, with battery indicator
- On/Off button, data hold button, measuring in °C and °F, max. display 1999
- 2 inputs for temperature probes type K, for temperature and relative measurements
- max. voltage input DC 60V AC 24V, response time approx. 2.5 s
- storage temperature 0°C ~ +50°C, rel. humidity <80% RH
- incl. 1 x 9 V battery (type 6LR61, art.-no. 60 9281)
  with operation manual

Option
- spare part temperature probe (art. no. 64 9303)

with stand

probe

bumper case

A^{RT} N⁰	capacity of device °C	°C at -50° ~ 200°C	-50°~ 200°/200 ~ 1000°/1000° ~ 1300°C	mm	KG	A^{RT}N⁰ CC
64 0302	-50 ~ +400 option: -50 ~ +1260	0.1	± 0.1%+1°C / ± 0.3%+2°C / ± 0.5%+2°C	147 x 71 x 34	0.200	64 9402

Temperature Probe, Type K

A^{RT}N⁰ **64 9301**

immersion probe

A^{RT}N⁰ **64 9303**

A^{RT}N⁰ **64 9300**

A^{RT}N⁰ **64 9304**

A^{RT}N⁰ **64 9302**

surface probe

A^{RT}N⁰ **64 9305**

A^{RT}N⁰ **64 9306**

A^{RT}N⁰		L mm	ø mm	KG
64 9300	~ +700 °C	~ 84	3	0.027
64 9302	~ +400 °C	~ 150	15	0.095

A^{RT}N⁰		L mm	ø mm	KG
64 9301	~ +700 °C	~ 150	4	0.090
64 9303	~ +400 °C	~ 950	2	0.006
64 9304	~ +400 °C	~ 15	14.92	0.270
64 9305	~ +600 °C	~ 150	3.5	0.270
64 9306	~ +800 °C	~ 170	5	0.270

Infrared Laser Thermometers

DIGI PLUS-LINE® Infrared Laser Thermometer

ART N⁰ 64 0313   **ART N⁰ 64 0312**

- pistol-sized, with shiftable laser pointer
- for contactless and quick measuring of temperatures
- the devices fulfill the strict requirements of the european national guidelines

- rugged ABS plastic housing
- large LCD display with clear reading, with backlight
- temperature reading in °C / °F, laserpoint can be switched on/off
- autom. power off after 15 sec., response time <1 sec., laser protection class II
- data hold function for short memory time of the measuring value
- storage temperature -10° ~ 60°C, operation temperature 0° ~ +50°C
- relative humidity 10-90% RH, emissivity 0.95 (pre-set)
- detector "thermopile", overload display "1" at temperature >+380° or < -20°C
- art.-no. 64 0312 incl. 9 V battery (type 6LR61, art.-no.: 60 9281)
  art.-no. 64 0313 incl. 2x 1.5 V battery (type AAA, art.-no. 60 9283),
  with interface for K-type temperature probe (option, available on request)
  for measurements from -60° ~ +1260°
- with readiness bag and operation manual
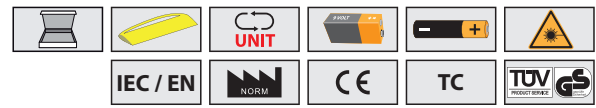
ART N⁰	°C	°C	max. °C	°C	measuring optics	mm	KG	ART N⁰ CC
64 0312	-20 ~ +380	0.1	± 2.0	± 2.0	8:1	175 x 90 x 40	0.150	64 9401
64 0313	-60 ~ +500 option: -60 ~ +1260	0.1	± 2.0	± 2.0	12:1	146 x 133 x 49	0.222	64 9401

DIGI PLUS-LINE® Infrared Laser Thermometer

- pistol-sized, with K-type temperature probe and shiftable laser pointer
- for quick measuring of temperatures, by temperature probe or contactless
- the devices fulfill the strict requirements of the european national guidelines

- rugged ABS plastic housing
- large LCD display with clear reading, with backlight
- temperature reading in °C / °F, with shiftable laser pointer
- autom. power off after ~ 20 sec., response time < 0.5 sec., laser protection class II
- data hold function for short memory time of the measuring value, Min/Max-function
- average value selectable, with battery indicator
- storage temperature -10° ~ +60°C, operation temperature 0° ~ +50°C
- relative humidity 10 - 90% RH, emissivity 0.95 (fixed)
- incl. 1x 9 V battery (type 6LR61, art.-no.: 60 9281)
- with readiness bag and operation manual

ART N⁰ 64 0317   **NEW**

ART N⁰ 64 0314
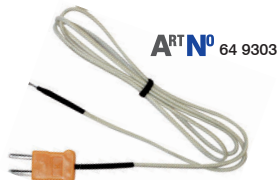
ART N⁰ 64 9303

ART N⁰	°C	°C	max. °C	°C	measuring optics	mm	KG	ART N⁰ spare probe	KG
★★★☆☆ 64 0314	-30 ~ +550	0.1	±4.0 / ±4%	± 1.0	12:1	170 x 135 x 50	0.120	64 9303	0.030
★★★★☆ 64 0317	-50 ~ +720	0.1	±2.0 / ±2%	± 1.0	16:1	170 x 135 x 50	0.195	-	-

VDIGI PLUS-LINE® Electr. Digital Moisture Meter NEW

- for measurements of wood moisture, paper, building materials, etc.
- with 4 contact pins

- rugged, polyamide housing material
- large LCD display with clear reading
- On/Off button, data hold button
- autom. power off, battery indicator
- setting the upper limit of the moisture ratio
- storage temperature -10°C ~ +60°C, operation temperature 0°C ~ +40°C, rel. humidity <70% RH
- incl. 1x 9 V battery (type 6LR61, art.-no. 60 9281) with operation manual

ART N⁰	wood	👁	max.	mm	KG
64 1006	5% - 40%	1.0 %	± 1.0% Rh+0.5	129 x 63 x 32	0.115

VDIGI PLUS-LINE® Electr. Digital Moisture Meter NEW

- for measurements of wood moisture, paper, concrete, building materials, etc.
- measurement via back-installed sensor plate
- with selection of 10 different wood densities

- rugged, polyamide housing material
- large LCD display with clear reading
- On/Off button, mode button for settings, button for wood density selection
- autom. temperature compensation, with self-calibration function
- autom. power off, battery indicator
- setting the upper limit of the moisture ratio
- storage temperature -10°C ~ +60°C, operation temperature 0°C ~ +40°C, rel. humidity <70% RH
- incl. 3x 1.5 V battery (type AAA, art.-no. 60 9283) with operation manual

sensor (backside)

ART N⁰	wood	👁	max.	mm	KG
64 1007	4% - 80%	0.5 %	± 1.0% Rh+0.5	132 x 67 x 25	0.125

VDIGI PLUS-LINE® Electr. Digital Moisture Meter NEW

- for measurements of wood moisture, paper, carton, building material, grain, etc.
- with insulating peel
- measurement via 2 external contact pins

- rugged, polyamide housing material
- large LCD display with clear reading
- On/Off button, data hold button, button for wood density selection
- button for selection of moisture measurement /temperature measurement in °C or °F
- battery indicator, with backlight
- setting the upper limit of moisture ratio, rel. humidity <70% RH
- storage temperature -10°C ~ +60°C, operation temperature -10°C ~ +40°C
- incl. 4x 1.5 V battery (type AA, art.-no. 60 9282) with operation manual

ART N⁰	wood	👁	max.	temperature	temperature	max.	housing	KG
64 1008	2% - 70%	0.5%	± 1.0% Rh+0.5	-10°C - 60°C	1°C / 2°F	± 2°C / ± 4°F	174 x 38 x 73	0.406

9e

★★★★★ DIGI PLUS-LINE® Electr. Digital Sound Level Meter **NEW**

- **for sound and noise measurements acc. to the international directives whether in industry, craft, or housekeeping**
- **useful device for air-conditioning, aviation industry, environmental technology**
- **with self-calibration**

- rugged, polyamide housing material
- On/Off button, data memory for 4700 measurements, slow-/fast-button, clock- and calendar indicator
- with tripod mounting screw on the rear side, autom. power off
- large LCD display, 4-digit, with clear reading, battery indicator
- frequency range 31.5 Hz ~ 8.5 KHz, A/C frequency weighting select switch, AC/DC out put
- bar graph indicator with 50 dB scale, 1 dB step, with pre-select of min/max.-value
- microphone ½ inch, electret condenser-microphone, with detachable foam ball for outside measuring
- storage temperature -20°C ~ +70°C, operation temperature 0°C ~ +45°C, DC 6 V input port, AC analog output port
- incl. 4x 1.5 V battery (type AA, art.-no. 60 9282), USB data cable, software, with operation manual

foam ball removable

bottom

Option
- charging by power supply possible, only when using rechargeable batteries!

					IEC / EN	ANSI	CE	CC

ART N⁰	level range dBA / dBC	dB	max. dB	linearity range dB	mm	KG	CC
64 1106	40-80 / 50-100 / 60-110 / 80-130	0.1	± 1.5	50	220 x 80 x 35	0.148	inclusive

★★★★☆ DIGI PLUS-LINE® Electr. Digital Luxmeter **NEW**

- **utilising a silicon photo diode with filter behind a large diffusor that is connected to the device by cable ensures that the light intensity can be read in all positions without restrictions**

- rugged, polyamide housing material
- large LCD display, 3 ½ digit, with clear reading
- On/Off switch, data hold switch, 3 step measurement setting function
- max. reading value 1999, test rate 0.5 s, temperature characteristic ±0,1%/°C
- storage temperature -20°C ~ +70°C, operation temperature 0°C ~ +45°C
- incl. 1x 9 V battery (type 6LR61, art.-no. 60 9281), carrying bag, with operation manual

				DIN VDE	CE	TC

ART N⁰	LUX	LUX	max. <10,000 LUX	max. >10,000 LUX		mm	KG	ART N⁰ CC
64 0342	1 - 100,000	1	± 4%	± 5% ± 10 Digits	± 2%	130 x 72 x 30	0.135	64 94340

★★★★☆ DIGI PLUS-LINE® Electr. Digital Anemometer

ART N⁰ 64 1203 + 64 1204

- **for many outdoor applications and for several industry purposes**
- **for to measure the wind speed in different units**
- **ideal device for heating- and ventilation technician, shipping industry, etc.**
- **with Beaufortscale display**

NEW

- rugged, polyamide housing material
- with tripod mounting screw on the rear side
- large LCD display with clear reading and backlight
- wind speed unit selection: m/s; Ft/min; Knots; Km/h; Mph
- with max.-value and data hold button, average and current speed measuring, temperature reading in °C and °F, switchable
- storage temperature -20°C ~ +70°C, operation temperature -10°C ~ +45°C
- incl. 1x 9 V battery (type 6LR61, art.-no. 60 9281), with operation manual

ART N⁰ 64 1205

Art. No. **64 1205** without data output
Art. No. **64 1203** with USB data output, with external impeller, recording- and reset function, data cable and software
Art. No. **64 1204** without data output, with external impeller

		UNIT				NORM	CE	TC

ART N⁰	wind speed m/s	wing volume m³/min.	speed m/s	temperature °C	max. wing speed	max. temperature °C	mm	KG
64 1203	0.3 ~ 45	0 ~ 999900	0.1	0.2°	± 0.1 Digt	± 2°	160 x 62 x 35	0.265
64 1204	0.3 ~ 45	0 ~ 999900	0.1	0.2°	± 0.1 Digt	± 2°	160 x 62 x 35	0.265
64 1205	0.3 ~ 30	0 ~ 999900	0.1	0.2°	± 0.1 Digt	± 2°	165 x 85 x 38	0.200

9e

⭐⭐⭐⭐⭐ DIGI PLUS-LINE ® **Electr. Digital Surface Roughness Tester**

• **portable roughness tester for measurements of Rz, Ra, Rq, Rt,**

• rugged housing in an aluminium frame, Ra, Rz, Rq, Rt roughness parameter in one device
• large OLED display, with backlight shiftable, with "low-battery" indicator
• On/Off push button, autom. power off after 3 min., with acoustical signal (start-test-ready)
• measuring range selectable in μm / μinch, parameter Ra (ISO and Rz DIN)
• min. tracer tip arc radius 10 μm±1 μm, angle 90°+5°/-10°
• variation of indication <12%, error indication ±15%
• touch needle statistic force measurement: 0,016 N, force measurement rate: 800 N/m
• operation temperature -20°C ~ +40°C, rel. humidity < 90%
• tracing length 6 mm, tracing speed 1.0 mm/sec., sensor guide head pressure 0.5 N
• integrated stylus protection sleeve for detector, with easy to use calibration function
• incl. roughness calibration test plate Ra, accuracy acc. ISO class 3
• with 3.7 V Li-Ion rechargeable battery, incl. charger 9 V AC
• incl. sturdy carrying case and operation manual
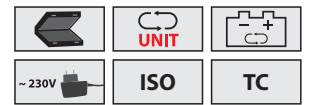
Art N⁰	👁 µm / µinch	Ra µm	Rz µm	tracing length mm	mm	KG
65 7111	0.01 / 1	0.05 - 10	0.1 - 50	6	350 x 200 x 75	0.200

⭐⭐⭐⭐⭐ BLUE-LINE ® **Surface Finish Specimen „RUGOTEST"**

Art N⁰ 65 1001

• **acc. to the norms NF E 05-501, ISO/R 468 and ISO 2632**
• **for testing surface roughness by sight and touch method (with finger-tip)**
• **available for all standard machining methods**

• wear-resistant and made of stainless steel
• delivery in a handy pouch, with description
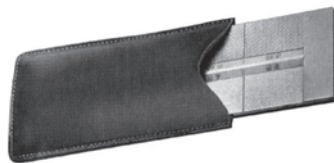
Art N⁰ 65 1101 - 65 1107

Art N⁰	machining method	quantity of plates	comparaison range Ra µm	ISO - class	mm	KG
65 1001	general (standard)	27	0.05 - 12.5	N2 - N10	120 x 90	0.150
65 1002	sand	6	0.8 - 25.0	N6 - N11	120 x 90	0.125
65 1003	shot / grit (coarse + fine)	18	0.0125 - 25.0	N0 - N11	120 x 90	0.125
65 1101	planing	6	0.8 - 25.0	N6 - N11	110 x 50	0.125
65 1102	turning	6	0.4 - 12.5	N5 - N10	110 x 50	0.100
65 1103	face milling	6	0.4 - 12.5	N5 - N10	110 x 50	0.120
65 1104	suface grinding	8	0.025 - 3.2	N1 - N8	130 x 50	0.125
65 1105	cylindrical grinding	8	0.025 - 3.2	N1 - N8	130 x 50	0.110
65 1107	spark erosion	6	0.4 - 12.5	N5 - N10	110 x 50	0.105

⭐⭐⭐⭐⭐ V DIGI PLUS-LINE® Electr. Digital Surface Roughness Tester **NEW**

- **high performance device, for professional demand**
- **for measurement of roughness parameters**
  Rz, Ra, Rq, Ry, Rt, Rv, R3z, R3y, RzJIS, Rsk, Rku, Rsm, Rmr
- **with USB 2.0 data output**

- rugged ABS plastic housing, in ergonomic design
- large LCD display with clear reading and with backlight
- comprehensive information and graphic representations
- diamond tracer tip, 90°, radius 5 μm, contact power 4mN (0.4gf)
- standards acc. to ISO, DIN, ANSI, JIS
- digital filter RC, PCRC, Gauss, D-T13565, data memory 2 MB + 2 GB
- with built-in and rechargeable Li-Ion battery, charger 100-240 V / 50/60 Hz
- up to 10 hrs. permanent use, with calendar and RTC
- On/Off button, autom. power off, battery indicator
- selectable languages: english, german, chinese
- reliable software for the electrical motor drive
- connection to PC or printer, incl. interface cable
- incl. software, ground plate, calibration test block, standard tracer (art.-no. 65 7210)
  and operation manual, with carrying case

Option
- bluetooth printer

extensive information and graphic representations

| IEC / EN | DIN ISO | JIS K | CE | TC |
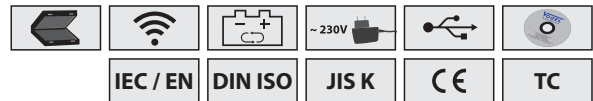
ART N⁰	Ra / Rq µm	Rq/Rt/Rp/Rv/R3z/R3y/ RzJIS/Rsk/Rku/Rsm/Rmr µm	max. %	%	cut-off length mm	mm	KG
65 7112	Ra 0.005-16 / 0.02 - 160	± 0.6 %	< ±10	< 6	0.25 / 0.8 / 2.5	140 x 55 x 47	0.400

Accessories for Art. No. 65 7112

- **Art. No. 65 7210** tracer, straight (standard)
- **Art. No. 65 7211** tracer, angled
- **Art. No. 65 7212** tracer, for ø 3 mm bore depth
- **Art. No. 65 7213** tracer, for ø 10 mm bore depth
- **Art. No. 65 7214** Ra test block
- **Art. No. 65 7218** stand
- **Art. No. 65 7219** PC software for wireless data transfer
- **Art. No. 65 7220** bluetooth printer

ART N⁰ 65 7210

ART N⁰ 65 7211

ART N⁰ 65 7212

ART N⁰ 65 7213

ART N⁰ 65 7220

ART N⁰ 65 7218
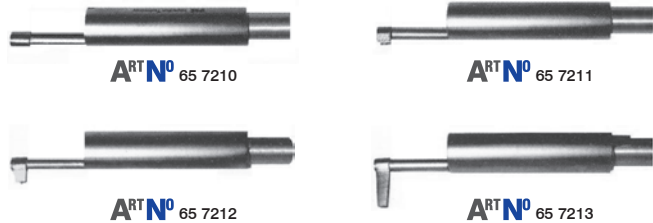
Example for a wireless transmission

⭐⭐⭐⭐☆

V BLUE-LINE® **Hand-Held Refractometer**

- **refractometers are optical precision instruments for measuring the optimal concentration of liquids**

- rugged stainless stell housing with rubber handle
- with adjusting screw, folding cover, okular with rubber eye cup, quality optic
- delivery in a case, with accessories, operation manual

ART N⁰ 65 3200

scale reading

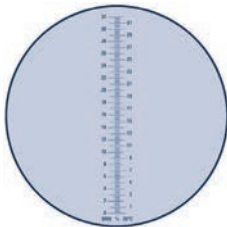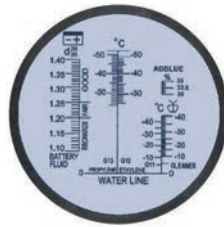ART N⁰ 65 3200   ART N⁰ 65 3210   ART N⁰ 65 3211

Further instruments available on request

NORM

ART N⁰	application range	⊢mm⊣	max.	→mm←	KG
65 3200	lubricants, coolant liquids, fruit, juices, wines, etc.	0 - 32% Brix	± 0.20%	170 x ø-29	0.240
65 3210	automotive industry (standrad)	E: -40°C ~ 0°C P: -50°C ~ 0°C B: 1100 ~ 1400sg	± 5°C ± 5°C ± 0.01 sg	153 x ø-29	0.230
65 3211	Automotive industry (universal with Adblue) Adblue concentration, coolant liquids, antifreeze, detergents and battery acidity	Adblue: 30 - 35% E: -60°C - 0°C P: -50°C - 0°C B: 1.10 - 1.40 SG	5°C 5°C 0.01 SG	170 x ø 29	0.260

Explore our website!

On our website you will find many features and informations,
which make cooperation with us very well. For more dealer information,
ask for your personal access code to our login area!

Our **V made®** -team is happy to help.
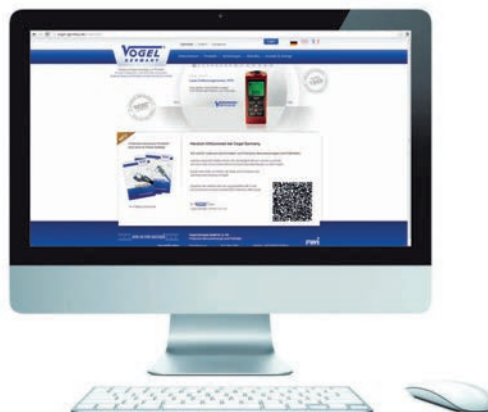
Any questions?
We are pleased to advise!

⭐⭐⭐⭐⭐ SILVER-LINE® Webster Hardness Tester

- **3 pliers for different application ranges are available**
- **a round test anvil allows tests of different specimen forms**

- portable instrument, one-hand-use, provides testing at any angle
- testable material thicknesses of specimen between 0.6 mm and 8 mm
- adequate Rockwell values can be determine on provided diagram
- values can be switched into other hardness data by conversion table
- incl. standard test block, spare indentor, screwdriver, calibration wrench, diagram
- with operation manual, in carrying case

application range at type B, art.-no. 65 4274
- aluminium, aluminium alloy and other materials in the range of Rockwell 25~110 HRE

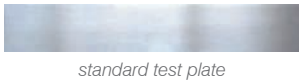**application range at type B 75, art.-no. 65 4276**
- brass, hard aluminium alloy and other steel qualities in the range of Rockwell 63~105 HRF

application range at type BB 75, art.-no. 65 4278
- copper alloy and annealed brass in the range of Rockwell 18~100 HRE
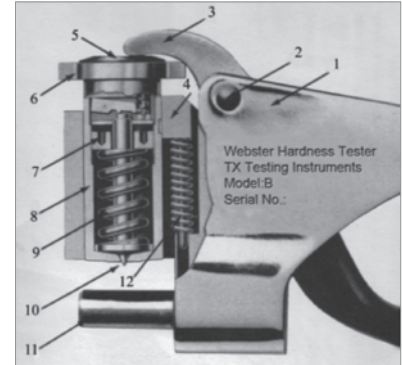
Spare parts
- indentor (art.-no.: 65 9270)
- standard test block (art.-no.: 65 9275)

Construction of a Webster Hardness Tester

1. frame	7. adjusting
2. rotary screw	8. penetration cylinder
3. handle	9. load spring
4. reset button	10. penetration tip
5. adjustment	11. anvil
6. probe	12. return spring

standard test plate

DIN EN	ASTM	TC

ART N⁰	max.	hardness range		workpiece thickness mm	mm case	KG
		type	hardness range			
65 4274	± 0.5 HW	B	25-110 HRE / 58-131 HV	0.8 - 6.0	330 x 255 x 150	0.500
65 4276	± 0.5 HW	B75	63-105 HRF	0.8 - 6.0	330 x 255 x 150	0.500
65 4278	± 0.5 HW	BB75	18-100 HRE	0.8 - 6.0	330 x 255 x 150	0.500

⭐⭐⭐⭐☆ DIGI PLUS-LINE® Universal Digital Rebound Hardness Tester

- **with integrated impact device type „D", portable device without cable connection**
- **measurement is based on the principle of Leeb**

- hand-held device, rugged, polyamide housing material, with self-calibration function
- LCD display with clear reading and backlight, digit height 9 mm
- autom. power off, memory with 99 data
- suitable for testing hardness of almost all Ferrous (Fe) and Non-Ferrous (NFe) materials
- direct display of hardness scales: HL, HRC, HRB, HB, HV and HS
- statistics function: average / min. / max. / value
- provides testing at any angle, even upside down
- min. workpiece weight 2~5 kg on a solid ground, at 0.05~2 kg with couplant paste
- for indentation depth see techn. data of the impact devices on page 309
- min. radius workpiece (concave/convex) Rmin. = 50 mm, with support ring Rmin. = 10 mm
- min. surface roughness of workpiece 1.6 μm (Ra)
- storage temperature -20°C ~ 70°C, operation temperature -10°C ~ 45°C
- incl. cleaning brush, test block with HLD value and with calibration certificate
- incl. 1x 9 V battery (type 6LR61, art.-no.: 60 9281),
  carrying case and operation manual

DIN EN	ASTM	CE	CC

ART N⁰		max. (HL=800 / ± 0.2 HRC)	mm	KG	CC
65 1609	200-960 HL / 19-68 HRC 13-101.7 HRB / 20-655 HB 80-940 HV / 32-99.5 HS	± 0.6 %	100 x 60 x 33	0.150	inclusive

⭐⭐⭐⭐⭐
VOGEL DIGI PLUS-LINE® Universal Digital Rebound Hardness Tester

- **with external impact device type „D" (standard), with RS232/USB**
- **portable device for quick and location-independent hardness tests based on the principle of Leeb**
- **large LCD display with clear reading, multifunction display, art.-no. 65 1606 with dimmable backlight**

- rugged, anodized aluminium frame (art.-no. 65 1606), polyamide housing material (art.-no. 65 1607)
- display functions: hardness scales, hardness value, date, testing time, battery indication, impact direction, average value, type of impact device, memory, with keypad
- incl. testblock type „D" and impact device type „D", more impact devices as accessory available
- suitable for testing hardness of almost all Ferrous (Fe) and Non-Ferrous (NFe) materials
- provides testing at any angle, even upside down
- autom. and manual power off, memory capacity for 600 groups (art.-no. 65 1606) or for 500 groups (art.-no. 65 1607)
- adjusting limit function, autom. alarm function when exceeding the limit value
- min. workpiece weight 2~5 kg on solid support or 0.05~2 kg with couplant, surface roughness of specimen Ra 10
- min. thickness of workpiece 3 mm with couplant paste, (with impact device G = 10 mm)
- direct display of hardness scale HL, with autom. conversion in HRB, HRC, HV, HB, HS and tensile strength
- min. radius workpiece (concave/convex) Rmin=30 mm (<30 mm with support ring)
- operation temperature -10° ~ +40°C, humidity 20% ~ 90% RH
- incl. 2x 1.5 V battery (type AA, art.-no.: 60 9282), cleaning brush, screw driver, calibration certificate for the test block, small support ring
- incl. software and data cable RS232 / USB, hand strap, sturdy carrying case, operation manual

art.-no. 65 1607 additional functions:
- with integrated thermal printer, for direct printing of all values and histogram
- internal memory for 500 groups, rugged polyamide housing material, anti-slip rubber covered
- incl. software, data cable USB/Mini-USB, 3.7 V Li-ion rechargeable accu and charger 100 V ~ 240 V / AC

ART N⁰ 65 1606

ART N⁰ 65 1607

ART N⁰ 65 1606	UNIT		RS232 C		DIN ISO	ASTM	BS	CE	TC

ART N⁰ 65 1607	UNIT		~230V	USB		DIN ISO	ASTM	BS	CE	TC

ART N⁰	(HLD = 800) max.	max. hardness of workpiece HLD	workpiece radius (concave/convex) mm	mm	KG
65 1606	± 1.0%	960	Rmin. = 30/with support ring Rmin. = 10	123 x 67 x 30	0.350
65 1607	± 0.5%	960	Rmin. = 30/with support ring Rmin. = 10	210 x 80 x 35	0.465

Further information please find on our website. Explore more!

**Any questions? We are pleased to advise!**

Electr. Digital Shore Hardness Tester „DIGITAL-DUROMETER"

DIGI PLUS-LINE

- with integrated probe, with data output RS232C
- portable device with LCD reading, for to measure the penetration hardness of:
- Shore „A": rubber, elastomer, neoprene rubber, silicon, vinyl, thermo-plastic, leather, felt and similar materials
- Shore „D": plastic, formica, plexiglass, epoxies and similar materials

- rugged ABS-plastic housing, with soft keypad
- for one-hand-use or can be mounted onto a stand
- LCD display with clear reading, digit height 8 mm
- with distance plate for fast calibration
- On/Off button and autom. power off function
- measurement deviation <1% of max. value, resolution 0.1
- possible characteristic value displays: shore grade, average, max. value
- operation temperature 0°C ~ +40°C, humidity 20% ~ 80% RH
- incl. 4x 1.5 V battery (type AAA, art.-no.: 60 9283), with battery indicator
- incl. hand strap, sturdy carrying case, with operation manual

Options
- art.-no. 65 9880 RS232C Software with data cable
- art.-no. 65 9881 USB adapter
- art.-no. 65 9210 stand for „Durometer"

Shore A   Shore D

DIN ISO	ASTM	JIS K	CE	TC
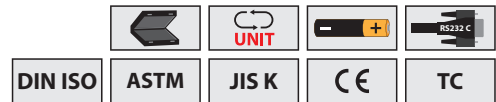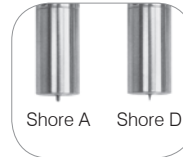
ART N⁰	Shore type		max. spring force N	👁	indentor type	mm	KG	ART N⁰ CC
65 0210	A	0 - 100 HA	8.065	0.1	blunt taper, 35°	165 x 67 x 28	0.185	65 94200
65 0211	D	0 - 100 HD	44.50	0.1	sharp point, 30°	165 x 67 x 28	0.185	65 94200

Electr. Digital Shore Hardness Tester „DIGITAL-DUROMETER"

DIGI PLUS-LINE

- portable device for to measure different shore versions „A" / „D" and „C"
- Shore „A": rubber, elastomer, neoprene rubber, silicon, vinyl, thermo-plastic, leather, felt and similar materials
- Shore „D": plastic, formica, plexiglass, epoxies and similar materials
- Shore „C": different types of foams, sponge and similar materials

- rugged metal housing, front plate made of rugged polyamide material
- large LCD display, with clear reading, digit height 10 mm
- On/Off button, for one-hand-use, with data hold function
- incl. 1.5 V battery (type LR44, art.-no.: 20 20192/B), and operation manual

ART N⁰ 65 0220

Shore A   Shore D   Shore C

DIN ISO	ASTM	TC
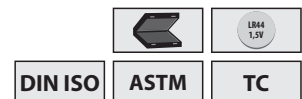
ART N⁰	Shore type		👁	needle version ° / mm	indentor type	mm	KG
65 0220	A	0 - 100 HA	0.5	35° / ø 0.79	blunt taper	85 x 57 x 27	0.250
65 0221	D	0 - 100 HD	0.5	30° / R 0.1	sharp point	85 x 57 x 27	0.250
65 0222	C	0 - 100 HC	0.5	SR 2.5	ball head	85 x 57 x 27	0.250

★★★★☆
V̌ SILVER-LINE ® **Shore Hardness Tester „Durometer" • analog model** **NEW**

ART N⁰ 65 0720

- portable device for measuring the hardness for elastomers and plastics
- Shore „A": rubber, elastomers, neoprene rubber, silicon, vinyl, soft plastics, leather, felt and similar materials
- Shore „D": plastic, formica, plexiglass, epoxies and similar materials

- rugged metal housing, compact design
- with drag pointer, with needle protection
- 2 different models, for Shore „A" and Shore „D" measurements
- measuring needle made of special steel, needle guidance is linear mounted
- incl. test block, with operation manual

Shore A   *Shore D*

with needle protection

DIN | ASTM | TC

ART N⁰	Shore type	max. spring load N	mm	👁	needle ° / mm	meas.-face mm	indentor type	→ mm ←	KG
65 0720	A	8.064	0 - 100 HA	1.0	35° / ø 0.9	ø 18	blunt taper	100 x 64 x 35	0.180
65 0721	D	44.54	0 - 100 HD	1.0	30° / R 0.1	ø 18	sharp point	100 x 64 x 35	0.180

Test Stand for Shore Hardness Testers
Suitable for series art. no. 65 0720 - 650721 and 65 0220 - 65 0222

- rugged construction
- chromed and polished column
- with hand lever
- incl. additional weight

example with hardness tester

ART N⁰	ground plate mm	column mm	working height mm	additional weight (KG)	stand (KG)
65 9210	180 x 180 x 15	ø 25 x 285	100	0.619	0.323

Test Blocks for Shore Hardness Testers
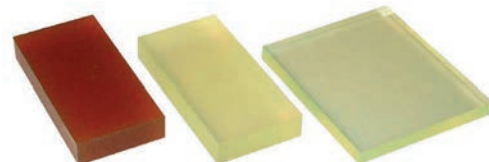
ART N⁰	article	Shore type	Shore value	→ mm ←	KG
65 0919	set of test blocks, 3-pcs.	A + D	50 / 80 / 40	-	0.150
65 0920	test block	A	50	80 x 40 x 12	0.050
65 0921	test block	A	80	80 x 40 x 12	0.050
65 0922	test block	D	40	80 x 70 x 7	0.050

Impact Devices for Special Applications

• suitable for our hardness testers

D G
impact body

D C DC

D+15C

DL

G

A^{RT}N⁰ 65 1699

A^{RT}N⁰ 65 9899

A^{RT}N⁰ 65 1680

A^{RT}N⁰ 65 1688

A^{RT}N⁰ 65 1690

A^{RT}N⁰ 65 1698/1

reference
impact body „G" suitable for impact device „G"
impact body „D" for all other impact devices

A^{RT}N⁰	suitable for version	article description	application
65 9892	type "D"	impact device "D"	standard impact device. for the majority of hardness testing assignments
65 9893	type "C"	impact device "C"	device with reduced energy (∼¼ of that for type D), thin walled or impact sensitive components
65 9894	type "DC"	impact device "DC"	extremly short impact device
65 9895	type "D+15"	impact device "D+15"	impact device with particularly slim front section and with measuring coil moved back
65 9896	type "DL"	impact device "DL"	tube front section diameter ø 4.2 mm, length 50 mm
65 9897	type "G"	impact device "G"	enlarged test tip, increased impact energy (∼9 x that of type D), with only minor damage to the surface
65 9890	type "D"	impact body "D"	for measurements in the extremly high hardness range up to 500 HRC/650 HV. Tool steel with high carbide content inclusions for measurements up to 1200 HV
65 9891	type "G"	impact body "G"	for measurements in the extremly high hardness range up to 500 HRC/650 HV. Tool steel with high carbide content inclusions for measurements up to 1200 HV
65 9893/2	type "C"	impact body "C"	for surface hardened elements, coatings, thinly coated or impact sensitive parts
65 9894/2	type "DC"	impact body "DC"	for standard measurements in holes, cylinders, inside measurements, etc.
65 9895/2	type "D+15"	impact body "D+15"	for general measurements in narrow grooves and on narrow surfaces (e.g. gears)
65 9896/2	type "DL"	impact body "G"	for measurements in inaccessible places and recesses
65 1680	all models	couplant paste, 60 ml	for better contacting, especially with thin materials
65 1688	all models	couplant paste, 100 ml	
65 1690	all models	support rings with holder, set of 11-pcs.	on curved surfaces with a radius under 30 mm, effective positioning, rings can be screwed on front of the impact device
65 1698/1	65 1606	mini-thermal printer, 230 V power supply and printer cable	-
65 1698/2	65 1698/1	printer cable	-
65 1698/3	65 1606	data cable USB to PC and RS232 C	-
65 1692/1	all models with data output	software for data process	data view/statistics
65 1699	all models	cable with Lemo connetctor	replacement cable for impact device
65 9899	all "D" versions	test block "D", with application of HLD value	for perfomance tests of hardness testers
65 9899/1	all "G" versions	test block "G", with application of HLG value	for perfomance tests of hardness testers
65 9901	65 1613 + 65 1614	paper roll	-
65 9902	65 1613 + 65 1614	printer ribbon, black	-
65 9913	65 1607 + 65 1608	paper roll	-
65 9914	65 1607 + 65 1608	printer ribbon, black	-

9f

## Impact Devices for Special Applications • Technical Data

Hardness Parameters and Materials versus range for impact devices type „D" (HLD 200~900)

Material	HLD	HRB	HRA	HRC	HB	HV	HS
steel cast steel	300 - 900	39 - 100	59 - 86	20 - 68	81 - 654	81 - 955	32 - 100
cold work tool steel	300 - 840	-	-	20 - 67	-	80 - 898	-
stainless steel	300 - 800	46 - 101	-	20 - 62	85 - 655	85 - 802	-
grey cast iron	360 - 650	-	-	-	93 - 334	-	-
nodular cast iron	400 - 660	-	-	-	131 - 387	-	-
aluminium alloys	200 - 570	24 - 34	-	-	27 - 164	-	-
brass	200 - 550	13 - 95	-	-	40 - 173	-	-
bronze	300 - 700	-	-	-	60 - 290	-	-
copper	200 - 690	-	-	-	45 - 315	-	-
the ranges are stipulated by the application limits of the relevant static procedure							

type of impact device	D / DC / DL	D+15	C	G
impact energy: weight:	11 Nmm 5.5 g / DL = 7.3 g	11 Nmm 7.8 g	3 Nmm 3.0 g	90 Nmm 20 g
test tip hardness: diameter: material:	1600 HV 3 mm	1600 HV 3 mm	1600 HV 3 mm Hartmetall	1600 HV 5 mm
impact body diameter: length: weight:	20 mm 147 / 86 mm 75 / 50 g	20 mm 162 mm 80 g	20 mm 141 mm 75 g	30 mm 254 mm 250 g
max. hardness of sample:	940 HV	940 HV	1000 HV	650 HV
preparation of surface roughness class ISO: max. roughness Rt: average roughness Ra	N7 10 μm 2 μm	N7 10 μm 2 μm	N5 2.5 μm 0.4 μm	N9 30 μm 7 μm
min. weight of sample solid and compact shape: on solid support/ground: with couplant paste:	5.0 kg 2.0 kg 0.1 kg	5.0 kg 2.0 kg 0.1 kg	1.5 kg 0.5 kg 0.02 kg	15 kg 5 kg 0.5 kg
min. thickness of sample coupled with copulant paste: min. thickness of hardened layers:	3.0 mm 0.8 mm	3.0 mm 0.8 mm	1.0 mm 0.2 mm	10.0 mm

indentation of test tip

	D / DC / DL	D+15	C	G
at 300 HV diameter: depth:	0.54 mm 24 μm	0.54 mm 24 μm	0.38 mm 12 μm	1.03 mm 53 μm
at 600 HV diameter: depth:	0.45 mm 17 μm	0.45 mm 17 μm	0.32 mm 8 μm	0.90 mm 41 μm
at 800 HV diameter: depth:	0.35 mm 10 μm	0.35 mm 10 μm	0.30 mm 7 μm	- -
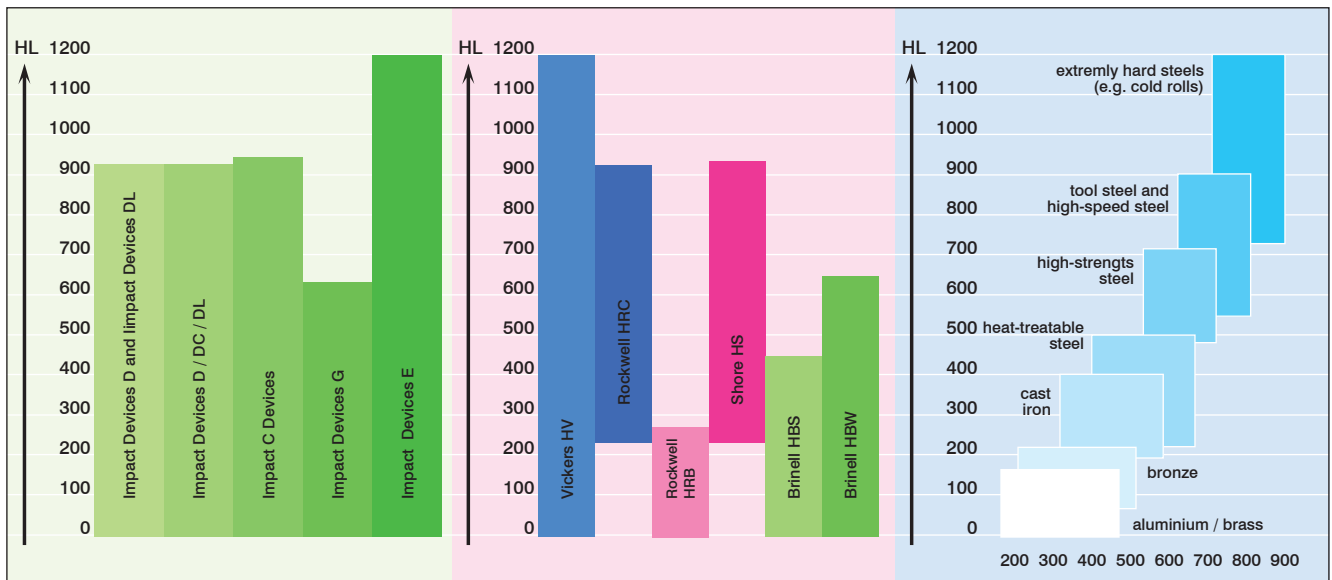
Hardness Testers

Rockwell Hardness Testers

**V SILVER-LINE®** analogous versions **V DIGI PLUS-LINE** electr. digital versions **NEW**

- with lever system for direct load application
- with deadweights or alternative with motorized testing procedure

- rugged construction, will stand up to the harshest environments
- accurate, reliable and long lasting machines, multiple approved quality
- with lever system for direct load application (art.-no. 65 0100*)
- accuracy acc. to EN ISO 6508 and ASTM E-18
- large capacity to accommodate large test specimen, with spindle protection cover
- direct reading of Rockwell scales HRC, B, A, F
- easy load force selection by robust dial knob, with 4 adjustable feet
- built-in oil-brake with variable damping by adjustable knob
- incl. each 1x hardness test block ± 25 HRC, ± 60 HRC and ± 85 HRB
- incl. diamond Rockwell indentor and Rockwell ball-indentor ø 1/16"
- incl. each 1 flat anvil ø 60 mm, flat anvil ø 150 mm and V-anvil ø 40 mm
- incl. installation- and operation manual, in a sturdy carrying case

**additional equipment at art.-no. 65 0121*, further technical data like art.-no. 65 0120***
- with motorized testing procedure
- incl. power cable
- power supply 220/240 V, 50-60 Hz, incl. charger

additional equipment at art.-no. 65 0125*, digital version, further technical data like art.-no. 65 0120*
- incl. printer and RS232 data port
- large, illuminated LCD display, with load progress bar for visual control
- digital display to avoid reading errors, encreases the efficiency of the Rockwell hardness tester
- direct reading of Rockwell scales HRA, C, D, E, G, K, L, M, P, R, V
- superior accurate readings, automatic ISO/ASTM procedure function
- power supply 220/240 V, 50-60 Hz, incl. charger

ART N0 65 0120*   ART N0 65 0121*

ART N0 65 0125*

~ 230V   DIN EN ISO   ASTM   CE   TC
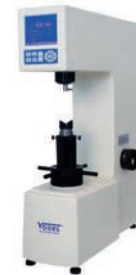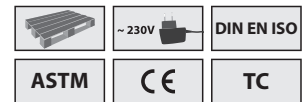
ART N0	Rockwell	total load N	max. space sizes in mm vertically / horizontally	mm	KG
65 0120*	0.5	1471	170 / 165	510 x 212 x 730	85.000
65 0121*	0.5	1471	170 / 165	510 x 212 x 730	85.000
65 0125*	0.5	1471	170 / 165	510 x 212 x 730	85.000

Accessories for Rockwell Hardness Testers

- selection of anvils for correct hardness testing

- to keep the test specimen stable and provide support, always use smallest anvile possible
- when using test blocks, a pedestal spot anvil is recommended
- always ensure that the anvil's top surface and its supporting contact surface are free of dirt, swarf, oil or corrosion

ART N0 65 9800   ART N0 65 9801

ART N0 65 9802

ART N0	article description
65 9800	large testing table/anvil, ø 150 mm
65 9801	small testing table/anvil, ø 60 mm
65 9802	prism support for cylindrical rods > ø 6 mm

V SILVER-LINE® Hardness Reference Blocks for all testing scales

- with DAkkS calibration certificate (MPA Hannover)

- manufactured acc. to the patented HIP-procedure (hot isostatic pressing)
- polished surface, means even for micro testing method
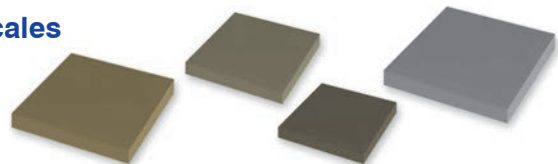
Options
- more blocks for other testing methods available, all blocks in other dimensions available
- wooden boxes available by extra charge, on request

DIN EN ISO   ASTM   CC

ART N0	testing method	range of hardness	useable test field mm²	mm	KG	CC
65 0950	HRA	40 - 83.4 HRA	3600	60 x 60 x 16	0.240	inclusive
65 0951	HRB	60 - 100 HRB	3600	60 x 60 x 16	0.240	inclusive
65 0952	HRC	20 - 65 HRC	3600	60 x 60 x 16	0.240	inclusive
65 0953	HV 0.01 - HV 30	140 - 840 HV	3600	60 x 60 x 16	0.240	inclusive

⭐⭐⭐⭐⭐ DIGI PLUS-LINE® **Electr. Digital Concrete Test Hammer**

- **for nondestructive testing of the compressive strength of concrete, building materials in finished structure or prefabricated blocks or mortar**
- **for testing ordinary buildings and bridge constructions**
- **with USB data output**
- **different models with various impact energy, in order to test a wide range of material types and sizes**

- robust design for harsh outdoor environments
- OLED display with high resolution for clear reading, dual-display with analogous and digital display
- autom. calculation of compressive strength, autom. correction of impact direction
- memory capacity for 4000 concrete structures, with battery indicator
- data process to PC via USB data cable (Bluetooth as option available)
- operation temperature -40° C ~ 60° C
- conform to EN12 5042-, ENV 206, DIN 1048, ASTM C805/D5873
- incl. 3,7 V Li-ion rechargeable battery, charger via USB port, USB data cable, software for data process and operation manual

DIN EN | ASTM | CE | TC
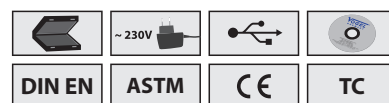
ART N⁰	N/mm²	impact energy Kgm	impact energy Nm	spring stroke mm	R max.	mm	KG
65 0800	10 - 70	0.225	2207	75	0.1	280 x 75 x 60	1.100

SILVER-LINE® **Calibration Device**

- **for calibrating concrete test hammers**

- solid steel construction
- incl. test report acc. to BS/T: 9138-1988, with declaration of value
  - of hardness value in HRC
  - of avarage
  - weight

BS | TC

ART N⁰	mm	KG
65 0810	ø 150/65 x 135/95	~ 18.820