GOSSEN METRAWATT

Measuring Instruments and Testers 2003/04

quality original made in germany

CERTIFICATE

DQS Deutsche Gesellschaft zur Zertifizierung von Managementsystemen mbH

Gossen-Metrawatt GMBH
Thomas-Mann-Strasse 16-20
D-90471 Nürnberg

GMC-Instruments Deutschland GmbH
Thomas-Mann-Strasse 16-20
D-90471 Nürnberg

R & D, Manufacture, Sales and Service of Measuring, Test and Control Instruments as well as Energy Control Systems

has implemented and maintains a

Quality Management System.

An audit, documented in a report, has verified that this quality management system fulfils the requirements of the following standard:

DIN EN ISO 9001
August 1994 edition

This certificate is valid until: 2003-02-04
Certificate Registration No.: 1262-03
Frankfurt am Main, Berlin: 2000-02-14

Dr.-Ing. K. Petrick — Dipl.-Ing. J. Parsch
MANAGING DIRECTORS

Offices: D-60433 Frankfurt am Main, August-Schanz-Straße 21; D-10787 Berlin, Budapester Straße 6

IQNet

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium für elektrische Größen
Calibration laboratory for electrical measurement quantities
Laboratoire d'étalonnage en unités électriques

Akkreditiert durch die / accredited by the / accrédité par la
Akkreditierungsstelle des DKD bei der
PHYSIKALISCH TECHNISCHE BUNDESANSTALT (PTB)

GOSSEN - METRAWATT GMBH
zertifiziert nach DIN EN ISO 9001

Kalibrierlabor

C0089
DKD-K-19701
01 - 12

Kalibrierschein
Calibration Certificate
Certificat d'étalonnage

Gegenstand / Object / Objet	Kalibrator / Multimeter
Hersteller / Manufacturer / Fabricant	GOSSEN-METRAWATT GMBH
Typ / Type / Type	METRAHIT 28C
Fabrikat/Serien-Nr. / Serial number / Numéro de série	L1.1401
Auftraggeber / Customer / Client	GOSSEN-METRAWATT GMBH
Auftragsnummer / Order No. / Numéro de commande	—
Anzahl der Seiten des Kalibrierscheines / Number of pages of the certificate / Numéro de pages	5
Datum der Kalibrierung / Date of calibration / Date d'étalonnage	20.12.2001

Deutscher Kalibrierdienst DKD-K-19701

20.12.2001

Leiter des Kalibrierlaboratoriums / Head of the calibration laboratory / Directeur du laboratoire d'étalonnage: Kabarl

Bearbeiter / Person in charge / Personne responsable: Grünendahl

GOSSEN - METRAWATT GMBH
Thomas Mann Str. 16 - 20
D-90471 Nürnberg

Info, Reklamierung, Prüfen, Abkürzung
GOSSEN - METRAWATT GMBH Servicecenter
Thomas Mann Str. 20 D-90471 Nürnberg

Leiter DKD-Kalibrierlaboratorium

Tel. 0911 / 8602 - 259410 FAX - 253
Tel. 0911 / 8602 - 372 FAX - 374

Direct Link to Measuring and Test Technology:

http://www.gmc-instruments.com

- Product descriptions for our instruments with illustrations including accessories and related software
- Comprehensive product data sheets in PDF format for printing or download
- Services including:
  Initial start-up and queries
  Updates
  Replacement parts, repairs and maintenance,
  Used measuring instruments, bargain market
  Rental instruments
  Disposal of old instruments
  Calibrating and test services
  Testing per BGV A2 (VBG4)
- Training and seminars with practical experience
- Forum: application reports and special features on subjects of interest
- Requests for information
- News and press reports
- Contact addresses inside and outside of Germany

New

DKD Calibration laboratory accredited per DIN ISO/IEC 17025, manufacturer independent

Table of Contents

METRA*Hit* Series Multimeter Overview

Measuring Functions	Measuring Ranges / Features		Standard Multimeters										
			METRA*Hit*										
			ONE	22S	22M	23S	24S	25S	26S	26M	28S	29S	30M
	See page		6	6	6	7	7	7	8	8	8	9	9
Voltage Measurement	30 mV ⎓		●										
	120 mV ⎓												●
	1.2 V ... 600 V ⎓												●
	3 V ... 600 V ~		●										
	300 mV ... 1000 V ⎓			●	●	●	●	●	●	●	●	●	
	120 mV ~												●
	300 mV ~			●	●	●	●	●	●	●	●	●	
	1.2 V ... 600 V ~												●
	3 V ... 1000 V ~			●	●	●	●	●	●	●	●	●	
	TRMS AC, crest factor: max. 5							●	●	●	●	●	
	TRMS AC + DC, crest factor: max. 5								●	●	●	●	●
Current Measurement	120 µA ⎓/~ ... 120 mA ⎓/~												●
	300 µA ⎓/~ ... 3 A ⎓/~		●			●	●	●	●	●	●	●	
	10 A ⎓/~		●				●	●	●	●	●	●	
	16 A ⎓/~					●							
	30 and 100 A ~ with WZ12B mini-clip			●	●	●	●	●	●	●	●	●	●
	30/300 A ~ with 1000:1 current transformer [1]					●	●	●	●	●	●	●	❍
	TRMS AC + DC, crest factor: max. 5								●	●	●	●	●
	TRMS AC, crest factor: max. 5							●					
Resistance Measurement	3 mΩ to 30 Ω (4-wire)		●										
	30 Ω		●										
	120 Ω ... 12 MΩ												●
	300 Ω... 30 MΩ		●	●	●	●	●	●	●	●	●	●	
	100 kΩ ... 300 MΩ at 100 V												●
	100 kΩ ... 3000 MΩ at 500 V / 1000 V												
	30 MΩ ... 3 TΩ @ 50 V/100 V/250 V/500 V												
Capacitance Measurement	3 nF			●	●	●	●	●	●	●	●	●	
	30 nF ... 30 µF			●	●	●	●	●	●	●	●	●	
	300 µF ... 10 000 µF / 30 000 µF			●	●	●	●	●	●	●	●	●	
Temp. Measurement	– 200 °C (– 100 °C) ... + 850 °C, Pt100/Pt1000			●	●	●	●	●	●	●	●	●	●
	Type J and K thermocouples										●	●	●
Frequency Measurement	300 Hz ... 3 kHz												
	300 Hz ... 100 kHz			●	●	●	●	●	●	●	●	●	●
Level Measurement	– 58 dB ... + 63 dB			●	●	●	●	●	●	●	●	●	
Power Measurement	mW ... kW, PF, VA, ..., power disturbance recording											●	
Measuring Accuracy	Intrinsic error	±...% of reading for V ⎓		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.02	0.0035
		± ... digits		1	1	1	1	1	1	1	10	10	10
Display	Digital display	± 3100 counts	●										
		± 31,000 counts		●	●	●	●	●	●	●	●	●	
		± 310.000/triple display									●	●	
		±1,200,000 counts											●
	Analog display	± 35 scale graduations	●	●	●	●	●	●	●	●			
	Automatic scaling		●	●	●	●	●	●	●	●			
Functions, Certification	Events counter, event duration			●	●	●	●	●	●	●	●	●	
	Continuity and diode testing			●	●	●	●	●	●	●	●	●	●
	Measured value memory, DATA		●	●	●	●	●	●	●	●	●	●	
	Min-Max value storage		●	●	●	●	●	●	●	●	●	●	●
	Interface with infrared transmission		– / ●	●	●	●	●	●	●	●	●	●	●
	Stopwatch			●	●	●	●	●	●	●	●		
	Frequency and pulse generator			●	●	●	●	●	●	●			
	128 kB memory				●					●		●	●
	Quartz movement			●	●	●	●	●	●	●	●	●	
	DKD calibration certificate			●	●	●	●	●	●	●	●	●	●
	CAT … at 600 V		III	IV	IV	III	IV	IV	IV	IV	IV	IV	II
Weight	Including batteries (approx.)		350 g	350 g	350 g	350 g	350 g	350 g	350 g	350 g	350 g	405 g	350 g
Dimensions	width x height x depth		84 x 195 x 35 mm										

1) See also accessories on page 17
2) See also page 12
❍ Limited display range

Overview, METRA*Hit* Series Multimeters

Insulation Tester			Milliohmmeter		Calibrator	Measuring Ranges / Features		Measuring Functions
METRA*Hit*								
16I	16T	16U	27M	27I	28C			
10	10	10	11	11	12	See page		
●	●	●				30 mV ⎓		Voltage Measurement
						120 mV ⎓		
						1.2 V ... 600 V ⎓		
●	●	●	●	●		3 V ... 600 V ~		
					●	300 mV ... 1000 V ⎓		
						120 mV ~		
●	●	●			●	300 mV ~		
						1.2 V ... 600 V ~		
●	●	●			●	3 V ... 1000 V ~		
●	●	●			●	TRMS AC, crest factor: max. 5		
●	●	●				TRMS AC + DC, crest factor: max. 5		
						120 µA ⎓/~ ... 120 mA ⎓/~		Current Measurement
					❍	300 µA ⎓/~ ... 3 A ⎓/~		
						10 A ⎓/~		
						16 A ⎓/~		
●	●	●			●	30 and 100 A ~ with WZ12B mini-clip		
					●	30/300 A ~ with 1000:1 current transformer [1]		
●	●	●				TRMS AC + DC, crest factor: max. 5		
					●	TRMS AC, crest factor: max. 5		
			●	●		3 mΩ ... 30 Ω (4-wire)		Resistance Meas.
●	●	●				30 Ω		
						120 Ω.. 12 MΩ		
●	●		●	●	●	300 Ω.. 30 MΩ		
	●					100 kΩ ... 300 MΩ at 100 V		
●						100 kΩ ... 3000 MΩ at 500 V / 1000 V		
				●		30 MΩ to 3 TΩ @ 50 V/100 V/250 V/500 V		
						3 nF		Capacitance Meas.
●	●	●				30 nF ... 30 µF		
						300 µF ... 10 000 µF / 30 000 µF		
●	●	●	●	●	●	– 200 °C (– 100 °C) ... + 850 °C, Pt100/Pt1000		Temp. Measurement
					●	Type J and K thermocouples		
			●	●		300 Hz ... 3 kHz		Frequency Meas.
●	●	●				300 Hz ... 100 kHz		
						– 58 dB ... + 63 dB		Level Measurement
						mW ... kW, PF, VA, ..., power disturbance recording		Power Measurement
0.25	0.25	0.25	0.1	0.1	0.05	Intrinsic Error	±... % of reading for V ⎓	Measuring Accuracy
1	1	1	5	5	2		± ... digits	
●	●	●	●	●	●	Digital display	± 3100 counts	Display
			●	●	●		± 31,000 counts	
					●		± 310,000/triple display	
							±1,200,000 counts	
●	●	●				Analog display	± 35 scale graduations	
●	●	●				Automatic scaling		
						Events counter, event duration		Functions, Certification
●	●	●	●	●	●	Continuity and diode testing		
●	●	●	●	●	●	Measured value memory, DATA		
●	●	●	●	●	●	Min-Max value storage		
●	●	●	●	●	●	Interface with infrared transmission		
					●	Stopwatch		
						Frequency and pulse generator		
			32 kB	32 kB	●	128 kB memory		
			●	●	●	Quartz movement		
●	●		●	●	●	DKD calibration certificate		
III	III	III	III	III	II	CAT … at 600 V		
350 g	350 g		350 g	350 g	420 g	Including batteries (approx.)		Weight
84 x 195 x 35 mm						width x height x depth		Dimensions

1) See also accessories on page 17
2) See also page 12
❍ Limited display range

Hand-Held Digital Multimeters

METRAHIT ONE

3¾ Digit Digital Multimeter with Analog Bar Graph and Temperature Measuring Instrument

Universal auto-ranging multimeter for use in all areas of electrical engineering. The MetraHit ONE provides users with all the measuring functions of a highly diverse multimeter: convincing technology with all voltage, resistance, current and temperature measuring ranges, and additional measuring functions and automatic functions.

- Resolution: +/- 3100 counts plus analog bar graph
- Patented automatic blocking sockets (ABS)
- Voltage: 30 mV - 600 V_{DC} and 3 V - 600 V_{AC}
- Current: 300 µA - 10 A_{DC} (16 A 30 sec) and 3 mA - 10 A_{AC} (16 A, 30 sec)
- Resistance: 30 Ω - 30 MΩ
- Temperature: –200.0 °C ... +850.0 °C Pt100/Pt1000
- Continuity and diode testing
- Min-Max measured value storage and DATA hold
- IR interface (METRAHit ONE plus)

Type	Data Sheet No.	Article Number	
METRAHit ONE	3-349-237-03	M204B	
METRAHit ONE with protective rubber cover	3-349-237-03	M204C	
METRAHit ONE plus	3-349-237-03	M204D	

METRA*Hit*®22S

4¾ Digit Precision Multimeter and Temperature Measuring Instrument

Universal, basic multimeter for professional training, and electrical and energy applications, no direct current measurement, no fuses: very cost effective with low maintenance costs

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- mA - A_{AC} by means of additional WZ12C current sensor with mV output
- Min-Max measured value storage, DATA hold
- Continuity and diode testing
- Frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, DKD calibration certificate
- Optional METRAwin 10 software
- 600 V CAT IV or 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 22S	3-349-026-03	M222A	
METRA*Hit* 22S with protective rubber cover	3-349-026-03	M222F	

METRA*Hit*®22M

4¾ Digit Precision Multimeter, Temperature Measuring Instrument and Data Logger

Basic multimeter and data logger for training, electrical and energy applications, no direct current measurement, no fuses: very cost effective with low maintenance costs

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- A_{AC} by means of additional WZ12C current sensor with mV output
- Min-Max measured value storage, DATA hold
- Continuity and diode testing, frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- With integrated 128 kB measurement data memory, 1 ms to 10 min sampling interval, versatile trigger functions
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate
- Optional METRAwin 10 software
- METRAHit 22M Set 1: measurement and data logging case with multimeter, WZ12B current sensor (10 mA to 100 A), BD-Pack 1 (BD232, RS 232 bus cable, METRAwin 10 software), TF220 temperature sensor and HC30 hard case

Type	Data Sheet No.	Article Number	
METRA*Hit* 22M	3-349-026-03	M222B	
METRA*Hit* 22M Set 1	3-349-026-03	M222D	

METRA*Hit*®23S

4¾ Digit Precision Multimeter and Temperature Measuring Instrument for Energy Technology

Special multimeter for energy technology (power plants, utility companies): no fuse in 16 A measuring circuit and thus suitable for 0 ... 5 A current transformer circuits

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V, 300 µA to 16 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- Min-Max measured value storage, DATA hold
- Continuity and diode testing, frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- Heavy-duty mA fuse with 1000 V nominal voltage
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate
- Extended A_{AC} by means of additional current transformer with mA output
- Optional METRAwin 10 software
- 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 23S	3-349-026-03	M223A	

METRA*Hit*®24S

4¾ Digit Precision Multimeter and Temperature Measuring Instrument for Universal Use

Low-cost universal instrument for electricians, process engineers, schools etc.

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V, 300 µA to 10 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- Min-Max measured value storage, DATA hold
- Continuity and diode testing, frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- Heavy-duty mA fuse with 1000 V nominal voltage
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate
- Extended A_{AC} by means of additional current transformer with mA output
- Optional METRAwin 10 software
- 600 V CAT IV or 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 24S	3-349-026-03	M224A	

METRA*Hit*®25S

4¾ Digit Precision Multimeter and Temperature Measuring Instrument for Universal Use

Cost-effective $TRMS_{AC}$ digital multimeter for universal use in electrical and electronics applications with distorted AC signals

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V_{AC} (TRMS), 20 Hz to 1 kHz bandwidth, 300 µA to 10 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- Min-Max measured value storage, DATA hold
- Continuity and diode testing
- Frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- Heavy current fuses with 1000 V nominal voltage
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate
- Extended A_{AC} by means of additional current transformer
- Optional METRAwin 10 software
- 600 V CAT IV or 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 25S	3-349-026-03	M225A	

METRA*Hit*®26S

4¾ Digit Precision TRMS Multimeter and Temperature Measuring Instrument for Demanding, Universal Applications

TRMS $_{AC,\ AC+DC}$ digital multimeter for demanding universal applications with broad-band (20 kHz), high-speed TRMS value converter

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V and TRMS$_{AC+DC}$, 20 Hz to 10 kHz bandwidth, 300 µA to 10 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- Min-Max measured value storage, DATA hold
- Continuity and diode testing
- Frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff
- Heavy current fuses with 1000 V nominal voltage
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate
- Extended A_{AC} by means of additional current transformer with mA output
- Optional METRAwin 10 software
- 600 V CAT IV or 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 26S	3-349-026-03	M226A	

METRA*Hit*®26M

4¾ Digit Precision TRMS Multimeter, Temperature Measuring Instrument and Data Logger for Demanding, Universal Applications

TRMS $_{AC,\ AC+DC}$ digital multimeter for demanding universal applications with broad-band (20 kHz), high-speed TRMS value converter

- Display range: +/- 30,000 counts, intrinsic error: 0.05% of reading + 3 counts
- Measuring functions: 300 mV to 1000 V, TRMS$_{AC+DC}$ and TRMS$_{AC}$, 16 Hz to 20 kHz bandwidth, 300 µA to 10 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (with optional Pt100/Pt1000 temperature sensor)
- Key operated stopwatch, 100 ms to 100 min
- Min-Max measured value storage, DATA hold
- Continuity and diode testing
- Frequency and pulse generator, 1 Hz to 1 kHz
- Automatic range selection and battery cutoff, heavy-duty fuses with 1000 V nominal voltage
- Integrated 128 kB measurement data memory, 1 ms to 10 min sampling interval, versatile trigger functions
- Patented automatic blocking sockets (ABS), patented IR data interface
- Integrated quartz movement, protective rubber cover, DKD calibration certificate, mains power pack (optional)
- Extended A_{AC} by means of additional current transformer with mA output
- Optional METRAwin 10 software

Type	Data Sheet No.	Article Number	
METRA*Hit* 26M	3-349-026-03	M226B	

METRA*Hit*®28S

5¾ Digit Multifunctional, Precision TRMS Multimeter, System Compatible

Precision multimeter for universal use in the field of energy electronics, and for high bandwidth electronics from 16 Hz to 100k Hz and TRMS$_{AC}$, TRMS$_{AC+DC}$

- Triple display with range of ±310,000 counts, minimal intrinsic error of only ±(0.02% + 10 counts for V DC)
- Measuring functions: 300 mV to 1000 V, 300 µA to 100 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (Pt100 / Pt1000, type K and J thermocouples with reference junction)
- Key operated stopwatch, 100 ms to 100 min
- Patented automatic blocking sockets (ABS)
- Patented IR data interface
- Continuity and diode testing
- Min-Max measured value storage, DATA hold
- With cable set, protective rubber cover and DKD calibration certificate, mains power pack (optional)
- Optional METRAwin 10 software
- 600 V CAT IV or 1000 V CAT III per IEC 61010-1

Type	Data Sheet No.	Article Number	
METRA*Hit* 28S	3-348-866-03	M228A	

METRA*Hit*®29S

5¾ Digit Precision TRMS Multimeter, Power Meter and Power Disturbance Measuring Instrument with Data Logger

Precision multimeter, power multimeter and power disturbance measuring instrument with integrated memory for universal use in the field of energy electronics, and for high bandwidth electronics from 16 Hz to 100 kHz and $TRMS_{AC}$, $TRMS_{AC+DC}$

- Triple display with range of ±310,000 counts, minimal intrinsic error of only ± (0.02% + 10 counts for V_{DC})
- Measuring functions: 300 mV to 1000 V, 300 µA to 100 A, 300 Ω to 30 MΩ, 3 nF to 30 mF, dBV, Hz, °C/°F (Pt100 / Pt1000, type K and J thermocouples with reference junction)
- W, VA, VAr, Wh, VAh, peak load profile, power disturbance measurement, power disturbance recording
- Key operated stopwatch, 100 ms to 100 min
- Patented automatic blocking sockets (ABS), patented IR data interface
- Continuity and diode testing, integrated 128 kB measured value memory, 0.5 ms to 10 min. sampling interval
- Versatile trigger functions, Min-Max measured value storage, DATA hold
- With cable set, protective rubber cover and DKD calibration certificate, mains power pack (optional)
- METRAwin 10 software option, 600 V CAT IV or 1000 V CAT III per IEC 61010-1
- METRAHit 29S Set 1: universal measurement and data logging case with multimeter, WZ12D current sensor (30 mA to 150 A), BD-Pack 1 (BD232, RS 232 bus cable, METRAwin 10 software), TF220 temperature sensor and HC30 hard case
- For power measurement either directly in the current path or by means of current transformer with current output

Type	Data Sheet No.	Article Number	
METRA*Hit* 29S	3-348-866-03	M229A	
METRA*Hit* 29S Set 1	–	M229E	
KS29 safety cable set	–	Z229A	

METRA*Hit*®30M

6½ Digit Precision TRMS Multimeter, Temperature Measuring Instrument and Data Logger

Precision multimeter, temperature measuring instrument and data logger for demanding universal use in the laboratory and for service applications

- Display range: +/-1,200,000 counts, intrinsic error: +/- (35 ppm of reading + 70 ppm)
- Measuring functions: 120 mV to 600 V DC and TRMSAC+DC (bandwidth: 16 Hz to 100 kHz), 120 µA to 120 mA, 120 Ω to 12 MΩ, 1 Hz to 100 kHz, °C/°F (Pt100, Pt1000, J, K)
- Resistance and temperature measurement with Kelvin terminal
- Min-Max measured value storage
- Automatic range selection and battery cutoff
- PTC fuse, max. 250 V
- Integrated 128 kB measurement data memory, 0.1 s to 10 min sampling interval
- Patented IR data interface
- Cable set, protective rubber cover, DKD calibration certificate, mains power pack (optional)
- Optional METRAwin 10 software

Type	Data Sheet No.	Article Number	
METRA*Hit* 30M	3-348-979-03	M230B	

Hand-Held Digital Multimeters with Insulation Tester

METRA*Hit*® 16I

Digital-Analog TRMS Multimeter with Insulation Measurement for Service Technicians

This inexpensive universal multimeter is designed for use by electrical service technicians. In addition to a multimeter, it includes a 500 V / 1000 V insulation tester in accordance with VDE 0413, and a precision temperature indicator. The optional WZ12B clip-on meter allows for easy, safe measurements of up to 30 A / 100 A.

- Rugged digital multimeter, ±3100 counts, with analog display
- Patented automatic blocking sockets (ABS), IR interface
- V_{DC}, $V_{AC/DC}$, V_{AC}, Ω, °C (with optional Pt100/Pt1000 temperature sensor)
- Continuity and diode testing
- Min-Max measured value storage, DATA hold
- Minimal intrinsic error: ± (0.25% + 1 digit for V_{DC})
- With cable set, protective rubber cover and DKD calibration certificate
- METRAHit 16I-Set 1: Measurement case with insulation measuring instrument and multimeter plus cable set, battery, GH18 protective rubber cover with carrying strap, DKD calibration certificate and TF220 temperature sensor
- METRAHit 16I-Set 2: Measurement case with insulation measuring instrument and multimeter plus cable set, battery, GH18 protective rubber cover with carrying strap, DKD calibration certificate, WZ12B clip-on current sensor and TF220 temperature sensor

Type	Data Sheet No.	Article Number	
METRA*Hit* 16I	3-348-972-03	M216B	
METRA*Hit* 16I-Set 1	3-348-972-03	M216E	
METRA*Hit* 16I-Set 2	3-348-972-03	M216F	

METRA*Hit*® 16T

Digital-Analog TRMS Multimeter with Insulation Measurement for Telecommunications Service

METRA*Hit* 16T: same as 16I but optimized with 100 V insulation measurement for telecommunications service

- Rugged digital multimeter, ±3100 counts, with analog display
- Patented automatic blocking sockets (ABS), IR interface
- V_{DC}, $V_{AC/DC}$, V_{AC}, Ω, °C (with optional Pt100/Pt1000 temperature sensor)
- Continuity and diode testing
- Min-Max measured value storage, DATA hold
- Minimal intrinsic error: ± (0.25% + 1 digit for V_{DC})
- With cable set, protective rubber cover and DKD calibration certificate

Type	Data Sheet No.	Article Number	
METRA*Hit* 16T	3-348-972-03	M216A	

METRA*Hit*® 16U

Cable Multimeter for Measurements in Symmetrical Copper Cable Networks

The METRA*Hit* 16U cable multimeter is a rugged portable measuring instrument for use in the field. It is used to perform measurements for pinpointing errors in copper cable networks. Interruption of a single core, or contact with an open-circuit core (capacitive asymmetry), can be recognized by switching polarity with the high speed logarithmic bar graph display.

- Insulation resistance measurement (100 V test voltage) and simultaneous recognition of interference voltage, as well as polarity reversal for diode testing
- Cable symmetry testing by means of rapid changeover switching
- Multifunctional multimeter (V, Ω, F, Hz)
- AC and AC+DC TRMS measurement
- Scaled current measurement from 10 mA to 100 A with accessory clip-on current sensor
- Precision temperature indication in °C and °F for Pt100 / Pt1000 sensors
- Display illumination can be activated, analog display: linear or logarithmic for insulation measurement
- Acoustic signal for:
  Continuity testing, dangerous contact voltages, exceeded overload limits
- Min-Max value storage
- IP 54 housing, protective rubber cover as standard feature
- Windows software available as accessory for processing and graphic display of measured values via RS 232 interface

Type	Data Sheet No.	Article Number	
METRA*Hit* 16U	3-349-227-03	M216U	

METRA*Hit*® 27M

Precision Milliohmmeter and 4¾ Digit Multimeter

The Metra*Hit* 27M milliohmmeter is a compact instrument for the measurement of low value contact resistances, e.g. on outer aircraft skins (lightning protection and wick test), as well as for general low value resistance measurements at switches, relays, plugs etc. Voltage, frequency and temperature measurement, as well as diode testing, can also be performed with the expanded multimeter functions.

- Milliohmmeter, Kelvin connection (4-wire measurement)
- 3.000 mΩ 300.00 mΩ with 1 A measuring current and 30.00 mΩ ... 30.00 Ω with 200 mA
- Resistance measurement from 300 Ω to 30 MΩ
- Voltage measurement from 3 to 600 V_{DC}, and 3 V to 600 V_{AC} with ±30,000 counts
- Frequency measurement from 300 Hz to 3 kHz
- DATA hold memory for up to 1200 measured values
- Continuity and diode testing
- Overload protection
- DKD calibration certificate as standard feature
- The instrument can be optionally powered with rechargeable NiMH batteries and charger.

Type	Data Sheet No.	Article Number	
METRA*Hit* 27M	3-349-206-03	M227A	

METRA*Hit*® 27I

Precision Milliohmmeter, Insulation Tester and 4¾ Digit Multimeter

The METRA*Hit* 27I multimeter is equipped with all of the functions included with the Metra*Hit* 27M, plus an additional insulation tester. This extra measuring function, with test voltages ranging from 50 to 500 V, allows for insulation resistance measurement up into the megaohm range.

- Milliohmmeter, resistance, voltage and frequency measurement, data hold memory and continuity and diode testing

Plus:

- Insulation resistance measurement
- 30 MΩ to 3 TΩ with adjustable test voltage of 50, 100, 250 or 500 V
- LCD panel with background illumination
- Mains and battery operation, furnished with 3 rechargeable NiMH batteries and charger as standard equipment

Extensive accessories and a hard case expand the Metra*Hit* 27I into a professional Avionics Set (AS) for service and repairs for aviation technology and other applications.

- HC30 hard case, Metrawin 10 software, Metrawin 90-2 software, BD232 IR / RS 232 adapter, KC4 Kelvin clip set and KC27 Kelvin probe set

Type	Data Sheet No.	Article Number	
METRA*Hit* 27I	3-349-206-03	M227B	
METRA*Hit* 27AS	3-349-206-03	M227C	
VL15 extension cable, 15 m	–	Z110I	

METRAmax 6

Resistance Measuring Instrument with Analog Display

Resistance measuring instrument with analog display for use in the plant, on service calls and for installation work

- Measuring method: current measurement
- Large variety of measuring ranges from 0.05 Ω to 1 MΩ (5 ranges)
- Ranges for rough capacitance measurement from 0 to 30000 µF
- Integrated buzzer for continuity testing
- Rugged moving-coil mechanism with spring loaded bearing jewels allows for use under adverse operating conditions
- Dimensions: 100 x 140 x 35 mm, weight: approx. 0.3 kg without battery
- Battery: 1.5 V IEC LR 6 (AA Mignon)

Type	Data Sheet No.	Article Number	
METRAmax 6	–	GTM3060000R0001	
F825 ever-ready case	–	GTY3172100P01	

METRA*Hit*®18C

Hand-Held Calibrator with Current Measuring Instrument for Process Engineering

The METRA*Hit*®18C calibrator functions as a highly accurate calibration and simulation instrument for electrical and physical quantities. As a hand-held instrument, it is suitable for precise, on-site calibration and inspection work, as well as in the test department and the laboratory.

- Universal calibration source: mA/mV...V/°C(Pt100/1000, Ni100/1000, thermocouples J, L, T, U, K, E, S, R, B, N)/30 ... 2000 Ω
- Rugged, EMC compliant design
- Automatic blocking sockets
- Procedures memory
- Easy operation
- Frequency and pulse run generator
- Ramp and staircase functions
- Modular design for expansion to calibration system
- Traceable test certificate included
- Interface and METRAwin·90 calibration software
- Transmitter simulator (sink: 0 to 24 mA), current measurement: 0 to 24 mA
- Dimensions: 84 mm x 185 mm x 35 mm, weight: 0.4 kg with batteries
- Batteries: 3 ea. 1.5 V IEC LR 6 (AA mignon)

Type	Data Sheet No.	Article Number	
METRA*Hit* 18C	3-348-828-03	GTM 2018 300 R0001	

METRA*Hit*®28C

Calibrator, Multimeter and Milliohmmeter for Process Engineering

The METRA*Hit*®28C can be used by process engineers simultaneously as a calibrator and a TRMS multimeter, for example in order to simulate sensor conditions at a transmitter input and at the same time to measure, store and display the output signal. At the same time, the METRA*Hit*®28C serves as a hardware platform for a calibration system with documentation function.

- Universal calibrator and simulator: mA/mV…V/°C (Pt100/1000, Ni100/1000), thermocouples J, L, T, U, K, E, S, R, B, N)/30… 2000 Ω
- Dual mode – simultaneous calibration and measurement (U/I)
- Measuring and encoding in absolute terms and as percentage (scaled)
- Memory for calibration procedures and results
- Frequency and pulse run generator, ramp and staircase functions
- Interface and METRAwin®90 calibration software
- Transmitter simulator (sink: 0 … 24 mA)
- DKD calibration certificate included, rugged EMC compliant design
- **Precision multimeter:** (V, A, Ω, F, Hz, °C/°F) 300,000 counts and triple display
- **Milliohmmeter:** 4-wire connection with 0.01 mΩ resolution (to 30.00 Ω)
- Dimensions: 84 mm x 185 mm x 35 mm, weight: 0.42 kg with batteries
- Batteries: 3 ea. 1.5 V IEC LR 6 (AA mignon)

Type	Data Sheet No.	Article Number	
METRA*Hit* 28C	3-349-098-03	M231A	

Technical Data

Function	Instrument ➤	METRA*Hit* 18C			METRA*Hit* 28C		
▼		Range	Resolution	Intrinsic Error	Range	Resolution	Intrinsic Error
Calibration:	Voltage =	0…150 mV/1.5/10/15 V	0.01…1 mV	±0.05%+2 digits	0 … 300 mV/3/10/15 V	0.01…1 mV	±0.05%+2 mV
	Current =	0… 24 mA	1 µA	±0.05%+2 digits	0 … 24 mA	1 µA	±0.05%+2 µA
	Resistance, 2-wire	30…2000 Ω	0.1 Ω	±0.1%+1 digits	5 … 2000 Ω	0.1 Ω	±0.05%+0.2 Ω
	Resistance, 4-wire	–	–	–	0 … 2000 Ω	0.1 Ω	±0.05%+0.2 Ω
	Thermocouples	–250…1800 °C	0.1 K	±0.4…4%	– 200 … 1800 °C	0.1 K	±(0.1% UL+0,5 K)
	Resistance thermometers	–180…850.0 °C	1 K	±0.1%+0,25 K	– 180 … 850 °C	0.1 K	±(0.1% UL+0.4/0,5 K)
	Frequency	0.01… 999.99 Hz	0.01 Hz	±0.05%	1 kHz	0.1… 8 Hz	±0.05%+3 digits
Measuring:	Voltage ≃	–	–	–	0…300 mV/600 V	1 µV (10 µV)	±0.05%+15 digits
	Current =	0… 24 mA	1 µA	±0.05%+2 digits	0…3/30/300 mA	10 nA…1 µA	±0.05%+15 digits
	Current ~	–	–	–	0…3/30/300 mA	10 nA…1 µA	±0.05%+5 digits
	Resistance, 2-wire	–	–	–	0…300 Ω/30 MΩ	1 mΩ/0.1 kΩ	±0.07%+15 digits
	Resistance, 4-wire	–	–	–	0…30 mΩ/30 Ω	10 µΩ/1 mΩ	±0.5%+5 digits
	Thermocouples	–	–	–	–200…1800 °C	0.1 K	±0.2…0.8%+3 digits
	Resistance thermometers	–	–	–	–200…850 °C	0.1 K	±0,25 K/0.5%+3 digits
	Capacitance	–	–	–	0…3 nF/30 µF	1 pF/10 nF	±1%+5 digits
	Frequency	–	–	–	0…300 Hz/30 kHz	0.01…10 Hz	±0.05%+5 digits
	Diode testing at 1 mA	–	–	–	0…3 V/15 V	0.1 mV	±0.5%+5 digits

METRAmax® 12 / 14

METRAmax®12: Digital-Analog Multimeter for Electrical Applications
METRAmax®14: Digital-Analog TRMS Multimeter for Electrical Applications

Favorably priced hand-held multimeters for professional results. Suitable for use in the fields of general electronics and electrical engineering

METRAmax 12 and 14

- ± 4000 counts with bar graph
- Voltage measurement from 400 mV…600 V ⎓/~, selectable input resistance: 10 MΩ/400 kΩ intrinsic error V ⎓: ± 0.5% of reading + 2 digits, V ~: ± 1% of reading + 5 digits
- Current measurement: 40 mA ⎓/~, 400 mA ⎓/~, 10 =/~ (12 A max. 5 min.) intrinsic error A ⎓: ± 0.8% of reading + 2 digits, A ~: ± 1% of reading + 5 digits
- Resistance measurement: 400 Ω … 40 MΩ, frequency measurement: 10 Hz … 400 kHz, capacitance measurement: 4 nF … 40 µF
- Continuity and diode testing, Min, Max and HOLD memory
- VDE GS approved, case with tilt stand and take-up reel
- Dimensions: 92 x 154 x 25 mm, weight: approx. 0.2 kg with batteries
- Batteries:
  METRAmax 12: 2 ea. 1.5 V IEC LR 6 (AA mignon)
  METRAmax 14: 9 V flat cell battery, IEC 6 LR 61 (6 F 22)

METRAmax 12 Set 1:

Electrician's measuring case with METRAmax12 automatic multimeter plus cable set, WZ12A current clip and HC20 hard case

METRAmax 14:

- TRMS measuring ($TRMS_{AC}$) even with distorted waveshapes

Type	Data Sheet No.	Article Number	
METRAmax 12	3-348-831-03	M212A	
METRAmax 12 Set 1	3-348-831-03	M212D	
METRAmax 14	3-348-831-03	M214A	
F823 ever-ready case	–	GTY3172097P01	
F829 carrying pouch	–	GTZ3301000R0003	

METRAport® 32S

Folding, Universal TRMS Multimeter with "Auto-Fuse"

Folding digital multimeter for universal use in general electrical and electronics applications, as well as for automotive service. Ideal reading angle adjustment thanks to tilt stand. When suspended from the neck strap, both hands are free for performing measurements. The instrument is switched off automatically when folded closed, and the display and the control panel are protected against damage. Automatic shutdown in the event of overcurrent minimizes maintenance costs and reduces downtime.

- Precision multimeter, resolution: 10 µV, 10 nA, 10 mΩ, TRMS V_{AC} and I_{AC} to 1 kHz
- Voltage measurement: 300 mV/3/30/300/600 V ⎓/~
- Direct current measurement via transformer or current sensor with voltage output: 300 µA/3/30/300 mA/15 A ⎓/~
- Resistance measurement: 300 Ω/3/30/300 kΩ/3/30 MΩ
- Frequency measurement: 300 Hz/3/100 kHz
- Capacitance measurement: 30/300 nF/3/30/300/3000/30000 µF
- Measured value storage and Min-Max recording, indication for overload and blown fuse
- Temperature measurement with automatic Pt sensor recognition: Pt100 or Pt1000
- Automatic and manual measuring range selection, large digital display (20 mm) with additional analog scale
- DKD certificate, 3 year guarantee
- Dimensions: 146 x 118 x 44 mm, weight: approx. 450 gr. with batteries

METRAport® 3E

Folding Analog Multimeter for Demanding Applications

Folding multimeter with analog display and 46 measuring ranges for universal use in process engineering, electronics and electrical applications, testing, R&D, service and training in accordance with EN 61010-1/DIN VDE 0411 part 1

- For measurement of voltage, current, resistance and level with mirror-backed scale, accuracy class 1.5 =
- High 10 MΩ input resistance for load-free voltage measurement
- Automatic battery cutoff when the instrument is folded closed
- Scale can be tilted with folding lid, also provides transport protection, 250 V~ overload protection in all ranges (except 10 A)
- Voltage measurement in 9 measuring ranges: V =/~: 100 mV/300 mV/1 V/3 V/10 V/30 V/100 V/300 V/1000 V
- Current measurement in 7 measuring ranges: A =/~: 10 µA/100 µA/1 mA/10 mA/100 mA/1 A/10 A
- Resistance measurement in 5 ranges: 1 Ω ... 2 kΩ/10 Ω to 20 kΩ/100 Ω to 200 kΩ/1 kΩ to 2 MΩ/10 kΩ to 20 MΩ
- Level measurement in 9 measuring ranges: -40 dB to +62 dB
- Power supply: commercially available 9 V battery, service life: 500 hours
- Standard equipment: measuring instrument and operating instructions
- Recommended accessories: NA2-9/20 mains power pack (highly isolated), FF1.6 fuse link / 250G
- Dimensions: 146 x 118 x 44 mm, weight: approx. 450 gr. with batteries
- Batteries: 2 ea. 1.5 V IEC LR 6 (AA mignon)

Type	Data Sheet No.	Article Number	
METRAport 32S	3-349-105-03	M234A	
METRAport 3E	–	GTM101300R01-G	
F822 carrying pouch	–	GTY3172095P01	

MA 1H, MA 2H

MA 1H: Analog Multimeter, Basic Model for Hobby and Work
MA 2H: Analog Multimeter for Electrical Applications, Class 2.5

MA 1H: Basic analog multimeter for training and hobby applications, compact time-tested design

- Voltage measurement: 0…0.15/0…0.5 V=, 0…1.5/5/15/50/150/500 V=/~, 0…1000 V=
- Input resistance: 20 kΩ/V=, 4 kΩ/V~
- Current measurement: 0…50 µA=, 0…0.5/5/50/500 mA/5 A=/~
- Resistance measurement: 1 Ω…1 MΩ (4 ranges)
- Level: –15…+56 dB (6 ranges)
- Dimensions: 92 x 126 x 45 mm, weight: approx. 0.25 kg without battery
- Battery: 1.5 V IEC LR 6 (AA mignon)

MA 2H: Basic analog multimeter for electrical applications, class 2.5, compact time-tested design

- Voltage measurement: 0…0.15/0…0.5 V=, 0…1.5/5/15/50/150/500 V=/~, 0…1000 V=
- Input resistance: 20 kΩ/V=, 4 kΩ/V~
- Current measurement: 0…50 µA=, 0…1.5/15/150 mA/1.5/15 A=/~
- Resistance measurement: 1 Ω…1 MΩ (4 ranges)
- Level: –15…+56 dB (6 ranges)
- Accuracy: class 2.5
- Dimensions: 92 x 126 x 45 mm, weight: approx. 0.25 kg without battery
- Battery: 1.5 V IEC LR 6 (AA Mignon)

Type	Data Sheet No.	Article Number	
MA 1H	–	GTM1020070R01	
MA 2H	–	GTM1020080R01	
F809 ever-ready case	–	GTY3172083P01	
GH185 protective rubber cover	–	GTY3171185P01	

METRAmax 2 / … 3

Analog Multimeter for Training Applications, and for Use in the Electrical Trades

**The METRAmax 2 hand-held multimeter was developed in cooperation with a renowned German supplier of training systems and fulfills all of the demands placed upon contemporary vocational training.
Thanks to exceptional overload capacity, selectable scale zero point at left or center and automatic battery cutoff, this instrument is not only well suited for training, but rather for balancing and service work as well.**

- Voltage measurement: 0…100/300 mV/1 V=, 0…3/10/30/100/300 V=/~
- Current measurement: 0…100 µA/1/10/100 mA/1/3 A=/~
- Zero point: left / center
- Accuracy: 2 =/3 ~
- Dimensions: 100 x 140 x 35 mm, weight: approx. 0.3 kg with battery
- Battery: 9 V flat cell battery, IEC 6 LR 61 (6 F 22)

The METRAmax 3 analog multimeter is an inexpensive, handy multimeter without amplifier stage with an integrated circuit breaker for current measuring circuits. Good overload protection is provided in the voltage ranges as well by means of generous dimensioning and high performance PTC thermistors.

- Voltage measurement: 30/300/600 V=/~
- Current measurement: 0.3/3/15 A=/~
- Resistance measurement: 1 Ω…500 kΩ
- Protective conductor
- Accuracy: class 2.5
- Dimensions: 100 x 140 x 35 mm, weight: approx. 0.3 kg with battery
- Battery: 1.5 V IEC LR 6 (AA Mignon)

Type	Data Sheet No.	Article Number	
METRAmax 2	–	M102A	
METRAmax 3	3-349-117-03	M103A	
F841 carrying pouch	–	Z104A	
GH19 protective rubber cover	–	Z104B	
NW10A shunt resistor	–	GTZ0156000R0001	

MAVOWATT 4

Multiple Electronic Power Meter

The MAVOWATT 4 electronic multiple power meter allows for direct measurement of DC power as well as RMS power measurement for single-phase alternating current and balanced load three-wire, three-phase current.

- Determination of reactive power
- Measurement of phase-to-phase voltage(s)
- Ideal instrument for manufacturing, service and installation
- Phase sequence indicator
- cos φ measurement

Technical Data:

Direct current	12.5 kW
Single-phase alternating current	12.5 kW (active power)
3-wire, 3-phase, balanced load	25 kW (active power) / 25 kVar • $\sqrt{3}$ (reactive power)
Nominal current	0.25 A / 1 A / 5 A / 25 A
Nominal voltage	50 / 100 / 250 / 500 V
Frequency range	10 Hz ... 400 Hz
AC/DC voltage measurement	50 / 100 / 250 / 500 V
AC/DC current measurement	0.25 A / 1 A / 5 A / 25 A
Accuracy class	1.5 (2.5 P–, U, I)
Power supply	2 ea. 9 V flat cell, IEC 6 F 22
Dimensions	110 x 181 x 62 mm
Weight	0.8 kg

Type	Data Sheet No.	Article Number	
MAVOWATT 4	3-348-801-03	GTM3033000R0001	
KS28 cable set	–	GTY3620065P0001	
F786 ever-ready case	–	GTY 3172 068 P01	

METRA*Hit*® 1 ASi

Addressing and Diagnostics Device

The METRA*Hit*® 1 is an easy to use addressing and diagnostics device for active AS-i modules, intelligent sensors and actuators in accordance with AS-i version 2.1 including the extended addressing mode.

- Read-out of slave addresses 0 … 31, A and B with clear-cut complete display without scrolling
- Read-out of slave IO and ID codes (including extended ID codes 1 and 2)
- Standard and extended addressing mode per AS-i version 2.1
- Programmable ID code 1, slave function test
- Recognition of all system devices, diagnosis functions, memory functions, PC gateway function
- Dimensions: 84 mm x 195 mm x 35 mm, weight: approx. 450 gr. with batteries
- Batteries: 4 ea. 1.5 V IEC LR 6 (AA mignon)

Standard equipment:

- **METRAHit 1ASi:** AS-i addressing device and tester with GH18, batteries and KS31A
- Set 1ASi: AS-i addressing device and tester with batteries, GH18, KS31C, BD232 and ASi-doc documentation software in HC30 hard case

Type	Data Sheet No.	Article Number	
METRA*Hit* 1ASi	3-349-108-03	M235A	
Set 1ASi	3-349-108-03	M235C	

METRAtest 36 ASi

ASi Bus Tester

Measuring and Test Instrument, Monitoring and Addressing Device for ASi Bus and ASi Slaves, for Professional Initial Start-Up and Troubleshooting

- Simple menu-driven operation with function keys and matrix display
- Measurement of bus characteristics (voltage, current consumption)
- Recognition of data protocol errors (e.g. duplicate addresses)
- Master mode operation for ASi bus
- Programming and parameters configuration for ASi slaves
- PC gateway function
- Monitoring function with address trigger for indication of error frequency
- Tool kit and extensive accessories included
- Complete display of all parameters and addresses, compatible with existing installations and latest ASi standard 2.11
- Integrated 128 kB memory for saving entire systems, also allows for copy functions
- Firmware can be downloaded from a PC via IrDA interface: simplifies later upgrades.
- ASi-doc or ASi-access report and management software (option) streamlines documentation, planning and start-up.
- Dimensions: 275 mm x 140 mm x 65 mm, weight: approx. 1.2 kg with batteries
- Power supply: 6 NiMH mignon cells, 7.2 V nominal voltage, 1300 mAh capacity, charging: 130 mA / 16 h

Standard equipment:

- **METRAtest 36ASi:** AS-i bus tester with neck strap, measurement cable, KS36A, ground cable, NA 0100S, HC30 hard case
- **Set 36 ASi:** AS-i bus tester, same as above but with additional, extensive connector accessories (module base with addressing socket, KS36B, C, D, E), IrDA 0100S interface adapter and ASi-access software

Type	Data Sheet No.	Article Number	
METRAtest 36ASi	3-349-106-03	M236A	
Set 36 ASi	3-349-106-03	M236B	

Accessories, Software

A Variety of Accessories and Software for METRAHit® 1 ASI and METRAtest 36 ASi

Type	Designation	Article Number	
Akku-Set 36A	NiMh rechargeable battery pack for METRAtest 36A	Z236F	
NA 0100S	Charger for 36A rechargeable battery pack	Z501D	
KS36A	Connector cable set (M12 to jack plug)	Z236A	
KS36B	Connector cable set (M12 female to M12 male)	Z236B	
KS36C	Connector cable set (M12 male to M12 male)	Z236C	
KS36D	1 set (10 ea.) AS-i ribbon cable pick-off	Z236D	
KS36E	1 ea. AS-i ribbon cable pick-off with M12	Z236E	
IrDa 0100S	Interface adapter to RS 232 for METRAtest 36A	Z501C	
ASi.doc-win	Documentation software for AS-i bus	Z710Q	
ASi-access	Documentation and management software for AS-i bus	Z710J	
ASi-Pack 1	Documentation set for AS-i bus with BD232, RS 232 cable and ASi-doc (for METRAHit 1 ASi)	Z231D	

Multimeter Accessories – Overview

Type	Designation	Suitable for use with	METRAHit ONE	METRAHit 16I / 16T / 16U	METRAHit 27M / 27I	METRAHit 22S	METRAHit 22M	METRAHit 23S / 24S / 25S	METRAHit 26S / 26M / 28S	METRAHit 29S	METRAHit 30M	METRAmax 2	METRAmax 3	METRAmax 6	METRAmax 12 / 14	METRAport 32S	METRAport 3E	MA 1H / 2H
		See page➤	6	10	11	6	6	7	8	9	9	14	14	11	13	13	13	14
	Current Transformers																	
WZ11A	Clip-on current transformer with cable, 15 ... 200 A~							●	●	●	❍	●			●	●	●	❍
WZ11B	Clip-on current sensor with cable, ... 20/200 A~ selectable, output: 2 V~		●	●		●	●	●	●	●	●	❍			●	●	●	
WZ12A	Clip-on current transformer with cable, 15 ... 180 A~, 1 mA/A~, 1000:1, ±3%		●					●	●	●	❍	●			●	●	●	●
WZ12B	Clip-on current sensor, 10 mA ... 100 A, 1 mV/10 mA ±2%		●	●		●	●	●	●	●	●	●			●	●	●	●
WZ12C	Clip-on current sensor, 1 mA ... 10 A~, 1 mV/mA~, 1 A ... 120 A~, 1 mV/A		●	●		●	●	●	●	●	●	●			●	●	●	●
WZ12D	Clip-on current transformer, 30 mA-150 A, 1000:1, ±2.5%		●					●	●	●	❍	●			●	●	●	●
Z3511	Clip-on current transformer, 4 ... 500 A~, 1 mA/A~ with cable and safety circuit		●					●	●	●		●			●	●	●	■
Z3512	Clip-on current transformer, 0.5 ... 1000 A~, 1 mA/A~ with cable and safety circuit		●					■	●	●	●	●			●	●	■	❍
Z3514	Clip-on current transformer, 1 ... 2000 A~, 1 mA/A~ with cable and safety circuit		●					■	●	●		●			●	●	■	❍
Z201A	Clip-on current sensor, 00 ... 30 A⎓, 0 ... 20 A~, 100 mV/A⎓≂		●	●		●	●	●	●	●	●	●			●	●	●	
Z202A	Clip-on current sensor, 00 ... 30/300 A⎓, 0 ... 20/200 A~, 10 mV/A⎓≂ or 1 mV/ A⎓≂		●	●		●	●	●	●	●	●	●			●	●	●	
Z13B	Clip-on current sensor, 60/600 A⎓, 40/400 A~		●	●		●	●	●	●	●	●	●			●	●	●	
Z203A	Clip-on current sensor, 0 ... 300/1000 A⎓, 0 ... 200/1000 A~, 1 mV/A⎓≂		●	●		●	●	●	●	●	●				●	●	●	
AF033A	Ampflex current sensor, 0.5 ... 30/300 A~, selectable: 100 mV/A~ or 10 mV/A~		●	●		●	●	●	●	●	●				●	●	●	
AF11A	Ampflex current sensor, 0.5 ... 1000 (2000 A~), 1 mV/A~		●	●		●	●	●	●	●	●				●	●	●	
AF33A	Ampflex current sensor, 0.5 ... 300/3000 A~, selectable: 10 mV/A~ or 1 mV/A~		●	●		●	●	●	●	●	●				●	●	●	
AF101A	Ampflex current sensor, 0.5 ... 1000/10000A~, selectable: 1 mV/A~ or 0.1 mV/A~		●	●		●	●	●	●	●	●				●	●	●	
	Voltage Probes																	
KS30	Probe for voltage measurement in power installations with up to 1000 V~		●	●		●	●	●	●	●	●	❍			●	●	●	
HV3	High-voltage probe, 3 kV/3 V≂		●				●	●	❍	❍	●	❍			●	●	●	
HV30	High-voltage probe, 30 kV/30 V⎓ (for direct voltage only)		●	●		●	●	●	●	●	●	❍			●	●	●	
	High Frequency Probe																	
Z3431-2	High frequency probe, 100 kHz ... 750 MHz, 0.25 ... 50 V~			●		●	●	●	●	●	●	●			●	●	●	
	Temperature Sensors and Probes																	
TF220	Pt1000 sensor, class B, for measurements in gases and liquids, −50 ... +220°C		●	●		●	●	●	●	●	❍					●		
Z3409	Standard Pt100 sensor, class A, for surface and immersion measurements, −40 ... +600°C		●	●		●	●	●	●	●	❍					●		
TF550	Pt100 oven sensor, class B, for measurements in ovens, refrigerators etc., −50 .... +550°C		●	●		●	●	●	●	●	❍					●		
TS-Chipset	10 miniature Pt100 sensors, class B (2 x 2.3 mm), adhesive, 50 ... +550°C infrared		●	●		●	●	●	●	●	●					●		
	Measuring Adapters																	
R200K	Ri adapter, 200 kΩ/230 V		●	●		●	●	●	●	●	●	●			●	●	●	●
Z3450	Leakage current measuring adapter, DIN VDE 0107/DIN VDE 0750		●	●					●	●								
SM16	Current measuring adapter, 16 A/230 V, for earth contact plugs		●	●		●	●	●	●	●	●	●			●	●	●	●
PMA16	Power measuring adapter (single-phase), 16 A/230 V, for earth contact plugs									●								
EMA1	Energy measuring adapter for energy optimization (3-phase)									●								
	EMC Measuring Adapter																	
FMA1	METRAHit field measuring adapter for electrical and magnetic fields								●	●								
	Measuring Accessories																	
KS17-2	Cable set		●	●		●	●	●	●	●	●	●	●	●	❍	●	●	●
KY94	Hook clips (1 pair) for KS17-2		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
KY95-1	Alligator clips (1 pair) for KS17-2		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
KY96	Push-on lugs (1 pair) for KS17-2		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
	Kelvin Clips																	
KC4	Kelvin clips (1 pair) with normal terminals																	
KC27	Kelvin probe																	

● = Accessory is suitable for this device.

❍ = Can be used with this device with certain limitations.

■ = Accessory is suitable for this device in the upper current measuring ranges.

Accessories for Multimeters – Carrying Pouches, Hard Cases, Protective Rubber Covers

Carrying Pouches, Hard Cases, Protective Rubber Covers

Practical Accessories for Carrying and Protecting METRA*Hit* Series Instruments

F840

GH18

F829

F836

HC20

HC30

Designation	Type	Data Sheet No.	Article Number	
Protective rubber cover and carrying strap	GH18	–	GTZ3212000R0001	
Carrying pouch with rubber sleeve and sensor	F829	–	GTZ3301000R0003	
Ever-ready case with cable compartment	F836	–	GTZ3302000R0001	
Ever-ready case for 2 METRA*Hit*s, 2 SI232s and accessories	F840	–	GTZ3302001R0001	
Hard case for one METRA*Hit* and accessories	HC20	–	Z113A	
Hard case for 2 METRA*Hit*s and accessories	HC30	–	Z113B	

Clip-On Current Transformers
Clip-On Current Sensors

Current within conductors can be conveniently measured with clip-on current transformers, or with clip-on current sensors in combination with a multimeter.

The following advantages result:

- The electrical circuit need not be interrupted, no electrical connection to the conductor.
- Measurement of current up to 2000 A, no multimeter overloading as a result of current surges.


WZ12A...D

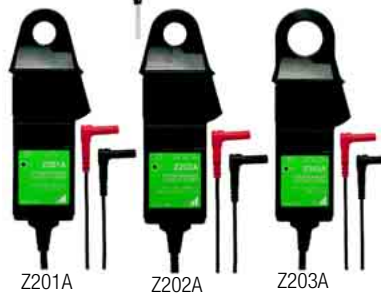

WZ11A/B


Z3511


Z3512


Z3514


Z13B


Z201A Z202A Z203A

Type	Nominal Current	Conductor Cross Section	Transformation Ratio	Intrinsic Error ± (% rdg. + mV/A)
WZ12A	15 ... 180 A ~	15 mm diameter	1 mA/A	3%
WZ12B	10 mA ... 100 A ~	15 mm diameter	0.1 mV/mA	1.5% + 0.1 mA
WZ12C	1 mA ... 15 A ~, 1 A ... 150 A ~	15 mm diameter	1 mV/mA, 1 mV/A	3%+0.15 mA, 2%+0.1 A
WZ12D	30 mA ... 150 A ~	15 mm diameter	1 mA/A	2.5% + 0.1 mA
WZ11A	1 ... 200 A ~	20 mm diameter	1 mA/A	1 ... 3%
WZ11B	0.5 ... 20, 200 A ~	20 mm diameter	10 mV/A, 100 mV/A	1 ... 3%
Z3511	4 ... 500 A ~	30 x 63 mm	1 mA/A	3% +0.4 A
Z3512	0.5 ... 1000 A ~	52 mm diameter	1 mA/A	0.5% ... 0.7%
Z3512A	0 ... 1/100/1000 A ~	52 mm diameter	1 mV, 1 V/A	0.2% ... 0.7%
Z3514	1 ... 2000 A ~	64 x 150 mm	1 mA/A	0.5% +0.1 A
Z13B	... 60/600 A ⎓, 40/400 A ~	50 mm diameter	10 mV/A, 1 mV/A	1.5%, 2%
Z201A	... 30 A ⎓, 20 A ~	19 mm diameter	100 mV/A	1%
Z202A	... 30/300 A ⎓, 20/200 A ~	19 mm diameter	10 mV/A, 1 mV/A	1% + 0.03 A, 1% + 0.3 A
Z203A	... 300/1000 A ⎓, 200/1000 A ~	31 mm diameter	1 mV/A	1% +0.5 A

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
WZ12A	3-349-017-03	Z219A	
WZ12B	3-349-017-03	Z219B	
WZ12C	3-349-017-03	Z219C	
WZ12D	3-349-017-03	Z219D	
WZ11A	3-349-017-03	Z208A	
WZ11B	3-349-017-03	Z208B	
Z3511	–	GTZ3511000R0001	
Z3512	–	GTZ3512000R0001	
Z3512A	–	Z225A	
Z3514	–	GTZ3514000R0001	
Z13B	3-349-085-03	Z213B	
Z201A	–	Z201A	
Z202A	–	Z202A	
Z203A	–	Z203A	

Ampflex
Flexible Current Sensors

Current Sensors for the Measurement of Alternating Current at Difficult to Access Locations

**These sensors are suited for the measurement of alternating current at difficult to access locations.
They are highly insulated and can generally be switched at a ratio of 1:10 with a range selector.
They can be operated within a frequency range of up to 20 kHz. Maximum phase error is 2.5° at a frequency of up to 1 kHz. Supply power is provided with a 9 V battery with a service life of approx. 150 hours.**

Type	Nominal Current	Loop Length	Sensitivity mV/A	Intrinsic Error ± (% of V_A (output voltage) + mV)
AF11A	5 ... 1 kA: 1 V	450 mm	1	1 + 2
AF033A	5 ... 30 A: 3 V 5 ... 300 A: 3 V	600 mm	100 10	1 + 50 1 + 5
AF33A	5 ... 300 A: 3 V 5 ... 3000 A: 3 V	900 mm	10 1	1 + 5 1 + 2
AF101A	5 ... 1 kA: 1 V 50 ... 10 kA: 1 V	1200 mm	1 0.1	1 + 2 1 + 1

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
AF11A	3-348-845-03	Z207D	
AF033A	3-348-845-03	Z207A	
AF33A	3-348-845-03	Z207B	
AF101A	3-348-845-03	Z207C	

Multimeter Accessories

Voltage Probes

For High-Voltage Measurements with a Multimeter

- KS30: The high impedance KS30 voltage probe offers additional protection against overvoltages and operator error for measurements at high energy voltage sources.
- HV3: The HV3 probe is suitable for measurements of up to 3 kV. It simultaneously serves as a low pass filter for frequency converter signals.
- HV30: The HV30 high-voltage probe (VDE approved) can be used for safe measurement of direct voltages of up to 30 kV.

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
KS30	–	GTZ3204000R0001	
HV3	–	GTZ3431011R0001	
HV30	–	GTZ3431001R0001	

Kelvin Clips

Kelvin Clips for Connecting Low-Impedance Resistors to Ohmmeters

Kelvin clips are used for connecting low impedance resistors (e.g. contact resistors, shunts etc.) to an ohmmeter with 4-wire connection. This allows for compensation of cable resistance.

- KC4: KC2 clips are suitable for DUT connector leads with diameters of up to 30 mm.
- KC27: Probe

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
KC4	–	Z227A	
KC27	–	Z227B	

High Frequency Probe

High Frequency Probe: 100 kHz - 750 MHz, 0.25 ... 50 V_{AC}

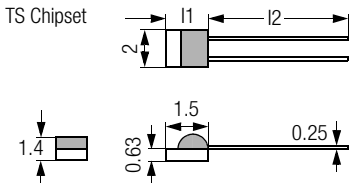
Alternating voltages with an amplitude of 0.25 V to 50 V within a frequency range of 100 kHz ... 750 MHz can be measured with the Z3431-2 high frequency probe in combination with a multimeter .
The probe rectifies alternating voltages at a ratio of 1:1.
The measuring instrument must have an input impedance of 10 MΩ.

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
Z3431-2	–	GTZ3431002R0001	

Temperature Sensors

Pt100 / Pt1000 Temperature Sensors



Standard Z3409 sensor for surface and immersion measurements from – 40 °C to + 600 °C.
TF550 oven sensor for temperature measurements in ovens, refrigeration units etc. from – 50 °C to + 550 °C.
TF220 water-proof sensor for temperature measurements in gases and liquids, e.g. water temperature in washing machines, oil temperature in automotive transmissions and air temperature in freezers and air conditioners.
TF400CAR dipstick oil temperature sensor for motor oil temperature measurement in automotive applications.
The TS chipset includes 10 miniature adhesive sensors for spot measurements at small measuring points within a range of – 50 °C to + 550 °C.

Type	Z3409	TF550	TF220	TF400CAR	TS Chipset
Sensor element	Pt100		Pt1000		Pt100
Sensor element length (l1) mm	130	40	39	810	2.3
Sensor length (l2) mm	1000	1500	1500	2310	10
Temperature range °C	–40...+600	–50...+550	–50...+220	–50...+500	–50...+550
Accuracy per DIN EN60751/IEC 751	Class A	Class B			
Intrinsic error at 0°C	0.15 K	0.3 K		–	0.4 K
Intrinsic error for °C	600: 1.35K	550: 3.1K	220: 1.4K	–	550: 3.1K
Transient recovery, T_{90} water	5 s	8 s		–	0.3 s
Transient recovery, T_{90} air	30 s	33 s		–	15 s
Lead	Strand, 2 ea. 0.35 square mm			–	0.25 dia. / Ni-Pt
Outer jacket	PVC	V4A	Teflon	–	–
Insulation	PVC	Glass	Teflon	–	–

Usable with instruments specified in the overview on page 17.

Type	Data Sheet No.	Article Number	
Z3409	–	GTZ3409000R0001	
TF550	–	GTZ3408000R0001	
TF220	–	Z102A	
TF400CAR	–	Z102C	
TS-Chipset	–	GTZ3406000R0001	

Multimeter Accessories

Leakage Current Adapter

Leakage Current Measuring Adapter, DIN VDE 0107 / DIN VDE 0750

The Z3450 leakage current adapter is used with RMS multimeters for the measurement of contact voltage per DIN VDE 0107, section 10, and for the measurement of continuous leakage and patient auxiliary current per DIN VDE 0750 part 1, IEC 601-1, EN 60 601-1.1990.

Type	Data Sheet No.	Article Number	
Z3450	–	GTZ3450000R0001	

Measuring Adapters

Current Measuring Adapter, Power Measuring Adapter

SM16 PMA16

SM16 current measuring adapter for safe, trouble-free measurement of power consumption at consumers connected to the mains with a plug. The attached cable with contact-protected connectors can be connected directly to the current measurement jacks at the multimeter.
The PMA 1 power measuring adapter includes an additional, second cable for connection to the voltage path of the METRA*Hit* 29S.

Type	Data Sheet No.	Article Number	
SM16	–	GTM9070190E0002	
PMA16	–	Z228A	

R_i Adapter

Ri Adapter, 200KΩ/230V

The type R200k Ri adapter reduces the input impedance of electronic multimeters to 200 kΩ, which suppresses erroneous measurements caused by capacitive interference.

Type	Data Sheet No.	Article Number	
R200K	–	Z101A	

Cable set

Measuring Accessories

KS17-2

A cable set with permanently mounted test probes and contact-protected angle plugs is available for safe measurement.
Hook clips, alligator clips or push-on lugs can be attached to the test probes for special measuring tasks.

- KS17-2 cable set
- KY94 hook clips (1 pair) for KS17-2
- KY96 push-on lugs (1 pair) for KS17-2
- KY95-1 alligator clips (1 pair) for KS17-2

KY95-1 KY96 KY94

Type	Data Sheet No.	Article Number	
KS17-2	–	GTY3620034P0002	
KY94	–	GTY3610094P01	
KY95-1	–	GTZ3215000R0002	
KY96	–	GTY3610096P01	

METRA*Hit*® FMA1

E and B Field Measuring Adapter for Measurement of Low Frequency Alternating Fields

METRAHit field measuring adapter for measuring and recording electrical and magnetic fields (recommended for use with the following instruments: METRAHit 26M, 28S and 29S)

- Compact, handy measuring instrument adapted to battery powered multimeters including METRA*Hit* 26S/26M ... 29S
- Suitable for short and long-term recording of EM fields and measurement data analysis at the PC in combination with METRA*Hit* 26M and 29S or SI232 memory interface (accessory)
- Orientation measurements in accordance with federal regulations (BIMSCHG)
- Testing for radiation at CRT monitor workstations in accordance with MPRII and TCO
- Easy to use
- High dynamic range assures reliable measurement values, even at 100% over-ranging
- Fluctuating field strengths can be recorded in combination with a METRA*Hit* multimeter and METRAwin software, and peak values can be analyzed
- Dimensions (W x H x D):
  Control unit: 97 mm x 135 mm x 39 mm, weight: 210 g with battery
  Probe: 43 mm x 130 mm x 28 mm, weight: 130 g
- Batteries: 2 ea. 1.5 V IEC LR 6 (AA mignon)

Type	Data Sheet No.	Article Number	
FMA1	3-348-854-03	Z108A	

METRA*Hit*® EMA1

Energy Measuring Adapter for Ferraris Meters

The EMA1 is a plug-in adapter for the METRA*Hit* 29S digital multimeter for energy measurement at Ferraris meters without altering the electrical installation.

The EMA1 is an inexpensive, optimized accessory for acquisition, evaluation and optimization of energy curves in combination with the METRA*Hit* 29S multimeter and METRAwin 10 software.

A METRA*Hit* 29S can be connected to a Ferarris meter via the EMA1 for the measurement and recording of 3-phase energy curves. The meter pulse is acquired optically and is evaluated and recorded with a programmable factor. Recorded data are displayed as a peak value curve with METRAwin 10 software.

- Dimensions (W x H x D):
  Control unit: 97 mm x 135 mm x 39 mm, weight: 110 g

Type	Data Sheet No.	Article Number	
EMA1	3-348-994-03	Z112A	

BD232

Interface Adapter for METRA*Hit* Multimeters

Can be snapped onto all METRA*Hit* multimeters. The infrared interface allows for electrically isolated data transmission between PC and multimeter.
Data transmission is indicated visually by means of two LEDs.
The BD232 interface adapter is especially recommended for measuring instruments with integrated memory (METRA*Hit* 22M, 26M, 29S, 30M).
The BD-Pack 1 is available as a user-friendly complete package for single-channel operation.
The package includes the BD232 interface adapter, an RS 232 bus cable, METRAwin 10 software and installation instructions.
METRAwin 10 is used for data analysis and display (see page 25).
It cannot be used for online recording with type SI232-II adapters.
In order to expand to 2, 3 or 4-channel operation, one BD232 is required for each channel, as well as additionally required multimeters.
Accessories: Type Z3241 = RS 232 interface cable, 2 m, (included with 1-Ch. pack, 4-Ch. pack and Z3231)

- Dimensions: 135 mm x 97 mm x 39 mm

Type	Data Sheet No.	Article Number	
BD232	3-349-026-03	GTZ3242100R0001	
BD-Pack 1	3-349-026-03	Z215A	
Z3241	–	GTZ3241000R0001A1	

SI232 II

Memory Adapter, Single-Channel / 4-Channel Memory Pack for METRA*Hit* Multimeters

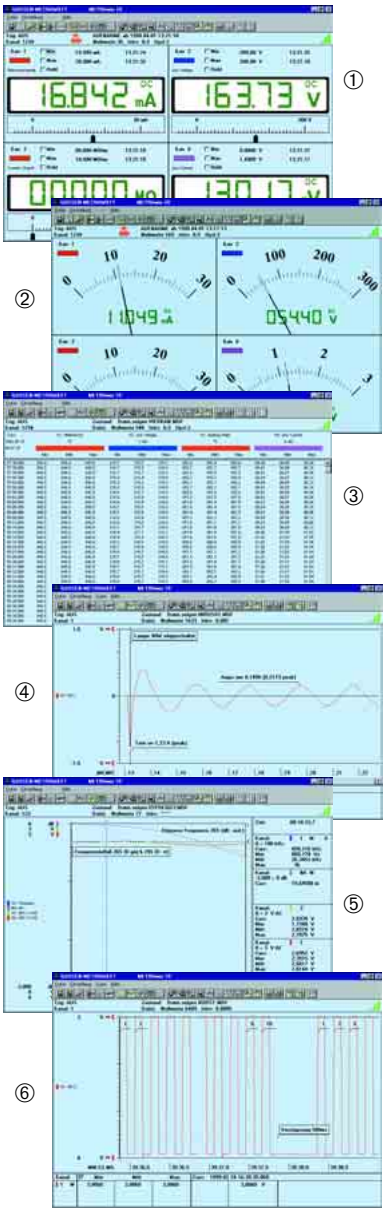
Can be snapped onto all METRA*Hit* multimeters and convert IR measurement data received from the instrument, as well as control signals received from the PC. Measurement data are recorded to the integrated memory with reference to real-time, and are transmitted to the PC after measurement has been completed. The 128 kB memory can be broken down into blocks as desired. The sampling interval can be set within a range of 50 ms to 10 min., or sampling can be triggered in a signal dependent fashion for optimum memory usage.
The SI 232-II memory adapter is especially recommended for measuring instruments **without** integrated memory (METRA*Hit* 22S through 28S). The 1-Ch. pack is available as a user-friendly complete package for single-channel operation.
The pack includes the SI232 II memory adapter, an RS 232 bus cable, METRAwin 10 software and installation instructions.
METRAwin 10 is used for data analysis and display (see page 25).
In order to expand to 2, 3 or 4-channel operation, one SI 232-II is required for each channel, as well as additionally required multimeters. The 4-Ch. pack is recommended for simultaneous recording with 4 multimeters.
Accessories: Type Z3241 = RS 232 interface cable, 2 m, (included with 1-Ch. pack, 4-Ch. pack and Z3231)

- Dimensions: 135 mm x 97 mm x 39 mm, weight approx. 0.25 kg with battery
- Batteries: 2 ea. 1.5 V IEC LR 6 (AA mignon)

Type	Data Sheet No.	Article Number	
SI232 II	3-349-026-03	GTZ3242020R0001	
1-Ch. Pack II	3-349-026-03	GTZ3231020R0001	
4-Ch. Pack II	3-349-026-03	GTZ3234020R0001	
Z3241	–	GTZ3241000R0001A1	

METRAwin® 10/Hit

System Software for METRA*Hit* Multimeters



Any METRA*Hit* multimeter can be transformed into a professional, PC-based universal recording system with METRAwin 10/METRA*Hit* and an interface adapter or a memory adapter.
Measured values are queried from the multimeters, managed at the PC and displayed as Yt or XY diagrams (up to 4 channels), or in tabular form (up to 10 channels) with METRAwin 10/METRA*Hit*.
In the online mode, measurement data are displayed at up to 4 virtual indicator instruments or digital displays (with adjustable limit values). High performance, online arithmetic functions allow for data analysis and evaluation.
The sampling interval can be set within a broad range: 50 ms – 100 ms – 200 ms – 500 ms – 1 s ... – 60 min online, or off-line to intermediate storage at max. 0.5 ms (with the METRA*Hit* 29S). Measurement data can be easily imported to other Windows PC applications such as Word and Excel via the clipboard.
METRAwin 10/METRA*Hit* software is included with the memory and interface adapter packs, and is not offered separately. The article number shown below includes updates.

Multimeter and Indicator Instruments (1 and 2)
Uploaded measured values are displayed at the screen both digitally and at an analog scale.

Data Logger (3)
Acquired measurement data are continuously displayed at the screen in easy to read tabular form.

Arithmetic Functions
Measurement data can be analyzed and displayed with high performance arithmetic functions.

Yt Diagram (4 and 6)
Acquired measurement data are displayed at the screen as a time graph with a horizontal time axis, and are measured off with the cursor.
Stored signals can be expanded or compressed along amplitude or time axes (zoom function).
The time scale can be displayed as absolute time, or as relative measuring time.

Continuous Line Recorder
Up to 6 channels can be printed out continuously as a Yt line graph at a color printer.

Yt Diagram (5)
Acquired data are displayed as an XY graph and are measured off with the cursor.
As is the case with all display formats, all scales can be freely adjusted.

Sampling
Sampling can be started either manually (mouse click), automatically with an adjustable interval (50 ms to 1 hour) or as a function of the signal with adjustable signal hysteresis (0 to 500 digits).
The sampling interval for devices with integrated memory is max. 0.5 ms (see figure 6).
Data can be controlled with time and window triggers, and can be saved automatically as multiple data files.

Type	Data Sheet No.	Article Number	
METRAwin 10 Software Update	3-349-026-03	GTZ3240000R0001	

CP1 Calibrator Pack

Calibrator Pack with METRAwin 90-2 and Accessories

The CP1 calibrator pack includes all hardware and software components required for connecting the METRA*Hit* 18C or the METRA*Hit* 28C to a PC.
The CP1 is ideal for stationary calibration of indicators, recorders etc., in the test department or in the lab, and for expanding a METRA*Hit* 28C into an automated process calibration system.
Easy creation of calibration procedures and storage to the METRA*Hit* 18C also significantly simplifies on-site use.

The CP1 consists of:

- METRAwin 90-2 calibration software with installation instructions
- BD232 interface adapter
- RS 232 interface cable

Type	Data Sheet No.	Article Number	
CP1	3-348-828-03	GTZ 3231 100 R0001	

CP28 Calibrator Pack

Calibrator Pack with METRAHit®28C and Accessories

The CP28 calibrator pack includes all hardware and software components required for the creation of a PC aided, automatic process calibration system.
The CP28 is ideal for on-site calibration of system components and measuring transducers, as well as for recorders etc. in the test department and in the laboratory.
Easy creation of calibration procedures and storage to the METRA*Hit* 28C also significantly simplifies on-site calibration work.

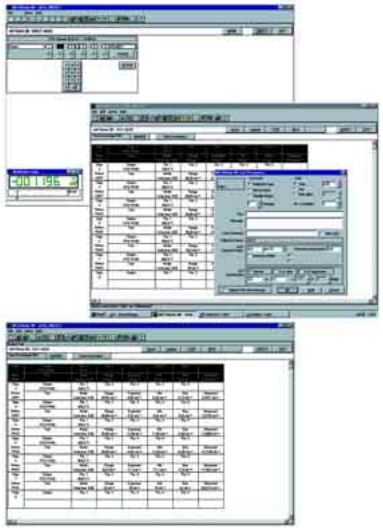
The CP28 consists of:

- METRAHit®28C calibrator
- BD232 interface adapter
- RS 232 interface cable
- KC2 Kelvin Clips
- 1ASi rechargeable battery set
- KY95-1 alligator clips (1 pair)
- METRAwin 10 system software and METRAwin 90-2 calibration software with installation instructions

Type	Data Sheet No.	Article Number	
CP28	3-349-098-03	M231B	

Calibration software METRAwin®90-2

Calibration software for METRA*Hit* 18C and METRA*Hit* 28C



In combination with a multimeter, hand-held METRA*Hit* 18C and 28C calibrators can be transformed into a professional, PC-based calibration system for measuring transducers, indicators and recorders.
Calibration procedures are created with METRAwin software. Specified analog values are transmitted from the PC via the BD232 adapter to the calibrator, and are fed to the device to be calibrated from the analog output at the calibrator. The analog output value from the device to be calibrated is then measured by the multimeter, and is returned to the PC for evaluation via the interface. If the measurement results remain within the specified tolerances, the next calibration step is initialized automatically until the entire procedure has been run.
Calibration data can be easily imported into other Windows applications (e.g. Word or Excel).

- METRAwin 90-2 is included with the above described calibrator packs.

Type	Data Sheet No.	Article Number	
METRAwin 90-2	3-349-098-03	Z211A	

MAVOWATT®45

3-Phase Energy and Power Disturbance Analyzer for Stationary or Mobile Use

This portable device is designed for the measurement of electrical quantities in DC systems, as well as in single and three-phase AC systems at any load up to 400 Hz. Measurement at frequency converter outputs (motor controllers) is also possible with the TCM option.
The spectrum of functions ranges from acquisition, display and recording of measured quantities by means of recognition and evaluation of fluctuations and other power supply interference factors (optional harmonics and power disturbance analysis), right on up to analysis and recording of energy consumption.
In industry as well, a wide range of potential applications exists. For example, it can serve as an accurate measuring instrument with recording functions for the determination of characteristic quantities from electrical load components or generators in steady-state, as well as during dynamic processes.
Or it can function as a tester with the FFT option, by means of which it compares harmonic current from consumers with prescribed limit values. Its compact, rugged design makes the MAVOWATT 45 suitable for stationary operation as well as mobile applications.

Options: MAVO-FFT: Harmonic Analysis (see page 28)
MAVO-PDA: Power Disturbance Analysis (see page 28)
MAVO-TCM: Acquiring Transients / Frequency Converter Measurements (see page 29)
MAVO-FSA: Flicker Measurement per EN 61000-4-15 (see page 29)

- Dimensions: 150 x 290 x 290 mm, weight: 4.0 kg

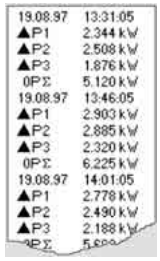
Standard equipment included with MAVOWATT 45L:
Energy and power disturbance analyzer, 3-phase, with RS 232 interface, slot for memory card, includes 3 pairs of measurement cables with test probes and plug-in alligator clips, 4 short measurement cables with plugs for safety sockets, power cable, RS 232 interface cable, floppy disk with firmware for menu languages, F2000 universal carrying pouch and operating instructions

Standard equipment included with MAVOWATT 45S:
Same as MAVOWATT 45 L, plus enabling of FFT, PDA, TCM and FSA options, and 3 Z823B clip-on current-voltage transformers, in K45 test case

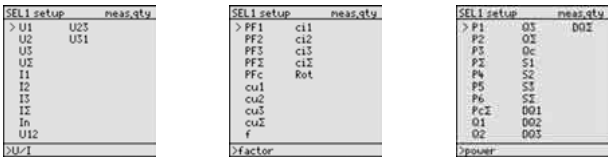
Type	Data Sheet No.	Article Number	
MAVOWATT 45L	3-348-795-03	M815C	
MAVOWATT 45S	3-348-795-03	M815E	
K45 hard case	3-348-795-03	Z845C	

Plain Text Display at Large Dot Matrix LCD

Display modes for power and energy analysis measurements

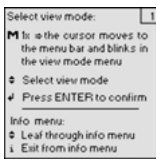


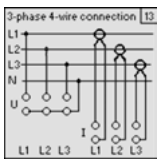
Measurement data can be recorded to the plug-in memory card or to recording chart paper at the integrated printer module.



Selection menus for 75 power and energy quantities and 6 measuring modes

Menu-driven instrument configuration in a variety of languages

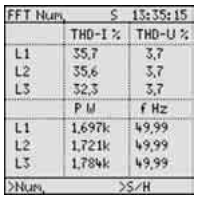


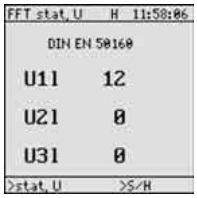


Integrated help function with condensed instructions and connection diagrams

MAVO-FFT

Harmonic Analysis Software Option





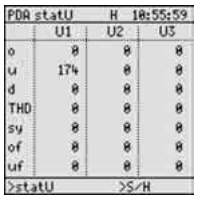
This option expands the MAVOWATT 45 to include simultaneous acquisition, display and analysis of voltage and/or current harmonics.

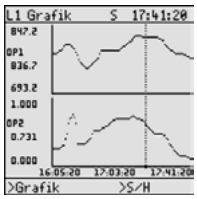
DC components, fundamental components and current and voltage harmonics (up to the 50th harmonic relative to a fundamental frequency of 15 to 400 Hz) are continuously and uninterruptedly acquired and calculated by means of the fast Fourier transformation process in real-time at all three phases, and are represented as numeric values or as a bar graph for the selected phase.
Alternatively, measurement values for respective THD (total harmonic distortion) for all three phases for voltage and current can be simultaneously numerically displayed or statistically classified.

Type	Data Sheet No.	Article Number	
MAVO-FFT	3-348-795-03	Z850B	

MAVO-PDA

Power Disturbance Software Option





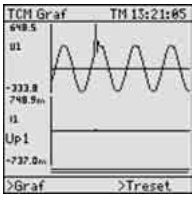
Power disturbance analysis methods which allow for uninterrupted monitoring and classification of disturbances within electrical supply lines are taken advantage of by the MAVOWATT 45.

Measured quantities (RMS voltage and current values, frequency, THD) which have been acquired during 2, 4, 8 or 16 signal periods at all phases, or at selected phases only, are continuously compared with the respective, individually preset trigger criteria (upper limit for U/I/THDU/ THDI/f, lower limit for U/I//f, fluctuation value for U/I).
Individual or simultaneously occurring events are recorded uninterruptedly and are combined and represented in three different tables: number and type of voltage and frequency disturbance events within an adjustable interval period, number and type of current disturbance events within an adjustable interval period, events list including time, cause and measured value. If uninterrupted data logging is not required, the voltage and current signal pattern can be displayed as well with high time-resolution when an event occurs. In this way, important line voltage characteristics as required by EN 50160 can be documented, and power consumer making-operations can, for example, be analyzed.

Type	Data Sheet No.	Article Number	
MAVO-PDA	3-348-795-03	Z851B	

MAVO-TCM

Software Option for Transient Capture and Frequency Converter Measurements



The MAVO-TCM expands the scope of functions included with the MAVOWATT 45 to include two special facilities for mains power measuring technology:

- On the one hand, brief transient events can be captured which occur in alternating or direct current power supply lines, as well as at power consumers connected to them.
- On the other had, the instrument is capable of acquiring measured quantities for power and energy analysis at frequency converter outputs.

Transient Measurement

Voltage transients with a duration of at least 20 µs can be acquired, and measured at levels of up to 1500 V_S.
Trigger conditions for events recording are derived from a comparison of the absolute level of a sampled value and the selected trigger level (Up or Ip). A rate-of-change trigger is active as well. The sampling interval (20 µs to 640 µs) and the pre-trigger can also be adjusted.
The *Event* display mode can be used for recording rapidly occurring, successive events. This allows for recording of up to 40 events per second listed in the order in which they occur along with time stamp, cause of triggering, measured quantity and sampled or rate-of-change measured value.

Measurements at Frequency Converters

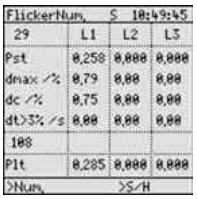
Modern frequency converters used for controlling electric motor speed usually have a high frequency square-wave output voltage which is pulse-width modulated via motor frequency.
This type of measurement signal requires a special measuring process, by means of which the converter switching frequency is filtered out, and the effective modulation frequency at the motor (fundamental frequency) is determined.

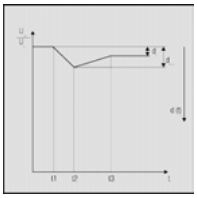
- Switching frequency must be greater than 1.2 kHz, and fundamental frequency within a range 10 to 100 Hz.
- Motor current is acquired in an electrically isolated fashion, e.g. with a clip-on ammeter.

Type	Data Sheet No.	Article Number	
MAVO-TCM	3-348-795-03	Z851C	

MAVO-FSA

Flicker Measurement Software Option





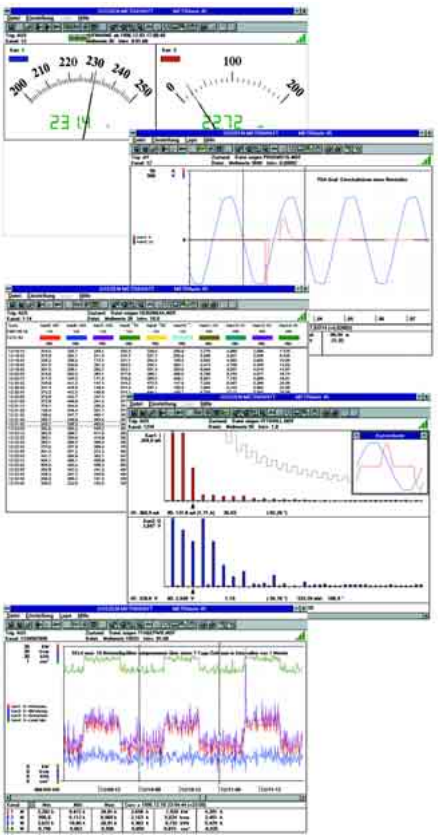
The MAVO-FSA function expands the MAVOWATT 45 to include a flicker meter function.

Flicker is defined as the subjective impression made by fluctuations in brightness at lighting appliances caused by fluctuations in the power supply. Fluctuations of this sort can be acquired and evaluated with the help of a flicker meter. EN 61000-4-15 defines the basic functional principle of a flicker meter, which simulates the complex chain of events which takes place at the lamp, the eye and the brain, and which correlates measurement results to an experimentally determined limit value curve (perceptual limits). Values for the resulting measured quantities, Pst (short-term flicker intensity, 10 min.) and Plt (long-term flicker intensity, 2 hours,) are simultaneously determined for all three phase voltages on an individual basis. An evaluation of line voltage quality as regards flicker can be carried out in accordance with EN 5016 based upon these measured values.
Furthermore, the function also acquires the largest relative voltage fluctuation (dmax) which occurs during the short-term measuring interval, relative constant voltage fluctuation (dc) and, for voltage changes of less than 3%, the maximum deviation duration (dtn > 3%).
These measured quantities are required for type testing for electrical devices per EN 61000-3-3.
Observance of the limit values set forth in this standard is required as of 1 January 2001 for application of the CE mark to electrical and electronic equipment, and devices with input current of up to 16 A.

Type	Data Sheet No.	Article Number	
MAVO-FSA	3-348-795-03	Z851D	

METRAwin®45

Analysis Software for MAVOWATT 45



METRAwin 45 Windows software allows for read-out, display and processing of measurement data from the MAVOWATT 45 at a PC.

Uploading of data can be accomplished online (does not apply to FFT/PDA measurements), or from the memory card via the RS 232 interface or an interconnected modem. Measurement data can be represented and printed out numerically in tabular form, as a Yt graph or as an FFT frequency spectrum, and exported to other Windows applications.

Yt Recorder
Acquired measured values from up to six freely selectable channels are displayed at the screen as a line diagram with a horizontal time axis and are measured off with the cursor. Stored signals can be expanded or compressed along amplitude or time axes (zoom function).

High Speed Yt Recorder
Voltage and current signals recorded at the MAVOWATT 45 with the PDA/TCM graph function can be analyzed with a time resolution of up to 20 µs.

Multimeter
Transmitted measured values from up to four freely selectable channels are displayed at the monitor in the online mode in digital format with an additional analog scale, or as an analog indicator with additional digital display.

Table
Acquired measured data from up to 10 channels are displayed numerically in clear-cut tabular format. Measured values can be exported to other programs via the clipboard.

FFT Frequency Spectrum
Harmonic measurement data recorded at the MAVOWATT 45 with the FFT Tab function are displayed as a frequency spectrum with vertical bars. Limit value marker lines, as well as reconstructed waveshapes, can be displayed for various standards or in a user-defined fashion.

System Requirements:
MS Windows 95, 98, ME, NT, 2000 or XP

Type	Data Sheet No.	Article Number	
METRAwin 45	3-348-795-03	Z852B	

MAVO-RC8 Memory Card

Plug-In Measured Value Memory for Long-Term Recording

Measurements from all of the MAVOWATT 45 analysis functions can be saved to a PCMCIA flash RAM adapter for non-volatile storage. Stored values can be viewed at the display.
However, METRAwin 45 software is recommended for the analysis of long-term measurement value recordings. The MAVO-RC 8 memory card has 8 MByte of capacity (approximately 2 million measured values).

Type	Data Sheet No.	Article Number	
MAVO-RC8	3-348-795-03	Z845D	

SECUTEST PSI Printer Module

Integratable Printer-Memory Module for Rapid On-Site Report Generation

Measuring results, events and device settings are transmitted to the PSI module, which can be integrated into the lid of the MAVOWATT 45, via a ribbon cable and are recorded to recording chart paper. Printing can be started manually, or can be measured-value or time triggered.

Consumable materials: PS-10P = pack of 10 recording charts, Z3210 = pack of 10 printer ribbon cartridges

- Dimensions: 240 mm x 81 mm x 40 mm (without knurled screws and ribbon cables), weight: approx. 0.8 kg
- Power supply: via the MAVOWATT 45

Type	Data Sheet No.	Article Number	
SECUTEST PSI	3-348-785-03	GTM5016000R0001	
PS-10P	3-348-785-03	GTZ3229000R001	
Z3210	3-348-785-03	GTZ3210000R001	

Current Measuring Accessories for the MAVOWATT 45

Clip-On Current-Voltage Transformers, Current Sensors, Shunt Resistors

WZ12E: Mini clip-on current sensor, 0.2 ... 150 A~, 10 mV/A, frequency range: 30 ... 500 Hz
WZ12F: Mini clip-on current sensor, 0.02 ... 15 A~, 100 mV/A, frequency range: 30 ... 500 Hz
Z202A: Active clip-on current-voltage transformer with battery,
0 ... 30/300 A⎓, 0 ... 20/200 A~, 10 mV/A or 1 mV/A, frequency range: DC ... 10 kHz
Z203A: Active clip-on current-voltage transformer with battery,
0 ... 300/1000 A ⎓ , 0 ... 200 / 1000 A~ , 1 mV / A, frequency range: DC ... 10 kHz
Z823B: Passive clip-on current-voltage transformer,
1 ... 1000 A~, output: 0 ... 1 V, frequency range: 45 Hz ... 10 kHz
Z821B: Passive clip-on current-voltage transformer,
1 ... 3000 A~, output: 0 ... 1 V, frequency range: 30 Hz ... 5 kHz
AF033A: Ampflex flexible current sensor, 0.5 ... 30/300 A~, 100 mV/A or 10 mV/A
AF33A: Ampflex flexible current sensor, 0.5 ... 300/3000 A~, 10 mV/A or 1 mV/A
AF101A: Ampflex flexible current sensor, 5 ... 1000/10000 A~, 1 mV/A or 0.1 mV/A
AF11A: Ampflex flexible current sensor, 5 ... 1000 A~, 1 mV/A
Z860A: Shunt resistor, 20 mA/1 V (class 0.2)
Z861A: Shunt resistor, 1 A/1 V (class 0.2)
Z862A: Shunt resistor, 5 A/250 mV (class 0.2)
Z863A: Shunt resistor, 16 A/160 mV (class 0.2)

Ranges of Use for Measuring Accessories:

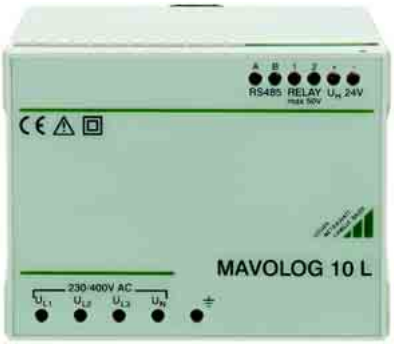
Type	Suitable for *	Measuring range **		Figure
		Nominal Value	Usable Range with MAVOWATT 45	
WZ12F	A, (C)	AC: 15 A_{eff}	approx. 0.02 ... 15 A_{eff}	①
WZ12E	A, (C)	AC: 150 A_{eff}	approx. 0.2 ... 150 A_{eff}	①
Z201A	B, C	AC: 20 A_{eff} DC: 30 A	approx. 0.1 ... 17 A_{eff} approx. 0.1 ... 24 A	④
Z202A	B, C	AC: 20 A_{eff} / AC: 200 A_{eff} DC: 30 A / DC: 300 A	approx. 0.1 ... 20 A_{eff} / approx. 1 ... 200 A_{eff} approx. 0.1 ... 30 A / approx. 1 ... 300 A	⑤
Z203A	B, C	AC: 200 A_{eff} / AC: 1000 A_{eff} DC: 300 A / DC: 1000 A	approx. 1 ... 200 A_{eff} / approx. 1 ... 1000 A_{eff} approx. 1 ... 300 A / approx. 1 ... 1000 A	⑥
Z823B	A, B, (C)	AC: 1000 A_{eff}	approx. 1 ... 1200 A_{eff}	②
Z821B	A, B, (C)	AC: 3000 A_{eff}	approx. 1 ... 3000 A_{eff}	③
AF033A	(A), B, C	AC: 30 A_{eff} / AC: 300 A_{eff}	approx. 0.5 ... 17 A_{eff} / approx. 0.5 ... 170 A_{eff}	⑩
AF33A	(A), B, C	AC: 300 A_{eff} / AC: 3000 A_{eff}	approx. 0.5 ... 170 A_{eff} / approx. 0.5 ... 1700 A_{eff}	⑩
AF101A	(A), B, C	AC: 1000 A_{eff} / AC: 10 kA_{eff}	approx. 5 ... 1000 A_{eff} / approx. 5 A ... 10 kA_{eff}	⑩
AF11A	(A), B, C	AC: 1000 A_{eff}	approx. 5 ... 1000 A_{eff}	⑩
Z860A	A, B	AC: 20 mA_{eff} DC: 20 mA	approx. 0.05 ... 32 mA_{eff} approx. 50 µA ... 48 mA	⑦
Z861A	A, B	AC: 1 A_{eff} DC: 1 A	approx. 1 mA_{eff} ... 1 A_{eff} approx. 1 mA ... 1.2 A	⑧
Z862A	A, B	AC: 5 A_{eff} DC: 5A	approx. 0.02 ... 5 A_{eff} approx. 0.02 ... 5A	⑨
Z863A	A, B	AC: 16 A_{eff} DC: 16 A	approx. 0.1 ... 16 A_{eff} approx. 0.1 ... 16 A	⑨

*) A = long-term measurements (up to 1 week) / B = harmonics measurements / C = frequency converter measurements (f > 30 Hz)
**) For AC ranges: with peak factor < 1.5

Type	Data Sheet No.	Article Number	
WZ12F miniature clip-on current sensor	3-348-795-03	Z823E	
WZ12E miniature clip-on current sensor	3-348-795-03	Z823D	
Z201A clip-on I-U transformer	3-348-795-03	Z201A	
Z202A clip-on I-U transformer	3-348-795-03	Z202A	
Z203A clip-on I-U transformer	3-348-795-03	Z203A	
Z823B clip-on I-U transformer	3-348-795-03	Z823B	
Z821B clip-on I-U transformer	3-348-795-03	Z821B	
Ampflex AF033A flexible current sensor	3-348-795-03	Z207A	
Ampflex AF33A flexible current sensor	3-348-795-03	Z207B	
Ampflex AF101A flexible current sensor	3-348-795-03	Z207C	
Ampflex AF11A flexible current sensor	3-348-795-03	Z207D	
Z860A shunt resistor	3-348-795-03	Z860A	
Z861A shunt resistor	3-348-795-03	Z861A	
Z862A shunt resistor	3-348-795-03	Z862A	
Z863A shunt resistor	3-348-795-03	Z863A	

MAVOLOG®10L/N/S

3-Phase Voltage Quality Analyzer and Test Instrument for Testing per EN 50160 in Standard Combination Housing



3-phase voltage quality analyzer and test instrument for testing per EN 50160 in standard combination housing including harmonic and flicker analysis

- Monitors voltage quality and simultaneously records 3-phase alternating quantities, records 3-phase AC quantities
- Internal analysis of voltage quality for short-term, daily and long-term intervals per EN 50160 and other industrial standards
- 640 k internal memory, memory capacity can be partitioned for various measuring and test tasks in a user-specific fashion.
- RS 485 fieldbus with multi-drop connection for up to 32 devices, alarm output for events indication
- Dimensions: 100 x 75 x 105 mm, weight: 360 g

Analyzer Variants

MAVOLOG series instruments have been designed to allow for the selection of ideal configurations for all types of applications, from power generation to consumer applications, in combination with multiple instruments or as a stand-alone. Even the basic model, the MAVOLOG 10L+FFT/FSA, provides for comprehensive disturbance recording and line voltage quality analysis with integrated harmonic analysis (FFT) and flicker measurement (FSA). Equipped with an LCD and additional current inputs, the top of the line MAVOLOG 10S+FFT/FSA is a universal measuring instrument and can be used for recording the characteristics of almost any conceivable measured quantities in 3-phase systems, and simultaneously acquires power disturbances and characteristics for the analysis of voltage quality.

Features	MAVOLOG			
	10L+FFT/FSA	10N+FFT/FSA	10S+FFT/FSA	10S
Voltage				
Measurement inputs	3 x U_{L-L} / U_{L-N} & U_{N-PE}			
Dips, failures	>10 ms	>10 ms	>10 ms	>10 ms
Swells	>10 ms	>10 ms	>10 ms	>10 ms
Asymmetry	●	●	●	●
Frequency	●	●	●	●
Harmonics	1-40&THD	1-40&THD	1-40&THD	–
Flicker (Pst, Plt)	●	●	●	
EN 50160 analysis	●	●	●	
Current				
Measurement inputs	–	–	3xI_L & I_N	3xI_L & I_N
Characteristics for voltage dips	–	–	Resolution: 10 ms	Resolution: 10 ms
Harmonics	–	–	1-40&THD	–
Power / Energy				
Active power P1, P2, P3, PΣ	–	–	●	●
Apparent power SΣ	–	–	●	●
Reactive power QΣ	–	–	●	●
Power factor PFΣ	–	–	●	●
Active energy WPΣ	–	–	●	●
Reactive energy WQΣ	–	–	●	●
Alphanumeric LCD				
Measured values, analyses	–	10, selectable	10, selectable	10, selectable
Parameters Configuration	–	●	●	●

Type	Data Sheet No.	Article Number	
MAVOLOG 10L+FFT/FSA	3-349-028-03	M830S	
MAVOLOG 10N+FFT/FSA	3-349-028-03	M830P	
MAVOLOG 10S+FFT/FSA	3-349-028-03	M830R	
MAVOLOG 10S	3-349-028-03	M830V	

MAVOLOG®10 Mobile Set

MAVOLOG Set in Carrying Case for Mobile Use

A practical solution for occasional mobile use: The MAVOLOG Mobile Set consisting of the following components:

- MAVOLOG 10S+FFT/FSA voltage analyzer
- MAVOLOG PS/C power pack and interface converter
- MAVOLOG BP battery pack

Wired and installed in a stable carrying case (46 x16 x 35 cm)

Included accessories:

- Connector cables for mains power and voltage measurement inputs including alligator clips and RS 232 interface
- METRAwin 10 for MAVOLOG parameters configuring and analysis software

The case also provides space for storing optional clip-on current transformers such as 3 ea. Z3512 (1000/1 A).

Type	Data Sheet No.	Article Number	
MAVOLOG 10 Mobil-Set	–	M830W	

MAVOLOG®PS/C

230 V~ / 24 V – Power Pack for MAVOLOG Instruments and the MAVOLOG BP, Additionally Integrated RS 485-232 Interface Converter

The MAVOLOG PS/C module (PS = power supply / C = converter) includes a mains power pack with 24 V DC output for supplying power to as many as five MAVOLOG 10 instruments and one MAVOLOG BP, as well as a bidirectional RS 232-485 interface converter for communications between a PC and MAVOLOG control software. Up to 32 MAVOLOG 10 instruments can be connected to the RS 485 bus, which can have a length of up to 1 km, and which functions at a maximum data transmission rate of 115 kBaud.
The standard version is laid out for an input voltage of 230 V AC.

- Dimensions: 75 mm x 55 mm x 111 mm (H x W x D), weight: approx. 800 g

The MAVOLOG PS/C universal variant (above figure) has a broad range input for 60 to 230 V AC / DC.

- Dimensions: 75 mm x 100 mm x 111 mm (H x W x D), weight: approx. 350 g

Type	Data Sheet No.	Article Number	
MAVOLOG PS/C	3-349-045-03	Z863D	
MAVOLOG PS/C universal	–	Z863G	

MAVOLOG®BP

Battery Pack as Emergency Backup for MAVOLOG Instruments in the Event of Power Failure

The MAVOLOG BP (BP = battery pack) is an uninterruptible DC power supply which, in combination with the MAVOLOG PS/C, automatically supplies power to connected MAVOLOG 10 instruments in the event of mains power failure.
Depending upon the number and type of instruments, they can be operated with a fully charged backup battery for up to 10 hours.
Integrated electronics regulate and monitor the charging process, assuring reliable availability of supply power and long backup battery service life.

- Dimensions: 75 mm x 55 mm x 109 mm (H x W x D), weight: approx. 480 g

Type	Data Sheet No.	Article Number	
MAVOLOG BP	3-349-044-03	Z863E	

MAVOLOG®Dial-Up

Analog Modem for Long Distance Data Transmission in Standard Combination Housing

The MAVOLOG analog dial-up modem connects the installed MAVOLOG mains monitoring system to a master computer via public telephone lines for remote parameters configuration, control and data queries.
An SMS message can be transmitted to a cell phone, a fax machine etc., in the event of power disturbance.

- Dimensions: 75 mm x 45 mm x 110 mm (H x W x D), weight: approx. 230 gr.
- Power supply: 10 ... 60 V–, e.g. with the MAVOLOG PS/C

Additional modems upon request, e.g. for ISDN, GSM and Ethernet

Type	Data Sheet No.	Article Number	
MAVOLOG Dial-Up	–	Z864C	

MAVOLOG®C232/485

RS 232-485 Interface Converter

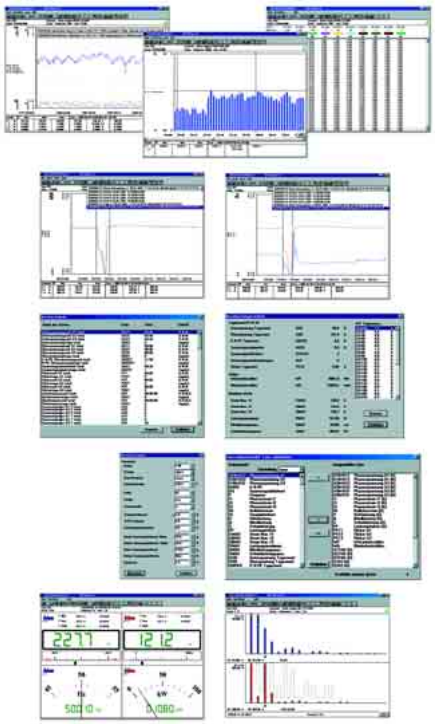
The MAVOLOG C232/485 is designed for use with MAVOLOG 10 series instruments. It includes an RS 232-485 interface converter for communications between a PC with METRAwin control software and the individual instruments. Up to 32 MAVOLOG instruments can be connected to the RS 485 bus.
The battery powered interface converter is bidirectional with automatic switching, although the communications direction is not electrically isolated.
If a MAVOLOG PS/C is not used, it can be utilized for supplying power to the MAVOLOG 10, if the MAVOLOG 10 is only read out occasionally with a notebook, for example after the occurrence of power disturbances.

- Dimensions: 102 mm x 61.5 mm x 26 mm (H x W x D), weight: approx. 200 g with batteries
- 9 V flat cell, IEC 6 LF 22

Type	Data Sheet No.	Article Number	
MAVOLOG C232/485	–	Z863F	

METRAwin 10/MAVOLOG

Parameters Configuration and Visualization Software



METRAwin for MAVOLOG 10 software is used for configuring parameters and visualizing data from the MAVOLOG 10. It includes the following functions:

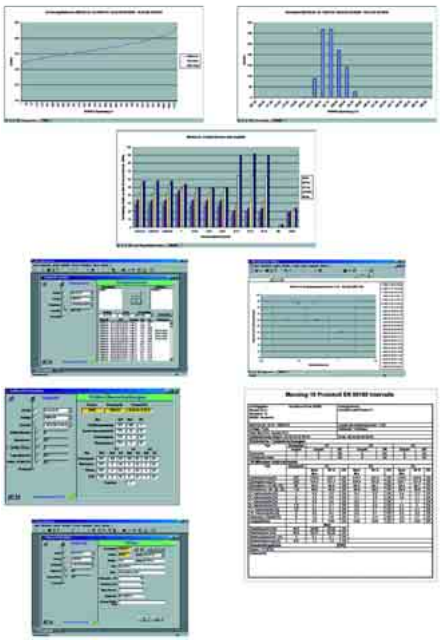
- Configuration of device parameters (hook-up configuration, memory parameters)
- Memory mode initialization
- Read-out and print-out of complete statistics, as well as daily statistics
- Read-in and graphic representation of interval data
- Read-in and representation of events data in list format, as well as graphic representation of 10 ms RMS values from respective event curves
- Read-in and graphic representation of harmonics
- Online visualization of selected measured quantities
- Interval data or measurement series recorded on line are displayed at the monitor as a line diagram or a bar graph with horizontal time axis and can be analyzed with two pointers.
- The data logger display shows time and measured values numerically in an easy to read table, and allows for data export to other programs with the Windows clipboard.
- Event data read out from one or several MAVALOGs are listed in the order in which they occurred and can be printed as an events list.
- In the event of voltage dips, failure or swells, these are displayed in a time sequence which can be measured off with cursors. If the current signal is simultaneously available, conclusions may be drawn regarding the cause of the disturbances.
- Complete statistics and daily maximum values provide information concerning all important factors at a single glance.
- Parameters configuration for interconnected instruments as regards the measuring circuit, recording parameters, memory configuration etc., is accomplished by means of a menu-driven process.
- In the online mode, up to ten selectable measured quantities can be scanned and recorded once every second.

System Requirements: MS Windows 95, 98, ME, NT, 2000 or XP

Type	Data Sheet No.	Article Number	
METRAwin10/MAVOLOG	–	Z852D	

PC.doc-ACCESS/MAVOLOG

Software for the Generation of Reports and Graphics



PC.doc-ACCESS for MAVOLOG 10 is a database program based on Microsoft Office products including Word, Excel and Access for the management, presentation and documentation of data recorded with the MAVOLOG 10. The database software allows for the management of data from any number of MAVOLOG 10 instruments, and for interactive or automatic, time controlled querying with the help of a scheduler. In this way, the software allows for comprehensive, detailed long-term analysis of voltage quality within a power supply system with numerous measuring stations.

Graphics Processing with MS Excel

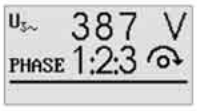
- Sorting of measured values according to time of occurrence, size (ascending/descending) and frequency distribution
- Data analysis (with minimum values/mean values/95%/maximum values) in compliance with EN 50160 and with adjustable limit values
- Time sorted lists of recorded events from several MAVOLOG 10 instruments during an adjustable observation period
- Analysis of voltage dips relative to standard limits/classes (ITIC, NRS048)
- Print-out of events list with explanatory remarks
- Analysis of statistical data with reference to EN 50160 and adjustable limit values
- Report printing with Go/No-Go evaluation in MS Word
- Scheduler for time controlled remote read-out from MAVOLOG 10 instruments with the help of METRAwin 10 software via RS 232 interface or modem, or via Ethernet with a slave PC as gateway

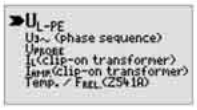
System Requirements: MS Windows 95, 98, ME, NT, 2000 or XP
MS Office 97 or 2000

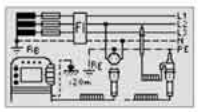
Type	Data Sheet No.	Article Number	
PC.doc-ACCESS / MAVOLOG	–	Z852F	

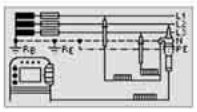
PROFiTEST® 0100S-II

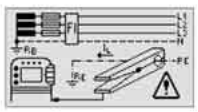
International Test Instrument for Electrical Systems with True Two-Hand Operation

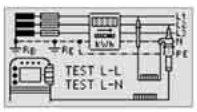


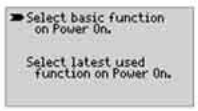












All protective safety measures required by DIN VDE 0100 part 610, as well as the corresponding international regulations (e.g. IEC 64-8 and HD 364-6-61.S1), can be tested with the PROFiTEST 0100S-II:

- Insulation resistance measurement per DIN VDE 0413 part 2 / EN 61557-2
- Loop impedance measurement per DIN VDE 0413 part 3 / EN 61557-3
- Low-resistance measurement per DIN VDE 0413 part 4 / EN 61557-4
- RCD testing per DIN VDE 0413 part 6 / EN 61557-6 (complete test)
- Earthing resistance measurement per DIN VDE 0413 part 5 / EN 61557-5
- Phase sequence testing per DIN VDE 0413 part 7 / EN 61557-7
- Line impedance and standing surface insulation resistance
- Earth leakage resistance, voltage, frequency, biasing current, leakage current, circulating current, current to 150 A

Additional functions include:

- Energy meter start-up testing, cable length determination, recommended fuse types

Special features:

- Loop impedance measurements to 550 V with display of allowable overcurrent protective devices
- Current measurements with clip-on ammeters as of 1 mA
- Low-resistance measurement with calculation of cable lengths
- Universal connector system: interchangeable plug inserts and 2-pole plug-in adapter assure worldwide compatibility
- Integrated processor-controlled charger for rechargeable NiCd and NiMH batteries
- Large voltage and frequency ranges. The range of applications includes all alternating current and 3-phase systems from 60 V to 800 V with frequencies from 15.4 Hz to 420 Hz
- Meter start-up direction
- Large, easy to read display with background illumination: Menus, schematic diagrams, online help, measured, reference and nominal values etc. appear in plain text at a dot matrix display.
- Indication of connection errors and limit values violations
- Always current with software updates via IRDA interface
- Direct measurement of leakage current with clip-on ammeter, indirect with rising test current
- Easy, concise operation with a single function selector switch and three keys, as well as remote control
- Online help and schematic diagrams can be queried for all basic functions and sub-functions
- Immediate print-out of measured value tables via PSI plug-in module
- Data transmission to a PC via RS 232 interface and report generation with PC.doc-win, PC.base-m and PS3 software
- 6 different languages can be selected, and additional languages can be uploaded via the IRDA interface.

The following versions are available:

- **PROFiTEST 0100S-II:** VDE 0100 test instrument with the following languages: German, English, French, Italian, Spanish, Dutch, including socket, earth contact plug, 2-pole adapter, cable for expansion to 3-pole adapter, 2 alligator clips, set of batteries, operating instructions and test report
- **PROFiTEST 0100S-UK-II:** UK version with the following languages: English, Danish, Swedish, Finnish, German, Dutch
- **PROFiTEST 0100S-E-II:** Iberian version with languages: Spanish, Catalan, Gallic, Basque, Portuguese, English
- **PROFiTEST 0100S-O-II:** Slavic version with the following languages: Czech, Slovak, Hungarian, German, Polish

Type	PROFiTEST 0100S-II	
RCCB testing with or w/o tripping:	– With nominal residual current	10/30/100/300/500 mA
	Contact voltage	0 ... 70 V
	Time to trip	0 ... 1000 ms
	– With rising residual current	
	Contact voltage	0 ... 50 V
	Tripping current	0.3 ... 1.3 x $I_{\Delta N}$
Overcurrent protective devices	Loop resistance (... 550 V)	0 ... 10 Ω
	Short-circuit current	0 A ... 50 kA
Earthing measurements	Earth resistance	0.15 Ω ... 10 kΩ
	Earth electrode voltage	0 ... 253 V
	Standing surface insulation resistance	0 ... 1 MΩ
Insulation resistance measurement	Insulation resistance	0 ... 300 MΩ
	Nominal voltage	100 / 250 / 500 V
	Nominal current	1 mA
	Insulation and earth leakage resistance	50 kΩ ... 100 MΩ
Low-value resistance		0 ... 100 Ω
Alternating voltage		0 ... 253 / 500 / 850 V
Frequency		15 ... 420 Hz
Current measurement with clip		1 mA ... Clip Measuring Range
Nominal Ranges of Use	Voltage	60 ... 500 V
	Frequency	15.4 ... 420 Hz
Power Supply	6 ea. 1.5 V mignon cell per IEC LR 6 (AA)	
Dimensions / weight	240 x 340 x 62 mm / 2.5 kg	

Type	Data Sheet No.	Article Number	
PROFiTEST 0100S-II	3-348-888-03	M520A	
PROFiTEST 0100S-UK-II	3-348-888-03	M520B	
PROFiTEST 0100S-E-II	3-348-888-03	M520C	
PROFiTEST 0100S-O-II	3-348-888-03	M520D	

PROFi TEST® PSI-E/-BC

PSI Module for PROFi TEST 0100S-II

PROFi TEST PSI-E

The PSI module (printer, storage, interface) functions simultaneously as printer, memory and interface. It is attached to the test instrument and secured with two snap-hooks. Values measured with the PROFi TEST 0100S-II are transmitted to the PSI module by means of infrared light where they are stored to memory. It offers sufficient capacity for approximately 4400 measurement values from 200 electrical circuits. The measurement values from all of the recorded electrical circuits can be read out to the test instrument display in tabular form, and can be printed out onto a recording chart along with date and time by simply pressing a key. The measurement value table can, for example, be attached directly to an approval report.
The PSI module is equipped with an RS 232 interface. Stored data can be transmitted via the interface to a PC and processed with PC.doc and PC.base software independent of the test instrument at a later point in time. Reports can be generated directly at a Centronics printer from the PSI module in A4 format with the DA-II printer adapter (optional).

- 3 functions with a single device: printer, memory and interface
- Report generating functions: numeric entry of buildings and electrical circuits
- Reports can be printed out in A4 format at Centronics printers with the help of a printer adapter (accessory).

PROFi TEST PSI-BC ⇒ same as PROFi TEST PSI-E with

- Expanded report generating functions: alphanumeric entry of buildings, distributors, RCDs, electrical circuits and defects, or data entry with a barcode scanner

Power supply: 4 ea. mignon cell per IEC LR 6 (AA)

Type	Data Sheet No.	Article Number	
PROFiTEST PSI-E	3-348-976-03	M522A	
PROFiTEST PSI-BC	3-348-976-03	M522D	

PROFiTEST DC II / DI-MON 1

PROFi TEST DC II: Add-On Device for the Measurement of Loop Resistance in TN Systems
DI-MON 1: Differential Current Monitor for Acquiring Leakage Current

PROFi TEST DC II:
This add-on device allows for the measurement of loop impedance in TN systems which are equipped with RCCBs with the PROFi TEST 0100S-II. It suppresses tripping of RCCBs. The PROFi TEST DC II can also be used for measuring DC components, tripping current and time to trip for DC sensitive RCCBs (selective DC versions as well).

- Accessories: adapter with 3 test leads for PROFiTEST DC-II in systems without earthing contact sockets
- Dimensions: 205 mm x 120 mm x 100 mm (H x W x D), weight: 1.5 kg without connector cable

DI-MON 1:
Differential current monitor for acquiring leakage current which occurs only sporadically at individual power consumers. Allows for easy detection of faulty load components.

- Dimensions: 120 mm x 65 mm x 100 mm (H x W x D), weight: 360 gr.

Type	Data Sheet No.	Article Number	
PROFi TEST DC II	3-348-974-03	M523A	
3-pole adapter for DC-II	3-348-974-03	Z523A	
DI-MON 1	–	M662B	

PROFiKALIBRATOR 1

Comparative Calibration Device for Test Instruments per DIN VDE 0100

The PROFiKALIBRATOR 1 is a comparative calibration device for testers per DIN VDE 0100.
In conjunction with a test standard and a multimeter (e.g. METRAHit 22S), it allows for testing of protective measure test instruments such as the PROFiTEST 0100S-II, PROFiTEST C. The various functional values which must be determined according to DIN VDE 0100, part 610, are first compared with the test standard, and then with the measured values from the DUT. Measured values from the test standard serve as reference values. In this case, the test standard is a device of the same type as the DUT, which, however, has a valid calibration certificate.

Type	Data Sheet No.	Article Number	
PROFi-KALIBRATOR 1	–	M661A	

PGS... Test Sets

Test Sets in Carrying Case for Testing per DIN VDE 0100

In addition to the PRO*Fi*TEST 0100S-II, test sets include all essential accessories required for testing electrical systems in accordance with DIN VDE 0100 packed in a carrying case: e.g. PRO*Fi*TEST PSI-E, software with interface cable, A3-16 3-phase current adapter for CEE 16 A outlets, SP350 earth drills, Telearm1 telescoping rod for PE measurements, PS-10P recording chart and TR25 reel with 25 meters of cable.
Included with individual test sets:

Designation	Type	PGS...							
		110	115	117T	210	211	215	216	2000
Universal carrying pouch	F2000		✔				✔	✔	
Carrying case	K100	✔		✔	✔	✔			
Metal case	Z504J								✔
PRO*Fi*TEST 0100S-II	M520A	✔	✔	✔	✔	✔	✔	✔	✔
PRO*Fi*TEST PSI-E	M522A	✔			✔				✔
PRO*Fi*TEST PSI-BC	M522D		✔	✔		✔	✔	✔	
Digital multimeter	METRAmax 12								✔
Software, interface cable	PC.doc-win		✔						
Software update, interface cable	WinProfi	✔	✔	✔	✔	✔	✔	✔	✔
Adapter	DA-II								✔
Earth spike	SP350	✔			✔	✔			✔
Test probe extension	Telearm1	✔			✔	✔			
Recording charts	PS-10P	✔		✔	✔	✔			
Measuring adapters	A3-16	✔							
Variable plug adapter set	Z500A			✔	✔	✔			✔
Plug insert	PRO-RLO			✔	✔	✔			✔
Plug insert	PRO-Schuko							✔	
Measurement cable, 25 m	TR25	✔		✔	✔	✔			✔

Type	Data Sheet No.	Article Number	
PGS 110	3-348-888-03	M509H	
PGS 115	3-348-888-03	M509K	
PGS 117T	3-348-888-03	M509T	
PGS 210	3-348-888-03	M509L	
PGS 211	3-348-888-03	M509M	
PGS 215	3-348-888-03	M509R	
PGS 216	3-348-888-03	M509S	
PGS 2000	3-348-888-03	M509P	

PRO-RLO and PRO-UNI Plug Inserts

Plug Inserts for PRO*Fi*TEST 0100S-II with 10 m Cable for PE Measurements and the like, or with 3 Connector Cables for Any Connection Standards

PRO-RLO: Plug insert with 10 m cable for PE measurements and the like

PRO-UNI: Plug insert with 3 connector cables for any connection standards

Type	Data Sheet No.	Article Number	
PRO-RLO	–	GTZ3214000R0002	
PRO-UNI	–	GTZ3214000R0003	

Clip 0100S / Z3512A Clip-On Adapter Cable

Clip-On Current Transformer / Sensor and Cable for Connecting Current Clips

Z3512A

Clip 0100S

Clip 0100S:
Clip-on current sensor for measuring fault current with 3.5 mm jack plug

Z3512A:
Clip-on current sensor, selectable measuring range: 0 ... 1/100/1000 A~ AV~ ± (0.7% ... 0.2%)

Clip-on adapter cable:
Cable with banana plugs for connecting current clips to jack plugs at the PRO*Fi*TEST 0100S-II

Type	Data Sheet No.	Article Number	
Clip 0100S	3-349-017-03	Z501E	
Z3512A	–	Z225A	
Clip-on adapter cable for clip-on current sensors	–	Z501G	

PROFi TEST C

Test Instruments – DIN VDE 0100 / IEC 364-6-61

Protective measures test instrument for loop resistance measurement, calculation of short-circuit current and display of suitable fuse ratings. In addition to complete testing for the effectiveness of RCCBs, the instrument is also capable of phase sequence analysis, as well as the measurement of voltage and frequency.

- The extremely rugged 2-component housing with integral impact guard makes this instrument perfect for use by on-site installation teams, and it supplements the PROFITEST 204 in accordance with the new EN 60204 in an ideal fashion.
- A large, illuminated, anti-reflection graphic display allows for clear, intuitive, menu-driven operation.
- Operation is quick and easy with a total of only 5 keys.
- The integrated measured value memory can be read out via the infrared data interface, which is included as standard equipment.
- Print-outs and reports can also be read out via the IR interface,
- The interface can also be used for updates to assure that the instrument continues to meet future demands as well.
- Stored measured values can be accurately assigned to their respective electrical circuits, distributors and buildings with the alphanumeric keypad.
- Unambiguous Go/No-Go decisions are made possible with LEDs and display messages.
- The desired language can be selected.
- A phase tester is integrated into the instrument.
- A carrying strap, a stand, holders for test probes and cables and a recharging socket for NiCd/NiMH batteries round out the convenient and safe PRO*FI*TEST C.
- Dimensions: 275 mm x 140 mm x 65 mm (H x W x D), weight: 1.2 kg with batteries
- Power supply: 4 ea. mignon cell per IEC LR 14
- PROFiTEST C/METRISO C set consisting of: PROFiTEST C, METRISO C, 3-pole adapter, IrDa 0100 adapter cable and KS17 measurement cables in HC 40 hard case

Accessories:

- NA 0100S: Charger for rechargeable battery set
- HC30-C: Hard case with blister inserts for one series C test instrument with accessories
- HC40: Hard case with blister inserts for two series C test instruments and accessories

Software:

- PS3: Test instrument software including systems and equipment management, and reports generating (see page 58)
- PC.doc-win documentation and management software for measurements per DIN VDE 0701/0702 and 0100 as a supplement to MS Word and Access in German
- WinProfi: For communications between the test instrument and the PC (included)

Function	Measured Quantity	Measuring Range (display range I_K)	Intrinsic Error	Nominal Range of Use
$U_{L-PE\ (N)}$ U_{N-PE}	U_{L-PE} / U_{N-PE} / U_{L-N}	0 ... 300 V / (0 ... 600 V)	± (2% rdg. +2 d)	108 ... 253 V
	f	15.0 ... 650 Hz	± (0.1% rdg. +1 d)	15 ... 70 Hz
$U_{3\sim}$	$U_{3\sim}$	0 ... 500 V / (0 ... 600 V)	± (2% rdg. +2 d)	108 ... 440 V
I_Δ	$U_{I\Delta N}$	0 ... 99.9 V	±(12.5%rdg.+2 d)+(2.5 % rdg.−2 d)	5 ... 70 V
	R_E / $I_\Delta N$ = 10 mA	10 Ω ... 9.99 kΩ	–	Calculated value
	. . .	. . .		
	R_E / $I_\Delta N$ = 500 mA	0.2 Ω ... 380 Ω		
	I_Δ / $I_\Delta N$ = 10 mA	3.0 mA ... 13.0 mA	± (5% rdg. +2 d)	3.0 mA ... 13.0 mA
	. . .	. . .		
	I_Δ / $I_\Delta N$ = 500 mA	150 mA ... 650 mA		150 mA ... 650 mA
	$U_{I\Delta}$ / U_L = 25 mA	0 V ... 25.0 V	+ (12.5% rdg.+ 2 d) + (2.5% rdg.– 2 d)	0 ... 25.0 V
	$U_{I\Delta}$ / U_L = 50 mA	0 V ... 50.0 V		0 V ... 50.0 V
	t_A ($I_\Delta N$ / 5 · $I_\Delta N$)	0 ms ... 999 ms	± 3 ms	0 ms ... 1000 ms
Z_{Loop}	Z_{Loop}	0.01 Ω ... 30.0 Ω	± 5 D ± (6% rdg.+ 3 d)	0.25 Ω ... 30 Ω
R_E	R_E	0 Ω ... 9.99 Ω		0.25 Ω ... 9.99 Ω
		10.0 Ω ... 9.99 kΩ	± (4% rdg. +3 d)	10.0 Ω ... 9.99 kΩ

Type	Data Sheet No.	Article Number	
PROFiTEST C	3-349-075-03	M521A	
PROFiTEST C-CH	3-349-075-03	M521B	
Set PROFiTEST C / METRISO C	3-349-075-03/-086-03	M508A	
NA 0100S		Z501D	
HC30-C		Z541C	
HC40		Z541D	
PC.doc-win		Z710F	

METRISO C

Digital Insulation and Resistance Measuring Instrument, 1000 V

The following functions are included for measurements in electrical systems, as well as at insulating and conducting floor coverings and walls:

- Measurement of insulation resistance and high-resistance with display of the measured value and the actual, respective measuring voltage
- Measurements at bonding and protective conductors with low-resistance measurement
- Measurement of contact current, voltage and frequency
- Optional measurement of temperature and relative atmospheric humidity
- All measurements are in compliance with the following regulations:
  DIN VDE 0100 part 610, DIN VDE 0413 (=EN 61557) parts 1, 2, and 4, DIN VDE 0701 part 240, EN 344, EN 1081, IEC 1340-4-1, IEC 1340-5-1
- Unambiguous limit value and Go/No-Go indication with 4 LEDs, helpful hints appear plainly at the display
- All measurement values are stored to memory with reference to their respective electrical circuit designations
- Rugged 2-component housing for everyday use
- Dimensions: 275 mm x 140 mm x 65 mm (H x W x D), weight: 1.2 kg with batteries
- Power supply: 4 ea. mignon cell per IEC LR 14

Accessories:

- NA 0100S: Charger for rechargeable battery set
- HC30-C: hard case with blister inserts for one series C test instrument with accessories

Software:

- PS3 software for test instruments including systems and equipment management, and reports generating

Characteristic Values

Function	Measuring Range	Measuring Voltage	Nominal Current
Insulation resistance R_{ISO}	000 kΩ ... 99.9 GΩ	100 V ... 1000 V	1 mA (R_N=1 kΩ/V)
Resistance R_{LO}	0.00 Ω ... 99.9 Ω	4.5 V (U_0)	≥ 200 mA (R < 10 Ω)
Voltage U_{ISO} / U~	0 V ... 1200 V	–	–
Contact current I_B	0.00 mA ... 9.99 mA	–	–

Type	Data Sheet No.	Article Number	
METRISO C	3-349-086-03	M541A	

METRISO® 500D

Digital Insulation Measuring Instrument, 500 Volt

Classical, digital insulation measuring instrument for electrical systems with up to 500 V in accordance with EN 61 557 parts 1, 2 and 4 (DIN VDE 0413 parts 1 and 4) with a measuring voltage of 500 V

- Digital and analog display
- Warning for hazardous shock voltages
- Quick-test with signal lamp in test probe
- Low-resistance measurement per DIN VDE 0413, part 4

Type	Data Sheet No.	Article Number	
METRISO 500D	3-349-115-03	GTM5040000R0001	
F837 ever-ready case	–	GTZ3312000R0001	

METRISO® 1000D (1000IR)

Digital Insulation Measuring Instrument, 1000 Volt

Digital insulation measuring instrument for electrical systems with up to 1000 V in accordance with EN 61 557 parts 1, 2 and 4 (DIN VDE 0413 parts 1 and 4) with 3 measuring voltages: 100, 250 and 1000 V

- Digital and analog display
- Three nominal voltages: 100 V, 500 V, 1000 V (METRISO 1000 IR: 250 V, 500 V, 1000 V)
- Warning for hazardous shock voltages
- Voltage measurement to 1000 V
- Quick-test with signal lamp in test probe
- Low-resistance measurement per DIN VDE 0413, part 4

Type	Data Sheet No.	Article Number	
METRISO 1000D	3-349-115-03	GTM5050000R0001	
METRISO 1000IR	3-349-115-03	GTM5050000R0002	
F837 ever-ready case	–	GTZ3312000R0001	

METRISO® 1000A

Analog Insulation Measuring Instrument, 1000 Volt

Low-cost analog insulation measuring instrument for electrical systems with up to 1000 V in accordance with EN 61 557 parts 1, 2 and 4 (DIN VDE 0413 parts 1 and 4)

- Five nominal voltages: 50 V, 100 V, 250 V, 500 V, 1000 V
- Voltage measurement to 1000 V
- Signal lamp for battery level
- Low-resistance measurement per DIN VDE 0413, part 4 / EN 61557 -1 / -2 / -4

Accessories:

- 1081 Probe: triangular probe for floor measurements in accordance with EN 1081, DIN VDE 0100 (see page 56)
- KS24: 4 m extension cable

Type	Data Sheet No.	Article Number	
METRISO 1000A in pouch	3-348-807-03	M540C	
KS24 extension cable	–	GTZ3201000R0001	
1081 Probe	–	GTZ3196000R0001	

METRAOHM 413

Digital Low-Resistance Measuring Instrument

Digital low-resistance measuring instrument in accordance with DIN VDE 0 413 part 4 and EN 61 557 parts 1 and 4

- Overvoltage protection
- Interference voltages indicated with LED, acoustic signal and measured value
- IP 65 protection
- Zero balancing for measurement cables

Type	Data Sheet No.	Article Number	
METRAOHM 413	3-348-810-03	M630A	

ISO CALIBRATOR 1

Calibration Adapter for Insulation and Resistance Measuring Instruments

Calibration adapter for rapid, efficient testing of the accuracy of measuring instruments for insulation resistance and low-value resistors

Type	Data Sheet No.	Article Number	
ISO calibrator 1	–	M662A	

Characteristic Values

Type	METRISO 500 D	METRISO 1000 D	METRISO 1000 IR	METRISO 1000 A	METRAOHM 413
Display	Digital			Analog	Digital
Insulation resistance	0 ... 3 GΩ	0 ... 30 GΩ		0 ... 400 MΩ	–
Number of ISO measuring ranges	6	7		15	
Intrinsic error	± (1.5% + 2 digits)				± (1.5% + 4 digits)
Max. nominal voltage	500 V	100 V/500 V/1000 V	250 V/500 V/1000 V	50 V ... 1000 V	
Nominal Current	1 mA			≥ 1 mA / 200 mA	200 mA (20 mA)
Limit value signal Signal lamp	●	●	●	●	●
Limit value signal Acoustic	●	●	●	–	●
Low-resistance measuring range	0.01 ... 30 Ω			0 ... 4 Ω	0.01...20 Ω (200 Ω)
Voltage (AC / DC)	0 ... 500 V	0 ... 400 V	0 ... 1000 V	0 ... 1000 V	Interference voltage display
Power supply	6 ea. 1.5 V mono-cell, IEC R 20				1 ea. 9 V block, IEC 6 LR 61
Dimensions	165 x 125 x 110 mm				60 x 230 x 40 mm
Weight	1.85 kg			1.6 kg	0.25 kg

METRISO® 5023

Insulation and Resistance Measuring Instrument with Voltage Measuring Range

Handy, extremely rugged instrument for harsh ambient conditions with easy, clear-cut operation

- Straightforward two-hand operation
- Insulation measurement with 100, 250 and 500 V measuring voltage (VDE 0413, part 2 / EN 61557-2)
- Insulation resistance measurement from 0.1 to 400 MΩ
- Low-value resistance measurement from 0 to 4 Ω (VDE 0413, part 4 / EN 61557-4)
- Voltage measurement from 0 to 500 V

Accessories:

- KS24: Cable set for insulation measuring instruments
- ISO calibrator 1: calibration adapter

Type	Data Sheet No.	Article Number	
METRISO 5023 in pouch	3-349-212-03	M540D	
KS24	–	GTZ3201000R0001	
ISO calibrator 1	–	M662A	

METRISO® 5000 D-PI

Digital High-Voltage Insulation Measuring Instrument to 5000 V DC

Instrument for traditional insulation measurement with selectable voltages of up to 5000 V – designed and manufactured for all known types of long-term insulation measurement as well

- Extensive measuring range from 0.1 MΩ to 1 TΩ
- Variable test voltage, or in fixed steps: 100 V, 250 V, 500 V, 1 kV, 1.5 kV, 2 kV, 2.5 kV, 5 kV
- Polarization index and absorption ratio
- Voltage measurement to 1000 V
- Frequency measurement from 15 Hz to 1 kHz
- Capacitance measurement from 0.1 to 5 µF
- Measurement of electrical discharge
- Guard terminal for the elimination of surface current
- 5 m extension cable included as accessory
- Supply power from mains, battery pack or external 12 V power supply
- Backlit dot matrix display
- Digital display of measured values and limit values, characteristic curve display for polarization index
- Timer function: 1 s to 100 min.

Accessories:

- Guard 5000A: 1 guard cable with plug and alligator clips
- Leadex 5000: 5 m extension cable
- SECUTEST PSI: PSI module with 2 rolls paper chart, 1 ribbon cartridge, batteries and operating instructions
- DA-II: Printer adapter for direct connection of external printers with Centronics interface
- KY 5000A: 2 alligator clips (5 kV version)
- ISO calibrator 1: Calibration adapter for test voltages **up to 1000 V**

Type	Data Sheet No.	Article Number	
METRISO 5000D-PI Basic instrument = all features 00	3-349-209-03	M5810	
PROFITEST 204HP/2.5 kV (not with C1)	3-348-802-03	M5810B1	
PROFITEST 204HP/5.4 kV (not with C1)	3-348-802-03	M5810B2	
Rechargeable battery (not with B1, B2)	–	M5810C1	
Caddy 2047 (not with B0)	3-348-802-03	M5810D1	
Calibration certificate per DKD	–	M5810E1	
Signal 204, external signal lamp	3-348-802-03	M5810F1	
Guard 5000A, measurement cable	–	M5810G1	
Leadex 5000, 5 m extension cable	–	M5810H1	
SECUTEST PSI, printer module	3-348-785-03	M5810I1	
DA-II	–	Z745M	
KY 5000A	–	Z580B	
ISO calibrator 1	–	M662A	
F2000 carrying pouch	3-349-126-02	Z700D	

METRISO® 5000A

Analog Insulation Measuring Instrument, 5000 Volt

METRISO 5000A:
Analog high-voltage insulation measuring instrument with 4 measuring voltages: 100, 250, 500 and 1000 V (per EN 61 557 part 2) and 1500, 2000, 2500 and 5000 V
METRISO 5000AK:
The battery powered METRISO 5000A is converted into the muscle powered METRISO 5000AK simply by replacing the battery module with a crank generator.

- Extensive measuring range: 10 kΩ ... 1 TΩ
- Measuring range: 100 kΩ ... 100 MΩ (1000 V)
- Measuring voltages: 100 V, 250 V, 500 V, 1000 V, 1500 V, 2000 V, 2500 V, 5000 V
- Measurements to 1000 V per DIN VDE 0413
- Voltage measurement to 2000 V ⎓, ~
- Concise logarithmic display
- Guard terminal for the elimination of surface current
- METRISO 5000A set: METRISO 5000A + KY 5000A + GUARD 5000A in F2000 universal carrying pouch
- METRISO 5000AK set: METRISO 5000AK + KY 5000A + GUARD 5000A in F2000 universal carrying pouch

Accessories:

- Generator 5000A: Crank generator for Metriso 5000A
- KY 5000A: 2 alligator clips for Metriso 5000A
- Guard 5000A: 1 guard cable and 1 alligator clip for METRISO 5000A
- Leadex 5000: 5 m extension cable

Technical Data:

Type	METRISO 5000 A
Insulation resistance	1 TΩ
Open-circuit voltage	100 V, 250 V, 500 V, 1000 V, 1500 V, 2000 V, 2500 V, 5000 V
Voltage (AC / DC)	0 ... 2000 V
Power supply	6 ea. 1.5 V mono-cell, IEC R 20 (D size)
Dimensions	290 x 250 x 140 mm
Weight	3.4 kg (with batteries)

Type	Data Sheet No.	Article Number	
METRISO 5000A	3-348-858-03	M580A	
METRISO 5000AK	3-348-858-03	M580C	
METRISO 5000A-Set	3-348-858-03	M580S	
METRISO 5000AK-Set	3-348-858-03	M580T	
Generator 5000A	3-348-858-03	Z580A	
KY 5000A	–	Z580B	
Guard 5000A	–	Z580C	
Leadex 5000	–	Z580D	
F2000 carrying pouch	3-349-126-02	Z700D	

GEOHM C

Battery Powered Earth Tester (also for measurement of soil resistivity)

Compact, menu-driven instrument for the measurement of earthing resistance for 3 or 4-wire connection.
Continuous monitoring of interference voltage, as well as auxiliary earth electrode and probe resistance with indication if allowable limit values are violated.
Complete display of all required values at a large dot matrix display, or warning with 4 LEDs.
Easy concise operation with only 4 keys.

- Measurement of earthing resistance in 5 ranges to 50 kΩ
- Voltage measurement from 10 to 250 V, frequency measurement from 45 to 200 Hz
- Battery monitoring and self-test, integrated memory with IrDA interface, factory calibration certificate
- Extremely rugged 2-component housing, earth tester in accordance with DIN VDE 0413, part 5
- Measurement of ohmic resistance, automatic measurement of probe and auxiliary earth electrode resistance
- Automatic monitoring of interference voltages in the ground
- Helpful hints appear plainly at the display, automatic battery monitoring
- Storage of all measured values to memory
- Dimensions: 275 mm x 140 mm x 65 mm (H x W x D), weight: 1.2 kg with batteries
- Power supply: 4 ea. mignon cell per IEC LR 14

For the measurement of earthing resistance in electrical systems in accordance with:

- DIN VDE 0100, set-up of power installations with nominal voltages of up to 1000 V
- DIN VDE 0141, grounding in AC systems with nominal voltages of greater than 1 kV
- DIN VDE 0800, set-up and operation of telecommunications systems including data processing equipment
- DIN VDE 0185, lightning protection systems
- DIN VDE 0413 (=EN 61557) parts 1 and 5, devices for testing, measuring or monitoring protective measures and earth resistance

Accessories:

- NA 0100S: Charger for rechargeable battery set
- HC30-C: Hard case with blister inserts for one series C test instrument with accessories

Type	Data Sheet No.	Article Number	
GEOHM C	3-349-088-03	M590A	
NA 0100S	–	Z501D	
HC30-C	–	Z541C	

Technical Data:

Function	Measuring Range	Resolution	Measuring Voltage	Test Current	Accuracy	Operating Error
Resistance	0.01 Ω ... 20 kΩ	0.01 Ω ... 10 Ω	Max. 50 V_{eff}/128 Hz	10 m A_{eff} ...100 µA_{eff}	±(3% rdg. + 3 d)	±(10% +6 d)
	manual: ... 50 kΩ					±(16% +10 d)
Voltage	0 V ... 250 V	–	–	–	–	–

GEOHM®33D

Earth Tester with Crank Generator

Earth testers are used for the measurement of earth resistance in electrical systems per DIN VDE 0100, 0141, 0800 and 0185. This measurement is required for the determination of earthing system dimensions. The testers can also be used for geological ground surveys and for the planning of earthing systems. Interference voltages and auxiliary earth electrode resistance are continuously monitored. A signal is generated automatically if allowable limit values are exceeded.
The testers function in accordance with the current-voltage measuring method per DIN VDE 0413 part 7, and in accordance with the compensation measuring method in accordance with DIN VDE 0413 part 5.

- Digital LCD
- Limit value monitoring
- Easy to turn crank generator
- Rugged mechanical design

Technical Data:

Type	GEOHM 33D
Display	Digital
Measuring ranges	0 ... 20 / 200 / 2000 / 20000 Ω
Intrinsic error	± (2% rdg. + 3 digits)
Power supply	Crank generator
Dimensions	210 x 128 x 125 mm
Weight	1.4 kg

Type	Data Sheet No.	Article Number	
GEOHM 33D	1-2.5-416.02	GTM5033000R0001	
F833 carrying pouch	–	GTZ3301001R0001	

GEOHM Accessories
E-Set 2

Measuring Accessory Set for Earth Testers

Extensively equipped earth measurement case with space for device and accessories

Contents:

- 1 drum with 25 m measurement cable
- 2 drums with 50 m measurement cable each
- 4 measurement cables, 3 ea. 0.5 m, 1 ea. 2 m
- 1 test clamp
- 4 earth drills, 350 mm long
- 1 dust cloth
- 2 pads of test result forms

Type	Data Sheet No.	Article Number	
E-Set 2	–	GTZ3301004R0001	

GEOHM Accessories
E-Set 3

Measuring Accessory Set for Earth Testers

Moderately priced measuring accessories for measurements with earth spikes

Contents:

- 2 reels
- 2 measurement cables, 25 m each
- 1 measurement cable, 40 m long
- 2 measurement cables, 3 m each
- 4 earth spikes (zinc plated)
- 2 spike pullers
- 1 hammer

Type	Data Sheet No.	Article Number	
E-Set 3	–	GTZ3301005R0001	

GEOHM Accessories
E-Set 4

Measuring Accessory Set for Earth Testers

Measuring accessories for earth measurements, same as E-Set 3 but with earth drills instead of spikes

Contents:

- 2 reels
- 2 measurement cables, 25 m each
- 1 measurement cable, 40 m long
- 2 measurement cables, 3 m each
- 4 earth drills

Type	Data Sheet No.	Article Number	
E-Set 4	–	Z590A	

Accessories for Earth Resistance Measurements

Description	Type	Data Sheet No.	Article Number	
Reel with 25 m measurement cable	TR25	–	GTZ3303000R0001	
Drum with 50 m measurement cable	TR50	–	GTY1040014E34	
Earth drill, 35 cm long	SP350	–	GTZ3304000R0001	

Phase Sequence Indicators – EN 61557-1/-7

MetraPhase 1

Phase Sequence Indicator with Electronic Rotary Dial, Frequency Display and Display of Nominal Line Voltage

Phase sequence indicator in compliance with safety regulations.
Many users prefer the Ferraris type rotary dial which, however, requires a mechanical movement. The size of the movement necessitates the use of a relatively large housing in order to assure that the required clearances and creepage distances are observed. For this reason, we have equipped or new METRAPHASE 1 phase sequence indicator with an electronic rotary dial. LEDs arranged in a circular array not only indicate the direction of rotation, but rather line frequency as well by means of LEDs which light up in various colors. The presence of voltage at each phase is indicated with additional LEDs as required by the regulation, as well as nominal line voltage. This new phase sequence indicator can be used as a 3-pole or a 2-pole indicator.

- Power supply: 4 ea. mignon cell per IEC LR 6

Accessories:

- GH18: Protective rubber cover (optional)
- Z500A: Variable plug adapter set, 3.5 to 12 mm diameter, set of three
- NA4/500: 230 V / 4 V power pack with safety connector cable

Type	Data Sheet No.	Article Number	
MetraPhase 1	3-348-992-03	M620A	
Protective rubber cover	–	GTZ3212000R0001	
Z500A variable plug adapter set	–	Z500A	
NA4/500 mains power pack	–	Z218A	

MetraStart 1

Meter Start-Up Tester

Meter start-up tester for the assurance of correct functioning of newly installed Ferraris current meters. 5 seconds are sufficient for testing of rotation in the correct direction.

Type	Data Sheet No.	Article Number	
MetraStart 1	3-348-992-03	M620B	

PhaseCop 2

Phase Sequence Indicator with LEDs and Contact Protected Plugs

Instrument for the determination of the direction of rotation, or phase sequence in 3-phase systems

- 3 LEDs indicate whether or not the 3 phase conductors are live
- Very large voltage and frequency range
- Simple operation, rugged design
- Permanently connected cables with contact-protected connector plugs, three plug-on test probes and one plug-on alligator clip

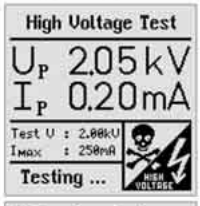
Type	Data Sheet No.	Article Number	
PhaseCop 2	–	GTM5202000R0001	
F801 ever-ready case	–	GTY3172070P01	

Technical Data

Type	METRAPHASE 1	PhaseCop 2
DIN VDE 0413 / EN 61557 compliant	●	●
Phase sequence display	LEDs	LEDs
Phase display	●	●
Display of nominal line frequency	●	-
Display of nominal line voltage	●	-
Nominal range of use	70 ... 690 V / 50 ... 400 Hz	90 ... 660 V / 45 ... 1000 Hz
Dimensions	84 x 195 x 35 mm	70 x 105 x 38.5 mm
Weight	0.3 kg	0.3 kg

MetraMachine 204/439

MetraMachine 204/2.5: Test System for Testing per VDE 0113, EN 60240-1
MetraMachine 439/5.4: Test System for Testing per VDE 0660, EN 60439-1



The PROFITEST 204 is used for rapid, safe testing of electrical and electronic equipment and systems at machinery in accordance with DIN EN 60204-1 and VDE 0113 with nominal voltages to 1000 V.
According to the regulations, the following initial and periodic tests must be performed:

- Testing for continuous electrical bonding of the protective conductor system with a 10 A test current
- Insulation resistance testing, voltage tests (HP or HV option) and testing for residual voltage
- The following tests and measurements can also be performed:
  leakage current testing, as well as voltage and frequency measurements
- All of the values required for approval reports can be measured with this instrument.

Instrument features:

- Clear-cut operating menus, illuminated display, two 4 m measurement cables (4-wire connection)
- Remote operation for easy use and limit value settings
- Convenient memory and report functions, data interfaces for PC and printer
- Can be expanded for rapid, on-site alphanumeric data entry and report printing
- Can be upgraded for high-voltage tests

Display: The LCD window consists of an illuminated dot matrix at which menus, setting options, measurement results and help texts are displayed.

Help key: Information regarding the currently selected menu item can be queried with this key.
The appropriate information is displayed at the LCD window.

Function selector switch: Test, report and data management functions are selected with the rotary switch.

Limit values: Limit values can be specified for each measurement, allowing for individualized adaptation to local conditions as well as requirements set forth in applicable regulations.

Memory: Depending upon the number of systems stored to memory (max. 254), up to 2800 measurements can be saved.

Remote operation: The test probe with integrated control panel allows for remote triggering of protective conductor and insulation resistance measurements, as well as storage of measured values. Integrated lamps indicate progress of the currently running measurement. All PROFITEST 204 control functions can also be activated via the RS 232 interface. Signal and display values can be read out as well.

RS 232 interface for PC and printer: This port allows for power supply and data transmission to the optionally available SECUTEST PSI printer. Other devices can also be connected to this port with the help of an interface cable, e.g. a PC.

Centronics parallel port: Any commercially available printer (except for postscript printers) can be connected to this data interface. Report forms, which can be uploaded to the test instrument, can thus be printed out.

Reporting facilities: The following options are available:

- Print out measurement data with the attachable SECUTEST PSI printer (accessory)
- Upload report form templates to the test instrument with the help of a PC and the included PROTOCOL program
- Select one of three report form templates included in the test instrument
- Print out measurement data with a commercially available printer with Centronics parallel port
- Transmit measurement data to a PC and process with PC.base or Excel

Software:

- PROFI-SPS 204: control software for series testing at a PC
- PC.base-m+204: basic software for reports archiving at a PC
- PS3: modular universal software (see page 58)
- WinProfi: for transmitting the desired language from a PC to the test instrument (included)

Standard equipment:

- PROFITEST 204: basic instrument with two 4 m measurement cables and 204 plug-on cable lug
- MetraMachine 204/2.5: PROFITEST 204, PROFITEST 204 HP, Signal 204, Leadex 204, Caddy 204
- MetraMachine 439/5.4: same as MetraMachine 204, but with PROFITEST 204 HV (5 kV)
- PROFITEST 204: Dimensions (W x D x H) 255 mm x 133 mm x 240 mm, weight: approx. 5.1 kg

Technical Data

Measured Quantity	Measuring Range	Nominal Range of Use	Resolution	Nominal voltage U_N	Open-Circuit U_0	Nom. Current I_N	Short-Circuit I_K	Measuring Error	Intrinsic Error
Protective conductor resistance R_{SL}	0 ... 85 mΩ	10 ... 330 mΩ	100 µΩ	–	12 V ~	10A	12 A	±(8.6% rdg. +6 d)	±(3% rdg. + 5d)
	85...999 mΩ		1 mΩ						
	1 ... 9.99 Ω	–	10 mΩ			–	–		±(3% rdg. +10 d)
	10...25 Ω		100 mΩ						
ΔU *	0 ... 9.99 V*	–	0.01 V	–	12 V ~	10 A	12 A	–	±(2% rdg. +3 d)
	10 ... 12 V		0.1 V			–	–		±(10% rdg. +3 d)
Insulation Resistance R_{ISO}	0 ... 999 kΩ	0.050 ... 50 MΩ	1 kΩ	100 / 250 / 500 / 1000 V	Max. 1.3 • U_N	1 mA	Max. 1.6 mA	±(5.5% rdg. + 4 d) of 0.05 ... 50 MΩ	±(3% rdg. +2 d)
	1...9.99 MΩ		10 kΩ						
	10...99.9 MΩ		100 kΩ						
	100...499 MΩ	–	1 MΩ	250 V				–	±(8% rdg. +2 d)
				500 / 1000 V					±(5% rdg. +2 d)
	500...999 MΩ								±(10% rdg. +2 d)
	1 ... 3 GΩ		10 MΩ	1000 V					±(20% rdg. +2 d)
Leak. cur. ΔI	0 ... 9.99 mA	0.2...9.9 mA	0.01 mA	–	–	–	–	±(8.6% rdg.+9 d)	±(5% rdg. + 5d)
Voltage U DC/AC	0 ... 99.9 V	1 ... 1000 V	0.1 V	–	–		–	±(8.6% rdg.+9 d)	±(5% rdg. + 5d)
	100 ... 999 V		1 V						
	1 ... 1.2 kV		0.01 kV						
Frequency f~	8 ... 99.9 Hz	10 ... 1000 Hz	0.1 Hz	–	–	–	–	±(8.6% rdg.+2 d)	±(2% rdg. + 1 d)
	100 ... 999 Hz		1 Hz						

Type	Data Sheet No.	Article Number	
PROFITEST 204	3-348-802-03	GTM5027000R0001	
MetraMachine 204/2.5	3-348-802-03	M504D	
MetraMachine 439/5.4	3-348-802-03	M504F	

PROFITEST 204HP-2.5 kV
PROFITEST 204HV-5.4 kV

High-Voltage Module for PROFITEST 204

Add-on features: PROFITEST 204HP-2.5 kV and 204HV-5.4 kV
- Test voltage selectable in 50 V steps
- Rise time (ramp) adjustable from 0.1 s … 99 s, test duration adjustable from 1 s … 120 s
- Floating test voltage outputs, electronically controlled test sequence, test sequence can be started with test pistol
- Display of breakdown voltage and phase angle, pulse control operation, measured values can be saved to memory
- Acoustic and visual error indication
- Protection against unauthorized start-up with key switch, connector terminals for external signal lamps

Add-on features: PROFITEST 204HP
- Voltage testing in accordance with EN 60204 / VDE 0113, test power: 500 VA (short-term)
- Breaking current adjustable in 1 mA steps

Add-on features: PROFITEST 204HV
- Test power: 50 VA
- Breaking current adjustable in 0.5 mA steps

The high-voltage modules which can be mounted to the base of the instrument allow for high-voltage testing.
Voltage, current and phase angle are measured with permanently attached measurement cables.
A bidirectional infrared interface at the base of the PROFITEST 204 controls the high-voltage module and transmits measured values to the basic instrument.
- Dimensions: 254 mm x 130 mm x 285 mm, mounted to caddy: 380 mm x 250 mm x 650 mm, weight: approx. 8 kg

Type	Data Sheet No.	Article Number	
PROFi TEST 204HP-2.5kV	3-348-802-03	M505A	
PROFi TEST 204HV-5.4kV	3-348-802-03	M505B	

Signal 204, Claim 204, Caddy 204, Leadex 204, STOP 204, Cable Lug 204

PROFITEST 204 Accessories

Signal 204

Caddy 204

Claim 204

Signal 204
- Combination signal lamp on a magnetic base plate for high-voltage tests in accordance with DIN VDE 0104

Claim 204
- Set of various items used to warn unauthorized persons and for securing large areas, machines or machine components during the performance of high-voltage testing

Caddy 204
- Trolley for basic instrument combined with high-voltage module, includes cover with side pockets

Leadex 204 (no photo)
- 12 m extension for cable with test probe to which the measuring circuit fuse is installed

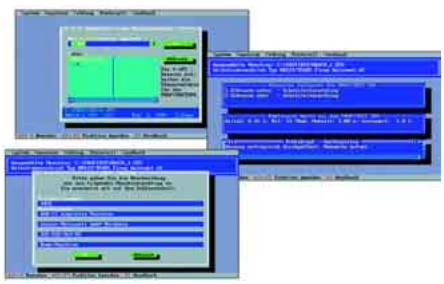
Stop 204 (no photo)
- Combination of basic instrument and high-voltage module

Cable Lug 204 (no photo)
- Plug-on cable lug for secure attachment of the test probe to terminals
- Adapter for SL and ISO Tests with the PROFiTEST 0100S-II and the PROFiTEST 204

Type	Data Sheet No.	Article Number	
Signal 204	3-348-802-03	Z504D	
Claim 204	3-348-802-03	Z504G	
Caddy 204	3-348-802-03	Z504A	
Leadex 204	3-348-802-03	Z504C	
STOP 204	3-348-802-03	Z504F	
Cable Lug 204	3-348-802-03	Z504E	

Remote 204

PROFITEST 204 Control Software



Programming software in 3 languages for controlling the PROFiTEST/MACH 204 from a PC. (replacement for PROFI-SPS 204)

Type	Data Sheet No.	Article Number	
Remote 204	3-348-802-03	Z532A	

SECUTEST®SII

Test Instrument for Testing in Accordance with DIN VDE 0701, 0702, 0751

For testing the safety of portable electrical equipment after repair or modification per DIN VDE 0701, or at regular intervals (periodic testing) per DIN VDE 0702. The device automatically recognizes the protection class of the device under test and performs complex measurements automatically to a great extent. Timely software updates assure that the test instrument is always kept current and in compliance with the standards. For example, all test procedures in accordance with the new DIN VDE 0701-1: 2000-09 are included for devices whose insulation characteristics cannot otherwise be fully evaluated.
Online help for operation and parameter settings, measurement and test results, circuit diagrams, as well as help texts and error messages are displayed in plain text at a large dot matrix LCD.
Several different languages can be selected.
Data transmission to the PSI module (printer) or to a PC is accomplished via the RS 232 interface, which is included as standard equipment.
Programs are available for PCs which make it possible to generate test reports, and to incorporate measurement and test data into the equipment management function, or into the comprehensive management function for the electrical trades. With the help of a barcode printer and scanner, large inventories of equipment can be cost effectively and efficiently managed and tracked for periodic testing.

Complete:
- Functions expansion with attachable PSI module (printer, memory and keypad)
- Future regulations are also taken into consideration
- Barcode scanner, PC or PDA can be connected

By practitioners, for practitioners:
- All measured values at a single glance in plain text
- Menu-driven, integrated operating instructions
- Complies with VDE 0404
- Illuminated display!
- Regulation oriented function selection

Cost-effective:
- Serial port in basic instrument at no extra cost
- Saves time with automated measuring sequences
- Dimensions: 292 x 130 x 243 mm
- Weight: 4.5 kg

Easy report generation:
- On-site printing of test reports and statistics
- PC software for generating reports, repair management and administration
- User-specific texts can be entered with the keypad at the PSI module

Type	Data Sheet No.	Article Number	
SECUTEST SII	–	M7030	
M7030-V001	–	M7030-V001	

VDE Tests

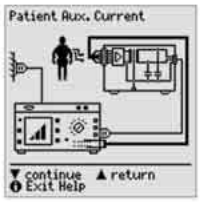
Test	Protective Conductor Resistance	Insulation Resistance	Equivalent Leakage Current	Absence of Voltage	Load Current	Residual Current
Measuring range	0 ... 31 Ω	0 ... 310 MΩ	0 ... 120 mA	0 ... 3.5 mA	0 ... 16 A	0 ... 31 mA
Intrinsic error	±(2.5% rdg. + 5 d)					±(5% rdg. + 5 d)

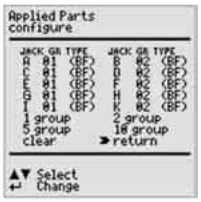
General Service Measurements

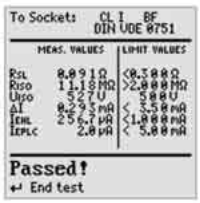
(line) Voltage	Current	Temperature	Resistance	Active power	Apparent Power	Power Factor
0 ... 253 V	0 ... 10 A / 120 A with clip-on ammeter	– 200 ... + 850 °C with Pt100 sensor	0 ... 150.0 kΩ	0 ... 3700 W	0 ... 4000 VA	0 ... 1.00
±(2.5% rdg. + 5 d)	±(3% rdg. + 10 d)	±(2% rdg. + 1 °C)	±(1% rdg. + 3 d)	±(5% rdg. + 10 d)		

SECUTEST®SIII

Universal test instrument for testing the electrical safety of portable electrical equipment in commercial and medical applications after initial manufacture or repair, and for periodic testing







Technical safety measurements for, amongst others:

- Electrical equipment per DIN VDE 0701 part 1, 2000-9 edition, part 200, part 260 1990 edition
- Data processing devices and equipment per DIN VDE 0701 part 240 (1990 edition) and DIN EN 60950
- Periodic testing per DIN VDE 0702 (BGV A2)
- Electrical medical devices per DIN VDE 0751 and IEC EN 60601 (supplement)
- Electrical equipment for measurement, control and laboratory use per EN 61010
- Electrical household appliances per EN 60335, electrical equipment in accordance with British standards

Expanded functionality thanks to:

- Function test with power analysis
- Temperature measurement, current measurement (with optional clip-on ammeter), voltage and resistance measurement
- Report generation with printer module (PSI module), DA-II printer adapter or PC software
- Complete measuring system with automated meas. sequences, can be controlled with PC software (PS3 remote module)
- Partially programmable test sequences (optional database required)
- User interface in various languages: English, French, German, Italian, Spanish, Czech, Dutch
- Parallel test sockets for devices under test without mains plug

Options:

- Mains connectors for England, France, Germany, Italy, Switzerland, Denmark, USA, China, Australia and adapter set
- High-voltage test
- 25 A_{AC} test current for protective conductor measurement
- DBmed database, modem operation, remote control, direct printing
- Configuration in accordance with customer specifications
- Measurements in accordance with EN 60601, calibration certificate
- 10 test sockets for patient application parts
- 2 test sockets for equipotential bonding conductor / operational earth electrode
- Customer-specific configuration with device “features” (see price list on page 16)
- Software: PS 3, PC.doc-win, SE-L.med, SE-Q.remote, DB-med, PC.doc-med, SECU 601

SECUTEST SIII – standard models (available from stock) including:

- M7010-V010: SECUTEST SIII for Germany with all basic features
- M7010-V001: SECUTEST SIII for Germany with additional service outlet and patient ports
- M7010-V003: SECUTEST SIII for Germany with additional service outlet and patient ports, 25 A 50/60 Hz AC test current for protective conductor measurement
- M7010-V004: SECUTEST SIII for Germany with additional service outlet and patient ports, 25 A 50/60 Hz AC test current for protective conductor measurement, with high-voltage test, setpoint max. 4 kV AC – max. 6.126 kV DC test voltage output
- M7010-V005: SECUTEST SIII standard model for Germany with additional service socket and high voltage test, setpoint max. 4 kV AC – max. 6.126 kV DC test voltage output
- Dimensions: 292 x 130 x 243 mm, weight: 4.5 kg

Type	Data Sheet No.	Article Number	
M7010-V010	3-349-112-03	M7010-V010	
M7010-V001	3-349-112-03	M7010-V001	
M7010-V003	3-349-112-03	M7010-V003	
M7010-V004	3-349-112-03	M7010-V004	
M7010-V005	3-349-112-03	M7010-V005	
SECUTEST SIII basic instrument = all features 00	3-349-112-03	M7010	
Service outlet	3-349-112-03	M7010B01	
Adapter set for international use	3-349-112-03	M7010B11	
SECUTEST PSI printer module	3-349-112-03	M7010E01	
HV test, setpoint max. 4 kV AC	3-349-112-03	M7010F02	
25 A 50/60 Hz AC test current	3-349-112-03	M7010G01	
Patient ports	3-349-112-03	M7010J01	
Measurements per EN 60601/IEC 601	3-349-112-03	M7010KA01	
Integrated database	3-349-112-03	M7010KB01	
Data transmission via modem	3-349-112-03	M7010KC01	
Acoustic signaling via software+SK5	3-349-112-03	M7010KD01	
Direct printing	3-349-112-03	M7010KE01	
DKD calibration certificate, standard	3-349-112-03	M7010L01	
... Including measurement per MPG	3-349-112-03	M7010L02	
... Including HV test	3-349-112-03	M7010L03	
... Including MPG and HV test	3-349-112-03	M7010L04	
F2000 universal carrying pouch	3-349-126-02	Z700D	
K701 carrying case	–	GTZ3316000R0001	
WZ12C clip-on current sensor	3-349-017-03	Z219C	
Z864A shunt	–	Z864A	
Z3409 Pt100 temperature sensor	–	GTZ3409000R0001	

METRATESTER® 4/5/5E/5F

Instruments for Electrical Safety Testing of Electrical Equipment in Accordance with DIN VDE 0701 and 0702

METRATESTER 4:
Measuring instrument for testing repaired or modified electrical devices per DIN VDE 0701-1: 2000-09.
Exception: safety class 1 devices which are electrically switched at all poles.

- Large digital LCD, mains connection testing with finger contact and indicator lamp
- VDE GS approved, compact plastic housing, dimensions: 190 x 140 x 95 mm, weight: approx. 1.3 kg

METRATESTER 5:
Instrument for electrical safety testing of electrical equipment per DIN VDE 0701 and 0702
Same as METRATESTER 4, plus:

- Differential current measurement: Measurement of differential current complies with DIN VDE 0701 and 0702.
- Display functions: All measured values are clearly displayed at a large, digital display. Exceeded limit values are also indicated optically, and in some cases acoustically as well.
- Available with plug and outlet for France/Czech Republic
- METRAPAT IT4: test instrument with UK plug and outlet (portable appliance tester, British version)

METRATESTER 5-F/5-F-E:
Same as METRATESTER 5, but with radio transmission of measured values

- Direct transmission of measured values to a PC with the help of a receiver module connected to the serial port
- Documentation and data management with PC.doc-win Windows software
- Frequency: 433.92 MHz, range: max. 10 m
- Available with plug and outlet for France/Czech Republic
- Panel mount variant: METRATESTER 5-F-E
- With radio receiver and software (M700M)

Technical Data:

DIN VDE Tests	METRATESTER 4	METRATESTER 5/5-F
Test	Measuring Range	
Protective conductor resistance	0 ... 19.99 Ω	
Insulation resistance	0 ... 1.999 MΩ	0 ... 19.99 MΩ
Equivalent leakage current	0 ... 19.99 mA ~	
Absence of voltage	0 ... 1.999 mA ~	
Residual current	–	0.01 ... 19.99 mA ~
Line voltage	207 V ... 253 V ~	
Load current	0 ... 16.00 A ~	
Dimensions (WxHxD):	190 mm x 140 mm x 95 mm	
Weight	approx. 1.3 kg	

Type	Data Sheet No.	Article Number	
METRATESTER 4	3-348-817-03	GTM5013000R0001	
METRAPAT IT4	3-348-817-03	GTM5013000R0004	
METRATESTER 5	3-348-817-03	M700D	
METRATESTER 5-F	3-348-817-03	M700M	
METRATESTER 5-F [1)]	3-348-817-03	M700V	
METRATESTER 5-F-E	3-348-817-03	M700T	

1) Without receiver module or software

Radio Receiver Set FE 5

Radio Receiver Set for METRATESTER 5-F and METRATESTER 5-3P

Receiver set consisting of receiver with RS 232 interface for connection to a PC and PC.doc-win software

Type	Data Sheet No.	Article Number	
FE5	3-348-817-03	M700U	

METRATESTER®5-3P

Test Case for Testing Devices in Accordance with DIN VDE 0701 and 0702 can also be used as a workshop test panel per DIN VDE 0104

For testing electrical safety of single and 3-phase electrical equipment:
The METRATESTER 5-3P performs the following tests **in accordance with the regulations:**

- Protective conductor resistance
- Insulation resistance
- Earth leakage current
- Residual current
- Contact current
- Protective conductor current

Features: The METRATESTER 5-3P test case complies with "guidelines for equipment required for electrical installation operations" issued by the Federal Committee for Electrical Installations, ZVEH, WFE and electrical power utilities.
Mains connection: The test case can either be connected to an earthing contact outlet with the two included power cables, or to a 16 A CEE mains outlet.
Test types: DIN VDE tests without mains operation: protective conductor resistance, insulation resistance, equivalent leakage current. DIN VDE with mains operation at all single and 3-phase devices: differential current, contact current. Function tests with measurement of current consumption and voltage in phases L1, L2 and L3. Protective conductor measurement is performed correctly in accordance with DIN VDE 0104.
Contact surface for finger contact: Protective conductor potential can be tested by means of a contact surface for finger contact. The PE signal lamp lights up if a potential difference of more than 100 V is detected between the contact surface and the protective contact at the mains plug.
Differential current measurement: Measurement of differential current complies with regulations for periodic testing in accordance with DIN VDE 0702.
Convenient testing: All safety and function tests are performed by simply switching mains voltage, or the individual phases, to the devices under test.
Display functions: All measured values are clearly displayed at a large digital display. Exceeded limit values are also indicated optically, and in some cases acoustically as well.
Rugged case design: The test case consists of an aluminum shell and a removable, lockable lid. Ample space is provided for the included connection adapters and operating instructions.
Measurement value transmission: Measurement values are forwarded via radio transmission with the FE 5 receiver set.

- Dimensions: approx. 380 mm x 300 mm x 220 mm (with cover), weight: approx. 8 kg

Type	Data Sheet No.	Article Number	
METRATESTER 5-3P	–	M700S	
Wall bracket for METRATESTER 5-3P	–	Z725A	

Accessories:

Description	Type	Data Sheet No.	Article Number	
Brush probe for measuring protective conductor resistance	Z745G	–	Z745G	
Test adapter for 63 A consumers	AT3-63	–	Z745C	
Test adapter for METRATESTER 5 extension cables	EL2	–	Z721D	
Adapter with CEE plug for METRATESTER 5-3P	DL1	–	Z723F	
Cable set	KS13	–	GTY3624065P01	
Radio Receiver Set FE 5	FE5	3-348-817-03	M700U	
Test adapter VL2	VL2	–	Z600B	

MINITESTER 0702

Test Instrument for VDE 0702

Ideal electricians' test instrument for "special periodic tests" per DIN VDE 0702 and §5 of the German Trade Association guidelines:

- Protective conductor resistance
- Protective conductor current as measured with differential current method
- Contact current as measured with differential current method
- Direct-measured contact current for permanently installed devices under test
- Dimensions: 200 x 190 x 100 mm, weight: approx. 1.2 kg
- Measurement results indicated by means of green LEDs if limit values are not exceeded, by means of red LEDs if limit value violation occurs
- EL3: Adapter for testing extension cables

Type	Data Sheet No.	Article Number	
MINITESTER 0702	–	M712B	
EL3	–	Z723C	
F702 carrying pouch	–	Z740A	

Z745A CEE Adapter

Adapter for 3-Phase Power Consumers

The Z745A CEE adapter allows for quick and efficient testing of devices equipped with a CEE plug in accordance with VDE 0701/0702.

- CEE attachment outlets: 16 A/3-pole, 16 A/5-pole, 32 A/5-pole
- Safety outlets for 3-phase devices without permanently attached plug
- Protective conductor continuity test and insulation test for each phase, and combined phases, with rotary switch

Type	Data Sheet No.	Article Number	
Z745A	–	Z745A	

AT3-med

Adapter for SECUTEST SIII

3-phase adapter

- Testing of devices with 5-pole, 16 A CEE plug
- Testing of protective conductor continuity
- Measurement under operating conditions

Type	Data Sheet No.	Article Number	
AT3-med	–	Z745E	

AT3 Safety Tester

Test case for testing 1 to 3-phase power consumers and extension cables in combination with external test instruments per DIN VDE 0701/0702

The specially designed portable safety tester is used by trained electricians for measuring and testing electrical devices and extension cables in combination with external test instruments per DIN VDE.
According to the regulations, testing must be performed for protective conductor resistance, insulation resistance, equivalent leakage current and differential current, depending upon the type of device under test.

The test case is used in combination with DIN VDE 0701/0702 test instruments for performing the following tests on single and 3-phase devices:

- Protective conductor resistance, insulation resistance, equivalent leakage current.
- Protective conductor resistance, conductor continuity, reversed wiring (phase sequence) and short-circuiting for extension cables
- Independent testing of differential current under mains operating conditions at single and 3-phase devices (with function test). The device is thus specifically designed for tests in combination with single-phase device testers per DIN VDE 0701 which do not allow for the measurement of differential current, and for testing 3-phase devices by means of this measuring method.
- Display at digital panel-mount device and transfer of measured values in accordance with utilized external test instruments and software
- Protective conductor measurement is performed correctly in accordance with DIN VDE 0104
- Testing without the need for reversing the DUT's plug with the help of "VDE MAINS" switching
- Dimensions: 380 x 300 x 220 mm (with lid), weight approx. 7.5 kg

Type	Data Sheet No.	Article Number	
AT3	3-349-073-03	Z745B	

AT3-II Safety Tester

Adapter for Connection to SECUTEST SII Test Instruments (with feature F01), for Tests per DIN VDE 0701, 0702, 0751

The safety tester is used in combination with SECUTEST test instruments for testing 3-phase devices after repair (DIN VDE 0701), as well as for periodic testing (DIN VDE 0702).

It allows for fully automated or manual testing in accordance with the menu-driven test sequences included with the test instruments, with transmission of test results to, and data analysis at SECUTEST test instruments.

Additional protection is provided by electronic residual current monitoring with mains disconnect for defective devices under test.

Test types:

DIN VDE tests without mains operation

- Protective conductor resistance, insulation resistance, equivalent leakage current.

DIN VDE tests with mains operation

- Differential current, contact current.

- Equipped with 5-pole CEE 32 A (max. 20 A) and CEE 16 A
- Dimensions: 260 x 120 x 150 mm, weight: approx. 2.2 kg

Type	Data Sheet No.	Article Number	
AT3-II	3-349-245-03	Z745Q	

AT3-III Safety Tester

Test case for Connection to SECUTEST SII (with feature F01) and SIII Test Instruments for Testing per DIN VDE 0701, 0702 and 0751

The safety tester is used for measuring and testing single and 3-phase electrical devices and extension cables in combination with SECUTEST SII and SIII test instruments. These tests must be performed by a qualified electrician with an appropriate test instrument after repair or modification in accordance with DIN VDE 0701, and are also required for periodic testing per DIN VDE 0702 or 0751.
According to the regulations, protective conductor resistance, insulation resistance, equivalent leakage current and differential current must be measured, depending upon the device under test and its application.
Testing per EN 60601-1 is only possible to a certain extent.

- Connection of single and 3-phase devices and extension cables without reconnecting devices under test in operating modes with and without mains power via the test sockets and the test plug at the AT3-III
- Tests according to menu-driven test sequences included with SECUTEST test instruments, fully automated or manual.
- Transfer of test results to test instruments with evaluation performed by SECUTEST series test instruments
- Additional protection provided by electronic residual current monitoring with mains disconnect for defective devices under test for fault currents of greater than 20 mA, and optical error indication
- Trip control with “residual current tripping” test key
- Prevention of short-circuits and blown mains fuses during testing of defective single and 3-phase extension cables
- The EL1 adapter function (SECUTEST test instrument accessory) for testing single phase extension cables is included with the AT3-III as an integral component.
- Dimensions: 380 x 300 x 220 mm (with lid), weight approx. 6 kg

Type	Data Sheet No.	Article Number	
AT3-III	3-349-156-03	Z745P	

SECUTEST PSI Printer Module

Integratable Printer / Memory Module for SECUTEST..., PROFITEST 204 and METRISO 5000D-PI and MAVOWATT 45 for Rapid On-Site Report Generation

Test results are transmitted via ribbon cable to the PSI module, which can be integrated into the instrument’s lid, and are automatically saved to memory. All measured values for 200 to 1000 test reports can be stored to this memory. Test results can be printed out on-site in the form of concise, documented reports which can be furnished with date, time and text entered at the keypad.

- Dimensions: 240 mm x 81 mm x 40 mm (without knurled screws and ribbon cables), weight: approx. 0.8 kg
- Batteries: 4 ea. 1.5 V IEC LR 6 (AA mignon) if operated with batteries

Consumable materials:
PS-10P = pack of 10 recording charts, Z3210 = pack of 10 printer ribbon cartridges

Type	Data Sheet No.	Article Number	
SECUTEST PSI	3-348-785-03	GTM5016000R0001	
PS-10P	3-348-785-03	GTZ3229000R001	
Z3210	3-348-785-03	GTZ3210000R001	

B3261 Barcode Scanner
Z721D Barcode Printer

Barcode Scanner for Direct Connection to the SECUTEST PSI and the PRO*FI*TEST PSI-BC Barcode and Label Printer with Software

Barcode scanner:

- Trouble-free scanning of all common barcode types
- Insertion of decoded characters to any desired cursor position
- Plug for direct connection to the SECUTEST PSI and the PROFITEST PSI-BC

Barcode printer:

- For the identification of equipment with barcode labels
- Prints smudge-proof, scratch resistant labels in all common sizes
- MS Windows software
- Ideal for use with the B3261 barcode scanner

Type	Data Sheet No.	Article Number	
B3261 barcode scanner	–	GTZ3261000R0001	
Z721D barcode printer	–	Z721D	
Z722D label set	–	Z722D	

SECU-cal 10

SECUTEST Calibration Adapter

The calibration adapter is used for testing test instruments per DIN VDE 0701/0702 for measuring safety.

As a rule, these instruments must be tested once each year, as well as for certification in accordance with the ISO 9000 quality standard, as set forth by accident prevention regulation BGV A2 (VBG 4).
All limit values for the required tests per DIN VDE, as well as protective conductor resistance, insulation resistance, equivalent leakage current, and residual and/or contact current must be tested.

Type	Data Sheet No.	Article Number	
SECU-cal 10	–	Z715A	

IrDa 0100S

Interface Adapter for Connecting Test Instruments to a PC

Electrically isolated infrared interface for data transmission between test instrument and PC

Test instruments which are equipped with a serial IrDa interface can be connected to the RS 232 interface at a PC with the IrDa0100S converter. This allows for data transmission between test instrument and PC, as well as test instrument software updates.

Type	Data Sheet No.	Article Number	
IrDa 0100S	–	Z501C	

PA 4

Patient Connector Cables

Patient connector cables with 12 conductors, each with 4 mm plug

Type	Data Sheet No.	Article Number	
PA4	–	Z745L	

EL1

Adapter for Testing Single-Phase Extension Cables

- For testing extension cables
- Earth contact and inlet connector plug inserts included
- Additional country-specific inserts available as well

Type	Data Sheet No.	Article Number	
EL1	–	Z723A	

DA-II

RS 232 – Centronics Printer Adapter for Connecting External Printers

- RS232 – Centronics printer adapter
- Printer driver in SECUTEST SIII for all common printers with parallel interface
- No external power supply required, report generation without PC

Type	Data Sheet No.	Article Number	
DA-II	–	Z745M	

SK5

Probe Cable for Protective Conductor Measurement

- 5 meter probe cable for protective conductor measurement
- Automatic recognition of changing measuring points as software upgrade on floppy disk
- Go/No-Go indicator display

Type	Data Sheet No.	Article Number	
SK5	–	Z745K	

A3-16 / A3-32 / A3-63

3-Phase Current Adapters

A3-16

A3-32

A3-63

A3-xx: A3-16, A3-32 and A3-63 3-phase adapters for connecting test instruments to 5-pole CEE outlets.
The adapters correspond to 5-pole CEE sockets with 16 A, 32 A and 63 A nominal current.
Phase sequence testing with signal lamps and testing for effectiveness of protective measures with five 4 mm contact protected sockets

Type	Data Sheet No.	Article Number	
A3-16	–	GTZ3602000R0001	
A3-32	–	GTZ3603000R0001	
A3-63	–	GTZ3604000R0001	

Z500A

Variable Plug Adapter Set

Three self-retaining, contact protected test probes for the connection of measurement cables with 4 mm banana plugs, or with contact protected plugs for sockets with an opening of 3.5 mm to 12 mm, e.g. CEE, and Perilex sockets.
For example, the test probes also fit the square PE jacks on Perilex sockets.
Maximum allowable operating voltage: 600 V per IEC 61010.

Type	Data Sheet No.	Article Number	
Variable plug adapter set	–	Z500A	

TR25 / TR50

TR25: Reel with 25 m Measurement Cable
TR50: Metal Drum with 50 m Measurement Cable

TR25: Reel with 25 m measurement cable, cable ends are equipped with banana plugs.

TR50: 50 m measurement cable coiled onto a metal drum. Connection to the inside end of the cable is made possible with a socket integrated into the drum. The other end is equipped with a banana plug.
The drum axle with handle can be removed for space saving storage.

Type	Data Sheet No.	Article Number	
TR25	–	GTZ3303000R0001	
TR50	–	GTY1040014E34	

KS12 / KS12 / KS24

Cable Sets

KS12: Two highly insulated measurement cables with lockable connector plugs for insulation resistance measurements with the METRISO 5000 A. Two plug-on test probes and two plug-on alligator clips are included with the set.

KS13: Cable set for connecting test instruments such as METRATESTER 4/5/5-F, SECUTEST 0701/0702S II or SECUTEST SII (with feature F01) to the mains without using an earthing contact outlet, and for connecting DUTs. Consists of coupling socket with 3 permanently connected cables, 3 measurement cables, 3 plug-on pick-up clips and 2 plug-on test probes.

KS24: The KS24 cable set includes a 4 m long extension cable with a permanently attached test probe at one end and a contact protected socket at the other end, as well as two alligator clips which can be plugged onto the test probe.

Type	Data Sheet No.	Article Number	
KS12	–	GTY2620028R01	
KS13	–	GTY3624065P01	
KS24	–	GTZ3201000R0001	

Telearm1, SP350, 1081 Probe

Telescoping Rod, Earth Drill, Floor Probe

Telearm1 Telescoping Rod: Telescoping rod with test probe, and with a socket in the handle at the other end for quick and safe testing of, for example, lamps installed at excessive heights for the measurement of protective conductor resistance. The rod is 53 cm long and can be telescoped to a working length of 120 cm and locked. Max. allowable voltage to earth: 1000 V.

SP350 Earth Drill: Earth drill, 35 cm long, with connector for 4 mm banana plug.
Can also be used as a probe or auxiliary earth electrode for earth measurements, testing RCCBs etc.

1081 Floor Probe: This metallic tripod-type measurement electrode can be used for:
- Determination of electrical resistance at elastic floor coverings in accordance with EN 1081
- Resistance measurement for insulating floors and walls in accordance with DIN VDE 0100 part 610

Type	Data Sheet No.	Article Number	
Telearm1	–	GTZ3232000R0001	
SP350	–	GTZ3304000R0001	
1081 probe	–	GTZ3196000R0001	

F2000

Universal Carrying Pouch for PRO*Fi*TEST 0100S-II, PROFITEST 204, SECUTEST ... and METRISO 5000A/AK

Padded plastic carrying pouch with adjustable carrying strap. The cover and carrying strap are equipped with snap fasteners.

- Device can be positioned with a variable support, support dimensions: 15.5 cm wide x 5.5 cm high
- Support can be fastened variably with Velcro strip: 20 … 38 cm.
- Side pocket dimensions: 3 cm deep x 20 cm high
- Fastened with Velcro, removable, elastic holders for 3 test probes
- Pouch dimensions: 38^{+4} cm wide x 31^{+3} cm high x 20^{+2} cm deep

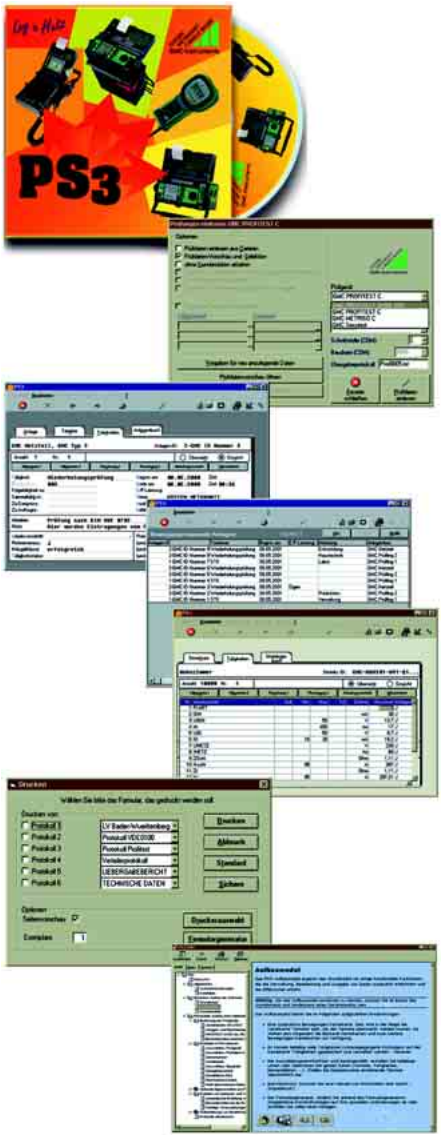
Type	Data Sheet No.	Article Number	
F2000	3-349-126-02	Z700D	

Test Instrument Accessories – Overview

Accessories Overview

Suitable for use with following test instruments ➤		MINITESTER 0702	METRATESTER 4/5/5-F	METRATESTER 5-3P	SECUTEST S II	SECUTEST S III	PROFi TEST C	PROFi TEST 0100S-II	PROFiTEST 204	METRAOHM 413	METRISO 1000A	METRISO 5000A/AK	METRISO 5000 D-PI	METRISO 500D	METRISO 1000D	METRISO 1000IR	METRISO C	GEOHM C	METRAtest 36 ASi
Type	**Designation**																		
	Connecting Adapters and Accessories																		
AT3-med	5-pole 3-phase adapter					●													
DA-II	Printer adapter for external printer				●	●		●											
CEE Adapter	3-phase adapter for 3 x CEE		●		●	●													
DL1	Adapter with CEE Plug			●															
A3-16	5-pole 3-phase adapter for 16 A CEE outlets						●	●											
A3-32	5-pole 3-phase adapter for 32 A CEE outlets						●	●											
A3-63	5-pole 3-phase adapter for 63 A CEE outlets						●	●											
Z500A	Variable plug adapter set, set of three, 3.5 to 12 mm diameter						●	●	●										
Telearm1	Telescoping rod for PE measurement							●		●	●			●	●	●	●		
TR25	Reel with 25 m measurement cable							●		●	●			●	●	●	●		
TR50	Drum with 50 m measurement cable							●		●	●			●	●	●	●		
SP350	Earth drill, 35 cm long							●											
Z580A	Crank generator											●							
KY 5000A	Alligator clips, 2 ea.												●						
Guard 5000A	Guard cable, 1 ea. with 1 alligator clip											●	●						
Leadex 5000	Extension cable, 5 m											●	●						
KS13	Cable set		●		●	●													
KS17-2	Cable set				●														
KS24	Extension cable, 4 m							●			●			●	●	●	●		
PA4	Patient connector cables					●													
EL1	Adapter for testing extension cables				●	●													
EL2	Adapter for testing extension cables			●															
EL3	Adapter for testing extension cables	●																	
SECU-cal 10	Calibration adapter for test instruments per DIN VDE 0701/0702 with test report				●	●													
IrDa 0100S	IR interface for connection to the RS 232 interface at a computer						●	●									●	●	●
	Safety Testers																		
AT3	AT3 safety tester		●																
AT3-II	AT3-II safety tester				●	●													
AT3-III	AT3-III safety tester				●	●													
	Probes																		
SK2	Special cable with test probe, 2 m				●	●													
SK5	Special cable with test probe, 5 m		●	●	●	●													
Z745G	Brush sensor				●	●													
1081 probe	Triangular probe for floor measurements per EN 1081 and DIN VDE 0100 part 610							●			●				●		●		
	Barcode Scanner / Printer																		
B3261	Barcode scanner				●	●		●	●										
Z721D	Barcode printer				●	●		●	●										
	Carrying Pouches																		
F2000	Universal pouch				●	●		●	●			●							
	Consumable Materials																		
PS-10P	Recording chart paper for PSI module, package of 10 rolls				●	●		●	●										
Z3210	Printer ribbon cartridges for PSI module, package of 10				●	●		●	●										

PS 3



Modular, Universal Software for Test Instruments – Systems, Equipment and Service Management, Plus Report Generation

Automatic read-in and analysis of measured values from tests conducted on systems and equipment. Systems and equipment management with respective test results stored to a database. Automatic generation of test reports in accordance with recommendations issued by the trade associations. Maintenance of equipment logbooks as required by the trade associations and public authorities (MPG, BGV, A2).

PS3 supports the following test instruments: PROFITEST-C, -0100xx, -204, METRISO C and all SECUTEST instruments

Modular Software Design

Each test instrument includes a specific PS3 device module. In combination with the PS3 basic module, all of the above mentioned tasks can be executed.

Additional Requirements, for example:

Follow-up on test deadlines, test data history, convenient evaluation and list generation right on up to complete object management (devices, buildings) with inventory management, work order processing, repairs management, document administration, client options and a network version are made possible with additional software modules.

Z531B Add-On Module:

The add-on module expands the basic module with a number of convenient functions which simplify data administration, editing and read-out, and increase efficiency.

Additional Modules:

The following additional modules are available for easy management of large volumes of data:

- Document management, navigator and viewer (Z531C) / client options (Z531D) / inventory management (Z531E) / remote control software for SECUTEST series instruments (Z531F) / error message (Z531H) / barcode module (Z531J) / maintenance management (Z531K)
- Upon request: network version, statistics, external functionality

PS3 Device Modules

Enable read-out of measured values from the following test instruments:

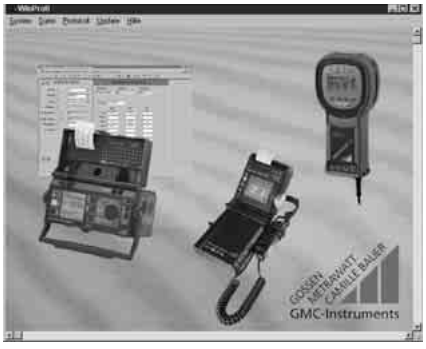
- PROFITEST 0100 (all PSI) (Z530A), PROFITEST C, METRISO C (Z530B), SECUTEST (all) (Z530C), PROFITEST 204 (Z530D)

PS3 Compact

- Report generation and test data management for electrical devices and equipment with PROFITEST 0100S-II and SECUTEST

Type	Data Sheet No.	Article Number	
PS3 compact	–	Z530K	
PS3 device module, PROFITEST 0100S-II	–	Z530A	
PS3 device module, PROFITEST/METRISO C	–	Z530B	
PS3 device module, SECUTEST (all)	–	Z530C	
PS3 device module, PROFITEST 204	–	Z530D	
PS3 basic module, reports management	–	Z531A	
PS3 add-on module	–	Z531B	
PS3 remote module	–	Z531G	
PS3 add-on module, LHNavigator/LHViewer	–	Z531C	
PS3 add-on module, client options	–	Z531D	
PS3 add-on module, inventory management	–	Z531E	
PS3 add-on module, barcode printing	–	Z531J	
PS3 add-on module, maintenance management	–	Z531K	
PS3 statistics module	–	Z531L	
Update for SE-Q.base and PS3 compact to PS3	–	Z530U	

Winprofi

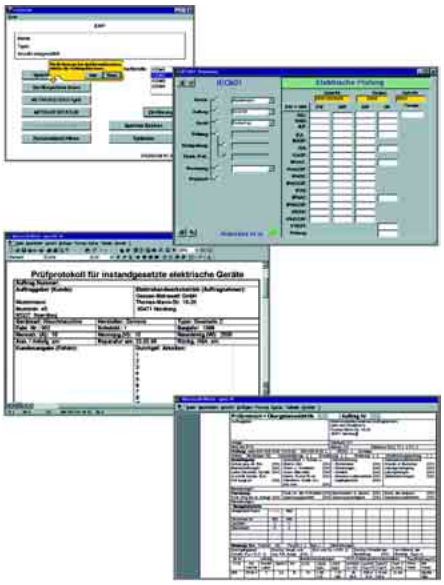


Simple program for report generation, as well as for updating firmware and languages for all PROFITESTs, METRISO C and GEOHM C

- **Can be installed free of charge from any PS3 CD ROM.**

PC.doc-win
PC.doc-med+204

Report Generating and Database Software for Safety Tests



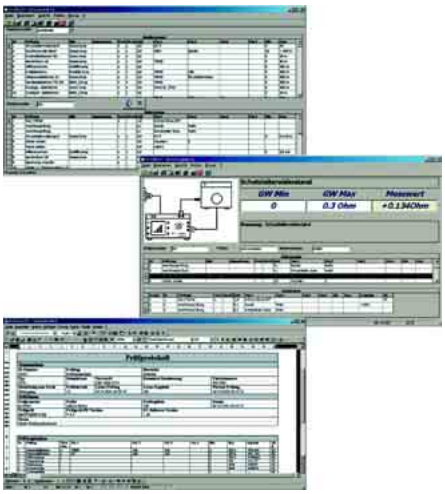
PC.doc-win is report generating software for MS Office for the following test instruments: SECUTEST 0701/ 0702S, METRATESTER 5, METRATESTER 5 FUNK and PROFITEST 0100S.
PC.doc-med+204 also supports the SECUTEST SII, SECUTEST SIII and PROFITEST 204 test instruments.
PC.doc-win / PC.doc-med+204 for MS Word inserts test results and data entered at the test instrument input module (PSI module or PSION organizer) into report forms or lists.
These can then be processed and printed out with MS Word. PC.doc-win / PC.doc-med+204 and the PCACCESS database under MS Access manages device data, system data and master data.
Available test instrument data are automatically entered to master data and test data lists which are assigned to individual customers. Reports and deadline lists can be printed out with PCACCESS as well.
All tools included with MS Access are available to the user for the creation of individualized database queries.

- Report and list generation with MS WORD
- Test and calibration data management with MS Access
- Simple operation thanks to use of Microsoft Office

Type	Data Sheet No.	Article Number	
PC.doc-win	3-349-067-03	Z710F	
PC.doc-med+204	3-349-067-03	Z710E	

PC.doc remote

Remote Control Software for SECUTEST Test Instruments



PC.doc-remote software is used for remote control of SECUTEST test instruments. The software allows for the creation of individualized test sequences for safety testing, assigns unique ID numbers to devices under test and performs the respective tests from a PC. Test reports including all measured values can be printed out with MS Word. A test and master data file is created automatically at the same time.

- Individual configuration of test times and limit values
- Automatic Go/No-Go evaluation
- Loop and step functions
- All data saved to an Access database

Type	Data Sheet No.	Article Number	
PC.doc remote	–	Z711C	

SE-L.med

Foreign Language User Interface

Foreign language user interface as software on floppy disk for downloading German, Dutch, English, French, Spanish, Italian or Czech to SECUTEST SII / SIII

Type	Data Sheet No.	Article Number	
SE-L.med	–	Z713B	

SECU 601

Firmware Update for SECUTEST Series Instruments

Software for measurements per IEC 601

- Patient ports can be assigned to groups
- Automatic sequence under all single-fault conditions for SECUTEST SIII
- Not for predecessors: SECUTEST 0701 and SECUTEST 0701/0702S
- For Windows 3.11 or higher

Type	Data Sheet No.	Article Number	
SECU 601	–	Z853G	

DB-med

Integrated Database

Integrated database for SECUTEST SII / SIII

- Database for instrument-specific test sequences in accordance with standards
- Storage of up to 99 measurements at the basic instrument

Type	Data Sheet No.	Article Number	
DB-med	–	Z853H	

SK5

Remote Control for SECUTEST Test Instruments

Upgrade program for enabling the remote control feature

- A function for “auto-recognition of measuring point change” is added to the protective conductor measurement.
- During protective conductor measurement, the test instrument recognizes whether or not the test probe is in contact with the protective conductor, which is indicated by means of two different acoustic signals.
- This function is very useful where several protective conductor connections need to be tested.

Type	Data Sheet No.	Article Number	
SK5	–	Z745K	

SECU-dd

Direct Printing for SECUTEST Test Instruments

After completion of each test (individual tests or at the end of a test sequence), test results are read out directly via the RS 232 interface. If a SECUTEST®PSI has been connected, results are printed out directly onto recording chart paper.

Type	Data Sheet No.	Article Number	
SECU-dd	–	Z853L	

SE-701-upgrade

Software Upgrade for Older Series SII and SIII Instruments

Software upgrade to new standards DIN VDE 0701-1:2000-09 and DIN VDE 0751-1:2000-10 for older series SII and SIII devices (prerequisite: article no. M7xxx)

Type	Data Sheet No.	Article Number	
SE-701 upgrade	–	Z713C	

Workshop Test Panels – VDE 0104

METRATESTER®5-3P

Workshop Test Panel for Testing Devices in Accordance with DIN VDE 0701/0702, DIN VDE 0104

The METRATESTER 5-3P test panel can be used as a portable or a stationary device for the measurement and testing of electrical devices after repair or modification in accordance with DIN VDE 0701, as well as for periodic testing per DIN VDE 0702. According to these regulations, protective conductor resistance, insulation resistance, differential current, equivalent leakage current and, for data processing systems and office machinery, absence of voltage at exposed parts accessible to the user must be measured.
Measurement of operating voltage and current at the DUT, as well as testing of extension cables for conductor continuity and polarity reversal represent further applications for the substantiation of correct functioning of electrical equipment. The VL2 test adapter allows for quick, safe testing of extension cables. The protective conductor at the mains connection can also be tested for the absence of voltage, and line voltage can be measured. Protective conductor measurement is performed correctly in accordance with DIN VDE 0104.

- Dimensions: 380 x 300 x 220 mm (with lid)
- Weight: approx. 8 kg

See page 51 for further details and accessories.

Type	Data Sheet No.	Article Number	
METRATESTER 5-3P	–	M700S	
Wall bracket for METRATESTER 5-3P	–	Z725A	
Test adapter VL2	3-349-241-03	Z600B	

SECUTEST® 15P-III

Workshop Test Panel for Testing Devices in Accordance with DIN VDE 0701/0702, DIN VDE 0104

The SECUTEST 15P-III portable or stationary test panel with an expanded scope of plug connectors is capable of performing the same measurements and tests as the METRATESTER 5-3P test panel. With the help of a multi-position switch, extension cables can also be tested for conductor continuity, short-circuit and reversed wiring (phase sequence) efficiently at a single glance.
The test panel is equipped with terminals for connecting an external emergency stop button.

- Dimensions: 580 x 300 x 190 mm (with lid)
- Weight: approx. 9.5 kg

Type	Data Sheet No.	Article Number	
SECUTEST 15P-III	–	M600E	

SECUTEST® 21F

Workshop Test Panel for Testing Devices in Accordance with DIN VDE 0701/0702

The SECUTEST 21F test panel has been designed for the set-up of test stations at shops specialized in electrical work. It is used for measurement and testing of electrical devices after repair or modification in accordance with DIN VDE 0701, as well as for periodic testing per DIN VDE 0702.
The test panel is designed for wall mounting and is equipped with a mains switch with undervoltage trigger and lock.
Load currents of up to 25 A and line voltages of up to 500 V can be measured.
Compliance with DIN VDE 0104 also assures flawless protective conductor measurements.

- Dimensions: 532 x 792 x 179 mm
- Weight: approx. 24 kg

Type	Data Sheet No.	Article Number	
SECUTEST 21F	–	M601A	

In accordance with the guidelines for "workshop equipment for electrical installation operations" issued by the ZVEH / VDEW

Technical Data: METRATESTER 5-3P, SECUTEST 15P-III, 21F

Measured Quantity	Line voltage	Device Protective Conductor Resistance	Insulation Resistance	Equivalent Leakage Current	Absence of Voltage	Load Voltage via the Mains Outlet	Residual Current (15P- III only)
Measuring range	207 ... 253 V ~	0 ... 19.99 Ω	0 ... 19.99 MΩ	0 ... 19.99 mA	0 ... 1.999 mA⎓	0 ... 16.00 A ~	0 ... 19.99 mA~
Resolution	1 V	10 mΩ	1 kΩ, 10 kΩ	10 µA	1 µA	10 mA	10 µA
Open-circuit voltage	–	approx. 20 V	600 V ⎓	28 V ~	–	–	–
Internal Resistance	–	–	approx. 100 kΩ	2 kΩ		–	–
Short-Circuit Current	–	–	< 10 mA	< 20 mA	–	–	–
Nominal current	–	210 mA const.	–	–	–	–	–
Max. error under reference conditions	± (1.5% rdg. + 1 d)	± (2.5% rdg. + 2 d)	± (2.5% rdg. + 2 d) as of 10 d				± (2.5% rdg. + 2 d)

Test Adapter VL2

Test Adapter for Expanding Workshop Test Panel Functions

The test adapter expands the functions of the METRATESTER 5-3P and SECUTEST 21F test panels.
Portable operation is possible.
After connection to one of the test panels, the test adapter allows for the testing of electrical devices and extension cables by trained electricians after repair or modification in accordance with DIN VDE 0701, as well as for periodic testing per DIN VDE 0702.
Also allows for function testing for conductor continuity, short-circuit, reversed polarity (clockwise rotation)

- Connection via CEE plug, 3P+N+PE
- Nominal line voltage: 230 / 400 V
- Dimensions: 330 x 230 x 130 mm
- Weight: approx. 1.7 kg

Replaces additional EL 2 and DL 1 adapters.

Type	Data Sheet No.	Article Number	
VL2	3-349-241-03	Z600B	

PROFITEST S1

Simulation Model for Testing Effectiveness of Safety Measures in Power Installations per DIN VDE 0100

For testing the effectiveness of safety measures in electrical systems with up to 500 V, we recommend the DIN VDE 0100 Simulations Model PROFITEST S1.
TT and TN systems with overcurrent protection and RCDs can be simulated with this model, and systems with overcurrent protection may be equipped with standard RCCBs, as well as with selective RCCBs.
In combination with appropriate measuring and test instruments, all measurements and tests can thus be performed which are required for safety testing of electrical systems with up to 500 V which use various types of networks and safety devices.

Measurements include:

- Insulation resistance measurement
- Low-resistance measurement at equipotential bonding conductors
- Measurements for testing RCDs
- Loop impedance measurement
- Earthing resistance measurement
- Line voltage measurement

Accessories:
S1A-4/10 contact protected jumper (package of 10)

Type	Data Sheet No.	Article Number	
PROFITEST S1	–	GTM5101000R0001	
S1A-4/10	–	GTZ3216000R0001	

METRACLIP®50 ... 60

Clip-On Meters with Analog or Digital Display for Service Technicians

Current within conductors can be conveniently measured with clip-on meters. The following advantages result:

- Electrical circuits need not be interrupted
- No electrical connection to the conductor (total insulation)
- Measurement of current up to 3000 A
- Electrical safety per IEC 61010

METRACLIP 50/51

- Measured value memory with mechanically (METRACLIP 50) or electrically arrested pointer (METRACLIP 51)
- Electrical safety per IEC 61 010

METRACLIP 60

- 3¾ digit digital display, automatic measuring range selection, data HOLD and Max-Min display

Type	Data Sheet No.	Article Number	
METRACLIP 50	3-349-049-03	M300A	
METRACLIP 51	3-349-049-03	M300B	
METRACLIP 60	3-348-983-03	M311C	

Type	METRACLIP 50	METRACLIP 51	METRACLIP 60
Clip opening	28 mm dia. / 30x20 mm	60 mm dia. / 70x30 mm	24 mm max. dia.
Overvoltage category Vmax	III/600V, IV/300V	III/1 kV, IV/600 V	III
Display	Analog	Analog	Digital
Resolution			0.01/0.1 A
Current	1.5 ... 300 A/AC	15 A...3000 A/AC	400 A/AC
Voltage	150 V ... 600 VAC	150 V ... 600 VAC	600 V/AC
Frequency range for U / I	48...52/40...100/40...400 Hz	40...60/40...100/40...400 Hz	I: 50...60 Hz / U: 50...400 Hz
Memory	–	HOLD function	Min-Max
Frequency measurement	–	–	–
Harmonic analysis	–	–	–
Continuity	–	–	●
Resistance	–	–	400...4000 Ω
Active power	–	–	–
Apparent power	–	–	–
Reactive power	–	–	–
Power factor	–	–	–
Energy	–	–	–
Sampling rate	–	–	2.5/sec.
Interface	–	–	–
Accuracy	class 2.5	class 2.5	I: ± (2%+7 digits) U: ± (1%+5 digits)
Power supply	–	3 V, 850 mAH	2ea. IEC 6 LR03 (AAA micro)
Dimensions / weight w. battery(ies)	88x220x40 mm / 0.5 kg	112x313x60 mm / 0.9 kg	69x191x33 mm / 0.22 kg

METRACLIP®61 ... 81

Clip-On Meters with Analog or Digital Display for Service Technicians

METRACLIP 61
- 4½ digit digital display, automatic or manual measuring range selection, data HOLD and Max-Min display

METRACLIP 70
- 4½ digit digital display, automatic or manual measuring range selection, data HOLD and Max-Min display

METRACLIP 71
- Three 4½ digit digital displays with background illumination, data HOLD and Max-Min display

METRACLIP 80
- Bar graph and digital display, Max-Min and mean value memory, digital interface for PC, integrated 3-phase adapter

METRACLIP 81
- Matrix display for numeric and oscilloscope read-outs, 8 display pages can be saved to memory, Max-Min and mean value memory, data storage for 5 parameters over a period of 24 hours

Type	Data Sheet No.	Article Number	
METRACLIP 61	3-348-983-03	M311C	
METRACLIP 70	3-349-064-03	M312A	
METRACLIP 71	3-349-061-03	M312B	
METRACLIP 80	3-349-054-03	M312C	
METRACLIP 81	3-349-065-03	M312D	

Type	METRACLIP 61	METRACLIP 70	METRACLIP 71	METRACLIP 80	METRACLIP 81
Clip opening	40 mm dia.	42 mm dia. / 25x25/50x5 mm	50 mm dia. / 80x5 mm	55 mm dia.	60 mm dia.
Overvoltage category Vmax	III/300 V, II/600 V	III/600 V	III / 600 V	III / 600 V	IV / 600 V
Display	Digital	Digital (4000 digits)	triple (3 x 10,000 pixels)	digital and bar graph	multimeter and oscilloscope
Resolution	0.01 mA/0.01 A	4½ digit	4½ digit	4½ digit	Dot matrix: 160x128 pixels
Current	0...300 A/AC (4 ranges)	0.2...400...1000 A RMS/AC, 0.2...400...1400 A/DC	1500 A_{ss} AC	400/1000 A/DC/AC TRMS	40/400/2000 A/DC/AC TRMS
Voltage	–	0.4...600 V/DC, 0.4...600 V/AC	1500 V_{ss} DC	400/600 V DC/AC TRMS	4/40/400/600 V/DC/AC TRMS
Frequency range for U / I	50...60 Hz	45...450 Hz	10 Hz ... 5 kHz	20 Hz...1 kHz	10 Hz...1 kHz
Memory	DATA HOLD	Min-Max 500 ms	Min-Max 30 Hz	Min-Max	Min-Max/mean value/logger
Frequency measurement	–	3 ranges: 100 Hz...4 kHz	0.5 Hz...20 kHz	20.0 Hz...1 kHz	10.0 Hz...1 kHz
Harmonic analysis	–	–	Harmonic distortion: CF, THD, DF	–	Harmonic distortion: CF, THD, DE
Continuity	–	Ω/diode (acoustic)	–	–	–
Resistance	–	5 ranges: 0.5 Ω ... 4 MΩ	–	–	–
Active power	–	–	10 W...600 kW	10 W...600 kW	4/40/400/1200 kW/VA DC
Apparent power	–	–	10 VA...600 kVA	10 VA...600 kVA	4/40/400/1200 kW/VA DC
Reactive power	–	–	10 var...600 kvar	10 var...600 kvar	0 ... 850 kvar
Power factor	–	–	0 ... 1	0.3 cap....1...0.3 ind.	0.3 cap....1...0.3 ind.
Energy	–	–	–	via PC	●
Sampling rate	2/sec. (bar graph: 12/sec.)	(2.5/sec.)	4 kHz	9 kHz	9 kHz
Interface		–	–	–	special RS 232
Accuracy	30/300 mA: ±2% rdg. ±5 digits 30/300 mA: –3/–5% rdg. ±5 digits	1% (typ.)	U = 1% (typ.) I/P = 2% (typ.)	1%... 2.5% rdg. ±5 digits	1%... 3% rdg. ±5 digits
Power supply	2 x LR44/SR44	9 V, IEC 6 LR61	4 x IEC LR6 (AA mignon)	9 V, IEC 6 LR61	6 ea. IEC LR6
Dimensions / w. with battery(ies)	64x176x23 mm/0.6 kg	97x254x46 mm/0.6 kg	103x275x50 mm/0.67 kg	98x251x52 mm/0.5 kg	98x300x52 mm/0.82 kg

Voltage Testers

2-Pole Voltage Meters and Multiple Measuring Instruments with Analog or Digital Display

ProfiSafe 1

METRAVOLT 5

METRAVOLT 12D

These 2-pole voltage meters and multiple measuring instruments fulfill requirements for voltage testers per DIN EN 61243-3 / VDE 682, part 401 (previously: DIN VDE 0680, part 5).

- Easy to operate, VDE GS approved
- Overvoltage category III devices, double indication reliability with LEDs

ProfiSafe 1

This voltage, phase, continuity and polarity tester plus phase sequence indicator has been equipped with a long-life, rechargeable lithium battery for the display of continuity and phase test results. The battery is continuously recharged with a high performance solar cell, even with minimum ambient light. This maintenance-free voltage source assures long service life and reliable operation.

- 9 LEDs for the display of voltage, continuity, phase and direction of rotation
- Phase testing, display of direction of rotation and continuity testing
- Rugged housing, hazard-free use even under damp conditions, IP 65 protection

METRAVOLT 5

- LED indicates dangerous contact voltages as of 50 V
- Phase and direction of rotation indicated with LED, single pole voltage testing
- Rugged housing, hazard-free use even under damp conditions, IP 65 protection
- Insulation marking (manufactured per DIN 48699), class 2.5

METRAVOLT 12D

- Fully automated measuring sequence, self-test, measurement value storage, battery saving circuit
- Rugged housing, hazard-free use even under damp conditions, IP 65 protection
- Intrinsic error: 0.5% of rdg. + 1 digit

Type	ProfiSafe 1	METRAVOLT 5	METRAVOLT 12D
Complies with DIN VDE 0680	●	●	●
Voltage	12 ... 690 V ≂	50 ... 500 V ≂	0 ... 1200 V ≂
Dielectric strength	> 5 kV (1.2 / 50 µs pulse wave)	> 10 kV (1.2 / 50 µs pulse wave)	
Test voltage	5 kV	5 kV (routine test)	
Phase testing	●	●	●
Phase sequence indicator	●	●	●
Resistance	–	–	0 ... 750 kΩ
Continuity test	●	–	●
Frequency range	0 ... 2000 Hz	0 ... 100 Hz	15 ... 10,000 Hz
Power supply	Lithium battery + solar cell	–	9 V flat cell battery, IEC 6F 22
Battery test	–	–	●
Dimensions	50 x 230 x 35 mm + 1 m cable	78 x 285 x 48 mm	60 x 240 x 40 mm
Weight	0.17 kg	0.43 kg	0.29 kg (with battery)

Type	Data Sheet No.	Article Number	
ProfiSafe 1	–	M630B	
METRAVOLT 5	–	GTM5250000R0001	
METRAVOLT 12D	3-349-201-03	M630C	

CableCop 300

Cable Detection System for Current and Voltage-Free Cables, and Current and Voltage Conducting Cables

Current and voltage-free, as well as current and voltage conducting cables in electrical circuits with up to 300 V can be pinpointed with the cable detection system. Cables and conductors, electrical circuits, short-circuits and earth faults can be located, and protective conduits and coaxial cable can be traced as well without interrupting power or shutting down sensitive electronic components. Detection is possible in walls and concrete, as well as underground.

Voltage range	9 ... 300 V ≂
Measuring frequency	32,768 kHz
Display / signal	LED / buzzer
Typical applications	Location of cables, switches, short-circuits and earth faults Tracing of protective conduits and coaxial cables
Range of applications	Walls, ground, concrete
Standard equipment	Case with T320 transmitter, S330 signal generator, R300 receiver, two 9 V batteries, 2 measurement cables, 2 alligator clips, 2 test probes and operating instructions
Dimensions / weight	310 x 200 x 85 mm / case and contents: approx. 1.95 kg

Type	Data Sheet No.	Article Number	
CableCop 300	–	GTM5292000R0001	

Recommended workshop equipment according to guidelines issued by ZVEH and VDEW

Required Measuring and Test Instruments	Equipment for Initial Setup	Standard	Equipment for Efficient Work Sequences
Test bay per DIN VDE 0104 with perm. integrated measuring instruments	METRATESTER 5-3P	SECUTEST 21F	SECUTEST 15P-III
Single-pole voltage tester per DIN VDE 0680, part 6	ProfiSafe 1	METRAVOLT 5	METRAVOLT 12D
2-pole voltage tester per DIN VDE 0680, part 5			
Voltage meter to at lest 600 V, DIN VDE 0410	METRA*Hit* ONE with WZ12A clip-on current transformer	METRA*Hit* 25S with WZ12C clip-on current transformer	METRA*Hit* 26S with Z3512 clip-on current transformer
Current meter to at least 15 A, DIN VDE 0410			
Continuity tester, DIN VDE 0403			
Clip-on ammeter to at least 300 A	METRACLIP 60	METRACLIP 70	METRACLIP 81
Insulation measuring instrument DIN VDE 0413, part 1	PROFiTEST 0100S-II	METRISO C	METRISO C
Resistance measuring instrument, DIN VDE 0413, part 4		PROFiTEST 0100S-II (or PGS test instrument sets …)	PROFiTEST 0100S-II (or PGS test instrument sets …)
Earth tester DIN VDE 0413, part 5 or part 7			
Loop resistance measuring instrument DIN VDE 0413, part 3			
Test instrument for RCCBs DIN VDE 0413, part 6			
Phase sequence indicator DIN VDE 0413, part 9			
Measuring instruments for electrical devices, DIN VDE 0701/0702, part 1		METRATESTER 5	SECUTEST SII with PSI Module
Earth tester per DIN VDE 0413, part 5		GEOHM C	GEOHM C
Continuity tester per DIN VDE 0403		ProfiSafe 1	ProfiSafe 1
Illuminance meter		MAVOLUX 5032C	MAVOLUX 5032B
Cable detectors		CableCop 300	CableCop 300

Support Software for Measuring Instruments and Testers – Overview

Suitable for use with following instruments ➤ / Support Software ▼	METRA*Hit* ONE	METRA*Hit* 22 ... 29	METRA*Hit* 30M	METRA*Hit* 18C	METRA*Hit* 28C	METRA*Hit*27	METRA*Hit* 1 ASi	METRAtest 36 ASi	MAVOWATT 45	MAVOLOG	METRATESTER 5	METRATESTER 5-3P	SECUTEST SII	SECUTEST SIII	PRO*Fi* TEST C	PRO*Fi* TEST 0100S-II	PRO*Fi* TEST 204	METRISO 5000 D-PI	METRISO C	GEOHM C
METRAwin 10	●	●	●		●	●			●	●										
METRAwin 90-2				●	●	●														
ASi-doc							●	●												
ASi-access							●	●												
PS3													●	●	●	●	●		●	
PC.doc-ACCESS / MAVOLOG										●										
PC.doc-win											●	●	●		●	●			●	●
PC.doc-med														●			●			
WinProfi															●	●	●	●	●	●
PC.doc remote													●	●						

Overview of Laboratory Power Supplies

Computer Controlled Laboratory Power Supplies

Overview	Power Max. in W		Setting Range		Setting Accuracy		Residual Ripple		Interfaces			Sink Mode	Overvoltage Protection	Auto-Ranging Output	Output On/Off	Meas. Value Query	Sequence Control
	Continuous	(int.)	Voltage V	Current A	Voltage ± (% + mV)	Current ± (% + mA)	Voltage mV_{eff}	Current mA_{eff}	Analog	RS 232	IEEE 488						
SSP 32 N Series																	
32 N 20 RU 10 P	120	(200)	0… 20	0… 10	0.15 + 30	0.4 + 35	10	25	●	●	❍	dyn.	●	●	●	●	●
32 N 40 RU 6 P	120	(240)	0… 40	0… 6	0.15 + 40	0.5 + 20	10	20	●	●	❍	dyn.	●	●	●	●	●
32 N 80 RU 3 P	120	(240)	0… 80	0… 3	0.15 + 80	0.5 + 10	10	10	●	●	❍	dyn.	●	●	●	●	●
32 N 20 RU 20 P	240	(320)	0… 20	0… 20	0.15 + 40	0.5 + 70	15	50	●	●	❍	dyn.	●	●	●	●	●
32 N 40 RU 12 P	240	(360)	0… 40	0… 12	0.15 + 45	0.5 + 45	15	25	●	●	❍	dyn.	●	●	●	●	●
32 N 80 RU 6 P	240	(360)	0… 80	0… 6	0.15 + 80	0.5 + 25	15	20	●	●	❍	dyn.	●	●	●	●	●
32 N 32 RU 18 P	320	(430)	0…32	0…18	0.15 + 50	0.5 + 70	30	50	●	●	❍	dyn.	●	●	●	●	●
SSP 62 N/64 N Series																	
62 N 40 RU 25 P*	500		0…40	0…25	0.1 + 10	0.2 + 25	10	15	●	❍	❍	dyn.	●	●	●	●	●
62 N 52 RU 25 P	500		0…52	0…25	0.1 + 17	0.2 + 25	10	15	●	❍	❍	dyn.	●	●	●	●	●
62 N 80 RU 12.5 P	500		0…80	0…12.5	0.1 + 20	0.2 + 15	10	15	●	❍	❍	dyn.	●	●	●	●	●
62 N 40 RU 50 P*	1000		0…40	0…50	0.1 + 10	0.2 + 50	10	25	●	❍	❍	dyn.	●	●	●	●	●
62 N 52 RU 50 P	1000		0…52	0…50	0.1 + 17	0.2 + 50	10	25	●	❍	❍	dyn.	●	●	●	●	●
62 N 80 RU 25 P	1000		0…80	0…25	0.1 + 20	0.2 + 25	15	20	●	❍	❍	dyn.	●	●	●	●	●
64 N 40 RU 100 P*	2000		0…40	0…100	0.1 + 10	0.25 + 100	10	80	●	❍	❍	dyn.	●	●	●	●	●
64 N 52 RU 100 P	2000		0…52	0…100	0.1 + 17	0.25 + 100	10	80	●	❍	❍	dyn.	●	●	●	●	●
64 N 80 RU 50 P	2000		0…80	0…50	0.1 + 20	0.25 + 50	15	30	●	❍	❍	dyn.	●	●	●	●	●
64 N 40 RU 150 P*	3000		0…40	0…150	0.1 + 10	0.3 + 150	10	120	●	❍	❍	dyn.	●	●	●	●	●
64 N 52 RU 150 P	3000		0…52	0…150	0.1 + 17	0.3 + 150	10	120	●	❍	❍	dyn.	●	●	●	●	●
64 N 80 RU 75 P	3000		0…80	0…75	0.1 + 20	0.3 + 80	15	60	●	❍	❍	dyn.	●	●	●	●	●
MSP 64 D Series																	
Basic unit 64 D 42 P									–	●	●						
MSP control module																	
ES 31 K 7 R 7 P plug-in module	49		0…7	0…±7	0.05 + 4	0.1 + 4	1	3	–	via		●	–	–	●	●	–
ES 32 K 30 R 4 P plug-in module	120		0…30	0…±4	0.05 + 16	0.1 + 2	3	3	–	basic unit		●	–	–	●	●	–
ES 32 K 80 R 1.5 P plug-in module	120		0…80	0…±1.5	0.05 + 40	0.1 + 1	3	2	–			●	–	–	●	●	–
ES 31 K 2x8 R 3 P plug-in module	2x24		2x0…8	2x0…±3	0.05 + 4	0.1 + 2	1	3	–			●	–	–	●	●	–
ES 31 K 2x16 R 1.5 P plug-in module	2x24		2x0…16	2x0…±1.5	0.05 + 8	0.1 + 1	1	2	–			●	–	–	●	●	–
ES 31 K 2x40 R 0.6 P plug-in module	2x24		2x0…40	2x0…±0.6	0.05 + 20	0.1 + 0.5	3	2	–			●	–	–	●	●	–

Analog Controlled Laboratory Power Supplies

Overview	Power Max. in W		Setting Range		Total System Error		Residual Ripple		SELV, Safety Extra-Low Voltage	Analog Interface	Sink Mode	Overvoltage Protection	Auto-Ranging Output	Output On/Off	Output	
	Continuous	(int.)	Voltage V	Current A	Voltage mV	Current mA	Voltage mV_{eff}	Current mA_{eff}							Front Panel	Rear Panel
SLP 32 N Series																
32 N 20 R 10	120	(200)	0…20	0…10	20	28	10	25	●	●	dyn.	–	I	I	I	I
32 N 40 R 6	120	(240)	0…40	0…6	15	15	10	20	●	●	dyn.	–	I	I	I	I
32 N 80 R 3	120	(240)	0…80	0…3	15	15	10	10	–	●	dyn.	–	I	I	I	I
32 N 20 R 20	240	(320)	0…20	0…20	30	38	15	50	●	●	dyn.	–	I	I	I	I
32 N 40 R 12	240	(360)	0…40	0…12	23	38	15	25	●	●	dyn.	–	I	I	I	I
32 N 80 R 6	240	(360)	0…80	0…6	23	20	15	20	–	●	dyn.	–	I	I	I	I
32 N 32 R 18	320	(430)	0…32	0…18	40	50	30	50	●	●	dyn.	–	I	I	I	I
33 K Series																
33 K 7 EU 5/2x25 R 1 D	25+25+35		0…25/25/7	0…1/1/5	15/15/17	7/7/12	0.5/0.5/0.5	0.5/0.5/2	●	●	–	– – ●	–	–	I	–

* To be discontinued in 2003

SSP KONSTANTER 32 N

Computer Controlled Laboratory Power Supplies: Series SSP 120…320

SSP KONSTANTER 120, 240 and 320 devices (single output system power supply) are single output computer controlled laboratory power supplies for universal use in R&D, production and testing. Our innovative BET circuit technology (bidirectional energy transformation) allows for practically load independent response times of less than 1 ms (< 4 ms with 80 V device). The analog interface includes monitor, auxiliary power and programmable signal outputs, as well as trigger and setpoint inputs.

- Diverse functionality, extensive calibration report, minimal power loss
- Auto-ranging output with 120, 240 or 320 W
- Output: voltage and current regulated, increased output power for brief intermittent periods
- Very short response times thanks to BET technology, typically 1 ms
- Dynamic sink operation, excellent dynamic control parameters
- Minimal residual ripple, output On/Off function, lockable control panel
- Master-slave operation for parallel and series connection
- Sequence controls for the generation of voltage and current sequences
- Overvoltage, overcurrent and excessive temperature protection, calibration procedure for menu-driven balancing
- RS 232 interface (complete device operation) / analog interface
- Floating output terminals at front and rear, can be electrically and mechanically combined into multi-channel units
- Dimensions: bench-top (W x H x D) 221.5 x 102 x 397.5 mm, 19" rack: ½19" x 2 standard height units x 400 mm
- Weight: approx. 2.8 kg

Options:

- IEEE 488 interface (listener/talker for configuration and querying measured values)
- Driver software for LabView, LabWindows CVI and HPVEE
- **Accessories:** assembly accessories for mounting to 19" rack

	Type	Data Sheet No.	Article Number	
120 W	32 N 20 RU 10 P	3-348-843-03	K320A	
	32 N 40 RU 6 P	3-348-843-03	K321A	
	32 N 80 RU 3 P	3-348-843-03	K322A	
240 W	32 N 20 RU 20 P	3-348-843-03	K330A	
	32 N 40 RU 12 P	3-348-843-03	K331A	
	32 N 80 RU 6 P	3-348-843-03	K332A	
320 W	32 N 32 RU 18 P	3-348-843-03	K334A	
	IEEE 488 interface	3-348-843-03	K380A	

SSP KONSTANTER 62/64 N

Computer Controlled Laboratory Power Supplies: Series SSP 500…3000

SSP KONSTANTER 500, 1000, 2000 and 3000 devices (single output system power supply) are single output computer controlled laboratory power supplies for universal use in R&D, production and testing. Special circuitry allows for jumping from 0 V to nominal voltage (and back again) under nominal load conditions within response times of less than 10 ms. The analog interface includes monitor and auxiliary power outputs, as well as programmable trigger and setpoint inputs.

- Diverse functionality, minimal power loss
- Auto-ranging output with 500, 1000, 2000 or 3000 W
- Output: voltage and current regulated, increased output power for brief intermittent periods
- Short response times thanks to special circuitry, typically 10 ms
- Dynamic sink operation, excellent dynamic control parameters
- Minimal residual ripple, output On/Off function, lockable control panel
- Sequence controls for the generation of voltage and current sequences
- Master-slave operation for parallel and series connection, overvoltage, overcurrent and overtemperature protection
- Analog interface, output terminals at rear panel
- Dimensions: bench-top (W x H x D) 465x101 or 190x500 mm, or 19" rack: 2x19" or 4 standard height units x 500 mm
- Weight: 62 N/500 W: prox. 12 kg, 62 N/1000 W: prox. 13 kg, 64 N/2000 W: prox. 22 kg, 64 N/3000 W: prox. 28 kg

Options:

- RS 232 and IEEE 488 interfaces (listener/talker for configuration and querying measured values)
- Driver software for LabView, LabWindows CVI and HPVEE, calibration report upon request

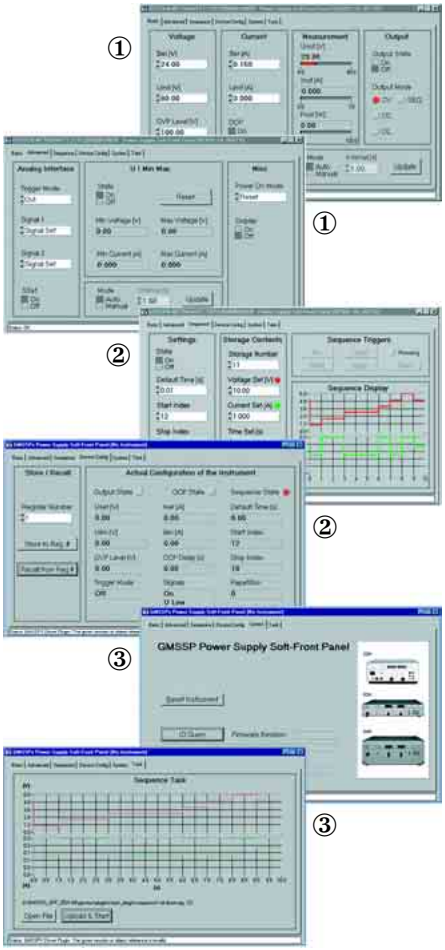
	Type	Data Sheet No.	Article Number	
500 W	62 N 40 RU 25 P*	3-349-078-03	K340A	
	62 N 52 RU 25 P	3-349-078-03	K344A	
	62 N 80 RU 12.5 P	3-349-078-03	K341A	
1 kW	62 N 40 RU 50 P*	3-349-078-03	K342A	
	62 N 52 RU 50 P	3-349-078-03	K345A	
	62 N 80 RU 25 P	3-349-078-03	K343A	
2 kW	64 N 40 RU 100 P*	3-349-078-03	K350A	
	64 N 52 RU 100 P	3-349-078-03	K352A	
	64 N 80 RU 50 P	3-349-078-03	K351A	
3 kW	64 N 40 RU 150 P*	3-349-078-03	K360A	
	64 N 52 RU 150 P	3-349-078-03	K362A	
	64 N 80 RU 75 P	3-349-078-03	K361A	
IEEE 488/RS 232 interface		3-349-078-03	K381A	

* To be discontinued in 2003

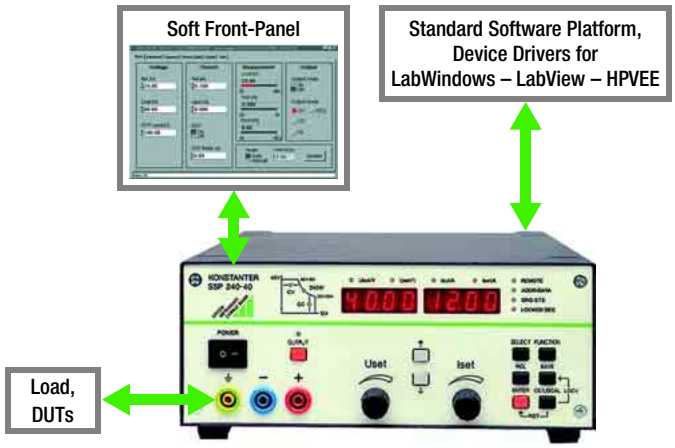
Computer Controlled Laboratory Power Supplies, Soft Front-Panel

GM SSP-SFP

Soft Front-Panel PC User Interface for SSP Konstanters



Virtual instruments: KONSTANTER with **soft front-panel**



All SSP Konstanter functions can be controlled and displayed at a PC with this software.

- Free download
- For serial as well as IEEE interfaces
- Runs with Windows 95, 98, NT4 and 2000

Prerequisite: NI-VISA driver or additional NI-488.2 driver for control via GPIB must be installed

Target groups:

- R&D
- Production and test equipment design
- System manufacturers

① Integrated software included in our KONSTANTERs simplifies use and allows for the generation of automated sequences.

② Intuitive user interface and device drivers for standard software quickly place all of the functional options of KONSTANTER instruments at the disposal of the user, and dramatically shorten learning curves.

③ As device-specific software, our soft front-panel provides users with the advantages offered by "virtual instruments" without the need for a complex standard platform.

MSP KONSTANTER 64 D

Computer Controlled Laboratory Power Supplies, Multiple Outputs: MSP Series

The MSP KONSTANTER (multi-output system power supply) offers extensive flexibility, ease of operation and economy for universal use in R&D, production and testing.
The MSP KONSTANTER is a modular, manually operated and computer controlled DC power supply. The basic unit with integrated auxiliary power supply and cooling fan is equipped with IEEE 488 and RS 232 interfaces, and accepts up to four single or 2-channel plug-in power supply modules, and one control module. The control module allows for manual operation of all 8 channels. The plug-in modules operate in accordance with the linear controller principle, and the outputs have a 2 quadrant operating range.
Source and sink functions are possible for constant voltage as well as constant current operation. Parallel or series connection, as well as bridging for the generation of bipolar voltages is possible.

- Up to eight independent, electrically isolated outputs, all outputs can also be used as electronic loads
- Minimal residual ripple and short response times
- Output On/Off function
- Outputs can be activated and deactivated individually or in groups
- Measuring function for voltage, current and power with storage of extreme values
- Online help available in various languages by simply pressing a key
- IEEE 488 and RS 232 interfaces
- Easy, flexible device configuration
- Driver software for LabVIEW, LabWindows CVI and HP VEE

Type	Data Sheet No.	Article Number	
64 D 42 P	3-349-084-03	K370A	
MSP control module	3-349-084-03	K371A	
ES 31 K 2x8 R 3 P	3-349-084-03	K372A	
ES 31 K 2x16 R 1.5 P	3-349-084-03	K372B	
ES 31 K 2x40 R 0.6 P	3-349-084-03	K372C	
ES 31 K 7 R 7 P	3-349-084-03	K372D	
ES 32 K 30 R 4 P	3-349-084-03	K373A	
ES 32 K 80 R 1.5 P	3-349-084-03	K373B	

SLP KONSTANTER 32 N

Laboratory Power Supplies, Analog Interface: SLP Series

Series SLP 120, 240 and 320 (single output laboratory power supplies) are single output, primary switched-mode laboratory power supplies for universal use in R&D, production, training and service applications. Our innovative BET circuit technology (bidirectional energy transformation) allows for practically load independent response times.

- Compact design and minimal weight
- Auto-ranging output with 120, 240 or 320 W
- Minimal power loss
- Output: Voltage and current regulated output
- Increased output power for brief intermittent periods
- Very short response times thanks to BET technology, typically 1 ms
- Dynamic sink mode operation
- Excellent dynamic control parameters
- Minimal residual ripple
- Output On/Off function
- Manual adjustment with ten-turn potentiometer
- Remote sensing
- Master-slave operation for parallel and series connection
- Protection against excessive temperature
- Floating output terminals at front and rear panel
- Can be electrically and mechanically combined into multi-output devices
- Assembly accessories for mounting to 19" rack
- Dimensions: bench-top instrument (W x H x D) 221.5 x 102 x 397.5 mm, or 19" rack: ½19" x 2 standard height units x 400 mm
- Weight: approx. 2.8 kg

	Type	Data Sheet No.	Article Number	
120 W	32 N 20 R 10	3-348-796-03	K220A	
	32 N 40 R 6	3-348-796-03	K221A	
	32 N 80 R 3	3-348-796-03	K222A	
240 W	32 N 20 R 20	3-348-796-03	K230A	
	32 N 40 R 12	3-348-796-03	K231A	
	32 N 80 R 6	3-348-796-03	K232A	
320 W	32 N 32 R 18	3-348-796-03	K234A	

LSP KONSTANTER 23/33 K

Laboratory Power Supplies, Analog Interface: LSP Series

KONSTANTER series LSP 85 devices (laboratory and system power supply) are compact, linear controlled three output devices with extraordinary control characteristics.
They are exceptionally well suited for universal use in R&D, production, training and service applications.
Control mode indicators display current operating status.
The analog interface includes monitor, auxiliary power supply and signal outputs with status display and setpoint inputs.

- SELV (safety extra-low voltage)
- Three mutually isolated outputs (at the front panel)
- Constant voltage and constant current operation
- Extremely minimal residual ripple
- Accurate, infinite adjustment of output voltage and current
- Analog interface (for remote control)
- Outputs can be connected for parallel or series operation
- Master-slave operation
- Tracking operation
- Rugged metal housing with carrying handle, suitable for rack-mounting
- Dimensions: bench-top instrument (W x H x D) 219 x 148 x 365 mm, or 19" rack: 3/6 19" x 3 standard height units x 343 + 45 mm
- Weight: approx. 8.7 kg

Type	Data Sheet No.	Article Number	
33 K 7 EU 5/2x25 R 1 D	–	K270A	

Accessories, Software, Panel Mount and OEM Power Supplies

Accessories

Designation	Type	Article Number	
19" rack adapter, 1 x 32 N (for mounting 1 series SLP / SSP 32 N device)	K990A	K990A	
19" rack adapter, 2 x 32 N (for mounting 2 series SLP / SSP 32 N devices)	K990B	K990B	
F48F-C1L socket connector for KONSTANTER	J904A	J904A	
Bus cable, IEEE - IEEE, 2 m	K931A	K931A	
Bus cable, RS 232, 0.4 m, 9-pin socket to 9-pin plug	K931B	K931B	
Bus cable, RS 232, 2 m, 9-pin socket to 9-pin plug	Z3241	GTZ3241000R0001	
Mains jumper cable, 0.4 m	K991A	K991A	
Software			
Lab View device driver	K930D	K930D	
LabWindows CVI device driver	K930E	K930E	
HPVEE / VXI PnP device driver	K930F	K930F	

Panel Mount Power Supplies
OEM Power Supplies

Power Supplies for Special Applications, or in Accordance with Customer Specifications

In addition to our standard power supply series, we also fabricate power supplies for special applications, or in accordance with customer specifications, for example:

- Fixed voltage switched-mode power supplies in European plug-in module or cartridge format
- Customer-specific power supplies
- 24 to 12 V DC-DC converters for commercial vehicles

Request data sheets for these products if required.

Service, DKD Calibration Laboratory

GOSSEN METRAWATT GMBH Service Center

Thomas-Mann-Str. 20 D-90471 Nuremberg, Germany
Phone: +49-911-8602 354/410/256 Fax: +49-911-8602 253

- After-sales assistance for new device operation, right on up to disposal of old devices
- Full service provider for repairs, replacement parts and test equipment management
- Advice on calibration, maintenance and equipment use
- Training and seminars with practical experience

Calibration laboratory for electrical quantities

Accredited per DIN ISO/IEC 17025
GOSSEN METRAWATT GMBH (certified per DIN EN ISO 9001)
DKD - K - 19701
www.kalibrierdienst.info

Permanent Calibration Laboratory

The laboratory fulfills three primary functions:

- **Establishes** a link to the German Federal Institute of Physics and Metrology (PTB: **P**hysikalisch **T**echnische **B**undesanstalt)
- **Assures** traceability of measured quantities to SI units
- **Calibration** of working standards, as well as on-site calibration stations and test equipment monitoring

On-Site Test Benches

- Calibration of measuring instruments and calibrators:
  Devices are calibrated at these test benches either during the course of final manufacturing inspection as a standard routine, or individually when service is required. Measuring uncertainty is matched to the individual requirements of the devices to be calibrated.
- Calibration of special measuring equipment, for example:
  – Shunts by means of current-voltage method
  – High-value resistance, 30 GΩ with U_M = 5000 V

Accredited Quantities

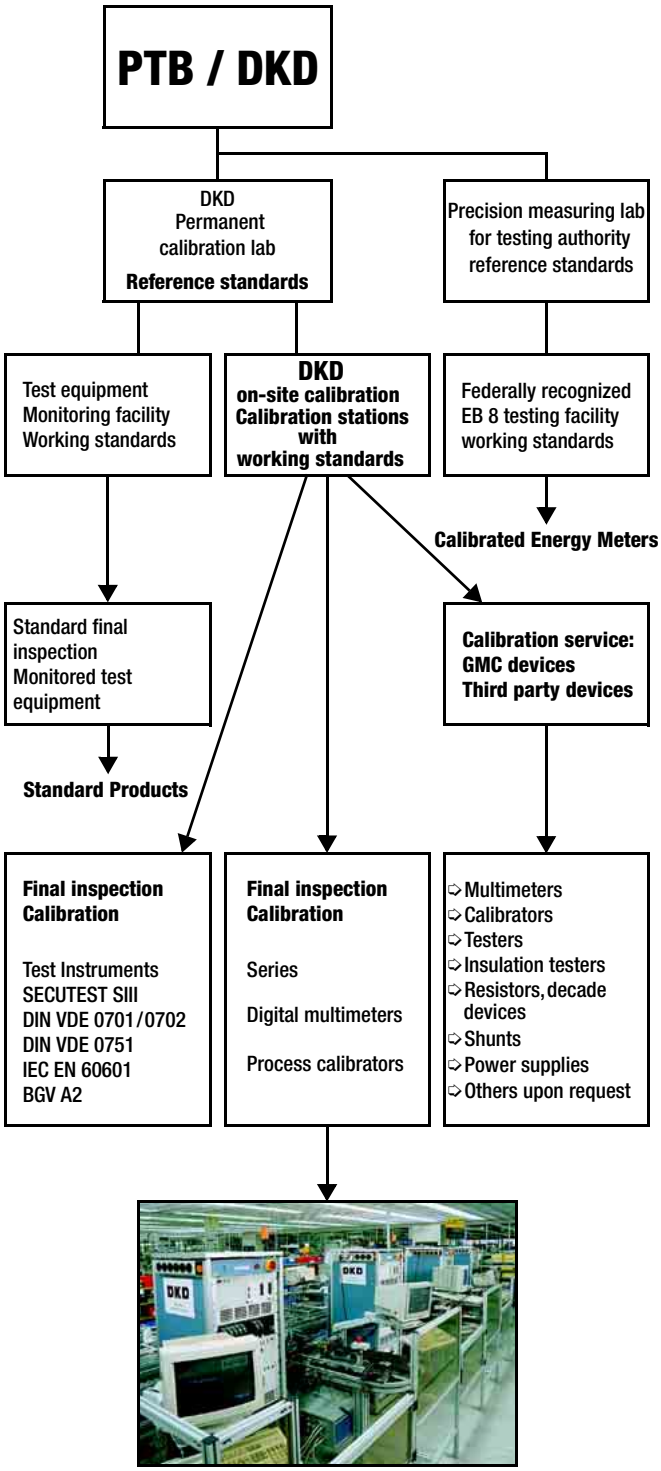
Calibration of Measuring Instruments	Smallest Specifiable Measuring Uncertainty	
	to	Relative
Direct voltage	1100 V	6.3×10^{-6}
Fixed value for artifact calibration	10 V	1.5×10^{-6}
Direct current value	11 A	5.3×10^{-5}
Ohmic resistance	100 MΩ	3×10^{-6}
High value ohmic resistance	30 GΩ / 1000 V	60×10^{-6}
Alternating voltage	1100 V / 100 kHz	1.2×10^{-4}
Alternating current value	11 A / 10 kHz	3×10^{-4}
Fixed value capacitance	2.8 nF ... 30 mF	3×10^{-3}
Frequency	1 MHz	5×10^{-6}
Temperature indication, resistance thermometers	850 °C	2×10^{-5}
Temperature indication, thermocouples	2000 °C	2×10^{-3}
Calibration of Power Sources		
Direct voltage	1100 V 10000 V	5.3×10^{-6} 3.5×10^{-3}
Direct current value	11 A	1.3×10^{-5}
Ohmic resistance	200 MΩ	11×10^{-6}
High value ohmic resistance	30 GΩ / 1000 V	60×10^{-6}
Alternating voltage	1100 V / 300 kHz 10000 V / 50 Hz	45×10^{-6} 4.5×10^{-3}
Alternating current value	11 A / 10 kHz	1×10^{-4}
AC active power	500 V / 20 A	2×10^{-4}
AC apparent power	500 V / 20 A	2×10^{-4}
DC power	1000 V / 11 A	1×10^{-4}
Fixed value capacitance	2.8 nF ... 30 mF	3.5×10^{-3}
Frequency	1 MHz	3×10^{-6}

Deutscher Akkreditierungs Rat DAR

Service:

- Pick-up and return service
- Technical support
- Initial start-up and queries
- Updates, replacement parts, repair and maintenance
- Used measuring instruments, rental device service, disposal of old devices
- DKD calibration laboratory
- Training

Standards hierarchy



Calibration of Measuring and Test Instruments (regardless of manufacturer) with DKD or Factory Calibration Certificate

Why is calibration important?	In the DIN EN ISO 9000-9004 series of standards, test equipment monitoring is included as an essential element of quality assurance. Test equipment monitoring must assure that all test equipment with relevance for product quality measures "correctly". In order to assure that this is the case, test equipment must be calibrated in a regular basis, and must be traceable to national standards. Due to the fact that demands placed upon customers regarding traceability have become even stricter within the framework of certification per DIN EN ISO 9000-9004, **GOSSEN METRAWATT** offers DKD as well as factory calibration certificates as an **accredited DKD calibration laboratory**.
What is traceability?	Traceability describes the process by means of which measured values indicated by a measuring instrument can be compared with the national standard for the respective measured quantity, either in a single or in several steps. To an ever greater extent, ISO9000 inspectors demand calibration certificates from calibration services who are accredited by or associated with the EA (European Cooperation for Accreditation). National calibration services, e.g. the DKD, are organized into the EA within the EU . The DKD (German Calibration Service) is accredited by the DAR as a German member organization, and is thus fully recognized in all EU countries, as well as worldwide.
What is calibration?	Calibration involves the determination and documentation of deviation of values display by the measuring instrument from the correct value , or the output quantity of a tester from the nominal value. Two possibilities exist if the value displayed by a measuring instrument or the output quantity of a tester is determined to be out of tolerance during calibration: 1. The instrument is adjusted such that the value are within the allowable tolerance and it is then calibrated once again. 2. Adjustment is intentionally omitted because the user wants to document measuring deviation demonstrated by his measuring or test instrument during long-term use over defined periods of time (history).
Services provided by the GOSSEN METRAWATT calibration Service	1. **Calibration** (of our own products including adjustment) with factory or DKD calibration certificate and calibration label (e.g. DKD label) applied to the instrument. 2. **Free monitoring of your instruments** with written notification indicating when your instrument is once again due for calibration. Saves you the time and effort of performing in-house test equipment monitoring. 3. **Receiving test report**, prepared as part of point 1 upon request only, if the measured values determined during receiving calibration do not comply with the specifications.

Our calibration lab is part of our service department.
If repairs should become necessary during the course of calibration , our experts can prepare a cost estimate immediately (for our own devices only).
After the cost estimate has been approved, repair is performed using original replacement parts and calibration is resumed immediately thereafter.

New: Everything from a Single Source!

Recalibration (DKD / factory calibration) and test equipment management for measuring instruments from all well known manufacturers at our DKD calibration lab or service center.

Question regarding prices, turnaround times, processing or rental instrument service?
GOSSEN METRAWATT GMBH Service Center
Phone: +49-911-8602 256 / 410

Seminars with Practical Experience in Nuremberg

As part of our complete service package, we offer seminars which incorporate practical experience using models and simulators in combination with original instruments. Participants are placing more and more significance on extensive practical exercises, because they impart knowledge and experience which is invaluable in the day to day work environment.

Seminars are held at our training facilities in Nuremberg.
Upon request, we can also offer closed seminars at your location.
Please contact our training division if you require additional information. Call us or send us a fax, and request your copy of our seminar calendar today.
Phone: +49-911-8602 406, Fax: +49-911-8602 724

Seminars with Practical Experience in Nuremberg – Overview	Type	Article Number	
Testing of Safety Measures			
Measurements for testing safety measures in power installations per DIN VDE 0100 / 0105 and BGV A2 (VBG 4) (seminar duration: 2 days)	GTT1210	GTT1210000R0001	
Efficient periodic testing of electrical equipment according to requirements set forth by BGV A2 (VBG 4) (seminar duration: 2 days)	GTT1211	GTT1211000R0001	
Periodic testing of electrical equipment by “trained persons” according to requirements set forth by BGV A2 (seminar duration: 1 day)	GTT1212	GTT1212000R0001	
Safety tests for medical devices with SECUTEST 0751/601 and SIII test instruments (seminar duration: 1 day)	GTT1213	GTT1213000R000	
Safety test for electrically operated hospital beds	GTT1214	GTT1214000R0001	
Measurements for testing electrical equipment at machinery per DIN VDE 0113 (EN 60204) (seminar duration: 1 day)	GTT1215	GTT1215000R0001	
Testing electrical equipment in hospitals and other medical facilities	GTT1217	GTT1217000R0001	
Measuring with Multimeters			
Safe, efficient measurements in hazardous environments with category IV multimeters (seminar duration: 1 day)	GTT1219B	GTT1219000R0001	
Software for SECUTEST and PROFITEST Test Instruments			
PS3 user software with the SECUTEST S II test instrument: Basics regarding entry, documentation and management of test and device data for electrical **devices** (test management) (seminar duration: 1 day)	GTT1224A	GTT1224000R0001	
PS3 user software with the PROFiTEST 0100S II/PROFiTEST C test instrument: Basics regarding entry, documentation and management of test data for electrical **systems** (test management) (seminar duration: 1 day)	GTT1224B	GTT1224000R0001	
PS3 user software with the PROFiTEST 0100S II/PROFiTEST C test instrument: Basics regarding entry, documentation and management of test and device data for electrical **machines** (test management) (seminar duration: 1 day)	GTT1224C	GTT1224000R0001	
PC.doc-win ACCESS user software : Entry, documentation and management of test and device data for electrical devices and systems (test management) (seminar duration: 1 day)	GTT1226	GTT1226000R0001	
Power Disturbance Analysis			
Power disturbance analysis, as well as power and energy analysis with the Mavowatt 45 and Metrawin 45 software (seminar duration: 2 days)	GTT1641	GTT1641000R0001	
Power disturbance analysis, as well as power and energy analysis with the Mavolog 10 (seminar duration: 2 days)	GTT1642	GTT1642000R0001	

Type Index

Type Index

Article Number Index

Article Number Index

Measuring Technology – Universal	Voltage Quality – Energy – Power Field Measuring Systems, Cable Detection Devices Resistance Thermometers / Clip-On Measuring Instruments Digital Multimeters Analog Multimeters Multimeter Accessories Calibrators Temperature Measuring Instruments
Testing Technology – Electrical	Testing Electrical Installations and Equipment (installed) Testing Electrical Devices (portable) Testing Electrical Machinery Earthing, Insulation, Low-Resistance Workshop Test Panels AS Interface Test Instruments
Measuring Technology – Industrial	Measuring Transducers for Universal Use Measuring Transducers for Electrical Quantities Temperature Measuring Transmitters Measuring Transducers for Angle of Rotation DC Signal Isolators, Isolating Transformers Power Packs, Mounting Racks Isolating Switch Amplifiers, Isolating Amplifiers Valve Control Modules, Limit Value Indicators Ex-i Equipment
Energy Management	Energy Meters, Summators, Additional Components Power – Energy – Voltage Quality ECS – Energy Control System Energy Management – Engineering Competent Project Management Partner
Power Supplies	Laboratory Power Supplies, OEM Power Supplies
Control Technology	Analog and Compact Controllers, Modules, Control Systems
Recording Technology	Continuous Line Recorders, Point Recorders
Software for	Measuring Instruments Test Instruments ECS – Energy Control System Measuring Transducers, Isolating Amplifiers Power Supplies Controllers

Visit our website at:

http://www.gmc-instruments.com

quality original

made in germany

Your sales partner:

www.gmc-instruments.com • info@gmc-instruments.com

GOSSEN METRAWATT GmbH • Thomas-Mann-Str. 16-20 • 90471 Nürnberg, Germany

Phone +49 911 8602-111 • Fax +49 911 8602-777

Printed in Germany • Subject to change without notice • 1/2.03 • Order No. 3-337-026-03