



PAGE 14-4

**DIGITAL METERING INSTRUMENTS**  
**LED MEASURING INSTRUMENTS**

- Voltmeters, ammeters, frequency meters, cosphi meters and wattmeters.

**DIGITAL LED MULTIMETERS**

- Basic version, with energy meters, with 2 programmable outputs, for use with generating sets and with data-logger.

**DIGITAL LCD MULTIMETERS**

- Graphic LCD or touch screen
- Remote display
- Expandable versions.



PAGE 14-19

**ENERGY METERS**

- Single phase, three phase with neutral, three phase with or without neutral
- Direct connection or by current transformer
- Data concentrator.



PAGE 14-21

**CURRENT TRANSFORMERS**

- Primary current: 40-1500A
- Secondary current: 5A.

- ◆ Digital voltmeters, ammeters, wattmeters, frequency meters and cosphi meters
- ◆ Digital multimeters, expandable, with graphic LCD
- ◆ Connection to single, two, three phase systems
- ◆ Ideal for distribution systems, co-generation energy systems, stand-by generating sets and on-board machinery installations
- ◆ High measurement accuracy
- ◆ Totally programmable digital outputs
- ◆ RS485, RS232, USB, Ethernet, serial interface for remote control and data-logger.



PLANET - LOGIC

**Digital metering instruments**

	SEC.	PAGE
Flush mount LED measuring instruments .....	14-	4
Flush mount LED multimeters .....	14-	6
Flush mount expandable LCD multimeters .....	14-	10
Modular LED measuring instruments .....	14-	12
Modular LED multimeters .....	14-	14
Modular LCD multimeters .....	14-	16
Modular LCD expandable multimeters .....	14-	16
Software and accessories .....	14-	17

**Energy meters**

Single phase .....	14-	19
Three phase with neutral .....	14-	20
Three phase with or without neutral .....	14-	20
Data concentrator .....	14-	20
Software and accessories .....	14-	20

**Current transformers**

14- 21

### Digital measuring instruments with LED display



SINGLE PHASE	DMK 00 DMK 00 R1	DMK 01 DMK 01 R1	DMK 02	DMK 03 DMK 03 R1	DMK 04 DMK 04 R1			
THREE PHASE	DMK 10 DMK 10 R1	DMK 11 DMK 11 R1				DMK15 DMK 15 R1	DMK 16 DMK 16 R1	
Voltmeter	●		● <sup>2</sup>			●	●	
Ammeter		●	● <sup>2</sup>			●	●	
Frequency meter				●			●	
Cosphi meter					●			
Wattmeter						●	●	
Energy measurement							●	
With programmable output relay	● <sup>1</sup>	● <sup>1</sup>		● <sup>1</sup>	● <sup>1</sup>	● <sup>1</sup>	● <sup>1</sup>	
Page	14-4 and 5						14-6 and 7	

<sup>1</sup> For DMK...R1 version only.

<sup>2</sup> Configurable as voltmeter or as ammeter.

### Digital multimeters with LED display



SINGLE PHASE, TWO PHASE, THREE PHASE WITH OR WITHOUT NEUTRAL	DMK 20	DMK 21	DMK 22	DMK 25	DMK 26	DMK 30	DMK 31	DMK 32 DMK 32D <sup>3</sup>	DMK 40
47 electrical parameters	●	●	●	●	●				
251 electrical parameters						●	●	●	●
Basic version	●					●			
With energy meters		●	●			●	●	●	●
Opto-isolated RS232 port									●
Opto-isolated RS485 port			●					●	●
For generating sets				●	●				
Programmable outputs							●	●	
Page	14-8					14-9			

<sup>3</sup> Version with 24-48VDC supply.

### Digital multimeters with graphic LCD



SINGLE PHASE, TWO PHASE, THREE PHASE WITH OR WITHOUT NEUTRAL	DMG 700	DMG 800 DMG 800 D048 <sup>1</sup>	DMG 900 DMG 900 D048 <sup>1</sup>	DMG 900T DMG 900T D048 <sup>1</sup>	DMG 900RD
Graphic LCD	●	●			
Touch screen display				●	●
Measurement transducer				●	
Remote display					●
Voltage measurements	●	●	●	●	
Current measurements	●	●	●	●	
Power measurements	●	●	●	●	
Power factor measurements		●	●	●	
Frequency measurements	●	●	●	●	
Active energy measurements	●	●	●	●	
Reactive energy measurements		●	●	●	
Expandable (In/Out, USB, RS232, RS485, Ethernet, memory)	●	●	●	●	
Page	14-10			14-11	

<sup>1</sup> Version with 12-24-48VDC supply.

### Digital measuring instruments with LED display



SINGLE PHASE	DMK 80 DMK 80 R1	DMK 81 DMK 81 R1	DMK 82	DMK 83 DMK 83 R1	DMK 84 DMK 84 R1	
THREE PHASE	DMK 70 DMK 70 R1	DMK 71 DMK 71 R1				DMK 75 DMK 75 R1
Voltmeter	●		●②			●
Ammeter		●	●②			●
Frequency meter				●		
Cosphi meter					●	
Wattmeter						●
With programmable output relay	●①	●①		●①	●①	●①
Page	14-12 and 13		14-12		14-13	

- ① For DMK...R1 versions only.
- ② Configurable as voltmeter or as ammeter.

### Digital multimeters with LED display



SINGLE PHASE, TWO PHASE, THREE PHASE, WITH OR WITHOUT NEUTRAL	DMK 50	DMK 51	DMK 52	DMK 60	DMK 61	DMK 62
47 electrical parameters	●	●	●			
251 electrical parameters				●	●	●
Basic version	●			●		
With energy meters		●	●	●	●	●
Harmonic analysis				●	●	●
Opto-isolated RS485 port			●			●
For generating sets				●	●	
Programmable outputs					●	●
Page	14-14			14-15		

### Digital multimeters with graphic LCD



SINGLE PHASE, TWO PHASE, THREE PHASE WITH OR WITHOUT NEUTRAL	DMG 200	DMG 210	DMG 300
Graphic LCD	●	●	●
Voltage-current measurements	●	●	●
Frequency-power measurements	●	●	●
Power factor measurements			●
Active-reactive energy measures	●	●	●
Harmonic analysis			●
Opto-isolated RS485 port		●	
Expandable (In/Out, USB, RS232, RS485, Ethernet, memory)			●
Page	14-16		

### Energy counters



SINGLE PHASE	DME M100	DME M100 T1	DME D100 T1	DME D110 T1	DME D120 T1		
THREE PHASE WITH NEUTRAL						DME D300 T2	
THREE PHASE WITH OR WITHOUT NEUTRAL							DME D310 T2
Mechanical display	●	●					
Digital display			●	●	●	●	●
Direct connection	●	●	●	●	●	●	
Connection by CT							●
Programmable digital input						●	●
Pulse outputs		●	●				
Programmable static output				●	●	●	●
Multi-measurements				●	●	●	●
Active energy measurements	●	●	●	●	●	●	●
Partial active energy measurements					●	●	●
Reactive energy measurements				●	●	●	●
Expandable (In/Out, USB, RS232, RS485, Ethernet, memory)							●
Page	14-19					14-20	

### Flush-mount instruments single phase



DMK 0...

Order code	Displayed measurements	Output relay	Qty per pkg	Wt [kg]
	n°	n°	n°	[kg]
Voltmeter.				
DMK 00	1 voltage value	–	1	0.290
DMK 00 R1	1 max voltage value 1 min voltage value	1	1	0.323
Ammeter.				
DMK 01	1 current value	–	1	0.290
DMK 01 R1	1 max current value 1 min current value	1	1	0.323
Voltmeter and ammeter.				
DMK 02	1 voltage or current value 1 maximum voltage or current value 1 minimum voltage or current value	–	1	0.290
Frequency meter.				
DMK 03	1 frequency value	–	1	0.290
DMK 03 R1	1 max frequency value 1 min frequency value	1	1	0.323
Cosphi meter.				
DMK 04	1 cosphi value	–	1	0.290
DMK 04 R1	1 power factor value	1	1	0.323

❶ The DMK02 can operate as a voltmeter or ammeter. It is duly equipped with two front plates (V and A) which must be fitted by the user depending on which instrument is required and on the wiring scheme used.

#### General characteristics

The DMK 0... instruments are available with flush-mount housing, 96x48mm size.

Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- True RMS measurements
- HIGH and LOW measurement storage
- 1 output relay with 1 changeover contact for DMK...R1 version only
- Housing: flush mount 96x48mm
- Terminals: 4mm<sup>2</sup>
- Degree of protection: IP54 on front.

#### DMK 00 - DMK 00 R1

- Voltage measure range: 15-660VAC
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Accuracy:  $\pm 0.25\%$  f.s.  $\pm 1$  digit

#### For DMK 00 R1 only

- Voltage loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Time delay for max-min voltage or voltage loss, phase loss ❷: 0.0-900.0 seconds.

#### DMK 01 - DMK 01 R1

- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable CT ratio: 5-10,000
- Accuracy:  $\pm 0.5\%$  f.s.  $\pm 1$  digit

#### For DMK 01 R1 only

- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Time delay for max-min current or current loss ❷: 0.0-900.0 seconds.

#### DMK02

- Voltage measure range: 15-660VAC
- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Programmable CT ratio: OFF/5-10,000
- Accuracy: Voltage  $\pm 0.25\%$  f.s.  $\pm 1$  digit  
Current  $\pm 0.5\%$  f.s.  $\pm 1$  digit

#### DMK 03 - DMK 03 R1

- Measurement input: 15-660VAC
- Frequency measure range: 15-65Hz
- Accuracy:  $\pm 1$  digit

#### For DMK 03 R1 only

- Maximum frequency: OFF/101-110%
- Minimum frequency: OFF/90-99%
- Time delay for min-max frequency ❷: 0.5-900.0 seconds.

#### DMK 04 - DMK 04 R1

- Cosphi measure error:  $\pm 0.5^\circ \pm 1$  digit
- Cosphi measure in 4 quadrants
- Accuracy:  $\pm 1^\circ \pm 1$  digit

#### For DMK 04 R1 only

- Maximum cosphi threshold: OFF/0.1Ind-0.0 Ind
- Minimum cosphi threshold: OFF/0.1Ind-0.0 Ind
- Maximum P.F. threshold: OFF/0.10-1.00
- Minimum P.F. threshold: OFF/0.0-1.00
- Delay time for max or min threshold ❷: 1-9,000 seconds.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

❷ Independent adjustable delays.

### Flush-mount LED instruments three phase



DMK 1...

Order code	Displayed measurements	Output relay	Qty per pkg	Wt [kg]
	n°	n°	n°	[kg]
<b>Voltmeter.</b>				
<b>DMK 10</b>	3 phase voltage values	–	1	0.297
<b>DMK 10 R1</b>	3 phase to phase voltage values 3 maximum phase voltage values 3 minimum phase voltage values 3 minimum phase to phase voltage values	1	1	0.330
<b>Ammeter.</b>				
<b>DMK 11</b>	3 phase current values	–	1	0.292
<b>DMK 11 R1</b>	3 maximum phase current values 3 minimum phase current values	1	1	0.336
<b>Combined voltmeter, ammeter and wattmeter.</b>				
<b>DMK 15</b>	3 phase voltage values	–	1	0.332
<b>DMK 15 R1</b>	3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 maximum active power values, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 minimum active power values, phase and total	1	1	0.350

#### General characteristics

The DMK 1... instruments are available with flush-mount housing, 96x48mm size. Measurements are TRMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- TRMS measurements
- HIGH and LOW measurement storage
- 1 output relay with 1 changeover contact for DMK...R1 version only
- Housing: flush mount 96x48mm
- Terminals: 4mm<sup>2</sup>
- Degree of protection: IP54 on front.

#### DMK 10 - DMK 10 R1

- Voltage measure range: 15-660VAC
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Accuracy: ±0.25% f.s. ±1 digit

#### For DMK 10 R1 only

- Phase loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Asymmetry: OFF/2-20%
- Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Frequency
  - Maximum frequency: OFF/101-110%
  - Minimum frequency: OFF/90-99%
- Time delay for max-min voltage, phase loss, asymmetry and min-max frequency ①: 0.5-900.0 seconds.

#### DMK 11 - DMK 11 R 1

- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable CT ratio: 5-10,000
- Accuracy: ±0.5% f.s. ±1 digit

#### For DMK 11 R1 only

- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Asymmetry: OFF/2-20%
- Time delay for max-min current or current loss and asymmetry ①: 0.5-900.0 seconds.

#### DMK 15 - DMK15 R 1

- Voltage measure range: 35-660VAC
- Current measure range: 0.05-5.75A
- Frequency measure range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Programmable CT ratio: 5-10,000
- Accuracy: Voltage ±0.25% f.s. ±1 digit  
Current ±0.5% f.s. ±1 digit  
Power ±1% f.s. ±1 digit

#### DMK 15 R1 only

- Voltage
  - Phase loss or failure: OFF/5-85%
  - Maximum voltage: OFF/102-120%
  - Minimum voltage: OFF/70-98%
  - Asymmetry: OFF/2-20%
  - Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Current
  - Current loss: OFF/5-85%
  - Maximum current: OFF/102-200%
  - Maximum current instantaneous tripping: OFF/110-600%
  - Minimum current: OFF/5-98%
  - Asymmetry: OFF/2-20%
- Power
  - Rated power: 1-10,000
  - Maximum power: OFF/101-200%
  - Maximum power instantaneous tripping: OFF/110-600%
  - Minimum power: OFF/10-99%
- Frequency
  - Maximum frequency: OFF/101-110%
  - Minimum frequency OFF/90-99%
- Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power ①: 0.0-900.0 seconds.

#### Certifications and compliance

Certifications obtained: cULus, GOST. Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

① Independent adjustable delays.



### Flush-mount LED multimeter three phase



DMK 16

Order code	Displayed measurements	Qty per pkg	Wt
		n°	[kg]
DMK 16	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 4 reactive power values, phase and total 4 apparent power values, phase and total 3 phase power factor values 1 frequency value 1 active energy value in kWh 1 reactive energy value in kvarh 1 hour counter 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 minimum and maximum active power values, phase and total 4 minimum and maximum reactive power values, phase and total 4 minimum and maximum apparent power values, phase and total	1	0.350

#### General characteristics

The DMK 16 multimeter is available with flush-mount housing, 96x48mm size.

Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- True RMS measurements
- Accuracy: Voltage  $\pm 0.25\%$  f.s.  $\pm 1$  digit  
Current  $\pm 0.5\%$  f.s.  $\pm 1$  digit
- Active energy accuracy: Class 2 (IEC/EN 62053-21 and IEC/EN 62053-23)
- HIGH and LOW measurement storage
- Voltage measure range: 35-660VAC
- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.0
- Programmable CT ratio: 5-10,000
- Housing: flush mount 96x48mm
- Terminals: 4mm<sup>2</sup>
- Degree of protection: IP54 on front.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Flush-mount LED multimeter three phase



DMK 16 R1

Order code	Displayed measurements	Output relay	Qty per pkg	Wt
	n°	n°	n°	[kg]
<b>DMK 16 R1</b>	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 4 reactive power values, phase and total 4 apparent power values, phase and total 3 phase power factor values 1 frequency value 1 active energy value in kWh 1 reactive energy value in kvarh 1 hour counter 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 minimum and maximum active power values, phase and total 4 minimum and maximum reactive power values, phase and total 4 minimum and maximum apparent power values, phase and total 2 minimum and maximum power factor values	1	1	0.353

#### General characteristics

The DMK 16 R1 multimeter is available with flush-mount housing, 96x48mm size.

Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
  - Operating frequency: 50-60Hz
  - True RMS measurements
  - Accuracy: Voltage  $\pm 0.25\%$  f.s.  $\pm 1$  digit  
Current  $\pm 0.5\%$  f.s.  $\pm 1$  digit
  - Active energy accuracy: Class 2 (IEC/EN 62053-21 and IEC/EN 62053-23)
  - HIGH and LOW measurement storage
  - Voltage measure range: 35-660VAC
  - Current measure range: 0.05-5.75A
  - Frequency measure range: 45-65Hz
  - Programmable PT ratio: 1.00-500.0
  - Programmable CT ratio: 5-10,000
  - 1 output relay with 1 changeover contact
  - Housing: flush mount 96x48mm
  - Terminals: 4mm<sup>2</sup>
  - Degree of protection: IP54 on front.
- RELAY PROGRAMMING**
- Voltage
    - Phase loss or failure: OFF/5-85%
    - Maximum voltage: OFF/102-120%
    - Minimum voltage: OFF/70-98%
    - Asymmetry: OFF/2-20%
    - Phase sequence: OFF/L1-L2-L3/L3-L2-L1
  - Current
    - Protection inhibition max current: OFF/2-100%
    - Maximum current: OFF/102-200%
    - Maximum current instantaneous tripping: OFF/110-600%
    - Minimum current: OFF/5-98%
    - Asymmetry: OFF/2-20%
  - Power factor
    - Maximum power factor: 0.10-1.00
    - Minimum power factor: 0.10-1.00
  - Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power factor **ⓘ**: 0.0-900.0 seconds.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

**ⓘ** Independent adjustable delays.

### Flush mount LED multimeters non expandable 47 electric parameters



DMK 2...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMK 20	Basic version, 208-240VAC	1	0.434
DMK 21	Version with energy meters included, 208-240VAC	1	0.477
DMK 22	Version with energy meters and RS485 port included, 208-240VAC	1	0.477
DMK 25	Version for generating set duty, 12-24VDC	1	0.350
DMK 26	Version for generating set duty with maximum current demand, voltage and current imbalance, 12-24VDC	1	0.350

#### General characteristics

DMK 2... digital multimeters are available with flush-mount housing, 96x96mm size. They monitor and view reliable readings of electric parameters, even in presence of critical operating conditions, such as voltages and currents with high harmonic content and variable frequency.

The total and partial hour counter feature provides an interesting feature for electric panels of emergency generating sets.

The diversified and accurate measurements give the multimeters valuable technical and cost effective advantages respect to traditional analog instrumentation.

The digital multimeters DMK 2... view 47 electric parameters:

- Voltage: phase, line and system values
- Battery voltage: 9-32VDC for DMK 25 and DMK 26 only
- Current: phase values
- Power: apparent phase, active and reactive values
- P.F.: power factor per phase
- Frequency of measured voltage value
- HIGH/LOW: instantaneous minimum and maximum values of each phase voltage and current, total active power ( $\Sigma W$ ), total reactive power ( $\Sigma var$ ) and total apparent power ( $\Sigma VA$ ) values
- Total hours: non-volatile clearable log for DMK 20, DMK 25 and DMK 26 only
- Partial hours: non-volatile configurable log for DMK 20, DMK 25 and DMK 26 only
- Active and reactive energy meters for DMK21 and DMK22 only.

#### Operational characteristics

- Auxiliary supply voltage range:
  - 154-288VAC for DMK 20
  - 177-264VAC for DMK 21-DMK 22
  - 9-32VDC for DMK 25-DMK 26
- Voltage measure range: 60-830VAC phase-phase  
30-480VAC phase-neutral
- Frequency measure range: 45-65Hz
- Programmable CT ratio: 1.0-2,000
- Accuracy: Voltage-class 0.5  $\pm$ 0.35% f.s. (830V)  
Current-class 0.5%  $\pm$ 0.5% f.s. (6A)
- Active energy accuracy: Class 2
- Non-volatile total and partial hour counter with separate clearing; used as maintenance interval with alarm display in DMK 20 - DMK 25 - DMK 26 only
- HIGH and LOW value functions to read and log instantaneous voltage, current and power values
- Delayed automatic resetting of default measures
- Averaging function to slow down repetitive fluctuations to obtain more stable readouts
- Current connection in ARON configuration via 2 current transformers (CTs) only
- Single, two, three phase with or without neutral and balanced three-phase connection
- TRMS measurements up to 22<sup>nd</sup> harmonic order
- Housing: flush mount 96x96mm
- Degree of protection: IP54 on front; IP 20 at rear.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Compliant with standards, IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.



### Flush mount LED multimeters non expandable 251 electric parameters



DMK 3...  
DMK 40



Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMK 30	Basic version, 100-240VAC / 110-250VDC	1	0.410
DMK 31	Version with 1 relay and 1 static programmable outputs, 100-240VAC / 110-250VDC	1	0.480
DMK 32	Version with 1 relay and 1 static programmable outputs and RS485 opto-isolated port, 100-240VAC / 110-250VDC	1	0.490
DMK 32 D048	Version with 1 relay and 1 static programmable outputs and RS485 opto-isolated port, 24-48VDC	1	0.485
DMK 40	Version with data-logger, RS232 and RS485 opto-isolated ports, 100-240VAC / 110-250VDC	1	0.470

#### General characteristics

DMK3... and DMK40 digital multimeters are available with flush-mount housing, 96x96mm size. They comprise excellent features, superior to devices of the same category currently on the marketplace. Distorted waveform conditions, such as very disturbed electric lines having voltage and currents with high harmonic content and variable frequency, do not influence the high accuracy DMK multimeter readouts because of rigorous design in addition to the use of the latest generation of microprocessor technology. Measurement of the phase angle ( $\cos\varphi$ ) in addition to power factor, harmonics analysis and HIGH-LOW-MAX functions are just a few of those which are difficult to find on higher category equipment.

The DMK 40 version includes a reliable data-logger system, extremely easy to use.

DMK 3... and DMK 40 digital multimeter can display 251 measurements; a few of these are listed below.

- Voltage: phase, line and system values
- Current: phase and system values
- Power: active, reactive, apparent phase and total values
- Energy: import, export, active and reactive values
- P.F.: power factor per phase
- $\cos\varphi$ : angle displacement, i.e. power factor related to the harmonic fundamental only
- Frequency of measured voltage value
- Harmonics (HARM.): residual and total harmonic content for each harmonic order up to the 22° per phase, both for voltage and current values
- HIGH / LOW: maximum / minimum values of phase voltage and current and  $\Sigma W$ ,  $\Sigma var$  and  $\Sigma VA$  power
- Maximum (MAX): maximum current and total active power values, both calculated on programmable integration time.

The technical features of the DMK 40 data-logger are:

- 2Mbyte (MB) non-volatile memory for data logging
- Real Time Clock (RTC) with replaceable back-up lithium battery
- Sampling time, 1s to 24h configurable
- Number of sampling measures, 1 to 32 configurable at a time
- Communication protocols: Modbus®-RTU and Modbus®-ASCII
- Data logging of one electric parameter in continuous format or with begin and end by programmable thresholds
- Suspension of data acquisition at full memory or refreshing of oldest data.

#### Operational characteristics

- Operating auxiliary voltage range: 85-265VAC; 93.5-300VDC
- Voltage measure range: 20-830VAC phase-phase; 10-480VAC phase-neutral
- PT ratio programming: 1.0-5,000
- Current measure range: 0.02-6A
- Frequency measure range: 45-65Hz
- CT ratio programming: 1.0-2000
- Accuracy: Voltage  $\pm 0.25\%$  f.s. (830V)  
Current  $\pm 0.35\%$  f.s. (6A)  
Frequency and harmonic distortion  $\pm 1$  digit
- Active energy accuracy: Class 1
- HIGH and LOW value functions to detect and log instantaneous voltage, current and power values
- Averaging function to slow down repetitive fluctuations to obtain more stable readouts
- Current connection in ARON configuration via 2 current transformers only
- Single, two, three phase with or without neutral and balanced three-phase connection via 1 current transformer only
- Usage with voltage transformers for voltages >830VAC
- True RMS measurements up to 22° harmonic order, class 1 accuracy
- Power factor and  $\cos\varphi$  measurements
- Voltage and current harmonic analysis per phase up to 22° harmonic order
- Active energy meters (import-export)
- Reactive energy meters (import-export)
- Housing: flush mount 96x96mm
- Degree of protection: IP54 on front; IP 20 at rear.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Compliant with standards, IEC/EN 61010-1,  
IEC/EN 61000-6-2, CISPR11/EN 55011.

### Flush mount expandable LCD multimeters



DMG 700 - DMG 800...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 700	Graphic 128x80 pixel LCD, 100-440VAC / 110-250VDC	1	①
DMG 800	Graphic 128x80 pixel LCD, harmonic analysis 100-440VAC / 110-250VDC	1	①
DMG 800 D048	Graphic 128x80 pixel LCD, harmonic analysis 12-24-48VDC	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

DMG 700 and DMG 800 digital multimeters are capable of viewing the measurements with high accuracy on the wide graphic LCD, which allow to control energy distribution systems.

They are available with a flush-mount housing, 96x96mm size, and 4 expansion slots to fit plug-in expansion modules suitable for numerous applications.

The main features of these multimeters include an extended power supply voltage range, high measurement accuracy, expandability and graphic interactive interface for simple use.

The main electric parameters are:

- Voltage: phase, line and system values
- Current: phase values (neutral current calculated)
- Power: apparent, active and reactive phase and total values
- P.F.: Power Factor per phase and total
- Frequency of measured voltage value
- HIGH/LOW function: instantaneous measurement and storing of minimum and maximum values of voltage, current, power P.F. and frequency values
- Averaging function
- Maximum demand of power and current values
- Voltage and current asymmetry
- Total harmonic distortion (THD) of voltage and current values
- Harmonic analysis of voltage and current up to the 31<sup>st</sup> order with DMG 800 only
- Energy meters for active, reactive, apparent partial and total values with programmable tariff functions
- Hour counter for programmable total and partial hours
- Pulse hour counter for general use: pulse counting for water, gas, etc. consumption with expansion module only.

#### Operational characteristics

- Auxiliary supply voltage range: 90-484VAC / 93.5-300VDC for DMG 700 and DMG 800; 9-70VDC for DMK 800 D048
- Voltage measure range: 10-830VAC phase-to-phase 5-480VAC phase-neutral
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: 5A for DMG 700; 5A or 1A using external CT for DMG 800... up to 10,000A
- Frequency measure range: 45-66Hz
- True RMS measurements for voltage and current values
- Accuracy for DMG 700:
  - Voltage:  $\pm 0.5\%$  (50-830VAC)
  - Current:  $\pm 0.5\%$  (0.1-1.1 In)
  - Power:  $\pm 1\%$  f.s.
  - Frequency: 0.05%
  - Active energy: Class 1
- Accuracy for DMG 800... to EN50470-3 (MID Class B)
  - Voltage:  $\pm 0.2\%$  (50-830VAC)
  - Current:  $\pm 0.2\%$  (0.1-1.1 In)
  - Power:  $\pm 0.5\%$  f.s.
  - Power factor:  $\pm 0.5\%$
  - Frequency: 0.05%
  - Active energy: Class 0.5S (IEC/EN 62053-22)
  - Reactive energy: Class 2 (IEC/EN 62053-23)
- Non-volatile memory for data storage
- Communication protocol Modbus<sup>®</sup>-RTU and ASCII with communication expansion modules only
- Programming and remote control by software with communication expansion modules only
- 5 language texts in Italian, English, French, Spanish and Portuguese
- Housing: flush mount 96x96mm.

**Expansion modules, EXP10... series - See page 14-17.**

#### Reference standards

Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Flush mount expandable LCD multimeters



DMG 900...



DMG 900T...



DMG 900RD



Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 900	Graphic 128x112 pixel touch screen LCD, harmonic analysis 100-440VAC / 110-250VDC	1	①
DMG 900 D048	Graphic 128x112 pixel touch-screen LDC, harmonic analysis 12-24-48VDC	1	①
DMG 900T	Measurement transducer harmonic analysis, 4 channels V/f 100-440VAC / 110-250VDC	1	①
DMG 900T D048	Measurement transducer harmonic analysis, 4 channels V/f 12-24-48VDC	1	①
Remote display for DMG 900T...			
DMG 900RD	Graphic 128x112 pixel touch screen LCD, with connecting cable, 3m long	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

DMG 900... expandable digital multimeters are available with a flush-mount housing, 96x96mm size. The wide graphic touch screen display provides extremely simple interacting between the instrument and the user. The high performance of the multimeters gives very accurate measurements and can control energy distribution systems, to detect and prevent energy problems which could compromise quality and supply. The main features of these multimeters include an extensive power supply voltage range, high measurement accuracy, expandability up to 4 plug in expansion modules. There also is available the DMG 900T measurement transducer which can be used with the DMG 900RD remote display.

- The DMG 900T, without display, is arranged for mounting inside the panel board, on 35mm DIN rail, and is an ideal solution for installations where the measurements of various multimeters must be remotely viewed. The DMG 900RD remote display connected to the DMG 900T transducer can display the measurements on the panel front while power connections remain inside the panel. The main electric parameters are:
- Voltage: phase, line and system values
  - Supply voltage value for the DC supply type only
  - Current: phase values
  - Neutral current calculated and true values
  - Power: apparent, active and reactive phase and total values
  - P.F.: Power Factor per phase and total
  - $\cos\phi$  per phase and total
  - Frequency of measured voltage value
  - Voltage and current asymmetry
  - Total harmonic distortion (THD) of voltage and current values
  - Harmonic analysis of voltage and current up to the 63<sup>rd</sup> order
  - HIGH/LOW function: instantaneous measurement and storing of minimum and maximum values of voltage, current, power P.F.,  $\cos\phi$  and frequency
  - Averaging function
  - Maximum demand of power and current values
  - Flow direction of harmonic power values
  - Energy meters for active, reactive, apparent partial and total values with programmable tariff functions
  - Hour counter for programmable total and partial hours
  - Pulse hour counter for general use: pulse counting for water, gas, etc. consumption with expansion module only
  - Analysis of power quality to EN 50160 with expansion modules.

#### Operational characteristics

- Auxiliary supply voltage range: 90-484VAC / 93.5-300VDC for DMG 900 and DMG 900T; 9-70VDC for DMG 900 D048 and DMG 900T D048
- Voltage measure range: 10-830VAC phase-to-phase 5-480VAC phase-neutral
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: 5A
- Current measure range: 0.002-10A
- Current measure range with CT up to 10.000A
- Frequency measure range: 45-65Hz / 360-440Hz
- True RMS measurements for voltage and current values
- Accuracy to EN50470-3 (MID Class B)
  - Voltage:  $\pm 0.2\%$  (50-830VAC)
  - Current:  $\pm 0.2\%$  (0.1-1.1 In)
  - Power:  $\pm 0.5\%$  f.s.
  - Power factor:  $\pm 0.5\%$
  - Frequency: 0.05%
  - Active energy: Class 0.5S (IEC/EN 62053-22)
  - Reactive energy: Class 2 (IEC/EN 62053-23)
- Non-volatile memory for data storage
- Communication protocol Modbus<sup>®</sup>-RTU and ASCII with communication expansion modules only
- Programming and remote control by software with communication expansion modules only
- 5 language texts in Italian, English, French, Spanish and Portuguese
- Housing: flush mount 96x96mm for DMG 900... and DMG 900RD; 35mm DIN fixing for DMG 900T.

Expansion modules, EXP10... series - See page 14-17.

#### Reference standards

Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Modular LED instruments single phase



DMK 80



DMK 80 R1



DMK 81



DMK 81 R1



DMK 82



DMK 82



DMK 83



DMK 83 R1



DMK 84



DMK 84 R1

Order code	Displayed measurements	Output relay	Qty per pkg	Wt [kg]
	n°	n°	n°	[kg]
Voltmeter.				
DMK 80	1 voltage value	–	1	0.237
DMK 80 R1	1 max voltage value 1 min voltage value	1	1	0.268
Ammeter.				
DMK 81	1 current value	–	1	0.237
DMK 81 R1	1 max voltage value 1 min voltage value	1	1	0.268
Voltmeter and ammeter.				
DMK 82	1 voltage or current value 1 maximum voltage or current value 1 minimum voltage or current value	–	1	0.241
Frequency meter.				
DMK 83	1 frequency value	–	1	0.237
DMK 83 R1	1 max frequency value 1 min frequency value	1	1	0.268
Cosphi meter.				
DMK 84	1 cosphi value	–	1	0.241
DMK 84 R1	1 power factor value	1	1	0.272

① The DMK82 can operate as a voltmeter or ammeter. It is duly equipped with two front plates (V and A) which must be fitted by the user depending on which instrument is required and on the wiring scheme used.

#### General characteristics

The DMK 8... instruments are available with modular housing, 3-module size.

Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
  - Operating frequency: 50-60Hz
  - True RMS measurements
  - HIGH and LOW measurement storage
  - 1 output relay with 1 changeover contact for DMK...R1 version only
  - Terminals: 4mm<sup>2</sup>
  - Modular DIN 43880 housing, 3 modules
  - Degree of protection: IP40 on front.
- DMK 80 - DMK 80 R1
- Voltage measure range: 15-660VAC
  - Operating frequency range: 45-65Hz
  - Programmable PT ratio: 1.00-500.00
  - Accuracy:  $\pm 0.25\%$  f.s.  $\pm 1$  digit
- For DMK 80 R1 only
- Voltage loss or failure: OFF/5-85%
  - Maximum voltage: OFF/102-120%
  - Minimum voltage: OFF/70-98%
  - Time delay for max-min voltage or voltage loss, phase loss Ⓣ: 0.0-900.0 seconds.

#### DMK 81 - DMK 81 R1

- Current measure range: 0.05-5.75A
  - Operating frequency range: 45-65Hz
  - Programmable CT ratio: 5-10,000
  - Accuracy:  $\pm 0.5\%$  f.s.  $\pm 1$  digit
- For DMK 81 R1 only
- Current loss: OFF/2-100%
  - Maximum current: OFF/102-200%
  - Maximum current instantaneous tripping: OFF/110-600%
  - Minimum current: OFF/5-98%
  - Time delay for max-min current or current loss Ⓣ: 0.0-900.0 seconds.

#### DMK82

- Voltage measure range: 15-660VAC
- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Programmable CT ratio: OFF/5-10,000
- Accuracy: Voltage  $\pm 0.25\%$  f.s.  $\pm 1$  digit  
Current  $\pm 0.5\%$  f.s.  $\pm 1$  digit

#### DMK 83 - DMK 83 R1

- Measurement input: 15-660VAC
  - Frequency measure range: 15-65Hz
  - Accuracy:  $1^\circ \pm 1$  digit
- For DMK 83 R1 only
- Maximum frequency: OFF/101-110%
  - Minimum frequency: OFF/90-99%
  - Time delay for min-max frequency Ⓣ: 0.5-900.0 seconds.

#### DMK 84 - DMK 84 R1

- Cosphi measure error:  $\pm 0.5^\circ \pm 1$  digit
  - Cosphi measure in 4 quadrants
  - Accuracy:  $\pm 1^\circ$  digit
- For DMK 84 R1 only
- Maximum cosphi threshold: OFF/0.01Ind...0.000Ind
  - Minimum cosphi threshold: OFF/0.01Ind...0.000Ind
  - Maximum P.F. threshold: OFF/0.10-1.00
  - Minimum P.F. threshold: OFF/0.10-1.00
  - Delay time for max or min threshold Ⓣ: 1-9,000 seconds.

#### Certification and compliance

Certifications obtained: GOST.

Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Ⓣ Independent adjustable delays.



### Modular LED instruments three phase



DMK 70      DMK 70 R1



DMK 71      DMK 71 R1



DMK 75      DMK 75 R1

moduLo

Order code	Displayed measurements	Output relay	Qty per pkg	Wt [kg]
	n°	n°	n°	[kg]
<b>Voltmeter.</b>				
DMK 70	3 phase voltage values	–	1	0.233
DMK 70 R1	3 phase to phase voltage values 3 maximum phase to phase voltage values 3 minimum phase voltage values 3 minimum phase to phase voltage values	1	1	0.264
<b>Ammeter.</b>				
DMK 71	3 phase current values	–	1	0.241
DMK 71 R1	3 maximum phase current values 3 minimum phase current values	1	1	0.272
<b>Combined voltmeter, ammeter and wattmeter.</b>				
DMK 75	3 phase voltage values	–	1	0.271
DMK 75 R1	3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 maximum active power values, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 minimum active power values, phase and total	1	1	0.280

#### General characteristics

The DMK 7... instruments are available with modular housing, 3-module size. Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

#### Operational characteristics

- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- True RMS measurements
- HIGH and LOW measurement storage
- 1 output relay with 1 changeover contact for DMK...R1 version only
- Terminals: 4mm<sup>2</sup>
- Modular DIN 43880 housing, 3 modules
- Degree of protection: IP40 on front.

#### DMK 70 - DMK 70 R1

- Voltage measure range: 15-660VAC
- Operating frequency range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Accuracy: ±0.25% f.s. ±1 digit

#### For DMK 10 R1 only

- Phase loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Asymmetry: OFF/2-20%
- Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Maximum frequency: OFF/101-110%
- Minimum frequency: OFF/90-99%
- Time delay for max-min voltage, phase loss, asymmetry and min-max frequency ①: 0.0-900.0 seconds.

#### DMK 71 - DMK 71 R1

- Current measure range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable CT ratio: 5-10,000
- Accuracy: ±0.5% f.s. ±1 digit

#### For DMK 71 R1 only

- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Asymmetry: OFF/2-20%
- Time delay for max-min current or current loss and asymmetry ①: 0.0-900.0 seconds.

#### DMK 75 - DMK 75 R1

- Voltage measure range: 35-660VAC
- Current measure range: 0.05-5.75A
- Frequency measure range: 45-65Hz
- Programmable PT ratio: 1.00-500.00
- Programmable CT ratio: 5-10,000
- Accuracy: Voltage ±0.25% f.s. ±1 digit  
Current ±0.5% f.s. ±1 digit  
Power ±1% f.s. ±1 digit

#### DMK 75 R1 only

- Voltage
  - Phase loss or failure: OFF/5-85%
  - Maximum voltage: OFF/102-120%
  - Minimum voltage: OFF/70-98%
  - Asymmetry: OFF/2-20%
  - Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Current
  - Current loss: OFF/2-100%
  - Maximum current: OFF/102-200%
  - Maximum current instantaneous tripping: OFF/110-600%
  - Minimum current: OFF/5-98%
  - Asymmetry: OFF/2-20%
- Power
  - Rated power: 1-10,000
  - Maximum power: OFF/101-200%
  - Maximum power instantaneous tripping: OFF/110-600%
  - Minimum power: OFF/10-99%
- Frequency
  - Maximum frequency: OFF/101-110%
  - Minimum frequency: OFF/90-99%
- Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power ①: 0.0-900.0 seconds.

#### Certifications and compliance

Certifications obtained: GOST.  
Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

① Independent adjustable delays.

### Starters kits



DMKKIT 75 060  
DMKKIT 75 080  
DMKKIT 75 100



DMKKIT 75 150  
DMKKIT 75 200  
DMKKIT 75 250

Order code ordinazione	Description	Qty per pkg	Wt [kg]
		n°	[kg]
DMKKIT 75 060	Kit composed of one DMK 75 instrument and three DM1T 0060 current transformers	1	0.871
DMKKIT 75 080	Kit composed of one DMK 75 instrument and three DM1T 0080 current transformers	1	0.871
DMKKIT 75 100	Kit composed of one DMK 75 instrument and three DM1T 0100 current transformers	1	0.871
DMKKIT 75 150	Kit composed of one DMK 75 instrument and three DM2T 0150 current transformers	1	0.661
DMKKIT 75 200	Kit composed of one DMK 75 instrument and three DM2T 0200 current transformers	1	0.661
DMKKIT 75 250	Kit composed of one DMK 75 instrument and three DM2T 0250 current transformers	1	0.661

### Modular LED multimeters non expandable 47 electric parameters

DMK 5... **moduLo**

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMK 50	Basic version, 208-240VAC	1	0.398
DMK 51	Version with energy meters included, 208-240VAC	1	0.420
DMK 52	Version with energy meters and RS485 port included, 208-240VAC	1	0.420

#### General characteristics

DMK 5... digital multimeters are available with modular housing, 6 module size. They monitor and view reliable readings of electric parameters, even in presence of critical operating conditions, such as voltages and currents with high harmonic content and variable frequency.

The total and partial hour counter feature provides an interesting feature for electric panels of emergency generating sets.

The diversified and accurate measurements give the multimeters valuable technical and cost effective advantages respect to traditional analog instrumentation. The digital multimeters DMK 5... view 47 electric parameters:

- Voltage: phase, line and system values
- Current: phase values
- Power: apparent phase, active and reactive values
- P.F.: power factor per phase
- Frequency of measured voltage value
- HIGH/LOW: instantaneous minimum and maximum values of each phase voltage and current, total active power ( $\Sigma W$ ), total reactive power ( $\Sigma var$ ) and total apparent power ( $\Sigma VA$ ) values
- Total hours: non-volatile clearable log for DMK 50 only
- Partial hours: non-volatile configurable log for DMK 50 only
- Active and reactive energy meters for DMK 51 and DMK 52 only.

#### Operational characteristics

- Auxiliary supply voltage range:
  - 154-288VAC for DMK 50
  - 177-264VAC for DMK 51-DMK 52
- Voltage measure range: 60-830VAC phase-phase  
30-480VAC phase-neutral
- Frequency measure range: 45-65Hz
- Programmable CT ratio: 1.0-2,000
- Accuracy: Voltage-class  $0.5 \pm 0.35\%$  f.s. (830V)  
Current-class  $0.5\% \pm 0.5\%$  f.s. (6A)
- Active energy accuracy: Class 2
- Non-volatile total and partial hour counter with separate clearing; used as maintenance interval with alarm display in DMK 50 only
- HIGH and LOW value functions to read and log instantaneous voltage, current and power values
- Delayed automatic resetting of default measurements
- Averaging function to slow down repetitive fluctuations to obtain more stable readouts
- Current connection in ARON configuration via 2 current transformers (CTs) only
- Single, two, three phase with or without neutral
- True RMS measurements up to 22° harmonic order
- Modular DIN 43880 housing, 6 modules
- Degree of protection: IP41 on front; IP 20 at rear.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Compliant with standards, IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Starters kits

DMKKIT 51 060  
DMKKIT 51 080  
DMKKIT 51 100DMKKIT 51 150  
DMKKIT 51 200  
DMKKIT 51 250

Order code ordinazione	Description	Qty per pkg	Wt
		n°	[kg]
DMKKIT 51 060	Kit composed of one DMK 51 multimeter and three DM1T 0060 current transformers	1	1.020
DMKKIT 51 080	Kit composed of one DMK 51 multimeter and three DM1T 0080 current transformers	1	1.020
DMKKIT 51 100	Kit composed of one DMK 51 multimeter and three DM1T 0100 current transformers	1	0.810
DMKKIT 51 150	Kit composed of one DMK 51 multimeter and three DM2T 0150 current transformers	1	0.810
DMKKIT 51 200	Kit composed of one DMK 51 multimeter and three DM2T 0200 current transformers	1	0.810
DMKKIT 51 250	Kit composed of one DMK 51 multimeter and three DM2T 250 current transformers	1	8.210



### Modular LED multimeters non expandable 251 electric parameters



DMK 6...

**moduLo**

Order code	Description	Qty per pkg	Wt
		n°	[kg]
<b>DMK 60</b>	Basic version, 100-240VAC / 110-250VDC	1	0.290
<b>DMK 61</b>	Version with 1 relay and 1 static programmable outputs, 100-240VAC / 110-250VDC	1	0.300
<b>DMK 62</b>	Version with 1 relay and 1 static programmable outputs, and RS485 opto-isolated ports, 100-240VAC / 110-250VDC	1	0.320

#### General characteristics

DMK6... digital multimeters are available with modular housing, 6 module size. They comprise excellent features, superior to devices of the same category currently on the marketplace. Distorted waveform conditions, such as very disturbed electric lines having voltage and currents with high harmonic content and variable frequency, do not influence the high accuracy DMK multimeter readouts because of rigorous design in addition to the use of the latest generation of microprocessor technology. Measurement of the phase angle ( $\cos\phi$ ) in addition to power factor, harmonics analysis and HIGH-LOW-MAX functions are just a few of those which are difficult to find on higher category equipment.

DMK 6... digital multimeter can display 251 measurements; a few of these are listed below.

- Voltage: phase, line and system values
- Current: phase and system values
- Power: active, reactive, apparent phase and total values
- Energy: import, export, inductive and capacitive values
- P.F.: power factor per phase
- $\cos\phi$ : angle displacement, i.e. power factor related to the harmonic fundamental only
- Frequency of measured voltage value
- Harmonics (HARM.): residual and total harmonic content for each harmonic order up to the 22° per phase, both for voltage and current values
- HIGH / LOW: maximum / minimum values of phase voltage and current and  $\Sigma W$ ,  $\Sigma var$  and  $\Sigma VA$  power
- Maximum (MAX): maximum current and total active power values, both calculated on programmable integration time.

#### Operational characteristics

- Auxiliary supply voltage range: 85-265VAC/ 93.5-300VDC
- Voltage measure range: 20-830VAC phase-phase 10-480VAC phase-neutral
- PT ratio programming: 1.0-5,000
- Current measure range: 0.02-6A
- Frequency measure range: 45-65Hz
- CT ratio programming: 1.0-2000
- Accuracy: Voltage  $\pm 0.25\%$  f.s. (830V)  
Current  $\pm 0.35\%$  f.s. (6A)  
Frequency and harmonic distortion  $\pm 1$  digit
- Active energy accuracy: Class 1
- HIGH and LOW value functions to detect and log instantaneous voltage, current and power values
- Averaging function to slow down repetitive fluctuations to obtain more stable readouts
- Current connection in ARON configuration via 2 current transformers only
- Single, two, three phase with or without neutral and balanced three-phase connection via 1 current transformer only
- Usage with voltage transformers for voltages >830VAC
- True RMS measurements up to 22° harmonic order, class 1 accuracy
- Power factor and  $\cos\phi$  measure
- Voltage and current harmonic analysis per phase up to 22° harmonic order
- Active energy meters (import-export)
- Reactive energy meters (import-export)
- Modular DIN 43880 housing, 6 modules
- Degree of protection: IP41 on front; IP 20 at rear.

#### Certifications and compliance

Certifications obtained: cULus, GOST.  
Compliant with standards, IEC/EN 61010-1, IEC/EN 61000-6-2, CISPR11/EN 55011.

### Modular non expandable LCD multimeters



DMG 200 - DMG 210

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 200	Graphic 128x80 pixel LCD, 100-240VAC / 110-250VDC	1	①
DMG 210	Graphic 128x80 pixel LCD, RS485 port included 100-240VAC / 110-250VDC	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

### Modular expandable LCD multimeters



DMG 300

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 300	Graphic 128x80 pixel LCD, 100-240VAC / 110-250VDC	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

DMG 200..., DMG 210 and DMG300 digital multimeters are available with a modular housing, 4 module size, and are equipped with a graphic backlit LCD capable of providing extremely clear, intuitive and flexible viewing of all electrical parameters of a system.

The very accurate measurements combined with their extreme compactness provide an ideal solution for every type of application.

The DMG 210 version is supplied with RS485 opto-isolated built-in interface.

The DMG 300 version is expandable with up to 3 modules of the EXM series by optic interface.

The main measurements are:

- Voltage: phase, line and system values
- Current: phase values (neutral current calculated)
- Power: apparent, active and reactive phase and total values
- P.F.: Power Factor per phase and total
- Frequency of measured voltage value
- HIGH/LOW function: instantaneous measurement and storing of minimum and maximum values of voltage, current, power P.F. and frequency
- Averaging function
- Maximum demand of power and current values
- Voltage and current asymmetry
- Total harmonic distortion (THD) of voltage and current values
- Harmonic analysis of voltage and current up to the 31<sup>st</sup> order for DMG 300 only
- Energy meters for active, reactive, apparent partial and total values with programmable tariff functions for DMG 300 only
- Hour counter for programmable total and partial hours
- Pulse hour counter for general use: pulse counting for water, gas, etc. consumption for DMG 300 with expansion module only.

#### Operational characteristics

- Auxiliary supply voltage range: 85-264VAC / 93.5-300VDC
- Voltage measure range: 10-830VAC phase-to-phase 5-480VAC phase-neutral
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: 5A for DMG 200 and DMG 210 only; 5A or 1A with external CT for DMG 300 only
- Current measure range with CT up to 10,000A
- Frequency measure range: 45-65Hz
- True RMS measurements for voltage and current values
- Accuracy for DMG 200 and DMG 210:
  - Voltage:  $\pm 0.5\%$  (50-830VAC)
  - Current:  $\pm 0.5\%$  (0.1-1.1 In)
  - Power:  $\pm 1\%$  f.s.
  - Frequency: 0.05%
  - Active energy: Class 1
- Accuracy for DMG 300 to EN 50470-3 (MID Class B):
  - Voltage:  $\pm 0.2\%$  (50-830VAC)
  - Current:  $\pm 0.2\%$  (0.1-1.1 In)
  - Power:  $\pm 0.5\%$  f.s.
  - Power factor:  $\pm 0.5\%$
  - Frequency: 0.05%
  - Active energy: Class 0.5S (IEC/EN 62053-22)
  - Reactive energy: Class 2 (IEC/EN 62053-23)
- Non-volatile memory for data storage
- Communication protocol Modbus<sup>®</sup>-RTU and ASCII for DMG 210 and DMG 300 only
- Programming and remote control by software for DMG 210 and DMG 300 only
- 5 language texts in Italian, English, French, Spanish and Portuguese
- Modular DIN 43880 housing, 4 modules
- Degree of protection: IP40 on front; IP20 at rear.

**Expansion modules, EXP10... series for DMG 300**  
See page 14-17.

#### Reference standards

Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Digital multimeter software and accessories



DMK SW10



EXP 10...



EXM 10 10



Order code	Description	Qty per pkg	Wt
		n°	[kg]

Software.

<b>DMK SW</b>	Remote control software for PC ↔ DMK 22/32/40/52/62 and DMG 210/300/700/800/900 having Modbus®-RTU and ASCII protocols, complete with 51 C4 connecting cable	1	0.246
<b>DMK SW 10</b>	Data-logger software complete with 51 C2 connecting cable. Remote control and supervision software for PC↔DMK (as above) having Modbus®-RTU and ASCII protocols, complete with 51 C4 connecting cable	1	0.400

EXPANSION MODULES FOR DMG700, DMG 800, DMG 900 and DMG 900T.

Inputs and outputs.

<b>EXP 10 00</b>	4 digital opto-isolated inputs	1	①
<b>EXP 10 01</b>	4 static opto-isolated outputs	1	①
<b>EXP 10 02</b>	2 digital inputs and 2 static outputs, opto-isolated	1	①
<b>EXP 10 03</b>	2 relay outputs rated 5A 250VAC	1	①
<b>EXP 10 04</b>	2 analog opto-isolated inputs 0/4-20mA or 0-100V or 0...±5V for DMG 800/900 only	1	①
<b>EXP 10 05</b>	2 analog opto-isolated outputs 0/4-20mA or 0-100V or 0...±5V for DMG 800/900 only	1	①

Communication ports.

<b>EXP 10 10</b>	Opto-isolated USB interface	1	①
<b>EXP 10 11</b>	Opto-isolated RS232 interface	1	①
<b>EXP 10 12</b>	Opto-isolated RS485 interface	1	①
<b>EXP 10 13</b>	Opto-isolated Ethernet interface (solo per DMG 800/900)	1	①
<b>EXP 10 14</b>	Opto-isolated Profibus-DP interface for DMG 800/900	1	①
<b>EXP 10 30</b>	Data storage, clock-calendar (RTC) with backup battery for events and data logging for DMG 800/900 only	1	①
<b>EXP 10 31</b>	Data storage with Energy Quality (EN 50160), clock-calendar (RTC) with backup battery for events and data logging for DMG 800/900 only	1	①

EXPANSION MODULES FOR DMG 300.

Inputs and outputs.

<b>EXM 10 00</b>	2 digital inputs and 2 static outputs, opto-isolated	1	①
<b>EXM 10 01</b>	2 opto-isolated digital inputs and 2 output relays rated 5A 250VAC	1	①

Communication ports.

<b>EXM 10 10</b>	Opto-isolated USB interface	1	①
<b>EXM 10 11</b>	Opto-isolated RS232 interface	1	①
<b>EXM 10 12</b>	Opto-isolated RS485 interface	1	①
<b>EXM 10 13</b>	Opto-isolated Ethernet interface	1	①
<b>EXM 10 20</b>	Opto-isolated RS485 interface and 2 output relays rated 5A 250VAC	1	①
<b>EXM 10 30</b>	Data storage, clock-calendar (RTC) with backup battery for events logging	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

DMK SW

Remote control software for DMK 22, DMK 32, DMK 40, DMK 52, DMK62, DMG 210, DMG 300, DMG 700, DMG 800 and DMG 900.

This software is capable of controlling a maximum of 64 digital multimeters remotely connected to one RS485 bus. The DMK SW is subdivided into modules which warrant simple and easy use:

- Main synoptic page which includes the most important in-coming data of the various DMK connected
- Detailed page with data related to the selected DMK unit
- Data log which consents to store sampled measurements on disk (max 128 measurements)
- Events / alarms log with alarm data acquisition of the various DMKs as well as the elaborated analysis
- Trend graphs to control electric parameters status
- Harmonic content analysis bar graph
- Energy count to periodically view energy meters of the various instruments and monitor power usage.

DMK SW 10

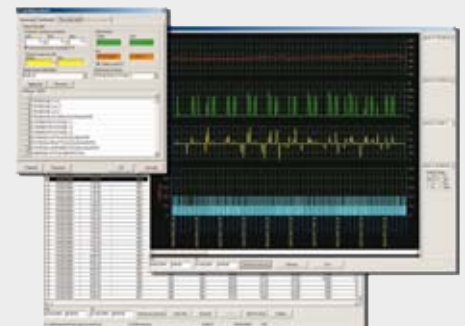
Data-logger and remote control for DMK 40 and DMG.. with memory modules.

The DMK SW 10 includes the data-logger software and the remote control DMK SW software, two applications with separate installation.

The data-logger software consents:

- To configure multimeter parameters, both for the data logging and installation (CT or PT ratio, etc.)
- To view and print acquired data from the multimeter storage memory in table or trend graph format. No data-logger configuration or stored data viewing is obtainable on the unit front
- To download data in ACCESS, EXCEL or TEXT file
- To view all actual electric parameter measures on a virtual multimeter display
- Program the multimeter clock-calendar (RTC - Real Time Clock) to automatically manage daylight saving time
- To directly connect or via modem to the multimeters.

#### Example of remote control software DMK SW and DMK SW 10 viewing



### Accessories for multimeters



51 C4

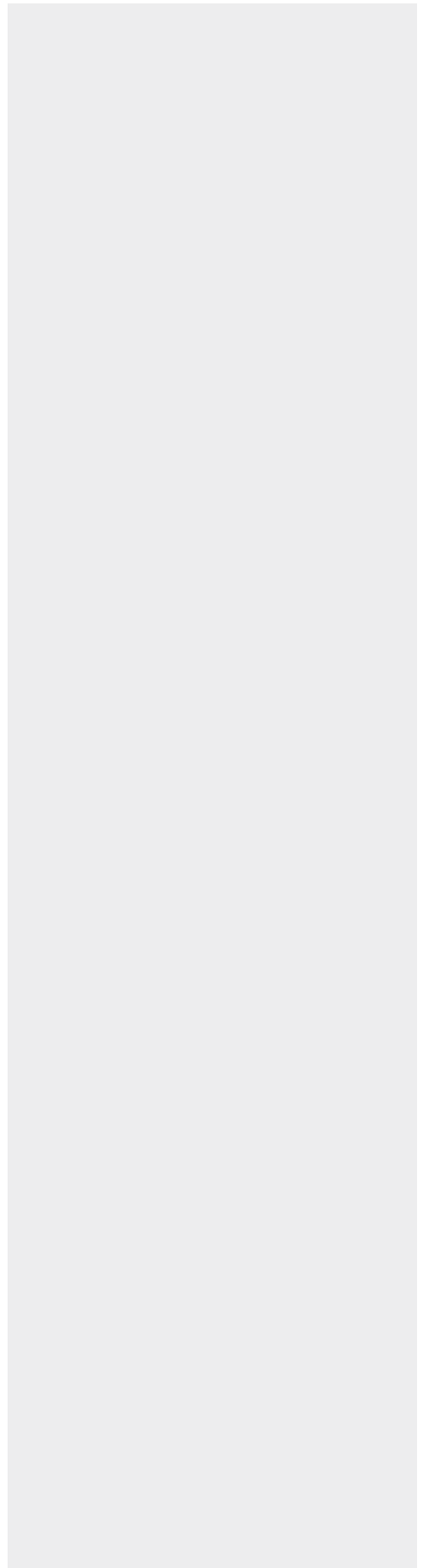


4 PX1

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Accessories.			
51 C2	PC ↔ RS232 connecting cable, 1.8m long	1	0.090
51 C4	PC ↔ 4 PX1 converter drive connecting cable, 1.8m long	1	0.147
51 C5	RS232 ↔ analog modem connecting cable, 1.8m long	1	0.111
51 C9	PC ↔ analog modem connecting cable, 1.8m long	1	0.137
4 PX1	RS2322/RS485 converter drive, opto-isolated, 220-240VAC ❶	1	0.600
PA 96X48	IP65 front protection cover for DMK 0..., DMK 1...	1	0.048
31 PA 96X96	IP54 front protection cover for DMK 2..., DMK 3... and DMK 40	1	0.077
EXM 80 04	Sealable set of terminal covers for DMG 200, DMG 210 and DMG 300	1	❷

❶ RS232/RS485 opto-isolated analog modem, 38,400 Baud rate maximum, automatic or manual TRANSMIT line supervision., 220-240VAC ±10% (110-120VAC supply on request).

❷ Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).



### Single phase



DME M100

moduLo



DME D110 T1

moduLo



DME D120 T1

moduLo

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Mechanical meter.			
DME M100	32A direct connection	1	①
DME M100 T1	32A direct connection, 1 pulse output	1	①
Digital meter.			
DME D100 T1	32A direct connection, 1 pulse output	1	①
DME D110 T1	32A direct connection, 1 programmable static output, multi-measurements	1	①
DME D120 T1	63A direct connection, 1 programmable static output, multi-measurements	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

The energy meters are instruments for the measurement of energy consumption in single-phase systems with direct connection.

#### Operational characteristics

DME M...

- Rated supply voltage: 230VAC -20...+15%
- Direct connection
- 32A maximum current
- Active energy measurements
- Active energy accuracy: Class 1 (IEC/EN 62053-21)
- Mechanical meter with 6+1 digits
- Flashing LED for consumption indication
- Static pulse output for DME M100 T1 only
- Modular DIN 43880 housing, 1 module
- Sealable terminals, standard supplied
- Degree of protection: IP40 on front; IP20 at terminals.

DME D100 T1 - DME D110 T1

- Rated supply voltage: 220-240VAC
- Direct connection
- 32A maximum current
- Measurement of 10 electrical parameters for DME D110 T1 only
- Active and reactive energy measurement for DME D110 T1 only
- Active energy accuracy: Class 1 (IEC/EN 62053-21); Class B (EN 50470-3)
- Reactive energy accuracy: Class 2 (IEC/EN 62052-23)
- LCD meter with 5+1 digits
- Flashing LED for consumption indication
- Static pulse output for DME D110 T1 only
- Modular DIN 43880 housing, 1 module
- Sealable terminals, standard supplied
- Degree of protection: IP40 on front; IP20 at terminals.

DME D120 T1

- Rated supply voltage: 220-240VAC
- Direct connection
- 63A maximum current
- Measurement of 12 electrical parameters
- Active and reactive energy measurement
- Active energy accuracy: Class 1 (IEC/EN 62053-21); Class B (EN 50470-3)
- Reactive energy accuracy: Class 2 (IEC/EN 62052-23)
- LCD meter with 6+1 digits
- Flashing LED for consumption indication
- Modular DIN 43880 housing, 2 modules
- Sealable terminals, standard supplied
- Degree of protection: IP40 on front; IP20 at terminals.

#### Certifications and compliance

Certifications pending: MID directive (EN 50470-1, EN 50470-3) for DME D100 T1 only.  
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.



### Three phase with neutral



DME D300 T2

Order code	Description	Qty per pkg	Wt
		n°	[kg]

Digital meter.

<b>DME D300 T2</b>	63A direct connection, 2 programmable static outputs multi-measurements	1	①
--------------------	---	---	---

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

### Three phase with or without neutral



DME D310 T2

Order code	Description	Qty per pkg	Wt
		n°	[kg]

Digital meter.

<b>DME D310 T2</b>	Connection with CT /5A secondary, 2 programmable static outputs multi-measurements, expandable	1	①
--------------------	--	---	---

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

### Data concentrator



DME CD

Order code	Description	Qty per pkg	Wt
		n°	[kg]

Data concentrator

<b>DME CD</b>	For DME M100 T1 and DME D... types, 8 energy meters can be connected, RS485 interface, expandable	1	①
---------------	---	---	---

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).

#### General characteristics

The energy meters are digital meters/analysers for electric energy for systems, with direct three-phase connection or by CT.

#### Operational characteristics

- Rated supply voltage: 220-240VAC
- Direct connection up to 63A for DME D300 T2 only
- Connection by CT /5A for DME D310 T2 only
- Measurements of 30 electric parameters
- Active energy accuracy: Class 1 (IEC/EN 62053-21); Class B (EN 50470-3)
- Reactive energy accuracy: Class 2 (IEC/EN 62052-23)
- LDC multifunction meter
- Flashing LED for consumption indication
- Partial active energy measurement is clearable
- 1 programmable digital input
- 2 programmable static outputs
- Optic interface port for expansion modules EXM10... for DME 310 T2 only
- Modular DIN 43880 housing, 4 modules
- Sealable terminals, standard supplied
- Degree of protection: IP40 on front; IP20 at terminals.

#### Reference standards

Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

#### General characteristics

The data concentrator DME CD has been designed in combination with energy meters DME M100 T1 and DME D...

It is capable of pulse count coming in from the static outputs of the connected energy meters, stores data and views it on the display or directly on a PC through the built-in RS485 port, using the DMK SW software.

#### Operational characteristics

- Rated supply voltage: 220-240VAC / 120-250VDC
- 8 inputs, expandable with EMX10... modules
- RS485 communication interface
- Modbus®-RTU communication protocol
- Multifunction display
- Total and partial energy meter, can be cleared for each channel
- Modular DIN 43880 housing, 4 modules
- Sealable terminals, standard supplied
- Degree of protection: IP40 on front; IP20 at terminals.

#### Reference standards

Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### Software and Accessories



DMK SW



EXM 10 10

Order code	Description	Qty per pkg	Wt
		n°	[kg]

Software.

<b>DMK SW</b>	Remote control software for PC ↔ DME... complete with 51 C4 connecting cable	1	0,246
---------------	--	---	-------

Expansion modules for DME D310 T2 and DME CD.

<b>EXM 10 00</b>	2 digital inputs and 2 static outputs, opto-isolated	1	①
<b>EXM 10 01</b>	2 opto-isolated digital inputs and 2 output relays rated 5A 250VAC	1	①
<b>EXM 10 10</b>	Opto-isolated USB interface	1	①
<b>EXM 10 11</b>	Opto-isolated RS232 interface	1	①
<b>EXM 10 12</b>	Opto-isolated RS485 interface	1	①
<b>EXM 10 13</b>	Opto-isolated Ethernet interface	1	①

① Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com).



### Solid-core current transformers



DM1T...



DM2T...



DM3T...

Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For Ø22mm cable.					
DM1T 0040	40	—	1	1	0.200
DM1T 0050	50	—	1	1	0.200
DM1T 0060	60	—	1	1	0.200
DM1T 0080	80	1.5	3	1	0.200
DM1T 0100	100	1.5	3	1	0.200
DM1T 0150	150	1.5	3	1	0.200

Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For Ø23mm cable. For 30x10mm, 25x12.5mm, 20x15mm busbars.					
DM2T 0060	60	—	1	1	0.130
DM2T 0080	80	—	1	1	0.130
DM2T 0100	100	—	1	1	0.130
DM2T 0150	150	—	1	1	0.130
DM2T 0200	200	1.5	3	1	0.130
DM2T 0250	250	1.5	3	1	0.130
DM2T 0300	300	1.5	3	1	0.130
DM2T 0400	400	1.5	4	1	0.130

Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For 40x10mm, 30x20mm, 25x25mm busbars.					
DM3T 0200	200	2	4	1	0.260
DM3T 0250	250	2.5	5	1	0.260
DM3T 0300	300	4	6	1	0.260
DM3T 0400	400	5	8	1	0.260
DM3T 0500	500	6	10	1	0.260
DM3T 0600	600	6	12	1	0.260
DM3T 0800	800	8	15	1	0.260
DM3T 1000	1000	10	20	1	0.260

### Split-core current transformers



DM1TA...



DM2TA...



DM3TA...



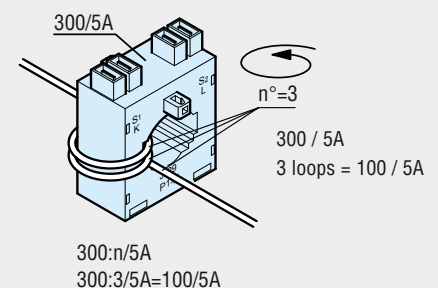
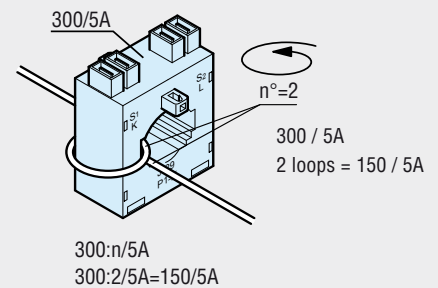
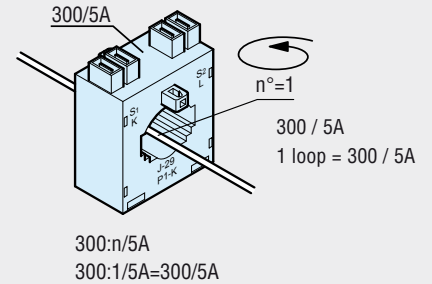
Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For 50x60mm busbar.					
DM1TA 0250	250	1.5	3	1	0.900
DM1TA 0300	300	1.5	3	1	0.900
DM1TA 0400	400	1.5	3	1	0.900
DM1TA 0500	500	2.5	5	1	0.900
DM1TA 0600	600	2.5	5	1	0.900
DM1TA 0750	750	2.5	5	1	0.900
DM1TA 0800	800	2.5	5	1	0.900
DM1TA 1000	1000	5	10	1	0.900

Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For 80x60mm busbar.					
DM2TA 0250	250	1.5	3	1	1.050
DM2TA 0300	300	1.5	3	1	1.050
DM2TA 0400	400	1.5	3	1	1.050
DM2TA 0500	500	2.5	5	1	1.050
DM2TA 0600	600	2.5	5	1	1.050
DM2TA 0750	750	2.5	5	1	1.050
DM2TA 0800	800	2.5	5	1	1.050
DM2TA 1000	1000	5	10	1	1.050

Order code	Primary current Ip	Burden		Qty per pkg n°	Weight [kg]
		cl. 0.5 [VA]	cl. 1 [VA]		
For 80x120mm busbar.					
DM3TA 0500	500	2.5	5	1	1.250
DM3TA 0600	600	2.5	5	1	1.250
DM3TA 0750	750	2.5	5	1	1.250
DM3TA 0800	800	2.5	5	1	1.250
DM3TA 1000	1000	5	10	1	1.250
DM3TA 1200	1200	6	12	1	1.250
DM3TA 1250	1250	7.5	15	1	1.250
DM3TA 1500	1500	7.5	15	1	1.250

### General characteristics

The DM...T series current transformers (CT) are installed in electric systems to reduce the line current to a secondary value of 5A, which is compatible with current inputs of digital multimeters or protection relays. These are without primary winding and are used for high primary current values from 40A upward. The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current. Suitable for screw fixing or mounting on 35mm DIN rail (IEC/EN 60715), using the standard-supplied kit.



### Operational characteristics

- Operating frequency: 40-60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ip
- Rated insulation voltage Ui: 720V
- Rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): class E
- Degree of protection: IP30
- Ambient conditions
  - Operating temperature: -25 ... +50°C
  - Storage temperature: -40 ... +80°C.
  - Relative humidity, non condensing: 90%.

### Reference standards

Compliant with standards: IEC/EN 60044-1.