

Type: EDU-2

The **EDU-2** family has been developed particularly for education purposes. Based on the wide scale and large characters the values can be read from 8 meter distance. The large-sized movement having big torque offers proper introduction possibilities of various standard and special measuring modes. One important feature allows the user to adjust the pointer in the middle of scale (middle-zero) based on the special mechanical construction.

General specifications

Scales: Practically linear calibration.

Scale length: 200 mm.

Pointer: red color - Ø1 mm made of aluminium tube format with rhombus-shaped tip

Instrument case: 16 mm wooden case, 4 mm glass.

Range of operating temperature: compartment in closed rooms between -10 °C and +55 °C.

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2., CAT III. 600V, CAT II. 1000V

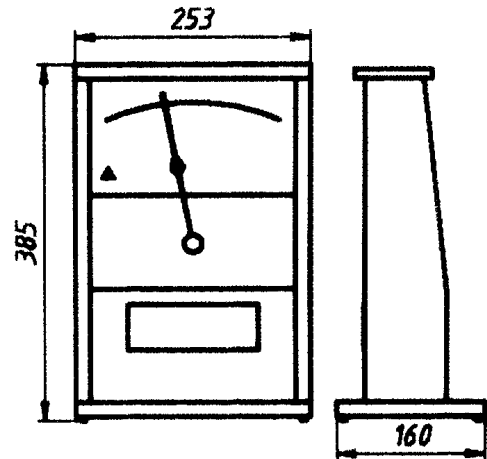
Protection: IP 30 for instrument case and IP 50 for the movement, according to DIN 40 050.



Test voltage: The instrument comply with standards EN 61 010-1

Dimensions: with 253 mm x height 385 mm x depth 160 mm.

Order data required:

1. Instrument type.
2. Catalogue number.
3. Measuring range
4. Description of special execution.



	<h2 style="margin: 0;">DECLARATION OF CONFORMITY</h2> <p style="margin: 0;"><i>according to ISO/IEC guide 22 and EN45014</i></p>	 CE Mark						
<p>Manufacturer's name: GANZ Instruments Ltd.</p> <p>Manufacturer's address: H-1191 Budapest, Üllői út 200.</p> <p style="text-align: right;">www.ganzinst.hu</p> <p style="text-align: center;">Declares, that the product</p> <p style="text-align: center;">Product name: INSTRUMENTS FOR EDUCATION</p> <p style="text-align: center;">has been manufactured to the technical specifications of the product and conforms in all respects to the relevant standards and regulations in force and especially to:</p> <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 50%;">Safety:</td> <td style="width: 25%;">EN 60 529</td> <td style="width: 25%;">EN 50081-1 Class B</td> </tr> <tr> <td></td> <td>EN 60 051-1-2</td> <td>EN 50082-1</td> </tr> </table> <p style="margin-top: 10px;">IEC 1010/ EN 61010-1 Insulation: Class 2 Degree of pollution: 2 Over voltage category of inputs: CAT III. 600V max., CAT. II. 1000V max., CAT. I. 1200V</p> <p style="text-align: center; margin-top: 10px;">The product hereby fulfil the requirements of the low voltage directive 72/23/EEC and the EMC directive 89/336/EEC amended by 93/68/EEC.</p>			Safety:	EN 60 529	EN 50081-1 Class B		EN 60 051-1-2	EN 50082-1
Safety:	EN 60 529	EN 50081-1 Class B						
	EN 60 051-1-2	EN 50082-1						



AMMETER AND VOLTMETER WITH MOVING-COIL MOVEMENT



The instrument measure direct and / or alternating current or voltage

Technical data

Movement: Moving-coil movement with spring-type bearing.

Scale: Practically linear calibration.

Scale length: 200 mm.

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2.,
CAT III. 600V, CAT II. 1000V

Class of accuracy: 2,5 according to IEC-51

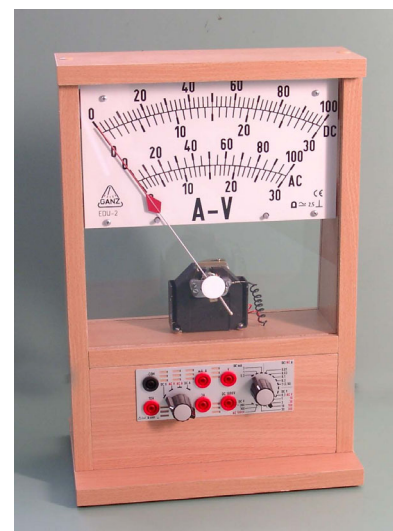
Continuous overload: $1,2 \cdot U_N$
 $1,2 \cdot I_N$

Movement protection: Antiparallel connected diodes on the movement.

Position of application: horizontal.

Instrument case: 16 mm wooden case, 4 mm glass.

Weight: approx. 4,6 kg.



Type	Cat. No 2686-01-	Class of acc.	Switchable current ranges		Switchable voltage ranges		Remark		
			DC	AC	DC	AC			
EDU-2	-001	2,5	50-100-250-500- 1000 μ A		100 mV*		Voltage drop Max. 480mV		
	-002		75-150-300-750- 1500 μ A		100 mV*		Voltage drop Max. 300mV		
	-003		1,2-3-6-12-30- 60 mA		60 mV*		Voltage drop Max. 180mV		
	-004		30 mA				Voltage drop Max. 100mV		
	-005		100 mA				Voltage drop Max. 100mV		
	-006		1A				Voltage drop Max. 100mV		
	-007		3 A				Voltage drop Max. 100mV		
	-008		10 A				Voltage drop Max. 100mV		
	-009		10-50-250-1-5-10A	10-50-250-1-5-10 A			Voltage drop Max. 1,2V		
	-010		10-50-250-1-5 A	10-50-250-1-5 A			Voltage drop Max. 1,2V		
	-011		10-100-500-5-10 A	10-100-500-5-10 A			Voltage drop Max. 1,2V		
	-012						10 V	Internal resist 1k Ω /V	
	-013						30 V	Internal resist 1k Ω /V	
	-014						100 V	Internal resist 1k Ω /V	
	-015						300 V	Internal resist 1k Ω /V	
	-016						1-3-10-30V	1-3-10-30 V	Internal resist 5k Ω /V AC/DC
	-017						3-7,5-30-75-150- 450 V	3-7,5-30-75-150- 450 V	Internal resist 5k Ω /V AC/DC
	-018						3-10-30-100-300- 600 V	3-10-30-100-300- 600 V	Internal resist 1k Ω /V AC/DC
	-021						5-10-100-500- 1000 V	5-10-100-500- 1000 V	Internal resist 5k Ω /V AC/DC
	-019						6-12-30-60-120- 300-600 V		Internal resist 2k Ω /V
-020			0.3-1-3-10-30-100- 300mA-1-3-10A	10-30-100-300mA- 1-3-10A	0.3-1-3-10-30- 100-300-1000V	10-30-100-300- 1000V	3 k Ω /V AC, 300 Ω /V DC		

*For connection to separate shunt

Customers requirement:

- Education moving-coil voltmeter
- EDU-2
- Range between: 300V DC

Ordering data:

- Education moving-coil ammeter
- Cat. No. 2686-01-015

On request for extra charge special ranges are possible



AMMETER AND VOLTMETER WITH MOVING-IRON MOVEMENT



The instruments serve to measure direct or alternating current or voltage.

Technical data

Movement: Moving-iron movement with spring-type oil filled bearing, practically vibration-free oil damping.

Scale: The graduations are practically almost linear from 25 percent of the measuring range upwards.

Scale length: 200 mm.

Class of accuracy: 2,5 according to IEC-51

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2., CAT III. 600V

Continuous overload: $1,2 \cdot U_N$ or $1,2 \cdot I_N$

Position of application: horizontal.

Instrument case: 16 mm wooden case, 4 mm glass

Weight: approx. 4,6 kg.



TYPE	Cat. No 2686-02-...	Class of acc.	Switchable current ranges AC/DC	Switchable voltage ranges AC/DC	Frequency range	Remark
EDU-2	002	2.5 AC/DC	60-120-300-600 mA		15...40...60...100 Hz	consumption: max. 1 VA
	011		0.5-1-2.5-5A			
	001		0.6-1.2-3-6 A			
	006		1A			
	007		1-5A			
	016		3A			
	008		5A			
	017		10A			
	012			10V		consumption: max. 3 VA
	013			30V		consumption: max. 3 VA
	014			100V		consumption: 5 mA
	009			250V		consumption: max. 3 VA
	015			300V		consumption: 5 mA
	010			500V		consumption: max. 3 VA

Customers requirement:

- Education moving-iron ammeter
- EDU-2**
- Range between: 300V AC

Ordering data:

- Education moving-iron ammeter
- Cat. No. **2686-02-015**

On request for extra charge special ranges are possible



FERRODYNAMIC POWER METERS



The instruments are suitable for measuring single- or three-phase active power and three-phase reactive power.

Technical data

Movement: The instruments have a ferrodynamic movement with spring bearing. Due to the properly chosen oil damping, the move of the pointer is free of vibration.

Scale: Linear calibration.

Scale length 200 mm

Number of graduation marks: 120.

Class of accuracy: 2.5 according to IEC-51.

Rated power factor: $\cos \varphi = 1$ (**a**, **b**),
 $\sin \varphi = 1$ (**bm**)

Rated power: $U \cdot I \cdot \cos \varphi = U \cdot I \cdot 1$ (**a**),
 $\sqrt{3} \cdot U \cdot I \cdot \cos \varphi = \sqrt{3} \cdot U \cdot I \cdot 1$ (**b**),
 $\sqrt{3} \cdot U \cdot I \cdot \sin \varphi = \sqrt{3} \cdot U \cdot I \cdot 1$ (**bm**)

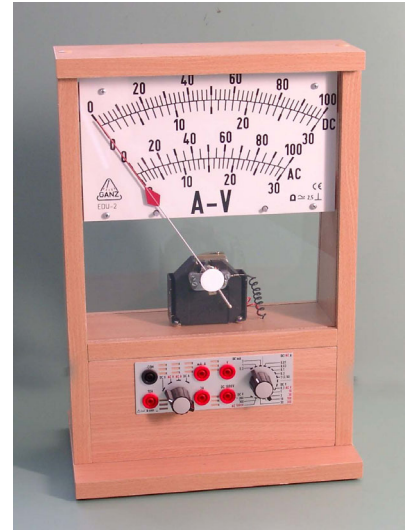
Consumption: *current circuit:* max. 3.5 VA.
voltage circuit: max. . 6 mA.

Continuous overload: 1.2x rated current
1.2x rated voltage
(for two hours).

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2., CAT III.

Position of application: horizontal.

Weight: approx. 4,8 kg.



TYPE	System	Cat. No. 2686-04-...	Class of acc.	Rated current	Rated voltage		Network	Remark
				AC	AC	Three-phase AC		
EDU-2	a	001	2.5	0.5-1 A	48-120-240-480 V		Single phase ~	Active power
		003		0.5-5 A	48-120-240-480 V			
		008		1-5 A	48-120-240-480 V			
		002		2.5-5 A	48-120-240-480 V			
	b	004		0.5-1 A		48-120-240-480 V	Three-phase balanced ≡	Reactive power
		005		2.5-5 A		48-120-240-480 V		
	bm	006		0.5-1 A		48-120-240-480 V		
		007		2.5-5 A		48-120-240-480 V		

Ordering data:

-Education ferrodynamic power meter.

-Type: **EDU-2**.

-Cat. No. **2686-04-002**

Customers requirement:

--Education ferrodynamic power meter.

-Measuring range:

rated current: 2.5-5 A

rated voltage: 48-120-240-480 V

-Single-phase AC active power measurement.

On request for extra charge special ranges are possible



FERRODYNAMIC POWER FACTOR METERS



The instruments are suitable for measuring power factor in single- or three-phase networks.

Technical data

Movement: It is a cross-coiled ferrodynamical movement with spring bearings and oil damping. Due to the oil damping, the move of the pointer is free of vibration.

Scale: It can be read off directly in $\cos \varphi$, and φ , .
Scale length: 200 mm.

Class of accuracy: 2,5 ~ of 90 degrees, according to IEC-51

Operating range: $0,2 \times I_N \dots 1,2 \times I_N$

Frequency range: 45...50...60 Hz (b), 49.5...50...50.5 Hz (a)

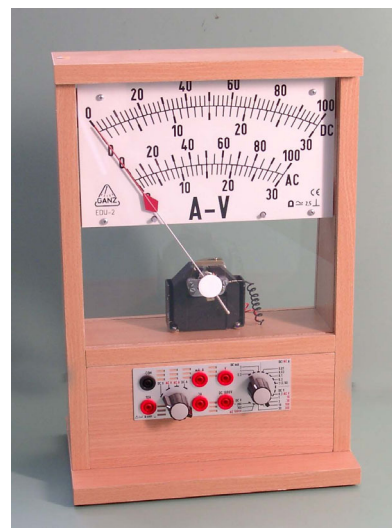
Consumption: current circuit: max. 12 VA.
voltage circuit: max. 20 mA.




Continuous overload: 1.2* rated current at $\cos \varphi = 1$.
1.2* rated voltage

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2., CAT III.

Position of application: horizontal.

Weight: approx. 4,8 kg.



TYPE/ rendszer	Cat. No. 2686-05-...	Class of acc.	Rated current	Rated voltage		Remark	
			AC	AC	Three-phase AC	$\cos \varphi$	
EDU-2 a 	004	2,5	5 A	100-240-400-500 V		ind. 0.4-1-0.4 cap.	
	010		1-5 A	100-240-400-500 V			
	036		10 A	100-240-400-500 V			
EDU-2 a-b  and 	024		1 A	150-300-450-600 V	150-300-450 V		
	025		5 A	150-300-450-600 V	150-300-450 V		
	032		1-5 A	150-300-450-600 V	150-300-450 V		
	028		5-10 A	150-300-450-600 V	150-300-450 V		
	030	10 A	150-300-450-600 V	150-300-450 V			

Customers requirement:

- Education ferrodynamical power factor meter.
- Range:
 - rated current: 5 A
 - rated voltage: 100-240-400-500 V
 - Single-phase AC, ind 0,4-1-cap 0,4.

Ordering data:

- Education ferrodynamical power factor meter.
- Type: **EDU-2**.
- Cat. No. **2686-05-004**

On request for extra charge special ranges are possible



Type: EDU-1

The instrument measure direct current or voltage

Technical data

Movement: Moving-coil movement with spring-type bearing.

Scale: Practically linear calibration.
Scale length: 100 mm.

Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2.,
CAT III. 600V

Class of accuracy: 1,5 according to IEC-51

Continuous overload: $1,2 \cdot U_N$
 $1,2 \cdot I_N$

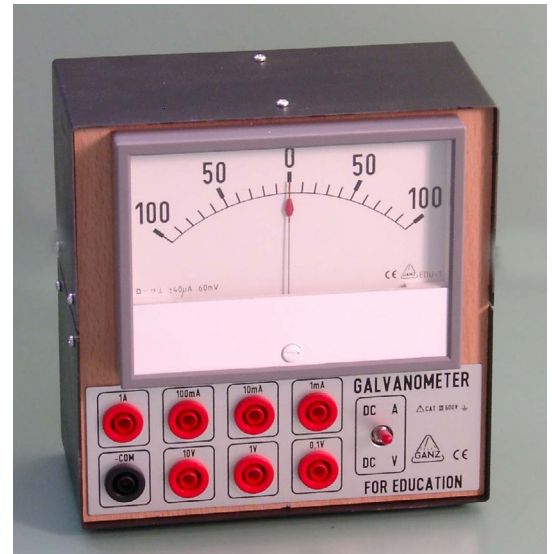
Movement protection: Antiparallel connected diodes on the movement.

Position of application: horizontal.

Instrument case: 16 mm wooden case combined with metal, glass.

Weight: approx. 2,6 kg.

Dimensions: width 147 mm x height 154 mm x depth 75 mm.



Type	Cat. No 2688-01-	Class of acc.	Switchable current ranges	Switchable voltage ranges	Remark
			DC	DC	
EDU-1	-001	1,5	$\pm 1-10-100-1000$ mA	$\pm 0,1-1-10$ V	Voltage drop Max. 65 mV
	-002		$\pm 1-10-100-1000$ mA		Voltage drop Max. 65 mV
	-003		$\pm 1-5-10-50-100-500$ mA-1-5-10 A		Voltage drop Max. 65 mV
	-006		± 40 μ A	± 60 mV*	
	-007		± 1 mA		Voltage drop Max. 30 mV
	-004		$\pm 1-10-100$ mA-1-5 A	$\pm 0,1-1-10-100$ V	Internal resist 25 k Ω /V
	-005			$\pm 0,06-0,1-0,3-1-3-10-30-100-300$ V	Internal resist 25 k Ω /V

* For connection to separate shunt.

Customers requirement:

- Education moving-coil ammeter.
- Range between: ± 1 mA DC

Ordering data:

- Education moving-coil ammeter.
- Type: **EDU-1**.
- Cat. No. **2688-01-007**

On request for extra charge special ranges are possible



AMMETER AND VOLTMETER WITH MOVING-IRON MOVEMENT



Type: EDU-1

The instruments serve to measure direct or alternating current or voltage.

Technical data

Movement: Moving-iron movement with spring-type oil filled bearing, practically vibration-free oil damping.

Scale: The graduations are practically almost linear from 25 percent of the measuring range upwards.

Scale length: 100 mm.

Class of accuracy: 2,5 AC/DC according to IEC-51

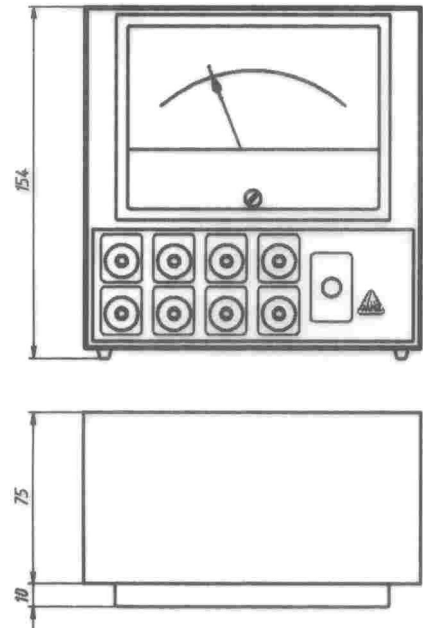
Safety: IEC 1010/ EN 61010-1 class 2, degree of pollution 2., CAT III. 600V

Continuous overload: $1,2 \cdot U_N$ or $1,2 \cdot I_N$

Position of application: horizontal.

Instrument case: 16 mm wooden case combined with metal, glass.

Dimensions: width 147 mm x height 154 mm x depth 75 mm.



Weight: approx. 2,6 kg.

TYPE	Cat. No 2688-02-...	Class of acc.	Switchable current ranges AC/DC	Switchable voltage ranges AC/DC	Frequency range	Remark	
EDU-1	006	2.5 AC/DC	1A		15...40 ... 60..100 Hz	consumption: max. 1 VA	
	007		1-5A				
	016		3A				
	008		5A				
	017		10A				
	012			10V			consumption: max. 3 VA
	013			30V			consumption: max. 3 VA
	014			100V			consumption: 5 mA
	009			250V			consumption: max. 3 VA
	015			300V			consumption: 5 mA
010		500V		consumption: max. 3 VA			

Customers requirement:

- Education moving-iron ammeter.
- Range between: 1 A

Ordering data:

- Education moving-iron ammeter.
- Type: **EDU-1**.
- Cat. No. **2688-02-006**

On request for extra charge special ranges are possible



CERTIFICATE

DNV ZERTIFIZIERUNG UND UMWELTGUTACHTER GMBH

certifies that the company

GANZ Műszer Rt.

Üllői út 200.

H-1191 Budapest

has established a

quality system
in conformity with

ISO 9001:2000

This Certificate is valid for:

**Development, production and sale of electrical and
electromechanical measuring equipment**

This Certificate is valid until:

2006-12-31

Certificate-Registration-No.:

13849-2004-AQ-BUD-TGA

Budapest, 2004-02-10

János Zrupkó
Manager



Budapest, 2004-02-10

László Adlovits
Lead-Auditor

This Certificate is only valid in connection with the original Certificate 13849-2004-AQ-BUD-TGA