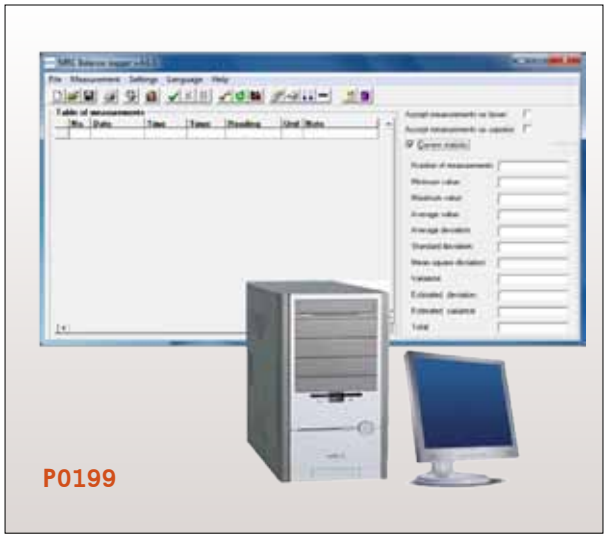
P0199, Computer Software



P0199 software is designed for collecting measurement data from MRC weighing instruments & its statistics process.

Designed for scales:
- With standard communication frame.

Functions:
- Readout from instrument, record from measurements and saving data to a file
- Possibility of manual & auto registration of measurements
- Registration & storing of measurement data in a form of file
- Visualization of measurements data in a form of graph
- Static processing of measurement data
- Possibility of creating data from chosen measuring session
- Printout of measuring data, graphs and statistics
- Mainly used in laboratories.

Computer requirements:
- processor 1,2 GHz • free 500 MB on hard drive • RAM 256 MB (recommended 512 MB) • operation system Windows 2000/XP • Language versions: German/English/French.

BBA, BBB, BB Compact Balances

Features:
- **Fast and stable weighing**
  High quality AD converter offers fast and stable weighing.
- **Multi selectable weighing units**
  – g, lb, oz, ozt, dwt, GN, ct, tl, tl^{H}, tl^{HJ}, tl_{M}, tl_{A}, mm.
- **Piece counting and percentage functions**
- **Comparator (Hi/Lo) function**
- **Bright and distinct LCD display**
  Large-sized bright LCD Display with 17 mm height digits.
- **Battery powered and auto-off timer**
  Advanced software for battery saving, rechargeable battery, low battery indication.
- **Leveling feet and level bubble**
  for accurate weighing
- **Portable-compact size, light weight, rugged body**
- **Stainless steel weighing pan.**

Multi weighing units

g	Gram
lb	Pound(av)
oz	Ounce(av)
ozt	Troy ounce
dwt	Pennyweight
GN	Grain
ct	Carat
tl	Tael TW
tl^{H}	Tael HK
tl^{HJ}	Tael Jewel
tl_{A}	Tola-Anna
tl_{M}	Tola-Masha
mm	Momme

Model	BBA-600	BBA-1200	BB-1550	BB-3100
Capacity x Division(g)	600x0.01	1200x0.02	1500x0.05	3000x0.1
Pan size	118Φ		180mm x 140mm	
Display Type	6 segment LCD with backlight			
Dimension	185(W) x 211(D) x 59(H) mm			
Admissible Ambient Temp.	0°C ~ 40°C, RH<85%			
Weight	1.5kg			
Power	AC adapter (9V/500mA) or Re-chargeable battery (6V)			
Standard Accessories	Manual , AC/DC (9V) adapter			
Options	OP-01 Carrying case ; OP-02 Under hook			

PRINTER enables two–way thermal printing by mobile head.
The design of the mark: matrix 8 × 8 points. Print Speed: 0.75 line / sec.
Depending on the version, PRINTER can be equipped with real time clock, statistic functions or internal battery (outdoor operation).

Model	PRINTER–1/RG	PRINTER–1/Z/RG	PRINTER–1/RG Portable	PRINTER–1/Z/RG Portable	PRINTER–SQS
Description	base functions, (main current supply)	clock of real time, (main current supply)	base functions, (battery power and main current supply)	clock of real time, (battery power and main current supply)	date, time and statistic functions, (main current supply)
Print	Dual direction thermal print with moveable 8–point head, character construction: 8 x 8 point matrix, print speed: 0,75 line/s, quantity of signs a line: 40, 80				
Set of characters	One from below mentioned: IBM set 2, Mazovia, DHN, Latin–2 PC, Cyrylics, Latin–2 ISO				
Thermal paper	Roll: width 112 mm, max diameter 42 mm, paper length 20 m, marking: TF 50KS–E2C				
Power supply	8,5V – 14V DC or 7V – 10V AC 50Hz, power consumption: 3W – 15W (max.), Power connection: type Jack 2.1, external power adapter: 220V / 9V AC 1,5A 50 Hz or battery (portable version)				
Interface	One from below mentioned: RS232C, RS242 (TTL), RS422A (RS485), power loop 20mA (CL), interface connection: 5 pin type DIN				
Transmission parameters	Speed of transmission: 1200, 2400, 4800, 9600 bod (other for secial order.), transmission protocol: machine with DTR, Data format: 8 or 7 bytes, with or without parity control, parity: even or odd				
Durability	MTBF: 5000 hours, MCBF: 500 000 lines				
Working conditions	Working temperature: 5°C to 35°C, relative humidity: 10% – 80% (no condensation)				
Weight , dimensions	165 x 140 x 50 mm, 0,45 kg (without paper roll)				
Printer marking with set of characters	PRINTER IBM set 2, PRINTER 1 WIN 1250, PRINTER 2 DHN, PRINTER 3 Latin – 2 PC, PRINTER 4 Cyrylica, PRINTER 5 Latin – 2 ISO				
Components	printer, external power adapter, interface plug or cable (according to order), roll of thermal paper, user manual, warranty and external power adapter (portable version)				

Model	TM–U200A	TM–U200B	TM–U200D
Description	with paper roll reeler and paper cutter	with paper cutter	basic version
Means of print	9–needle		
Fonts	7 × 9 / 9 × 9 points		
Quantity of characters in one line	paper 76.0 mm: 42/40/35/33 cpl 69.5 mm: 40/36/32/30 cpl 57.5 mm: 33/30/27/25 cpl		
Character dimensions (mm)	1.2 / 1.6 / 1.7 / 1.9 / 2.0(width) x 3.1(height)		
Quantity of characters per inch	17.8 / 16 / 14.5 / 13.3		
Interfaces	RS–232 or parallel or USB or Ethernet drive for casette drawers, power adapter connection		

Model	TM–U200A	TM–U200B	TM–U200D
Input buffer	1 kB or 40 bytes		
Memory for logo	128 kB		
User defined memory	8 kB		
Print speed	6 lines / second (30 characters / line)		
Paper width	76.0 mm ±0.5 69.5 mm ±0.5 57.5 mm ±0.5		
Paper roll diameter	maximally 83 mm		
Coloring tape	ERC–38 purple, black or red–black		
Paper cutter	Cutter type "full cut" or "one–point–left cut" built in models type A and B		
Power consumption	Stand–by: 2.2 W while printing: 31 W		
Power adapter	included (compatible with PS–180)		
Casette drawers	drive for two casette drawers		
Durability	MTBF: 180 000 hours MCBF: 18 million lines cutter: 800 000 cuts		
Dimensions	160x286x158mm	160x248x139mm	160x248x139mm
Weight	2.7Kg	2.5Kg	2.3Kg
Colors	white: EPSON cool white or dark grey: EPSON dark grey		
Standard functions	paper reeler (type A) paper cutter (type A and B) easy paper exchange type "Drop–in" built in function Auto Status Back paper end sensor, paper end sensor, power adapter		
Options	wall hanger (for type B) customer display DM–D (connected through interface UB–S09)		
Standard EMI	sign CE, EN55022 class B, EN55024		
Safety standards	EN60950		

Model	CLP–521	CLP–621	CLP–631	CL–S700
Print	thermal	thermal, thermo–transfer	thermal, thermo–transfer	thermal, thermo–transfer
Head	200 dpi	200 dpi	300 dpi	200 dpi
Print speed	100mm/sec	100mm/sec	175mm/sec	250mm/sec
Maximal print width	104mm	104mm	104mm	104mm
Maximal print length	812mm	812mm	812mm	406mm
Minimal print length	12.7mm	12.7mm	12.7mm	12.7mm
Label width	19 – 118mm	19 – 118mm	12.5 – 118mm	25.4 – 118mm
Material thickness	0.0635 ÷ 0.254mm	0.0635 ÷ 0.254mm	0.0635 ÷ 0.254mm	0.0635 ÷ 0.254mm
Material kind	labels, cartoons, continuous media, folder			
Material recognition	overexposure optical sensor and light reflection from material		overexposure optical sensor and light reflection from material, optional moveable optical sensor	
Fonts	8 vector fonts, 1 half–tome screen		1 vector, 8 half–tome screen, True Type sensors in standard	
Bar codes	All standard types including: EAN–8, EAN–13, UPC–A, UPC–E, UCC/EAN 128, 3 with 9, 2 with 5, code 93, 128, Coderbar, Telepen, Zip and dual dimensions: PDF–417,UPS Maxicode, Posnet			
Communication interface	–	–	Parallel (Centronics) Series RS232C	
Control panel	–	–	4 buttons, 4 diodes LED	3 buttons, 2 diodes LED, display LCD
Input buffer	–	–	–	12KB
Memory	–	–	8MB	16MB
Memory extension	–	–	Flash 2MB memory cards	Flash 4MB memory cards
MTBF (average operation time between defects)	–	–	–	printer 1000km, printing head 30km
Dimensions (W×H×L)	–	–	224×288×270mm	255×480×253mm
Mass	–	–	4.5Kg	13.5Kg
Options	–	–	Paper cutter, divider, Ethernet, WLAN	Paper cutter, divider, Flash memory card, network input, real time clock

SAP/SAL, Anti vibration Table

Anti vibration table can be used with as a base for analytical, laboratory or control balance. It has been designed for assurance of stable operation conditions while performing very accurate measurements.

- Including table independent bare.
- MDF painted table top.
- Mild steel profiles construction, adjustable height.
- Optional part in stainless and acid-proof construction.
- Table Size: 600Wx770Dx800Hmm, 25kg
- Marble concrete board Size: 270Wx410Dx115mmH, 29kg

Set for determination of water vapor permeability

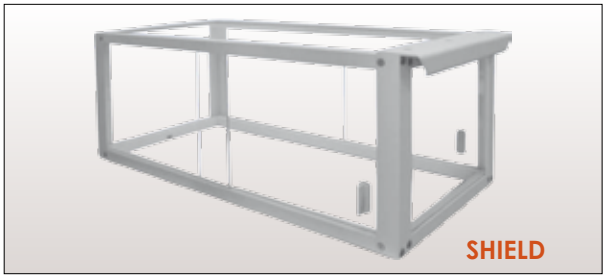
Permeability of water vapor is a feature which directly determines quality and application of a specific material, for instance cloth, shoes. Improper material if applied, may result in unhealthy or uncomfortable use.

Stand for under hook weighing

Stand for weighing loads in under hook weighing method. Loads are placed on special pan hanged on a hook mounted to the bottom of the scale.

Application:

- Measuring mass of magnetic materials.
- Measuring mass of non-standard dimensions or shapes.
- Determination of density of solids and liquids.
- Size (WxHxD): 330x210x335 mm



SHIELD, Anti draught for Microbalances

Anti-draught chamber is intended for microbalances.
It is an optional equipment of microbalances working in unfavorable conditions (air-draughts and breezes).
It is mounted on a table, a microbalance is placed inside a chamber. It features sliding side windows allowing for free access into the weighing chamber of a microbalance.

- Internal size (WxHxD): 468x250x250 mm
- External size (WxHxD): 536.5x256x254 mm

The anti draught shield can be used for protecting the weighed objects against external environment, especially wind or breeze in production halls. It is Optional accessories to the balances Series BPS, ASB with pan size 128×128mm.
Protecting the weighed objects against wind has very good influence of measuring results. It eliminates the possibility of vibration of an object caused by external conditions while taking its measurements.
Size (WxHxD): 203x200x264 mm

DENSITY, Cereal Kit

This kit is designed for determination of density of cereals. Measurement of cereal density in loose state is performed with application of precise balance Series BPS-X4500G and density kit for cereals. Density determination result is calculated automatically by balance software (in accordance to tables containing cereal density).
It is possible to determine the density of following cereal: wheat, oats, barley, rye. Its volume is 1 Liter.
The cereal density kit allows for determination of density according to norm: PN-73/R-74007.

P0180, Density Kit

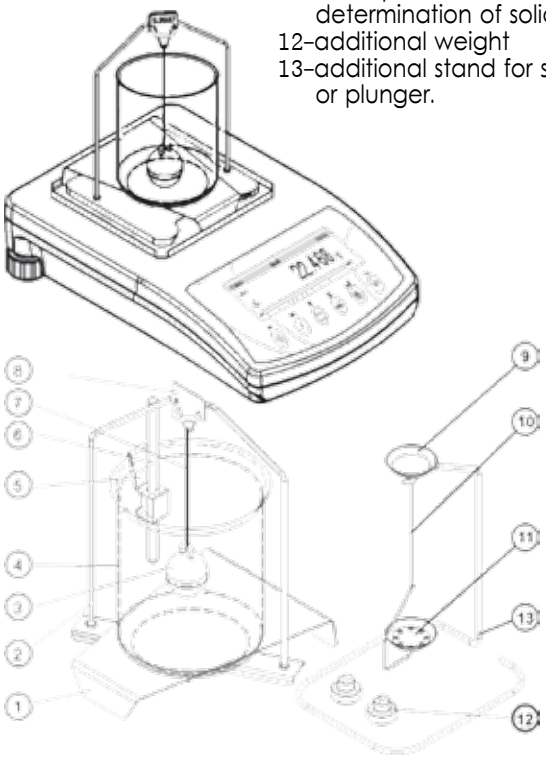
Determining the density of solids and liquids is an inseparable part of work of the laboratories. Traditional method of density determination requires from the operator many measurements and a lot of complex calculation. In result the operator ends with a density determination result which can be saddled with calculation and systematic errors. Additionally time that needs to be devoted to density calculation is long. In case of determining the density of solids and liquids with application of MRC density determination kit, the whole procedure is very much simplified and speeded up. Time till the operator receives the density measurement is very short, as all the calculation is performed by the software of the weighing instrument, & operator's activities is limited to:

- operation of the keyboard of weighing instrument
- placing the samples on the weighing pans of the kit
- hanging the plunger

Density determination kit is Optional accessories offered to MRC laboratory balances. The software for determination of density has following basic features:

- simplicity of usage (all activities are described on the display of the balance)
- reliability (all calculation is automatically performed by the balance's software)
- fast data processing (result is obtained after determination of sample mass in water or plunger mass in liquid)
- accurate data processing (before every measurement of mass, display indication is automatically zeroed, this proves the density determination result to be reliable and real).

1–beaker base
2–pans suspension
3–plunger
4–beaker
5–thermometer holder
6–thermometr
7–plunger string
8–hook
9–upper pan of the set for density determination of solids
10–pan string
11–lower pan of the set for density determination of solids
12–additional weight
13–additional stand for set of pans or plunger.



Selection of the appropriate test weight for your balance

A balance can never be more accurate than the test weight used to adjust it, it depends on its tolerance.

Accuracy of the test weight: Should correspond to the readout d of the balance, rather than something better.

Nominal weight value: This is shown in adjust mode "CAL" in the balance display. Given the choice, the heaviest weight is the most suitable for accurate measurement.

OIML Directive

The key points from the OIML Directive

OIML (Organization International de Metrologies Legal) has established the exact metrological re-quirements for weights in verified applications in approx. 100 states all over the world. The OIML recommendation RIII (2004 Edition) for weights relates to sizes 1mg–50 kg. Statements are made on the accuracy, materials, geometric shape, marking & storage of the weights.

Error limits for weights of classes E1 to M3

The error limit classes are in fixed hierarchical levels in the proportion of 1:3, where El is the most accurate and M3 is the least accurate weight class. When testing weights with other weights, the correct test class is the next highest class.

Error limit classes (= tolerances)

The values given in the table below (tolerances ± ... mg) are the respective permitted fabrication tolerances. They are to be equal to the measuring uncertainty of the weight, if no DKD calibration certificate is available.

Nominal Value	OIML Max. permissible errors for weights=permissible tolerances "Tol ± mg"				
	E1	E2	F1	F2	M1
1mg	±0.003mg	±0.006mg	±0.020mg	±0.06mg	±0.20mg
2mg	±0.003mg	±0.006mg	±0.020mg	±0.06mg	±0.20mg
5mg	±0.003mg	±0.006mg	±0.020mg	±0.06mg	±0.20mg
10mg	±0.003mg	±0.008mg	±0.025mg	±0.08mg	±0.25mg
20mg	±0.003mg	±0.010mg	±0.03mg	±0.10mg	±0.3mg
50mg	±0.004mg	±0.012mg	±0.04mg	±0.12mg	±0.4mg
100mg	±0.005mg	±0.016mg	±0.05mg	±0.16mg	±0.5mg
200mg	±0.006mg	±0.020mg	±0.06mg	±0.20mg	±0.6mg
500mg	±0.008mg	±0.025mg	±0.08mg	±0.25mg	±0.8mg
1g	±0.010mg	±0.03mg	±0.10mg	±0.3mg	±1.0mg
2g	±0.012mg	±0.04mg	±0.12mg	±0.4mg	±1.2mg
5g	±0.016mg	±0.05mg	±0.16mg	±0.5mg	±1.6mg
10g	±0.020mg	±0.06mg	±0.20mg	±0.6mg	±2.0mg
20g	±0.025mg	±0.08mg	±0.25mg	±0.8mg	±2.5mg
50g	±0.03mg	±0.10mg	±0.3mg	±1.0mg	±3.0mg
100g	±0.05mg	±0.16mg	±0.5mg	±1.6mg	±5.0mg
200g	±0.10mg	±0.3mg	±1.0mg	±3.0mg	±10mg
500g	±0.25mg	±0.8mg	±2.5mg	±8.0mg	±25mg
1kg	±0.5mg	±1.6mg	±5.0mg	±16mg	±50mg
2kg	±1.0mg	±3.0mg	±10mg	±30mg	±100mg
5kg	±2.5mg	±8.0mg	±25mg	±80mg	±250mg
10kg	±5.0mg	±16mg	±50mg	±160mg	±500mg
20kg	±10mg	±30mg	±100mg	±300mg	±1000mg
50kg	±25mg	±80mg	±250mg	±800mg	±2500mg
100kg		±160mg	±500mg	±1600mg	±5000mg
200kg		±300mg	±1000mg	±3000mg	±10g

Example of Calibration certificate:

mrc

Calibration laboratory accredited by Polish Centre for Accreditation, a signatory to EA MLA and ILAC MRA that include recognition of calibration certificates. Accreditation No AP 069

PCA AP 069 ilac-MRA

CALIBRATION CERTIFICATE

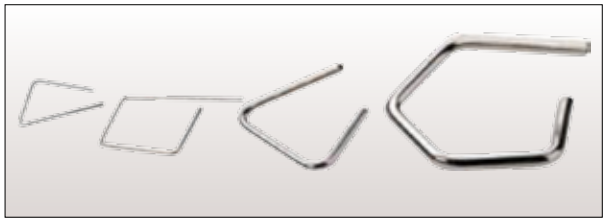
Date of issue: 12-th November 2009 Certificate No: Page: 1 / 2

OBJECT OF CALIBRATION	Non-automatic elektronic weighing instrument Model: AS 60/C/2 Serial No: Manufacturer: MRC Ltd. Characteristic: Max capacity Max.: 60g Readability d: 0.01mg
APPLICANT	
USER	
PLEACE OF CALIBRATION	
CALIBRATION METHOD	Calibration Procedure PW-01 Rev. V - 10-th january 2007
ENVIRONMENTAL CONDITIONS	Air temperature [°C] (21.1÷21.5) ±0.5 Relative air humidity [%] (48.1÷48.5) ±2.5
DATE OF CALIBRATION	10-th November 2009
TREACEABILITY	Calibration results were referred to national mass standard maintained in polish metrology institut - Głowny Urząd Miar (GUM) with the application of mass standards numbers: 147
CALIBRATIONS RESULTS	The results have been presented on page 2 of this certificate including uncertainty of measurement
UNCERTAINTY OF MEASUREMENT	Uncertainty of measurement has been evaluated in compliance with EA-4/02 The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor k = 2

This certificate may by presendet or copied as a whole document only

Ordering Information: Weight-1- ☐ - ☐

E1 E2 F1 F2 M1	1mg 2mg 5mg 10mg 20mg 50mg 100mg 200mg 500mg



Ordering Information: Weight-2- ☐ - ☐

E1 E2	1mg 2mg 5mg 10mg 20mg 50mg 100mg 200mg 500mg

Sets of masses

Ordering Information:

Model: Weight-S - ☐ - ☐

E1 E2 F1 F2 M1	1mg – 500mg (12pcs) 1g – 100g (9pcs) 1g – 200g (11pcs) 1g – 500g (12pcs) 1g – 2kg (15pcs) 1kg – 5kg (4pcs)

Single standard masses

Ordering Information:

Model: Weight - ☐ - ☐

E2 F1 F2 M1	1g, 2g, 5g, 10g, 20g, 50g, 100g, 200g, 500g, 1kg, 2kg, 5kg, 10kg, 20kg.