MAS, MAS.1 weighing modules

Series of professional electromagnetic modules of high resolution ensures highly precise and fast measurement in laboratory.

MAS.1

MAS.1.Y

MAS.1.R

MAS

Features

High Resolution
High resolution is the characteristic feature of the advanced line of MAS weighing modules. Their operation is based on an EMFC converter. The modules are intended to be a component of laboratory workstations and to be integrated into production lines.

Ease of Integration
MAS designs enable fast and easy installation at any surface. A weighing terminal is connected to the modules with up to 5-metre long cable facilitating ergonomics of use. Modules offer option of under-pan weighing.

Databases and Alibi Memory
Both panels, R and Y, feature internal databases of products and operators. The databases are secure thanks to implemented modules of ALIBI memory. The panels, being functional devices, provide you with option of easy data import and export.

Communication Interfaces
Offered range of available interfaces enables connecting the printer, fast transfer of data using USB flash drive and cooperation with PC software.

Customized Control Panels
Weighing modules are offered with R or Y control panels. The first one has been equipped with LCD and its functionality is equal to functionality of a standard laboratory balance. The second is a multifunctional weighing terminal providing you with applications such as formulations, checkweighing, SQC and differential weighing.

Precise Measurement
Auto adjustment system ensures accuracy even under changing ambient conditions. The most precise measurement is guaranteed thanks to repeatability of sd <=1d*.

Technical Specifications

	MAS.1.21	MAS.1.21.R	MAS.1.21.Y
Maximum capacity [Max]	21 g	21 g	21 g
Minimum load	1 mg	1 mg	1 mg
Readability [d]	0.01 mg	0.01 mg	0,01 mg
Verification scale interval [e]	—	—	—
Tare range	–21 g	–21 g	–21 g
Repeatability (5% Max)*	0.012 mg	0.012 mg	0,012 mg
Repeatability (Max) *	0.02 mg	0.02 mg	0,02 mg
Linearity	±0.06 mg	±0.06 mg	±0,06 mg
Sensitivity temperature drift**	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt
Stabilization time	6 s	6 s	6 s
Adjustment	internal	internal	internal
Verification	—	—	—
OIML Class	—	—	—
Construction material	aluminium	aluminium	aluminium
Weighing pan material	AISI304 stainless steel	AISI304 stainless steel	AISI304 stainless steel
Display	—	LCD (with backlight)	5.7" colour, resistive touch screen
Panel – Module cable lenght***	1 meter	1 meter	1 meter
Protection class	IP 54	IP 54	IP 54
USB	—	—	2
RS 232	1	1	2
Ethernet	—	—	1
IN/OUT	—	—	4 × IN, 4 × OUT
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+15° ÷ +35 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions	Ø 33 mm	Ø 33 mm	Ø 33 mm
Weighing device dimensions	289 × 143 × 125 mm	289 × 143 × 125 mm	289 × 143 × 125 mm
Net weight	4.1 kg	4.7 kg	4.7 kg
Gross weight	6.1 kg	6.7 kg	6.7 kg
Packaging dimensions	650 × 340 × 305 mm	650 × 340 × 305 mm	650 × 340 × 305 mm

Rt net weight
* repeatability is expressed as a standard deviation from 10 weighing cycles
** parameter determined in the following temperature range: +15 ÷ +35 °C
*** optional solution with 5 m cable
**** non-condensing conditions

	MAS.1.51	MAS.1.51.R	MAS.1.51.Y
Maximum capacity [Max]	51 g	51 g	51 g
Minimum load	1 mg	1 mg	1 mg
Readability [d]	0.01 mg	0.01 mg	0.01 mg
Verification scale interval [e]	—	—	—
Tare range	–51 g	–51 g	–51 g
Repeatability (5% Max)*	0.012 mg	0.012 mg	0.012 mg
Repeatability (Max) *	0.025 mg	0.025 mg	0.025 mg
Linearity	±0.06 mg	±0.06 mg	±0.06 mg
Sensitivity temperature drift**	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt
Stabilization time	6 s	6 s	6 s
Adjustment	internal	internal	internal
Verification	—	—	—
OIML Class	—	—	—
Construction material	aluminium	aluminium	aluminium
Weighing pan material	AISI304 stainless steel	AISI304 stainless steel	AISI304 stainless steel
Display	—	LCD (with backlight)	5.7" colour, resistive touch screen
Panel – Module cable lenght***	1 meter	1 meter	1 meter
Protection class	IP 54	IP 54	IP 54
USB	—	—	2
RS 232	1	1	2
Ethernet	—	—	1
IN/OUT	—	—	4 × IN, 4 × OUT
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+15° ÷ +35 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions	Ø 33 mm	Ø 33 mm	Ø 33 mm
Weighing device dimensions	289 × 143 × 125 mm	289 × 143 × 125 mm	289 × 143 × 125 mm
Net weight	4.1 kg	4.7 kg	4.7 kg
Gross weight	6.1 kg	6.7 kg	6.7 kg
Packaging dimensions	650 × 340 × 305 mm	650 × 340 × 305 mm	650 × 340 × 305 mm

Rt net weight
* repeatability is expressed as a standard deviation from 10 weighing cycles
** parameter determined in the following temperature range: +15 ÷ +35 °C
*** optional solution with 5 m cable
**** non-condensing conditions

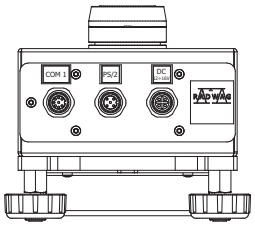
	MAS.1.82/200	MAS.1.82/220.R	MAS.1.82/220.Y
Maximum capacity [Max]	82 g / 220 g	82 g / 220 g	82 g / 220 g
Minimum load	1 mg	1 mg	1 mg
Readability [d]	0.01 mg / 0.1 mg	0.01 mg / 0.1 mg	0.01 mg / 0.1 mg
Verification scale interval [e]	—	—	—
Tare range	–220 g	–220 g	–220 g
Repeatability (5% Max)*	0.02 mg	0.02 mg	0.02 mg
Repeatability (Max) *	0.1 mg	0.1 mg	0.1 mg
Linearity	± 0.06 mg / ± 0.2 mg	± 0.06 mg / ± 0,2 mg	± 0.06 mg / ± 0.2 mg
Sensitivity temperature drift**	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt
Stabilization time	6 s / 2 s	6 s / 2 s	6 s / 2 s
Adjustment	internal	internal	internal
Verification	—	—	—
OIML Class	—	—	—
Construction material	aluminium	aluminium	aluminium
Weighing pan material	AISI304 stainless steel	AISI304 stainless steel	AISI304 stainless steel
Display	—	LCD (with backlight)	5.7" colour, resistive touch screen
Panel – Module cable lenght***	1 meter	1 meter	1 meter
Protection class	IP 54	IP 54	IP 54
USB	—	—	2
RS 232	1	1	2
Ethernet	—	—	1
IN/OUT	—	—	4 × IN, 4 × OUT
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+15° ÷ +35 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions	Ø 42 mm	Ø 42 mm	Ø 42 mm
Weighing device dimensions	289 × 143 × 125 mm	289 × 143 × 125 mm	289 × 143 × 125 mm
Net weight	4.1 kg	4.7 kg	4.7 kg
Gross weight	6.1 kg	6.7 kg	6.7 kg
Packaging dimensions	650 × 340 × 305 mm	650 × 340 × 305 mm	650 × 340 × 305 mm

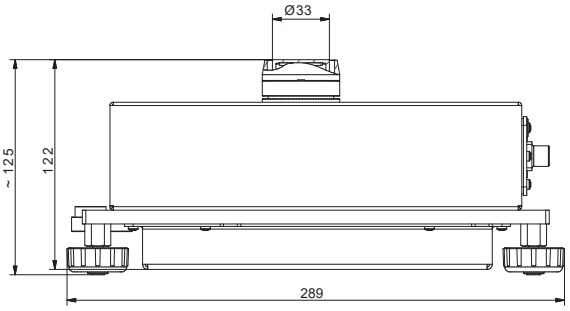
Rt net weight
* repeatability is expressed as a standard deviation from 10 weighing cycles
** parameter determined in the following temperature range: +15 ÷ +35 °C
*** optional solution with 5 m cable
**** non-condensing conditions

	MAS 220.R	MAS 220.Y
Maximum capacity [Max]	220 g	220 g
Minimum load	10 mg	10 mg
Readability [d]	0.1 mg	0.1 mg
Verification scale interval [e]	—	—
Tare range	-220 g	-220 g
Repeatability (5% Max)*		
Repeatability (Max) *	0.1 mg	0.1 mg
Linearity	± 0.2 mg	± 0.2 mg
Sensitivity temperature drift**	1×10^{-6} / °C × Rt	1×10^{-6} / °C × Rt
Stabilization time	3.5 s	3.5 s
Adjustment	internal	internal
Verification	—	—
OIML Class	—	—
Construction material	aluminium	aluminium
Weighing pan material	AISI304 stainless steel	AISI304 stainless steel
Display	LCD (with backlight)	5.7" colour, resistive touch screen
Panel – Module cable lenght***	1 meter	1 meter
Protection class	IP 32	IP 32
USB	1	2
RS 232	1	2
Ethernet	—	1
IN/OUT	—	4 × IN, 4 × OUT
Power supply	12 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions	Ø 42 mm	Ø 42 mm
Weighing device dimensions	248 × 180 × 117 mm	248 × 180 × 117 mm
Net weight	3.6 kg	3.6 kg
Gross weight		
Packaging dimensions	515 × 340 × 285 mm	515 × 340 × 285 mm

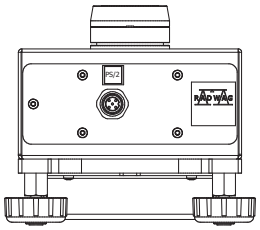
Rt net weight
* repeatability is expressed as a standard deviation from 10 weighing cycles
** parameter determined in the following temperature range: +15 ÷ +35 °C
*** optional solution with 5 m cable
**** non-condensing conditions

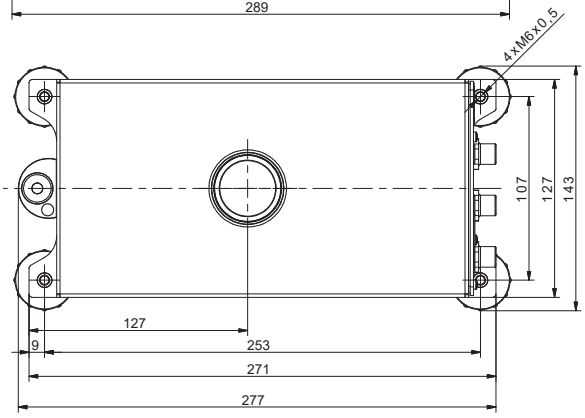
Dimensions





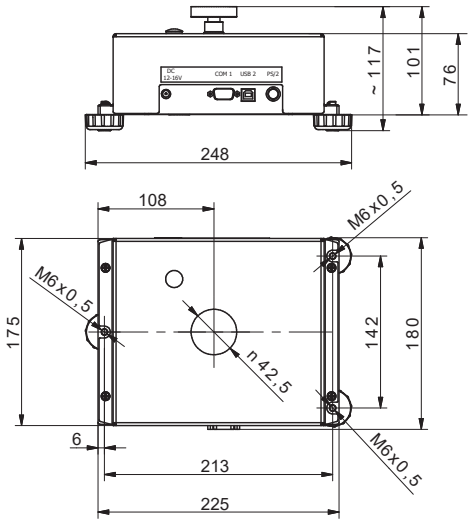
MAS.1
MAS.1.R





MAS.1.Y

MAS.1



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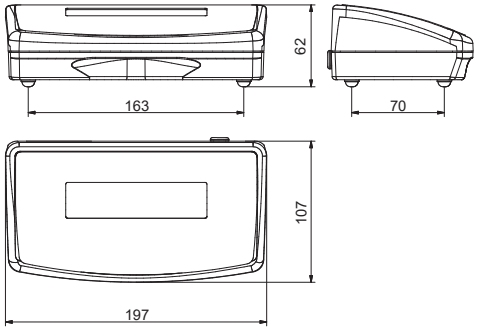

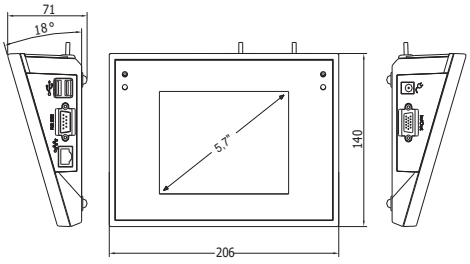

R operator panel

Y operator panel

Accessories

Weighing Tables
- granite antivibration table
- antivibration tables for laboratory balances
- professional weighing table

Peripheral Devices
- Epson dot matrix printer

Ambient Conditions
- antystatic ionizer DJ-04

Cables, Converters
- P0108: RS 232 cable (balance-computer)
- P0151: RS 232 cable (balance - Epson printer)

Electrical Accessories
- ZR-02 power supply with battery

Dedicated Software

R-LAB
- collecting measurements
- carrying out statistical analysis of measurements
- customized graphs and reports