

Specificație Tehnică Completată

Anexa 24 Densitometru McFarland

Model: DEN-1B

Producător: Biosan

Țara: Letonia

Specificarea tehnică deplină solicitată, Standarde de referință	Specificația tehnică propusă de ofertant
<p>Dispozitiv pentru măsurarea turbidității suspensiilor prin metodă optică Domeniu de măsurare 0.1 - 4 McF Acuratețea: $\leq 5\%$ la 2 McF Volum minim măsurat: ≤ 2 ml Posibilitate funcționare de la rețea sau baterii/acumulatori Afișare date pe ecran LCD Diametru eprubete acceptate: 16 mm Accesorii livrate: baterii/acumulator,, cablu alimentare, bloc alimentare(în caz de alimentare de la sursă externă), set standarde pentru calibrare (în cazul necesității calibrării periodice).</p>	<p>Dispozitiv pentru măsurarea turbidității suspensiilor prin metodă optică Domeniu de măsurare 0.1 - 15 McF Acuratețea: 3% la 0- 6 McF Volum minim măsurat: 2 ml Posibilitate funcționare de la rețea sau baterii(3xAA) Afișare date pe ecran LCD Diametru eprubete acceptate: 16 mm, este oferit cu adaptor A-16 Accesorii livrate: baterii,, cablu alimentare, bloc alimentare(pentru alimentare de la sursă externă), un set de standarde pentru calibrare (în cazul necesității calibrării periodice). CKG16</p>

Set oferit:

1x BS-050104-AAF, DEN-1B, McFarland densitometer, with A-16 adapter for 16 mm tubes

1x CKG16 Calibration kit,

DEN-1B, Densitometer (suspension turbidity detector)

DESCRIPTION

Densitometer is designed for measurement of cell suspension's turbidity in the range of 0.0–6.0 McFarland units (0 – 180×10^7 cells/ml).

Densitometers provide the opportunity to measure solution turbidity in a wider range (up to 15.0 McFarland units) however, it is necessary to remember that in this case the standard deviation values increase.

A densitometer is used for measurement of cell concentration (bacterial, yeast cells) during fermentation process, determination of microorganism sensitivity to antibiotics, microorganism identification using various test-systems, for measurement of absorption at the definite wavelength, as well as for quantitative estimation of concentration of colour solution, absorbing green light.

The operation principle is based on measurement of optical density with digital presentation of results in McFarland units. The unit is calibrated at the factory (for operation with 16 mm diameter glass tubes) and keeps calibration without power supply. However, if necessary it is possible to calibrate the unit by 2–6 points in 0.0–6.0 McFarland unit range. We recommend to use Biosan standards to ensure full reliability, but it is acceptable to use other commercial as well as self prepared standards (e.g. BaSO₄). Possibility to restore factory calibration settings.

Following calibration kits are available on request:

- **CKG16** for glass tubes with diameter 16 mm, set of 0.5; 1.0; 2.0; 3.0; 4.0 McFarland Turbidity Standards (latex particles).
Cat.Nr.: BS-050102-BK
- Calibration kit for glass tubes with diameter 18 mm, set of 0.5; 1.0; 2.0; 3.0; 4.0; 5.0 McFarland Turbidity Standards (BaSO₄).
Cat.Nr.: 70900
- Calibration kit for glass tubes with diameter 12 mm, set of 0.0 (blank); 0.5; 2.0; 3.0 McFarland Turbidity Standards (latex particles).
Cat.Nr.: 21255

Two versions of the product are available:

1. **DEN-1** powered from external energy supply;
2. **DEN-1B** powered both from external energy supply and from batteries (AA).



CAT. NUMBER

BS-050104-AAF	230VAC 50/60Hz Euro plug
BS-050104-AAK	100-240VAC 50/60Hz Multi plug (EU, UK, AU, US)
BS-050104-AK	IQ OQ document
BS-050104-BK	PQ document

SPECIFICATIONS

Measurement range	0.00–15.00 McF
Resolution	0.01 McF
Light source	LED
Measurement wavelength (λ)	$\lambda = 565 \pm 15$ nm
Accuracy (0.0–6.0 McF)	$\pm 3\%$
Measurement time	1 s
Sample volume	not less than 2 ml
Tube external diameter	12 mm, 16 mm (using A-12, A-16 adapter) or 18 mm (without adapter)
Possibility to restore factory calibration settings	+
Display	LCD
Independent power supply	3 × AA batteries
Overall dimensions (W×D×H)	165 × 115 × 75 mm
Weight	0.7 kg
Input current/power consumption	12 V, 7 mA / 0.1 W
External power supply	Input AC 100–240 V, 50/60 Hz; Output DC 12 V
Standard set	External power supply, A-16

ACCESSORIES



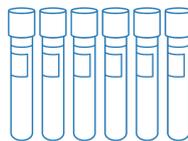
Glass test tubes 16mm
BS-050102-MK

Glass Test Tubes 16x100mm, high borosilicate, PP Cap with silicone pad.
Packing - 100 pcs/box



CKG16
BS-050102-BK
Calibration kit

CKG16 for glass tubes with diameter 16 mm, set of 0.5; 1.0; 2.0; 3.0; 4.0 McFarland Turbidity Standards (latex particles).



Calibration kit
70900
d18mm

McFarland Turbidity Standards, $\varnothing 18$ mm



Calibration kit
21255
d12mm

McFarland Turbidity Standards, $\varnothing 12$ mm



Glass test tubes 18mm
BS-050102-NK

Glass Test Tubes 18x100mm, high borosilicate, PP Cap with silicone pad.
Packing - 100 pcs/box



A-12
BS-050102-1K
adapter

A-12, adapter for work with tubes which are 12 mm in external diameter.

EU Declaration of Conformity

Unit type Densitometers

Models DEN-1, DEN-1B, DEN-600

Serial number 14 digits styled XXXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.

Manufacturer SIA BIOSAN
Latvia, LV-1067, Riga, Ratsupites str. 7/2

The objects of the declaration described above is in conformity with the following relevant Union harmonization legislations:

LVD 2014/35/EU	LVS EN 61010-1:2011 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements.
EMC 2014/30/EU	LVS EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.
RoHS3 2015/863/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
WEEE 2012/19/EU	Directive on waste electrical and electronic equipment.

I declare that the Declaration of Conformity is issued under sole responsibility of the manufacturer and belongs to the above-mentioned objects of the declaration.

Svetlana Bankovska
Managing director



Signature

07.02.2020.

Date



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Bureau Veritas Certification



EN ISO/IEC 17021-1
S2-424

Certification
Awarded to
Biosan SIA

Rātsupītes iela 7 k-2, Rīga, LV-1067, LATVIA
Brīvības gatve 323, Rīga, LV-1006, LATVIA

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standard detailed below
Standard

ISO 9001:2015

SCOPE OF CERTIFICATION

DEVELOPMENT, PRODUCTION, SALES AND SERVICE OF LABORATORY EQUIPMENT.



Original Cycle Start Date:	25-05-2004
Expiry date of previous cycle:	25-05-2025
Certification / Recertification Audit date:	13-05-2025
Certification/Recertification Cycle Start Date:	26-05-2025
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	25-05-2028

Certificate No.: LV009252

Version: 1

Issue date: 21-05-2025

Certification body address: Bureau Veritas Latvia SIA, Dunties street 17a, Riga, LV-1005, Latvia
Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call +371 67323246



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Standard

ISO 13485:2016

SCOPE OF CERTIFICATION

DEVELOPMENT, DESIGN, PRODUCTION, SERVICE AND DISTRIBUTION OF MEDICAL DEVICES: DEVICE FOR MEASURING OPTICAL DENSITY (OD), AUTOMATIC MICROPLATE WASHER, MICROPLATE PHOTOMETER. SALES, STORAGE AND DISTRIBUTION OF ACTIVE AND NON ACTIVE NONIMPLANTABLE MEDICAL DEVICES.

Original Cycle Start Date:	26-05-2022
Expiry date of previous cycle:	25-05-2025
Certification / Recertification Audit date:	13-05-2025
Certification/Recertification Cycle Start Date:	26-05-2025
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	25-05-2028

Certificate No.: LV009253

Version: 1

Issue date: 21-05-2025



Certification body address: Bureau Veritas Latvia SIA, Dunties street 17a, Riga, LV-1005, Latvia
Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call +371 67323246