BUREAU VERITAS
Certification

LATAK -S2-424

Certification

Awarded to

SIA "Biosan"

Rātsupītes iela 7, korp.2, Rīga, LV-1067, 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.

Recertification Audit date: 09.04.2019.

Recertification cycle start date: 26.05.2019.

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: 25.05.2022.

Certificate Number : LVRIG24119A *Version:* 1 *Revision date:* 11.04.2019

Digitally signed by Ceaicovschi Tudor
Date: 2022.05.04 11:41:16 EEST
Reason: MoldSign Signature
Location: Moldova

Certification Manager
Iveta Lazdiņa

Certification body address: Bureau Veritas Latvia SIA, Duntes 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

BUREAU VERITAS

Abstract# 3002

Rapid Chromatin Preparation from Solid Mammalian Tissues for Low Cell ChIP Assays

Kyusung Park[1], Loni Pickle[1], Vasiliki Anest[1], Zhoutao Chen[1], George Marnellos[1], Dorothy Markowitz[1], Dan Krissinger[1], Nisha Mulakken[2], Darryl Leon[2], Rob Bennett[1],
Life Technologies, Carlsbad[1], CA, 92008, Foster City[2], California 94404

For questions contact: Loni.Pickle@lifetech.com

ABSTRACT

In this presentation we demonstrate a novel, rapid, and low input per ChIP tissue collection protocol for researchers utilizing solid mammalian tissue to study protein-DNA interaction via the **MAGnify™ ChIP System**. We also illustrate **SOLiD™ ChIP-Seq assay** feasibility with solid mammalian tissue by utilizing MAGnify™ ChIP DNA to generate fragment libraries for future use in massively parallel DNA sequencing. This simple, user-friendly protocol provides multiple benefits over the standard homebrew method for ChIP solid tissue collection. Thousands of dollars in up-front cost of specialized tissue equipment are eliminated and the once standard 50 cent assay is now reduced to less than 1 cent per reaction. The new protocol cuts processing time in half. It reduces reported homebrew amount of tissue from approximately 30mg to less than 1mg per ChIP reaction when paired with the powerful MAGnify™ ChIP system. We reduce anxiety associated with cross-contamination by implementing only sterile, disposable items. This sterility is especially a concern now that ChIP DNA feeds directly into a highly sensitive, hypothesis-neutral approach to accurately characterize protein-DNA interactions at genome-wide scale via the SOLiD™ ChIP-Seq Kit.

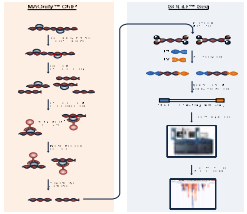
INTRODUCTION

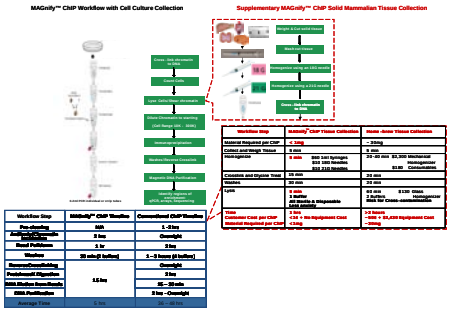
To date, the most widely used and powerful method to identify regions of the genome associated with specific proteins is the Chromatin Immunoprecipitation (ChIP) assay. Determining how proteins interact with DNA to regulate gene expression is essential to fully understand many biological processes, cancers and disease states. In a ChIP assay, protein-DNA complexes are crosslinked, immunoprecipitated and then purified. This material is then ready for downstream analyses using technologies/platforms/methods such as qPCR, genome-wide analyses using promoter-tiling arrays, or massively parallel sequencing. We developed the MAGnify™ ChIP system: a faster, optimized ChIP workflow, enabling lower starting cell numbers (10,000-300,000 cells), thus preserving precious samples such as primary cells and stem cells. In addition, we developed a sensitive SOLiD™ library construction procedure to produce complex libraries using as low as 1 ng MAGnify™ ChIP DNA. Through SOLiD™ ChIP-Seq, we characterized transcriptionally permissive histone H3 modifications in breast cancer cell lines utilizing the SOLiD™ platform.
From this, an exciting new customer-driven challenge emerged. Researchers wished to attempt low input MAGnify™ ChIP assays on precious solid mammalian tissue samples but required a tissue collection protocol radically different from the standard homebrew method. Tissue ChIP profiles with pharmacologically relevant, organ specific targets were generated with less than 1mg tissue per ChIP. SOLiD™ ChIP-Seq libraries were produced from 1ng MAGnify™ tissue ChIP input DNA.

MATERIALS AND METHODS

Three week old mouse brain, liver, heart and kidney were collected from male Ncr nude mice, weighed, and then minced. The plastic sheath was retained on a needle and used as a sterile, disposable mortar and pestle when paired with a 50ml conical tube. A specific, optimized gradient of gauge needles effectively homogenized these tissues and fed directly into the MAGnify™ ChIP and SOLiD™ ChIP-Seq Kits.

A. Overview of SOLiD™ ChIP-Seq System B. Comparison of workflow improvements vs. conventional protocols. Overall, The SOLiD™ Chromatin Immunoprecipitation System provides a streamlined, optimized assay for the enrichment of chromatin complexes and DNA recovery using magnetic bead capture technology. Currently, an optimized cell culture collection protocol is provided. Here, a novel solid mammalian tissue collection protocol compatible with the MAGnify™ workflow is showcased.





RESULTS

Figure 1. Cancer Cell Line ChIP-qPCR Control

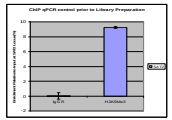


Figure 1. *ChIP-qPCR control prior to library preparation.* Sheared chromatin was diluted to 100,000 cells per ChIP and enrichment of H3-K9Me3 at the SAT2 locus was analyzed by qPCR. H3-K9Me3 is a maker for heterochromatin and a useful control for ChIP workflow.

Figure 2. SOLiD™ ChIP-Seq Workflow

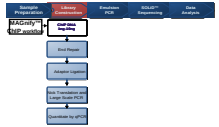


Figure 2. *Flow Chart of ChIP-Seq workflow for Cancer Cell Line Run.* Sample preparation begins with ChIP DNA prepared according to MAGnify™ protocol using 100,000 cells per ChIP using the H3-K27Me3 antibody. Subsequently the ChIP DNA enters library construction where libraries were made between 1-10ng, including input, and sequenced on a SOLiD™ (V3) platform in quad chambers. Templated bead generation for each library was performed according to SOLiD™ System 3.0 User Guide standard protocols. Each sample was deposited on one quadrant of the slide at a target bead density of 60,000–70,000 beads per panel. We generated two slides and processed them similarly to assess the reproducibility of the system. High-throughput sequencing was performed using the SOLiD™ System and analysis of 50-bp reads was carried out. The short sequence reads from the SOLiD™ System are mapped against genomic sequences using the SOLiD™ System alignment tools available through the Applied Biosystems software development community (http://info.appliedbiosystems.com/solidsoftwarecommunity) or third-party tools compatible with SOLiD sequencing data.

Figure 3. SOLiD™ ChIP-Seq of Histone H3-K27Me3 Cancer Cell Line Enrichment at RGMA

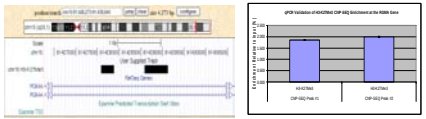


Figure 3. A. *UCSC Genome Browser view of a chromosomal locus near the RGMA gene.* SOLiD™ reads from MAGnify™ H3-K27Me3 ChIP were mapped and normalized against the input control. B. *Validation of the ChIP-Seq peak enrichment of H3-K27Me3 at the RGMA gene was observed by ChIP-qPCR.* Consistent with the ChIP-Seq results, we observed enrichment of H3-K27Me3 by qPCR. SYBR qPCR primers targeting the two peak regions observed in Figure 7A were designed and used for detection.

Figure 4. SOLiD™ ChIP-Seq of Histone H3-K27Me3 Cancer Cell Line Enrichment

Figure 4. *Illustrated in the UCSC Genome* Browser is H3-K27Me3 ChIP enrichment over control input on chromosome 15 from 1ng input libraries.

Figure 5. SOLiD™ ChIP-Seq Cancer Cell Line Mapping Statistics

System	Library (ChIP DNA Amount)	Total # of Beads	# of Unique Mapped	% of Uniquely Mapped
SOLiD™ 3	Chromatin Input (5ng)	82,777,712	29,972,094	36.2%
	ChIP'd H3-K27Me3 (1ng)	86,001,613	26,033,473	30.3%
SOLiD™ 4	Chromatin Input (5ng)	109,954,420	66,212,482	60.2%
	ChIP'd H3-K27Me3 (1ng)	107,174,859	49,322,428	46.0%

Figure 5. *Significant improvement on SOLiD™ 4 system.*
ChIP DNA prepared according to MAGnify™ protocol using 100,000 cells per ChIP for SOLiD ™ 3 or 50,000 cells per ChIP for 4.0. 5ng Input ChIP DNA and one H3K27Me3 IP was used to construct ChIP-Seq libraries. Templated bead generation for each library was performed according to SOLiD™ System User Guide standard protocols. Each sample was deposited on one quadrant of the slide. We generated sequencing data from both SOLiD™ 3 and SOLiD™ 4 system and processed them similarly to assess the improvement of the system. The short sequence reads from the SOLiD™ System are mapped against genomic sequences using the SOLiD™ System alignment tools available through the Applied Biosystems software development community (http://info.appliedbiosystems.com/solidsoftwarecommunity).

Figure 6. Histone H3 Methylation ChIP from < 1mg Solid Mammalian Tissue

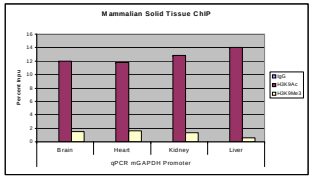


Figure 6. *Histone H3 Methylation ChIP from < 1mg Solid Mammalian Tissue (~50,000 cells).* Sheared chromatin from mouse brain, heart, kidney and liver was prepared from 150mg in 450ul lysis buffer and dilute to 0.83mg per ChIP according to the MAGnify™ Solid Tissue ChIP Protocol. All chromatin was sheared per standard SOLiD™ ChIP-Seq shearing. 1µg negative control IgG, H3-K9Me3 or H3-K9Ac antibody was used per ChIP experiment. A fraction (10%) of the sonicated chromatin was set aside as input control. Optimized qPCR primers were used to amplify the mouse GAPDH promoter. Percent input was calculated by 100 x 2^Ct adjusted input – Ct enriched). Input DNA Ct was adjusted from 1% to 100% equivalent by subtracting 6.64 Cts.

Figure 7. Polymerase II ChIP from < 1mg Solid Mammalian Tissue

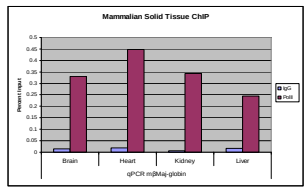
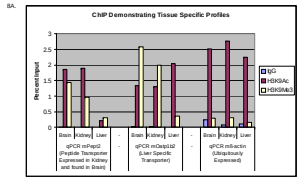


Figure 7. *Polymerase II ChIP from < 1mg Solid Mammalian Tissue (~50,000 cells).* Sheared chromatin from mouse brain, heart, kidney and liver was prepared from 150mg in 450ul lysis buffer and dilute to 0.83mg per ChIP according to the MAGnify™ Solid Tissue ChIP Protocol. All chromatin was sheared per standard SOLiD™ ChIP-Seq shearing. 1µg of IgG negative control antibody or 3µl RNA Pol II antibody were used per ChIP experiment. A fraction (10%) of the sonicated chromatin was set aside as input control. Optimized qPCR primers were used to amplify the mouse βMaj-globin region and data presented as percent input.

Figure 8. Tissue ChIP Profiles with Pharmacologically Relevant, Organ Specific Targets.



8B.

	Pept2	Oatp1b2	β-actin	
Brain	High	Low	High	mRNA expression*
Kidney	High	Low	High	mRNA expression*
Liver	Low	High	High	mRNA expression*

* (Imai et al, *Mol Pharmacol* 75:568–576, 2009)

Figure 8. *Tissue ChIP Profiles with Pharmacologically Relevant, Organ Specific Targets.* (8A) Sheared chromatin from mouse brain, kidney or liver was prepared from 150mg in 450ul lysis buffer and dilute to 0.83mg per ChIP according to the MAGnify™ Solid Tissue ChIP Protocol. All chromatin was sheared per standard SOLiD™ ChIP-Seq shearing. 1µg negative control IgG, H3-K9Me3 or H3-K9Ac antibody was used per ChIP experiment. A fraction (10%) of the sonicated chromatin was set aside as input control. Optimized qPCR primers were used to amplify mouse Pept2, Oatp1b2 and β-actin loci with data presented as percent input. (8B) Table summarizing published mRNA expression data from total RNA isolated from mouse liver, kidney and cerebrum. The laboratory performed reverse transcription then PCR with primers specific for mouse Pept2, Oat1b2 and β-actin cDNA. The published agarose gel band intensity is presented here as either high or low to indicate relative mRNA expression levels in the different tissues examined.

Figure 9. Tissue Chromatin Shearing for ChIP-ready Libraries

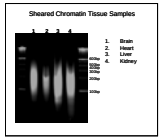


Figure 9. *Tissue Chromatin Shearing for ChIP-ready libraries.* All samples are collected using the MAGnify™ solid tissue protocol, crosslinked with 1% formaldehyde for 10 minutes, and processed per standard SOLiD™ ChIP-Seq shearing. 0.5µl mouse brain, heart, liver and kidney crosslinked chromatin (50mg per 150µl Lysis Buffer) was ran on a 2% EX-Gel with 100bp DNA ladder.

Figure 10. SOLiD™ ChIP-Seq Mammalian Tissue Libraries

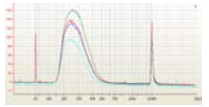


Figure 10. SOLiD™ ChIP-Seq libraries from Mammalian Tissue. 1ng ChIP input DNA, measured by Qubit Quant-IT dsDNA High Sensitivity Assay Kit, was processed per standard SOLiD™ ChIP-Seq library protocol. Libraries from mouse brain, heart, kidney and liver ChIP DNA were amplified 15 cycles and run on a High Sensitivity Bioanalyzer chip.

CONCLUSIONS

We currently offer the MAGnify™ and SOLiD™ ChIP-Seq kits, providing a faster and more reproducible solution for lower input cell ChIP and ChIP-seq.

Reduce cell number **per ChIP (10,000-300,000 cells recommended) and reduce protocol time**

Combined with the ChIP-Seq workflow optimized on the SOLiD™ system, fingerprints of protein-DNA interactions can be systematically revealed and compared

Improve reproducibility due to *optimized magnetic DNA purification* (avoid columns and phenol/chloroform steps)

Easily increase throughput with small volumes, magnetic protocol and magnet compatible with multi-channel pipetting

Increase confidence in results due to optimized and reproducible components, and antibodies qualified in chromatin immunoprecipitation

Reduce experimental error with novel Dynabeads® Protein A/G Mix - worry less about antibody compatibility and non-specificity

We now offer a novel, rapid chromatin preparation solution for solid mammalian tissues compatible with low cell MAGnify™ ChIP assays and able to produce libraries utilizing the SOLiD™ ChIP-Seq kit.

Eliminates greater than $2,400 in up-front tissue equipment cost

A 50 ¢ assay is reduced to less than 1 ¢ per tissue ChIP preparation

Reduces tissue processing time by greater than half

Reduces homebrew amount of tissue from approximately 30mg to less than 1mg (50,000 cells) per ChIP reaction when paired with the powerful MAGnify™ ChIP system

Lessens anxiety by implementing only sterile, disposable items. Cross-contamination is especially a concern now researchers require ChIP DNA to feed massively parallel DNA sequencing

SOLiD™ ChIP-Seq libraries from 1ng ChIP tissue input DNA for future analysis on the SOLiD™ platform

In summary, this method reduces time, cost, and sample per assay, while providing an innovative, user-friendly approach to processing mammalian tissue for MAGnify™ ChIP. This novel protocol capitalizes on existing MAGnify™ ChIP and SOLiD™ ChIP-Seq system advantages to produce pharmacologically relevant ChIP-qPCR profiles and ChIP-sequencing libraries from low amounts of starting mammalian tissue.
By utilizing less tissue per assay, studying protein-DNA interaction through ChIP and ChIP-seq is opened to researchers examining abundant as well as precious cancer, disease, animal-model, and biopsy solid mammalian tissues.

REFERENCES

1. Jenuwein T, Allis CD. Translating the histone code. *Science* 2001, 293(5532):1074-1080
2. Das PM, K Ramachandran, J van Wert, R Singal. Chromatin immunoprecipitation assay. *Biotechniques* 2004, 6:961-9.
3. Nightingale KP, O'Neill LP, Turner BM: Histone modifications:signalling receptors and potential elements of a heritable epigenetic code. *Curr Opin Genet Dev* 2006, 16(2):125-136.
4. Kondo Y, Lanlan, S, et al. Gene silencing in cancer by histone H3 lysine 27 trimethylation independent of promoter DNA methylation. *Nat Genet* 2008, 40(6):741-50

ORDERING INFORMATION

Product †	Catalog #
SOLiD™ ChIP-Seq Kit	4449640
SOLiD™ ChIP-Seq Kit with ChIP Magnet*	4449638
DynaMag™-PCR*	492025
MAGnify ™ ChIP Kit	492024

*The magnet (DynaMag™-PCR Magnet) needs to be ordered only once.
† For Research Use Only, not intended for any animal or human therapeutic or diagnostic use.

EU Declaration of Conformity

Unit type	Rockers, shakers, rotators, vortexes
Models	**MR-1, MR-12;** **3D, Multi Bio 3D, PSU-10i, PSU-20i, MPS-1, PSU-2T;** **Bio RS-24, Multi Bio RS-24, Multi RS-60;** **V-1 plus, V-32, MSV-3500**
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. **LVS EN 61010-2-051:2015** Particular requirements for laboratory equipment for mixing and stirring.
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

Biosan SIA., Ratsupites 7, build. 2, Riga, LV-1067, Latvia,
Phone: +371 674 261 37, Fax: +371 674 281 01,
E-mail: marketing@biosan.lv, www.biosan.lv

Medical-Biological Research & Technologies

V-1 plus, Personal Vortex

Basic Plus Product Class

DESCRIPTION

Vortex **V-1 plus** is an ideal instrument for gentle mixing to vigorous resuspension of cells and biological and chemical liquid components in tubes using eccentric mechanism.

Vortex has two modes:

1. Continuous operation;
2. Impulse operation (activated by pressing the cap with the tube's bottom).

SPECIFICATIONS

Eccentric mixing principle	+
Speed control range	500-3000 RPM
Acceleration time	<1 s
Maximum continuous operation time	24 h
Mixing module for tubes	from 0.2 to 50 ml
Maximum mixing volume	30 ml
Orbit	4 mm
Overall dimensions (W×D×H)	90x150x80 mm
Weight	0.8 kg
Input current/power consumption	12 V, 320 mA / 3.8 W
External power supply	Input AC 100–240 V; 50/60 Hz; Output DC 12 V

CAT. NUMBER

BS-010203-AAG	230VAC 50/60Hz Euro plug
BS-010203-AAK	230VAC 50/60Hz UK plug, 230VAC 50/60Hz AU plug, 100VAC 50/60Hz US plug, 120VAC 60Hz US plug
BS-010203-BK	IQ OQ document
BS-010203-CK	PQ document

Biosan SIA., Ratsupites 7, build. 2, Riga, LV-1067, Latvia,
Phone: +371 674 261 37, Fax: +371 674 281 01,
E-mail: marketing@biosan.lv, www.biosan.lv

Medical-Biological Research & Technologies

MSV-3500, Multi Speed Vortex

Basic Plus Product Class

DESCRIPTION

Multi Speed Vortex **MSV-3500** is designed for soft or intensive mixing of reagents in different size and type plastic tubes (0.2 to 50 ml).

It is designed for operation in life science laboratories working in the fields of biochemistry, cell and molecular biology.

Unit has four types of interchangeable platforms: for Eppendorf type microtest tubes, 10/15/50 ml tubes (diameter 12/16/30 mm). Platforms can be ordered separately or as one set with **MSV-3500**.

Speed and time are under microprocessor control. LCD display indicates two lines of values: the set and actual values of speed and time.

Unit provides high maximum speed of platform rotation efficiently mixing microvolumes (less than 5 µl) of samples.

SPECIFICATIONS

Speed control range	300–3,500* rpm * Maximum speed depends on load
Digital time setting	0–60 min / non-stop
Timer sound signal	+
Maximum continuous operation time	8 hrs
Display	LCD, 2 x 16 signs
Maximum load	0.2 kg
Orbit	4 mm
Overall dimensions (W×D×H)	180x170x145 mm
Weight	2.6 kg
Input current/power consumption	12 V, 1 A / 12 W
External power supply	Input AC 100–240 V; 50/60 Hz; Output DC 12 V

CAT. NUMBER

With all 4 platforms included	With all 4 platforms included
BS-010210-TAH	230VAC 50/60Hz Euro plug
BS-010210-TAK	230VAC 50/60Hz UK plug, 230VAC 50/60Hz AU plug, 100VAC 50/60Hz US plug, 120VAC 60Hz US plug
Without platform	Without platform
BS-010210-AAH	230VAC 50/60Hz Euro plug
BS-010210-AAK	230VAC 50/60Hz UK plug, 230VAC 50/60Hz AU plug, 120VAC 60Hz US plug
BS-010210-IK	IQ OQ document
BS-010210-JK	PQ document

ACCESSORIES

SV-16/8
BS-010210-CK
platform

16/8/8 sockets for 1.5/0.5/0.2 ml microtest tubes (Ø 11/8/6 mm).

SV-10/10
BS-010210-BK
platform

10 sockets for 10 ml (Ø 12 mm) tubes.

SV-8/15
BS-010210-DK
platform

8 sockets for 15 ml (Ø 16 mm) tubes

SV-4/30
BS-010210-AK
platform

4 sockets for 50 ml (Ø 30 mm) tubes

EU Declaration of Conformity

Unit type	Rockers, shakers, rotators, vortexes
Models	**MR-1, MR-12;** **3D, Multi Bio 3D, PSU-10i, PSU-20i, MPS-1, PSU-2T;** **Bio RS-24, Multi Bio RS-24, Multi RS-60;** **V-1 plus, V-32, MSV-3500**
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

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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

EU Declaration of Conformity

Unit type	Mini-centrifuge, laboratory centrifuge
Models	**Microspin-12, LMC-3000, LMC-4200R**
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. **LVS EN 61010-2-020:2016** Particular requirements for laboratory centrifuges.
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.

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Managing director

Signature

07.02.2020.

Date

Biosan SIA., Ratsupites 7, build. 2, Riga, LV-1067, Latvia,
Phone: +371 674 261 37, Fax: +371 674 281 01,
E-mail: marketing@biosan.lv, www.biosan.lv

Medical-Biological Research & Technologies

Microspin 12, High-speed Mini-centrifuge

Basic Plus Product Class

DESCRIPTION

High-speed mini-centrifuge **Microspin 12** is a compact desktop centrifuge designed for biomedical laboratories.

Microspin 12 is used for extracting RNA/DNA samples, sedimentation of biological components, biochemical and chemical analysis of microsamples.

A display simultaneously shows actual and set values for:

1. Centrifugation time;
2. Set and actual speed values;
3. Relative centrifugal force.

A brushless motor provides noiseless performance at the maximal speed and long service life. An angular rotor is designed for accommodation of 12 Eppendorf microtubes and spin columns. The rotor is made of aluminium, it is equipped with fixing lid and included in the standard specification of the centrifuge. Constant airflow around the rotor reduces risk of samples overheating during operation.

Metal protective inserts inside the casing and lid, automatic imbalance switch-off and locking of a lid provide safe operation. Completion of centrifugation is indicated by a sound signal.

The external power supply unit allows operation of **Microspin 12** in cold rooms (at ambient temperatures from +4°C to +40°C).

Standard set:

Built-in rotor **MSR-12** (12 places for microtubes 1.5/2 ml) with protection lid **MSL-SC** and adapters A-02, A-05

	12 places for microtubes 1.5/2 ml
A-02 adapter	12 pieces for microtubes 0.2 ml
A-05 adapter	12 pieces for microtubes 0.5 ml

CAT. NUMBER

Including MSL-SC lid, adapters A-02, A-05	Including MSL-SC lid, adapters A-02, A-05
BS-010213-AA1	230VAC 50/60Hz Euro plug
BS-010213-AAQ	230VAC 50/60Hz UK plug
BS-010213-AA4	230VAC 50/60Hz AU plug
BS-010213-AA2	100VAC 50/60Hz US plug, 120VAC 60Hz US plug
BS-010213-DK	IQ OQ document
BS-010213-CK	PQ document

SPECIFICATIONS

Speed control range	1000 - 14500 rpm (increment 100 rpm)
Relative centrifugal force control range	50–12,400 × g
Digital time setting	15 s – 30 min (increment 15 s - 1 min)
Timer sound signal	+
Acceleration time up to 14,500 rpm	20 s
Slowdown time, not more	10 s
Display	LCD, 2 line
Safety: Rotor imbalance diagnostics: automatic stop, “IMBALANCE” warning	+
Overall dimensions (W×D×H)	200x240x125 mm
Weight	3.5 kg
Input current/power consumption	24 V, 2.5 A / 60 W
External power supply	Input AC 100–240 V 50/60 Hz, Output DC 24 V

ACCESSORIES

A-02
BS-010213-BK
adapter

Adapter 12 pieces for microtubes 0.2 ml

A-05
BS-010213-AK
adapter

Adapter 12 pieces for microtubes 0.5 ml

MSL-SC
BS-010213-EK
protection lid

Higher rotor lid to accommodate spin columns

EU Declaration of Conformity

Unit type	Rockers, shakers, rotators, vortexes
Models	**MR-1, MR-12;** **3D, Multi Bio 3D, PSU-10i, PSU-20i, MPS-1, PSU-2T;** **Bio RS-24, Multi Bio RS-24, Multi RS-60;** **V-1 plus, V-32, MSV-3500**
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. **LVS EN 61010-2-051:2015** Particular requirements for laboratory equipment for mixing and stirring.
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

Biosan SIA., Ratsupites 7, build. 2, Riga, LV-1067, Latvia,
Phone: +371 674 261 37, Fax: +371 674 281 01,
E-mail: marketing@biosan.lv, www.biosan.lv

Medical-Biological Research & Technologies

V-32, Multi-Vortex

Basic Plus Product Class

DESCRIPTION

Multi-Vortex **V-32** is intended for intensive stirring of bacterial and yeast cell, washing from the culture medium and extraction of metabolites and enzymes from cells and cell cultures.

It is different from V-1 by the possibility of mixing up to 32 tubes simultaneously.

Vortex is applicable for:

- Performing various DNA operations — deproteinisation of DNA/ protein complexes;
- Purification of low-molecular DNA/RNA fragments in PCR-diagnostic.

Multi-Vortex has two operation modes:

1. Continuous operation;
2. Impulse operation.

V-32 is supplied with a 32-socket universal platform for Eppendorf type tubes up to 1.5 ml (1.5/0.5/0.2 ml — 16/8/8 sockets) **PV-32** and **PL-1** platform for mixing single tube up to 50 ml.

An optional 6-socket platform **PV-6/10** for 10 ml tubes (max. tube diameter 15 mm) o**PV-48** for 48 - 0.2 ml microtubes can be supplied on request.

SPECIFICATIONS

Eccentric mixing principle	+
Speed control range	500-3000 RPM
Acceleration time	3 s
Maximum continuous operation time	24 h
Continuous / impulse operation	+
Maximum load	70 g
Orbit	2 mm
Overall dimensions (W×D×H)	120x180x100 mm
Weight	1.5 kg
Input current/power consumption	12 V, 320 mA / 3.8 W
External power supply	Input AC 100–240 V; 50/60 Hz; Output DC 12 V

CAT. NUMBER

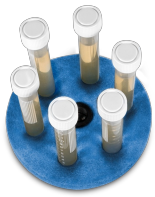
Including two platforms PV-32, PL-1	Including two platforms PV-32, PL-1
BS-010207-AAG	230VAC 50/60Hz Euro plug
BS-010207-AAK	230VAC 50/60Hz UK plug, 230VAC 50/60Hz AU plug, 100VAC 50/60Hz US plug, 120VAC 60Hz US plug
BS-010207-EK	IQ OQ document
BS-010207-FK	PQ document

ACCESSORIES

PV-32
BS-010207-CK
platform

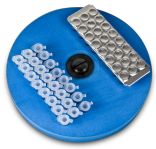
V-32 is supplied with a 32-socket universal platform for Eppendorf type tubes up to 1.5 ml (1.5/0.5/0.2 ml — 16/8/8 sockets) **PV-32** and **PL-1** platform for mixing single tube up ...

read more



PV-6/10
BS-010207-BK
platform

Platform for 6 × 10 ml tubes (max diameter 15 mm).



PV-48
BS-010207-GK
platform

Platform for 6-8 × 0.2 ml strips or 48 tubes of 0.2 ml.