

СПЕКТРОМЕТР ПРЯМОГО ОБНАРУЖЕНИЯ DIRECT DETECT



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Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

<https://millipore.nt-rt.ru> || <mailto:mer@nt-rt.ru>

Direct Detect[®] Spectrometer

Introduction

The Direct Detect[®] infrared (IR)-based quantification system is an innovative combination of software-controlled instrumentation and EMD Millipore Corporation's advanced membrane technology, optimized for biomolecule detection, quantification of proteins, and analysis of lipids/detergents. Biomolecules are applied directly to a card-based hydrophilic polytetrafluoroethylene (PTFE) membrane that is transparent in most of the infrared spectral region.

The Direct Detect[®] system measures amide bonds in protein chains, accurately quantifying an intrinsic component of every protein without relying on amino acid composition, dye binding properties, or redox potential. Protein concentrations from 0.25 to 5 mg/mL can accurately be determined from a minimal sample volume (2 μ L) without bio- or immuno-chemical staining. Sample analysis takes only minutes and in most cases can be performed directly from the buffered or native solution.

Quantification of lipids and detergents requires a user-defined standard curve. Unknown mixtures can be analyzed by determining the relative IR absorbance.

The system has been validated with proteins and cell lysates representative of those currently in use in research laboratories.

Safety Precautions

Review and understand the safety precautions below before installing and operating the Direct Detect[®] spectrometer.



WARNING

- To avoid danger of electric shock, do not install the instrument in an area with a high humidity level. Refer to Site Requirements in section 6.2.
- Do not touch the Ethernet cable or universal power adapter plugs with wet hands.
- To avoid potential shock hazard, choose the correct plug configuration and make sure that the power adapter is plugged securely into a properly grounded AC power outlet. Make sure that the connection between the cable and the instrument is secure.
- Always ensure that the power supply input voltage matches the voltage available in your location.
- Use only the power supplies that were supplied by EMD Millipore Corporation for use with the Direct Detect[®] system. Use of other power supplies may damage the system.
- Minimize power draw from other instruments on the same power circuit.
- Do not use with flammable or explosive liquids. Cards that have been spotted with samples in flammable solvents must be dried prior to insertion into the instrument.

Components Supplied

The Direct Detect® system includes the following components:



Figure 1. Components supplied

1A	Direct Detect® spectrometer
1B	Instrument power adapter with 4 power cord/plug configurations (EU, UK, US, Japan)
1C	Data cable (crossover, 10Base-T Ethernet with RJ45 connectors)
1D	Dell® Netbook computer with Direct Detect® Software installed
1E	Computer power adapter with world-wide plug adapter
1F	Netbook stand
1G	Direct Detect® Assay-free cards (package of 50)
1H	Direct Detect® spotting tray
	Desiccant pack replacement (1, not shown)
	Torx® TX20 screw driver for replacing the IR source (not shown)
	Direct Detect® Spectrometer Quick Start Card (not shown)

Specifications

General

Dimensions	22 cm wide x 30 cm deep x 15.2 cm high (including tray) (8.7 x 11.8 x 6.0 in.) NOTE: Overall height with Netbook computer opened will vary, but is typically less than 40.6 cm (16 in.).
Weight (approximate)	7 kg (15.4 lb)
Power consumption	Maximal: 100–240 VAC, 50–60 Hz (max 2 A)
Electronics	Class 1 laser product (contains 850 nm laser diode)
Environmental conditions	Operational temperature range: 18–35 °C (64–95 °F) Temperature variation: max. 1 °C/h and max. 2 °C/day Humidity (non-condensing): less than 35% (relative humidity) Humidity variation: less than 3%/hr Installation site: in a closed room, max. 2,000 m above sea level Installation overvoltage category: II Pollution degree: 2
Safety regulations	Complies with EN/IEC 61010-1/08.2002 (Safety requirements for electrical equipment for measurement, control and laboratory use)
EMI regulations	Complies with EN/IEC 61326/05.2004 (Electrical equipment for measurement, control and laboratory use – EMC requirements)

Performance

Spectral range	6,000–500 cm ⁻¹
Resolution	Better than 2 cm ⁻¹
Wave number accuracy	Better than 0.05 cm ⁻¹
Wave number reproducibility	Better than 0.01 cm ⁻¹
Photometric accuracy	0.1% T

Optics

Design	Sealed optics housing, convective desiccating
IR Source	Low voltage, air cooled, can be replaced (lifetime 44,000 operating hours)

Computer Specifications

Operating System	Microsoft® Windows® 7
Software Framework	Microsoft®.NET Framework 2.0
Screen Resolution	1,024 x 600 or greater
Ethernet Cable	Crossover, 10Base-T (10 or 10/100 MBit) with RJ45 connectors
Processor	Intel® Pentium® III, 800 MHz or greater
Random Access Memory (RAM)	2 GB
Graphics Card	XVGA, 256 Mb RAM, 32-bit color depth, Open GL, GDI+

Ordering Information

This section lists catalogue numbers for the Direct Detect® spectrometer and replacement parts.

Product Description	Cat. No.	Qty/Pk
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Direct Detect® Spectrometer

Direct Detect® Spectrometer (includes instrument with power adapter*, Dell® Netbook computer with power adapter*, Ethernet crossover cable, Netbook computer stand, 50-pack of Assay-free cards, spotting tray, spare desiccant bag, Torx® screw driver, Quick-Start Guide)	DDHW00010-WW	1
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* Power adapters are configured for multiple countries

Direct Detect® Spectrometer Replacement Parts/Accessories

Direct Detect® Assay-free Cards	Multiple colors	DDAC00010-4P	50 x 4
	Multiple colors	DDAC00010-8P	50 x 8
	Green	DDAC00010-GR	50
Spotting Tray		DDMISC0010-ST	5
Netbook Stand		DDMISC0010-NS	1
Direct Detect® IR Source**		DDSP00010-LA	1
Direct Detect® Desiccant Bag**		DDSP00010-DE	1

** Contact Technical Service to order
(see Technical Assistance section)



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