

Complete Biomarker Solutions

Immunoassay
Instruments and Services



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Biomarker Detection

is the key to the discovery and understanding of important biological processes and disease states.

We offer biomarker detection platforms covering nanogram to femtogram levels of detection. Our detection platforms are based on 2 different technologies:

- **Luminex® xMAP® Multiplexing Technology**
- **SMC® Ultrasensitive Technology**

We also offer ELISA plate readers and kits. Selecting the right platform for your biomarker detection is the first step in your protein research workflow. An ideal platform should allow you to detect and quantify the biomarker in complex biological matrices with reproducibility, precision, and ease.

Parameters to consider when selecting your biomarker detection platform include:

1. Sensitivity and assay dynamic range
2. Number of targets/analytes
3. Sample volume
4. Precision and reproducibility
5. Automation compatibility
6. Data analysis

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Luminex® xMAP® Instruments

Luminex® instruments are based on xMAP® (Multi-Analyte Profiling) technology that enables researchers to study up to 500 analytes from a single sample thus allowing them to save on sample volume, time, and reagents.

We offer 4 multiplexing instruments, covering the full range of multiplexing capabilities:

- xMAP® INTELLIFLEX®
- xMAP® INTELLIFLEX® DR-SE
- Luminex® 200™
- FLEXMAP 3D®

All Luminex® platforms are based on flow cytometry that integrates key xMAP® detection components, such as lasers, optics, advanced fluidics, and high-speed digital signal processors. All our MILLIPLEX® multiplex assays are compatible with any of the 4 Luminex® platforms listed to the left, and also the MAGPIX® instrument which has been discontinued.

xMAP® INTELLIFLEX® Systems



The xMAP® INTELLIFLEX® systems are the latest addition to the Luminex® family and have advanced features like an embedded PC with a touchscreen, dual reporter functionality (the DR-SE model), automation-friendly, and automated maintenance functions.

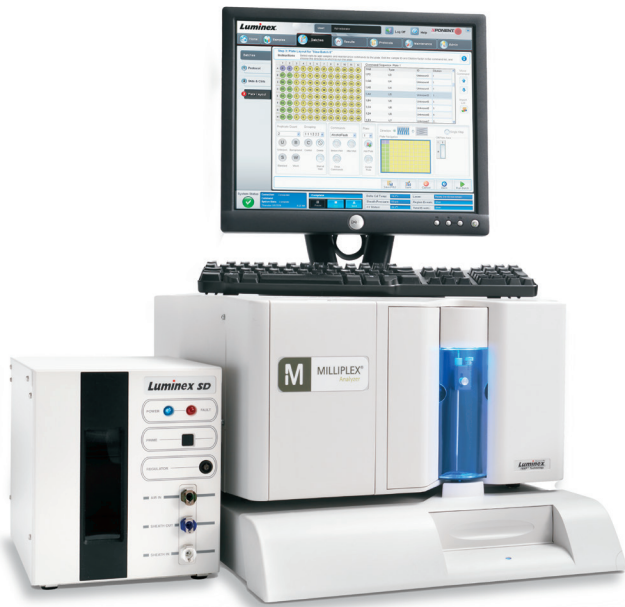
The design reduces the need for optical alignment and is smaller and lighter than other Luminex® readers.

The system runs both 96- and 384-well plates, combines low- and high-plex capabilities, offers quick time to reliable results, and has the ability to simultaneously acquire data for two parameters per analyte.

xMAP® INTELLIFLEX® Features:

- Widest dynamic range for MFI of any xMAP® platform ≥ 5.5 logs
- Compact footprint that features an embedded PC and a touchscreen user interface
- Easy-to-use software for optimizing workflows, gathering instrument performance insights, and exporting data into common analysis tools
- Open architecture design with the most extensive menu of MILLIPLEX® multiplex assays and custom assay solutions
- Second reporter channel on the DR-SE model

Luminex® 200™ System



The Luminex® 200™ system can multiplex up to 100 analytes in a single sample.

The Luminex® 200™ system provides a complete low- to mid-range multiplexing solution for rapid, accurate biomarker quantification.

Luminex® 200™ Features:

- Up to 100 analytes (80 on MagPlex® microspheres) per well of a 96-well microtiter plate in as little as 25 µL of sample
- User-friendly programming functions
- Bar code reader functionality
- Dynamic range of ≥ 3.5 logs

FLEXMAP 3D® System



The FLEXMAP 3D® system runs both 96- and 384-well plates and is capable of front-end automation and high-throughput applications.

The platform is capable of simultaneously measuring up to 500 analytes from a single small sample. Automated start-up, shutdown, and maintenance routines make the FLEXMAP 3D® platform easy to use and maintain.

FLEXMAP 3D® Features:

- Automated probe height adjustment
- Simplified routine maintenance operations
~ 30 mins daily startup and shut down
- Intuitive software interface
- High-throughput multiplexing
- Dynamic range of ≥ 4.5 logs



See how to compare these platforms at SigmaAldrich.com/luminex

SMC[®] Technology on the SMCxPRO[®] Platform

The SMCxPRO[®] platform allows for the detection of extremely low levels of biomarkers (down to femtogram/mL) and the monitoring of even small changes in protein concentrations associated with disease progression for research purposes.

It uses a laser to excite fluorescently-labeled detection antibodies as they pass through a small interrogation space where individual molecules are captured by an avalanche photodiode and recorded. This affordable, fast, and compact benchtop instrument provides ultra-high sensitivity protein detection to accelerate drug discovery and development.

SMC[®] technology achieves improved signal-to-noise ratios over traditional immunoassay technologies, thus providing quantification across a wide dynamic range.

SMCxPRO[®] Platform Specifications

Metric	Specifications
Slope	> 1.2 response/fM
Background	< 3 response
Limit of detection (LOD)	< 1 fM
Precision	< 10% CV*
Dynamic range	> 4 logs

*DE measurements from 30 fM calibrator, n=20



SMCxPRO[®] Instrument Features:

- High sensitivity (femtogram/mL) quantification
- Analysis in <1 hour
- Minimal bench space: 14" W x 16" H x 17.5" D
- LIMS compatible and 21CFR compliant
- Fluidics-free system

Read Plate:

- 384-well plate

Network/PC Requirement:

- Microsoft Windows[®] 10 Operating Systems
- A static IP address and an FTP server
- xPRO software included

Power Requirement:

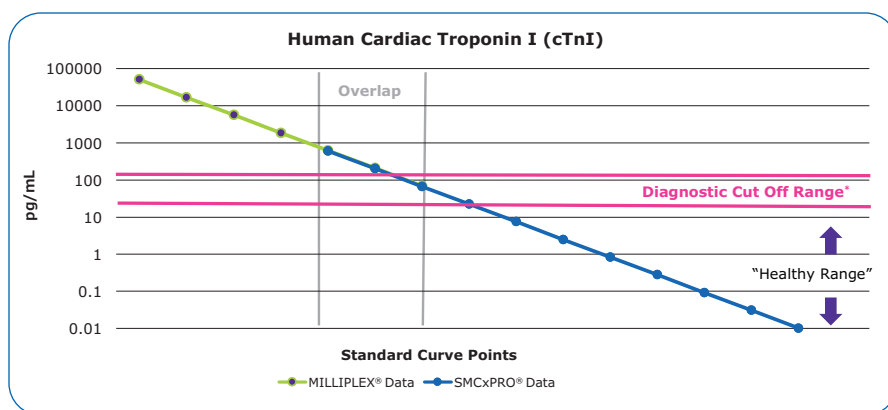
- U.S.: 115 VAC, 50-60 Hz (operating range 90-125 V)
- Int.: 230 VAC, 50-60 Hz (operating range 180-250 V)

Meeting Your Changing Needs with a High Sensitivity Option

When your work demands higher sensitivity, it's time to make the move to the SMCxPRO® platform. Our best-in-class MILLIPLEX® assays allow you to quickly and easily screen multiple markers and the SMCxPRO® platform allows you to take this even further, to the femtogram/mL level.

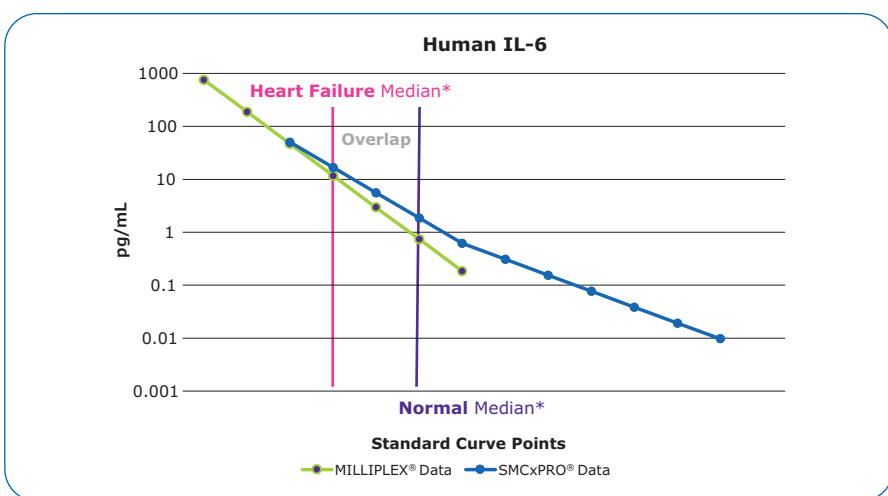
Taking the next step from MILLIPLEX® multiplex assays to the SMCxPRO® platform

With MILLIPLEX® multiplexing and the SMCxPRO® platform, you can now cover the complete quantitative measurement of disease states for research purposes. This improved sensitivity range allows for early recognition of marker changes which will ultimately improve diagnostic research. Graphs were constructed to demonstrate standard curve ranges of MILLIPLEX® and SMC® assays and their overlap.



A combination of the MILLIPLEX® Human cTnI (Cat. No. HCVD1MAG-67K) and SMC® Human cTnI (Cat. No. 03-0092-00) assays provide a 7 log range of detection. This allows for the exploration of samples both pre- and post-myocardial infarction.

* The Journal of the International Federation of Clinical Chemistry and Laboratory Medicine. Prof. Mauro Panteghini, MD, PhD <http://www.ifcc.org/ifccfiles/docs/1402062003014.pdf>.



Both the MILLIPLEX® Human IL-6 (Cat. No. HSTCMAG-28SK) and the SMC® Human IL-6 (Cat. No. 03-0089-01) assays provide detection and resolution of the cytokine within a study population. The combination of platforms allows for the detection and exploration of the biomarker on a multiplex platform, with detailed detection and resolution of the underlying changes in the marker by an ultrasensitive technology.

* As defined in a population of:

- Normal N = 125 40-65 year olds
- Heart Failure N = 32 age matched

"Reference range and short- and long-term biological variation of interleukin (IL)-6, IL-17A, and tissue necrosis factor-alpha using high sensitivity assays."**

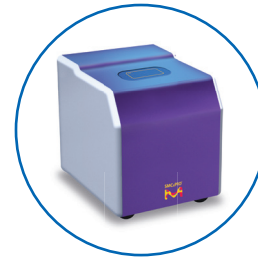
** Todd et al, Cytokine, 64, p 600-605, 2013.



Discover more about this platform at SigmaAldrich.com/smcxpro



View all our off-the-shelf SMC® kits at SigmaAldrich.com/smc



Instrument Comparison

Choose the immunoassay platform that best suits your research needs. The table below describes the specifications of the various instruments we offer.

Instruments	xMAP® INTELLIFLEX® DR-SE*	xMAP® INTELLIFLEX®	FLEXMAP 3D®	Luminex® 200™	SMCxPRO®
Cat. No.	INTELLIFLEX-DRSE	INTELLIFLEX-RUO	40-014	40-012	SMCXPRO
Optics Hardware	Lasers/APDs/PMTs	Lasers/APDs/PMTs	Lasers/APDs/PMTs	Lasers/APDs/PMTs	Lasers/APD
Technology	Flow-based	Flow-based	Flow-based	Flow-based	Scanning
Multiplexing	Up to 500	Up to 500	Up to 500	Up to 100 (80 on MagPlex® microspheres)	No
Dynamic Range	≥5.5 logs (RP1) ≥4.5 logs (RP2)	≥5.5 logs (RP1)	≥4.5 logs (RP1)	≥3.5 logs (RP1)	> 4 logs
Read Time	96-well in ~20 min 384-well in ~75 min	96-well in ~20 min 384-well in ~75 min	96-well in ~20 min 384-well in ~75 min	96-well in ~45 min	96-well in ~45 min
Applications	Protein/nucleic acid	Protein/nucleic acid	Protein/nucleic acid	Protein/nucleic acid	Protein/nucleic acid
Automation- Compatible Hardware	Front and side eject	Front eject only	Front eject only	Front eject only	No
Reporter Laser	532 nm (green) 405 nm (violet)	532 nm (green)	532 nm (green)	532 nm (green)	642 nm
IQ/OQ	Yes	Yes	Yes	Yes	Yes
21 CFR Compliance	Yes	Yes	Yes	Yes	Yes
Automation	Yes	Yes	Yes	Yes	Yes
Data Analysis	Belysa® software	Belysa® software	xPONENT® basic + Belysa® software	xPONENT® basic + Belysa® software	xPRO software + Belysa® software
Plate Format	96-well and 384-well	96-well and 384-well	96-well and 384-well	96-well	384-well
Footprint (Linear Bench Space, including PC)	58.4 cm x 61 cm x 76.2 cm	58.4 cm x 61 cm x 76.2 cm	110 cm x 62 cm x 63 cm	115 cm x 60 cm x 50 cm	406.4 mm x 355.6 mm x 444.5 mm
Weight	54.4 kg (120 lbs)	54.4 kg (120 lbs)	77.1 kg (170 lbs)	49 kg (113 lbs)	22.7 kg (50 lbs)

*DR-SE = dual reporter side eject

Plate Readers

To complete our immunoassay platform offerings, we also offer ELISA plate readers.

Cat. No.	Description
40-006	Bio-Tek® 800™ TS Absorbance Reader

Plate Washers

Plate washers are part of the assay workflow and play an important role in ensuring data reproducibility and consistency.

Cat. No.	Description
40-092AB	BioTek® 405™ LS Microplate Washer 96-Well Washer
40-301	BioTek® 50™ TS Microplate Washer
40-999	BioTek® MultiFlo™ FX Multi-Mode Dispenser
40-285	Handheld Magnetic Bead Washer
95-0004-06	BioTek® 405™ TSUV Magnetic 96-Well Plate Washer for SMC® and MILLIPLEX® Assays

We offer 4 different washers covering MILLIPLEX®, SMC®, and ELISA washing applications. In addition to this, we also offer one washer solution for both SMC® and MILLIPLEX® plate washing applications.

Instrument Service Plans

Service is an integral part of instrument support. To keep your instrument up and running we offer service plans for all our instruments.

Luminex® Instrument 1-Year Warranty Plans

Luminex® System	Cat. No.	Unlimited Remote Support	Unlimited Emergency Repair	1 (PM)	2 (PM)
FLEXMAP 3D®, Bronze	SVCLUMBRZFM3D	•		•	
FLEXMAP 3D®, Silver	SVCLUMSLVFM3D	•	•	•	
FLEXMAP 3D®, Gold	SVCLUMGLDFM3D	•	•	•	
FLEXMAP 3D®, Gold 360*	SVCLUMGLD360FM3D	•	•	•	
FLEXMAP 3D®, Platinum	SVCLUMPLTFM3D	•	•		•
FLEXMAP 3D®, Platinum 360*	SVCLUMPLT360FM3D	•	•		•
Luminex® 200™, Bronze	SVCLUMBRZ	•		•	
Luminex® 200™, Silver	SVCLUMSLV	•	•	•	
Luminex® 200™, Gold	SVCLUMGLD	•	•	•	
Luminex® 200™, Gold 360*	SVCLUMGLD360	•	•	•	
Luminex® 200™, Platinum	SVCLUMPLT	•	•		•
Luminex® 200™, Platinum 360*	SVCLUMPLT360	•	•		•
MAGPIX®, Standard	SVCLUMGLDMAGPIX	•	•		
MAGPIX®, Gold	SVCMMAGPIXGOLDPM	•	•	•	
MAGPIX®, Platinum	SVCMMAGPIXPLATPM	•	•		•
INTELLIFLEX® RUO, Gold	IFLEX-GOLD	•	•	•	
INTELLIFLEX® RUO, Platinum	IFLEX-PLATINUM	•	•		•
INTELLIFLEX® DR-SE, Gold	IFLEX-DRSE-GOLD	•	•	•	
INTELLIFLEX® DR-SE, Platinum	IFLEX-DRSE-PLAT	•	•		•

All the above service plans are offered/sellable only at point of instrument sale.

• Onsite 1-business day response • Onsite 2-business days response

1 (PM) = includes 1 preventive maintenance; 2 (PM) = includes 2 preventive maintenances

* 360 service includes on-site support for assays developed by Luminex® technology only

SMCxPRO® Service Support Programs

The SMCxPRO® system provides a highly sensitive, affordable, and easy-to-use protein quantification solution for your research. This instrument is backed by expert technical support and advanced processes to ensure smooth operation, reliability, and consistency.

Get the most out of your SMCxPRO® platform. Choose one of our best-in-class service plans and be confident that your system is always in excellent condition and able to meet your needs.

We offer a wide range of service agreements and preventative maintenance plans that are supported by highly-trained service professionals and technical support representatives.

As part of our complete solution, our service agreements are structured, yet flexible, allowing you to select the level of support that you prefer.

Three Service Plans to Choose From

All Include One Year Onsite Service

	Total Service Plan	Advanced Service Plan	Essential Service Plan
	Benefits	Benefits	Benefits
Service Visits	Unlimited	1 Floating	-
Coverage	All Parts	-	-
Preventative Maintenance Visit	One Visit	One Visit	One Visit
Preventative Maintenance Kit	One Kit	One Kit	One Kit
Calibrator	One 5-Set	One 5-Set	One 5-Set

Advantages of Maintaining a Service Plan

- Best-in-class service support maintains optimal performance, enabling high-quality data
- Planned instrument maintenance reduces overall service costs
- Service plans are the best protection for your instrument and its long-term operation

Product Warranty and Limitation of Liability

The applicable warranty and limitation of liability for the products listed in this publication may be found at SigmaAldrich.com within the "Conditions of Sale" applicable to your purchase transaction.



Instrument IQ/OQ and Software Modules

We offer IQ/OQ, OQ, and software modules to support your regulatory and experiment requirements.

Luminex® Instruments

Cat. No.	Description
XPON21CFR	xPONENT® 21 CFR Part 11 Module
XPONAUTO	xPONENT® Automation Module
XPONLIS	xPONENT® LIS/LIMS Module
XPONSECURITY	xPONENT® Basic Security Module
VPLXXPONIQQ	Luminex® 200™ IQ/OQ
VPFM3DXPONIQQ	FLEXMAP 3D® IQ/OQ
XPON-SEATS	Extra Seat Licenses

Cat. No.	Description
VP-LX-XPON-OQ	Luminex® 200™ OQ
VP-FM3D-XPON-OQ	FLEXMAP 3D® OQ
VP-MAGPIX-4.2	IQ/OQ Protocol for MAGPIX® xPON4.2
IFLEX-IQQ	INTELLIFLEX® IQ and OQ
IFLEX-OQ	INTELLIFLEX® OQ
IFX-CFR-RUO	INTELLIFLEX® 21 CFR Module
IFX-AUTO-RUO	INTELLIFLEX® Automation Module

SMCxPRO® Instrument and Installation Services

Cat. No.	Description
95-0100-00	SMCxPRO® System
96-2011-00	Standard SMCxPRO® Installation
96-2012-00	SMCxPRO® IQ/OQ Installation
96-2013-00	SMCxPRO® Service
96-2020-00	PQ Kit for SMCxPRO® System

Cat. No.	Description
96-2022-00	SMCxPRO® Training—System/Software Only - 1 day
96-2023-00	SMCxPRO® Advanced Training—System/Software and IL-6 Assay - 2 days
96-2026-00	Shipping, Handling, & Logistics Fee

Ancillary Reagents

Calibration and Verification Kits

Instrument	Calibration Kit Cat. No.	Verification Kit Cat. No.
Luminex® 200™	LX2R-CAL-K25	LX2R-PVER-K25
FLEXMAP 3D®	F3D-CAL-K25	F3D-PVER-K25
xMAP® INTELLIFLEX®	IFX-CAL-K20	IFX-PVER-K20
MAGPIX®	MPX-CAL-K25	MPX-PVER-K25
SMCxPRO®	02-1001-00 (5 set calibrators)	NA
SMCxPRO®	02-0046-02 (20 set calibrators)	NA

Fluidics for Luminex® Instruments

Cat. No.	Description
40-50021	xMAP® Sheath Fluid PLUS, 20L, RUO
40-50030	MAGPIX® Drive Fluid PLUS, 4PK, RUO
40-50023	xMAP® Sheath Concentrate PLUS, RUO



Learn more about our immunoassay platforms at SigmaAldrich.com/immunoassays



Data Analysis

Belysa® Immunoassay Curve Fitting Software

Whether it's Luminex® multiplex assays like MILLIPLEX® assays, SMC® kits, or ELISAs, Belysa® Immunoassay Curve Fitting Software is designed to give you confidence in your data.

Our Belysa® analysis software provides curve fitting capabilities with .csv output files from the Luminex® xMAP® platforms as well as the SMCxPRO® ultrasensitive analyzer. Designed using current methods and principles, the Belysa® software provides an easy-to-use environment to fit your data appropriately based on the individual standard curves within a multiplexed immunoassay. The software further provides indicators of data hygiene to enhance your experimental integrity and reproducibility.

Together the features of this package provide a user-friendly tool for data evaluation before using it to model a biological outcome.



Find out more at
SigmaAldrich.com/belysa

Belysa® Analysis Software Key Features

- Curve fit optimization, including 4pl, 5pl, Linear, Cubic Spline, and Competitive
- Single and multi-analyte views
- Rule-based data auto-flagging
- Standard curve comparison tool:
 - Relative potency analysis for multiple compare curves
 - Parallelism value for comparing the statistical similarities of the curves
- Modern look and feel
- User flexibility with a physical license key that opens any copy
- Compatible with Windows and macOS

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We have built a unique collection of life science brands with unrivalled experience in supporting your scientific advancements.

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BioReliance®

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