



## Cardiac Assessment Controls

A critical element of reliable cardiac testing



## Choose the products best suited for your cardiac assessment needs

Each year, 17.7 million people on average lose their lives to Cardiovascular Disease (CVD). This accounts for nearly 31% of all deaths globally, making CVD the world's leading cause of death. Of these, 80% are due to heart attack or stroke with half of the victims dying before they reach the hospital.<sup>1</sup>

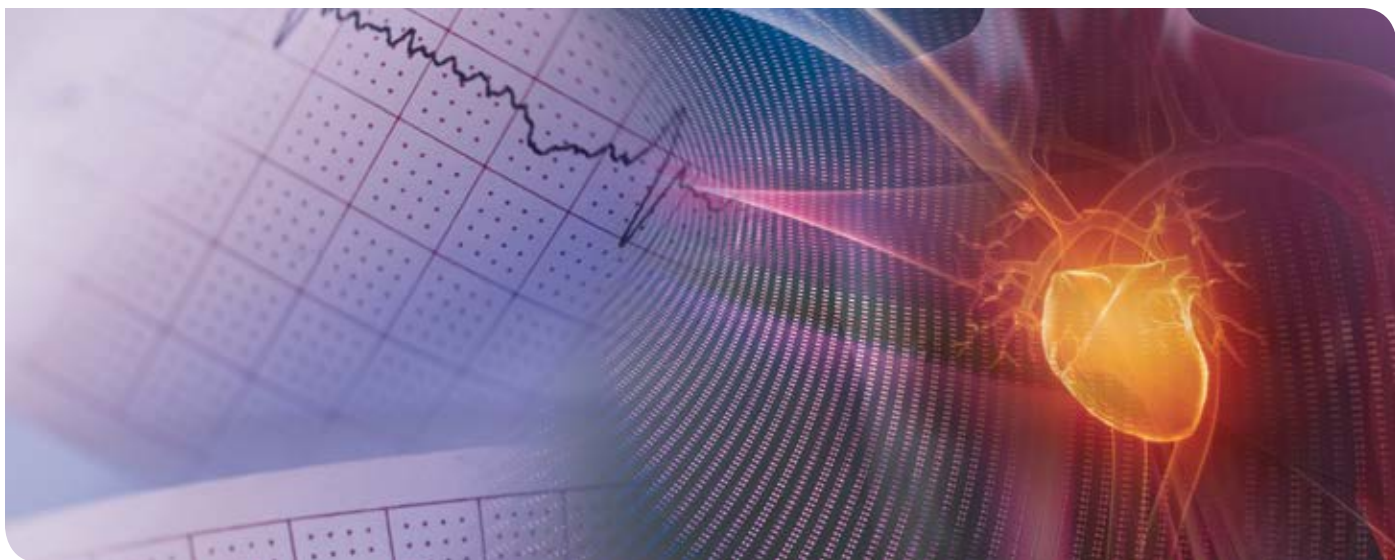
When a patient experiences chest pain, critical treatment decisions require timely detection and diagnosis. In turn, diagnosis often relies on an accurate assessment of the correct cardiac markers, which carry significant importance for both patient and care provider in determining the correct course of treatment.

Because so much is at stake, a one-size-fits-all control may not sufficiently monitor performance where the laboratory needs it most. This makes it critical for laboratories to choose quality control products targeted at medical decision levels appropriate for the cardiac markers tested.



1. "World Heart Day 2017." World Health Organization. Accessed November 27, 2017. [http://www.who.int/cardiovascular\\_diseases/world-heart-day-2017/en/](http://www.who.int/cardiovascular_diseases/world-heart-day-2017/en/).





## Full cardiac panel with Troponin, optimized for your assay

Available in different configurations to fit your laboratory workflow

### Liquichek Cardiac Markers Plus Control LT

A comprehensive, liquid, human serum based cardiac assessment control designed to monitor assay precision around the clinically significant 99th percentile upper reference limit (URL) for key analytes.

Running two levels of control materials may meet minimum regulatory requirements, but may not adequately provide control across the analytical measuring range (AMR). Liquichek Cardiac Markers Plus Control LT provides options to monitor a wide range of assays across the AMR.



#### 3 mL Fill Size

- Choice of four low Troponin I levels (1, 1A, 1B and 1C)
- Includes values for NT-proBNP and hs-CRP
- Level Low offers lower target values for all analytes (available only in 3 mL fill size)
- 3 year shelf life at -20°C to -70°C
- 20 day open-vial stability at 2–8°C for most analytes



#### 2.5 mL Fill Size

- Value assigned for the Siemens Dimension Vista®
- Store refrigerated on-board the Dimension Vista® instrument
- 2D barcode for quick and easy product insert and vial label scanning
- 3 year shelf life at -20°C to -50°C
- 10 day open-vial (punctured) stability for all analytes when stored at 2-8°C

#### Analytes

BNP\*\*  
CK (Total)

CK-MB Isoenzyme  
CRP

Digitoxin  
Homocysteine\*

Myoglobin  
NT-proBNP

Troponin I  
Troponin T\*\*

\*No claim is made for expected values or stability.

\*\*Not claimed in 2.5 mL fill size.

For specific analyte, open-vial stability, methods, mean values and ranges, refer to the package inserts of currently available lots at [myinserts.com](http://myinserts.com).



## Deciphering the variation of Troponin testing

### Challenging the 99th percentile upper reference limit for high sensitivity Troponin assays

Quality control of Troponin I (TnI) and Troponin T (TnT) at low levels is critical. Patient results with at least one value above the 99th percentile upper reference limit (URL), in addition to other criteria, designate myocardial infarction.<sup>2</sup> However, results from Troponin test methods vary. Troponin assays have wide variation in lower detection limits, upper reference limits, diagnostic points, assay imprecision (CV), and specimen matrices. Because of this variation, and because physicians rely on Troponin results, it's important that control materials monitor precision at critical medical decision levels.

### Liquichek Cardiac Troponins Control

A dedicated Troponins control designed to meet the quality control demands of high-sensitivity or next generation assays for major analyzer systems.

- Values closer to medical decision levels
- Convenience of a liquid control
- 18 month shelf life at -20°C to -70°C
- Open-vial stability at 2-8°C
  - 14 days for Troponin I
  - 25 days for Troponin T

#### Analytes

Troponin I  
Troponin T

2. Joint ESC/AACF/AHA/WHF Task Force for the Universal Definition of Myocardial Infarction. Third universal definition of myocardial infarction. European Heart Journal 2012; 33: 2551-2567. Available online at: [www.escardio.org/guidelines](http://www.escardio.org/guidelines).

For specific analyte, open-vial stability, methods, mean values and ranges, refer to the package inserts of currently available lots at [myeinserts.com](http://myeinserts.com)



## Quality control for additional cardiac markers

### The complete picture of a cardiac patient's clinical status requires multiple analytes

Elevated concentrations of certain cardiac biomarkers such as D-dimer and Homocysteine can indicate an increased risk for CVD or the presence of other health conditions with similar symptoms. These single analyte controls also reduce consumption of multi-analyte controls, and may improve laboratory efficiency because these analytes are often measured on separate platforms.

#### Liquichek D-dimer Control

Four level control monitoring assay precision across the critical values used in diagnosis of thrombotic events. Assayed for major coagulation and chemistry platforms.

- Liquid, human plasma based
- 3 year shelf life at -20°C to -70°C
- 15 day open-vial stability at 2-8°C

#### POCT Methods Listed

|           | Target Value         |
|-----------|----------------------|
|           | D-dimer ng/mL (FEU)* |
| Level Low | 250                  |
| Level 1   | 550                  |
| Level 2   | 1600                 |
| Level 3   | 3200                 |

\*Fibrinogen Equivalent Units (FEU) = twice the mass of the D-DU (D-dimer units).

The values listed are approximate targets. The actual observed values will vary depending upon lot number, analyzer, reagent, method, and calibrator.

#### Liquichek Homocysteine Control

A single analyte control designed to monitor Homocysteine precision across a wide range of target values.

- Liquid, human serum based
- 3 year shelf life at -20°C to -70°C
- 30 day open-vial stability at 2-8°C
- Includes values in all three levels for automated immunoassays

|         | Target Value          |
|---------|-----------------------|
|         | Homocysteine (µmol/L) |
| Level 1 | 6.5                   |
| Level 2 | 12.0                  |
| Level 3 | 28                    |

The values listed are approximate targets. The actual observed values will vary depending upon lot number, analyzer, reagent, method, and calibrator.





## Liquichek CK/LD Isoenzyme Control

- Monitors precision of traditional and electrophoretic methods
- Liquid, human serum based
- 2 year shelf life at -20°C to -70°C
- 10 day open-vial stability at 2–8°C

### Analytes

|                    |                 |                    |                         |
|--------------------|-----------------|--------------------|-------------------------|
| Albumin            | CK-MB Isoenzyme | LD Electrophoresis | Protein (Total)         |
| CK (Total)         | Globulin        | LDH                | Protein Electrophoresis |
| CK Electrophoresis |                 |                    |                         |

## Liquichek Cardiac Markers Plus Control

- Monitors precision of Troponin I and T assays at higher levels
- Includes BNP and NT-proBNP
- Values provided for hs-CRP
- Liquid, human serum based
- 3 year shelf life at -20°C to -70°C
- 20 day open-vial stability at 2–8°C for most analytes

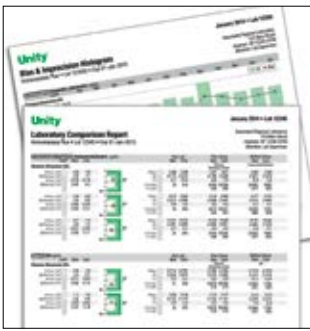
### POCT Methods Listed

### Analytes

|                 |               |           |            |
|-----------------|---------------|-----------|------------|
| BNP             | CRP           | Myoglobin | Troponin I |
| CK (Total)      | Digitoxin     | NT-proBNP | Troponin T |
| CK-MB Isoenzyme | Homocysteine* |           |            |

\*No claim is made for expected values or stability.

For specific analyte, open-vial stability, methods, mean values and ranges, refer to the package inserts of currently available lots at [myinserts.com](http://myinserts.com)



## Unity QC Data Management Solutions

**Bio-Rad Cardiac Assessment Controls are part of the Unity QC program with its industry-leading features for benchmarking laboratory performance**

- Benefit from peer data generated from more than 50,000 instruments worldwide
- Utilize real-time access to peer group comparisons to help troubleshooting
- Consolidate your entire laboratory into one system
- Facilitate run-time decisions with optimized Westgard rules
- Ease compliance with ISO 15189 using simple tools to review rule violations and document corrective actions
- Define your own quality requirements and track key quality performance indicators

You can consolidate your entire laboratory into one QC system through our Unity Program. This sophisticated software includes best-in-class tools to support releasing results, benchmarking laboratory performance, and designing your QC system.

## Unity Software Solutions

Contact your local sales representative for more information about our range of QC Data Management Solutions



### Unity Real Time

**Expert QC Data Management Solution for Desktop or Online Users**

- Facilitate CLIA and ISO 15189 compliance
- Improve real-time bench and supervisor QC data review
- Implement best QC rules when used with Westgard Advisor™
- Run validation with comprehensive audit trails
- Advanced charts and reports for data analysis
- Reduce non-essential retests with Analytical Goal options
- Upload QC data points from an LIS, middleware or instrument (optional)
- RiLiBÄK Advisor™ module available to comply with German regulations



### Bio-Rad Mission: Control

**Take the guesswork out of your QC strategy**

Bio-Rad Mission: Control is the first objective risk management solution for quality control in laboratories. This intuitive interface allows users to focus on patient safety by assessing the risk of reporting incorrect patient results in their laboratory.

**Bio-Rad Mission: Control allows you to:**

- Determine your laboratory's Risk Management Index (RMI)
- Evaluate your test method performance based on your QC results
- Quantify the likelihood and severity of reporting incorrect patient results
- Assess how much you can lower your risk, based on instrument performance
- Create a QC Plan by confidently selecting rules and frequency that fit your risk tolerance

For more information, visit  
[www.qcnet.com/missioncontrol](http://www.qcnet.com/missioncontrol)

## Ordering Information

| Cat #                                            | Description                                                            | Cat #                                         | Description                                                 |
|--------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|
| <b>Liquichek Cardiac Markers Plus Control LT</b> |                                                                        | <b>Liquichek D-dimer Control</b>              |                                                             |
| 146                                              | Level 1 . . . . .6 x 3 mL                                              | 27100                                         | Level Low . . . . .6 x 1 mL                                 |
| 147                                              | Level 2 . . . . .6 x 3 mL                                              | 27101                                         | Level 1 . . . . .6 x 1 mL                                   |
| 148                                              | Level 3 . . . . .6 x 3 mL                                              | 27102                                         | Level 2 . . . . .6 x 1 mL                                   |
| 149                                              | Level Low . . . . .6 x 3 mL                                            | 27103                                         | Level 3 . . . . .6 x 1 mL                                   |
| 146X                                             | Level 1 MiniPak . . . . .1 x 3 mL                                      | 27102X                                        | Four Level MiniPak (1 of each level) . . . . .4 x 1 mL      |
| 147X                                             | Level 2 MiniPak . . . . .1 x 3 mL                                      | <b>Liquichek Homocysteine Control</b>         |                                                             |
| 148X                                             | Level 3 MiniPak . . . . .1 x 3 mL                                      | 287                                           | Level 1 . . . . .6 x 1 mL                                   |
| 149X                                             | Level Low MiniPak . . . . .1 x 3 mL                                    | 288                                           | Level 2 . . . . .6 x 1 mL                                   |
| 27104                                            | Level 1A . . . . .6 x 3 mL                                             | 289                                           | Level 3 . . . . .6 x 1 mL                                   |
| 27105                                            | Level 1B . . . . .6 x 3 mL                                             | 288X                                          | Trilevel MiniPak (1 of each level) . . . . .3 x 1 mL        |
| 27106                                            | Level 1C . . . . .6 x 3 mL                                             | <b>Liquichek CK/LD Isoenzyme Control</b>      |                                                             |
| 27104X                                           | Level 1A MiniPak . . . . .1 x 3 mL                                     | 671                                           | Level 1 . . . . .6 x 1 mL                                   |
| 27105X                                           | Level 1B MiniPak . . . . .1 x 3 mL                                     | 672                                           | Level 2 . . . . .6 x 1 mL                                   |
| 27106X                                           | Level 1C MiniPak . . . . .1 x 3 mL                                     | 670X                                          | Bilevel MiniPak (1 of each level) . . . . .2 x 1 mL         |
| 297                                              | Level 1C/Vista® vials . . . . .6 x 2.5 mL                              | <b>Liquichek Cardiac Markers Plus Control</b> |                                                             |
| 298                                              | Level 2/Vista® vials . . . . .6 x 2.5 mL                               | 180                                           | Trilevel (2 of each level) . . . . .6 x 3 mL                |
| 299                                              | Level 3/Vista® vials . . . . .6 x 2.5 mL                               | 181                                           | Level 1 . . . . .6 x 3 mL                                   |
| 298X                                             | Trilevel MiniPak<br>(1 of each level)/Vista® vials . . . . .3 x 2.5 mL | 182                                           | Level 2 . . . . .6 x 3 mL                                   |
| <b>Liquichek Cardiac Troponins Control</b>       |                                                                        | 183                                           | Level 3 . . . . .6 x 3 mL                                   |
| 12001084                                         | Level 1 . . . . .6 x 3 mL                                              | 180X                                          | Trilevel MiniPak (1 of each level) . . . . .3 x 3 mL        |
| 12006239                                         | Level 2 . . . . .6 x 3 mL                                              | <b>Unity Real Time</b>                        |                                                             |
| 12006369                                         | Level 3 . . . . .6 x 3 mL                                              | 804-1                                         | Unity Real Time. . . . .Annual subscription                 |
| 12001085                                         | Level 1 MiniPak . . . . .1 x 3 mL                                      | <b>Bio-Rad Mission: Control</b>               |                                                             |
| 12006370                                         | Level 2 MiniPak . . . . .1 x 3 mL                                      | 1100002                                       | Bio-Rad Mission: Control . . . . .Annual Subscription       |
| 12006371                                         | Level 3 MiniPak . . . . .1 x 3 mL                                      | 1100005                                       | Bio-Rad Mission: Control . . .Subscription & Service Bundle |



### EQAS

An independent, external assessment of performance in comparison to your peers.



### Independent QC

Ongoing, proactive, unbiased daily QC that helps identify errors as they occur or begin to trend.



### Unity

QC Data Management tools that help you create a strategy to reduce risk and streamline QC workflow.



**Bio-Rad  
Laboratories, Inc.**

For further information, please contact the Bio-Rad office nearest you or visit our website at [www.bio-rad.com/cardiaccontrols](http://www.bio-rad.com/cardiaccontrols)

Clinical  
Diagnostics Group

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