

**cobas<sup>®</sup> pro integrated solutions**  
*Simplicity meets Excellence*



# Introducing cobas® pro integrated solutions

*Simplicity meets Excellence*



*Analytical units  
can be flexibly  
combined to fulfil your  
individual needs.*

- 01 Sample supply unit**  
Up to **1,000** samples per hour processing capacity  
Up to **300** samples direct loading  
Up to **300** samples direct unloading  
or bi-directional connectivity to lab automation
- 02 ISE analytical unit**  
Up to **900** tests per hour
- 03 cobas c 503 analytical unit**  
Up to **1,000** tests per hour  
**60** reagent positions
- 04 cobas e 801 analytical unit**  
Up to **300** tests per hour  
**48** reagent positions



**Your time is precious**  
*We help you use it wisely*

*Get answers fast with short and  
predictable turnaround times*

Boost your efficiency with fast analytical units, intelligent sample routing, and short assay incubation times. Empower your physicians to take action faster, with best-in-class 9 minutes STAT and 18 minutes routine immunochemistry assays<sup>1,2</sup>.





*Simplify your routine  
with minimal operator  
intervention*



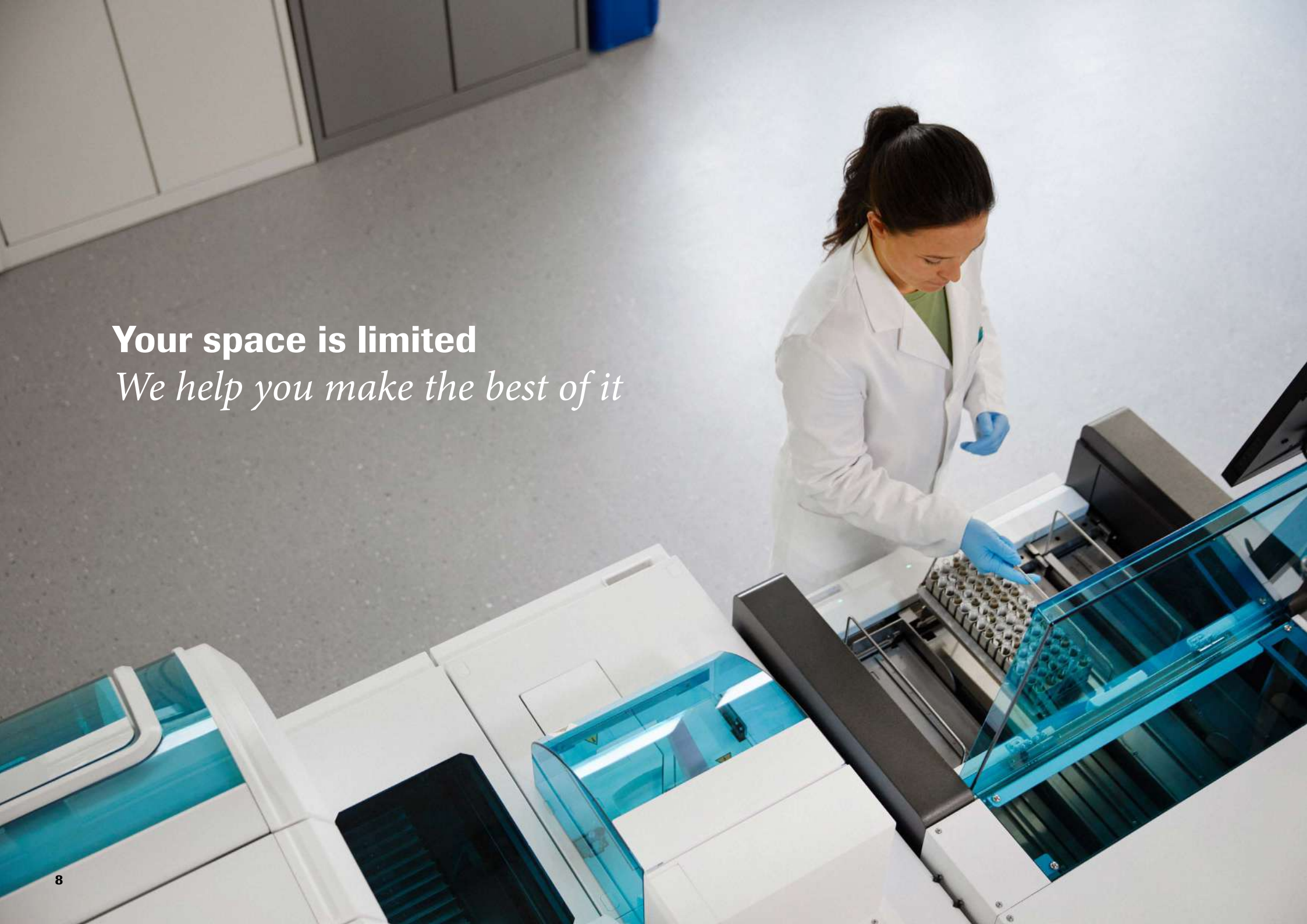
#### **Free up staff time with reduced maintenance efforts**

With **cobas® pro** integrated solutions, every effort has been made to reduce maintenance tasks to a minimum. The new and smart concept of self-operating maintenance executes maintenance tasks automatically in the background and reduces the manual burden of daily maintenance to zero for **cobas c** 503 analytical unit, and to only five minutes for **cobas e** 801 analytical unit.

#### **Ensure non-stop operation with continuous loading**

##### **Save time and costs with cobas AutoCal**

The new **cobas** AutoCal is a revolution in calibration. With **cobas** AutoCal, new reagent lots are calibrated automatically, without the need for manual calibration.



**Your space is limited**  
*We help you make the best of it*

*Use your space intelligently  
with cobas® green packs*

**More tests per pack**

Up to 3,300 tests per **cobas c** pack green allow for long walk-away times and less loading, ordering and handling events for reagents.

**Our most advanced reagent carriers in clinical chemistry and immunochemistry**

Closed onboard, more tests per pack. Preparation-free. From the fridge to the analyzer, without any preparation. This is as easy as it can get.



**Best-in-class onboard stability<sup>2,3</sup>**

With up to 6 months of onboard stability for the new **cobas c** pack green, and up to 4 months of onboard stability for the **cobas e** pack green.

- Consolidate low- and high-throughput testing
- Bring low volume send out testing in-house
- Minimize reagent waste

*Maximize reagent  
utilization with industry's  
longest onboard stability<sup>2,3</sup>*

*Increase revenue through  
expanded testing services*



**Your team is pushed to their limits**  
*We help them focus on the tasks that matter*



*Reduce tedious  
manual work with  
ready to use reagents*



*Enable error-free handling  
with RFID\*-tagged  
reagents and consumables*

\*Radio-frequency identification.

*Enhance sample  
integrity with  
cobas® SonicWash*

**Unprecedented cleanliness of the  
sample probe with cobas® SonicWash.**

SonicWash cleans the sample probe with ultrasound technology so thoroughly that only a few parts per billion are detectable<sup>4</sup>. In addition, SonicWash eliminates the daily maintenance of the sample probe and reduces clot events.

*Enable peace of mind  
for your team with reliable  
and safe solutions*

**cobas® pro** integrated solutions is designed to achieve more than 300 days between unplanned repair visits. This means less unplanned interruptions and smooth workflows. Every day.

*Reduce tedious manual  
work through integration  
into lab automation*



**Your future is unpredictable**  
*We help you succeed through  
continuous access to innovations*



**HITACHI**

WAKEUP TIME

DAY

TIME

OPERATION POWER

*Partner with a company  
that has a proven track  
record of pioneering lab  
solutions and sustainable  
development*



*Standardize your operations  
with cobas® integrated solutions*



*Make a difference when every drop of  
blood counts with industry's smallest  
sample volumes<sup>3</sup>*



*Support better outcomes by  
delivering greater medical value*

cobas<sup>®</sup> pro integrated solutions

General technical specifications

| Dimensions and weights               | Width        | Depth        | Height       | Units      | Weight            |
|--------------------------------------|--------------|--------------|--------------|------------|-------------------|
| Sample unit (SSU), including monitor | 1320<br>52,0 | 1185<br>46,7 | 1430<br>56,3 | mm<br>inch | 250 kg<br>551 lb  |
| ISE                                  | 450<br>17,7  | 1150<br>45,3 | 1160<br>45,7 | mm<br>inch | 170 kg<br>375 lb  |
| cobas c 503 (incl. SB and SBL)       | 1500<br>59,1 | 1140<br>44,9 | 1355<br>53,3 | mm<br>inch | 790 kg<br>1742 lb |
| cobas e 801 (incl. SB and SBL)       | 1500<br>59,1 | 1140<br>44,9 | 1350<br>53,3 | mm<br>inch | 780 kg<br>1610 lb |

| Specifications of the electrical power supply | cobas <sup>®</sup> pro integrated solutions                                                                                                |  |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|
| Distance to the instrument                    | ≤ 5 m<br>≤ 16 feet                                                                                                                         |  |
| Output                                        | 200 / 208 / 220 / 230 / 240 V<br>50 / 60 Hz                                                                                                |  |
| Max. power fluctuation                        | < 10 %                                                                                                                                     |  |
| Power consumption                             | Sample Supply Unit and Sample Buffers: 0.65 kVA   ISE: 0.4 kVA   <b>cobas c</b> 503: 2.4 kVA   <b>cobas e</b> 801: 2.8 kVA<br>Single Phase |  |

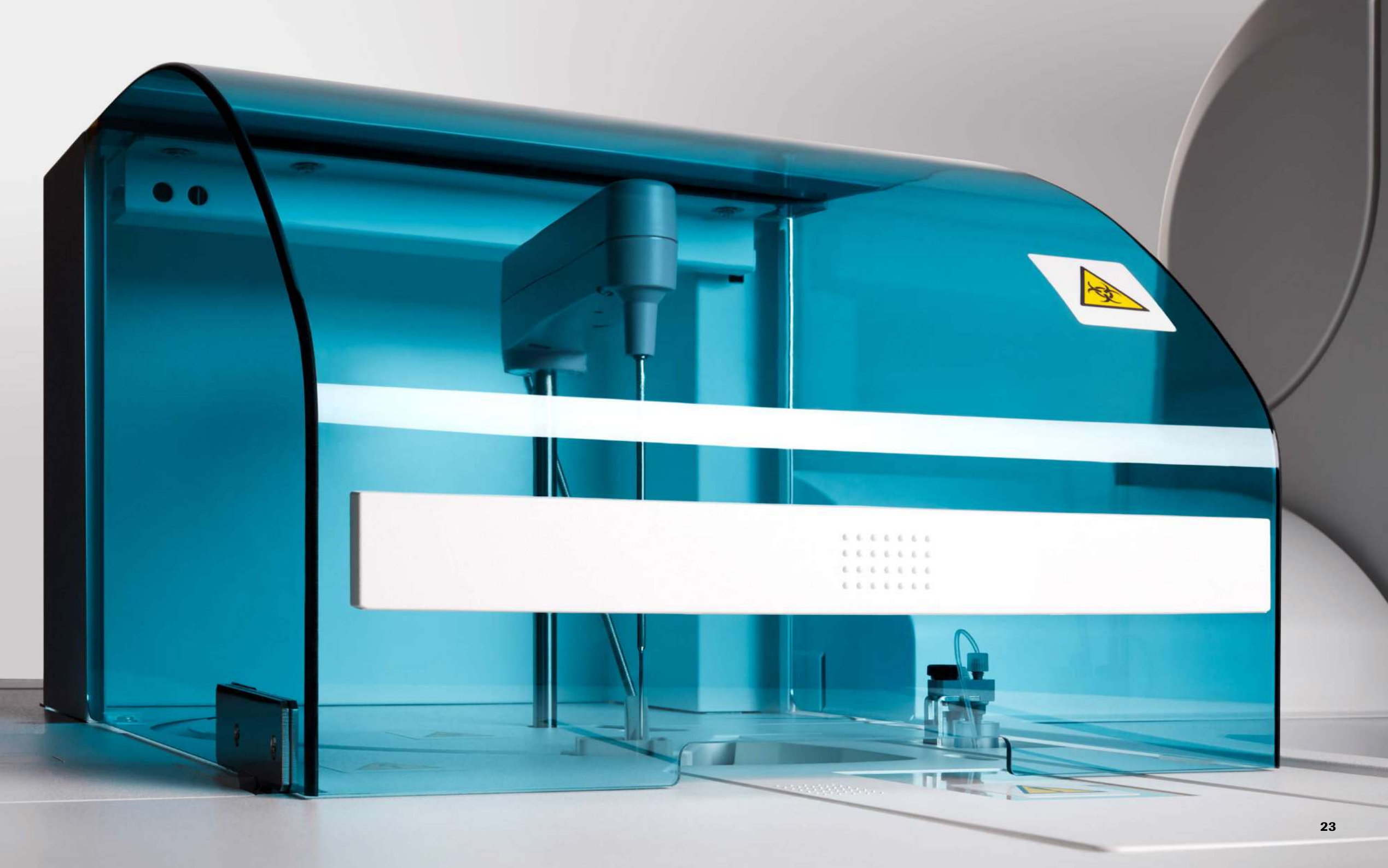
| List of concentrated liquid waste volumes | cobas c 503                                                                       | cobas e 801                                                                       |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Max. liquid waste volumes                 | Concentrated liquid waste volume: < 2 L/h<br>Normal liquid waste volume: < 30 L/h | Concentrated liquid waste volume: < 7 L/h<br>Normal liquid waste volume: < 22 L/h |

|                                       | cobas c 503                     | cobas e 801                     |
|---------------------------------------|---------------------------------|---------------------------------|
| Conductivity                          | ≤ 1.0 μS/cm                     | ≤ 1.0 μS/cm                     |
| Water conductivity                    | 50 to 340 kPa<br>0.5 to 3.4 bar | 50 to 340 kPa<br>0.5 to 3.4 bar |
| Water temperature                     | > 12°C<br>> 53.6 °F             | > 12°C<br>> 53.6 °F             |
| Deionized water consumption (average) | approx. 32 L/h<br>ISE: < 2 L/h  | < 30 L/h                        |

| List of environmental conditions during operation | cobas c 503                                                                                 | cobas e 801                                                                                 |
|---------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Max. altitude above sea level                     | 3,000 m                                                                                     | 3,000 m                                                                                     |
| Floor conditions                                  | ≤ 0.5 % inclination<br>Load bearing: 175 kg or more per adjust<br>foot installation surface | ≤ 0.5 % inclination<br>Load bearing: 175 kg or more per adjust<br>foot installation surface |
| Ambient temperature                               | 18-32°C (during operation)<br>18-30°C if altitude >2'000m above sea level                   | 18-32°C (during operation)<br>18-30°C if altitude >2'000m above sea level                   |
| Ambient temperature fluctuation                   | ≤ 2°C/hour (≤ 3.6 °F/h)                                                                     | ≤ 2°C/hour (≤ 3.6 °F/h)                                                                     |
| Ambient humidity                                  | 30–85% (non-condensing)                                                                     | 30–85% (non-condensing)                                                                     |
| Noise emission to environment                     | < 65 dBA in operation<br>< 56 dBA in standby                                                | < 65 dBA in operation<br>< 56 dBA in standby                                                |

ISE analytical unit

|                               |                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------|
| Applications                  | Na+: Sodium<br>K+: Potassium<br>Cl-: Chloride                                          |
| Sample types                  | Serum, urine<br>Ion-selective electrodes: 3 (Na+, K+ and Cl-)<br>Reference electrode 1 |
| Max. throughput               | 900 tests/hour (300 samples/hour)                                                      |
| Max. liquid waste volumes     | Concentrated liquid waste volume: < 2,8 L/h                                            |
| Sampling cycle time           | 12 seconds                                                                             |
| Electrode handling            | 2D barcode placed on the electrode package                                             |
| Sample Liquid level detection | Available                                                                              |
| Sample clot detection         | Available                                                                              |
| Sample foam detection         | Available                                                                              |
| Number of applications        | ISE: max. 60 (20 sample types available)                                               |
| Sample pipetting volumes      | 15 µl (Default)                                                                        |
| Reagent volumes per sample    | DIL: 450 µl<br>IS: Total 720 µl<br>REF: 130 µl                                         |



cobas c 503 analytical unit

Excellent performance, simple to use and beautifully designed. The **cobas c 503** analytical unit brings all that it takes to set new standards in reliability, maintenance and efficiency. 1,000 tests per hour. 60 reagent channels onboard.

|                               |                                                                               |
|-------------------------------|-------------------------------------------------------------------------------|
| Reagent pack type             | cobas c pack green                                                            |
| Reagent loading/unloading     | Automatic                                                                     |
| Reagent identification        | RFID                                                                          |
| Capacity of reagent manager   | 5 reagent packs                                                               |
| Capacity of reagent disk      | 60 packs<br>Inner ring: 24 (1-24 position)<br>Outer ring: 36 (25-60 position) |
| Reagent storage temperature   | 5-15 °C                                                                       |
| Number of applications        | 680                                                                           |
| Max. throughput               | Photometric: 1,000 tests/h<br>HbA1c: 500 samples/h                            |
| Number of reaction cells      | 221                                                                           |
| No. of reaction cell segments | 13 (17 cells/segment)                                                         |
| Reaction volume               | 75-185 µl                                                                     |
| Incubation bath temperature   | 37 ± 0.1 °C (98.6 ± 0.1 °F)                                                   |
| Reaction time                 | 10 min                                                                        |
| Mixer                         | Ultrasonic                                                                    |



cobas e 801 analytical unit

Launched in 2016, the **cobas e 801** analytical unit combines excellence in results with the speed and efficiency that is required to fulfil the highest expectations, especially during peak hours. 300 tests per hour. 48 reagent channels onboard.

|                                 |                                    |
|---------------------------------|------------------------------------|
| Reagent pack type(s)            | cobas e pack green                 |
| Reagent loading/unloading       | Automatic                          |
| Cap pre-opener                  | Yes                                |
| Reagent identification          | RFID                               |
| Capacity of reagent disk        | 48 reagents packs                  |
| Reagent storage temperature     | 5-10 °C                            |
| Incubator temperature           | 37 °C ± 0.3 °C<br>98.6 °F ± 0.5 °F |
| Reaction times for tests        | 9/18/27 min                        |
| Measuring cell                  | ECL measuring cell                 |
| Number of measuring cells       | 2                                  |
| Cycle time per channel          | 24 seconds                         |
| Overall cycle time (2 channels) | 12 seconds                         |
| Max. throughput                 | 300 tests/h                        |



#### References

1. *Atellica Solution Specsheets | 2017, Alinity ci-series Operations Manual, Architect i2000SR Operator manual (PN 201837-104) Extract page 4-4.*
2. *Roche cobas e 801 Immunoassay Method Sheets, data on file.*
3. *Method sheets cobas c 503, cobas e 801, Beckman AU 680, Beckman Unicel DxI, Abbott Alinity c/i, Siemens Atellica CH/IM.*
4. *Based on R&D report. Data on file.*

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**cobas<sup>®</sup> pure integrated solutions**  
*Simplicity meets Excellence*

**cobas<sup>®</sup>**

# cobas® pure integrated solutions

*Simplicity meets Excellence*



## 01 cobas e 402 analytical unit<sup>1</sup>

Up to **120 Immunochemistry** tests per hour  
28 reagent positions

## 02 Sample Supply unit<sup>1</sup>

Up to **50** samples direct loading  
Up to **50** samples direct unloading  
STAT port

## 03 cobas c 303 analytical unit<sup>1</sup>

Up to **450 photometric** tests per hour  
Up to **450 ISE** tests per hour  
Up to **750 tests** per hour  
(mixed mode photometric and ISE)  
42 reagent positions

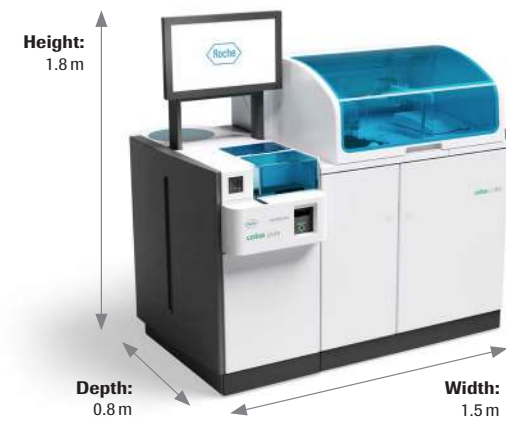
## *Three compact configurations\**



**Immunochemistry Configuration**  
Footprint  $\approx 1.2 \text{ m}^2$



**Serum Work Area Configuration**  
Footprint  $\approx 2.0 \text{ m}^2$



**Clinical Chemistry Configuration**  
Footprint  $\approx 1.2 \text{ m}^2$

\*The width and depth dimensions shown here are the floor(footprint) dimensions<sup>1</sup>

## Ready to use reagents\*

**cobas® pure** uses the latest reagent generation from Roche – **cobas e** pack green and **cobas c** pack green. These reagents do not require any preparation, mixing, waiting or pre-opening. The operator can simply take them out of the fridge and load them directly onto the analyser.



No preparing



No mixing



No waiting



No pre-opening

Take out of the fridge

Load onto the analyser

## Industry leading onboard stability

Using space intelligently is about achieving the highest output within the existing space. The average onboard stability for the immunochemistry reagents is 110 days, with 98% of the assays having an onboard stability of 4 months. The average onboard stability for clinical chemistry is 137 days, with 57% of the reagents having an onboard stability of 6 months.<sup>2,3</sup>

### Immunochemistry<sup>5</sup>



**cobas e**  
pack green

- Up to 4 months onboard stability
- ≈ 3 times longer average onboard stability compared to previous generation systems

### Clinical chemistry<sup>6</sup>



**cobas c**  
pack green

- Up to 6 months onboard stability
- ≈ 2 times longer average onboard stability compared to previous generation systems

## Safety of results<sup>1</sup>

### Disposable AssayTips/AssayCups

**cobas® pure** immunochemistry analytical unit utilises single-use disposable AssayTips and AssayCups to completely eliminate the risk of sample carry over.

### Carry over evasion program

The sample probes on the **cobas® pure** clinical chemistry analytical unit are rinsed inside and outside with deionised water each time after dispensing a sample. Additionally, for applications that are sensitive to sample carryover, special wash can be programmed for an extra wash of reagent probes, sample probes and reaction cells with basic and acidic wash solutions.

### Ultrasonic Mixing

The **cobas® pure** clinical chemistry analytical unit features ultrasonic mixing for non-contact mixing of sample and reagent to eliminate the risk of carryover during this event.

## Reliability

**cobas® pure integrated solutions** is designed to deliver the reliability that Roche is known for. With more than 75,000 analytical units globally, the **cobas** family of solutions demonstrates a distinctive uptime\* of more than 99%.<sup>7</sup> Having a reliable analyser means less interruption of services and less time spent on troubleshooting, thus higher productivity with more predictable turnaround times.

\*Uptime: Percentage of the time when system is up and running vs. the time the system is not running due to unplanned incidents. Calculation:

$(365 \text{ days} / \text{Mean time between repair visit}) \times (\text{Mean time for repair visit} + \text{Travel Time})^a$

#### Sample



Liquid Level Detection    Foam detection    Clot detection

#### Reagent



Liquid Level Detection    Foam detection

#### Clinical Chemistry



Carryover evasion program    Ultrasonic Mixing of sample and reagent

#### Immunochemistry



Single-use AssayTip    Single-use AssayCup



99 % uptime<sup>7</sup>

cobas® pure



## *Focused innovation of our assay portfolio*

### **Extending evidence base**

Extending the evidence-base for existing assays through clinical studies to generate higher awareness and broader access to innovation.

### **New claims for existing assays**

Generating new claims for existing assays for a wider range of application.

### **Discovery of new assays**

Menu expansion in the areas of unmet medical needs to help clinicians improve outcomes for their patients.

### **Bring Personalised Healthcare to clinical practice**

Supporting better patient care, contributing to health economics and empowering labs to play a greater role in medical decision making.

## *Commitment to exceptional assay quality*

### **Advanced assay design**

- Outstanding precision across measuring range
- High sensitivity in areas where it matters
- Wider measuring ranges, fewer dilutions and repeats

### **Consistent, standardised results**

- Consistent patient results across all platforms
- Excellent lot-to-lot consistency
- Assays standardised against reference method or reference material

### **Designed for convenience**

- Short and predictable assay Turn Around Times
- Low sample volume
- No reagent preparation required

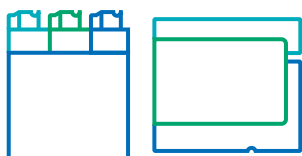


**cobas® pure** integrated solutions



**cobas® pro** integrated solutions

*Delivering seamless design today and into the future*



**Shared reagents  
packs**



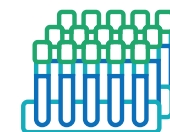
**Consistent  
results**



**Consistent  
operation**



**Same  
technologies**



**Same assay  
menu**

# cobas<sup>®</sup> pure integrated solutions

## *General technical specifications*

### Dimensions and Weights

|                                                                               | Width | Depth | Height    | Weight   |
|-------------------------------------------------------------------------------|-------|-------|-----------|----------|
| Sample Supply Unit (SSU),<br>(excl. STAT port and incl. touch screen monitor) | 450   | 800   | 1,750 mm  | 200 kg   |
|                                                                               | 17.7  | 31.5  | 70.0 inch | 441 lb   |
| <b>cobas c</b> 303 analytical unit (incl. ISE)                                | 1,000 | 800   | 1,375 mm  | 400 kg   |
|                                                                               | 39.4  | 31.5  | 54.1 inch | 882 lb   |
| <b>cobas e</b> 402 analytical unit                                            | 1,000 | 800   | 1,375 mm  | 400 kg   |
|                                                                               | 39.4  | 31.5  | 54.1 inch | 882 lb   |
| SWA System Configuration<br><c 303   SSU   e 402>                             | 2,450 | 800   | 1,750 mm  | 1,000 kg |
|                                                                               | 96.5  | 31.5  | 70.0 inch | 1,764 lb |

### Specifications of the electrical power supply

|                        |                                  |
|------------------------|----------------------------------|
| Distance to system     | ≤ 5 m (16 feet)                  |
| Electrical supply      | Single Phase AC                  |
|                        | 200 / 208 / 220 / 230 / 240 V    |
|                        | 50 / 60 Hz                       |
| Max. power fluctuation | ≤ 10 %                           |
| Power consumption      | ≤ 4.0 kVA                        |
|                        | Whole System: < 4.0 kVA          |
|                        | SSU: < 0.5 kVA                   |
|                        | <b>cobas c</b> 303 AU: < 1.5 kVA |
|                        | <b>cobas e</b> 402 AU: < 2.0 kVA |

### cobas<sup>®</sup> pure integrated solutions

# cobas<sup>®</sup> pure integrated solutions

## General technical specifications continued

|                                                  | cobas c 303 analytical unit (incl. ISE)                 | cobas e 402 analytical unit                             |
|--------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| <b>Deionised water supply and consumption</b>    |                                                         |                                                         |
| Distance to instrument                           | ≤ 5 m                                                   | ≤ 5 m                                                   |
|                                                  | ≤ 16 feet                                               | ≤ 16 feet                                               |
| Conductivity                                     | ≤ 1.0 µS/cm                                             | ≤ 1.0 µS/cm                                             |
| Water pressure                                   | 50 to 340 kPa                                           | 50 to 340 kPa                                           |
|                                                  | 0.5 to 3.4 bar                                          | 0.5 to 3.4 bar                                          |
| Water temperature                                | > 12 °C                                                 | ≥ 12 °C                                                 |
|                                                  | > 53.6 °F                                               | ≥ 53.6 °F                                               |
| Approx. deionised water consumption              | max. 16 L/h                                             | max. 12 L/h                                             |
| <b>Maximum liquid waste volumes</b>              |                                                         |                                                         |
| Highly concentrated liquid waste flow rate       | < 1.2 L/h                                               | ≤ 3 L/h                                                 |
| Diluted liquid waste flow rate                   | < 14.8 L/h                                              | ≤ 10 L/h                                                |
| <b>Environmental conditions during operation</b> |                                                         |                                                         |
| Maximum altitude above sea level                 | 3,000 m                                                 | 3,000 m                                                 |
| Floor conditions                                 | ≤ 1/200 or ≤ 0.5 % inclination                          | ≤ 1/200 or ≤ 0.5 % inclination                          |
|                                                  | Bearing load ≥ 5 kN/m <sup>2</sup>                      | Bearing load ≥ 5 kN/m <sup>2</sup>                      |
| Ambient temperature                              | 0 – 2,000 m above sea level 18 – 32 °C (64.4 – 89.6 °F) | 0 – 2,000 m above sea level 18 – 32 °C (64.4 – 89.6 °F) |
|                                                  | > 2,000 m above sea level 18 – 30 °C (64.4 – 86 °F)     | > 2,000 m above sea level 18 – 30 °C (64.4 – 86 °F)     |
| Ambient temperature fluctuation                  | ≤ 2 °C/hour (≤ 3.6 °F/h)                                | ≤ 2 °C/hour (≤ 3.6 °F/h)                                |
| Ambient humidity                                 | 30 – 85 %                                               | 30 – 85 %                                               |

## cobas e 402 analytical unit

## Specifications

### Specifications of the reagent system

|                             |                           |
|-----------------------------|---------------------------|
| Reagent pack types          | <b>cobas e</b> pack green |
| Reagent loading / unloading | Manual                    |
| Reagent Identification      | RFID                      |
| Capacity of reagent disk    | 28 reagent packs          |
| Reagent storage temperature | 5 – 10 °C (41 – 50 °F)    |

### Specifications of the sampling system

|                                 |                        |
|---------------------------------|------------------------|
| Sampling cycle time             | 30 seconds             |
| Sample pipetting volume         | 4 – 60 µL (1 µL steps) |
| Sample Liquid level detection   | Available              |
| Sample clot detection           | Available              |
| Sample air aspiration detection | Available              |

### Specifications of the reaction system

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Number of incubator disk positions | 38                                |
| Reaction volume                    | 120 µL                            |
| Incubator temperature              | 37 °C ± 0.3 °C (98.6 °F ± 0.5 °F) |
| Reaction times for tests           | 9/18/27 min                       |
| Mixer                              | Vortex                            |

### Specifications of the ECL measuring system

|                           |                    |
|---------------------------|--------------------|
| Measuring Cell            | ECL measuring cell |
| Number of measuring cells | 1                  |
| Maximum throughput*       | 120 tests/hour     |

\*Throughput may differ based on the mix of test orders per sample

*Excellent performance, simple to use and beautifully designed. The new Immunochemistry analyser – **cobas e 402** analytical unit.*



*The new **cobas c 303** analytical unit – combining photometric and ISE testing on a footprint of just 1.2 square metres.*



## cobas c 303 analytical unit

## Specifications

### Specifications of the reagent system

|                             |                           |
|-----------------------------|---------------------------|
| Reagent pack types          | <b>cobas c</b> pack green |
| Reagent loading/unloading   | Manual                    |
| Reagent Identification      | RFID                      |
| Capacity of reagent disk    | 42 reagent packs          |
| Reagent storage temperature | 5 – 15 °C (41 – 59 °F)    |

### Specifications of the sampling system

|                                 |                              |
|---------------------------------|------------------------------|
| Sampling cycle time             | 8 seconds                    |
| Sample pipetting volume         | 1.0 – 25.0 µL (0.1 µL steps) |
| Sample liquid level detection   | Available                    |
| Sample clot detection           | Available                    |
| Sample air aspiration detection | Available                    |

### Specifications of the reaction system

|                             |                                          |
|-----------------------------|------------------------------------------|
| Number of reaction cells    | 128                                      |
| Reaction volume             | 75 – 185 µL (detectable reaction volume) |
| Incubation bath temperature | 37.0 +/- 0.1 °C                          |
| Reaction time               | 3 – 10 min (1 min steps)                 |
| Mixer                       | Ultrasonic                               |

### Specifications of the photometric system

|                                       |                                                                                       |
|---------------------------------------|---------------------------------------------------------------------------------------|
| Measurements per reaction cell/10 min | 46                                                                                    |
| Photometer lamp                       | 12 V, 50 W                                                                            |
| Photometer                            | Multiple wavelengths spectrophotometer                                                |
| Maximum throughput*                   | Photometric only: 450 tests/hour                                                      |
|                                       | ISE only: 450 tests/hour (150 samples/hour)                                           |
|                                       | Mixed mode Photometric & ISE: 750 tests/hour (300 photometric + 450 ISE tests/hour)** |
|                                       | HbA1c only: 225 tests/hour                                                            |

\* Throughput may differ based on the mix of test orders per sample

\*\* The ISE unit and the c 303 photometric measuring unit share the same sample pipetter

ISE unit (integrated in the c 303 analytical unit\*)

|                                                  |
|--------------------------------------------------|
| Applications                                     |
| Sample types                                     |
| Number of electrodes                             |
| Maximum throughput**                             |
| Sampling cycle time                              |
| Electrode handling                               |
| Sample Liquid level detection                    |
| Sample clot detection                            |
| Sample air aspiration detection                  |
| Sample pipetting volumes<br>(serum/plasma/urine) |
| Reagent pipetting volumes per sample             |

Specifications

|                                                                                                  |
|--------------------------------------------------------------------------------------------------|
| Na <sup>+</sup> : Sodium                                                                         |
| K <sup>+</sup> : Potassium                                                                       |
| Cl <sup>-</sup> : Chloride                                                                       |
| Serum/Plasma, Urine                                                                              |
| Ion-selective electrodes: 3 (Na <sup>+</sup> , K <sup>+</sup> and Cl <sup>-</sup> )              |
| Reference electrode 1                                                                            |
| ISE only: 450 tests/hour (150 samples)                                                           |
| 24 seconds per sample for ISE                                                                    |
| 2D barcode placed on the electrode package                                                       |
| Available                                                                                        |
| Available                                                                                        |
| Available                                                                                        |
| 15 µL<br>For reruns of urine samples with a decreased sample volume after Test data alarm: 10 µL |
| DIL 780 µL                                                                                       |
| IS 720 µL                                                                                        |
| REF 130 µL                                                                                       |

\* The ISE unit and the c 303 photometric measuring unit share the same sample pipetter  
\*\* Throughput may differ based on the mix of test orders per sample

#### References

- 1 *cobas pure – footprint dimensions – Internal Document.*
- 2 *Elecsys assay menu cobas pure – Analysis (source method sheets cobas e pack green, CMP Database).*
- 3 *Clinical Chemistry assay menu cobas pure – Analysis (source method sheets cobas c pack green).*
- 4 *Roche Diagnostics Internal Reporting Data On File – GCS reporting / Product reports Q1/2020, CPS Finance Report from Tableau, ICB Q1 2020.*

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## cobas t 511 and cobas t 711 coagulation analyzers

*Making innovation your routine*

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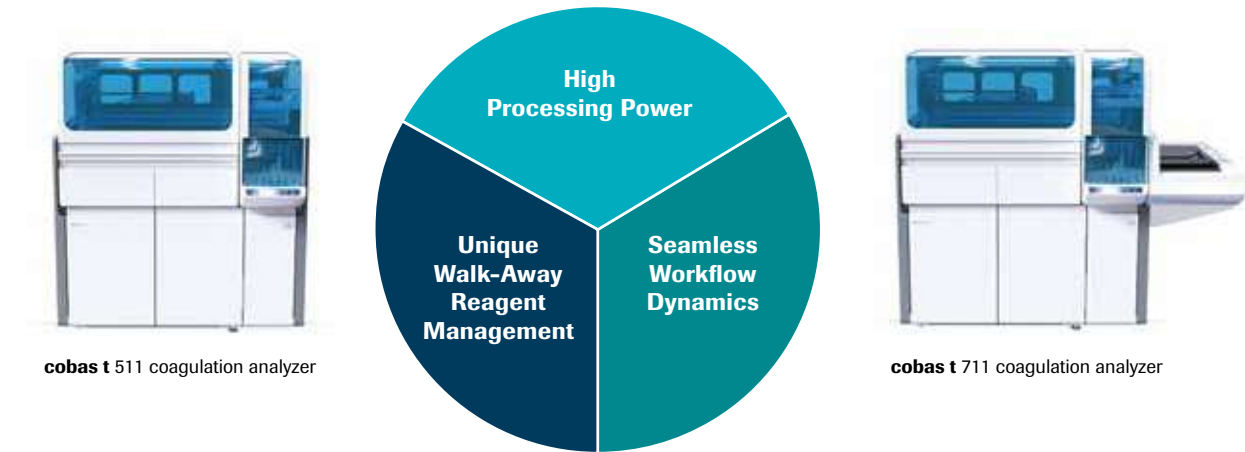
cobas®

cobas®

# Introduction

Growing world population, increasing prevalence of chronic diseases and a higher incidence of coagulation disorders are all driving a greater demand for coagulation testing<sup>1-3</sup>. This puts more pressure on healthcare systems and laboratories to cope with a growing number of tests that need to be analyzed and interpreted.

Today's coagulation laboratories need to meet clinicians' increasing demand for fast and accurate results, whilst remaining cost effective. The **cobas t 511** and **cobas t 711** coagulation analyzers address this need for greater efficiency, improved workflow, and reliable results by delivering innovative features that will revolutionize the way lab coagulation testing is done today.



The high-throughput **cobas t 711** coagulation analyzer and the mid-throughput **cobas t 511** coagulation analyzer are both fully automated, continuous random-access, software-controlled systems for clotting, chromogenic and immuno-turbidimetric analysis, intended for qualitative and quantitative in-vitro coagulation determinations using a wide variety of coagulation tests. The results of these tests aid in the diagnosis of coagulation abnormalities and in monitoring anticoagulant therapy.

Designed for coagulation laboratories to achieve more by doing less, the **cobas t 511** and the **cobas t 711** coagulation analyzers fully automate three of the most crucial steps in the daily workflow besides the actual execution of the tests:

1. Daily maintenance (pre-configured and executed automatically)
2. Reagent management (on-board storage of reagents, acclimatization, electronic import of reagent data)
3. Reagent reconstitution (fully automated)

# High Processing Power

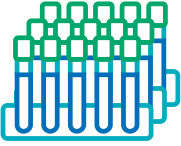
With their *High Processing Power* and extensive menu, the **cobas t** coagulation analyzers are the ideal solution for mid-to-high-volume and reference laboratories performing routine coagulation parameters and specialty assays.

The **cobas t 511** and **cobas t 711** coagulation analyzers enable laboratories to complete their daily testing workload faster, supported by the following features:



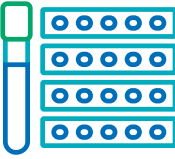
**High throughput:**

- 195 tests/hour (PT/APTT) on the **cobas t 511** coagulation analyzer
- 390 tests/hour (PT/APTT) on the **cobas t 711** coagulation analyzer



**High on-board sample capacity:**

- 75 samples on the **cobas t 511** coagulation analyzer
- 225 samples on the **cobas t 711** coagulation analyzer

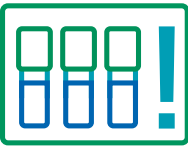


**Flexible sample loading/unloading:**

- On the **cobas t 511** coagulation analyzer, sample loading and unloading is automated via the front loading port
- On the **cobas t 711** coagulation analyzer, sample loading and unloading is automated via the front loading port and via the side balcony

The **cobas t 711** coagulation analyzer can also be connected with the **cobas® 8100** and the **cobas®** connection modules

- Both analyzers can be used in random-access or batch modes, and offer true STAT capabilities, with dedicated slots for urgent samples



**High on-board reagent capacity:**

- 57 reagent cassette positions for up to 34,200 tests on board
- Up to 2 weeks of on-board stability

# Seamless Workflow Dynamics

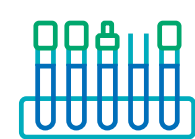
The **cobas t 511** and **cobas t 711** coagulation analyzers offer ease of use, continuous operation and maximized productivity, all whilst ensuring enhanced safety for the operator and reliable results for better patient care.

The benefits of *Seamless Workflow Dynamics* are enabled through the following features:



**Continuous loading and unloading of supplies:**

- Reagents, samples and cuvettes can be loaded and unloaded at any time
- Liquid and solid waste can be removed at any time



**Flexible sample tube handling:**

- The **cobas t 511** and the **cobas t 711** coagulation analyzers support open and closed sample tubes, which can be placed on the same rack
- Tubes from multiple vendors are supported
- Automatic rotation for correct identification and processing



**Quality of results:**

- HIL index
- Clog detection
- Automatic cuvette checks
- Full traceability of results



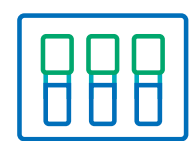
**e-Services:**

- Access to e-library for automatic download of necessary information
- Connectivity to Laboratory Information Systems
- Remote service support functionalities

# Unique Walk-Away Reagent Management

The **cobas t 511** and **cobas t 711** coagulation analyzers offer *Unique Walk-Away Reagent Management* by fully automating the reconstitution of reagents in a standardized and accurate way. This innovative concept greatly increases the ease of use, and eliminates the risk of user error during reagent preparation, which ensures the highest reagent quality and helps to optimize reagent utilization.

The intelligent scheduling of automated reconstitution is the ultimate enabler of continuous operation and true walk-away time: based on the user's preferred setting, the **cobas t** coagulation analyzers are capable of starting automated reconstitution when needed, without operator intervention.



**Reagent cassette concept:**

- 3 separate reagent vials in one **cobas t** pack, stored onboard the analyzer in a cooled reagent compartment (5 – 12 °C)
- The design eliminates the risk of contamination or evaporation, and allows for easy loading and unloading during operation



**Automated reagent reconstitution:**

- Automated transportation of **cobas t** pack from cooled reagent compartment to upper chamber
- Automated import of electronic data via barcode technology
- Automated pipetting, swirling and equilibrating to room temperature

# Technical specifications

|                                     | cobas t 511                                         | cobas t 711                                                           |
|-------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------|
| General specifications              |                                                     |                                                                       |
| Maximum throughput                  | 195 tests/hour (PT/APTT)                            | 390 tests/hour (PT/APTT)                                              |
| Measuring principle                 | optical                                             | optical                                                               |
| Assay types                         | clotting, chromogenic and immunoturbidimetric tests | clotting, chromogenic and immunoturbidimetric tests                   |
| Wavelengths                         | 408 nm, 588 nm, 625 nm, 800 nm                      | 408 nm, 588 nm, 625 nm, 800 nm                                        |
| Incubation channels                 | 20                                                  | 40                                                                    |
| Measurement channels                | 13                                                  | 26                                                                    |
| Sample management                   |                                                     |                                                                       |
| On-board sample capacity            | 75 samples                                          | 225 samples                                                           |
| Sample carrier                      | 5-position rack                                     | 5-position rack                                                       |
| Closed Tube Sampling/ Cap-piercing  | yes (multiple tube types supported)                 | yes (multiple tube types supported)                                   |
| Automated tube rotation             | yes                                                 | yes                                                                   |
| Sample identification               | automatic via internal barcode reader               | automatic via internal barcode reader                                 |
| Clog detection                      | yes                                                 | yes                                                                   |
| Pre-analytical sample check         | yes (HIL index)                                     | yes (HIL index)                                                       |
| Handling of STAT                    | through dedicated STAT port and via LIS request     | through dedicated STAT port and via LIS request                       |
| Automatic rerun testing             | yes                                                 | yes                                                                   |
| Reflex testing                      | yes                                                 | yes                                                                   |
| Continuous sample loading/unloading | yes, via front loading                              | yes, via front loading, side balcony, and workflow automation systems |

|                                         | cobas t 511                                             | cobas t 711                                             |
|-----------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Reagent management                      |                                                         |                                                         |
| Reagent carrier                         | cassettes (cobas t pack)                                | cassettes (cobas t pack)                                |
| Reagent positions on board              | 57 cassette positions (with up to 3 vials per cassette) | 57 cassette positions (with up to 3 vials per cassette) |
| Reagent vial identification             | automatic via built-in reading station                  | automatic via built-in reading station                  |
| Reagent cooling                         | yes (on-board temperature between 5 °C and 12 °C)       | yes (on-board temperature between 5 °C and 12 °C)       |
| Automated reagent reconstitution        | yes                                                     | yes                                                     |
| Continuous reagent loading/unloading    | yes                                                     | yes                                                     |
| Cuvettes                                |                                                         |                                                         |
| Type of cuvette                         | single cuvettes                                         | single cuvettes                                         |
| Cuvette capacity on board               | 1,000 cuvettes                                          | 1,000 cuvettes                                          |
| Continuous loading/unloading            | yes                                                     | yes                                                     |
| Software components and user interfaces |                                                         |                                                         |
| Touch screen                            | yes (LCD 23 inch)                                       | yes (LCD 23 inch)                                       |
| Operating system                        | Windows 7                                               | Windows 7                                               |
| Data storage                            | Up to 50,000 test results                               | Up to 50,000 test results                               |
| Online User Assistance                  | yes                                                     | yes                                                     |
| Remote Solutions                        | yes                                                     | yes                                                     |
| Connectivity to LIS                     | yes (using HL7 communication protocol)                  | yes (using HL7 communication protocol)                  |
| Technical specifications                |                                                         |                                                         |
| Height                                  | 1,444 mm (56.8 in)                                      | 1,444 mm (56.8 in)                                      |
| Width                                   | 1,284 mm (50.6 in)                                      | 1,735 mm (68.3 in)                                      |
| Depth                                   | 933 mm (37 in)                                          | 933 mm (37 in)                                          |
| Weight                                  | 307 kg (677 lb)                                         | 370 kg (816 lb)                                         |
| Power consumption                       | 700 VA                                                  | 800 VA                                                  |
| Water consumption                       | 2.6 L/hour (maximum)                                    | 4 L/hour (maximum)                                      |
| Noise emission                          | <60 dB                                                  | <60 dB                                                  |
| Heat dissipation                        | 700 W (maximum)                                         | 800 W (maximum)                                         |

# **Multiplate<sup>®</sup> analyzer**

*Powerful analysis of platelet function*



# Multiplate® analyzer

## *Addressing unmet medical needs*

### Milestone in analysis, major asset to therapy

Roche's stated aim is to combine true innovation with proven medical and diagnostic expertise. Multiplate® marks a milestone success in this ambitious endeavor.

The Multiplate® system addresses a significant unmet medical need by improving assessments of patients' platelet function. It provides invaluable support for clinical decision-making in cardiology, surgery and intensive care. And that makes this analyzer a key asset for cardiologists, anesthetists and hematologists.

### A potent force for platelet inhibition

Its best-in-class predictivity for thrombotic and bleeding risk is a potent force in anti-platelet therapy. It enables doctors to tailor treatment to the patient's need and stratify patients who are at risk of bleeding.

Underpinned by highly standardized testing technology, Multiplate® is making powerful medical momentum in this important field of patient care. Here today, it is the analyzer destined to set tomorrow's standards.



# Predictive power

## Best predictivity – for tailored anti-platelet therapy

- Approx. one in five patients responds inadequately to clopidogrel
- Risk of ischemic complications five to ten times greater in patients who respond poorly to clopidogrel.
- Other more potent drugs act more consistently but increase bleeding and cost up to 15 times as much as generic clopidogrel
- Success with tailored, Multiplate®-assisted APT reported by several groups

## Medical momentum

- Multiplate® features in > 400 Medline-listed publications
- Consensus paper published by the Working Group on High On-Treatment Platelet Reactivity extols virtues of Multiplate®'s predictivity
- Clinical guidelines recommend platelet function testing in CABG and PCI for patients treated with clopidogrel

## Consistent results

- Standardized test with low volume of whole blood
- Wide range of CE marked tests for various applications
- Fast five-channel, high-throughput analyzer
- Great sensitivity and dynamic range
- Dual-sensor design for enhanced quality control

## Best predictivity – for stratification of bleeding risk

- Patients on dual anti-platelet therapy with impaired platelet function are at greater risk of intra- and postoperative bleeding and transfusions
- Patients stratified as high-responders to clopidogrel are at 2.6-times higher risk of major bleeding
- Multiplate® helps improve hemostatic management in the bleeding patient after surgery, thereby contributing to a better outcome and lower costs.

## Detection of platelet disorders

- Platelet dysfunction can induce transient or permanent tendency to bleed
- Multiplate® detects platelet dysfunction and disorders, and determines heparin-induced platelet aggregation in whole blood
- It detects Glanzmann thrombasthenia, Bernard-Soulier syndrome, ADP receptor defects, and other platelet disorders associated with clinically relevant symptoms.



# Best predictivity – for tailored anti-platelet therapy



## The challenge of adequate platelet inhibition

Clinical management of patients at high risk of arterial thrombosis, for example, after stent placement or in the event of acute coronary syndrome (ACS), presents a great challenge. In this case, it is imperative to achieve adequate platelet inhibition.

Multiplate® analyses have established that some 20 percent of patients do not respond adequately to clopidogrel after PCI.<sup>1</sup> Patients who respond poorly to clopidogrel have been shown to have a fivefold to tenfold greater risk of ischemic complications.<sup>1-4</sup> Conversely, the risk of major bleeding is 2.6 times greater in patients who are high responders to clopidogrel.<sup>5</sup>

## More powerful but costly and risky

Novel P2Y<sub>12</sub> receptor antagonists with more potent and consistent action than clopidogrel have been introduced. However, they cost up to 15 times as much as generic clopidogrel.<sup>6</sup> The more effective action also comes at a human cost – a higher risk of major bleeding including fatal bleeding (prasugrel)<sup>7</sup> and of non-CABG related major bleedings and dyspnea (ticagrelor)<sup>8</sup>.

## More effective treatment with Multiplate®

Real life studies with more than 2,000 PCI patients support the clinical benefit and cost-effectiveness of Multiplate®-guided anti-platelet therapy algorithms.<sup>9-12</sup> It provides the guidance physicians need to tailor treatment. The ability to monitor and control anti-platelet therapy with Multiplate® is also a tremendous asset because it enables the treating physician to confirm patient compliance.

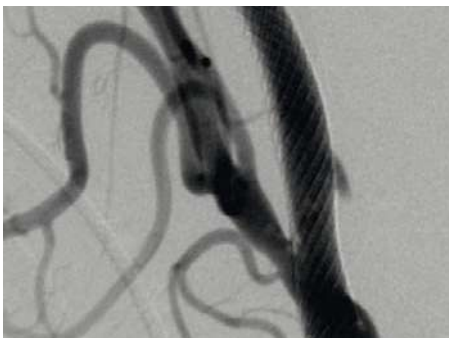


Citations from studies using the Multiplate® analyzer:

*“Personalized antiplatelet treatment according to the platelet function testing with MEA (Multiple Electrode Aggregometry) resulted in an improved efficacy with an equal safety compared to the standard treatment (with clopidogrel)”.* (Siller-Matula, J.M. et al. (2012)<sup>9</sup>)

*“Routine platelet function testing [with Multiplate] is useful for guidance of tailored antiplatelet treatment and switching to prasugrel markedly reduces ST risk in HPR patients on clopidogrel”* (Sibbing, D. et al. (2012)<sup>13</sup>)

*“ACS patients identified without HPR by the Multiplate assay had a remarkably low rate of thrombotic events on low-dose generic clopidogrel.”* (Aradi, D. et al. (2013)<sup>10</sup>)



1  
Stented brain vessel.  
Sufficient anti-platelet  
therapy is key for the  
prevention of stent  
thrombosis.



# Best predictivity – for stratification of bleeding risk



## Mitigating complications, maximizing patient management

Platelet function plays a pivotal role in hemostasis during surgery and following traumatic injuries. Dysfunction can trigger complications that require increased blood transfusions and renewed exploratory surgery.

Several studies attest to the Multiplate® analyzer's ability to detect a higher risk of bleeding and the need for increased transfusions in patients during surgery.<sup>14-18</sup>

## From insight to impact

The ability to assess platelet function before, during and after major surgical procedures helps improve hemostatic patient management. This insight is a positive force that can help reduce hospitalization time, exposure to allogenic blood products and, by extension, costs.<sup>19</sup> The savings potential is considerable.

1

The Multiplate® analyzer enables the assessment of platelet function in low volumes of whole blood.



Citations from studies using the Multiplate® analyzer:

*"The multiple electrode aggregometry ADPtest in patients under thienopyridine treatment and undergoing cardiac surgery is associated with postoperative bleeding and platelet transfusion and provides an accurate preoperative prediction of postoperative bleeding risk."*

*(Ranucci, M. et al. (2011)<sup>14</sup>)*

*"POC-guided therapy was associated with lower Fresh Frozen Plasma and Platelet Concentrates usage and costs as well as an improved clinical outcome in this prospective randomized single-center study."*

*(Weber, C.F. et al. (2012)<sup>19</sup>)*



# Detection of platelet disorders



Platelet dysfunction triggered by drugs, diseases or genetic factors may induce a transient or permanent tendency to bleed. The Multiplate® analyzer is able to detect platelet dysfunction. And that makes it an invaluable therapeutic asset for doctors who manage patients with platelet dysfunctions.

## Designed to determine and distinguish

Sensitivity to platelet disorders is designed into Multiplate®. It detects Glanzmann thrombasthenia, Bernard-Soulier syndrome, ADP receptor defects<sup>20-21</sup> and von Willebrand disease (comparable to optical aggregometry)<sup>22</sup>. It is also well-suited for the functional determination of heparin-induced thrombocytopenia in whole blood.<sup>23-24</sup>



1  
Hirudin anticoagulant enables platelet function analysis under physiological calcium conditions

Citations from studies using the Multiplate® analyzer:

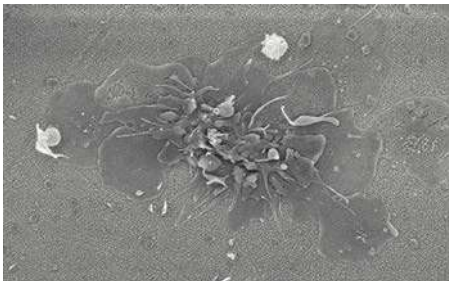
*"Compared to LTA MEA is more standardized, easier and faster to perform and requires smaller blood volumes for the analysis and is therefore a suitable alternative for the assessment of platelet disorders".*

*(Stemberger, M. et al. (2012)<sup>21</sup>)*

*"MEA is capable of detecting defective platelet aggregation in Glanzmann thrombasthenia (GT) patients similar to LTA... we think that Multiplate can be used as the standard aggregometer to study platelet aggregation in patients with GT."*

*(Awidi, A. et al. (2009)<sup>20</sup>)*

*"...in our population of VWD patients, [Multiplate] was as sensitive as LTA in detecting VWD. ...[Multiplate] correctly evidenced the challenging type 2B VWD subtype in 3/3 patients, among whom two were thrombocytopenic."* *(Valarche, V. et al. (2011)<sup>22</sup>)*



2  
Platelet aggregates and spreading on the Multiplate sensors



# Consistent results



## Speed paired with efficiency

Easy to use and compact, the Multiplate® system analyzes platelet function in whole blood. Designed for speed as well as accuracy, its turnaround time is just ten minutes per test. It is equipped with five channels, so it processes up to 30 tests per hour. Each analysis requires no more than 300 µL of blood.

The Multiplate® analyzer comes with a comprehensive menu featuring six CE marked and standardized PFT procedures (ADPtest, ASPItest, TRAPtest, COLtest, RISTOtest, ADPtest HS). The system's underlying low-shear detection principle enables the specific activation of platelet receptors or transduction pathways.

## Advanced detection with sophisticated sensors

The advanced detection principle and sophisticated sensors built into Multiplate® lend it a superior dynamic range, sensitivity and signal magnitude for detecting platelet function. Each test cell incorporates two pairs of sensors (multiple electrode aggregometry, or MEA for short) that serve as an on-board quality control feature.



1  
Multiplate analysis  
takes place in the  
patented test cell

Citations from studies using the  
Multiplate® analyzer:

*"As a whole blood method, Multiplate® avoids the handling of blood samples, with the advantage that the cellular environment remains unchanged, and allows rapid evaluation of platelet aggregation by ready-to-use test cuvettes with two independent sensor units."*

*(Paniccia, R. et al. (2009)<sup>25</sup>)*

*"The effect size by use of multiple electrode aggregometry (MEA) was consistently greater for clopidogrel and aspirin as compared to other methods."*

*(Siller-Matula, J.M. et al. (2009)<sup>26</sup>)*

*"MEA is a fast and standardized method to individually assess platelet function prior to and after clopidogrel treatment."*

*(Sibbing, D. et al. (2008)<sup>27</sup>)*





The Multiplate® analyzer already figures prominently in more than 400 Medline-listed publications. For example, the consensus paper published by the Working Group on High On-Treatment Platelet Reactivity extolled the virtues of Multiplate®'s peerless clinical predictivity.<sup>28</sup>

## Proven and recommended

Multiplate®'s ability to predict thrombotic and bleeding risk is documented. Three studies with more than 2,000 PCI patients have independently confirmed the improved patient outcomes that come as a result of anti-platelet therapy tailored with the benefit of Multiplate®.<sup>9-11</sup> A health economic study supports a Multiplate®-guided therapy to may be more cost-effective than prasugrel or ticagrelor treatment in ACS patients undergoing PCI.<sup>12</sup>

Clinical practice guidelines now recommend platelet function testing in patients treated with anti-platelet therapies in major surgical procedures<sup>29-30</sup> and in coronary interventions with stenting in ACS patients and stable patients<sup>31-34</sup> in case of high risk situations and if results may change the treatment strategy. Two position papers on the current role of platelet function testing in patients undergoing PCI<sup>35-36</sup> advocate a role for routine testing in patients at high risk for stent thrombosis.

The recommendations set out in such guidelines and consensus opinions are sure to become stronger as more evidence attesting to the benefits of Multiplate®-assisted anti-platelet therapy is gathered. The TROPICAL-ACS trial (NCT01959451)<sup>37</sup>, a large investigator initiated multi-center study on Multiplate®-guided anti-platelet therapy in ACS patients investigates the clinical and health-economic impact of tailored anti-platelet therapies in PCI.



## Abbreviations

ACS = acute coronary syndrome

APT = anti-platelet therapy

CABG = coronary artery bypass graft

HPR = high platelet reactivity

LTA = light transmission aggregometry

MEA = Multiple electrode aggregometry

PCI = percutaneous coronary intervention

PFT = platelet function testing

POC = Point-of-Care

ST = stent thrombosis

vWD = von Willebrand disease

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# Multiplate<sup>®</sup> analyzer

*Supporting clinicians with consistent results*



## 1 Measurement position

- Patented twin sensor test cell
- Testing in low volumes (300 µL) of whole blood
- 5 measurement positions for simultaneous measurement of different samples/agonists
- Internal QC using duplicate detection of every measurement
- 10 minute time to result
- Sensitive signal detection with a large dynamic range

## 2 Reagent and sample compartment

- 4 reagent vial positions
- 1 sample position
- 9 positions for reagent
- Removable for cold storage

## 3 Electronic pipette

- Predefined pipette programs for routine tests
- Customizable settings for individual adaptation
- Audiovisual user guidance
- One button operation for easy and safe pipetting

## 4 Software

- Windows<sup>®</sup> XP-based user interface
- Pre-programmed test settings
- Automatic analysis and documentation of measurements
- Parameterization of dynamic signal

# Multiplate<sup>®</sup> analyzer

## *Product specifications*

|                         |                                       |                                                           |                                                             |
|-------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| Hardware specifications | PC                                    | Processor                                                 | Intel Atom (1,6 GHz)                                        |
|                         |                                       | RAM                                                       | 2 GB                                                        |
|                         |                                       | Hard drive                                                | min. 60 GB                                                  |
|                         |                                       | Ports                                                     | USB 2.0/RS 232                                              |
|                         |                                       | Network                                                   | 100/1000 Mbit                                               |
|                         |                                       | Monitor                                                   | min. 15" TFT                                                |
|                         |                                       | Printer                                                   | Laser printer (optional)                                    |
|                         |                                       | Input devices                                             | Keyboard in various languages; mouse                        |
|                         |                                       | Software                                                  | Windows <sup>®</sup> XP Professional (Multi User Interface) |
|                         | Dimensions of the Multiplate analyzer | Height                                                    | 11 cm                                                       |
|                         |                                       | Width                                                     | 32 cm                                                       |
|                         |                                       | Depth                                                     | 45 cm                                                       |
|                         |                                       | Weight                                                    | 11 kg                                                       |
|                         | Electrical specifications             | Device                                                    | 100-240 V; 50-60 Hz                                         |
|                         |                                       | Monitor                                                   | See operator manual                                         |
|                         |                                       | Printer                                                   | See operator manual                                         |
|                         | Electronic pipette                    | 10-300 µL pipette volume                                  |                                                             |
|                         |                                       | Programmable rate for aspiration and dispersal of liquids |                                                             |
|                         |                                       | Pipette holder attached to housing                        |                                                             |
| Test                    | Sample volume                         | 300 µL whole blood per test                               |                                                             |
|                         | Key reagents                          | ASPItest                                                  |                                                             |
|                         |                                       | ADPtest                                                   |                                                             |
|                         |                                       | TRAPtest                                                  |                                                             |
|                         |                                       | COLtest                                                   |                                                             |
|                         |                                       | RISTOtest                                                 |                                                             |
|                         |                                       | Prostaglandin E1 Reagent                                  |                                                             |
|                         |                                       | GPIIb/IIIa Antagonist Reagent                             |                                                             |
|                         |                                       | ASA Reagent                                               |                                                             |

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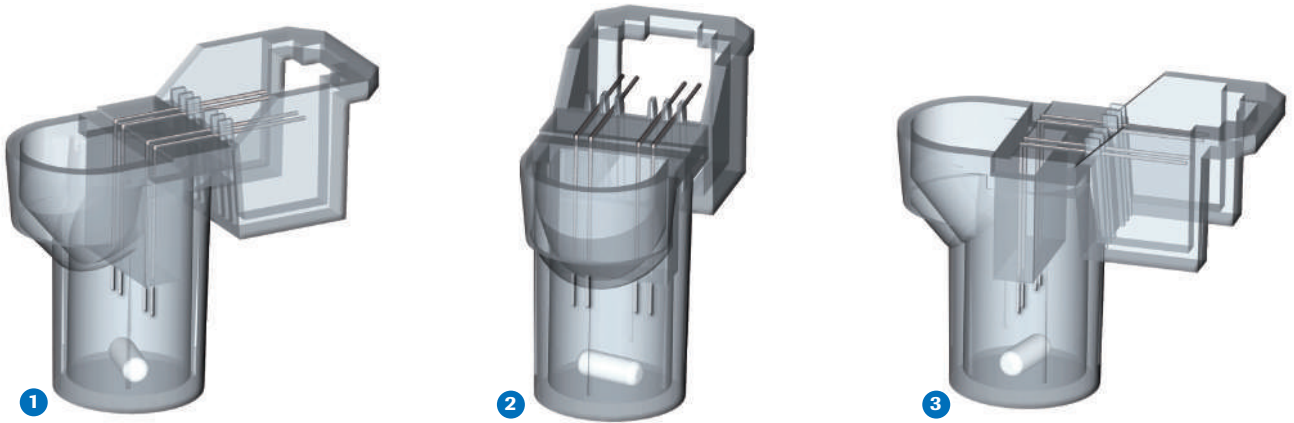
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# Multiplate® test principle

## *Supporting best predictivity*



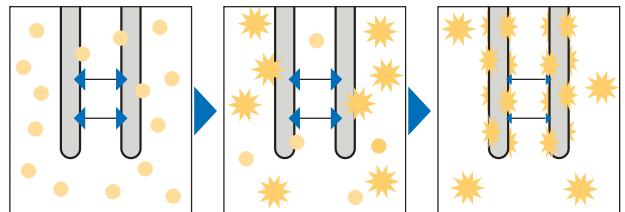
**1 Disposable test cell with incorporated sensor and teflon coated stirring bar**

**2 Duplicate sensor electrodes serve as an integrated quality control for each analysis**

**3 The electronic detection of platelet function is not affected by optical variables within the sample**

- The Multiplate® test principle is based on an advancement of Cardinal and Flower's 1979 impedance aggregometry method
- Unlike earlier applied systems, the Multiplate® analyzer provides a disposable test cuvette featuring a duplicate sensor
- Patented twin sensor technology (Multiple Electrode Aggregometry, MEA) for optimal results and quality control
- Whole blood testing eliminates the need for time-consuming sample preparation while maintaining the natural physiological matrix for platelet function

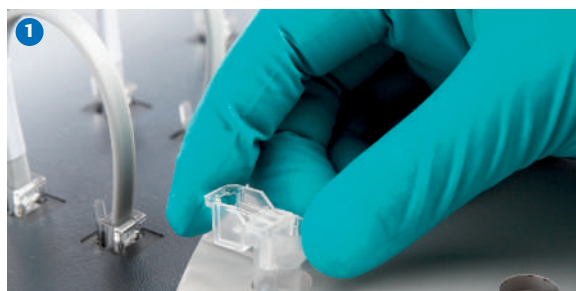
- Small quantity (300 µL) of whole blood required per test, permitting up to 9 tests per blood tube draw
- Upon activation platelets aggregate on metal sensors and increase the electrical resistance



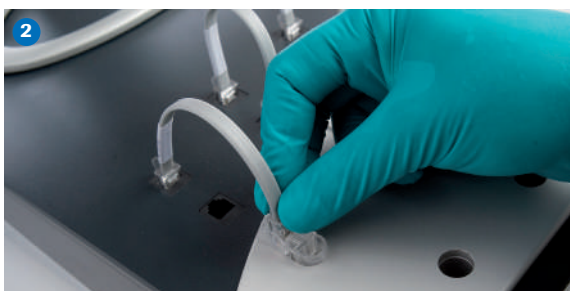
# Multiplate<sup>®</sup> test principle

## *Supporting best predictivity*

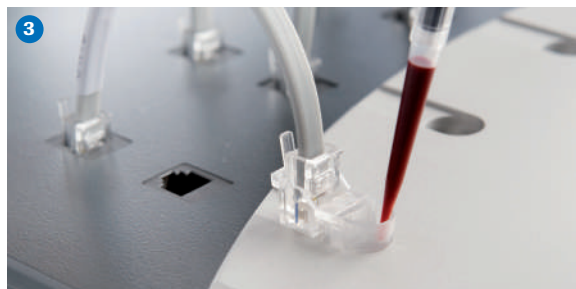
Easy four-step process with results available in 10 minutes, a throughput of up to 30 tests per hour, and a superior dynamic range



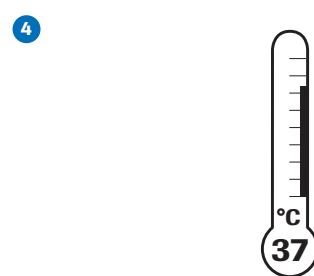
1 Place the test cell into the measurement position



2 Attach the sensor cable



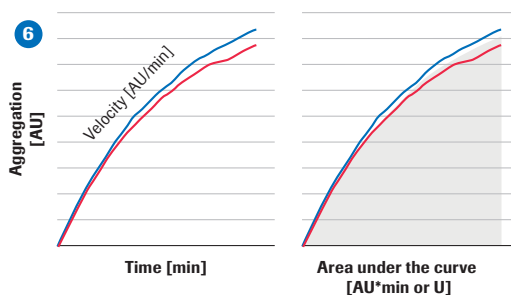
3 Pipette 300  $\mu$ L of saline + 300  $\mu$ L of hirudin blood



4 Warming and equilibration



5 Pipette reagent



6 Results after 10 minutes

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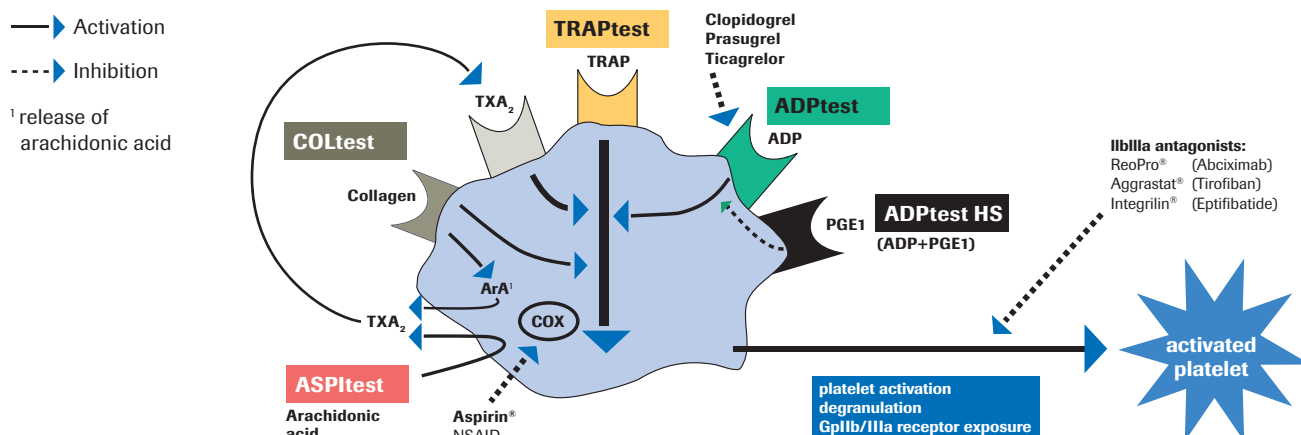
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# Multiplate® analyzer

## Comprehensive reagent menu



| Material number | Product                                 | Size       | Description                                                                                                                                                       |
|-----------------|-----------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 06675786190     | ADPtest                                 | 1 x 1 mL   | ADP induced platelet activation sensitive to clopidogrel, prasugrel and other ADP receptor antagonists                                                            |
| 06675794190     | ADPtest                                 | 3 x 1 mL   |                                                                                                                                                                   |
| 06675808190     | ASPtest                                 | 1 x 1 mL   | Cyclooxygenase dependent aggregation (using arachidonic acid) sensitive to Aspirin®, NSAIDs and other inhibitors of platelet cyclooxygenase                       |
| 06675816190     | ASPtest                                 | 3 x 1 mL   |                                                                                                                                                                   |
| 06675824190     | COLtest                                 | 1 x 1 mL   | Collagen induced aggregation                                                                                                                                      |
| 06675832190     | COLtest                                 | 3 x 1 mL   |                                                                                                                                                                   |
| 06675859190     | RISTOtest                               | 1 x 1 mL   | vWF and GpIb dependent aggregation (using ristocetin)                                                                                                             |
| 06675867190     | RISTOtest                               | 3 x 1 mL   |                                                                                                                                                                   |
| 06675875190     | TRAPtest                                | 1 x 1 mL   | Platelet stimulation via the thrombin receptor (using TRAP-6), sensitive to Ib/IIIa receptor antagonists                                                          |
| 06675883190     | TRAPtest                                | 3 x 1 mL   |                                                                                                                                                                   |
| 06675891190     | Prostaglandin E1 Reagent                | 1 x 1 mL   | For the assessment of ADPtest HS (high sensitivity). For the assessment of positive (i.e. abnormal) controls of the ADPtest                                       |
| 06675905190     | Prostaglandin E1 Reagent                | 3 x 1 mL   |                                                                                                                                                                   |
| 06675913190     | ASA Reagent                             | 1 x 1 mL   | Inhibitor of cyclooxygenase. Addition of ASA reagent to the blood sample leads to reduced aggregation responses in ASPtest and COLtest                            |
| 06675921190     | ASA Reagent                             | 3 x 1 mL   |                                                                                                                                                                   |
| 06675930190     | GpIIb/IIIa Antagonist Reagent           | 1 x 0.5 mL | Inhibitor of the platelet GpIIb/IIIa receptor. Addition to a blood sample leads to strongly reduced aggregation in the TRAPtest                                   |
| 06675948190     | GpIIb/IIIa Antagonist Reagent           | 3 x 0.5 mL |                                                                                                                                                                   |
| 06675972190     | NaCl/CaCl <sub>2</sub> Diluent Solution | 10 x 5 mL  | Sample diluent for platelet function testing with the Multiplate® analyzer under reduced calcium concentrations associated with the use of citrated blood samples |
| 06675751001     | Hirudin Blood Tubes                     | 50 x 3 mL  |                                                                                                                                                                   |
| 06675760001     | Hirudin Blood Tubes                     | 10 x 3 mL  | Anticoagulant for platelet function analysis under physiological calcium concentrations                                                                           |
| 06675999190     | Liquid Control Set                      |            |                                                                                                                                                                   |
|                 |                                         |            | Quality control for electrical signal in impedance aggregometry based on the analysis of an artificial liquid control material                                    |

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