

## Under Pressure

### Real Time Calorimetry for Pressure Reactions



#### Pressure Reactions Under Control

The medium pressure reactor MP10-1-RTC is designed to run pressure reactions accurately, reproducibly, safely, and in a precisely controlled manner.

The reactor is surrounded by a safety enclosure to protect the user and the laboratory during the operation.



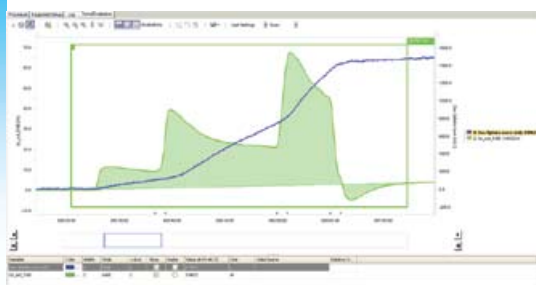
#### An Impressive Design

The pressure reactor MP10-1-RTC is fully transparent and permits the observation of the reactor content. The standard MP10-1 reactor was upgraded with the latest calorimetric technology RTCal™ enhancing the range of applications significantly.



#### Detecting Small Thermal Events

Don't miss even the smallest thermal effects of your reaction; the sophisticated sensor technology detects even small thermal events (~ 0.1W) accurately and reliably and provides a real time insight to your reaction.



#### Following the Trends

Following the trends of your reaction was never easier than today. All details about the course of a reaction are collected and displayed in real time. Timely interactions with your chemistry become an easy routine task and help to optimize the reaction faster than ever.



#### MP10-1-RTC

#### Fast and Reliable Heat Data in Real Time

The METTLER TOLEDO medium pressure reactor features both the traditional heat flow calorimetry and heat flow in real time using RTCal™.

The 10 bar glass reactor in combination with RTCal™ permits the operation of hydrogenations and any other pressure applications easily and safely. The integrated RTCal™ sensors provide heat flow and heat transfer data quickly and accurately in real time. As the measurement also provides the specific heat of the reaction mass, the heat flow can also be calculated when the temperature changes during the reaction. By virtue of the additional information, difficult to control reactions or reactions with an unexpected behavior will become more transparent and easier to perform and control.

Technical data  
**Under Pressure**  
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**Available Sets and Upgrades**

|          |  |
|----------|--|
| 51162558 | MP10-1-RTC-SS reactor set complete with:<br>– Reactor made of glass incl. RTCal™ sensors<br>– Cover and inserts made of AISI316    |
| 51162559 | MP10-1-RTC-HC reactor set complete with:<br>– Reactor made of glass incl. RTCal™ sensors<br>– Cover and inserts made of HC-22      |
| 51162569 | Upgrade set for existing MP10-1 or MP06-1 reactors including:<br>– Reactor made of glass incl. RTCal™ sensors<br>– Reactor support |

**Specifications**

|                       |  |
|-----------------------|--|
| Reactor Volume        | Starting volume: 300 mL<br>Working volume using RTCal™: 800 mL<br>Working volume using heat flow: 1000 mL<br>Nominal volume: 1100 mL   |
| Reactor Material      | Reactor: Duran® glass, 9 mm wall thickness<br>Cover: AISI316 or HC-22<br>Inserts: AISI316 or HC-22   |
| Stirrer               | Standard: Anchor<br>Optional: Propeller up or down<br>Gassing<br>Helical ribbon<br>Speed: 30 to 2500 rpm<br>Coupling: Magnetic, 1.5 Nm   |
| Cover                 | Heatable: Same as standard MP10-1 or MP06-1<br>Openings: 3 x NPT 1/4" pressure gauge (analog AISI316, digital HC-22), dosing line, and rupture disk<br>2 x NPT 3/8" Tr/Trs probe and calibration heater<br>3 x NPT 1/2" probes, sensors, connection to distillation set, adapter for solid additions, etc<br>Adapters: Swagelok® adapters in stainless steel for all versions of MP10 reactors |
| Temperature Probe     | Tr/Trs, AISI316 or HC-22   |
| Temperature Range     | -53 °C to 165 °C, jacket temperature (Tj)  |
| Pressure Range        | Vacuum to 5 bar with standard 6 bar rupture disk<br>Vacuum to 10 bar with optional 12 bar rupture disk   |
| Pressure Gauge        | Analog range: -1 bar (vacuum) to 16 bar relative<br>Digital range: 0 to 30 bar relative<br>Resolution: 0.1 bar   |
| Pressure Control      | RCPress10 (in combination with RD10) ME-51160000<br>LMPress10 (in combination with Universal Control Box, UCB) ME-51160002   |
| Calibration Heater    | 25 W, AISI316 or HC-22   |
| Sensitivity           | Detection limit RTCal™ 0.1 W<br>Resolution Tr-probe ± 0.2 mK < 100 °C<br>± 1 mK > 100 °C   |
| Safety Enclosure      | Required to operate all versions of MP10   |
| Software Requirements | iControl™ RC1 <sup>e</sup> ™ ≥ 3.3<br>RTCal™ option  |
| Accessories           | Same as standard MP10-1 or MP06-1  |



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 Environment certificate ISO14001  
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For more information