



Release Notes

Dear Customer,

Thank you for purchasing iControl RC1_e[™] 5.0, the simply powerful software package for METTLER TOLEDO's RC1_e[™] Reaction Calorimeter. Everything you need to install and run iControl RC1_e[™] 5.0 is stored on the installation media (CD-ROM or downloaded zip file).

Contents of the Installation Media

- iControl RC1_e[™] 5.0 Software Installer (AutoRun.exe)
- iControl RC1_e[™] 5.0 Release Notes (this file)
- iControl RC1_e[™] 5.0 Installation Guide
- iControl Data Conversion Utility
- iControl Mixing Guidelines
- UCB Firmware 3.4.2 for UCB and RTCal Box

For optimal viewing of Installation Guide and Documentation Portfolio, use Version 9 of Adobe Acrobat Reader.

Installation Guide and System Requirements

Please install iControl RC1_e[™] 5.0 according to the installation guide which can be found on the installation media. This also describes the minimum PC requirements to install and run iControl RC1_e[™] 5.0.

User Guide and Help File

The iControl RC1_e[™] 5.0 Help file is available from the software. To access the context-sensitive Help from a specific place in the software, click in the software window and then click F1 on your keyboard.

Customer Support

If you encounter any issues with iControl RC1_e[™] 5.0, please don't hesitate to contact your sales representative or service engineer, or contact us at:

Support.RXE@mt.com for General Support on Reaction Engineering

iControl@mt.com for Software Support

METTLER**TOLEDO**

Feature Comparison Table

Key features of iControl RC1[™]_e 5.0 compared with earlier versions of iControl and WinRC:

Feature	WinRC 7.12	iControl RC1 [™] _e 3.3	iControl RC1 [™] _e 4.0	iControl RC1 [™] _e 5.0
Easy Data Collection and Instrument Control				
Create your recipe automatically	X	✓	✓	✓
One click on the reactor to change any setpoint	X	✓	✓	✓
Change stirring speed and temperature during preparation and work up	X	✓	✓	✓
iC-iControl: Automatically synchronized reactor data, ReactIR [™] data, Raman data, FBRM [®] data in one experiment, drag and drop of trends	X	✓	✓	✓
Supports Real Time Calorimetry RTCal [™]	X	✓	✓	✓
Creates automatically the dosing profile based on real time heat signal RTCal [™]	X	✓	✓	✓
Add Equipment during experiment (with UCB)	X	X	✓	✓
Non-isothermal RTCal [™]	X	X	✓	✓
cp over Tr ramp and U online based on RTCal [™]	X	X	✓	✓
Chemistry Tables for easy illustration of chemical reaction and chemical amounts in design and analyze mode of experiments	X	X	X	✓
Improved RTCal calibration and adjustment procedure to increase precision and accuracy of measurement	X	X	X	✓
Allow reflux factor estimation for RTCal	X	X	X	✓
New math functions available for User Defined Trends (UDTs) → First derivative, averaging, logarithms, n th root	X	X	X	✓
New "time" trend (time passed by since experiment start)	X	X	X	✓
Global settings for trends and y-axis. Allows setting defaults for trend view such as displayed trends, color of trends etc.	X	X	X	✓
Copying User Defined Trend (UDT) during run-time	X	X	X	✓
Switch off unit check for User Defined Trends (UDT)	X	X	X	✓
Live value for "Mass set" added to UCB dosing live equipment.	X	X	X	✓

Feature	WinRC 7.12	iControl RC1e™ 3.3	iControl RC1e™ 4.0	iControl RC1e™ 5.0
Temperature control parameter (P&I) is visible in the start operation and the reactor tooltip.	X	X	X	✓
Change UCB dosing rate during a running dosing operation	X	✓	✓	✓
Change RD10 dosing rate during a running dosing operation	X	X	X	✓
Dosing profile based on “set point by expression”, e.g. dosing profile following an IR signal	X	X	X	✓
Option to complete manual dosing without user interaction and additional extensions in manual dosing dialog	X	X	X	✓
Audible alert for operator message	✓	X	X	✓
New thermostat mode: Hold actual value (T_r or T_i)	X	X	X	✓
Option in start operation to switch off overfill warnings during whole experiment	X	X	X	✓
Intuitive Data Analysis and Visualization				
Start Page: One click access to experiments, help file, all hardware manuals, application notes,	X	✓	✓	✓
Compare trends of different experiments in one graph	X	✓	✓	✓
Mixing guidelines	X	✓	✓	✓
Chemical Database	X	✓	✓	✓+
File based experiments	✓	X	✓	✓
Support for optional iC Safety™ module	X	X	✓	✓+
Linked View of Procedure, Trends, Timeline, and Events	X	X	✓	✓
Improved Usability of procedure (incl. timeline) and direct mode	X	X	✓	✓
Chemicals: IntelliSense entry and default chemicals	X	X	✓	✓
Improved iC-iControl integration: drag and drop of trends, refresh of trends, and iControl trends available in iC IR™ and iC FBRM™	X	X	✓	✓
Add iC trends without having iC IR™ or iC FBRM™ installed	X	X	✓	✓
Improved User defined trends, Events log, Annotation handling	X	X	✓	✓
Custom offset for $\text{Int}(qr_rtc)$	X	X	X	✓

Feature	WinRC 7.12	iControl RC1e™ 3.3	iControl RC1e™ 4.0	iControl RC1e™ 5.0
New option to set basepoints proportionality	X	X	X	✓
New feature to edit values of manual baseline.	X	X	X	✓
Option to use non-averaged calculation for qdos	X	X	X	✓
Cpi values of UCB sensors considered for calculations	X	X	X	✓
Option to define if qc is compensated for the qr calculation	X	X	X	✓
Quick Reporting and Data Exchange				
One click customized report of your results	X	✓	✓	✓
Drag and Drop trends from and to Excel into iControl RC1e™	X	X	✓	✓
Print feature added to more screens to allow printing of individual screen views into an ELNB	X	X	X	✓
Sensor history report contains adjustment values of all available sensors (Thermostat, RD10, UCB, RTCal)	X	X	X	✓
Various extensions for chemical database. The following features were added to the chemical db: <ul style="list-style-type: none"> grouping of chemicals new "Comments" field More straight-forward import/export 	X	X	X	✓
Chemical database shared between all iControl™ versions and iC Kinetics™ on the same PC	X	X	X	✓
Compatibility				
Convertibility of WinRC data into iControl (trends and eval)	–	X	✓	✓
Windows 2000 compatibility	✓	X	X	X
Windows XP compatibility	✓	✓	✓	✓
Windows Vista compatibility	X	X	✓	✓
Windows 7 compatibility	X	X	X	✓
The equipment database has been updated with the latest METTLER TOLEDO reactors, covers, stirrers and sensors.	X	X	X	✓
Activated iCare license allows installing updates without entering a new software activation key	X	X	X	✓
Connectivity to iC 4.0 applications	X	X	✓	✓

✓ = Supported feature

✓+ = Supported feature with enhancements

X = Not supported

These release notes summarize incremental changes in iControl RC1[™].

Enhancements for Version 5.0

Easy Data Collection and Instrument Control

Chemistry Table

The chemistry table is a completely new integrated feature module that allows the user to easily define the chemical reaction and calculate the amounts required. The chemistry table contains an intelligent calculation engine that is directly linked to the chemical database and that determines the required amounts based on the given stoichiometric factors and ratios. The calculated amounts are directly linked to the dosing table of the experiment.

Improvement of RTCal Calibration and Adjustment Procedure

RTCal is a unique METTLER TOLEDO calorimetry technology which allows an online measurement of heat data without the need for an experiment calibration. In order to achieve the optimal reliability of the measurement it is advisable to have the heat flux sensor bands adjusted by a METTLER TOLEDO field service engineer upon installation of the system and then to calibrate the sensors on a regular basis. The wizard to run the adjustment and calibration were improved extensively so the procedure is as easy and robust as possible.

Reflux Factor Estimation with RTCal License

The operation "HF Qreflux factor determination" has been renamed to "Qreflux factor determination" since this operation is now also available for users with an RTCal license. In previous versions this operation was restricted to users with a Heat Flow license.

New Mathematical Functions for User Defined Trends (UDTs)

Besides the four arithmetic functions (+ - * /), an additional six mathematical operations have been added to UDTs: first derivative, averaging, natural logarithm, logarithm, n^{th} root, and exponentiation.

New Trend for Elapsed Time to Be Shown

A new Elapsed Time trend reflects the time passed since the start of the experiment.

Global Settings for Trends and Y-Axis

The "Save current settings" functionality for the trends tab has been enhanced. It is now possible to define global trend view settings that are applied to every new experiment. The user can define the trends to be shown including the name, color, line width, line style and the settings for the y-axis like the minimum and maximum value, auto scaling, logarithmic and show grid properties etc. These settings are kept persistent and valid for every system user.

Copying User Defined Trend (UDT) During Run-Time

In the previous software version, when copying and pasting a UDT into a running experiment, the UDT immediately became read-only. With the current release the user has the ability to edit a user defined trend when pasting it into a running experiment.

Selectable Unit Check for User Defined Trend

By default the option "Enforce units compatibility" is selected. This means, the editor checks that all terms of the expression have compatible units.

If you select "Ignore units", this check is omitted and the resulting units can be defined manually:

Visibility of Set Value for Mass During Dosing with UCB Equipment

Beneath the end value, the actual mass and the dosing rate, now the set mass is displayed so it is available at first glance on the live equipment picture of the dosing controller.

Visibility of Temperature Control Parameters (P&I)

The T_r control parameters P (Amplification) and I (Reset Time) are now visible during runtime in the tooltip for the reactor. Within the start operation of an experiment the setting of the P parameter can be viewed during runtime and can be adapted to either an organic or an aqueous reaction mass during the design phase of an experiment.

Change of RD10 Dosing Rate During Running Dosing Operation

The dosing rate of a running RD10 dosing loop can be changed on the fly by entering a new value in the equipment overview (same behavior as for UCB dosing controller).

Dosing Profile Based on Arbitrary Expression

It is now possible to perform a dosing task against any available trend or against a user defined trend.

Completion of Manual Dosing without User Interaction

The user can now decide within the Manual Add task whether or not a user interaction or acknowledgement is required to complete the operation.

Play an audible alert during Acknowledge Message

It is now possible to insert an operator message at any point of the procedure that will play an audible alert. This alert can be a custom wave or mp3 file and can be configured to be repeated until the user acknowledges the message.

New Thermostat Mode to Hold Actual T_r or T_j Value

This useful option for the “Heat/Cool” operation will keep the actual temperature value (T_r or T_j mode) constant. This new set temperature is visible in the experiment event log.

Option to Switch Off Overfill Warnings during Whole Experiment

During the setup of the reactor (double click on the reactor in the equipment setup) a new option “Warn if reactor contents exceeds maximal volume” has been added. This option is by default switched on – but can be deactivated by the user.

Intuitive Data Analysis and Visualization

New Version of iC Safety[™]

iC Safety[™] is a crucial tool for evaluating the thermal risks of a chemical reaction at industrial scale for use by novice, as well as advanced users. In addition, iC Safety[™] summarizes key safety information in an easy-to understand graphical format and provides access to detailed safety data for expert users. In its new version 5.0, this D2i (Data to Information) module provides an even more enhanced interface and improved functionality such as the calculation of TD24, criticality classes, analysis of multiple reactions and the ability to take snapshots for the comparison of results. Watch the iC Safety[™] tutorial video for an introduction to this very powerful tool.

Custom Offset for Int(qr_rtc)

The integration of qr_rtc now uses the real baseline. In previous versions the integration was always done from zero.

Basepoint Proportionality Can Be Defined and Kept Persistent

The default basepoint proportionality for cpr, Reflux Factor, U and Vv can now be changed and kept persistent for each experiment and each user within the “Options” window of iControl.

The Points of a Manual Baseline Can Now Be Edited Easily

For a baseline or a baseline with integral it is now possible to select the type “Manual”. Using this type makes it possible to add or edit baseline-points using drag-and-drop. Alternatively it is also possible to enter the exact values for changed or added points within a separate window.

Option to Decide if Averaged Dosing Rate (qdos) Should Be Used

During the determination of the terms for qr_hf and qr_rtc, it can be decided if an averaged derivation for the dosing rate (qdos) should be used or not.

The Cpi Values of UCB Sensors Are Considered for Calculations

While setting up a UCB sensor it is now possible to define Cpi values with respect to a specific reactor type. Using the option “Linked to” allows the user to link the selected sensor to the Cpi values

of another sensor already defined in the equipment database. Simply choose the sensor to link to from a dropdown list and the Cpi values of this sensor will be used.

Option to Compensate qc During Calculation of qr_hf and/or qr_rtc

While defining the terms for calculating qr_hf and qr_rtc, the user can decide if qc (the heat flow due to a calibration heater) should be compensated or not.

Quick Reporting and Data Exchange

Print Functionality Added to Many Screens

The option to send a screenshot directly to a printer has been added to many of the displays within iControl. This functionality can be used to print a screenshot on paper or to transfer a screenshot to an ELNB (electronic laboratory note book) provided this is installed on your system as a printer.

Printable Sensor History Report

Within iControl RC1[™] 5.0 it is now possible to print a detailed sensor history report, regardless of whether the sensor is connected to the RC1^e itself or to a RD10, RTCal or UCB box. The report contains offset and slope data and the date and type of the last adjustment for each sensor.

New Functionality for the Chemical Database

The chemical database has been enhanced with some new functionality to improve its usability:

- Chemicals can now be assigned to groups – for example, chemicals can be structured into acids, bases, solvents, catalysts, etc.
- Using the new “Comments” field, specific data in relation to a chemical (or a specific batch of this chemical) like the purity or the source of supply, can be stored together with the physical or chemical properties.
- The import and export behavior for chemicals has been improved and is now easier and more intuitive.

Chemical Database Is Shared between All iControl Versions and iC Kinetics

There is no need to manage more than one version of the chemical database on one computer if working with different versions of iControl or in combination with iC Kinetics. All applications share the same chemical database and access the same physical and chemical data.

Compatibility

Support of Windows Vista 64-bit and Windows 7 Added

iControl now fully supports the 32-bit versions of Windows Vista and Windows 7 as well as Windows XP SP3. Additionally, iControl Office provides support for 64-bit systems.

Updated Equipment Database

The equipment database that the user specifies and selects his METTLER TOLEDO equipment from, like reactors, covers and stirrers, has been updated and now contains the latest equipment offered by METTLER TOLEDO.

Known Issues

No.	Issue	Description and workaround
1 FB31725	RTCal reminders Reminders require RTCal adjustment instead of calibration	On systems where iControl 4.0 was previously installed, reminders in iControl 5.0 may request user to perform an RTCal adjustment. Note that the reminder should say "calibration" instead of "adjustment". An RTCal adjustment is only required if a calibration fails.
2 FB31716	Tutorial Videos may not play Happens mainly on Windows 7 systems	When clicking on a tutorial video link, iControl may not start the video. Workaround: Install the latest Flash player from the Adobe Website (http://get.adobe.com/flashplayer/). You may also start the videos directly from the iControl installation CD and run it on a PC with Flash player installed. On the iControl installation CD the tutorial videos can be found in the folder "iControl Tutorial Videos".
3 FB31934	Starting Mixing Guidelines from iControl Main Application fails Error message gets displayed saying that Mixing Guidelines are not installed	When clicking on the Mixing Guidelines button on the iControl Start Page or on the corresponding menu entry, an error will be displayed saying that the Mixing Guidelines are not installed. This message is even displayed if the Mixing Guidelines are installed. Workaround: Start the Mixing Guidelines via the desktop link or via the corresponding entry in the Start Menu (Mettler-Toledo → Mixing Guidelines).
4 FB31895	iC Safety: Calculated trends may not be immediately updated Changing stoichiometry or concentration may not update iC Safety trends right away	If the stoichiometry or the concentration of a reactant or limiting reactant is changed, the iC Safety trends may not get updated right away. Note that this only applies to experiments in analyze mode. Workaround: Click on the iC Safety tab in order to trigger a recalculation of the corresponding trends.

No.	Issue	Description and workaround
5 FB31896	iC Safety: Trends may not be shown if the iC Safety tab is never activated Applies to Thermal Accumulation and Tcf	When opening a saved experiment, some iC Safety trends may only get displayed in the trend viewer if the iC Safety tab was activated at least once. The following iC Safety trends are affected by this issue: Thermal Accumulation, Tcf Workaround: Click on the iC Safety tab in order to trigger the calculation of missing trends in the trend viewer.
6 FB31900	iC Safety: Reference chemical may only be selectable for first integral Error message may get shown for reference chemical if several integrals available.	If an experiment was conducted with multiple dosings of the same chemical over time and if each dosing is integrated separately, the first fill or any manually added chemicals before the first dosing cannot be selected as reference chemical. An error message will be displayed saying that the selected chemical was not found in the defined integral. iC Safety does not support calculations with multiple dosings based on the same first fill chemical.
7 FB19442	iC Safety: Using WinRC 7.1x or 7.2 experiments Calculations related to dosings incorrect for experiments converted from WinRC 7.1x or V7.2	For experiments converted from WinRC 7.1x and V7.2 all heat curves that use the balance trends are incorrect because the balance curves start with the start of the experiment and end with the end of the experiment. Workaround: De-activate the automated dosing(s) displayed in the dosing table and add a manual addition with the respective mass, cp, temperature and the correct start and end time.
8 FB576	Firewall warning Appears when starting iControl	On most PCs you will see a firewall warning that iControl is trying to access the network and that this is blocked and needs to be opened by a network administrator. iControl only uses network access for communicating to iC applications if they are installed on a different PC. For more information on this, please refer to the iControl Installation Guide. If you are not planning to communicate with iC applications over the network, you can simply ignore this firewall warning.

No.	Issue	Description and workaround
9 FB20585	Adding an RD10 Adding a new RD10 in the equipment database only works if the RD10 COM port has been selected before in the RC1 [™] instrument overview	If you add or edit an RD10 instrument in the equipment database (in "Manage Equipment and Instruments"), the COM ports are most likely not set correctly which means the software cannot communicate with the instrument. Workaround: The only way to select the right COM port is to enable one of the three RD10 instruments in the RC1e instrument overview and select the COM port there. This COM port is then also used in the wizard to configure the RD10.
10 FB19437	Experiment Toolbar Next manual operation sometimes shows an invalid time of 00:00:00	This happens if you have a condition in your procedure before the next manual operation. In this case, iControl cannot determine when this next manual operation will start and therefore simply shows "00:00:00".
11 FB12135	Manual Interaction with UCB Manually activating an Output on the UCB while the control loop is active will switch off the control loop, but in iControl the control loop is still shown as active	Manually overriding the active control loop by activating a UCB output does not get reflected in the iControl software with the effect that a running ramp operation keeps running even though physically the control loop is already switched off. Workaround: When a control loop is active, do not manually interact with either the A or B output of that control loop.
12 FB20844	Error loading an experiment Conflict due to different RC1e/ RD10 equipment database with different contents	If an experiment in design mode is copied to another computer with a different equipment database of different content, error messages may appear during the loading of the experiment. These error messages are caused because the equipment name and/or respective ID is different. Workaround: The experiment can still be loaded, however, the equipment which is missing will not be displayed correctly, and in order to run this experiment, you will need to configure the missing equipment in the experiment equipment setup again.