

Torrent Suite™ Software 5.10 Release Notes

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Revision History

Revision	Date	Description
F.0	14 February 2020	Torrent Suite™ Software 5.10.3 corrects Torrent Suite™ Virtual Machine (TSVM) restarts or stalls on Ion S5™ and Ion GeneStudio™ S5 sequencers.
E.0	15 June 2019	Off-cycle release 5.10.2 corrects centrifuge hardware failure event on Ion Chef™ Instruments.
D.0	8 May 2019	Correct the ion-analysis version to 5.10.11-1.
C.0	10 December 2018	Addition of one fixed issue for Torrent Suite™ Software 5.10.1 sp1: Incorrect anchor base reported for a fixed variant.
B.0	16 October 2018	This revision of Torrent Suite™ Software release notes includes the fixed bugs, and work-arounds for known issues addressed by Torrent Suite™ Software 5.10.1 as well as the Torrent Suite™ Software 5.10 release.
A.0	8 June 2018	New release notes for Torrent Suite™ Software 5.10.

Fixed Issue in Torrent Suite™ Software in 5.10.3

Torrent Suite™ Virtual Machine (TSVM) restarts or stalls on Ion S5™ and Ion GeneStudio™ S5 sequencers

On some Ion S5™ and GeneStudio™ S5 sequencers, Torrent Suite™ Software on a virtual machine stalls, or stalls and restarts, during an analysis of the sequencing run. In both cases the sequencing run does not complete and users were required to manually start the reanalysis. This issue is fixed with the installation of Torrent Suite™ Software 5.10.3.

Fixed Issue in Torrent Suite™ Software in 5.10.2

Centrifuge hardware failure event on Ion Chef™ causes runs to abort

On some systems, centrifuge failure events were observed at the end of the certain spins in the run protocol. The centrifuge failed to recover from the failure event, resulting in implicated runs to abort. The 5.10.2 off-cycle release fixes this issue.

New Features in Torrent Suite™ Software 5.10.1

Ion AmpliSeq™ RNA ERCC Companion Panel supported

The new Ion AmpliSeq™ RNA ERCC Companion Panel is supported by Torrent Suite™ Software. With the addition of the Ion AmpliSeq™ RNA ERCC Companion Panel to your Ion AmpliSeq™ RNA panel, dynamic range and sensitivity can be similarly evaluated in Ion AmpliSeq™ libraries that are prepared for RNA samples containing the ERCC spike-in mix. The ERCC Analysis Plugin 5.10.0.3 is available for download from the

Thermo Fisher Cloud. See the *Ion AmpliSeq™ RNA ERCC Companion Panel User Guide* (Pub. No. MAN0016081) for more information.

Fixed Issues in Torrent Suite™ Software 5.10.1

Incorrect anchor base reported for a variant fixed

In rare cases for TSS version 5.10, it was observed that an incorrect anchor base was reported in a variant. This occurs when an indel and a different variant share the same start position. The update issued for Torrent Suite™ Software 5.10 service pack 1 fixes this issue.

AmpliSeq RNA plugin Filter Barcodes and Single Barcode run failures fixed

When a user attempted to use the AmpliSeq RNA plugin in Torrent Suite™ Software 5.10, the plugin failed when the Filter Barcodes option was un-checked, and also when a single barcode was used for a run. This issue is fixed with the installation of Torrent Suite Software™ 5.10.1.

Calibration Standard fixed

When a user attempted to use the Calibration Standard (Planned Run creation, Kits workflow bar step, Advanced Settings) in Torrent Suite™ Software 5.10, the run failed. This issue is fixed with the installation of Torrent Suite Software™ 5.10.1.

Dashboard instrument timeouts fixed

In the Torrent Suite Dashboard, some instruments appeared as offline when they were actually online in Torrent Suite™ Software 5.10. This was caused because the instrument status communication timed out. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

Ion S5™ System lockup with Ion Mesh usage fixed

In rare cases, the Ion S5™ system instrument screen does not update the Planned Run list when Ion Mesh was used. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

Network issue prevented Ion 550™ chip runs with Ion Chef™ Instrument

Ion S5™ Systems failed to synchronize time with Ion Chef™ Instruments, which prevented Ion 550™ chip runs. This issue affected customers using Torrent Suite™ Software 5.8 and 5.10 versions. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

Misleading message on Ion AmpliSeq™ Import page fixed

Users saw the following false message on the Ion AmpliSeq™ Import page in Torrent Suite™ Software after changing their passwords: “You haven’t ordered any AmpliSeq designs”. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

An issue impacting Ion AmpliSeq™ panel import without a reference fixed

When a user attempted to import an Ion AmpliSeq™ panel without a reference, the import failed for some panels. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

Ion S5™ System and Ion Proton™ System touchscreen error fixed

Ion S5™ and Ion Proton™ systems touchscreens were returning to the Main screen during sequencing runs. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

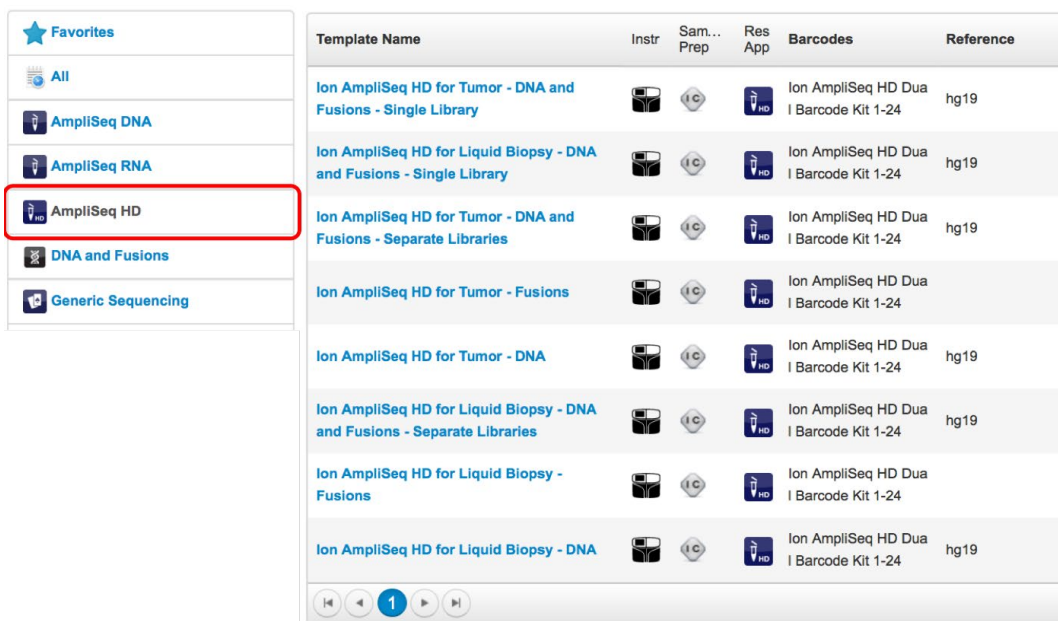
variantCaller plugin false negative variant calls fixed

In rare cases, false negative variant calls were observed at the overlapping amplicon junctions in variantCaller plugin results. This issue is fixed with the installation of Torrent Suite™ Software 5.10.1.

New Features in Torrent Suite™ Software 5.10

Ion AmpliSeq™ HD Made-to-Order Panels supported

The new Ion AmpliSeq™ HD Made-to-Order Panels are supported in this version of the Torrent Suite™ Software. Eight Planned Run templates are available under an AmpliSeq™ HD application category. These templates accommodate both single and separate libraries of DNA and Fusions for both Solid Tumor and Liquid biopsy sample types.



Template Name	Instr	Sam... Prep	Res App	Barcodes	Reference
Ion AmpliSeq HD for Tumor - DNA and Fusions - Single Library				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Liquid Biopsy - DNA and Fusions - Single Library				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Tumor - DNA and Fusions - Separate Libraries				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Tumor - Fusions				Ion AmpliSeq HD Dual Barcode Kit 1-24	
Ion AmpliSeq HD for Tumor - DNA				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Liquid Biopsy - DNA and Fusions - Separate Libraries				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Liquid Biopsy - Fusions				Ion AmpliSeq HD Dual Barcode Kit 1-24	
Ion AmpliSeq HD for Liquid Biopsy - DNA				Ion AmpliSeq HD Dual Barcode Kit 1-24	hg19

The templates are enabled with a dual barcoding feature that supports the Ion AmpliSeq™ HD Dual Barcode Kit 1-24. The dual barcodes can be assigned in the

samples table. See the *AmpliSeq™ HD Library Kit User Guide* (Pub. No. MAN0017392) for more information.

#	Barcode	Sample (required)	Control Type
1	IonHDdual_0102 (TAAGGAGAAC)	Sample 1	
2	IonHDdual_0102 (TAAGGAGAAC)	Sample 2	
3	IonHDdual_0103 (AAGAGGATTC)	Sample 3	
4	IonHDdual_0104 (TACCAAGATC)	Sample 4	
5	IonHDdual_0105 (CAGAAGGAAC)	Sample 5	

Oncomine™ TCR Beta Short Read Assay supported

The Oncomine™ TCR Beta Short Read Assay is now supported in Torrent Suite™ Software with a system template. This template allows further analysis in Ion Reporter™ Software. See the *Oncomine™ Immune Repertoire Assay, TCRB User Guide* (Pub. No. MAN0017438) for more information.

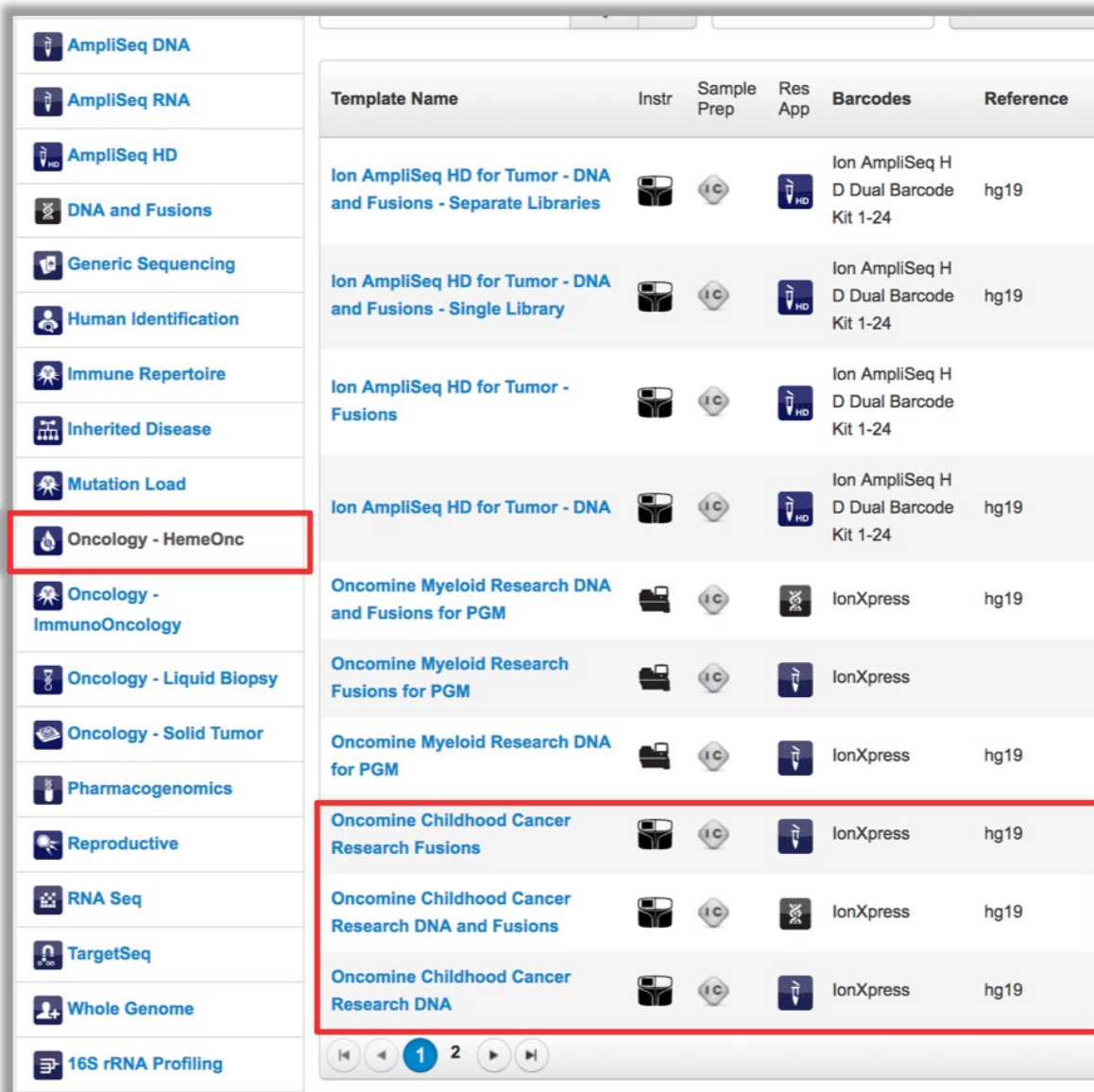
Template Name	Instr	Sample Prep	Res App	Barcodes	Reference
Oncomine TCR Beta-SR for S5				Ion Dual Barcode Kit 1-96	
Oncomine TCR Beta-LR for S5				Ion Select BC Seq t-1	
Ion AmpliSeq Immune Repertoire Assay Plus - TCRB for S5				Ion Select BC Seq t-1	































Oncomine™ TCR Beta Long Read Assay template name change

The Oncomine™ TCR Beta long read assay now has an Oncomine™ branded template available in Torrent Suite™ Software. The PGM instrument templates previously launched in Torrent Suite™ Software 5.8 are now removed from the templates screen. See the *Oncomine™ Immune Repertoire Assay, TCRB User Guide* (Pub. No. MAN0017438) for more information.

OncoPrint™ Childhood Cancer Research Panel supported

Support for the OncoPrint™ Childhood Cancer Research Panel is included in Torrent Suite™ Software 5.10. This includes three templates for DNA, Fusions, and DNA and Fusions. See the *OncoPrint™ Childhood Cancer Research Assay User Guide* (Pub. No. MAN0017117) for more information.



Template Name	Instr	Sample Prep	Res App	Barcodes	Reference
Ion AmpliSeq HD for Tumor - DNA and Fusions - Separate Libraries				Ion AmpliSeq H D Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Tumor - DNA and Fusions - Single Library				Ion AmpliSeq H D Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Tumor - Fusions				Ion AmpliSeq H D Dual Barcode Kit 1-24	hg19
Ion AmpliSeq HD for Tumor - DNA				Ion AmpliSeq H D Dual Barcode Kit 1-24	hg19
OncoPrint Myeloid Research DNA and Fusions for PGM				IonXpress	hg19
OncoPrint Myeloid Research Fusions for PGM				IonXpress	hg19
OncoPrint Myeloid Research DNA for PGM				IonXpress	hg19
OncoPrint Childhood Cancer Research Fusions				IonXpress	hg19
OncoPrint Childhood Cancer Research DNA and Fusions				IonXpress	hg19
OncoPrint Childhood Cancer Research DNA				IonXpress	hg19

Limit of Detection for TagSeq and AmpliSeq™ HD applications changed

Torrent Suite™ Software 5.10 features a completely new design of Limit of Detection (LOD) for Tag Sequencing and AmpliSeq™ HD applications. Compared with Torrent Suite™ Software 5.8 and earlier, higher values of LOD should be expected in 5.10 and later. In general, the change on the LOD reporting does not affect the variant calling results.

Ion Dual Barcode Kit supported

This version of Torrent Suite™ Software supports the Ion Torrent™ Dual Barcode Kit 1-96. This barcode kit enables dual barcodes for users' applications of interest. This kit at release, primarily supports the Oncomine™ TCR Beta Short Read Assay; however, customers can also use the kit for other applications. See the *Oncomine™ Immune Repertoire Assay, TCRB User Guide* (Pub. No. MAN0015869) for more information.

Ion Chef™ Scripts for Precision ID templates supported

The following Precision ID human identification (HID) templates support template preparation on the Ion Chef™ instrument:

Panel	Template
Precision ID mtDNA Control Region Panel - S5	HID Ion S5 Chef Templating 02
Precision ID mtDNA Whole Genome Panel - S5	HID Ion S5 Chef Templating 02
Precision ID Ancestry S5	HID Ion S5 Chef Templating 02
Precision ID Identity S5	HID Ion S5 Chef Templating 02

See *Precision ID SNP Panels with the Ion S5™/Ion GeneStudio™ S5 System Application Guide* (Pub. No. MAN0017767), or the *Precision ID mtDNA Panels with the Ion S5™/Ion GeneStudio™ S5 System Application Guide* (Pub. No. MAN0017770) for more information.

Torrent Suite™ Software Dashboard launched

The Torrent Suite™ Software Dashboard lists your active and recent sequencing runs. It also provides an overview of activity on all of your sequencers.

The screenshot displays the Torrent Suite Software Dashboard. At the top, there are navigation tabs: Home, Plan, Monitor, and Data. Below these, there are sub-tabs for Dashboard and News. The main content area is titled 'Summary' and includes a 'Stop Refresh' button. It is divided into four sections: SOFTWARE (Torrent Suite 5.10.0.RC4), INSTRUMENTS (3 connected), SERVICES (1 service down), and DATA MANAGEMENT (Disk usage 37.8%). Below the summary is a 'Runs' section with a table of sequencing runs, including run names, sample counts, sequencing/analysis dates, progress indicators, and report links. At the bottom is an 'Instruments' section showing three sequencers: GeneStudio, S5XL-00120, and S5XL-00125, with their current status and last initialization/clean dates.

Torrent Suite™ Software News relocated


The Torrent Suite™ Software News tab is now on the new Home tab, which also contains the Dashboard. New notifications will be highlighted next to the News text.

The screenshot shows the News tab in the software interface. It features a 'News' section with the heading 'Updates from Ion Torrent'. The first news item is titled 'Ion Torrent Software Team will be at the 2018 AACR Meeting, come meet with us!' and includes a promotional image of the team and a 'Find out more' button. The second news item is titled 'Torrent Suite™ Software v5.8 update available!' and provides details about the new features and bug fixes. The interface also shows navigation tabs for Home, Plan, Monitor, and Data, and sub-tabs for Dashboard and News.

Ploidy detection in variantCaller plugin output improved

Both the VCF files and the allele.xls table in the Torrent Suite™ Software now contain the variantCaller Possible Ploidy Alleles (PPA) tag in the INFO FIELD. The INFO FIELD contains only alleles that are not reported by genotype (GT). This makes the results consistent across both formats.

Samples table now auto-fill capable

Based on user feedback, the samples table features an auto-fill in feature for the barcodes column. When a user clicks on the first barcode, a "fill in"  button appears. If the user clicks on it, all subsequent barcodes will be re-numbered starting with selected first barcode value.

Templating size field removed

The templating size field will no longer be available in the Planned Run kits workflow step. Users will select library length, when applicable, or special protocols from the templating protocol field.

Reference annotation files for pre-loaded references available

Users can now install reference annotation files for downloaded, pre-loaded references. These annotation files are used by downstream plugins and viewed as additional tracks in Integrative Genomic Viewer (IGV) and Ion Reporter Genomic Viewer (IRGV). These annotation files are available for download from the References menu under settings.

Reference and BED file handling improved

Users are now able to upload and use a large number of reference and BED files, due to improvements to client-side file handling mechanisms.

Plugin configuration validation added

Certain plugins must be configured when users create a Planned Run. Beginning with Torrent Suite™ Software 5.10, users will receive a warning message if a plugin is not configured when they create a Planned Run.

Ion Chef™ workflow for the Ion 550™ Chip improved

Torrent Suite™ Software 5.10 includes script enhancements for the loading protocol for the Ion 550™ Chip within the Ion Chef™ workflow. These changes will improve robustness of Ion 550™ Chip loading and ensure reproducibility within runs.

New Ion AmpliSeq™ Community Panel for Microbial Research available

A new panel, the Ion AmpliSeq™ Pan-Bacterial Community Panel, is a quick, accurate, and cost-effective tool for detecting bacterial organisms at genus and species-level and detect with 31 different antibiotic classes. The analyses of the data is done with a Pan-Bacterial Plugin in beta. This plugin is available at the plugin store on Thermo Fisher Cloud. The plugin is in beta release and not currently supported.

Combined sample tube label added

Previously, when creating a Planned Run from a completed Ion Chef™ library preparation step on the Sample Sets tab, the “combined sample label” barcode was auto-populated in the “Sample Tube label” field of the new Planned Run template. Beginning in Torrent Suite™ Software 5.10, the sample tube label field will not be auto-populated.

Fixed Issues in Torrent Suite™ Software 5.10

variantCaller Plugin Allele table now displays in Internet Explorer® browser

An issue with variantCaller Allele table not displaying correctly in Internet Explorer® browser is fixed in this release of Torrent Suite™ Software.

variantCaller hotspots parameters now display in Firefox® browser

Previously, when users configured the variantCaller plugin in the Planned Run using Firefox® browser, an issue prevented the column of hotspots parameters in the Advanced Parameters of variantCaller Configuration screen, from being displayed. The issue is fixed in this release.

Known Issues


Torrent Suite™ Software User/Group permissions

Currently, specific user permissions are not supported on Torrent Suite™ Software. Only two types of user accounts, Administrator and Non-administrator, are supported. User-specific actions will be introduced in the upcoming releases.

Ion Mesh connectivity issues

An issue in the Ion Mesh utility is preventing servers that use Domain Name Service (DNS) Lookup from connecting to servers that do not use DNS Lookup. This issue will be fixed in an upcoming release of the software.

Configure Server screen does not auto-update

The Configure Server screen ( **Settings**) > **Configure**) does not update automatically. This page needs to be refreshed manually to check if the configure server step has completed successfully.

On-instrument re-analysis not reflected in Dashboard

Post initiation of a reanalysis on the instrument, if the analysis is aborted on the instrument the Torrent Suite™ Software Dashboard continues to show the analysis is in progress. This issue will be fixed in upcoming software release.

Set Chip Type to 540 when uploading compressed file from ampliseq.com

For Ion AmpliSeq™ HD research panels, when uploading compressed files from ampliseq.com, choose the S5, 540, chip type. The default setting of 314/316/318 will cause the upload to fail.

AmpliSeq

Manual Upload AmpliSeq.com export zip

Upload a design or panel's zip archive exported from AmpliSeq.com

No file selected.

Select File

Select which instrument/chip this panel is intended for:

PGM: 314 / 316 / 318

Proton: PI

S5: 510 520 530 540 550

Upload

Auto Refresh issue on Data tab

In the Data tab in the Completed Runs & Reports screen, Ion Mesh information is not updated after you click **Auto Refresh**.

Sample description issue

In some cases, when creating a barcoded Planned Run with a Sample Name and a Sample Description, if you click **Review** to check the saved values, and then edit the same plan, the sample description disappears. This issue will be fixed in the next release of software.

Fan speed below threshold error

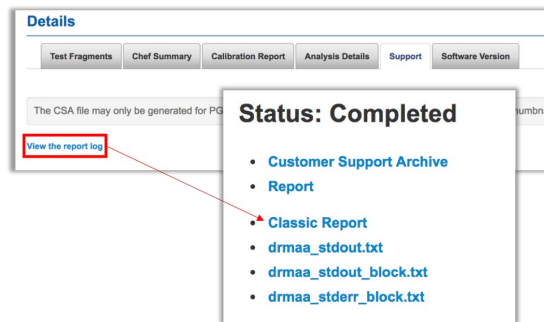
An issue is causing Ion S5™ and Ion S5XL™ Systems to falsely report fan speeds as below threshold. Contact Technical Support to determine if an alarm on the Torrent Suite™ Software Dashboard is valid.

Important information

Classic Report relocated

The Classic Report option, which was located on a Reports dropdown list on the Run Report, is now available from the Details section of the Run Report.

1. In the Data tab, select Completed Runs & Reports, then click a report name.
2. In the Details section, select the **Support** tab.
3. Click **View the report log**.
4. Click **Classic Report**.



Ion Chef™ Instrument Control Software off-cycle updates

Updates to Ion Chef™ Instrument Control Software packages (see *Appendix: Package and Version Information*) will occur after the release of Torrent Suite™ Software 5.10. These updates will be part of an off-cycle update feature that allows us to update Ion Chef™ Instrument Control Software between releases of Torrent Suite™ Software.

Ubuntu™ Security Updates

Please note that Torrent Suite™ Software 5.10.1 includes all Ubuntu™ security updates and patches as of October 10, 2018.



Install the Torrent Suite™ Software 5.10.1 Update

IMPORTANT! You cannot roll back to a previous version of Torrent Suite™ Software and Ion Torrent™ instrument software after you perform the upgrade described in this document.

When updating Torrent Suite™ Software, it is critical that you update both the software on the instrument and the software on the Torrent Server. In Torrent Suite™ Software 4.0 and later, the instrument will not retrieve the proper on-instrument analysis if both systems are not updated.

IMPORTANT! During this upgrade, you must use the same user account for both Torrent Server and the Ion instruments (Ion PGM™ Instrument, Ion Chef™ Instrument, Ion Proton™ Sequencer, Ion GeneStudio™ Plus S5, Ion GeneStudio™ S5 Prime, Ion S5™ and S5™ XL Sequencers.)

Use these steps to install Torrent Suite™ Software 5.10.1:

1. Sign in to Torrent Suite™ Software as **ionadmin** user.
2. Click  **(Settings)** > **Services**. Ensure that there are no active jobs running.
3. Click  **(Settings)** > **Configure** > **Admin Interface**.
4. Click **Update Server**.
5. Click **Check** to check for updates.
6. When the **Available** message appears, click **Update Server** to start the update process.
7. On the EULA screen, scroll down to read, then accept the EULA to begin update.
8. When finished, ensure that the “**Upgrade completed successfully!**” message appears.


Updates through a command-line user interface

Note: This procedure is typically performed by Thermo Fisher Scientific field service engineers. Most users will instead use the procedure above for updates through the Torrent Suite™ Software.

New in this release, for Ubuntu™ 14.04 systems, the command-line interface update procedure has an additional TSconfig step of TSconfig --configure-server. The complete command-line interface update procedure is:

- 1 sudo apt-get update
- 2 sudo apt-get install ion-tsconfig
- 3 When prompted to accept EULA acceptance, press “Tab”, then “Return” to proceed with update.
- 4 sudo TSconfig -s
- 5 sudo TSconfig --configure-server

Verify the software update on the Torrent Server

To verify that the server is running Torrent Suite™ Software 5.10.1, click  **(Settings)** > **About** in the Torrent Suite™ Software and review the version number.

Update the instrument software

Update the software on any Ion instruments in use:

- Ion Proton™ Sequencer
- Ion GeneStudio™ S5 Sequencer
- Ion S5™ and S5™ XL Sequencer
- Ion Chef™ Instrument
- Ion OneTouch™ 2 Instrument

Appendix: Package and Version information

Release Date	10 February 2020
Release Version	5.10.3

Software Packages Versions

These tables list the versions for each of the latest software packages for Torrent Suite™ Software plugins and Ion Torrent™ instruments.

Package	Version
ion-analysis	5.10.11-1
ion-dbreports	5.10.27-1
ion-gpu	5.10.0-1
ion-pipeline	5.10.12-1
ion-plugins	5.10.13-1
ion-publishers	5.10.2-1
ion-rsmts	5.6.1-1
ion-torrentr	5.10.10-1
ion-torrentpy	5.10.9-1
ion-tsconfig	5.10.7-1
Plugin	Version
ion-plugin-ampliseqrna	5.10.1.2
ion-plugin-assemblerspades	5.10.0.1
ion-plugin-coverageanalysis	5.10.0.3
ion-plugin-cloudupload	5.10.0.0
ion-plugin-dataexport	5.10.0.0
ion-plugin-erccanalysis	5.10.0.3

Package	Version
ion-plugin-fieldsupport	5.10.0.1
ion-plugin-fileexporter	5.10.0.0
ion-plugin-filterduplicates	5.10.0.0
ion-plugin-immuneresponse	5.10.0.1
ion-plugin-ionreporteruploader	5.10.0.31
ion-plugin-pgxanalysis	5.10.0.1
ion-plugin-runtransfer	5.10.0.1
ion-plugin-sampleid	5.10.0.1
ion-plugin-variantcaller	5.10.1.19

Ion Chef™ Instrument Control Software

Package	Version
ion-chefupdates	5.10.2
Package	Version
GUI	100006
IS	804
SC	803
GM	23
OS	61
TsLink	6.0.4

Ion GeneStudio™ S5/Ion S5™ Instrument Control Software

Update Package	Version
ion-s5updates	5.10.3
Package	Version
Scripts	2.1.42
RsmAgent	34
RfidMgr	30
ReaderFpga	2d40010d
OS	36
OIA	51000
LiveView	2389
Graphics	97
DataCollect	3607

Ion Proton™ Instrument Control Software

Update Package	Version
ion-protonupdates	5.10.3
Package	Version
LiveView	2389
datacollect	3606
Scripts	2.1.45
Graphics	97
rsmagent	34
OS	35
OIA	51000

Ion PGM™ Instrument Control Software

Update Package	Version
ion-pgmupdates	5.10.0
Package	Version
LiveView	755
DataCollect	489
HW8560	134
Scripts	220000
OS	21
Graphics	36
TSLink	1.0.5

Ion OneTouch™ Instrument Control Software

Update Package	Version
Ion-onetouchupdater	5.0.2-1
Package	Version
OneTouch	803
BoardControl	800
UpdateAgent	800
Scripts	802
Psplash	800

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