

Formatter2™

Liquid Handling Workstation

Product Brief

TOMTEC Formatter2™

The Formatter2™ is an automated workstation that transfers liquid samples from screw top cryovials to 96 well plate assays with full “chain of custody” and GLP under LIMS control. The Formatter2 can handle biological samples, polypeptides (RNA/DNA), reagents, or compounds. It brings together, within a single instrument, a wide range of reformatting capabilities that were previously unavailable.

At-a-Glance

Full ‘Chain of custody’ reformatting from cryovials to 96-well assays

Built in verification and data-logging for each pipetting operation

Seamless interface to legacy LIMS system with GUI for programming

Two independent robot arms for pipetting and handling of cryovials

Disposable tips to eliminate cross contamination

High level capabilities:

- Will pick, open and scan the bar-code on a cryovial from a Peltier® cooled (4°C) sample rack;
- Place the cryovials in the Vortexer for homogenization prior to pipetting;
- Unthread the cryovial top via a dedicated robot;
- Via a superior air displacement pipetting head Aspirate a volume from 450µL down to 10µL from the cryovials and optically verify aspirated volume (clot detector) prior to dispensing;
- Dispense a volume into one of four target assay positions; three general purpose assays and/or one dedicated chilled - deep well assay position (chilled via – Peltier® cooler);
- Re-thread the cap onto the cryovial and place it back in the chilled sample rack (dedicated robot);
- Shuck the tip and load new tip from one of two 96 tip jig fixtures and
- At any point within the run, extract and dispense a fixed aqueous reference volume which is gravimetrically measured to ensure consistency of volume (calibration log).

In addition to the above, the Formatter2 also has a dedicated rack for housing reference samples. This 4 x 8 rack can be used to hold either open or screw top cryovials containing standards which can be pipetted into any location within the target assay. It also has a four-tray multipurpose open reservoir for holding organic or aqueous reference solutions.

Each of the above noted capabilities can be programmed by a LIMS system and monitored via a Graphical User Interface provided by Tomtec. In the unlikely event of an error, the system will either set off an alarm and halt until the issue is resolved or log the error, retry and then continue. In either case, no data is lost and the workflow remains intact. The Formatter2 provides an automated “chain of custody” workflow that not only formats between cryovials and 96-well assays but allows a lab to verify and log each step of the procedure, i.e., time of action, quality of procedure and do it with zero human error and with minimal intervention by laboratory staff. As an example, legacy methods would require two dedicated technicians; one to perform the formatting and a second to verify and record each step, the Formatter2 provides full walk away automation with documentation, freeing up valuable laboratory resources.

Formatter2™ feature and benefits

Vortex - This is a nest which receives a single sealed cryovial via the pick&place robot arm. The vortex then homogenizes the contents which may have separated. The duration is programmable.

Chilled sample rack - The rack is an eight (8) by fourteen (14) cryovial rack which holds samples for formatting to a 96-well assay. The rack can be optionally cooled via a distributed Peltier cooling system to 4oC (factory set). A LIMS identification system receives and logs barcode data from each vial as it is retrieved, noting time of movement and position within the array.

Air displacement pipetting technology - The Formatter2 is based upon a 10µL to 450µL disposable tip. The cannula is designed to service both deep-well and shallow-well assays. The accuracy is guaranteed to be better than +/-3% at 10µL.

Internal gravimetric balance - This is a precision 4 place Sartorius Balance which rests on its own isolated mounting surface, within the Formatter enclosure. The balance is used to track and verify the pipettor calibration curve on demand. It may also run and record pipettor accuracy, prior to, and after a programmed processing run.

Tip clot detector - The detector, using a reference light source, verifies the volume of the pipette operation. If the measured volume fall outside of acceptable preset limits, the volume is flushed to waste and the step is logged and repeated or the process halts and an alarm state is set, allowing manual intervention.

Three axis cap robot - The eight by fourteen chilled sample rack is serviced by a dedicated capping robot. This allows parallel operation of cap operations with pipetting operations which reduces formatting time, and limit sample exposure to the environment.

Three axis pipetting robot - The pipetting robot works in parallel with the cap robot to format samples to the target array.

Safety Enclosure - The Formatter2 is available with a removable front enclosure with sliding door panels. This provides a seamless static enclosure of the operating area which can be vented. The enclosure can be optionally supplied with a 3" flex hose adapter to an external HEPA filter assembly. Together they provide a system that meets the Biological Safety Level 1 (BSL1) classification as specified by the CDC.

Applications:

- qPCR sample preparation
- Biobanking
- DNA/RNA Quantification
- NGS fragment library preparation
- MALDI-spotting
- PLE setup
- Reformatting of samples
- Reconstitution



Specification	Value	Dimension
width	inches	37
depth	inches	26
height	inches	33
power (peak)	watts	950
weight	pounds	226

