

RTA VOLTRAN[®]

Viral Load Detection System



RTA VOLTRAN Viral Load Detection System consists of 4 main components:

- RTA Magnetic Bead Viral Nucleic Acid Isolation Kit
- RTA (HBV / HCV / HIV-1 / CMV) Real Time PCR Kits
- Hamilton MICROLAB STAR^{LET} Automated Extraction and PCR setup system
- Bio-Rad CFX96TM Real Time PCR detection system

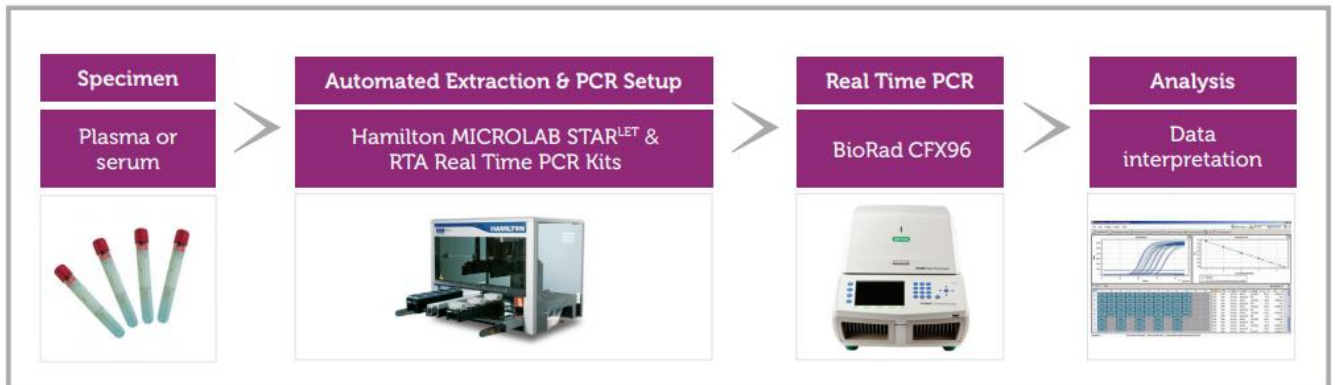
RTA VOLTRAN Viral Load Detection System offers everything you need for a fast, productive and reliable operation:

- Compliance with EU IVD 98/79/EC
- Automated nucleic acid extraction (magnetic bead) and PCR Setup
- 96 sample capacity, build-in and handheld barcode scanner
- Inhibitor-free nucleic acid checked by internal control added during extraction
- Leading pipetting technology of HAMILTON based on 50 years of expertise in liquid handling
- High sensitivity of detection even from low concentrated samples
- User friendly GUI, software, complete sample traceability
- Easy maintenance and serviceability
- UV lamp for daily decontamination
- Quick run setup, easy monitoring of progress and powerful analysis tools of BioRad CFX 96TM

RTAVOLTRAN[®]

Viral Load Detection System

→WORKING SYSTEM



RTA VOLTRAN Viral Load Detection System workflow is shown in the table below:

1. The consumables and the reagents are placed in the system.
2. Centrifuged and barcoded blood collection tubes are placed in the system.
3. Extraction programme is started (Takes nearly 3 hours for 48 samples).
4. After the extraction is completed, reagents required for PCR setup are placed in the system.
5. RT PCR setup programme is started (takes nearly half an hour).
6. The sample plate is placed in Bio-Rad CFX96 for RT PCR detection.
7. Data analysis is done via CFX Manager Programme.

RTAVOLTRAN®

Viral Load Detection System

This study shows the comparison of important parameters of Viral Load Detection Systems in the market.

→ HBV Viral Load Detection

	RTA	ROCHE	QIAGEN	ABBOTT
Duration of extraction	180 min/48 tests 240 min/96 tests	120 min/24 tests	75 min/24 tests	210 min/48 tests
Duration of PCR	150 min	?	?	?
Sample volume	200 µl	500 µl	200 µl, 500 µl or 1000 µl	200 µl or 500 µl
Capacity	96(91)****	72 (63)*	96(72)**	48(45)***
Analytical sensitivity	10	9 for plasma, 19 for serum	10,22	10 for 0.5 mL sample volume 15 for 0.2 mL sample volume
Linear range	$9.9-1 \times 10^9$	$2 \times 10^1-1,7 \times 10^9$	$3,1 \times 10^1-2 \times 10^7$	$1 \times 10^1-1 \times 10^9$
Unit	IU/ml	IU/ml	IU/ml	IU/ml

→ HCV Viral Load Detection

	RTA	ROCHE	QIAGEN	ABBOTT
Duration of extraction	180 min/48 tests 240 min/96 tests	120 min/24 tests	75 min/24 tests	210 min/48 tests
Duration of PCR	150 min	?	?	?
Sample volume	200 µl	500 µl	200 µl, 500 µl or 1000 µl	200 µl or 500 µl
Capacity	96(91)****	72 (63)*	96(72)**	48(45)***
Analytical sensitivity	15	12,6 for plasma, 8,2 for serum	36,2	12 for 0.5 mL sample volume 30 for 0.2 mL sample volume
Linear range	$14-1 \times 10^9$	$4,3 \times 10^1-6,9 \times 10^7$	$6,7 \times 10^1-1,77 \times 10^7$	$1,2 \times 10^1-1 \times 10^8$
Unit	IU/ml	IU/ml	IU/ml	IU/ml

RTAVOLTRAN®

Viral Load Detection System

→ CMV Viral Load Detection

	RTA	ROCHE	QIAGEN	ABBOTT
Duration of extraction	180 min/48 tests 240 min/96 tests	120 min/24 tests	75 min/24 tests	210 min/48 tests
Duration of PCR	150 min	?	?	?
Sample volume	200 µl	500 µl	200 µl, 500 µl or 1000 µl	500 µl
Capacity	96(91)****	72 (63)*	96(72)**	48(45)***
Analytical sensitivity	60	61 copies/ml or 56 IU/ml	42,5 copies/ml or 69,7 IU/ml	20 copies/ml or 31,2 IU/ml
Linear range	$58,5-1 \times 10^9$	$1,5 \times 10^2-1 \times 10^7$ copies/ml or $1,3 \times 10^2-9,1 \times 10^6$ IU/ml	$7,9 \times 10^1-1 \times 10^8$ copies/ml or $1,3 \times 10^2-1,64 \times 10^8$ IU/ml	$20-1 \times 10^7$ copies/ml or $31,2-1,56 \times 10^8$ IU/ml
Unit	IU/ml	copies/ml or IU/ml	copies/ml or IU/ml	copies/ml or IU/ml

→ HIV-1 Viral Load Detection

	RTA	ROCHE	QIAGEN	ABBOTT
Duration of extraction	180 min /48 tests 240 min/96 tests	120 min/24 tests	75 min/24 tests	210 min/48 tests
Duration of PCR	150 min	?	?	?
Sample volume	200 µl	850 µl	200 µl, 500 µl or 1000 µl	200 µl, 500 µl, 600 µl or 1000 µl
Capacity	96(91)****	72 (63)*	96(72)**	48(45)***
Analytical sensitivity	77	82	76,4	40 for 1 mL, 40 for 0.6 mL, 75 for 0.5 mL, 150 for 0.2 mL
Linear range	$77-1 \times 10^9$	$8,2 \times 10^1-1,7 \times 10^7$	$1 \times 10^2-1 \times 10^8$	$1 \times 10^1-1 \times 10^9$
Unit	IU/ml	IU/ml	IU/ml	copies/ml

* One set is for 24 tests. 3 sets can be worked simultaneously (72 tests). Each set includes 2 positive controls, 1 negative control and 21 samples can be analyzed.

**96 samples' extraction can be performed. 72 tests PCR can be setup, including 6 standards and controls.

***48 tests can be worked without interference. For 96 tests, pipette tips must be added. The system uses 2 positive controls and 1 negative control.

****96 samples' extraction can be performed. 91 tests PCR can be setup, excluding 4 standards and 1 negative control.

RTA VOLTRAN®

Viral Load Detection System

Below study is prepared to highlight the advantages and disadvantages of RTA VOLTRAN Viral Load Detection System over the competitor systems in the market.

Feature table 1

RTA VOLTRAN	12 tests, 24 tests and 48 tests packaging minimizes the wasting of the reagents.
Roche Cobas Ampliprep/ Cobas TaqMan	For the test numbers less than 24, remaining reagents and consumables are wasted. For every 24 tests set, 3 of the samples are used as standards.
Qiagen-QIA Symphony	The remaining reagents are re-usable. Considered as an advantage, but might increase the contamination risk.
Abbott M2000sp	For the test numbers less than 24, remaining reagents and consumables are wasted.

Feature table 2

RTA VOLTRAN	Barcoded sample tubes can be directly put in the instrument.
Roche Cobas Ampliprep/ Cobas TaqMan	Samples have to be transferred manually to the specific tubes before extraction. Additional barcode cartridges are put on the tubes one by one. This increases contamination risk and is time consuming.
Qiagen-QIA Symphony	Labeled sample tubes are supported through the customer need.
Abbott M2000sp	

Feature table 3

RTA VOLTRAN	Reagents are ready to use in sterile and seal capped containers. UV lamp in the device provides the complete decontamination of the system.
Roche Cobas Ampliprep/ Cobas TaqMan	Reagents are in cartridges and are opened within the instrument before the extraction. Has UV Lamp.
Qiagen-QIA Symphony	Reagents are in cartridges and are opened within the instrument before the extraction. Has UV Lamp.
Abbott M2000sp	Does not have UV Lamp.

RTA VOLTRAN®

Viral Load Detection System

Feature table 4

RTA VOLTRAN	If any trouble occurs during extraction, the system detects it and marked. Following PCR is not performed for the particular sample.
Roche Cobas Ampliprep/ Cobas TaqMan	If one of the pipette tips be bunged up with something, the whole system stops and the remaining reagents are wasted.
Qiagen-QIAasympyony	If one of the pipette tips be bunged up with something, the system passes the particular sample over.
Abbott M2000sp	

Feature table 5

RTA VOLTRAN	PCR reagents are placed in the system after extraction - before PCR setup.
Roche Cobas Ampliprep/ Cobas TaqMan	PCR reagents are placed in the system before the extraction starts.
Qiagen-QIAasympyony	Because the system has only one cooled elution block, DNA /RNA is kept in room temperature when more than 48 tests are used.
Abbott M2000sp	PCR reagents are placed in the system after extraction - before PCR setup.

Feature table 6

RTA VOLTRAN	The system has the “Anti Droplet Control” technology preventing inadvertent droplet from the tips
Roche Cobas Ampliprep/ Cobas TaqMan	Has a system to prevent droplet from the tips.
Qiagen-QIAasympyony	Has a system to prevent droplet from the tips.
Abbott M2000sp	Does not have a system to prevent droplet from the tips.