

MVS[®] Specifications



SYSTEM PERFORMANCE

| | Standard & Advanced Editions 96-Well Verification Plate | Advanced Edition Only 384-Well Verification Plate |
|--|---|---|
| Time Requirements | < 5 minutes | < 10 minutes |
| Tip Configurations | 1, 2, 4, 6, 8, 12, and 96 | 1, 8, 12, 16, 24, 96, and 384 |
| Traceable Volume Range | 0.1000 - 350.0 μ L | 0.0100 - 55.00 μ L |
| Operating Volume Range* | 0.0001 - 350.0 μ L | 0.0001 - 55.00 μ L |
| Artel 800TSNB Plate Reader | | |
| Uncertainty (Inaccuracy)** | 0.2000 - 350.0 μ L, \pm 2.0% 0.1000 - 0.1999 μ L, \pm 3.0% | 0.0500 - 55.00 μ L, \pm 2.5% 0.0200 - 0.0499 μ L, \pm 3.5% 0.0100 - 0.0199 μ L, \pm 5.5% |
| Random Error (Imprecision)** | 0.2000 - 350.0 μ L, \leq 0.4% 0.1000 - 0.1999 μ L, \leq 0.4% | 0.0500 - 55.00 μ L, \leq 0.8% 0.0200 - 0.0499 μ L, \leq 0.8% 0.0100 - 0.0199 μ L, \leq 0.9% |
| Operating Temperature for Aqueous Sample Solutions | 15 - 30 $^{\circ}$ C | 15 - 30 $^{\circ}$ C |
| Operating Temperature for DMSO Sample Solutions | 19 - 30 $^{\circ}$ C | 19 - 30 $^{\circ}$ C |
| Traceability to national & international standards using Artel MVS Verification Plates | Yes | Yes |

PERFORMANCE SPECIFICATION DEFINITIONS

- When each well in an MVS Verification Plate is uniformly¹ filled with a known² volume of MVS Sample Solution and measured with an Artel MVS Plate Reader, each individual well measurement will be within the stated MVS inaccuracy specification at a statistical confidence of 95% or better.³
- The CV across the full plate (96 or 384 individual results) will also be within the stated imprecision specification at a statistical confidence of 95% or better.⁴

1. When verifying the precision performance specification of the MVS, the liquid handler used to dispense into the MVS Verification Plates must be capable of repeatable volume delivery with a CV and tip-to-tip variability at least 3 times smaller than the MVS imprecision specification.
2. When verifying the accuracy performance specification of the MVS, the liquid handler used to dispense into the MVS Verification Plates must have a demonstrated accuracy (expanded uncertainty at k=2) at least 3 times smaller than the MVS accuracy specification.
3. The number of wells in a single plate, or in a collection of multiple plates, showing results outside of the MVS inaccuracy specification will be less than 5% of the total wells measured.
4. The probability that a plate dispensed in this way will show a CV greater than the imprecision specification is less than 5%, or one plate in 20.

* Measurement of volumes outside of the traceable volume ranges are not traceable to the national and international standards and no declarations of relative inaccuracy and imprecision are made.

** Stated specifications apply when Artel MVS Plate Readers MVS and MVS Verification Plates are used.

ARTEL 800TSNB PLATE READER

| | |
|----------------------|--|
| Size | Depth 41.9 cm, Width 38.1 cm, Height 17.8 cm |
| Weight | 9.97 kg |
| Display | Touch screen |
| Light source | Tungsten gas filled bulb |
| Wavelength selection | Metal oxide interference filters Center wavelengths: 520.2 nm (bandwidth at half-max = 6.2 nm) 730.5 nm (bandwidth at half-max = 10 nm) |
| Additional filters | 405 nm, 450 nm, 490 nm |
| USB COM port | USB |

MVS TITER PLATE SHAKER

| | |
|---------------------|--|
| Dimensions | Length 142 mm, Width 99 mm, Height 48.2 mm |
| Amplitude | 2.0 mm orbital |
| Shaking Speed Range | 200 to 3000 rpm |

MVS CALIBRATOR PLATE

| | |
|---------------|--|
| Storage | 15 - 30 °C in protective case, out of direct light |
| Recalibration | 12 month factory recalibration required |
| Shelf life | 1 year |

MVS BAR CODE READER

| | |
|--------------------|-------------------|
| Dimensions (LxWxH) | 104 x 71 x 160 mm |
| Weight | 147 g |



MVS COMPUTER (minimum requirements)

| | |
|-----------------------------|--------------------------------------|
| x86 Processor | 1.0 GHz |
| Memory | 1 GB |
| I/O Ports | 3 USB Connectors |
| Network | 10/100 Ethernet and 802.11b Wireless |
| Storage | 20 GB of hard drive space |
| Supported Operating Systems | Windows® 7 or Windows® 10 |

MVS MOBILE WORKSTATION

| | |
|-------------|--|
| Weight | 147 lbs. |
| Dimensions | Width 34 inches, Depth 20 inches, Height 40 inches |
| Accessories | Surge protector with 12 ft. cord |

MVS DATA MANAGER SOFTWARE

- 21 CFR Part 11 compliance ready.
- Immediate display of pass/fail, dispense patterns via heat map, and volumetric results for each channel.
- Automatic flagging of all deliveries exceeding tolerance limits.
- Compatible with Microsoft Windows® 7 or Windows® 10.
- Easy exporting of data for analysis or viewing with other programs.
- Ability to re-evaluate data visually by modifying the pass/fail criteria after analysis.
- Test the performance of multiple liquid delivery devices using a single plate.
- Ability to use popular conventional microtiter plates when traceability is not a factor.
- Ability to verify and optimize a volume dispensing instrument using specific test solutions such as Dimethyl sulfoxide (DMSO).

MVS VERIFICATION PLATES

| | |
|----------------|---|
| QTY per sleeve | 25 |
| Shelf Life | 96-well: 60 months 384-well: 60 months |
| Material | Black, Polystyrene, optical bottom |

| | | |
|--------------------------|--------------------------------------|---|
| MVS Volume Ranges | 96 well standard profile plate | 384 well for standard profile plate |
|--------------------------|--------------------------------------|---|

| AQUEOUS SAMPLE SOLUTIONS | | |
|----------------------------|--|-------------------------------|
| Range HV Sample Solution | 200.1 - 350.0 μL | N/A |
| Range A Sample Solution | 50.00 - 200.0 μL | 10.00 - 55.00 μL |
| Range B Sample Solution | 10.00 - 49.99 μL | 2.500 - 9.999 μL |
| Range C Sample Solution | 2.000 - 9.999 μL | 0.500 - 2.499 μL |
| Range D Sample Solution | 1.000 - 1.999 μL | 0.3000 - 0.4999 μL |
| Range E Sample Solution | | |
| Traceable Volume Range | 0.1000 - 0.9999 μL | 0.0100 - 0.2999 μL |
| Non-traceable Volume Range | 0.0001 - 0.0999 μL | 0.0001 - 0.0099 μL |
| Stock Solution 1 | 0.4 - 9.9 μL | 0.1 - 2.49 μL |
| Stock Solution 2 | 10 - 49.9 μL | 2.5 - 9.9 μL |
| Shelf Life | 24 months from date of manufacture. | |
| Storage/Operation | 15 - 30 °C tightly capped, in closed box, out of direct light. | |

| DMSO SAMPLE SOLUTIONS | | |
|------------------------------|--|-------------------------------|
| DMSO Range C Solution | 2.000 - 9.999 μL | 0.500 - 2.499 μL |
| DMSO Range D Solution | 1.000 - 1.999 μL | 0.3000 - 0.4999 μL |
| DMSO Range E Sample Solution | | |
| Traceable Volume Range | 0.1000 - 0.9999 μL | 0.0100 - 0.2999 μL |
| Non-traceable Volume Range | 0.0001 - 0.0999 μL | 0.0001 - 0.0099 μL |
| Shelf Life | 24 months from date of manufacture. | |
| Storage | 15 - 30 °C tightly capped, in closed box, out of direct light. | |
| Operation | 19 - 30 °C | |

PATENTS

The MVS system and its components are covered by patents listed at artel-usa.com/patents.