

## Plate CHAMELEON™ V Multi-technology platereader – FEATURES GUIDE



A uniquely broad application spectrum for research and diagnostic purposes with up to six technologies included:

- Liquid Scintillation Counting (LSC)
- Luminescence (Lum)
- Fluorescence Intensity (FI)
- Time Resolved Fluorescence (TRF)
- Fluorescence Polarization (FP)
- Absorbance (ABS)

Includes MikroWin 2000 Lite instrument control software as default. Temperature control, built-in injectors and compatibility with automation are available as options for Plate CHAMELEON V users.

### True multi-technology platform with unique features

- Up to 6 integrated technologies provides a flexible platform for the broadest spectrum of applications
- Measurement of both radioactive and non-radioactive labels
- Unique optical design with filtered and direct detection modes ensures highest available sensitivity in each technology, such as TRF sensitivity down to 5 amol/well on optimized measurement conditions, luminescence detection limit less than 1 amol ATP/well and LSC efficiency above 50 % for H-3
- Up to 20 + 20 pre-programmable filters on easy-to-change filter slides – speed and flexibility for assay setup
- Compact design saves the valuable laboratory space

### Common features

#### **Samples**

- 6 – 384 well & PCR plates with ANSI std dimension

#### **Shaking**

- Linear with adjustable time and amplitude

#### **Scanning of wells**

- Up to 32 x 32 measurement points/well depending on the well size and the step width.
- Scanning on row, on column or on raster with above 1 mm step width.

#### **User definable measurement time/well**

- 0.1 s to 16 min depending on measurement mode

#### **Measurement speed**

- Minimum kinetic interval on fast reading mode
- Lum: 60s on 96w & 3 min on 384w (0.1s/sample)
- FI: 2min20s on 96w & 8min20s for 384w (1flash)
- Abs: 1min40s on 96-w & 5min40s on 384w (1 flash)

#### **Temperature control**

- Available as field-upgradable option
- Range: ambient + 2°C – 42°C •Stability: ± 0,5°C

#### **Injectors**

- Maximum of 2 built-in injectors available as options
- 500 µL syringe as default
- Precision: < 0,05% CV at full stroke
- Accuracy: < 1% deviation at full stroke

#### **Multiplexing**

- Multiple measurements of samples using different technologies and wavelength settings.

#### **Multilabel kinetics**

- Kinetic detection on up to 3 wavelengths

#### **Kinetic LSC and TRF detection**

- Kinetic detection on LSC and TRF modes

#### **Non-equidistance kinetic measurements**

- Kinetic detection of samples on non-equidistant intervals
- Detection and evaluation of replicate samples on different plates

#### **Instrument operation and connections**

- MikroWin 2000 Lite instrument control/data acquisition software included in every delivery
- MikroWin 2000 Full version (available as option) with flexible data reduction features.
- Instrument keypad and Commfiler II service/maintenance program
- RS 232 serial interface to PC or Printer

#### **Automation compatibility**

- Plate insert with motorized lid is accessible by most robotic arms
- Drivers for communication with stackers and automated liquid handling stations available on request

**Excitation light path**

- High intensity direct illumination optics
- Excitation wavelength range 230 nm – 900 nm
- Total No. of 20 excitation and/or absorbance filters can be preprogrammed on 5 coded filter slides.
- Fast and easy change of the slides through automatically opening hatch on instrument cover
- 3.5 mm and 7 mm apertures for optimizing the focus of excitation light beam for each plate format

**Emission light path**

- Direct illumination emission light path, automatically optimized for each detection mode
- Detection through filters (*Filter Mode*) or directly from above the sample (*Direct Mode*)
- See “Detectors” for wavelength range
- Total No. of 20 filters can be preprogrammed on 5 coded filter slides
- Fast and easy change of the slides through automatically opening hatch on instrument cover
- 2.5 mm, 3.5 mm and 7.0 mm shutter apertures for optimizing the light collection from each plate format

**Physical dimensions**

- Width 370mm, Depth 500mm, Height 340mm
- Weight: 30 kg

**Measurement Technologies**
**Liquid Scintillation counting**

- Multi Channel Analysis.
- Detection of beta-emitters and gamma emitters on LSC mode up to 2000 keV.
- 96- and 384-well plates( 24-well plates on request)
- Preset protocols: H-3, C-14, S-35, P-33, P-32, I-125, Cerenkov and Free (for single photon count)
- Other nuclides can be easily defined
- Beta Spectrum Analysis
- Quench curve analysis on MikroWin data reduction software or using MS Excel macro
- Fluorescence based quench correction on SPA
- Performance
  - Counting efficiency in 96-well black/white Isoplate, 10 $\mu$ L organic sample + 190  $\mu$ L MaxiLight cocktail: 50%/H-3 and > 90%/C-14
  - Background** < 100 CPM.
  - Cross-talk** < 0,05 %, for H-3 and C-14 on white&black Isoplate.
  - Dynamic Range** up to 3.000.000 CPM.

**Fluorometry**

- Emission wavelength range up to 850 nm
- Performance

**Fluorescence Intensity (FI):**

< 2 fmol fluorescein/well, in a black 96-well plate, 100  $\mu$ L sample vol.

**Time-resolved Fluorescence (TR-F):**

< 20 amol Eu/well, in a white 96-well plate, 100  $\mu$ L sample vol.

**Detectors**

1. Direct Mode
  - Photon Counting for luminescence and LSC
  - Spectral range from 300 nm to 630 nm
2. Filter Mode
  - Photon Counting for luminescence
  - Integral counting for FI and FP
  - Photon counting with Time Resolved decay curve on TRF and FRET
  - Spectral range from 300 nm to 850 nm
3. UV sensitive Si-photodiode for Abs mode
  - Spectral range from 220 nm to 1000 nm

**Light source**

- Xe-flash lamp for FI, TRF, FP and Abs modes
- Excitation wavelength range 190nm – 1000nm
- Lifetime > 10<sup>9</sup> flashes, which equates to 10<sup>7</sup> samples (>100 000 96-well plates) when 100 flashes/sample is used
- Continuous Closed Loop intensity control

**Power requirements**

- Input voltage DC 12 V with external power supply, AC 100 – 240 V (24 V with temp. control)
- AC frequency 50/60Hz.

**Fluorescence Polarization (FP):**

< 10 mP stdev at 1 nM fluorescein (typical 5 mP)

**Dynamic range:** > 5 decades.

**Luminescence counting**

- Glow and Flash Luminescence
- Direct and Filtered Detection modes
- Performance
  - Sensitivity:** < 1 amol ATP/well in white 96-w. plate.
  - Max counts:** 20.000.000 CPS
  - Background:** < 200 CPS
  - Dynamic Range** up to 6 decades
  - Cross-talk:**
    - 0,05 % on white 96-well plate on Direct Counting mode, open aperture sample vol. 200 $\mu$ L.
    - 0,01 % on white 96-well plate on Direct counting mode, 3.5 mm aperture, sample vol. 200  $\mu$ L.
    - 0,5% on white 384-well plate on Direct counting mode, 3.5 mm aperture, sample vol. 50  $\mu$ L.

**Absorbance**

**Linearity** 2%

**Dynamic Range** >3.0/>2.5 OD on 96/384 well plate

**Linear Range** >2.5/>2.0 OD on 96/384 well plate

**Wavelength Range** 220-900 nm

**Models**

- 425-106 Multitechnology reader
- 425-130 LSC-Fluorometer-Luminometer
- 425-156 Fluorometer-Luminometer-Photometer
- 425-188 LSC-Luminometer-Photometer
- 425-146 LSC-Luminometer