

# UV / VIS Spectrophotometer



Single Beam  
Double Beam  
NANO

 made  
in  
Germany

**EMCLAB Instruments GmbH**



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## EMCLAB Spectrophotometer

Model	Optical System	Wavelength Range	Bandwidth	Page
EMC-11D-V	Single Beam	325-1000 nm	4 nm	4
EMC-11-UV	Single Beam	200-1000 nm	4 nm	5
EMC-16PC-V	Single Beam	320-1100 nm	4 nm	6
EMC-16PC-UV	Single Beam	190-1100 nm	4 nm	6
EMC-18PC-UV	Single Beam	190-1100 nm	2 nm	6
EMC-31PC-UV	Single Beam	190-1100 nm	2 nm	8
EMC-32PCS-UV	Single Beam Variable Bandwidth	190-1100 nm	0.5/1/2/4 nm	8
EMC-61PC-UV	Double Beam	190-1100 nm	1.8 nm	9
EMC-61PCS-UV	Double Beam Variable Bandwidth	190-1100 nm	0.5/1/2/4 nm	9
EMC-NANO-UV	Single Beam 0.2 ~ 2.5 µl	190-1100 nm	4 nm	10
PC Software	Basic, Professional, Analyst			12
Cells	Glass, Quartz Glass, Plastic			15
Reference Cells	DAkKS calibrated, Works calibrated			17
Accessories	Cell Holder, Peltier Systems, Lamps			19

EMCLAB Spectrophotometers are tested with DAkKS (German body of accreditation) certified UV/VIS Reference Materials NIST traceable:

- Photometric Accuracy
- Wavelength Accuracy
- Spectral Resolution
- Stray Light

All EMCLAB Spectrophotometers are supplied with EMCLAB Works Calibration Certificate.



## Visible Basic Spectrophotometer EMC-11D-V

### Features:

- LCD screen (128\*64)
- Auto Zero and Blank
- Manually setting wavelength
- Sample compartment for different cell holders
- Inclusive Basic PC software (page 12)  
 Following functions:  
 I. Quantitative II. Kinetics III. Photometry
- Inclusive EMCLAB Works Calibration Certificate



Model	EMC-11D-V
Wavelength Range	325-1000 nm
Spectral Bandwidth	4 nm
Optical System	Single Beam, grating 1200 lines/mm
Wavelength Accuracy	±2 nm
Wavelength Repeatability	1 nm
Photometric Accuracy	≤±0.5 % T or ±0.003A@1A
Photometric Repeatability	≤0.2 % T
Photometric Range	0-200 % T, -0.3 - 3A, 0-1999 Conc
Photometric Mode	T, A, C, F
Stray Light	0.3 % T
Stability	±0.002A/h@500 nm
Noise	0.003A@500 nm
Detector	Silicone Photodiode
Display	LCD 128*64
Central beam height	15 mm
Standard Cell Holder	4-position cell holder 10x10 mm
Light Source	Tungsten lamp
Output	USB port & Parallel port (printer)
Power Requirement	AC 85V~265V 50/60 Hz
Dimensions (LxWxH)	440 x 340 x 200 mm
Weight	8 kg

### Scope of delivery:

Spectrophotometer EMC-11D-V, power cable, dust cover, 4 x glass cells 10 x 10 mm, CD/USB stick (user's manual, manual Basic software, Basic software), USB cable, microfibre cloth, Calibration Certificate



# UV/VIS Spectrophotometer EMC-11-UV

## Features:

- LCD screen (128\*64)
- Self-check system
- Auto setting wavelength
- Sample compartment for different cell holders
- Save the results
- Up to 200 methods & 200 standard curves can be stored
- Inclusive Basic PC software (page 12)  
Following functions
  - I. Quantitative II. Kinetics III. Photometry
- Inclusive EMCLAB Works Calibration Certificate
- IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available



4-position cell holder 10x10 mm

Model	EMC-11-UV
Wavelength Range	200-1000 nm
Spectral Bandwidth	4 nm
Optical System	Single Beam, grating 1200 lines/mm
Wavelength Accuracy	±2 nm
Wavelength Repeatability	1 nm
Photometric Accuracy	≤0.5 % T or ±0.003A@1A
Photometric Repeatability	≤0.2 % T
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999 Conc.
Stray Light	0.2 % T
Stability	±0.002A/h@500 nm
Noise	0.003A@500 nm
Detector	Silicone Photodiode
Display	LCD 128*64
Central beam height	15 mm
Standard Cell Holder	4-position cell holder 10x10 mm
Light Source	Tungsten & Deuterium lamp
Output	USB port & Parallel port (printer)
Power Requirement	AC 110/220V 50/60 Hz
Dimensions (LxWxH)	490 x 3760 x 220 mm
Weight	14 kg

## Scope of delivery:

Spectrophotometer EMC-11-UV, power cable, dust cover, 4 x glass & 2 x quartz glass cells 10 x 10 mm, CD/USB stick (user's manual, manual Basic software, Basic software), USB cable, microfibre cloth, Calibration Certificate



## UV/VIS Spectrophotometer EMC-16/18 series

### Features:

- LCD screen (128\*64)
- Self-check system
- Auto setting wavelength
- Sample compartment for different cell holders
- Save the results
- Up to 200 methods & 200 standard curves can be stored
- Inclusive Basic PC software (page 12)  
Following functions:
  - Quantitative
  - Kinetics
  - Photometry
- Inclusive EMCLAB Works Calibration Certificate
- IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available



8-position auto cell changer - optionally

Model	EMC-16PC-UV	EMC-18PC-UV
Wavelength Range		190-1100 nm
Spectral Bandwidth	4 nm	2 nm
Optical System	Single Beam, grating 1200 lines/mm	
Wavelength Accuracy	±0.5 nm	
Wavelength Repeatability	0.3 nm	
Photometric Accuracy	≤±0.5 % T or ±0.003A@1A	
Photometric Repeatability	≤0.15 % T (0-100%), ±0.001A (0-0.5A), ±0.002A (0.5-1A)	
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999 Conc.	
Stray Light	≤0.05 % T@360 nm	
Stability	±0.002A/h@500 nm	
Baseline Flatness	±0.002A (200-1000 nm)	
Noise	0.0005A@500 nm	
Detector	Silicone Photodiode	
Display	LCD 128*64	
Central beam height	15 mm	
Standard Cell Holder	4-position cell holder 10x10 mm	
Light Source	Tungsten & Deuterium lamp	
Output	USB port & Parallel port (printer)	
Power Requirement	AC 110/220V 50/60 Hz	
Dimensions (LxWxH)	490 x 370 x 220 mm	
Weight		14 kg

### Scope of delivery:

Spectrophotometer EMC-16/18, power cable, dust cover, 4 x glass & \*2 x quartz glass cells 10 x 10 mm (\*for EMC-16/18PC-UV), CD/USB stick (user's manual, manual Basic software, Basic software), USB cable, microfibre cloth, Calibration Certificate

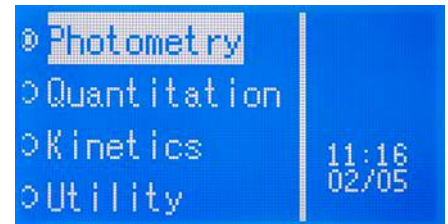


# UV/VIS Spectrophotometer EMC-16/18 series

## On-board Software

### Main Menu

Basic Mode  
Quantitative  
Kinetics  
Utility



### Basic Mode

For measurements of Absorbance, Transmittance or Concentration  
Display and save 200 values of data  
5 lines per screen

No.	WL	Ab <sub>s</sub>
5	230.0	0.025
6	635.0	-0.000
7	635.0	0.134
8	635.0	0.378
9	635.0	0.888

### Quantitative

#### 1. Standard Curve

A standard curve can be established with up to 9 standard samples. The curve and its equation will be displayed on the screen simultaneously. Save total 200 curves.

#### 2. Coefficient Method

If the coefficient  $k \cdot a + b$  in the formula  $C = k \cdot a + b$  is known, you can input them directly. Then measure your unknown samples.



### Kinetics

For time course scanning or reaction rate calculation.  
Absorbance vs time graphs will be shown on the display in real time.  
Process of up to 1000 data.



### Utility

D2 Lamp On/Off  
W Lamp On/Off  
Date & Time  
Dark Current  
Reset Wavelengths  
Lamp Life  
Load Default  
Lamp Change  
Version

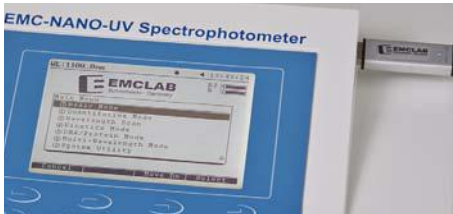




## UV/VIS Spectrophotometer EMC-3 series

### Features:

- LCD screen (320\*240)
  - Self-check system
  - Auto setting wavelength
  - Sample compartment for different cell holders
  - Inclusive USB stick for methods and results
  - Fixed or variable bandwidths
  - Inclusive Analyst PC software (page 14)
- Following functions:
- Quantitative
  - Kinetics
  - Wavelength Scan
  - Multi Wavelength
  - DNA/Protein
  - Photometric
  - System Utility
- Inclusive EMCLAB Works Calibration Certificate
  - IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available



USB stick for methods and results

Model	EMC-31PC-UV	EMC-32PCS-UV
Wavelength Range	190-1100 nm	
Spectral Bandwidth	2 nm	0.5/1/2/4/5 nm
Optical System	Single Beam, grating 1200 lines/mm	
Wavelength Accuracy	±0.5 nm	±0.3 nm
Wavelength Repeatability	0.3 nm	0.2 nm
Photometric Accuracy	≤0.5 % T or ±0.004A@1A	≤0.3 % T or ±0.003A@1A
Photometric Repeatability	≤0.001A (0-0.5A), ≤0.002A (0-0.5A) ≤0.5 % T (0-100%)	
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999Conc.	
Scan Speed	Hi, MED, LOW, MAX. 3000 nm/min	
Stray Light	0.05 % T@220, 340 nm	
Stability	±0.0002A/h@500 nm	
Baseline Flatness	±0.002A (200-1000 nm)	
Noise	0.0005A@500 nm	
Detector	Silicone Photodiode	
Display	LCD 320*240	
Central beam height	15 mm	
Standard Cell Holder	4-position cell holder 10x10 mm	
Light Source	Tungsten & Deuterium lamp	
Output	USB port A for USB memory stick USB port B for PC connectivity Parallel port for printer	
Power Requirement	AC 110/220V 50/60 Hz	
Dimensions (LxWxH)	490 x 370 x 220 mm	589 x 428 x 240 mm
Weight	14 kg	20 kg

### Scope of delivery:

Spectrophotometer EMC-3 series, power cable, dust cover, 4 x glass & 2 x quartz glass cells 10 x 10 mm, CD/USB stick (user's manual, manual Analyst software, Analyst software), USB dongle Analyst, USB stick & cable, microfibre cloth, Calibration Certificate





# UV/VIS Spectrophotometer EMC-6 series

## Features:

- LCD screen (320\*240)
- Self-check system
- Auto setting wavelength
- Sample compartment for different cell holders
- Inclusive USB stick for methods and results
- Fixed or variable bandwidths
- Inclusive Analyst PC software (page 14)  
Following functions:  
I. Quantitative II. Kinetics III. Wavelength Scan  
IV. Multi Wavelength V. DNA/Protein VI. Photometric VII. System Utility
- Inclusive EMCLAB Works Calibration Certificate
- IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available



Sample compartment  
Double beam

Model	EMC-61PC-UV	EMC-61PCS-UV
Wavelength Range		190-1100 nm
Spectral Bandwidth	1.8 nm	0.5/1/2/4 nm
Optical System		Double Beam, grating 1200 lines/mm
Wavelength Accuracy		±0.3 nm
Wavelength Repeatability		0.2 nm
Photometric Accuracy		≤±0.5 % T or ±0.005A@1A
Photometric Range		0-200 % T, -0.3 - 3A
Photometric Repeatability		≤0.001A (0-0.5A), ≤0.002A (0-0.5A) ≤0.15 % T (0-100%)
Scan Speed		Hi, MED, LOW, MAX. 3000 nm/min
Stray Light		0.05 % T@220, 340 nm
Stability		±0.001A/h@500 nm
Baseline Flatness		±0.001A (200-1000 nm)
Noise		0.0003A@500 nm
Detector		Silicone Photodiode
Display		LCD 320*240
Central beam height		15 mm
Standard Cell Holder		2 x Single cell holder 10x10 mm
Light Source		Tungsten & Deuterium lamp
Output		USB port A for USB memory stick USB port B for PC connectivity Parallel port for printer
Power Requirement		AC 110/220V 50/60 Hz
Dimensions (LxWxH)		589 x 428 x 240 mm
Weight	22 kg	24 kg

## Scope of delivery:

Spectrophotometer EMC-6 series, power cable, dust cover, 4 x glass & 2 x quartz glass cells 10 x 10 mm, CD/USB stick (user's manual, manual Analyst software, Analyst software), USB dongle Analyst, USB stick & cable, microfibre cloth, Calibration Certificate



# UV/VIS Spectrophotometer EMC-NANO-UV

## Features:

- LCD screen (320\*240)
- Self-check system
- Auto setting wavelength
- Unique Flip cell holder 2 in 1 for NANO volume and standard cells
- 0.2 ~ 2.5 µl sample volume for DNA, RNA, PCR, protein
- Inclusive USB stick for methods and results
- Inclusive Analyst PC software (page 14)  
Following functions:  
I. Quantitative II. Kinetics III. Wavelength Scan  
IV. Multi Wavelength V. DNA/Protein  
VI. Photometric VII. System Utility
- Inclusive EMCLAB Works Calibration Certificate
- IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available

The unique Flip cell holder for NANO volume and standard cells

- Simple-to-use
- NANO cell holder optical path length 0.5 mm
- Cell holder for standard cells optical path length 10 mm
- Horizontal light path - high precision - no loss of energy



Model	EMC-NANO-UV
Wavelength Range	190-1100 nm
Spectral Bandwidth	4 nm
Optical System	Single Beam, grating 1200 lines/mm
Wavelength Accuracy	±0.5 nm
Wavelength Repeatability	0.3 nm
Photometric Accuracy	≤0.5 % T or ±0.004A@1A
Photometric Repeatability	≤0.001A (0-0.5A), ≤0.002A (0-0.5A) ≤0.5 % T (0-100%)
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999 Conc.
Scan Speed	Hi, MED, LOW – MAX: 3000nm/min
Stray Light	0.05 % T@220, 340 nm
Stability	±0.002A/h@500 nm
Baseline Flatness	±0.002A (200-1000 nm)
Noise	0.0005A@500 nm
Detector	Silicone Photodiode
Display	LCD 320*240
Central beam height	15 mm
Flip Cell Holder	0.2~2.5 µl and cuvette 10 mm path length
Light Source	Tungsten & Deuterium lamp
Output	USB port A for USB memory stick USB port B for PC connectivity Parallel port for printer
Power Requirement	AC 110/220V 50/60 Hz
Dimensions (LxWxH)	490 x 370 x 220 mm
Weight	14 kg

## Scope of delivery:

Spectrophotometer EMC-NANO-UV, power cable, dust cover, 2 x quartz glass cells 10 x 10 mm, CD/USB stick (user's manual, manual Analyst software, Analyst software), USB dongle Analyst, USB stick & cable, microfibre cloth, Calibration Certificate



# UV/VIS Spectrophotometer EMC-3, EMC-6 & NANO

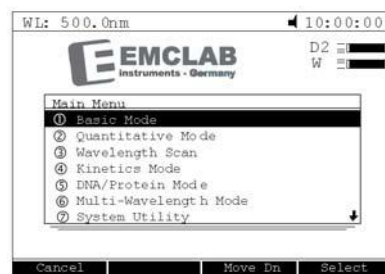
## On-board Software

### Main Menu

All methods are included as built-in standard; this eliminates the need of software.

The on-board software includes following functions:

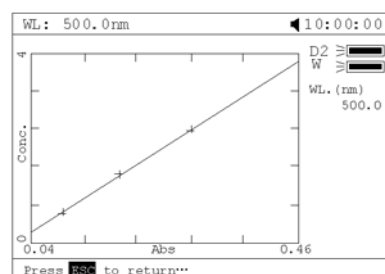
- Photometry
- Quantitative
- Kinetics
- DNA/Protein
- Wavelength Scan
- Multi-wavelength
- System Utility



### Standard Curve

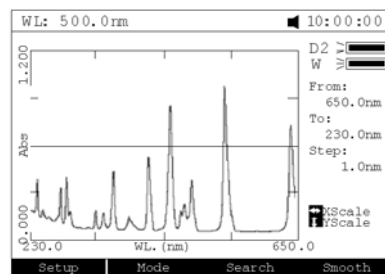
Up to 10 standards to establish a standard curve. 4 methods for fitting a curve:

1. Linear fit
2. Linear through zero
3. Square fit
4. Cubic fit



### Wavelength Scan

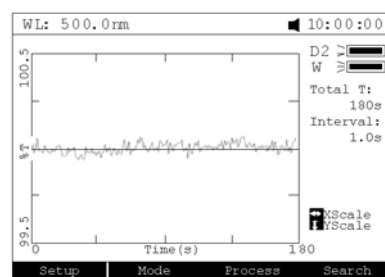
The wavelength scan intervals are 0.1, 0.2, 0.5, 1, 2, 5 nm and High, Medium and Low scan speeds are available. Scan speeds vary from 100 to 3000 nm/min. Wavelengths are scanned for high to low so that the instrument stand-by at high wavelength. This minimizes the degradation of UV sensitive samples. Precise control of filter and lamp changes means that their effects are not seen on the final scan. Post-run manipulation includes re-scaling axes, curve tracking and peak picking.



### Kinetics

For time course scanning or reaction rate calculation. Absorbance vs time graphs will be shown on the display in real time. Wait time and measurement time up to 12 hours may be entered with time intervals of 0.5, 1, 2.5, 10, 30 seconds and 1 min.

Post-run manipulation includes re-scaling, curve tracking and selection of the part of the curve required for the rate calculation. Rate is calculated using a linear regression algorithm before multiplying by the entered factor.



### Multi-Wavelength

Up to 10 wavelengths may be entered, allowing the measurement of multiple wavelengths on a series of samples.

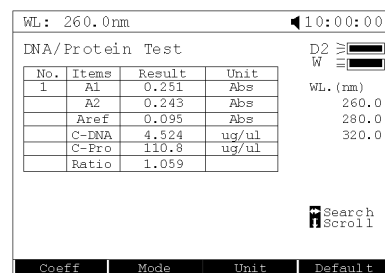
### DNA/Protein Test

Concentration and DNA purity are calculated by absorbance ratios 260 nm/280 nm or 260 nm/230 nm with optional subtracted absorbance at 320 nm

DNA concentration =  $62.9 \cdot A_{260} - 36.0 \cdot A_{280}$  or  $49.1 \cdot A_{260} - 3.48 \cdot A_{230}$

Protein concentration =  $1552 \cdot A_{260} - 757.3 \cdot A_{280}$  or  $183 \cdot A_{260} - 75.8 \cdot A_{230}$

Other wavelengths and factors may be entered.



No.	Items	Result	Unit
1	A1	0.251	Abs
	A2	0.243	Abs
	Aref	0.095	Abs
	C-DNA	4.524	ug/ul
	C-Pro	110.8	ug/ul
	Ratio	1.059	

# Spectrophotometer Basic PC Software

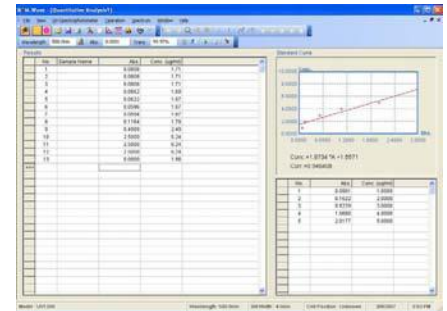
## Basic PC Software for EMC-11/16/18 series

The Basic PC software is based on Microsoft Windows. The Spectrophotometer can be controlled by PC software through built-in USB communication port, which makes the UV/VIS series with more functions and easy to control.

### Quantitative

Up to 20 standards to establish a standard curve. 3 methods for fitting a curve:

1. Linear fit
2. Linear through zero
3. Square fit



### Kinetics

For time course scanning or reaction rate calculation. Absorbance vs time graphs will be shown on the display in real time.



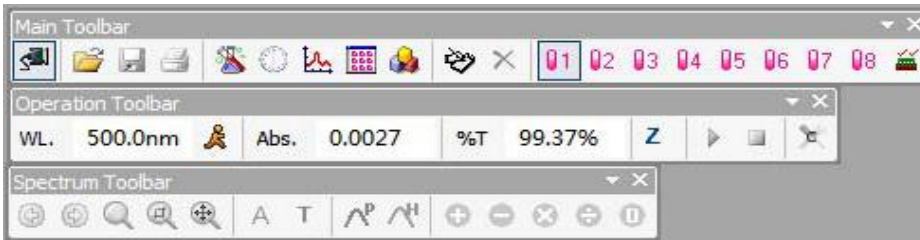
### Photometry Measurement

The test result can be displayed in Transmittance Mode and Absorbance Mode

IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available

# Spectrophotometer Professional PC Software

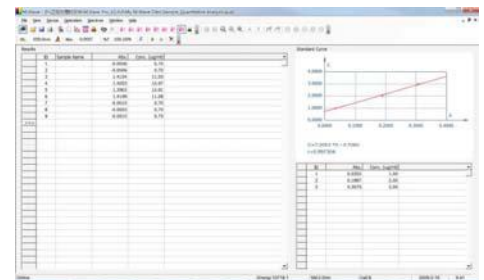
## Professional PC Software for EMC-11-UV/16/18 series



The Professional PC software is based on Microsoft Windows. The Spectrophotometer can be controlled by PC software through built-in USB communication port, which makes the UV/VIS series with more functions and easy to control.

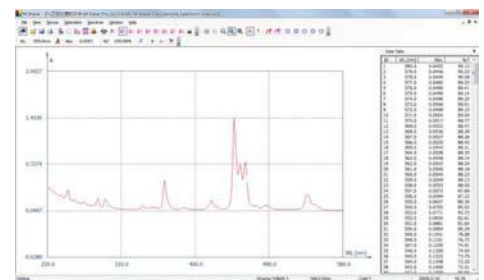
### Quantitative

- Provide 2 methods to establish a standard curve;
- Up to 20 standards to establish or input the coefficients to make a standard curve.
- 3 methods for fitting a curve:
  1. Linear fit
  2. Square fit
  3. Cubic fit



### Kinetics

For time course scanning or reaction rate calculation. Absorbance vs time graphs will be shown on the display in real time. Choose the time intervals (0.5, 1.0, 2.0, 5.0, 10.0, 30.0 or 60.0 sec). Choose different Photometric Mode to display the curve (Transmittance-Time & Absorbance-Time)



### Spectrum Scan

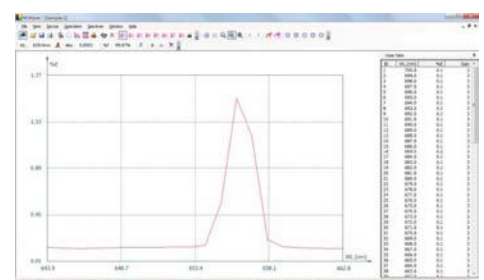
- Save and load the system baseline;
- Choose scan intervals (0.1, 0.2, 0.5, 1.0, 2.0 and 5 nm);
- Choose different Photometric Mode to display the spectrum (Wavelength-Transmittance, Wavelength-Absorbance)
- List spectrum peaks; mathematics and smooth

### Multi-Wavelength

Up to different 20 wavelengths to measure a sample

### DNA/Protein

- Calculate quickly and easily concentration and DNA
- Absorbance ratios 260 nm/280 nm with optional subtracted absorbance at 320 nm
- DNA concentration =  $62.9 \cdot A_{260} - 36.0 \cdot A_{280}$
- Protein concentration =  $1552 \cdot A_{260} - 757.3 \cdot A_{280}$
- Enter other wavelengths and factors optionally



### Energy Scan

- Switch the light source point (W Lamp, D2 Lamp or automatically switch)
- Choose the scanning intervals (0.1, 0.2, 0.5, 1.0, 2.0 and 5.0)
- Set the gain (1 to 8 times)
- Automatically search wavelength peaks
- IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available

# Spectrophotometer Analyst PC Software

## Analyst PC Software for EMC-3 series, EMC-6 series & EMC-NANO

The Analyst PC software enhances the features of the Spectrophotometer plus more powerful data processing, expanded data collecting and storage potential capacity.

### Main functions

1. Photometric Mode
2. Quantitative
3. Wavelength Scan
4. Kinetics
5. DNA/Protein
6. Multi-Wavelength
7. System Utility

### Quantitative

Up to 20 standards to establish a standard curve. 4 methods for fitting a curve:

1. Linear fit
2. Linear through zero
3. Square fit
4. Cubic fit

### Wavelength Scan

Automatically records peaks and valleys  
Store unlimited quantity of channels and data simultaneously  
Post-run manipulation and processing:

1. Re-scaling axes, curve
2. Smoothing, combination, zooming, overlap
3. 1<sup>st</sup> to 4<sup>th</sup> derivative

### Kinetics

For time course scanning or reaction rate calculation. Absorbance vs time graphs will be shown on the display in real time.

Enter wait time, measurement time and time intervals

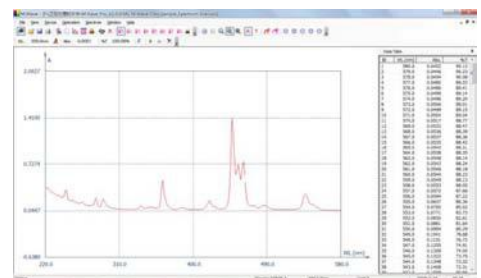
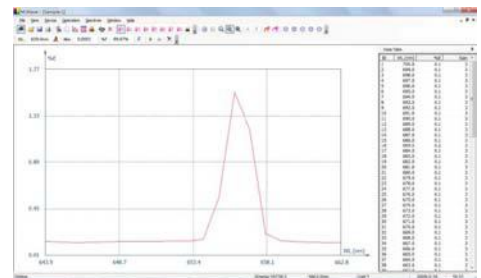
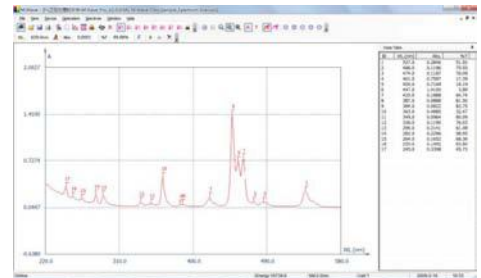
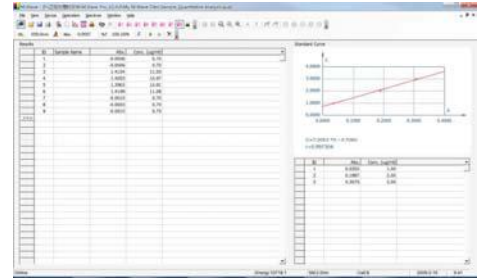
Post-run manipulation includes re-scaling, curve tracking and selection of the part of the curve required for the rate calculation. Rate is calculated using a linear regression algorithm before multiplying by the entered factor.

### DNA/Protein

Calculate quickly and easily concentration and DNA  
Absorbance ratios 260 nm/280 nm with optional subtracted absorbance at 320 nm  
DNA concentration =  $62.9 \cdot A_{260} - 36.0 \cdot A_{280}$   
Protein concentration =  $1552 \cdot A_{260} - 757.3 \cdot A_{280}$   
Enter other wavelengths and factors optionally

### Multi-Wavelength

Select up to 20 different wavelengths  
Measure multiple samples  
(8-position auto cell changer is required to run multiple samples automatically  
Art. no. EMC-00029)  
IQ/OQ/PQ / FDA 21 CFR Part 11 optionally available





## Spectrophotometer Cells

### Glass and quartz glass Cuvettes



Art. No.	Cuvettes	Optical path length (mm)	Volume (µl)	Outside dim (H x W x D mm)
<b>Cuvettes:</b>				
<b>Premium Macro cuvettes:</b>				
EMC-100OS	Cuvette glass	10	3500	45 x 12,5 x 12,5
EMC-105OS	Cuvette glass	50	17500	45 x 12,5 x 52,5
EMC-100QS	Cuvette quartz glass	10	3500	45 x 12,5 x 12,5
EMC-105QS	Cuvette quartz glass	50	17500	45 x 12,5 x 52,5
<b>Premium Semi-Micro cuvettes:</b>				
EMC-108OS	Cuvette glass	10	1000	45 x 12,5 x 12,5
EMC-108QS	Cuvette quartz glass	10	1000	45 x 12,5 x 12,5
<b>Premium Micro cuvettes:</b>				
EMC-104OSB	Cuvette glass (black side walls & base)	10	700	45 x 12,5 x 12,5
EMC-104QS	Cuvette quartz glass	10	700	45 x 12,5 x 12,5
EMC-104QSB	Cuvette quartz glass (black side walls & base)	10	700	45 x 12,5 x 12,5
EMC-108QSM	Cuvette quartz glass	10	500	45 x 12,5 x 12,5
EMC-108QSMB	Cuvette quartz glass (black side walls & base)	10	500	45 x 12,5 x 12,5
EMC-108QSM15	Cuvette quartz glass (aperture 5 x 2 mm)	10	100	45 x 12,5 x 12,5
<b>Premium Flow-through cuvettes:</b>				
EMC-175OS	Cuvette glass	10	750	45 x 12,5 x 12,5
EMC-175QS	Cuvette quartz glass	10	750	45 x 12,5 x 12,5

Type of cuvettes	Wavelength range
Premium special optical glass:	320 – 2500 nm
Premium quartz glass:	200 – 2500 nm



## Spectrophotometer Disposable UV/VIS Cells



New plastic coupled with modern methods of production allow photometric measurement well into the UV range. Ultra-precision molds with several cavities – one per cuvette – are used for producing EMC-disposable cuvettes under controlled room conditions. Thus, in any one injection molding run several cuvettes are produced simultaneously. In order to prevent deviations in extinction coefficient values from occurring in any one run due to increased stray light, the cuvettes are automatically sorted according to their numbered cavities of origin. Each package contains only cuvettes that have been produced in any one cavity. The corresponding cavity number is noted on each package. Thus, even for extensive analyses, the same cuvettes can be used.

- Very low variation of extinction values
- Excellent optical transmission range
- Cavity-sorted production
- Optical path length 10 mm
- Outside dim 45 x 12,5 x 12,5 mm
- Cuvettes supplied in practical styrofoam racks
- Stoppers supplied in a plastic bag

Art. No.	Cuvette	Volume (ml)	Packaging (pcs)	Wavelength (nm)
<b>Macro cuvettes:</b>				
EMC-S0028	PS (glass-clear Polystyrene)	4,0	10 x 100	340 – 900
EMC-S0030	UV	4,0	1 x 100	220 – 900
EMC-S0031	Solvent resistant against polar solvents	4,0	1 x 100	220 – 900
EMC-S0032	PMMA (Polymethylmethacrylate)	4,0	10 x 100	300 – 900
<b>Semi-Micro cuvettes:</b>				
EMC-S0029	PS (glass-clear Polystyrene)	1,6	10 x 100	340 – 900
EMC-S0033	UV	1,6	1 x 100	220 – 900
EMC-S0034	Solvent resistant against polar solvents	1,6	1 x 100	220 – 900
EMC-S0035	PMMA (Polymethylmethacrylate)	1,6	10 x 100	300 – 900
<b>Stoppers:</b>				
EMC-S0036	PP (Polypropylene)		1 x 1000	

# Spectrophotometer Reference Cells

## DAkks Calibration Certified UV/VIS Reference Cells



EMC-SET-667UV



EMC-SET-666



The UV/VIS certified reference materials enable the user to check quickly and easily its measurements results with the quality standard of the spectrophotometer. The measurement results are internationally comparable. The reference materials are DAkks (German body of accreditation) certified traceable to primary references of NIST (National Institute of Standards and Technology) and in accordance with the most important Pharmacopoeias (EP, DAB; USP).

UV/VIS certified reference materials for testing:

- Wavelengths accuracy
- Photometric accuracy
- Stray light
- Spectral resolution

Art. No.	Filters	Wavelength (nm)
<b>Set liquid filters for testing acc. to European Pharmacopoeias:</b>		
EMC-SET-667UV	Potassium chloride in pure water UV1 Pure water reference filter) UV12	A*: 235; 257; 313; 350; 430
	Toluene in n-hexane UV6 n-hexane (reference filter) UV9	W*: 241; 287; 361; 536; 640
	60 mg Potassium dichromate in HClO <sub>4</sub> (0.75 Abs.) UV60	S*: 200 (cut-off)
	600 mg Potassium dichromate in HClO <sub>4</sub> (1.0 Abs.) UV600	
	Perchloric acid HClO <sub>4</sub> (reference filter) UV14	R*: Scan 265-270
	Holmium Oxide in perchloric acid UV5	
	<b>Set glass filters for testing wavelengths accuracy (W) and photometric accuracy (A):</b>	
EMC-SET-666	Holmium Oxide glass filter F1	W*: 279; 361; 453; 536; 638
	Neutral density glass filter F2, 0.25 Abs.	A*: 440; 465; 546.1; 590; 635
	Neutral density glass filter F3, 0.5 Abs.	
	Neutral density glass filter F4, 1.0 Abs.	
	Empty filter mount F0, aluminium frame	
EMC-SET-666-07	Didymium glass filter F7	A*: 270; 280; 297; 320; 340 W*: 329; 472; 512; 681; 875

\*A= Wavelength for absorbance; W= Wavelength for wavelength accuracy, S= Wavelength for stray light, R= Wavelength for spectral resolution

## Spectrophotometer Reference Cells

**UV/VIS Reference Cells with EMCLAB Works Calibration Certificate for maintenance and service**



The EMC-glass filters for testing the wavelengths accuracy and photometric accuracy enable the user to check quickly and easily its measurement results with the quality standards of the spectrophotometer. All EMC-glass filters are supplied with EMCLAB Works Calibration Certificate.

UV/VIS reference materials for testing:

- Wavelengths accuracy
- Photometric accuracy

**Set glass filters EMC-SET-100 for testing wavelengths accuracy (W) and photometric accuracy (A):**

Art. No.	Filter	Wavelength (nm)
EMC-SET-100	Holmium Oxide glass filter H1	W*: 279; 361; 453; 536; 638 nm
	Neutral density glass filter N2, 0.25 Abs.	A*: 440; 465; 546.1; 590; 635 nm
	Neutral density glass filter N3, 0.5 Abs.	
	Neutral density glass filter N4, 1.0 Abs.	
	Empty filter mount N0	

\*A= Wavelength for absorbance, W= Wavelength for wavelength accuracy



## Spectrophotometer Accessories



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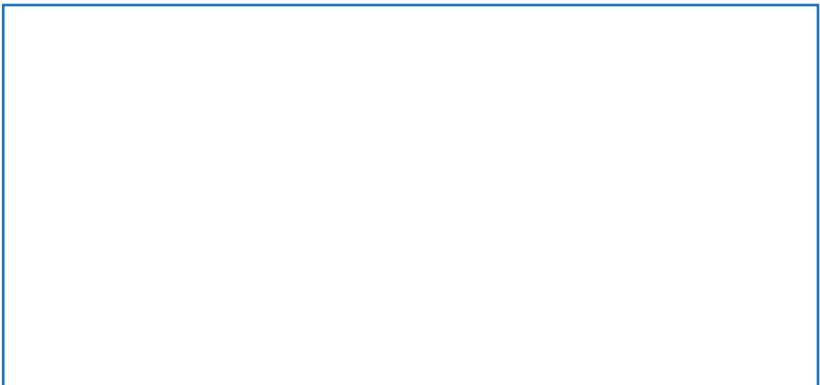
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Art. No.	Accessories	Item
<b>Cell Holder</b>		
EMC-00020	4-position cell holder cuvette 10 x 10 mm, standard	
EMC-00021	4-position cell holder cuvette 10 x 50 mm	
EMC-00019	4-position cell holder cuvette up to 100mm	
EMC-00022	1-position cell holder for micro cuvettes	
EMC-00023	1-position cell holder cuvette 10 x 10 mm	
EMC-20024	1-position cell holder, water-jacketed (for EMC-11-UV only with PT 31)	1
EMC-00025	4-position cell holder, water-jacketed (for EMC-11-UV only with PT 31)	
EMC-00029	8-position auto cell changer (not for EMC-11 series)	2
<b>Peltier Systems</b>		
EMC-00026	Peltier System, Constant-Temperature-System (not for EMC-11 series)	
EMC-00027	Sipper System (not for EMC-11 series)	
EMC-00028	Peltier / Sipper System, Constant-Temperature System (not for EMC-11 series)	
EMC-00030	Peltier Thermostat PT 31, 8 °C...40 °C contin. adjustable (also for EMC-11-UV)	3
EMC-00031	Peristaltic pump for flow-through cuvettes (also for EMC-11-UV)	
<b>Lamps</b>		
EMC-00011	Halogen lamp 6V10W (only for EMC-11D-V)	4
EMC-00012	Halogen lamp 12V20W	4
EMC-00013	Halogen lamp 12V20W (only for EMC-6 series)	4
EMC-00039	Deuterium lamp for UV	5

Other accessories on request



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Technical changes reserved

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