

### 3.9 Specifications

#### 3.9.1 Solvent Organizer

Reservoirs	Standard: 2 x 500 mL and 2 x 250 mL (safety) bottles with shut-off valve and 2 $\mu$ m in-line filter.
Solvent Degassing	Built-in 4 channel He degasser.
GLP Features	Full traceability of solvents used (composition, purity, supplier, etc.) in hardware settings of <i>UltiChrom</i> software.

#### 3.9.2 Injector

Valve	Manual, low dispersion 6 port valve with position feedback for automated injection mark (start data acquisition).
Injection Loop	Standard: 5 $\mu$ L (optional: 1 $\mu$ L).
Fill Port for Needle	2" x 22 gauge.

#### 3.9.3 Column Compartment

Dimensions (WxDxH)	70 mm (3 in) x 60 mm (2.5 in) x 400 mm (16 in), for a microcolumn with length up to 300 mm (12 in).
Connection	Preinstalled fitting, dead volume free.
GLP Features	Complete column specification and identification during system set-up ( <i>UltiChrom</i> software).

#### 3.9.4 Operating Software

<i>UltiChrom</i>	Full control of <i>UltiMate</i> instrument settings and run sequences, including data acquisition (maximum 4 channels), data evaluation and presentation. Runs under Windows 3.1, 95, 98 and NT based operating systems.
Recommended Computer Configuration	IBM compatible 166 MHz Pentium computer, 64 Mb RAM, 500 Mb hard drive, Super VGA display (1024 x 768 resolution), CD-ROM drive, 3 free com ports.
GLP Features	Full Compliance, including year 2000 compliance.

**3.9.5 General**

Power Requirements	115/230 V, 47-63 Hz, 250 VA (factory set)
Fuse	230 V Version: Slow-Blow, 2 A 115 V Version: Slow-Blow, 5 A
Dimensions (WxDxH)	250 mm (10 in) x 400 mm (16 in) x 530 mm (21 in).
Weight	22 kg (48 lb).
He Supply	1-2 bar (15-30 PSI)
Wetted Parts	PTFE, graphite fiber filled PTFE, PEEK, glass, sapphire, ceramic, fused silica, stainless steel Types 316 and V4A.
pH Range	2-10.
Production Quality	ISO 9002 certified manufacturing. CE certified (LVD and EMC).
Operating Temperature	10-40 °C, 20-80% relative humidity.

## 4.10 Specifications

### 4.10.1 Flow Characteristics

Pump Type	Reciprocating double piston pump with electronic residual pulsation suppression
Flow Rate Range	0-500 $\mu$ L/min
Flow Rate Accuracy	< 0.5 %
Flow Rate Selection	Predefined by Calibrator in Solvent Organizer (when used in conjunction with <i>UltiMate</i> )
Gradient Formation	Low pressure quaternary mixing with high speed micro proportioning valves
Gradient Accuracy	<0.5 % RSD (typically < 0.02 % RSD) (when used in conjunction with <i>UltiMate</i> )
Delay Volume	Calibrator Dependent Micro HPLC ~ 120 $\mu$ L Capillary HPLC ~ 12 $\mu$ L Nano HPLC ~ 0.6 $\mu$ L (when used in conjunction with <i>UltiMate</i> )
Rapid Purge Valve	Yes
Pressure Range	0-40 MPa
GLP Features	Tracking of instrument usage, total pump cycles, total volume electronic records of installation, maintenance, error codes

### 4.10.2 Instrument Control

User Interface	Keypad, 16 Keys, Liquid Crystal Display 2 x 24 characters
Instrument Control	2 x RS-232C terminals for remote control operation via <i>UltiMate</i> Software
GLP Features	Tracking of instrument usage, total pump cycles, total volume, electronic records of installation, maintenance, error codes

### 4.10.3 Inputs/Outputs

Solvent Generation	4 Low Pressure Gradient Proportioning Valves
Events	4 TTL (max 10 mA)* 2 Open Collector (max 40 mA)* 2 Relay (normally open) START-, ERROR IN: Optocoupler, max 10 mA* START-, ERROR OUT: Open Collector, max 40 mA* * Events controlled by <i>UltiChrom</i> Software
Recorder Output	2.5 mV/MPa (1 V = 40 MPa)

#### 4.10.4 General

Power Requirements	90-260 V, 47-63 Hz, 100 VA Maximum
Fuse	2 Slow-Blow, 2A
Dimensions (WxDxH)	160 mm (6.4 in) x 340 mm (13.4 in) x 185 mm (7.3 in).
Weight	5.5 kg (12 lb.).
Production Quality	ISO 9002 certified manufacturing. CE certified (LVD and EMC).
Operating Temperature	10-40°C, 20-80% relative humidity.

## 5.10 Specifications

### 5.10.1 Detection Characteristics

Detection Type	Rapid scanning monochromator
Noise	$1 \times 10^{-5}$ AU (254 nm, 1.0 sec)
Drift	$1.5 \times 10^{-4}$ AU/h
Time Constants	0.1/0.2/1/2/5/10 sec
Wavelength Range	190-740 nm, up to four wavelengths can be monitored simultaneously
Sources	D <sub>2</sub> , Tungsten
Wavelength Accuracy	+/- 1 nm
Scans per run	Number is limited only by speed of data transfer (time programmed or manually launched)
Scan Ranges	190-380, 381-740, 190-740 nm
Scan Autozero	Full wavelength range
Bandwidth	< 7 nm
Scan Speed	~ 100 nm/sec

### 5.10.2 Instrument Control

User Interface	Keypad, 16 Keys, Liquid Crystal Display 2 x 24 characters
Instrument Control and Data Evaluation	2 x RS-232C terminals for remote control operation via <i>UltiChrom</i> Software
Data Rate	1-10 Hz
GLP Features	Continuous tracking of lamp burn time, instrument usage, electronic records of installation, maintenance, error codes

### 5.10.3 Flow Cells, 10 mm UZ-View™

Application	Micro LC	Capillary LC	Nano LC
Type	UZ-M10	UZ-C10	UZ-N10
P/N	160011	160013	160015
Flow rate range	10-100 µL/min	1-10 µL/min	0.1-1 µL/min
Illuminated volume	180 nL	45 nL	3 nL
Capillary ID	150 µm	75 µm	20 µm
Path length	10 mm		
Noise	< 0.05 mAU (a)		
Max. Pressure	400 bar (6000 psi)		

(a) @245 nm, Acetonitrile/water (70/30), TC 2 s

**5.10.4 Flow Cells, 30 mm UZ-View™**

Application	Micro LC	Capillary LC	Nano LC
Type	UZ-M30	UZ-C30	UZ-N30
P/N	160012	160014	160016
Flow rate range	10-100 $\mu\text{L}/\text{min}$	1-10 $\mu\text{L}/\text{min}$	0.1-1 $\mu\text{L}/\text{min}$
Illuminated volume	540 nL	135 nL	10 nL
Capillary ID	150 $\mu\text{m}$	75 $\mu\text{m}$	20 $\mu\text{m}$
Path length	30 mm		
Noise	< 0.05 mAU (a)		
Max. Pressure	400 bar (6000 psi)		

(a) @245 nm, Acetonitrile/water (70/30), TC 2 s

**5.10.5 Inputs/Outputs**

Digital Output	2 RS-232 2 EVENT: (Open Collector, Relay) START-, ERROR IN: Optocoupler START-, ERROR OUT: Open Collector
Analog Input	1 V (1V/100 nm)
Analog Output	2 $\pm 0.1$ V / $\pm 1$ V / $\pm 10$ V (for recorder or integrator)

**5.10.6 General**

Power Requirements	90-260 V, 47-63 Hz, 100 VA Maximum
Fuse	2 Slow-Blow, 2A
Dimensions (WxDxH)	160 mm (6.4 in) x 340 mm (13.4 in) x 185 mm (7.3 in).
Weight	5.5 kg (12 lb.).
Production Quality	ISO 9002 certified manufacturing. CE certified (LVD and EMC).
Operating Temperature	10-40°C, 20-80% relative humidity.