



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai - 400076

PR No. 1000023409

Rfx No. 6100001115

**Technical Specification**

**Supply, Delivery, Installation and Commissioning of Completely Modular High Performance Liquid Chromatography System with Accessories.**

The HPLC system shall include the following individual stackable self-contained modules. Modules must be connected via fibre optic noise resistant high-speed transmission technology to enhance the reliability and sensitivity of the HPLC. Below are details of each of the individual modules. Vendor shall supply HPLC system with either similar or better specifications:

**1. Solvent Delivery System for Analytical Flow Rates with degasser:**

Parameter	Specifications	Compliance / Remark
Plunger Type	parallel type double plunger with automatic pulsation correction mechanism achieving pulse-free solvent deliver	
Plunger capacity	10ul or better with increment of 0.0001 ml	
flow rate	0.0001 to 10.0000 ml/min without any hardware changes	
Flow rate accuracy	$\pm 1\%$ or $\pm 2 \mu\text{l}/\text{min}$ of set value whichever is larger	
Flow rate precision	$\pm 0.06\%$ RSD or better	
Pressure	40 MPa or better	
gradient formation	quaternary low pressure gradient mixing	
precision of composition	less than 0.1% RSD.	
check valves	active for stable delivery of non-polar organic solvents	
Plunger rinsing	Automatic	
Operation	Standalone	
Reservoir tray	4 solvent bottles complete with fittings	
degassing unit	Up to 5 flow lines (membrane type)	
Internal capacity of degasser	400 $\mu\text{l}$ or better per flow line	

**2. Auto-Sampler with sample cooler:**

Parameter	Specifications	Compliance / Remark
Sample injection volume	variable between 0.1 $\mu\text{l}$ to 100 $\mu\text{l}$	
Injection system	variable injection volume type with zero sample loss during injection	
Number of samples processing	automatically, random access up to 175 positions for 1ml vial volume. 192 for 2x96 wells microtitre plates, 768 for 2x384 wells microtitre plates, 192 for 2x96 wells deep-well plates	
Flow line rinsing capability	before and after sampling	
Needle aspiration	variable from 0.1 to 15 $\mu\text{l}/\text{sec}$	
carry-over	not more than 0.0025 %	
Injection volume accuracy	within 1%	
injection precision	less than 0.3% of RSD	
Safety features	leak sensor, automatic rack and vial recognition	
Sample vials supply	least 100 sample vials of 1.5ml capacity, complete with caps and septa	

auto sampler	With inbuilt cooler, operating temperature from 4°C to 40°C	
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### 3. Column Oven:

Parameter	Specifications	Compliance / Remark
Column oven type	block heating type	
Heating and cooling method	Electronic	
Heating and cooling	uniform temperature distribution	
temperature range	4°C to 80°C	
Temperature control precision	±0.1°C	
Column numbers	up to 2 columns of 25 cm length	
Safety feature	leak sensor	

### 4. Photodiode Array (PDA) Detector:

Parameter	Specifications	Compliance / Remark
wavelength range	190 nm - 800 nm or better	
photo-diode array detector	1024 elements	
Detector slit width	variable for high resolution as well as high sensitivity	
standard flow cell	12µL volume, 10 mm path length & 12 MPa	
flow cell temperature setting	19°C to 50°C	
Wavelength accuracy	± 1 nm	
wavelength precision	± 0.1 nm	
UV light source	deuterium lamp [D2]	
Visible light source	Tungsten lamp [W]	
Light source selection	flexible to select D2, W or both [D2 +W]	
Drift	$0.4 \times 10^{-3}$ AU/h or better	
Noise	$4.5 \times 10^{-6}$ AU or better	
Linearity	equal or more than 2.5 AU (ASTM method)	
aligning mechanism light sources & cell	self-aligning mechanism	
Accessibility of light sources and cell	accessible from the front for easy maintenance	

### 5. Chromatographic Software:

Parameter	Specifications	Compliance / Remark
Software	Genuine & compliant chromatographic software	
Analysis	one-point digital instrument control, qualitative and quantitative processing, report creation and self-diagnosis	
Sample scheduling	standard and wizard function with on-line help function	
Reporting format	flexible and easy to use in any desired format	
Data format	convertible to other formats	
Other features	automatic execution of system checks, auto-purge and baseline checks	

### Service, Warranty and Training

1. Tendered price should include delivery, installation, commissioning and training (at least 4 users) at supplier's location
2. Warranty for complete equipment for a period of 12 months from date of supply should be provided. This shall include the following at no extra cost:
  - Travel and Labour expenses of Customer Engineer
  - Service Parts used for repairs
3. Vendor to provide service guarantee: should the system require service during the warranty period, vendor must guarantee turn-around-time within 24 hours
4. Vendor to provide a copy of Site-Preparation checklist
5. Vendor must demonstrate that it has a proven appropriate set-up and capability to provide after-sales service efficiently and effectively. The supplier should have in his facility a similar system to that proposed in this tender for training purpose

6. One Analytical C-18 Column (5 $\mu$ m, 4.6 x 250mm) should be supplied along with this HPLC system
7. All required kits, tubings, joints, tool kit etc. essential for running & maintenance of the system shall be supplied along with the system
8. The vendor must be reputed one having experience of at least 10 Years for supply of HPLC & Preparative LC systems. They should have their own facility within Mumbai for demo / training purpose having similar instrument which has been quoted here. Vendor must have service as well as application engineers based within Mumbai city (Attach relevant documents).