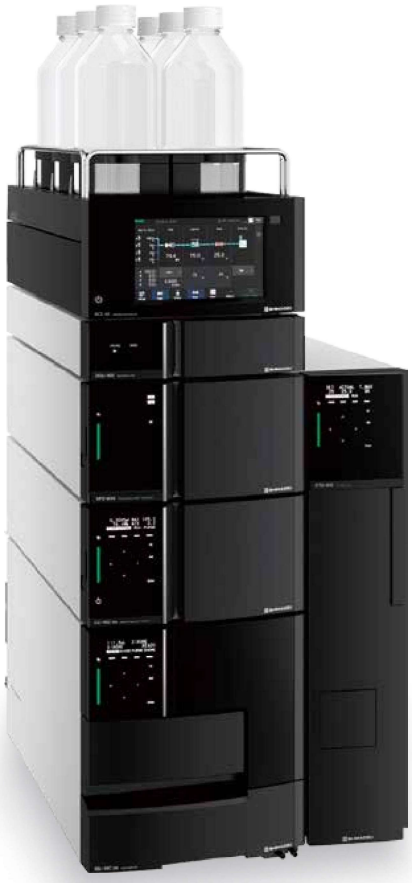
C190-E276A

SHIMADZU
Excellence in Science

Ultra High Performance Liquid Chromatograph

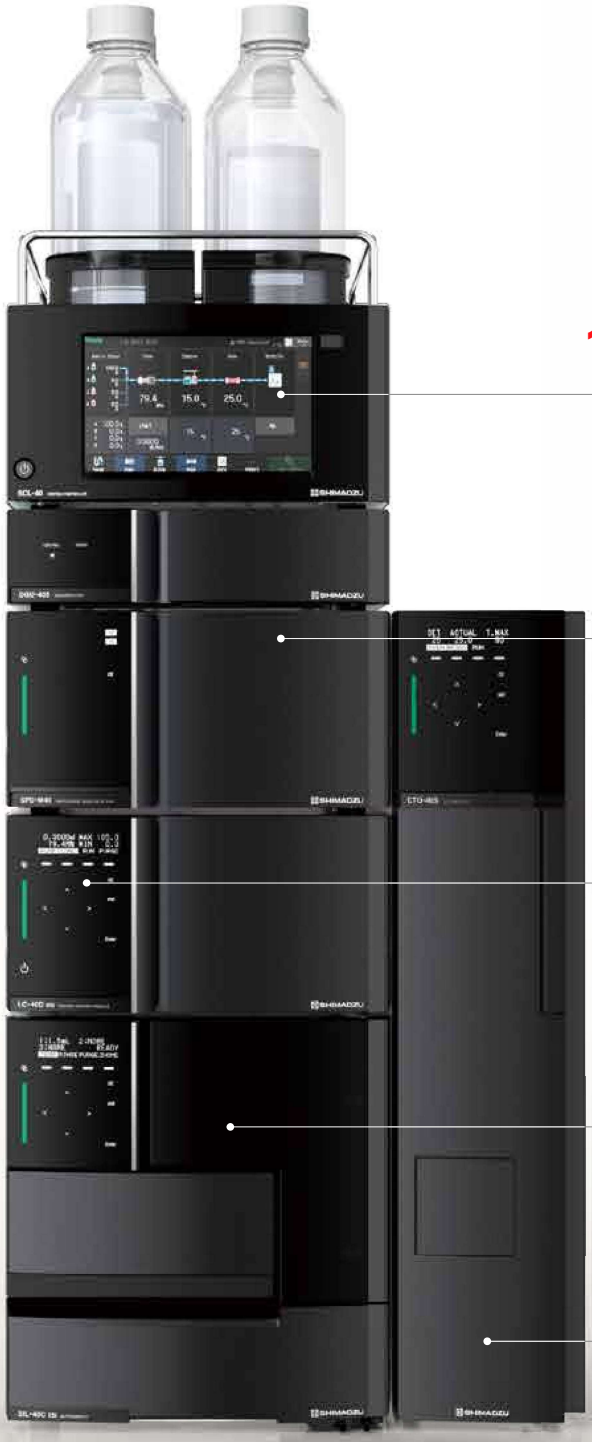
Nexera XS inert

Specifications



Full-range of Bio-inert UHPLC Capabilities

The Nexera™ XS inert eliminates the risk of sample adsorption or surfaces corrosion, while still providing all the exceptional features of the Nexera series. The Nexera XS inert is the perfect solution for a wide variety of applications.



2. The Nexera XS inert combines the excellent resistance to corrosion with the inertness of surfaces in contact with the sample and mobile phases. The system provides excellent chromatographic separation performances for a wide range of applications.

1.

System Controller

SCL-40, CBM-40/40lite

Used to coordinate actions of the overall system, this controller offers intuitive operability that minimizes the stress involved in operating the system, such as startup, analysis, and system shutdown.

Detector

SPD-40/40V/M40

Inert type cells for UHPLC analysis eliminate the risk of adsorption on the detector. Low diffusion cell, which has 5 mm of optical path length, can also be selected.

Solvent Delivery Unit

LC-40D XSi

Designed with corrosion-resistant non-stainless steel materials, it offers rugged, low pulsation performance, advanced AI features and solvent blending capabilities (optional).

Autosampler

SIL-40C XSi

This high-performance autosampler features non-metal materials for all surfaces that contact liquids. That inhibits metal-adsorption of biomolecules.

UHPLC Inert Switching Valve

FCV-0206H2i/FCV-0607H2i

Designed with adsorption-inhibiting materials for all surfaces that contact sample solutions.

Specifications

System Controller


SCL-40


CBM-40

	SCL-40	CBM-40	CBM-40lite
Monitor	Touch panel LabSolutions™ Web monitor	LabSolutions Web monitor	LabSolutions Web monitor
Connectable unit	Solvent delivery unit: Max. 4, Autosampler: 1, Column oven: Max. 4, Detector: Max. 2, etc.		
Number of connectable units	8 (Using option: 12)		4 (Excluding built-in solvent delivery unit)
Event input/output	Input: 1, output: 2		
Analog board	Up to two channels (option)	Up to one channel (option)	—
Communication	Ethernet		
Reservoir tray	Built-in	—	
Dimensions [mm], weight	W 260 × D 500 × H 140, 6 kg	W 260 × D 500 × H 72, 5 kg	—
Operating temperature range	4 to 35 °C		
Power supply	AC 100 to 240 V, 50 VA, 50/60 Hz		Supplied from solvent delivery unit

Solvent Delivery Unit

	LC-40D XSi
Pumping method	Parallel-type double plunger (approx. 10 µL/1 stroke)
Allowable maximum pressure	105 MPa
Flow rate settings range	0.0001 to 3.0000 mL/min (1.0 to 105 Mpa) 3.0001 to 5.0000 mL/min (1.0 to 80 Mpa) 5.0001 to 10.0000 mL/min (1.0 to 22 Mpa)
Flow rate accuracy	≤ ± 1% (1 mL/min, 80 Mpa)
Flow rate precision	≤ 0.06% RSD or 0.02 minSD, whichever greater
Gradient mode	High-pressure gradient (2 or 3 solvents) Quaternary low-pressure gradient
Gradient range of set concentrations	0 to 100% (0.1% step)
Gradient concentration accuracy	High-pressure GE: ± 0.5% (2-liquid gradient of water/caffeine solution, 1 mL/min, 80 MPa) Low-pressure GE: ± 0.5% (2-liquid gradient of water/caffeine solution, 1 mL/min, 10 MPa)
Wetted materials	titanium, titanium alloys, nickel alloys, PEEK, ruby, supphire, Hastelloy® C, high molecular weight polyethylene
Available pH range	1 to 14
Automatic rinsing kit	Standard equipment
Degassing unit	1 unit connectable
Dimensions [mm], weight	W 260 × D 500 × H 140, 12 kg
Operating temperature range	4 to 35 °C
Power supply	AC 100 to 240 V, 150 VA, 50/60 Hz

3.6. 3.8

3.7.

3.

3.1.

Degassing Unit


DGU-403

	DGU-403	DGU-405
Number of degassed solvents	3	5
Wetted materials	PEEK, PTFE	
Degassed flow line capacity	400 µL/1 line	
Dimensions [mm], weight	W 260 × D 500 × H 72, 4 kg	
Operating temperature range	4 to 35 °C	
Power supply	Supplied from solvent delivery unit	

3.3.

Autosampler

	SIL-40C XSi
Injection method	Total-volume Injection
Allowable maximum pressure	105 MPa
Injection volume	0.01 to 50 µL
Injection volume accuracy	≤ ± 1% (5 µL injection, n = 20)
Linearity	≥ 0.9999
Injection cycle time	≤ 6.7 seconds (under specifed conditions)
Samples for processing	288 (microtiter plate, 96 well × 3 plates), 1152 (microtiter plate, 384 well × 3 plates), 252 (1 mL sample vial, 84 × 3 plates), 162 (1.5 mL sample vial, 54 × 3 plates), 84 (4 mL sample vial, 28 × 3 plates), 36 (10 mL sample vial, 12 × 3 plates), 72 (1.5 mL micro tube, 24 × 3 plates)
Injection volume reproducibility	RSD ≤ 1.0% (0.5 to 0.9 µL), RSD ≤ 0.5% (1.0 to 1.9 µL), RSD ≤ 0.25% (2.0 to 4.9 µL), RSD ≤ 0.15% (More than 5.0 µL)
Carryover	≤ 0.0015% (without rinse) ≤ 0.0003% (with rinse, typically) (under specied conditions)
Dip rinsing outside the needle and injection port rinsing	Standard equipment
Pumping rinse outside the needle	Standard equipment
Internal rinsing (3 dil)	Standard equipment
Sample cooler	Standard equipment (Air-circulation temperature control type)
Sample cooler temperature setting range	4 to 45 °C (Room temperature needs to be less than 30 °C and humidity needs to be less than 70% to set 4 °C)
Sample cooler temperature accuracy	± 2 °C (sensor position ± 0.5 °C)
2. Wetted material	Sample transfer path: PEEK, DLC, ceramics Other flow path: PEEK, ceramics, PTFE, ETFE, FEP, GFP, supphire, PPS, FFKM
Available pH range	1 to 14
Dimensions [mm], weight	W 260 × D 500 × H 280 (Protrusion adds 140 mm to the depth), 24 kg
Operating temperature range	4 to 35 °C
Power supply	AC 100 to 240 V, 400 VA, 50/60 Hz

Plate Changer

	PLATE CHANGER	
Samples for processing (includes two plates of autosampler)	1 PLATE CHANGER 1536 (microtiter plate, 96 well × 16 plates), 864 (deep-well plate, 96 well × 9 plates) 6144 (microtiter plate, 384 well × 16 plates), 3456 (deep-well plate, 384 well × 9 plates) 756 (1 mL sample vial, 84 × 9 plates), 486 (1.5 mL sample vial, 54 × 9 plates) 252 (4 mL sample vial, 28 × 9 plates), 108 (10 mL sample vial, 12 × 9 plates)	3 PLATE CHANGERS 4224 (microtiter plate, 96 well × 44 plates), 2208 (deep-well plate, 96 well × 23 plates) 16896 (microtiter plate, 384 well × 44 plates), 8832 (deep-well plate, 384 well × 23 plates) 1932 (1 mL sample vial, 84 × 23 plates), 1242 (1.5 mL sample vial, 54 × 23 plates) 644 (4 mL sample vial, 28 × 23 plates), 276 (10 mL sample vial, 12 × 23 plates)
Sample cooler temperature setting range	Air-circulation temperature control type, 4 to 45 °C (Room temperature needs to be less than 30 °C and humidity needs to be less than 70% to set 4 °C)	
Dimensions [mm], weight	W 170 × D 500 × H 560 (Protrusion adds 140 mm to the depth), 26 kg	
Operating temperature range	4 to 35 °C	
Power supply (1Plate Changer)	AC 100 to 240 V, 400 VA, 50/60 Hz	

Column Oven

CTO-40C CTO-40S

	CTO-40C	CTO-40S
Temperature control type	Forced air circulation	
Cooling Method	Electronic cooling	
Temperature control range	Room temperature – 10 °C to 100 °C	Room temperature – 10 °C to 85 °C
Temperature accuracy	± 0.5 °C	± 0.8 °C
Temperature precision	± 0.05 °C	± 0.1 °C
Containable column size and number	Up to 250 mm L. column × 6 or 300 mm L. column × 3	Up to 100 mm L. column × 6 or 300 mm L. column × 3
Dimensions [mm], weight	W 260 × D 500 × H 415, 21 kg	W 130 × D 500 × H 553, 15 kg
Operating temperature range	4 to 35°C	
Power supply	AC 100 to 120 V / 220–240 V (Automatic switching), 400 VA, 50/60 Hz	AC 100 to 240 V, 300 VA, 50/60 Hz

UV-VIS Detector

SPD-40V

	SPD-40	SPD-40V
Light source	Deuterium (D_2) lamp	Deuterium (D_2) lamp, tungsten lamp
Wavelength range	190 to 700 nm	190 to 1000 nm
Bandwidth	8 nm	
Wavelength accuracy	≤ ± 1 nm	
Wavelength reproducibility	≤ ± 0.1 nm	
Drift*	≤ 0.1 × 10^{-3} of AU/h (under specified conditions, typically)	
Noise*	≤ 5.0 × 10^{-6} AU (under specified conditions)	
Linearity*	2.5 AU (under specified conditions, typically)	
Flow cell*	Optical path length: 10 mm, Cell volume: 8 µL, Pressure: 8 MPa Material of wetted parts: PEEK, PFA, quartz	
Sampling rate	Max. 100 Hz (Single wavelength mode)	
Cell temperature control range	19 to 50 °C, 1 °C Step	
Optional flow cell	UHPLC inert cell (optical path length: 10 mm, cell volume: 8 µL, equipped with temperature control function) Low-diffusion inert cell (optical path length: 5 mm, cell volume: 2.5 µL, equipped with temperature control function) Inert cell (optical path length: 10 mm, cell volume: 12 µL, equipped with temperature control function)	
Available pH range	1 to 13 (Cell quartz might be damaged by a mobile phase of pH >10.)	
Dimensions [mm], weight	W 260 × D 500 × H 140, 11 kg	
Operating temperature range	4 to 35 °C	
Power supply	AC 100 to 240 V, 150 VA, 50/60 Hz	

* When using inert flow cell for UHPLC analysis

Photodiode Array Detector

	SPD-M40
Light source	Deuterium (D_2) lamp, Tungsten lamp
Number of diode elements	1024
Wavelength range	190 to 800 nm
Wavelength accuracy	≤ ± 1 nm
Wavelength reproducibility	≤ ± 0.1 nm
Slit width	1.2 nm, 8 nm
Spectral resolution	≤ ± 1.4 nm
Drift*	≤ 0.4 × 10^{-3} of AU/h (under specified conditions, typically)
Noise*	≤ 6.0 × 10^{-6} AU (under specified conditions)
Linearity*	2.5 AU (under specified conditions, typically)
Flow cell*	Optical path length: 10 mm, Cell volume: 8 µL, Pressure: 8 MPa Material of wetted parts: PEEK, PFA, quartz
Sampling rate	Max. 100 Hz (Single wavelength mode)
Cell temperature control range	19 to 50 °C, 1 °C Step
Optional flow cell	UHPLC inert cell (optical path length: 10 mm, cell volume: 8 µL, equipped with temperature control function) Low-diffusion inert cell (optical path length: 5 mm, cell volume: 2.5 µL, equipped with temperature control function) Inert cell (optical path length: 10 mm, cell volume: 12 µL, equipped with temperature control function)
Available pH range	1 to 13 (Cell quartz might be damaged by a mobile phase pH >10.)
Dimensions [mm], weight	W 260 × D 500 × H 140, 10 kg
Operating temperature range	4 to 35 °C
Power supply	AC 100 to 240 V, 180 VA, 50/60 Hz

* When using inert flow cell for UHPLC analysis

Spectrofluorometric Detector

RF-20Axs

	RF-20A	RF-20Axs
Light source	Xenon lamp	Xenon lamp Low-pressure mercury lamp (to check wavelength accuracy)
Wavelength range	200 to 650 nm	200 to 750 nm
Spectral bandwidth	20 nm	
Wavelength accuracy	± 2 nm	
Wavelength precision	± 0.2 nm	
S/N	Water Raman peak S/N ≥ 1200 Low background S/N ≥ 9000	Water Raman peak S/N ≥ 2000 Low background S/N ≥ 12000
Range of cell temperature control	—	Room temperature – 10°C to 40°C, 1°C step
Cell	Standard conventional cell: volume 12 µL, maximum pressure 2 MPa Optional semi-micro cell: volume 3 µL, maximum pressure 2 MPa Optional inert cell: volume 12 µL, maximum pressure 2 MPa	
Sampling rate	Max. 100 Hz (Single wavelength mode)	
Function	Simultaneous measurement of four wavelengths, Wavelength scanning	
Dimensions [mm], weight	W 260 × D 500 × H 210, 17 kg	W 260 × D 500 × H 210, 19 kg
Operating temperature range	4 to 35 °C	
Power supply	AC 100 to 240 V, 400 VA, 50/60 Hz	

Evaporative Light Scattering Detector

	ELSD-LT III
Nebulizing method	Siphon splitting
Light source	Semiconductor laser
Detector	Photodiode
Temperature setting range	Room temperature to 100 °C
Nebulizer gas	Air or nitrogen*
Mobile phase flow rate (Standard nebulizer)	0.2 to 2 mL/min
Operating temperature range	4 to 35 °C
Operating humidity range	20 to 85 %
Dimensions [mm], weight	W 250 × D 530 × H 330, 15.5 kg
Power supply	AC 100 to 240 V, 120 VA, 50/60 Hz

* Supply gas at a pressure of about 350 kPa.
An air compressor may also be used.
A filter (P/N: 228-45528-92) is also available for filtering out moisture and other matter from the compressor.
For more details, contact a Shimadzu sales representative.

pH monitor

	pHM-40
Available pH range	1 to 14
Precision	pH ±0.1 (under specified conditions)
Drift	pH ±0.1 /10 h (under specified conditions)
Maximum flow rate	10 mL/min
Allowable maximum pressure	0.1 MPa
Cell volume	approx. 80 µL
Available liquid temperature	4 to 60 °C
Wetted materials	glass, PEEK, PCTFE, silicon
Calibration point	1 to 5 point is settable.
Dimensions [mm], weight	W 130 × D 393 × H 206, 6 kg
Power supply	DC 5 V, 5 VA

Optional Accessories

Solvent Delivery Unit

Part Name		P/N	Description
Low-pressure gradient unit		228-65082-58	Low-pressure gradient unit with excellent corrosion resistance
Reservoir selection valve		228-65017-58	Two-solvent switching unit to be incorporated in solvent delivery unit
FCV-11AL		228-65611-58	The mobile phase switching valve of 3 flow lines that connects to solvent delivery unit (external)
FCV-11ALS		228-65610-58	The mobile phase switching valve of 1 flow line that connects to solvent delivery unit (external)
Inert mixer (For built-in column oven)	MR 20 µL	228-65081-41	Excellent corrosion resistance high-efficiency mixer for high-pressure gradient system (volume 20 µL)
	MR 180 µL	228-65081-42	Excellent corrosion resistance high-efficiency mixer for high-pressure gradient system (volume 180 µL)
	MR 40 µL LPGE	228-65081-43	Excellent corrosion resistance high-efficiency mixer for low-pressure gradient system (volume 40 µL)
	MR 300 µL LPGE	228-65081-44	Excellent corrosion resistance high-efficiency mixer for low-pressure gradient system (volume 300 µL)
Inert mixer (For built-in solvent delivery unit)	MR 40 µL LPGE	228-65020-43	Excellent corrosion resistance high-efficiency mixer for low-pressure gradient system (volume 40 µL) It can be built into the solvent delivery unit.

3.2.

Autosampler

Part Name		P/N	Description
Sample plate	1.5 mL	228-71762-46	Plate for 1.5 mL sample vial (54)
	1 mL	228-71762-42	Plate for 1 mL sample vial (84)
	4 mL	228-71762-43	Plate for 4 mL sample vial (28)
	10 mL	228-71762-44	Plate for 10 mL sample vial (12)
Identification labels	For 96-well microplates	228-71840-41	Identification label affixed to the 96-well microtiter plate (100 set)
	For 96-well deep-well plates	228-71840-42	Identification label affixed to the 96-well deep-well plate (100 set)
	For 384-well microplates	228-71840-43	Identification label affixed to the 384-well microtiter plate (100 set)
	For 384-well deep-well plates	228-71840-44	Identification label affixed to the 384-well deep-well plate (100 set)

Column Oven

Part Name			P/N	Description
FCV kits	For CTO-40S		228-72438-41	This is a kit for attaching a flow line switching valve to CTO-40S
	For CTO-40C		228-72589-41	This is a kit for attaching a flow line switching valve to CTO-40C
FCV tubing kits	ID 0.1 mm× 300 mm	Two	228-72437-52	PEEK lining tubing kit to connect the flow line switching valve and columns
		Six	228-72437-53	
PEEK lining tubing	ID 0.1 mm×600 mm		228-74344-46	PEEK lining piping used on the column inlet side.
	ID 0.3 mm×600 mm		228-74346-46	

UV Detector / PDA Detector

Part Name	P/N	Description
UHPLC inert cell	228-74221-41/42	Inert type flow cell for UHPLC analysis that does not use metal for the wetted parts. (Cell volume is 8 µL)
Low-diffusion inert cell	228-74222-41/42	Inert type low-diffusion flow cell that does not use metal for the wetted parts. (Cell volume is 2.5 µL)
Inert cell	228-64728-41/42	Inert type flow cell that does not use metal for the wetted parts. (Cell volume is 12 µL)

Others

Part Name	P/N	Description
Mobile phase monitor (controller)	228-65525-58	MPM-40 controller to monitor remaining mobile phase in real-time Up to six bottle holders can be connected (228-65526-58, set of two)
Power outlet unit 6P	228-65523-41	Power tap to turn off the main power of the instrument completely at one time. Switches can be installed in front of the reservoir tray. It provides six outlets.
Power outlet unit 2PS	228-65524-58	Outlet to supply power to main units that need to be connected to service outlets, such as SIL-10A and FRC-10A. It provides two outlets.
PEEK lining stainless steel tubing kit B, ID 0.1 for high-pressure GE	228-74380-42	PEEK lining tubing kits for high-pressure gradient system. Column inlet tubing ID 0.1 mm
PEEK lining stainless steel tubing kit D, ID 0.1 for low-pressure GE	228-74380-44	PEEK lining tubing kits for low-pressure gradient system. Column inlet tubing ID 0.1 mm
PEEK lining stainless steel tubing ID 0.1 × 600	228-74344-46	A PEEK lining stainless steel tubing with an inner diameter of 0.1 mm and a length of 600 mm that connects the auto-sampler to the column.
PEEK lining stainless steel tubing ID 0.3 × 600	228-74346-46	A PEEK lining stainless steel tubing with an inner diameter of 0.3 mm and a length of 600 mm that connects the auto-sampler to the column.
Cable kit A	228-70247-41	Optical link cable kit, 600 mm × 1 pc, 800 mm × 1 pc
Cable kit B	228-70247-42	Optical link cable kit, 600 mm × 2 pcs, 800 mm × 1 pc
Cable kit C	228-70247-43	Optical link cable kit, 600 mm × 3 pcs, 800 mm × 1 pc
Cable kit D	228-70247-44	Optical link cable kit, 600 mm × 4 pcs, 800 mm × 1 pc
Reservoir tray	228-65508-58	Reservoir tray for up to 8 bottles (1L)
AD board	228-55519-41	Board for analog–digital conversion. It takes in detector signals as analog signals.
Optical cable connector	228-70481-41	The board to expand the number of optical cable connector channels to 12ch from 8ch (standard) by attaching to SCL-40/CBM-40

Valve

Part Name	P/N	Description
FCV-0206H2i	228-65630-58	2-position 6-port valve (Maximum pressure: 105 MPa) The wetted parts are ceramic, DLC, and PEEK. Does not contain metal.
FCV-0607H2i	228-65631-58	6-position 7-port valve (Maximum pressure: 105 MPa) The wetted parts are ceramic, DLC, and PEEK. Does not contain metal. 5.2.
FCV-S	228-65600-58	One flow channel swiching valve can be installed.
FCV-BOX	228-65601-58	Four flow channel switching valves can be installed.
Control panel	228-76002-41	This part is used to operate the flow path switching valve built into the FCV-BOX.

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