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Shimadzu - SIL-HTa/SIL-HTc  
Autosampler for Shimadzu Prominence Series, HPLC System and LCMS



High throughput is the key word for modern HPLC analysis. The SIL-HT is the best performing autosampler in terms of sample injection speed, sample capacity, and minimizing sample carryover of highly adsorbent sample components. These features are in increasingly high demand and essential for high throughput analysis. The SIL-HT has been developed to meet such users' requirements and will also provide optimum results in your lab. The SIL-HT is available in two versions: the SIL-HTA, ambient model; and the SIL-HTC with sample temperature control from 4 to 40C.

Features

#### **High throughput**

The SIL-HT maximizes analysis throughput with fast sample injection and high sample capacity. Injection speed is 15 seconds for injecting samples of 10uL . The SIL-HT is the fastest autosampler currently on the market.

#### **Near-zero sample carryover**

Recently, an increasing number of extremely basic and hydrophobic components are being used in new drug formulations. Since these chemical compounds strongly adsorb to the sampling needles or rotor seals (mainly Vespel) of autosamplers, cross contamination may not be reduced by simple rinsing. To minimize adsorption of such compounds, the outer surface of the sampling needle of the SIL-HT's autosampler is coated using a special, innovative surface processing technology (patent pending). Furthermore, by employing newly developed rotor seals and needle seals made of PEEK, the SIL-HT dramatically reduces contamination, even with the most highly adsorbent sample compounds. As a result, the SIL-HT demonstrates nearly zero sample carryover.

#### **Excellent repeatability**

The SIL-HT uses a needle-in-the-flow-path injection design (also called direct injection method or total volume injection method) and a high-performance measuring pump (6nL step resolution) for enhanced

accuracy. This results in superior repeatability over conventional autosamplers. In addition, precious samples are not wasted since the total volume aspirated is injected.

## Specifications

Sample Injection Unit	
Sample Injection System	Total sample injection, variable sample injection system (zero sample loss during injection)
Settable Range Of Injection Volumes	0.1 to 100 $\mu$ L (standard), or 1 to 2000 $\mu$ L(option) (0.1 $\mu$ L steps from 0.1 to 0.9 $\mu$ L, and 1 $\mu$ L steps from 1 to 2000 $\mu$ L)
Sample Processing Capability	With 1-mL vials: 350 With 1.50mL vials: 210(SIL-HTa), 140(SIL-HTc) With 4-mL vials:100 With micro plates:4 (96 wells: 384, 384 wells: 1536) With deep-well plates: 4 (96 wells: 384, 384 wells: 1536)
Injection Volume Repeatability	RSD: 0.3% max. (at 10 $\mu$ L injection)
Cross Contamination	0.01% max. (for analysis of naphthalene)
Injection Volume Accuracy	Less than +/-1% (50 $\mu$ L)
Injection Volume Accuracy Correction	Possible
Number Of Injections	1-99 times per sample
Setting Of Analysis time	0.01-9999.9 (0.01 minute increments to 999.099min.,0.1 minute increments over 1000min.)
Number Of Steps For Injection Conditions	Max 102 steps
Sample Suction Speed	0.1 - 15 $\mu$ L/sec (0.1 $\mu$ L/s step for 0.1-0.9 $\mu$ L/sec., 1 $\mu$ L/s step for over 1 $\mu$ L/sec.)
Rinsing Liquid Suction Speed	1 - 35 $\mu$ L/sec (1 $\mu$ L/s step)
Maximum Pressure	Max. 20.0Mpa (Standard pipings of sample flowpath is PEEK)
Sample Cooler (SIL-HTc only)	
Method	Direct cooling method (at a setting of 4°C, room temperature must be less than 30°C and humidity less than 70%)
Temperature setting range	4 to 40° (Cooling down to 4°C for room temperature up to 30°C and humidity up to 70%)
Operating Ambient Temperature Range	4 to 35°C
System Controller	

Display	LCD with back light (320 x 240 pixels)
Memory Media	3.5 inch floppy disk drive, disk (2HD)
Input/Output Terminals	External start input: 1, Error input: 3, External output(EVENT 1,2,3,4): 4, Output for external control (AC Remote):1, Optical link: (for Chromatopac), 8 (for LC unit control), RS-232C: 1 (for PC connection)
(configuration of condition setting files)	
No. of analysis file	20 files (parameter, time program)
No. of fraction collector files	10 files (parameter, time program)
Analysis sequence files	102 steps
Pump Control	Solvent delivery models: isocratic, high-pressure gradient, low-pressure gradient, constant pressure solvent delivery Programs: flow volume, pressure, concentration, upper pressure limit, lower pressure limit, linear step, index function (all are multiple steps)
Autosampler Control	Sample injection volume, number of repeated analyses, analysis time, analysis file unumber, etc
Column Oven Control	Oven temperature, upper temperature limit
Detector Control	Detection wavelength, range, time constant, lamp ON/OFF, scanning conditions, etc.
Self-diagnostic and safety measures	Monitoring abnormalities through checks of memory, upper and lower pressure limits oven temperature upper limit, lamp current and motor speeds
Operating pH Range	pH: 1 to 14 standard
Wetted Surface Material	SUS316, PEEK, Ceramics
Operating Temperature Range	4 to 35°C
Operating Humidity Range	up to 70%
Power Supply	AC100V, 150VA (SIL-HTa), 300VA (SIL-HTc), 50/60Hz
Size	540 (W) x 500 (D) x 415 (H) mm
Weight	40kg (SIL-HTa), 45kg (SIL-HTc)



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