

Column Flow Reactor

For the development and study of continuous production processes

Support basic research for practical application of flow synthesis method

SynpleFlow™



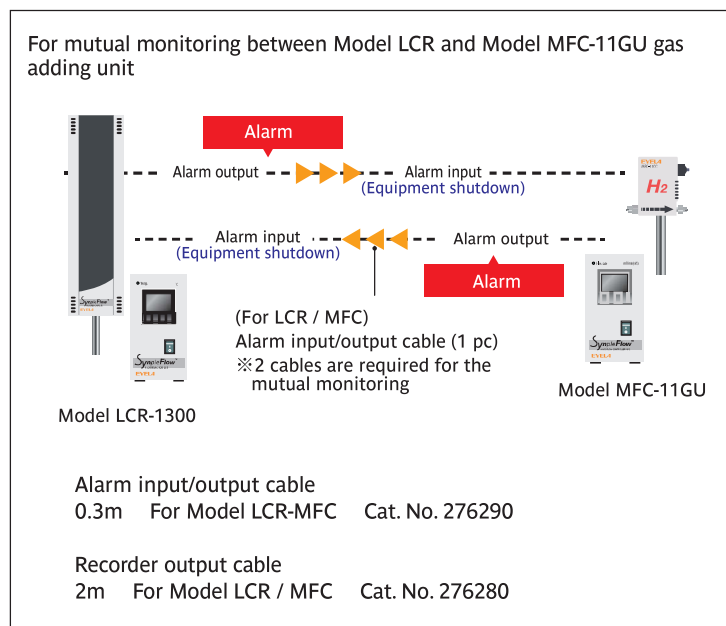
Model LCR-1300

This column flow reactor is ideal for the study of continuous flow synthesis using immobilized catalysts. The simple configuration consists only of a column and heating reactor. The system can be freely constructed by combining a pump, gas adding unit, and other components. It can also be used for the studies of process development and multi-step reaction.

- The length of the aluminum block thermostatic chamber has been extended to 300 mm. The range of conditions can be expanded, compared to the conventional model.
- The column reaction vessel can be filled with catalyst by hand.
- Sample preheating and keep warm functions are equipped.
- Three types of column end can be configured, 1-port for liquid phase, 2-ports for gas-liquid and 3-ports for gas-liquid/liquid-liquid.
- The output terminal for managing and recording experimental data, and the alarm input/output terminal for monitoring errors are provided as standard equipment.
- The heating reactor can be attached to the laboratory angle rack.

Standard equipment of recorder output and alarm input/output terminals

Equipped with alarm input and output terminals for monitoring the occurrence of abnormalities. Mutual monitoring is possible by connecting to the gas adding unit (Model MFC-11GU) and the handy-type data logger (Model GL240).

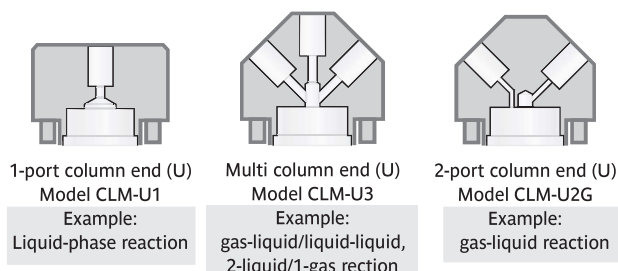


Preheating mechanism for samples before reaching the column



The aluminum block has a groove for fixing a tube (for OD 1/16inch). This is effective for preheating sample solution before enabling column and for heat retention of samples that are prone to precipitation.

Column ends for liquid-phase and gas-liquid/liquid-liquid applications



Model	LCR-1300	
Cat. No.	276200	
Reaction method	Flow method (with separate pressure pump)	
Reaction vessel	Column reaction vessel (Stainless steel)	
Compatible- column	ID5 x length 50/100mm, ID10 x length 50/100/300mm	
Max. working pressure	Less than 1MPa	
Tempe. control range	50 to 200 °C (on aluminum block)	
Functions	Temp. control	Aluminum block jacket control, heating P.I.D. control
	Sample inlet (Option)	1-port column end for 1 solution channel, 2-port column end for 1 gas and 1 solution channel. and Multi column end for the total of 3 channels of solution and gas.
	External input/output	Temp. controller PV value output (0 to 5 VDC), alarm contact output/input
	Safety functions	Temp. controller self-diagnostic function (variable upper temp. limit/sensor error), independent overtemperature protection device (thermal fuse), fuse
Standard	Wetted part material	Stainless steel, FFKM, PTFE, PEEK
	Connection tubes/thread standards	O.D. 1/16" tube (standard), O.D. 1/8" tube (optional), 1/4-28UNF
Ambient operating temp.	5 to 35°C	
Outer dimensions(mm)/weight	Heating reactor: 100W×90D×350H (240D: with arbor) temperature controller: 80W×220D×151H	
Power input and supply voltage	6.3A, 630VA / 100VAC 50/60Hz	

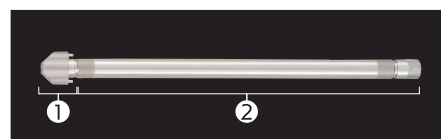
※Columns are not included. Optional column set and column end (U) are required.

※External dimensions do not include protrusions.

Option

■ Column set / Column end (upper side)

The reaction vessel consists of a column set and column end (upper side). There are a total of five types of column sets with different inner diameters and lengths, and three types of column ends (upper side) from 1 to 3 ports.



- ① Column end (upper side)
② Column set

Product name	Model	Cat. No.
Column set (φ5×50mm)	CLM-0505	262780
Column set (φ10×50mm)	CLM-1005	262790
Column set (φ55×100mm)	CLM-0510	264300
Column set (φ510×100mm)	CLM-1010	264310
Column set (φ510×300mm)	CLM-1030	276210
1-port column end (U)	CLM-U1	276220
Multi column end (U)	CLM-U3	276230
2-port column end (U)	CLM-U2G	263680

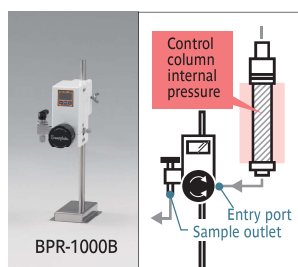
Related products



Medium to high pressure pumps Model EUI-22-110

A linear drive double plunger pump which is resistant to air bubbles and provides stable pumping with minimal pulsation is recommended. This pump is equipped with a pressure upper/lower limiter (variable) to prevent abnormal pressure increases due to blockages in the column or channel. PEEK and SUS pump head materials are also available.

Model	Flow Rate Range(mL/min)	Discharge pressure	Wetted part material	Cat. No.
EUI-22-110P	0.001 to 9.999	20MPa	PEEK	278550
EUI-22-110S		35MPa	SUS	278560



Pressure regulating valve unit (With external output function)

The column internal pressure can be controlled at any value by operating the valve. The valve body can be removed from the pedestal and installed at any desired location, such as an angle or a pedestal pole. A recorder output terminal is provided to output and record the measured value.

※Signal output cable is sold separately.

Model	Pressure adjusting range	Pressure value display	Entry port	Cat. No.
BPR-1000A	0 to 1.54MPa	0 to 3.5MPa	Left side	274450
BPR-1000B		Digital display	Right side	274460

Signal output cord Model ZO-2000 Cat. No. 120890



SimpleFlow gas adding unit MFC-11GU

Cat. No. 276320

This is a gas adding unit for hydrogenation reaction. Hydrogen gas can be supplied to the column at any flow rate. Stable gas flow control is possible even at less than 1MPa. In addition, a check valve and trap are provided as standard equipment to prevent liquid contamination.

Applicable gas: Hydrogen
Flow control range: Less than 1MPa
※Oxygen and carbon dioxide are also available (custom order)

Oxygen and carbon dioxide are also available (custom order). Please contact us if you require a gas type or flow range other than those listed above.



SimpleFlow pedestal STT-1010

Cat. No. 276310

This is a dedicated pedestal for the SimpleFlow Series that enables compact integration of system components. It is equipped with 4 service outlets for convenient power management (total power capacity 8A).

External input/output cables and data logger

LCR/MFC Recorder output cable 2m Cat. No. 276280
LCR/MFC Alarm input/output cable 0.3m Cat. No. 276290

Example of system configuration

Continuous Flow Reaction System (Hydrogenation reaction)

System code:
SYS13201



Product name	Model	Cat. No.
SimpleFlow	LCR-1300	276200
Column set (φ10x 300mm)	CLM-1030	276210
2-port column end	CLM-U2G	263680
Medium to high pressure pump	EUI-22-110P	278550
SimpleFlow gas adding unit	MFC-11GU	276320
Pressure regulating valve	BPR-1000A	274450
SimpleFlow pedestal	STT-1010	276310
1-2 way valve for analysis	V204	226590
Bracket for valve	VFB-10	165560
LCR/MFC Alarm input/output cable 0.3mx2 pcs		276290

Total system power capacity : 8A, Number of required outlets : 1
※A hydrogen supply source is required.

Example of system application

Multi-step reaction by connecting multiple units (flow precise synthesis)



Kobayashi et al. 「Nature 520, 329-332」

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※The appearance and specifications of the products are subject to change without notice.