

Intelligent RI Detector **RI-2031**



The JASCO Model RI-2031 RI detector is a microcomputer based Differential Refractometer which combines a high-quality optical system with advanced electronics and microcomputer control/programming capabilities. The RI-2031 is the latest addition to the new high-performance, easy-to-use and extremely compact LC-2000Plus series HPLC modules. The RI-2031 can easily be interfaced with the JASCO HPLC system using the JASCO chromatography data systems.

- **Highly Reliable Optics**

The RI-2031 optical design is based on Snell's Law of Refraction utilizing a prism flow cell. Two flow cells, i.e., the sample and the reference cells having triangle cross section, form a pair of liquid prisms. The beam from the light source is directed to the prism cell through the collimator lens and passes through the sample and the reference prism cells where refraction occurs in accordance with the difference in the refractive indices between the sample and reference liquids. This refracted beam is then reflected by the plane mirror located behind the flow cell back through the cell where the second refraction takes place and is focussed on a photodiode. The refraction angle representing the refractive index difference is monitored as a movement of the image on the photodiode pair which outputs corresponding electrical signals.

- **Advanced Electronics**

The difference and sum of analog signals from the photodiode pair are converted into digital signals and sent to the CPU. Then, the CPU computes the difference of refractive indices between the sample and reference liquids with compensation of the intensity fluctuation of the light source and the light absorption of the sample solute by using the sum signal. This digital signal is displayed on the high-contrast backlit LCD, and is also sent to the analog output via a D/A converter.

- **High Stability**

A high-sensitive Refractive Index detector requires an extremely rugged optical bench which maintains perfect alignment over the entire life. JASCO has achieved such optics and realized the RI-2031. To insure this stability, the RI-2031 is designed with careful consideration of the system's overall thermal balance by utilizing very effective heat exchangers and precise control of temperature at both the sample and reference cells.

- **Maximum flow rate of 50 mL/min**

Maximum flow rate is 50 mL/min (Solvent: H₂O). Wide dynamic range and extended maximum flow rate allow to the semi-preparative application.

- **Time Programming Capability**

The RI-2031's on-board microprocessor allows time programmed change of the detector range and reference cell solvent replacement, thereby optimizing peak detection and facilitating unattended solvent replacement of reference cell.



SPECIFICATIONS

Measurement system:	Deflection type
Refractive index range:	1.00 to 1.75 RIU
Measurement range:	1/4, 1/2, 1, 2, 4, 8, 16, 32, 64, 128, 256 and 512 x 10 ⁻⁶ RIU/full scale (MEASUREMENT RANGE: STD) 1/4, 1/2, 1, 2, 4, 8, 16, 32, 64, 128, 256 and 512 x 10 ⁻⁵ RIU/full scale (MEASUREMENT RANGE: WIDE)
Linearity:	5.0 x 10 ⁻⁴ RIU (H ₂ O) (MEASUREMENT RANGE: STD) 5.0 x 10 ⁻³ RIU (H ₂ O) (MEASUREMENT RANGE: WIDE)
Noise:	less than 0.20 x 10 ⁻⁸ RIU (H ₂ O) (MEASUREMENT RANGE: STD)
Cell capacity:	10 µl
Maximum usable flow rate:	10 mL/min ("up to 10 mL" flow rate tubing) 50 mL/min ("10 ~ 50 mL" flow rate tubing)
Temperature control:	PID control of heater
Setting range:	0 - 40 °C in 1 °C increment
Control range:	10 °C above ambient to 25 °C above ambient
Zero adjustment:	Optical and electronic auto-zero functions Integrator output zero positioning
Reference selection:	Electromagnetic valve control
Time program:	Parameters that can be set are PURGE ON/OFF, AUTO ZERO, RANGE, RESPONSE and time in the range from 0.1 to 999.9 min.
Input and output signals:	
Integrator output:	5.0 x 10 ⁻⁴ RIU/1V (MEASUREMENT RANGE: STD) 5.0 x 10 ⁻³ RIU/1V (MEASUREMENT RANGE: WIDE)
Recorder output:	10 mV/full scale
Marker and leak output:	1 circuit each
Marker, auto-zero, program reset/start input:	1 circuit each
LC-Net control:	1 circuit
Liquid wetted material:	Synthetic quartz, fluoride resin, stainless steel (SUS316)
Dimensions:	150 (W) x 470 (D) x 150 (H) mm excluding protrusions
Weight:	Approx. 13 kg
Power Input voltage:	AC 100 ~ 240 V, 50/60 Hz
Power consumption:	50 VA

ORDERING INFORMATION

6833-J002B	Model RI-2031	Refractive Index detector
6824-J002B	Model UV-2070	UV/VIS Detector (~ 900 nm)
6825-J002B	Model UV-2075	UV/VIS Detector (~ 600 nm)
6826-J002B	Model UV-2077	Multi-wavelength UV/VIS Detector
6832-J002B	Model MD-2015	Diode Array Detector (~ 900 nm)
6831-J002B	Model MD-2010	Diode Array Detector (~ 600 nm)
6829-J003B	Model FP-2020	Fluorescence Detector
6838-J002B	Model CD-2095	Circular Dichroism Detector
6837-J002B	Model OR-2090	Chiral Detector
6836-J002B	Model CL-2027	Chemiluminescence Detector
6818-J002B	Model PU-2080	HPLC Pump
6823-J003B	Model PU-2089	Quaternary HPLC Pump
6820-J002B	Model PU-2085	Semi-micro HPLC Pump
6821-J002B	Model PU-2086	Semi-preparative HPLC Pump
6822-J002B	Model PU-2087	Preparative HPLC Pump
6819-J002B	Model PU-2080i	Bio-inert HPLC Pump
6823-J004B	Model PU-2089i	Bio-inert Quaternary HPLC Pump
6828-J008B	Model AS-2059	Autosampler
6827-J005B	Model AS-2055	Autosampler
6827-J006B	Model AS-2057	Autosampler
6834-J002B	Model CO-2060	Column Oven
6835-J002B	Model CO-2065	Column Oven

STANDARD ACCESSORIES

Needle	1 pc
Tube, 1/16" O.D. x 0.8 mm I.D. x 1.5 m	1 pc
2 mL syringe	1 pc
Compression screw, PEEK, 1/16"	2 pcs
Label	1 pc
Spare fuses	2 pcs
AC power cable	1 pc

● Specifications are subject to change without notice.



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LLC11-0607 Printed in Japan