

# REFRACTIVE INDEX DETECTOR KIT THAT FITS

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## SUMMARY

Detection of small amounts of dissolved compounds with little or no absorption in the UV/V is spectral range represents an analytical challenge even today. The differential refractometer is an established work-horse for the detection of alcohols, sugars, lipids or polymers in HPLC (high performance liquid chromatography) and GPC (gel permeation chromatography). The KNAUER AZURA® RID 2.1L is a highly competitive and sensitive refractive index detector. This device is ideal for fast and reliable routine analysis of non-UV absorbing substances. Improved safety features and enhanced diagnostics functions guarantee easy handling and minimal maintenance. A number of innovative features such as extended dynamic range make it unique on the today's market.

## INTRODUCTION

The AZURA RID 2.1L is a sensitive and competitively priced differential refractometer suitable for detecting compounds with little or no UV activity such as alcohols, sugars, lipids or polymers. This instrument is designed for use in analytical HPLC (high performance liquid chromatography) as well as for GPC (gel permeation chromatography) applications. The intelligent temperature control guarantees fast baseline stabilization and stable operation. Furthermore, the long-life LED, highly pressure resistant flow cell, improved safety features and enhanced diagnostics functions guarantee easy handling and minimal maintenance. The wide linear dynamic range and 10 mL/min maximum flow rate make the AZURA RID 2.1L the perfect choice for most laboratory tasks.

## TECHNICAL DETAILS

### Optical Unit

The AZURA RID 2.1L is a differential refractive index detector (RID) of the deflection type. The detector measures the deflection of a light beam caused by the difference in refractive index between the liquids in sample and reference cell compartments of the flow cell. A light beam emitted from the long-life LED light source crosses the RID's sample and the reference cells twice (**Fig.1**). When both cells contain pure solvent, the system is calibrated to zero by means of a parallel zero glass plate which positions the beam on the two detector diodes in such a manner that the measured light intensities (I1 and I2) of the two diodes are virtually identical. When the sample cell contains a solution with a different refractive index, the light beam is geometrically proportionally deflected depending on the relative change of the refractive index (according to Snell's law). This results in a change of the light intensities I1 and I2 (one increases and the other decreases) proportional to concentration and refractive index of the sample solution. From these intensity changes the signal value is calculated.

### Temperature Control

The refractive index of a medium depends on the wavelength of the light and the density of the medium. Normally, in an RI detector, the wavelength is constant. The density depends on the temperature, pressure and composition of the medium. As even small changes in temperature can influence measurements, the optical unit of the AZURA RID 2.1L is thermally managed by an intelligent temperature control. This ensures fast warm-up time, rapid baseline stabilization, and excellent reproducibility, regardless of the ambient conditions.

### Extended Dynamic Range

The extended dynamic range option enables the linear dynamic range of the AZURA RID 2.1L to be broadened in +100 % (-1000  $\mu$ RIU offset) or - 100 % (+1000  $\mu$ RIU offset). This prevents the need to dilute samples, which saves time and money and diminishes additional errors during sample preparation (e.g. pipetting errors). The wide linear dynamic range of up to 2000  $\mu$ RIU and its maximum flow rate of 10 mL/min, make the AZURA RID 2.1L the perfect choice for most laboratory tasks.

### Connectivity

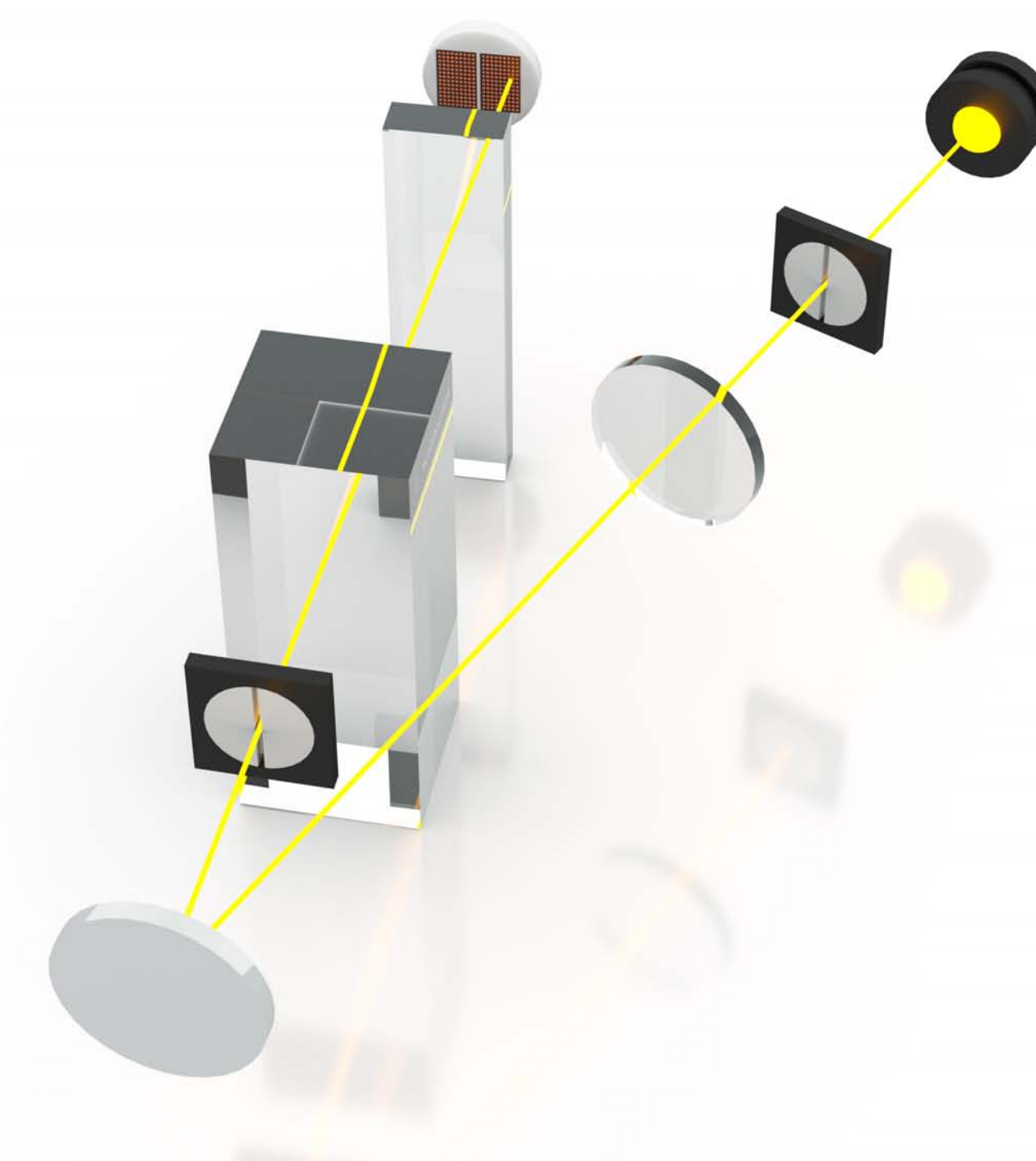
This detector can be controlled with OpenLAB® EZChrom, ClarityChrom®, Chromeleon® and PurityChrom® software, as well as from the AZURA Mobile Control (stand-alone operation). Control is possible via LAN or through analog input/output, allowing this detector to be integrated into almost any LC system.

### OEM Kit

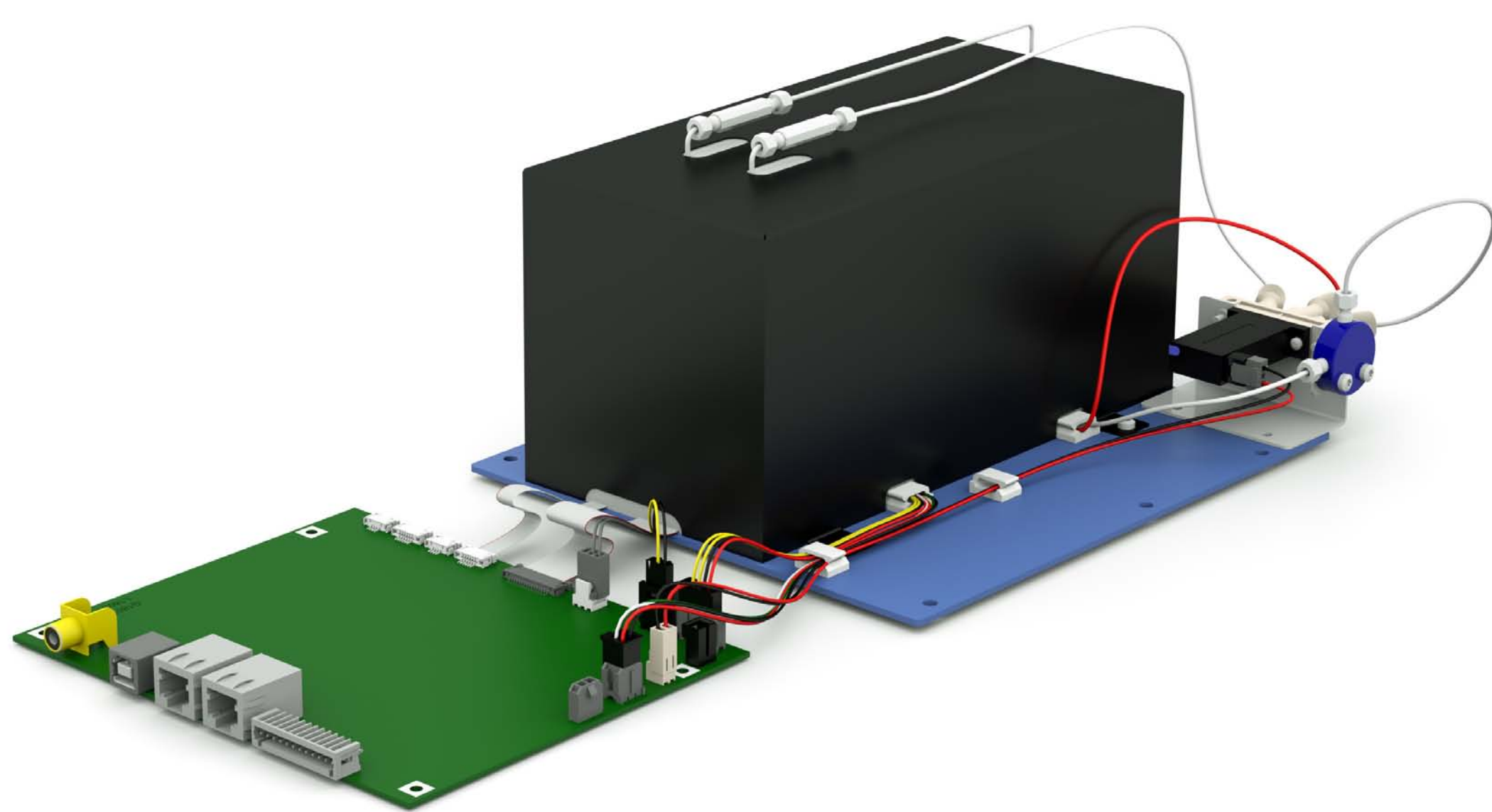
The AZURA RID 2.1L instrument can also be easily adapted and fitted into customized housings to fulfill specific market requirements at favorable costs. A differential refractometer kit (**Fig.2**) is available specifically designed for OEM integration and business. The kit has a modular set-up, multiple interfaces and is compatible with most Chromatography Data Systems. This device can be easily adapted and fitted into customized housings to fulfill specific market requirements. There are different control options: via software drivers, cable less user interface or integration into customers' software.

### KNAUER

For over 30 years KNAUER has been a reliable OEM supplier of pumps, detectors and further HPLC components. KNAUER is an ISO 9001 certified company with strict production and process stability for high quality: Made in Germany.



**Fig. 1** Optical path AZURA RID 2.1L



**Fig. 2** OEM-Kit

