LDRPS

PST PROCESS SENSING TECHNOLOGIES | LDetek A PST BRAND

GAS RECOVERY AND PURIFICATION SYSTEM

LDRPS ▲
PATENT PENDING

The LDRPS is a fully automatic gas recovery & purification system especially designed to recycle the Helium carrier gas used by any type of gas chromatograph. The system is also compatible with any other type of gas source that must be recycled.

APPLICATIONS

Cost of carrier gas is an important factor when using gas chromatograph as analysis instrument. Especially Helium carrier gas which is well recognized for its perfect properties used in gas chromatography. Reducing the operation cost becomes an important factor and it is where the LDRPS plays an important role with its quick return in investment by reducing any GC carrier gas consumption.

The LDRPS allows to continuously recycle/repurify and repressurize the same source of helium or other gases in a continuous loop. The helium gas consumption can then be divided by a large factor. It considerably reduces the operating cost of a gas chromatography system or any other processes. The recycle gas is purify by a built-in heated dual getters purifier. The quality of the purified gas produced is then measured by an integrated plasma emission detector. The combination of the specific flexible membrane used with a network of position and pressure sensors make the complete system being intelligent and fully automatic. The system has been designed with state of the arts components to ensure its high purity and leak free. The pump used for repressurizing the gas from ambient pressure up to 100psig+ pressure is specially designed to be compact and not noisy to be compatible with lab or industrial environment. All the components are aligned together to minimize the maintenance and ensure running continuously. To make the LDRPS fully controllable, a user-friendly interface is accessible with front 8 inches LCD touch screen monitor and a remote web-based interface. As extra feature, the unit offers all the industrial communication protocols.

- Industrial/medical/laboratory
- Gas chromatography/Gas analysis/Gas supply/Gas purification

CONFIGURATION

The module is configured with 5 phases that ensure to recover and purifier the carrier gas required to feed any type of gas chromatographs or gas analysers.

Phase 1: Collecting waste carrier gas from any gas chromatograph exhausts without causing pressure fluctuations or built up.
Phase 2: Building pressure up at the proper pressure requires by the GC inlets
Phase 3: Storing excess gas in reservoir
Phase 4: Purifying from any grade waste gas up to 99.999999% using multi steps heated purifiers system
Phase 5: Measuring trace impurities(ppb/ppm) nitrogen and moisture using a micro plasma detector to validate the purity of the recycled carrier gas prior to return to the gas chromatograph.

SPECIFICATIONS

OPERATING TEMPERATURE RANGE	5-55 Celsius
SAMPLE GAS TEMPERATURE	0-100 Celsius
RECYCLING GAS FLOW RATE CAPACITY	0-2LPM
GAS COLLECTING PRESSURE RANGE	0-20PSIG (sub atmospheric available)
OUTLET PRESSURE	20-110PSIG (other pressure ranges available on request)
INLET FITTINGS	1/4" Swagelok compression or VCR
OUTLET FITTINGS	1/4" Swagelok compression or VCR
OPTIONS	RS232, RS485, Modbus, Profibus, ProfiNet
SUPPLY	120VAC/240VAC 50/60Hz
ENCLOSURE TYPE	6U Rackmount
INGRESS PROTECTION	IP20 in accordance with IEC 60529
ENCLOSURE FINISH	RAL7030 powder coat
CERTIFICATION	In compliance with EMC directives : IEC 61000-4-3: 2020, IEC 61000-4-6: 2013, IEC 61000-4-2: 2008, IEC 61000-4-4: 2012, IEC 61000-4-5: 2014 A1: 2017, IEC 61000-4-8: 2009, IEC 61000-4-11: 2020 for immunity & CISPR 32: 2015 A1: 2019, FCC Part 15, Subpart B: 2021, CISPR 32: 2015 A1: 2019, FCC Part 15, Subpart B: 2021 for emissions.

DETECTION TECHNOLOGY FOR CONTINUOUS PURITY ANALYSIS

PLASMA EMISSION DETECTOR

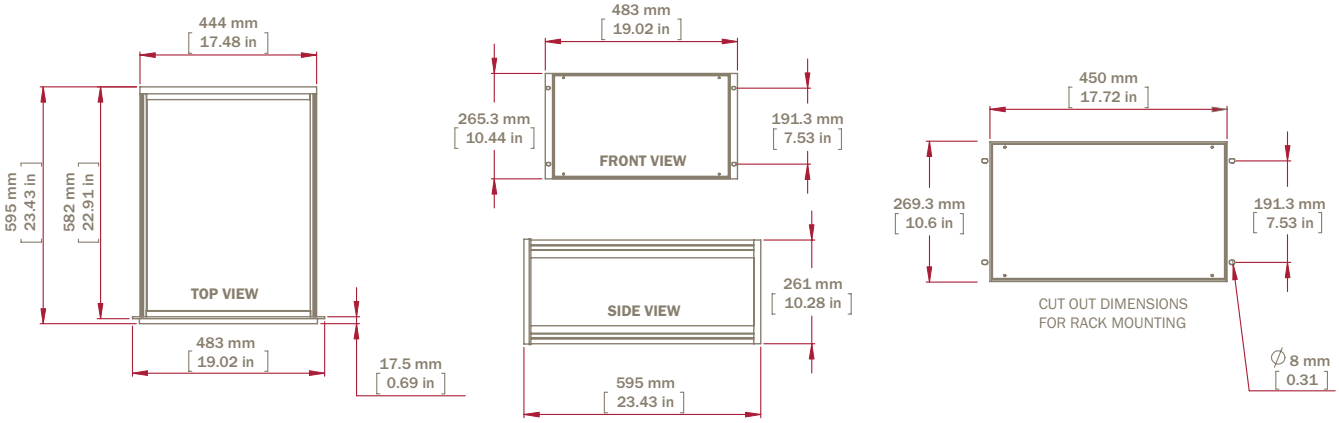
Plasma emission detector
It is uses to measure trace impurities nitrogen & moisture after the completion of the recycling and purification phases.

Plasma emission detector principle
The PED uses Helium or Argon or other noble gases as discharge gas in a sealed quartz chamber dedicated for measuring trace nitrogen and trace moisture at its specific wavelength. Both impurities are measured continuously through a quartz window that allow the light generated by the passage of nitrogen and moisture in the quartz chamber to be measured with its proper optical design.

Plasma emission module principle
The module is calibrated using a zero reference and a span reference. In instance, the zero comes from a grade 99.999% Argon or Helium that goes in our LDP1000 purifier series to generate grade 99.999999%. Going that way, it ensures the zero gas is well referenced to avoid negative reading. A second source of gas named span gas is used for the nitrogen span reference of the sensor. In this case, a certified gas containing a known concentration of N2 in a balance Argon or Helium is then required. The module is then calibrated, accurate and linear within its operating range. The moisture is calibrated using an internal certified permeation tube as reference.

Fast response time
Plasma emission detector responds very quickly to nitrogen and moisture concentrations with a T90 of less than 10 seconds within a set range.

DIMENSIONS



ORDERING INFORMATION

LDRPS	-XX	-XX	-XXX	-X	-XXX
	He : Helium **Ar :** Argon **Kr :** Krypton **Xe :** Xenon **Ne :** Neon **N_2 :** Nitrogen **H_2 :** Hydrogen	**4S :** 1/4'' Compression **4FS :** 1/4'' face seal (VCR)	**PED :** plasma emission for N2 & H2O	**P :** Purifier	**232 :** RS232 **485 :** RS485 **MOD :** Modbus **PRO :** Profibus **NET :** Profinet

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