MD LITE

MULTIDETEK-LITE

PST PROCESS SENSING TECHNOLOGIES | LDetek A PST BRAND

COMPACT GAS CHROMATOGRAPH

The MultiDetek-Lite is our most compact series of gas chromatographs. In its 4U rackmount configuration, it offers the flexibility of having different detectors, ovens/columns, valves and flow controllers in an arrangement that makes the unit being an impressive cost saving solution for multiple trace impurities applications. Based on the well-known platform of the MultiDetek3, the MD-Lite series offers the same performances in a smaller environment. It allows an alternative GC solution when the application requires less complexity.

FEATURES:

- Large measurement scale (ppb to %)
- Isothermal ovens for GC columns (up to 3x in one unit)
- Choice of chromatography detectors PED/TCD/FID (up to 2x in one unit)
- Choice of online detectors EC/Zr for trace O2 or quartz crystal for H2O (optional)
- Electronic flow controllers for sample and carrier flow controls
- Touchscreen 5'' Display
- 4-20 mA output per impurity (up to 8 outputs in one unit)
- Dry contacts (up to 8 contacts in one unit)
- Modbus/Profibus
- LAN/Web control

APPLICATIONS:

- Industrial gases
- Energy
- Semiconductor & Electronics
- Food & Beverage
- Environment
- Laboratory

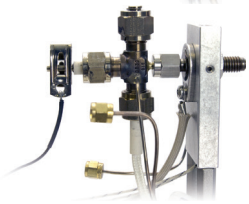
PROVEN SENSORS TECHNOLOGIES

PlasmaDetek

Plasma emission detector is used to measure trace impurities in different gas streams. The proper PED selective optics configuration is combined with the proper chromatography columns depending on the applications. The PED is compatible with different carrier gas types as Helium/Argon/Nitrogen (application dependent). The interference filters of the PED make this detector ideal to remove interference from background gases and offering the best sensitivity/selectivity for the measured impurity This configuration allows the analysis of trace ppb/ppm impurities.

TCD

Thermal conductivity detector is used to measure the sample gas purity in percent level. It can also be used to measure multiple impurities at high ppm levels when required by having the proper chromatography columns mounted with it. The TCD can be combined in one unit with the PED to offer a full range going from 1ppb (PED) to 100% (TCD) for complete gas mixture coverage. The lower concentration range is cover by PED while the upper range is cover by TCD.

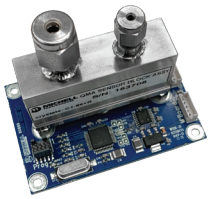


FID

Flame ionization detector can be used when the analysis technique required it. The PED using nitrogen as carrier gas is well known at LDetek to replace the FID technology without using a flammable gas mixture air/h2. It is a great advantage to avoid the use of this flammable mixture. However, the FID is well known in the GC applications and for this reason, we still keep it available in the MD-Lite series when carbons detection is required by this type of sensor.

SenzTx

With a choice of either electrochemical or zirconia oxygen sensor technology the SenzTX module offers reliability, accuracy and flexibility. Both technologies have a broad measurement capability allowing the user to measure from low ppm to high percent oxygen. Combined with a choice of PED or TCD or FID mounted in the MD-Lite series, it offers the possibility to measure the trace oxygen online in the same instrument.



QMA (for more technical information, refer to our design report for trace moisture analysis integrated inside the MultiDetek2 GC)

The Advanced Quartz Crystal Microbalance sensor from Michell Instruments is now integrated inside the MD-Lite to provide reliable, fast and accurate measurement of trace moisture content in a variety of applications where keeping moisture to a minimum is of critical importance. The analyzer provides consistently accurate measurements of trace moisture. This consistency is achieved using a self-calibration system, which adjusts the sensor with reference to an internal moisture generator.

Having such module inside the MD-Lite multigas series allows to combine multiple impurities analysis with trace moisture inside the same instrument.

Quartz crystal microbalance sensor

A quartz crystal is sensitised with a thin film of hygroscopic material. Water molecules are adsorbed into the hygroscopic layer deposited on the surface. The change in mass modifies, in a very precise and repeatable manner, the oscillation frequency. The moisture concentration is measured as a change in the oscillation.

Quartz crystal sensor principle

The change in the oscillation is evaluated by switching the gas inside the sensor and by measuring the response delta. For sampling response, the sensor is balanced between a dry gas source and the sample source. The difference is then calculated. The same principle is applied for the span gas calibration. However, this time the comparison is between a dry gas and a source of wet gas. A cycling time of 30 seconds on each gas is used to compare the response delta.

Quartz crystal module principle

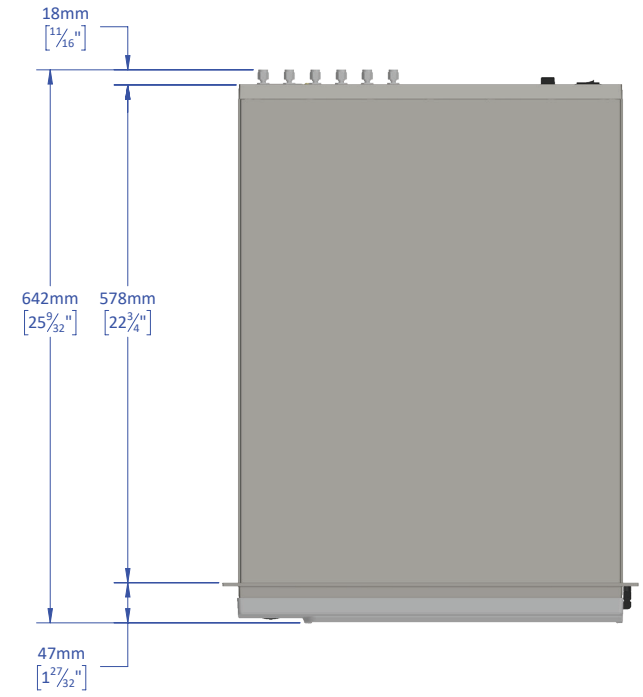
The dry gas comes from a reference gas source. The sensor is supplied by a known Helium or Argon or Nitrogen grade 5.0 carrier source going through a heated gas purifier model LDP1000 series. This combination generates a gas purity of 8N. By using this technique, the dry gas source contains less than 10ppb H20 what is ideal as zero gas reference.

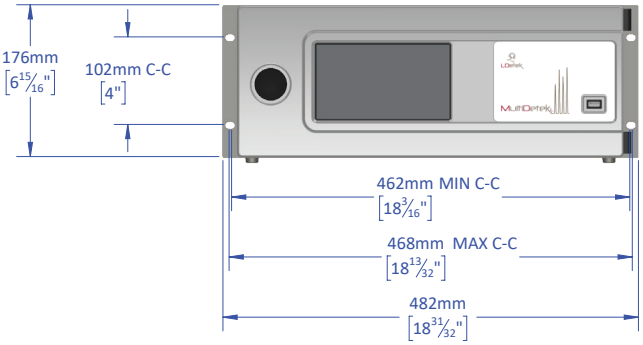
The wet gas comes from a certified water filled permeation tube heated at a controlled temperature of 45 Celsius. It generates a stable amount of moisture used for span calibration. The moisture generator is made of coated stainless steel to reduce the surface absorption of water molecules and then keep the moisture rate very stable and accurate. The flow inside the module is controlled and maintained by a network of calibrated orifices. All flow passageways upfront the sensor are less than 0.030''ID, all coated with an inert coating to accelerate the response/purge time and improve the performances of the system.

SPECIFICATIONS

SENSOR MODEL	PLASMADETEK	LDETEK TCD	LDETEK FID	SENZTX	SENZTX	QMA
MEASUREMENT TECHNOLOGY	PED	TCD	FID	Zirconia (ZR)	Electrochemical (EC)	Quartz crystal
SENSOR MANUFACTURER	LDetek	LDetek	LDetek	NTRON	NTRON	Michell Instruments
IMPURITY DETECTED	Permanent & noble gases, sulfurs, ammonia, hydrocarbons, aldehydes, btex, alcools...	Permanent & noble gases, sulfurs, ammonia, hydrocarbons, aldehydes, btex, alcools...	Hydrocarbons, CO, CO2	O2	O2	H2O
SAMPLE GAS	Any UHP gases, gas mixtures and ambient air					multiple gases
RANGES	up to 5000ppm available	up to 100% available	up to 100% available	up to 96% available	up to 25% available	0-10ppm (resolution 100ppb) 0-100ppm (resolution 1ppm) 0-1000ppm (resolution 1ppm) up to 2000ppm available
LIMIT OF DETECTION (LDL)	100ppt (application dependent)	1ppm (application dependent)	1ppb (application dependent)	1ppm	0.5ppm	20ppb
SENSOR LIFE EXPECTATION	10 years	3-5 years	3-5 years	3-5 years	1 year	3-5 years
OPERATING TEMPERATURE RANGE	5-45 Celsius					
SAMPLE GAS TEMPERATURE	0-100 Celsius					
SAMPLE FLOW REQUIREMENT	100ml/min	100ml/min	100ml/min	100ml/min	100ml/min	300-500ml/min
OPERATING SAMPLE PRESSURE RANGE	5-30psig (0.35-2barg)					
OUTLET PRESSURE	Atmospheric					
INLET FITTINGS	1/8'' or 1/4'' compression or face seal					
OUTLET FITTINGS	1/8'' or 1/4'' compression or face seal					
CARRIER GAS REQUIREMENT	Helium or Argon or Nitrogen (application dependent)	Helium or Argon or Nitrogen or Hydrogen (application dependent)	Helium or Argon or Nitrogen or Hydrogen (application dependent)	n/a	n/a	n/a
CARRIER FLOW REQUIREMENT	60ml/min to 250ml/min (application dependent)	60ml/min (application dependent)	60ml/min (application dependent)	n/a	n/a	n/a
OPERATING CARRIER PRESSURE RANGE	80-100psig (5.5-7barg)	80-100psig (5.5-7barg)	80-100psig (5.5-7barg)	n/a	n/a	n/a
STANDARD FEATURES	MCU system, Touchscreen 5'', 4 x 4-20mA outputs, 4 x dry contacts, Remote control (via Ethernet)					
OPTIONS	Internal sampling system for span/sample, Modbus via RS485 or RS232 or Ethernet Profibus, 4 extra 4-20mA outputs, 4 extra dry contacts					
SUPPLY	110VAC 50-60Hz / 220VAC 50-60Hz					
POWER CONSUMPTION	Maximum 250 watts depending on the combination of sensors and options mounted in the unit					
SIZE	4U Rackmount					
WEIGHT	45-65 lbs (20-30kg) depending on the combination of sensors and options mounted in the unit					
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.					

DIMENSIONS





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