**Please provide the following information to help us provide a system that exactly suits your requirements.**

**Please don’t hesitate to contact us if you have any questions or if you need help filling out this questionnaire.**

|  |  |  |
| --- | --- | --- |
| **CUSTOMER:**  **Company**  **Contact name**  **Address**  **City, State, Zip code** | Email: | **your email address** |
|  |
| Phone: | **your phone number** |
|  |
| Date: | **Date** |

|  |  |  |
| --- | --- | --- |
| **Industry:** |  | ***Others \*1*** |

|  |
| --- |
| **NOVA*plus* - BASIC ANALYZER BASE UNIT with** |

|  |  |  |
| --- | --- | --- |
| **• O2 Sensor *can be upgraded to Long Life sensor (see below)*** | 0 … 21% | |
| **•** Calculated CO2 or optional NDIR measured CO2 (OPTION 63573) | |  |
| **•** Large fuel type list + user definable fuel types | |
| **•** High energy Li-lon battery in Base unit and RCU | |
| **•** Analyzer and probe leak test ***(allows you to check analyzer and probe for leaks)*** | |
| **•** Combustion and Emission calculations | |
| **•** Flue Gas and Ambient Air Temperature measurement | |
| **•** Differential Temperature Measurement | |
| **•** Differential Pressure Measurement and Draft Measurement | |
| **•** Robust metal enclosure mounted inside aluminum framed case | |
| **•** Induction charging of RCU device | |
| **•** Mini-USB interface and USB cable, SD card reader and SD Card  ***(export function to Excel)*** | |
| **•** Built in high speed printer | |
| **•** Integrated, backlit condensate separator with PTFE filter (optional gas cooler) | |
| **•** 100 - 240 Volt Battery charger | |
| **•** Robust, stainless steel gas connectors | |
| **WITHOUT RCU - please choose below** | |

**Choose your Remote Control Unit:**



|  |  |
| --- | --- |
|  | ***Wireless Remote Control „Basic” Model for analyzer operation***  • Display of measured values via brilliant 3,5“ TFT high resolution color display  • Storage and transmission of measured results via SD card or mini USB port  • Inductive charging via NOVA plus base station or by means of mini USB cable  • High-capacity Li-Ion battery for approx. 30 hours operation |

**OR**

|  |  |
| --- | --- |
|  | ***Wireless Remote Control „Comfort” Model for analyzer operation***  As an alternative to the remote control “Basic” model  Also usable as an independent temperature and pressure measuring device  Functions as remote control basic model, but with the following additional features:  • Integrated differential pressure measurement 100 hPa, incl. sensor (manometer)  • Differential temperature measurement, 2x type „K“ sockets (thermometer)  • Combustion air temperature measurement (alternatively to basic model)  • AUX socket to connect external sensors (e.g. HC sensor, humidity sensor)  • SD‐Card (data logger function) (option #63901) |

**Choose your Sensors (gases you want to measure):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **O2 Long Life up to 5 years** | 0 – 21% |  | **63965** |
|  | **CO** (H2 compensated) | 0 – 4,000 ppm | overload 10,000 ppm | **63988** |
|  | **NO** | 0 – 1,000 ppm | overload 5,000 ppm | **63937** |
|  | **NO2 NO and NO2 needed for true NOx** | 0 – 200 ppm | overload 1,000 ppm | **64111** |
|  | **SO2** | 0 – 2,000 ppm | overload 5,000 ppm | **63990** |
|  | **CO High** | 0 – 4,000 ppm | overload 20,000 ppm | **63938** |
|  | **CO Very High** | 0 – 4.0% | overload 100,000 ppm | **63992** |
|  | **H2S** | 0 – 500 ppm | overload 2,000 ppm | **63991** |
|  | **CO2 single gas NDIR** | 0 – 40.0% |  | **64618** |
|  | **CO2 / CxHy dual gas NDIR** | 0 – 40.0% / 100 … 40,000ppm | | **65648** |

**CO low, NO low and NO2 low are not separate sensors; the standard sensors are used with special selection and calibration!**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **CO low Requires Part #: 63988** | 0 – 500 ppm | \* 0.1 ppm resolution | **63993** |
|  | **NO low Requires Part #: 63937** | 0 – 300 ppm | \* 0.1 ppm resolution | **63994** |
|  | **NO2 low Requires Part #: 64111** | 0 – 100 ppm | \* 0.1 ppm resolution |  |

**Choose your triple NDIR Bench if needed:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **CO** | range 0 – 3 % (min. range) up to 10 % | **64011** |
|  | **CO2** | range 0 – 3 % (min. range) up to 30 % |  |
|  | **CxHy as CH4 calibrated with CH4** | range 0 – 1 % (min. range) up to 3 % |  |

**OR**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **CO** | range 0 – 3 % (min. range) up to 10 % | **64012** |
|  | **CO2** | range 0 – 3 % (min. range) up to 30 % |  |
|  | **CxHy as C3H8 calibrated with C3H8** | range 0 – 5.000 ppm |  |

**Choose your options for the Base unit:**

|  |  |  |
| --- | --- | --- |
|  | **Direct Peltier Gas Cooler, for long‐term measurements**  With automatic condensate pump and condensate collection container | **63866** |
|  | **CO sensor protection using additional purging pump and CO cut off valve**  (a must if sensor 63988 is installed in combination with a CO high or NDIR with CO) | **65522** |
|  | **Separate CO sensor protection by Purafil filter, recommended for use at CHP engines**  NOTE: not possible to retrofit at a later date! | **65085** |
|  | **Internal Sample Flow Monitoring to check internal filters, pump, hoses**  with indication in the display | **63903** |
|  | **Gas Pressure / Differential Pressure Measurement,± 100 mbar,**  using 2nd internal pressure sensor, synchronized to flue gas measurement | **63902** |

**Choose your options for the RCU (for both BASIC and COMFORT MODEL):**

|  |  |  |
| --- | --- | --- |
|  | **Bluetooth communication software for data transfer to PC**  **Using 2nd Bluetooth module inside RCU “Comfort” model**  **!(This option can’t be installed inside RCU at a later date)!** | **63943** |
|  | **Shoulder strap for RCU “Basic” and “Comfort” model** | **64112** |
|  | **Automatic measurement incl. data logging function, user‐definable**  Determination of average value, storing on SD card and printing | **63901** |

**Choose your options for the RCU (only COMFORT MODEL):**

|  |  |  |
| --- | --- | --- |
|  | **HC probe (Gas Detector), to be connected to AUX socket of RCU “Comfort” model**  with 1,5 m cable and flexible tube | **63999** |
|  | **External pressure sensors – to be connected to AUX socket of RCU “Comfort” model**  • Measuring range up to + 5 bar, e.g. for examination of water pipelines  • Measuring range up to + 25 bar, e.g. for examination of water pipelines  • Measuring range up to + 40 bar, e.g. for examination of water pipelines | **64090**  **64091**  **64092** |
|  | **Measurement of ambient humidity and ambient temperature, incl. barometric pressure**  Probe with coiled cable to be connected to AUX socket | **63998** |
|  | **Measurement of gas flow velocity (without airflow cone) using Pitot tube,**  to be connected to RCU “Comfort” model  Inclusive volume flow calculation (mash measurement) and integrated absolute pressure sensor  With Pitot tube (length 300 mm, Ø 6 mm)  (1 m/sec. up to 100 m/sec., accuracy ± 1 m/sec. or 1% reading) | **63899** |
|  | **Measurement of gas flow velocity (with airflow cone) using Vane,**  to be connected to RCU “Comfort” model  Inclusive airflow cone (200 x 200 mm), suitable for Vane, Ø 100 mm  (1…35 m/sec., accuracy 0,25…3 m/sec. ± 0,1 m/sec. or ± 3% reading; 3,1…35 m/sec. or ± 1% reading) | **63890** |

**Pitot tubes for flow measurement (only COMFORT MODEL):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **L-Type PITOT Tube** | | | | | |
|  | L-Type pitot tube | 11.81” x 0.24” | (300 mm x 6 mm) |  | **85120** |
|  | L-Type pitot tube | 19.68” x 0.24” | (500 mm x 6 mm) | **85130** |
|  | L-Type pitot tube | 31.48” x 0.24” | (800 mm x 6 mm) | **85132** |
|  | L-Type pitot tube | 39.35” x 0.31” | (1000 mm x 8 mm) | **85133** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **L-Type PITOT Tube with temperature measurement** | | | | | |
|  | L-Type pitot tube | 3.94” x 0.12” | (100 mm x 3 mm) | pitot_LTCK | **85125TE-K** |
|  | L-Type pitot tube | 7.87” x 0.12” | (200 mm x 3 mm) | **85127TE-K** |
|  | L-Type pitot tube | 11.81” x 0.24” | (300 mm x 6 mm) | **85120TE-K** |
|  | L-Type pitot tube | 19.68” x 0.24” | (500 mm x 6 mm) | **85130TE-K** |
|  | L-Type pitot tube | 31.48” x 0.24” | (800 mm x 6 mm) | **85132TE-K** |
|  | L-Type pitot tube | 39.35” x 0.31” | (1000 mm x 8 mm) | **85133TE-K** |

**Computer Software:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **MRU WIN** For recording of measured data, data transfer, print out of measurement report |  | **61544** |
|  | **MRU ONLINE VIEW**  For visualization of measured data (bar chart, curve chart, text, LED) at PC |  | **15157** |
|  | **MRU EmissionsPro software** |  | **TBD** |

**Probes: - OPTION 1**



|  |  |  |
| --- | --- | --- |
| **Industrial Probe.** Industrial probe handle for exchangeable probe tubes; integrated NiCrNi thermocouple; type “K” connector,  With: · 9’ sampling line or optional 16’ sampling line | | |
|  | · 9’ (3.0 m) sampling line | **63981** |
|  | · 16’ (5.0 m) sampling line | **63982** |
|  | Pre-Filter for high concentrations of dirt to be inserted in the hose directly after the probe handle | **56356** |

**Probes tubes:**

****

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Exchangeable probe tubes.** Available in different lengths and material | | | | | |
|  | | · Exchangeable probe tube 12” x 0.3” | **≤ 1200°F (650°C)** | | **55583** |
|  | | · Exchangeable probe tube 20” x 0.3” | **≤ 1200°F (650°C)** | | **59292** |
|  | | · Exchangeable probe tube 20” x 0.4” | **≤ 1200°F (650°C)** | | **55806** |
|  | | · Exchangeable probe tube 30” x 0.4” | **≤ 1200°F (650°C)** | | **55672** |
|  | · Exchangeable probe tube 40” x 0.4” | | | **≤ 1200°F (650°C)** | **55673** |
|  | · Exchangeable probe tube 60” x 0.4” | | | **≤ 1200°F (650°C)** | **55674** |
|  | · Exchangeable probe tube 80” x 0.4” | | | **≤ 1200°F (650°C)** | **55464** |
|  | · Exchangeable probe tube 20” x 0.3” | | | **≤ 2000°F (1100°C)** | **63927** |
|  | · Exchangeable probe tube 30” x 0.4” | | | **≤ 2000°F (1100°C)** | **60626** |
|  | · Exchangeable probe tube 40” x 0.4” | | | **≤ 2000°F (1100°C)** | **56737** |
|  | · Exchangeable probe tube 50” x 0.4” | | | **≤ 2000°F (1100°C)** | **56738** |

**Probes tubes with filter:**



|  |  |  |  |
| --- | --- | --- | --- |
| **Exchangeable probe tubes with filter.** Available in different lengths | | | |
|  | · Exchangeable probe tube 30” x 0.4” | **≤ 932°F (500°C)** | **60813** |
|  | · Exchangeable probe tube 40” x 0.4” | **≤ 932°F (500°C)** | **60814** |
|  | · Exchangeable probe tube 50” x 0.4” | **≤ 932°F (500°C)** | **60815** |
|  | · Sintered metal filter for probe tube, CrNi, 3µm for probe tubes 60813-60814-60815 | **≤ 932°F (500°C)** | **56748** |

**Probes - OPTION 2:**



|  |  |  |  |
| --- | --- | --- | --- |
| **Industrial Probe.** With heated, easy replaceable quartz glass wool filter (incl. 100 g spare filter material) Gas sampling probe handle with 2.7 m VITON sampling line and gas temperature measurement using K-type thermocouple. Note: automatic stack draft measurement will not be possible! | | | |
|  | · 9’ (3.0 m) sampling line |  | **64195** |

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| --- | --- | --- | --- |
| **Exchangeable probe tubes.** Available in different lengths and material | | | |
|  | · Exchangeable probe tube 12” x 0.5” | **≤ 1200°F (650°C)** | **11620** |
|  | · Exchangeable probe tube 30” x 0.5” | **≤ 1200°F (650°C)** | **11621** |
|  | · Exchangeable probe tube 40” x 0.5” | **≤ 1200°F (650°C)** | **11622** |
|  | · Exchangeable probe tube 60” x 0.5” | **≤ 1200°F (650°C)** | **11623** |
|  | · Exchangeable probe tube 80” x 0.5” | **≤ 1200°F (650°C)** | **11624** |
|  | · Exchangeable probe tube 30” x 0.5” | **≤ 2000°F (1100°C)** | **59552** |
|  | · Exchangeable probe tube 40” x 0.5” | **≤ 2000°F (1100°C)** | **59904** |
|  | · Exchangeable probe tube 60” x 0.5” | **≤ 2000°F (1100°C)** | **59622** |

**HIGH Temperature Probe:**

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|  |  |  |  |
| --- | --- | --- | --- |
| **High Temperature Probe with Ceramic probe tube (without temperature and draft measurement)** | | | |
|  | · High Temperature probe 40” x 0.4” | **≤ 3000°F (1700°C)** | **63320** |

**Consumables and accessories:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Additional SD card, 2 GB (accredited for NOVA plus)** |  |  | **62994** |
|  | **Service kit (spare filter, fuses, probe cleaning brush, silicone, duster, etc.)** |  |  | **63951** |
|  | **PTFE filter (washable, re-useable)** |  |  | **11165** |
|  | **Filter tablets for Pre-Filter 56356 50pcs per pack** | Probe option 1 |  | **52798** |
|  | **Printer paper, thermo paper, 58 mm x 20 m (1 pack. = 5 rolls)** |  |  | **59465** |
|  | **Glass wool filter element (1 pack. = 1 kg, lasting for 500x filtering)** | Probe option 2 |  | **61041** |

**Transport case:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Additional compartment to be mounted under the transport case** |  |  | **63825** |



**Basic information about some sensor options and configuration**

The NOVAplus can either have a measured or calculated **NOx**. - What's the difference?

NOx is the accumulation of measured NO and NO2.

In case of a calculated NOx we measure the NO and then add 5% to get an equivalent of NOx.

In case a true NOx is required the AMPRO 2000 will have two sensors – NO and NO2 – both measured values will be NOx.

***Calculated method is not suitable for gas engines and gas turbines.***

The NOVAplus can either have a measured or calculated **CO2**. What’s the difference?

If you know what fuel type you are burning then CO2 calculated is fine.

The calculated CO2 uses the measured O2 and the fuel type depended CO2 max and some other parameters to calculate the CO2.

If you don't know the fuel type or you have a mixture of fuel types your option will be the measured CO2.

The NOVAplus has an active **CO protection**.

Why is that important and how does it work?

The active CO protection protect your CO sensor against unwanted high CO concentrations (user definable CO threshold).

For most applications and under normal conditions the CO concentration in a gas stream is fairly low.

Should the CO concentration however be higher than expected then the CO protection gives you the peace of mind not to damage the CO sensor. The life span of a CO sensor is defined by CO concentration and time. If you have low (normal) CO concentrations the CO sensor will have a longer life. If you overload the CO sensor occasionally or frequently the life span of the CO sensor will be much shorter.

H2 compensated CO sensor verses CO sensor without **H2 compensation**.

The AMPRO 2000 basic analyzer always has the H2 compensated CO sensor.

In every combustion you will have a certain amount of H2. When using a sensor without H2 compensation the displayed CO value is always higher than the actual CO concentration. The sensor reads CO and also reads H2 and displays that as CO.

The H2 compensated CO sensor "eliminates" the H2 and only displays the actual CO concentration.

**Your comments:**

**Email this questionnaire to: info@mru-instruments.com**

We will be more than happy to send you a quotation for the above chosen Analyzer and Options.

If you have any questions regarding this Analyzer or any other of our Analyzers and Instruments,

please feel free to contact us at any time.