



# VARIO *luxx* SYNGAS

SYNGAS ANALYZER



**PRICE LIST 2024**  
VALID 04/01 - 12/31/2024

Programm 1, Messgas		22.05.2024 12:27		
CO <sub>2</sub> [%]	9.96	O <sub>2</sub> [%]	2.05	Volun
CO [ppm]	81.3	CO [mg/Nm <sup>3</sup> ]	101.5	
NO [ppm]	32.4	NO <sub>2</sub> [ppm]	6	
SO <sub>2</sub> [ppm]	49.0	CH <sub>4</sub> [ppm]	2	

**VARIO/luxx SYNGAS ANALYZER**

**BASIC CONFIGURATION & FUNCTIONS VARIOluxx-Syngas, with :**

- Modern, rugged aluminum enclosure with rubber molded impact protection
- Linux OS & large, high-contrast and backlit 7" (840x480) graphical display
- Display with easy, intuitive touch and swipe panel and all measured data at one sight
- Graphical data visualization, csv or pdf reporting file
- Data transfer to PC over LAN Ethernet (RJ45 socket) or USB-stick
- Calculation of "balance" N2 and also of syngas calorific value
- Syngas inlet port with safety orifice, to reduce sample flow to max 1 L/min
- Monitored enclosure fan to increase safety in operation
- Integrated, efficient electrical Peltier gas cooler
- Automatic condensate draining via condensate pump
- Internal sample flow volume measurement
- Automatic zeroing by means of 3-way solenoid valve
- Strong, regulated sample gas pump
- Easy replaceable, effective PTFE filter
- Zero gas (ambient air) inlet port
- Sample gas evacuation over VENT outlet port
- Automatic internal test and control of soft- and hardware functions
- Automatic measurement incl. data logging function
- 10,000 data of internal data storage and large data storage on external 4GB USB-stick (MRU design)
- Syngas temperature measurement up to 1,200°C
- Differential pressure measurement +/- 100 hPa
- 8 channel analog output 4-20mA and 4 channel analog input 4-20mA, standard double USB sockets
- Universal analogue input (AUX socket) with 0-10 V or 4-20 mA signal or K-thermocouple or RS485
- 1 hour Li-Ion 48Wh battery stand-by operation, with power supply for gas cooler and heated probe filter
- Universal power supply: mains 90-264 Vac/ 105 W (up to 600W with 5m heated sampling line)
- Soft padded nylon transport case with compartment for accessories



**Prepared for options like:**

- O2 measurement using either long-life electrochemical cell or paramagnetic cell
- Reduced sample gas flow, adjustable from 10 to 30 l/h, for small scale lab tests
- Wireless data transfer and display to smartphone or tablet with MRU4u app
- Data transfer over Bluetooth or WLAN dongle or over VNC server using LAN/WLAN
- Temperature regulation of heated gas sampling line (only possible with AC grid power supply)



- 1 Pressure-/diff. Pressure
- 2 Pressure-/diff. Pressure
- 3 Combustion air temperature
- 4 AUX-port
- 5 Probe electrical connector
- 6 Outlet fan of gas cooler
- 7 Sample gas inlet
- 8 Fresh air inlet port
- 9 Sample gas outlet port (VENT)
- 10 Condensate outlet port
- 11 Sample gas filter



- 12 Loudspeaker
- 13 Ethernet (LAN)
- 14 USB socket\*
- 15 Second USB socket (option)
- 16 RS485 (option)
- 17 Analog outputs 4 ... 20 mA
- 18 Mains power supply

VARIO luxx SYNGAS WITH					QTY	Part No.	Unit price	Discount	Total Price
SYNGAS Analyzer - as described above					1	944350	\$10,394.00	0%	\$10,394.00

O2 SENSORS					QTY	Part No.	Unit price	Discount	Total Price
Sensor OPTION - O2	long-life electrochemical cell	0 - 25	%	SELECT ONE	1	11551	\$937.00	0%	\$937.00
Sensor OPTION - O2	using paramagnetic cell	0 - 25	%	SELECT ONE	1	11552	\$9,848.00	0%	\$9,848.00

H2S SENSORS					QTY	Part No.	Unit price	Discount	Total Price
Sensor OPTION - H2S		0 - 2,000	ppm	overload 5,000 ppm (*)	1	11093	\$1,079.00	0%	\$1,079.00
NOTE: (*) overload range for short time measurement only, without cross-interference to H2									

3 Gas NDIR module					QTY	Part No.	Unit price	Discount	Total Price
CO		0 to 10%	up to	100%	1	10774	\$5,243.00	0%	\$5,243.00
CO2		0 to 10%	up to	100%					
CH4	selective CH4 = Methane	0 to 10%	up to	100%					

H2 TCD - thermal conductivity detector					QTY	Part No.	Unit price	Discount	Total Price
H2 TCD - thermal conductivity detector		0 to 10%	up to	100%	1	11092	\$6,750.00	0%	\$6,750.00
NOTE: with extensive cross-interference compensation to CO, CO2 and CH4									

SYNGAS OPTIONS & ACCESSORIES					QTY	Part No.	Unit price	Discount	Total Price
Low sample gas flow, adjustable between 10 l/h to 30 l/h					1	11485	\$1,808.00	0%	\$1,808.00
Quick connector assembly and 5m unheated Viton sampling line					1	61900	\$378.00	0%	\$378.00
NOTE: for clean syngas sampling only!									
Portable syngas treatment (washing) device for tar or heavy hydrocarbons removal from sample gas					1	12215	\$3,039.00	0%	\$3,039.00
NOTE: requires probe with heated filter and heated gas sampling line, see below!									
MRU 600 - Portable Gas Conditioning System					1	13900	\$9,967.00	0%	\$9,967.00
with dual heat exchanger for high humidity and flow volume up to 250l/h									
MRU 600 - Control cable MGA / VARIO to MRU 600 - Choose from the following lengths: 3m, 5m, 10m, 15m					1	13183	\$964.00	0%	\$964.00

OTHER OPTIONS & ACCESSORIES					QTY	Part No.	Unit price	Discount	Total Price
Additional Li-Ion battery (12V, 48Wh) for additional 1h mains free stand-by operation					1	10559	\$354.00	0%	\$354.00

SOFTWARE OPTIONS / CONNECTIONS / DOCUMENTATION					QTY	Part No.	Unit price	Discount	Total Price
MRU4win - "full" version software, for real time data acquisition and handling on PC with Windows10					1	10539	\$287.00	0%	\$287.00
USB to Bluetooth converter set, wireless data transfer to PC / notebook with MRU4Win					1	12992	\$998.00	0%	\$998.00
NOTE: set is with 2x pre-paired and configured converters, required for up to 300m long distance wireless data transfer									
USB to Wi-Fi converter (dongle) for web browsing and wireless distance data transfer					1	10549	\$51.80	0%	\$51.80
NOTE: order additional USB socket if needed									
RS485 interface with Modbus RTU protocol for long distance data transfer over cable					1	10557	\$111.00	0%	\$111.00
NOTE: one twisted pair of shielded cable is user scope									
WLAN / USB printer with Li-Ion battery, 80mm paper width and separate battery charger					1	10872	\$500.00	0%	\$500.00

STORAGE AND TRANSPORTATION					QTY	Part No.	Unit price	Discount	Total Price
Robust aluminum frame transport case with trolley and wheels					1	11129	\$1,014.00	0%	\$1,014.00
Rugged "Pelican" style transport case, usable also for flight transportation					1	12996	\$700.00	0%	\$700.00
Adjustable shoulder strap					1	59773	\$24.10	0%	\$24.10
Ni-MH battery, 13,2V / 2A / 25W , for trouble-free air transportation					1	12361	\$83.30	0%	\$83.30
NOTE: replacement of standard Li-Ion battery									

INDUSTRIAL GAS SAMPLING PROBE HPI- Additional probe tube needed	QTY	Part No.	Unit price	Discount	Total Price
Industrial probe head, with integrated heater, 320 °F (160°C) temperature regulation by analyzer, with easy replaceable cartridge filter, using borosilicate quartz wool for dirty combustions, probe head prepared for intake of exchangeable probe tube (without tube, please select one from below) and gas temperature measurement using K-type (NiCrNi) thermocouple	1	12456	\$1,494.00	0%	\$1,494.00

Easy replaceable cartridge filter, using GW filter (glass-wool) element for dirty combustions NOTE: for fast on-site filter replacement, use of 2 cartridges is recommended	1	12667	\$381.00	0%	\$381.00
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INDUSTRIAL GAS SAMPLING PROBE - Additional probe tube needed (different lengths available)	QTY	Part No.	Unit price	Discount	Total Price
Temperature controlled and regulation by analyzer,					
Heated sampling line - with 9.84' (3.0 m) length heated Teflon hose and fast coupling to above gas sampling probe head 110VAC	1	11238-03US	\$2,589.00	0%	\$2,589.00
Heated sampling line - with 16.4' (5.0 m) length heated Teflon hose and fast coupling to above gas sampling probe head 110VAC	1	11238-05US	\$3,039.00	0%	\$3,039.00
Heated sampling line - with 9.84' (3.0 m) length heated Teflon hose and fast coupling to above gas sampling probe head	1	11238-03	\$1,536.00	0%	\$1,536.00
Heated sampling line - with 16.4' (5.0 m) length heated Teflon hose and fast coupling to above gas sampling probe head	1	11238-05	\$1,969.00	0%	\$1,969.00
NOTE: other heated sampling lines lengths on request					

EXCHANGEABLE PROBE TUBE FOR INDUSTRIAL PROBE HANDLE (Cone is included)	QTY	Part No.	Unit price	Discount	Total Price
Exchangeable probe tube 12" x 0.5" (300 mm x 12 mm) High grade steel ≤ 1472°F (800°C)	1	11620	\$420.00	0%	\$420.00
Exchangeable probe tube 20" x 0.5" (500 mm x 12 mm) High grade steel ≤ 1472°F (800°C)	1	11640	\$496.00	0%	\$496.00
Exchangeable probe tube 40" x 0.5" (1000 mm x 12 mm) High grade steel ≤ 1472°F (800°C)	1	11622	\$727.00	0%	\$727.00

EXCHANGEABLE PROBE TUBE FOR INDUSTRIAL PROBE HANDLE (Cone is included)	QTY	Part No.	Unit price	Discount	Total Price
Exchangeable probe tube 20" x 0.5" (500 mm x 12 mm) Inconel ≤ 2000°F (1100°C)	1	61827	\$1,592.00	0%	\$1,592.00
Exchangeable probe tube 40" x 0.5" (1000 mm x 12 mm) Inconel ≤ 2000°F (1100°C)	1	59552	\$1,562.00	0%	\$1,562.00

Probe tube holder, fitting 1/2"-12mm, for firm and tight probe fixation on the gas pipe	1	65670	\$81.40	0%	\$81.40
Heat deflector shield Ø150mm x Ø12mm tube, for high temperature radiation site	1	65481-12	\$152.00	0%	\$152.00
Probe adapter set HPI for 6mm or 8mm probe tube	1	13432-D6D8	\$448.00	0%	\$448.00
Adapter to connect 6mm steel tube of foreign heated sampling line to the analyzer gas inlet port	1	12906-D6D8	\$633.00	0%	\$633.00
T-fitting in front of the gas inlet incl. cable extension for the heated sample line	1	13445	\$1,181.00	0%	\$1,181.00

CONSUMABLES	QTY	Part No.	Unit price	Discount	Total Price
Service & cleaning set	1	60181	\$154.00	0%	\$154.00
PTFE Spare fine filter element (set of 5)	1	56879A	\$405.00	0%	\$405.00
Quartz wool filter element (1 pack 30g, lasting of 10x filtering for probe HPI)	1	10825	\$18.30	0%	\$18.30
Printer paper, thermo paper, 80 mm x 20 m (1 pack. = 5 rolls)	1	10879	\$29.80	0%	\$29.80

HPI Industrial gas sampling probe



With heated, easy  
replaceable glass wool filter  
With exchangeable probe tube  
and gas temperature  
measurement  
using K-type thermocouple

HEATED SAMPLING LINE



Transportation

Portable Syngas treatment



Useful nylon protection case  
with shoulder strap



Trolley for comfortable  
and safe transport



**OPTIONAL**  
Portable Syngas treatment  
(washing) device, for tar or  
heavy hydrocarbons removal  
from sample gas

## SALES TERMS & CONDITIONS

### A. Acceptance/Agreement

All orders are subject to acceptance by MRU Instruments, Inc. Additional or different terms or any attempt by the Buyer to vary, in any degree, any of the terms of this sales agreement form shall be deemed material and are objected to or rejected, but this sales agreement form shall not operate as a rejection of the Buyer's offer unless it contains variances in the terms of the description, quantity, price or delivery schedule of the goods.

### B. Payment Terms

MRU Instruments payment terms are net 30 days unless special written arrangements have been made. MRU Instruments, Inc. may, at any time, suspend performance of any order or require payment in cash, security or other adequate assurance satisfactory to MRU Instruments, Inc. when, in MRU Instruments' opinion, the financial condition of Buyer or other grounds for insecurity warrant such action. MRU Instruments, Inc. reserves the right to assess late charges on accounts due past 30 days at the rate of 18% per annum. All goods are shipped Ex Works and are the property of the Buyer upon shipment.

### C. Cancellation/Termination

Upon written notice of cancellation or termination for the Buyer's convenience of standard catalog items, for standard product only, the Buyer is subject to a minimum 15% charge on the remaining balance and a charge reflecting a reversion to the quantity pricing of items actually delivered. In the event that the goods are special, non-standard or custom the Buyer may terminate this order in whole or in part for its convenience upon written notice to MRU Instruments, Inc. in which event MRU Instruments, Inc. shall be entitled to termination charges consisting of a percentage of the order price reflecting the percentage of the work performed prior to termination plus actual direct costs resulting from termination.

### D. Remedies in the Event of Cancellation or Default

In the event the Buyer cancels this order, or becomes overdue on its account payable to MRU Instruments, Inc. by failing to pay for this order when due in accordance with the terms hereof, in addition to the charges assessed to the Buyer pursuant to Paragraphs B and C of this Agreement, the buyer shall be required to pay all costs of collection, including, whether suit be brought or not, attorney fees, court costs, collection expenses and other expenses which MRU Instruments, Inc. may incur or pay in the prosecution of defense of its rights hereunder whether in judicial proceedings at law or in equity, including bankruptcy court and appellate proceedings, or whether out of court. In addition, MRU Instruments, Inc. shall retain the right to terminate this Agreement and Buyer's right to use the Software (as term is defined below) upon any material breach of this Agreement by Buyer. Buyer agrees to return to MRU Instruments, Inc. or to destroy all copies of the Software upon termination of this Agreement.

### E. Delivery

The promised delivery date is the best estimate possible, based upon current and anticipated manufacturing capabilities, of when the product will be shipped. MRU Instruments, Inc. assumes no liability for loss, damages or consequential damages due to delay.

In any event, MRU Instruments, Inc. shall not be in default for any failure to deliver Products to Buyer by the promised delivery date. In the event that MRU Instruments, Inc. so defaults, Buyer's sole remedy for such default shall be cancellation of the applicable order. MRU Instruments, Inc. shall have no other liability to Buyer as a consequence of any such default.

### F. Force Majeure

Fulfillment of this order is contingent upon the availability of materials. MRU Instruments, Inc. shall not be liable for any delay in delivery or for non-delivery in whole or in part caused by the occurrence of any contingency beyond the control of either MRU Instruments, Inc. or suppliers to MRU Instruments, Inc. including but not limited to delay in transportation, labor disruption, earthquake, fire, acts of God, or any other act outside of MRU Instruments, Inc.'s reasonable control.

### G. Warranty

MRU Instruments, Inc. expressly warrants that the materials covered by this sale will conform to the specifications, drawings or other descriptions specified by the Buyer or if none are so specified, to MRU Instruments' standard specifications for such material. The materials will be new and unless specified to the contrary on the order acknowledgment or invoice, will be free of all liens and encumbrances.

MRU Instruments, Inc. is in compliance in all material respects with the terms and conditions of all material permits, licenses and authorizations which are required under federal, state and local laws applicable to MRU Instruments, Inc. and relating to pollution or protection of the environment, except where the failure to obtain such authorizations could not be reasonably expected to have a material adverse effect on the business of MRU Instruments, Inc. or its customers. MRU Instruments, Inc. is not aware of any conditions, circumstances, activities, practices, incidents, or actions which could reasonably be expected to form the basis of any claim, action, suit, proceeding, hearing, or investigation of, by, against or relating to MRU Instruments, Inc., based on or related to the manufacture, processing, distribution, use, treatment, storage, disposal, transport, or handling, or the emission, discharge, release or threatened release into the environment, of any pollutant, contaminant, or hazardous or toxic substance, material or waste, or relating to the safety of employees, workers or other persons, other than such conditions, circumstances, activities, practices, incidents, or actions that are beyond reasonable knowledge of and control of MRU Instruments, Inc..

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MRU Instruments, Inc. shall not be liable for any incidental, special, indirect or consequential damages, losses or expenses directly or indirectly arising from the sale whether in contract, tort, or any other legal theory. In any event, MRU Instruments' liability hereunder is expressly limited to the repair or replacement (at MRU Instruments' option) of non-conforming goods or, at MRU Instruments' election, to the repayment or crediting to Buyer the purchase price of such goods.

### H. Claims/Notice of Defects

Failure of the Buyer to object in writing to any merchandise shipped to it by MRU Instruments, Inc. within 30 days after receipt thereof will constitute complete acceptance by Buyer of such merchandise. Rejected material must be returned to MRU Instruments, Inc. within 45 days after receipt and with prior authorization from MRU Instruments, Inc. MRU Instruments, Inc. may (at its option) recondition or replace the rejected material to meet Buyer's specifications within a reasonable time period after receipt. Claims for shipping damage must be made with the carrier.

All products must be returned in the same packing conditions in which it left MRU Instruments, Inc.' manufacturing location(s) (anti-static rails and boxes, adequately protected, etc.). Buyer must pay return shipping.

### I. Confidential Information

All drawings, diagrams, specifications and other materials furnished by MRU Instruments, Inc. and identified as confidential, or information which the Buyer knows or has reason to know is confidential, proprietary or trade secret information of MRU Instruments, Inc., relating to the use and service of articles furnished hereunder and the information therein, are proprietary to MRU Instruments, Inc.. Buyer may not reproduce or distribute such materials except to buyer's employees who may use the articles as part of their duties.

Customer agrees that it will take all reasonable measures to maintain the confidentiality of all confidential information in its possession or control, which will in no event be less than the measures it uses to maintain the confidentiality of its own information of equal importance. Accordingly, MRU Instruments, Inc. will be entitled to preliminary and permanent injunctive relief and other equitable relief for any breach of this Section I.

Buyer further acknowledges and agrees that the sale of products to Buyer does not convey any license express or implied, and Buyer shall not, manufacture, modify, reverse engineer, duplicate, otherwise copy or reproduce any of the products or any part thereof. MRU Instruments, Inc. will treat drawings, specifications or data furnished by Buyer as confidential, when identified as such, in connection with this purchase.

### J. General Provisions

Any cause of action arising from this agreement, or breach of it, must be commenced within one year after the cause of action occurs. MRU Instruments, Inc. reserves the right to correct any stenographical or clerical errors in any of the writings issued by it. The terms and conditions of sale and any description on the face of MRU Instruments' writings constitute a complete and exclusive statement of the terms and conditions of the sale of the goods by MRU Instruments, Inc. to Buyer unless amended in writing between Buyer and MRU Instruments, Inc. Buyer may not assign any rights to, or delegate any performance owed under the agreement without the written consent of MRU Instruments, Inc.

This Agreement will be governed by and construed in accordance with the laws of the State of Texas. Any suit hereunder will be brought solely in the federal or state courts of Harris County, Texas, and Buyer hereby submits to the personal jurisdiction thereof. This agreement, as amended by any posted notices, constitutes the entire terms and conditions on products offered for sale by MRU Instruments, Inc.

MRU Instruments, Inc. may amend this Agreement at any time by posting the amended terms on its web site. Except as stated below, all amended terms shall automatically be effective after they are posted on the web site. This Agreement may not be otherwise amended except in a writing signed by Buyer and MRU Instruments, Inc.

This agreement was last revised on January 30, 2007.