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Divisions:

Plastics engineering & manufacturing Instruments engineering Measuring instruments

Subject to alteration



Manual

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1. General

The data acquisition software "MARS" (Multi Analyser Research Software) enables data logging of all relevant parameters from the sensor in a table and chart view. The general user mode (= not-advanced user mode) of this software can read all parameters and set zero and end points for the gas channels. It is also possible to activate and deactivate the radiation sources of the sensor.

INFORMATION

 a) This software was not only developed for data acquisition by the user but also for the production and calibration of sensors as well as for OEM manufacturers. Therefore, the software includes various functions that are not relevant for the standard data acquisition.
 Therefore, features which are not applicable for a standard data acquisition are not described in this manual.

For changing of calibration coefficients and some other critical parameters, the *Advanced User Mode* has to be entered. The necessary password is provided on request.

b) This documentation has been prepared with the greatest possible care. However, it is intended for specialist personnel who are familiar with the principles of gas measurement technology. Basic questions about measurements of gas concentrations, cross-sensitivities etc. can therefore not be answered with this documentation. Please consult the relevant technical literature in this regard.

2. Scope of Supply

No. of Items	Item
1	Document folder including
	Calibration Certificate
	Data Sheets
	Software Manual
1	Sensor in aluminium table top casing
	Plug-in power supply unit
1	Input: 100-240 V-AC, 50/60 Hz, 0.4 A
	Output: 24 V-DC, 0.5 A, 12 W or 36 W (H ₂ S / UVRAS sensor)
1	Data acquisition software (on USB flash drive)
	Connection cable: sensor \Rightarrow PC
1	Standard: USB V2.0 A/B, 1 m
	Option: RS232, 3 m
3 m	Viton tubing \mathcal{Q}_i 4 mm / \mathcal{Q}_0 6 mm



3. System Requirements

- PC with operating system Windows® 7 or higher
- Recommended processor performance: ≥ 2 GHz
- Recommended random access memory (RAM): ≥ 4 GB
- 1 x USB port
- Monitor 17" (optimised for monitor resolution of 1280x 1024 pixels or higher)

4. Setup of Software

- a) Please note: The sensor must NOT be connected to the PC at this time.
- b) The software is provided on an USB flash drive. Insert the USB drive into the appropriate port of the computer and open the file directory.
- c) Setup the USB driver by right mouse click on "\Driver Serial COM Port\CDM21228_Setup.exe" and execute with administrator rights.
- d) Start the software setup by right mouse click on "MARS_setup_Vxxx.exe" and execute with administrator rights.
- e) Follow the instructions of the setup procedure.

Driver Serial COM Port

- 1_ReadMe BEFORE Installation.txt
- 2_RITTER-MultiGas-Sensors-V1.4-Documentation.pdf
- 🔁 3_RITTER-MultiGas-Software-Manual-V135.pdf
- 4_RITTER-MultiGas-Sensors-Brochure.pdf
- 5_CheckList_RITTER-Sensors-EN.pdf
- MARS_setup_V135.exe
- Driver Serial COM Port
- 1_ReadMe BEFORE Installation.txt
- 2_RITTER-MultiGas-Sensors-V1.4-Documentation.pdf
- 3_RITTER-MultiGas-Software-Manual-V135.pdf
- 4_RITTER-MultiGas-Sensors-Brochure.pdf
- 5_CheckList_RITTER-Sensors-EN.pdf

 Image: Mars_setup_V135.exe
- f) After successful installation the software **must not** be started at this time. Otherwise the COM port of the connected sensor will not be recognized.
- g) Execute the setup procedure of the sensor as described in the Operation Manual of the sensor, par. 5.3 ff "Setup".
- h) Start the software "MARS_Tool.exe" by **right mouse click** and **execute with administrator rights.**

If several sensor modules are installed (e.g. $1 \times IR$ module + $1 \times UV$ module), the application must be opened several times according to the number of modules in several instances.



5. Software Features

5.1. Data Logging Tab

🔢 MultiAnalyser - Conf + Log - V	0.0135.20769	2	3										6			×
Interface RS232 COM Port	<u> </u>	Scan	Open	Close	00	CAN	CAN-ID (Hex): 300	Initialize	Release	1					
Serial Number:	4 Detektor	?	5													
Data Logging Basic configuration	n Config CH1	Config CH2 C	onfig CH3	Config C	H4 Pro	ductio	n Save/Load	Settings								
ADCRef_Ch1	?		Read	2	Pr	i v		ADCRef_Ch2		?		Read		2	Pri	\sim
ADCMeas_Ch1	?		Read	2	Pr	i v		ADCMeas_Ch2		?		Read	2	2	Pri	~
Modulation_Ch1	?		Read	2	Pr	i v		Modulation_Ch2		?		Read	2	2	Pri	\sim
Concentration_Ch1	?	?	Read	. 2	Pr	i v		Concentration_Ch	2	?	?	Read		2	Pri	~
6 7 ADCRef_cn3	8	9	Read	. 2	🖨 Pr	i v	6	Modulati		8	9	-10	11	12	13 Pi	η
ADCMeas_Ch3	?		Read	2	🖨 Pr	i ~	6 0	Concentration_Ch	4 7	2 8	?	Read		2	Pri	~
Modulation_Ch3	?		Read	. 2	Pr	i v		Temperature_IR		?	°C	Read			Sec	~
Concentration_Ch3	?	?	Read	2	🗣 Pr	i ~		Temper 14_PT1	000	?	°C	Read		I	Pri	~
6 7	8	9						Temperature_UV		?	°C	Read		I -	Sec	~
abs_Humidity_Ch	?	absH[%]	Read					Temper 15 µC I	Board	?	°C	Read			Pri	~
rel_Humidity_Ch	?	RH[%]	Read					EC_Sensor		?	Vol.%	Read			Pri	~
Humidity_Temperature	17 ?	°C	Read			19		0 ssur 16 sor		?	hP ₂ 23	Read		1	4 ri	~
Local CSV-File C:\Users\Ritter	\Documents\test	.csv (18)		Rate [m	sec] 10	000	Start	Stop		Sel	ect all	Select nor	ne	Reset	name	s
Network Copy]]	Interval	[min 10) 🧹	Сору	22			Zero	Detector a	all Cha	nnel	Set	25
View Chart Read	all	Vrite enable	Cvc	lic read o	n 0			-		System Res	et [Data Panel			Exit	-
		20		20								00				
20 2	9	28		29	30					31		32			33	

Figure 1: Data Logging Tab

- (1) Selects the serial COM port
- (2) Scans available sensor(s) and port(s)
- (3) Opens / closes selected COM port; reads configuration of sensor(s)
- (4) Displays serial number of the connected sensor
- (5) Display of sensor configuration
- (6) Designators for selection / de-selection of channel for data logging as well as for display of the measurement value in the table and chart view
- (7) Channel and function designators, editable (stored in configuration)
 Example: Default entry "Concentration_Ch1" can be changed to "CO2 Concentration Ch 1"
- (8) Measurement values
- (9) Dimension of measurement values
- (10) Manual one-time reading of measurement value (automatic reading: see (17), (19), (20))
- (11) Colour of the plotted line in chart view
- (12) Thickness of the plotted line in chart view
- (13) Selects primary (= left) axis or secondary (= right) axis for indication of measurement values in chart view
- (14) Temperature indication of IR sensor



- (16) Measurement value of EC sensor (O₂ sensor)
- (17) Storage path and file name for data logging file
- (18) Storage path for copy of data logging file to network (optional) No entry: No copy
- (19) Time interval for logging the data in milliseconds, minimum 100 ms
- (20) Starts / stops data logging into file [name].csv
- (21) Interval for copy of data logging file to network (optional)
- (22) Starts copy of data logging file to network (optional)
- (23) Selects / de-selects all channels for data logging and chart view
- (24) Resets all designators to default
- (25) Sets all channels to zero (with inert gas N_2 , H_2), see par. 7.1
- (26) Opens chart view in separate window
- (27) Reads all measurement values
- (28) Enables advanced user mode password protected. Password is provided on request only.
- (29) Starts measurement cycle independently from data logging. Useful for chart view and direct feedback values
- (30) Received data frames
- (31) Restarts the complete sensor
- (32) Shows the measurement values in combination with a chart (see par. 8.1)
- (33) Exits the software



5.2. Basic Configuration Tab

💽 MultiAnalyser - Conf + I	Log - V0.0.132.401	158						- 0	×
RS232 COM Pot COM	14	Scan	Open	Close	O CAN	CANID (Hex): 300 Initialize	Release		
Serial Number:	Detektor	ed:							
Data Logging Basic config	uration Config CH	1 Config	Contig	CH3 Conf	fig CH4 Pr	oduction Save/Load Settings			
LED1_PWM	0	ON	OFF	Write	Read	Alamlevel_UVLED1	50	Write	Read
LED1_CURRENT	6000 µA		2)	Wite	Read	Alamlevel_UVLED2	50	Write	Read
LED2_PWM	0	ON	OFF	Wite	Read	Alamlevel_IRLAMP	50	Write	Read
LED2_CURRENT	6000 μA		3	Wite	Read	Source_Power_UVLED1	5		Read
IR Lamp PWM	5 Hz	ON	OFF	Wrte	Read	Source_Power_UVLED2	< 6		Read
IR Pyro Sample Depth	1			Wrte	Read	Source_Power_IRLAMP		7	Read
FD CH1_2 Modulation	1			Wrte	Read	Set_Statvalue_UVLED1		Write	
FD CH1_2 Concentration	40			Wite	Read	Set_Startvalue_UVLED2		Write	
FD CH3_4 Modulation	1			Write	Read	Set_Statvalue_IRLAMP	1	Write	
FD CH3_4 Concentration	40			Write	Read	AZF Control			
FD ADC Raw Values	5.00000 max.	Value = 30		Write	Read	Freeze reading		Write	Read
Sample_Cell_UV_Lenghth	114.0000 mm			Write	Read	T_INTERVAL	80 ~	9 Vite	Read
Zero Detector all Channel	Set	4				T_RINSE	· 10	Wite	1 ead Config
Vew Chart F	Read al	Write enable		yclic read or	0		ystem Reset Data Pane		Ext

Figure 2: Basic Configuration Tab

- (1) Turns on/off radiation source: UV LED 1
- (2) Turns on/off radiation source: UV LED 2
- (3) Turns on/off radiation source: IR Source
- (4) Sets all channels to zero (with N₂, H₂)
- (5) Percentage of radiation power: UV LED 1
- (6) Percentage of radiation power: UV LED 2
- (7) Percentage of radiation power: IR Source & EDL \rightarrow indicators for aging
- (8) Time interval in which the zero point is to be set
- (9) Selection of minutes [min] hours [h] or days [d] for time interval
- (10) Time [sec] for rinsing the sensor at each interval
- (11) Reads all basic configuration settings



5.3. Configuration Tabs

The four *Configuration Tabs* for the different channels/gases are very similar to each other. The highlighted fields are explained in the "Config CH1" tab (Figure 3) only. These fields are identical in all tabs.

terface RS232 COM Port COM	64	_	~ <u>Sci</u>	0pt	n (Dose	O CAN	CAN-ID (He	ext 300 Initialize Release
erial Number:		41	2	2)	3		4		
Data Logging Basic config	ratio	n Config	CH1 Confi	g CH2 Co	nfig CH3	Confi	g CH4 Proc	duction Save	e/Load Settings
Unearisation_Oh1	(x')	32.49551	292.1436	1052.296	-1092	35	Wite	Read	Pressure Compensation_Ch1
		0.00000.0	0.00000						0.00000 0.00000 0.00000 UVite Read
Cross Sensitivity Ch2 to Ch1	- 11	0.00000					Write	Read	Reference pressure_Ch1
Cross Sensitivity Ch3 to Ch1	(a)	0.00000	0.00000		10E-6		Write	Read	0 hPa Witte Read
Cross Sensitivity Ch4 to Ch1	(a)	0.00000	0.00000		10E-6		Wite	Read	Building Accessed
TempCompNullpoint_Ch1	(b)	0.00000	0.00000	0.00000	10E-6		Write	Read	
TempCompEndpoint_Ch1	(b)	0.00000	0.00000	0.00000	10E-6		Write	Read	
				-					Humidity Compensation_Oh1
Endpoint Calibration Oh1		480		5			Write	6	0.00000 0.00000 0.00000 10E-6 Wite Read
Endpoint Factor Ch1		0.00000.0		-			Write	Read	
ig Factor	1						Wite	Read	Zero Detector Data
Measurement Unit Ch1		ppm	1.1	4			Wite	Read	ADC Meast 0 Read all
Measurement Range Ch1		500					Write	Read	AUC Metz 0 AUC Measz 0 Write al
									AUC Meas3 U

Figure 3: Tab "Config CH1"

- (1) Config CH1
- (2) Config CH2
- (3) Config CH3
- (4) Config CH4
- (5) Concentration of the test gas at the end point setting (may deviate max. ±10% F.S.)
- (6) Sets the endpoint
- (7) Sets the zero point for the gas in the current tab \rightarrow important for carrier gas dependencies
- (8) Raw values after setting of the last zero point



5.4. Production Tab

and an					
RS232 COM Port COM4 COM4 COM4	Open Close O CAN	CANID (Hex): 300 Initialize	Release		
Serial Number: Detektor connected:					
Data Logging Basic configuration Config CH1 Config CH2	Config CH3 Config CH4 Prode	uction Save/Load Settings			
Serial Number	Write Read	IR Detector Type	DeviceID		
HW Revision	Wite Read	none v	Measurement Type 1		
SW Revision	Read	Write Read	Measurement Type 2		
	Max Read	6111 B	Measurement Type 3		
Operating Hours	vince Head	CAN Protocol Type	Measurement Type 4		
LED_1_Hours	Write Read	Wite Read	Gas Type 1		
LED_2_Hours	Write Read		Gas Type 2		
Manufacturing_Date	Write Read	CAN termination	Gas Type 3		
Status Byte	Read	Write Read	Her Code		
CAN ID REC	Wite Basel		Dez Code		
	1110			Wite Read	
CAN_ID_TRA	Write Head			The New	
CAN Baudrate	Wite Read				
NodeID	Write Read			Read Production	18

Figure 4: Production Tab

- (1) Counter for the operating hours of the sensor
- (2) Status Byte of the sensor (see below)
- (3) Reads all production settings / information

5.4.1. Status Byte

IR/EDL detected	NA	UV LED1 detected	UV LED2 detected	IR/EDL Level error	NA	UV LED1 Level error	UV LED2 Level error			
Bit0	Bit 1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Status code bin	Status code hex	Status code dez
0	1	0	0	1	1	1	1	11110010	4F	79
1	1	0	0	1	1	1	1	11110011	CF	207
1	1	0	0	0	1	1	1	11100011	C7	199
0	1	1	0	1	1	1	1	11110110	6F	111
0	1	1	0	1	1	0	1	10110110	6D	109
0	1	1	1	1	1	1	1	11111110	7F	127
0	1	1	1	1	1	0	0	00111110	7C	124
0	1	1	1	1	1	0	1	10111110	7D	125
0	1	1	1	1	1	1	0	01111110	7E	126
1	1	1	0	1	1	1	1	11110111	EF	239
1	1	1	0	0	1	0	1	10100111	E5	229
1	1	1	0	0	1	1	1	11100111	E7	231
1	1	1	0	1	1	0	1	10110111	ED	237
1	1	1	1	1	1	1	1	11111111	FF	255
1	1	1	1	0	1	0	0	00101111	F4	244
1	1	1	1	0	1	0	1	10101111	F5	245
1	1	1	1	0	1	1	1	11101111	F7	247
1	1	1	1	0	1	1	0	01101111	F6	246
1	1	1	1	1	1	0	0	00111111	FC	252

lade in Germany	Gas Sensors »Ri Data Acquisiti Man	rter MultiGas« on Software ual	09.43 V135 Rev. 2024-01
MultiAnalyser - Con Interface R5232 COM Port Serial Number: Data Logging Basic or	1 + Log - V0.0.132.40158 COM4 V Scan Open Close O CAN C Deteitor connected: nfiguration Config CH1 Config CH2 Config CH3 Config CH4 Product	AN-ID (Hex): 300 Initialize Release	- 0 X
Parameterfile C 2 Load parameter	itemp/settings_21000.xml	only Zero/Endpoint	Save parameter to file

Figure 5: Save/Load Settings Tab

5.5. Save/Load Settings Tab

Save settings:

- (1) Select a storage path and *.xml file name for the settings to be saved.
- (2) Click the button [save parameter to file].

Load settings:

- (1) Select the storage path and the *.xml settings of the desired file. Optionally, set the checkbox to reset the zero-/endpoints only.
- (2) Click the button [Load parameter from file].

Note: The *.xml file can be edited with a standard XML viewer.



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6. Coupling the Sensor and Starting a Measurement

6.1. RS232 and USB Protocol

Multiánaluser - Conf + Lon - V0.0.132.4015	ia 🚹	~ 50	Open O			
mananayar - com + cog - roomacours		Petektor	2			
RS232 COM Port COM4	Scan (Open Close (CAN CANID (Hex): 300 Initial:	te Release		
Serial Number: 2 ktor	£	3				
Data Logging CH1	Config CH2	Config CH3 Config CH	14 Production Save/Load Settings			
Pot Scal		Read	ADCRef_Ch2		Read 📕 2	2 🔮 Pri 🗸
ADDIO0 21000 [COM5]		Read	ADCMeas_Ch2		Read	
Modulation_Ch1		Read	4 Modulation_Ch2		Read	
Concentration_Ch1		Read	Concentration_Ch2		Read	
ADCRef_Oh3	- 1	Read	Modulation_Ch4		Read	
ADCMeas_Ch3	- 1	Read	Concentration_Ch4		Read	
Modulation_Ch3		Read	Temperature_IR	D.	Read	
Concentration_Ch3		Read	Temperature_PT1000	°C.	Read	
			Temperature_UV	°C.	Read	
abs_Humidity_Ch	absH[%]	Read	Temperature_uC Board	J.	Read	
rel_Humidity_Oh	RH[%]	Read	Sensor	Vol 1	Read	
Humidity_Temperature	°C	Read	6ssure_Sensor	×4	Read	
Local CSV-File C:\		- Rate [msec]	1000 Start Stop	Select all	Select none	Reset names
Network Copy C:\		Interval (min)	15 Copy	Ze	ro Detector all Cha	mei Set
Vew Chart Read al	Vite enable	Cyclic read on	0	System Reset	Data Panel	Ext

Figure 6: Starting a measurement

- (1) Click the button [Scan]. The colour changes from blue to red while scanning the COM ports of your PC. When ready the button changes to blue again.
- (2) Click the dropdown menu and select the sensor's serial number which is stated on the sensor label located at the bottom side of the sensor casing.
- (3) Click the button [open] \rightarrow serial number and sensor configuration are displayed.

If several sensor modules are installed (e.g. 1 x IR module plus 1 x UV module) and the application is opened several times in several instances, please switch to the other instances one after the other and repeat steps (1) to (3) there.

(4) Click the checkboxes of the corresponding gas channels or the button [Select all/ Select none].

The assignment of the measurement channels is stated in the provided *Calibration Protocol.* Example:

Measurement Channels

Channel	Gas	Range	Sample Cell (Cuvette)		
CH1					
CH2	CO ₂ (in CH ₄)	0 – 100 %	50 mm		
CH3	CH4 (in CO2)	0 – 100 %	50 mm		
CH4					

- (5) Choose a storage path and file name for the data logging file.
- (6) Choose a measurement interval (min. 100 ms).



(7) Click on the button [start]. If the data file already exists, the user can select to override the file or add the new data to already existing data. Click the button [stop] to end the recording to the data file.

6.2. CANbus Protocol

	1	2	3	1
an Open Close	CAN CAN-ID (Hex):	300 Initialize	Release	MAR
?				P
CH2 Config CH3 Config CH4	Production Save/Load Se	ettings		
Read 10	Pri V AI	DCRef_Ch2	2	Read

Figure 7: Initialization of the sensor with CANbus protocol

- (1) Select the [CAN] interface.
- (2) Enter the CAN-ID "300" if not already set by default.
- (3) Connect the sensor with the provided connection cable with the respective port of the computer and click "Initialize".

(Click "Release" after termination of data acquisition.)

(4) Pin assignment of connection cable:

	RJ45- lead	Signal	Description	Colour *)
	1	CAN_GND	Ground	white
	2			brown
	3			green
	4	CAN_H	Dominant High	yellow
	5	CAN_L	Dominant Low	grey
	6			pink
	7			blue
- THE ALL -	8			red
	*) Wi	re colours of th	ne included connect	ion cable

If several sensor modules are installed (e.g. 1 x

IR module plus 1 x UV module) and the application is opened in multiple instances, please switch to the other instances and repeat steps (1) to (3) there.

Then proceed as described in par. 6.1 (4) to (7).



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6.3. MODbus Protocol (RTU)

(1) Settings

Baudrate	115200 Baud
Databits	8
Stopbit	1
Parity	None
Float Definition	IEE754
Available Register	Read Holding Register 0x03 Read input Register 0x04 Write single Register 0x06

(2) Command List

Normal operating mode

These commands are important for the main function of the detector.

Description	MODBUS Register	Number of Register	Format Type	Unit	Access
Concentration channel 3	30001	2	FLOAT	ppm,Vol.%,µg	Read
Concentration channel 4	30003	2	FLOAT	ppm,Vol.%,µg	Read
Concentration channel 1	30005	2	FLOAT	ppm,Vol.%,µg	Read
Concentration channel 2	30007	2	FLOAT	ppm,Vol.%,µg	Read
Set zero detector [all Channel] zeropoint stored*	40011	1	BOOL	-	Write
Set zero calibration channel 1 zeropoint stored*	40012	1	BOOL	-	Write
Set zero calibration channel 2 zeropoint stored*	40013	1	BOOL	-	Write
Set zero calibration channel 3 zeropoint stored*	40014	1	BOOL	-	Write
Set zero calibration channel 4 zeropoint stored*	40015	1	BOOL	-	Write
Set Span Calibration channel 1	40016	1	FLOAT	ppm[Vol.%]	Write
Set Span Calibration channel 2	40018	1	FLOAT	ppm[Vol.%]	Write
Set Span Calibration channel 3	40020	1	FLOAT	ppm[Vol.%]	Write
Set Span Calibration channel 4	40022	1	FLOAT	ppm[Vol.%]	Write



(3) Sensor information

Description	MODBUS Register	Number of Register	Format Type	Unit	Access
Serial Number	40001	1	UINT16		Read
Config ID	40002	1	UINT32		Read
Hardware Revision	40003	1	UINT16		Read
Software Revision	40004	1	UINT16		Read
Operating hours	40006	2	UINT32		Read
Manufacturing date	40010	1	UINT16		Read



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7. Zero and End point calibration

For highly accurate gas measurements a regular check of the zero point and end (span) point is necessary.

Recommended recalibration intervals:

- a) IR sensors:
 - Zero point: Weekly with inert gas, e.g. Nitrogen The setting of the zero point is described in par. 7.1 below.
 - End point (full scale): Every 3 months with suitable calibration gas The setting of the end point is described in par. 7.2 below.
- b) UV sensors:
 - Zero point:
 - Concentrations < 300 ppm: Every 48 hours with inert gas, e.g. Nitrogen
 - Concentrations \geq 300 ppm: Every 24 hours with inert gas, e.g. Nitrogen The patting of the zero point is described in zero 7.4 below
 - The setting of the zero point is described in par. 7.1 below.
 - End point (full scale): Every 3 months with suitable calibration gas The setting of the end point is described in par. 7.2 below.

In case of deviation (e.g. > 2% of span) the MARS Tool features an uncomplicated setting of the zero and span point.



Figure 8: Concentration readings during zero and span point calibration



7.1. Zero-point calibration

Purge the entire gas measurement system with a sufficient volume (11/min) of zero gas (e.g. N_2 , Ar, H_2 or cleaned air) and wait until the gas concentration reading is stable (<1% F.S.).

adaca								
RS232 COM Port COM4 V	Scan	Open Close	O CAN CA	N-ID (Hex): 300	Initialize	Release		
al Number: Detektor connected								
ta Logging Basic configuration Config CH1	Config CH2	Config CH3 Co	onfig CH4 Productio	n Save/Load Settin	pa .			
ADCRef_Oh1		Read		ADCRef_C	2		Read	2 单 Pri 🗸
ADCMeas_Oh1		Read		ADCMeas_	Dh2		Read	
Modulation_Ch1		Read		Modulation	Ch2		Read	
Concentration_Ch1		Read		Concentration	on_Oh2		Read	
ADCRef_Ch3	- 1	Read	WARNING		×		Read	
ADCMeas_Ch3		Read	Are you sure? All Zero Detector	parameters will be ov	erwritten		Read	
Modulation_Ch3		Read				°C	Read	
Concentration_Ch3		Read	2	Ja	Nein	°C	Read	
				Temperatur	e_UV	°C	Read	
abs_Humidity_Ch	absH[%]	Read		Temperatur	e_uC Board	°C	Read	
rel_Humidity_Ch	RH[1]	Read		EC_Sensor		Vol.1	Read	
Humidty_Temperature	°C	Read		Pressure_S	ensor	hPa	Read	
ccal CSV-File C:\		Rate	[msec] 1000	Start Stop		Select all	Select none	Reset names
etwork Copy C:\		Interv	al [min] 15	Сору		z	ero Detector a	Set

Figure 9: Zero-point calibration

- (1) Click the button [Set] next to Zero Detector all Channel.
- (2) Click the button [Yes/Ja] to do a zero-point calibration \rightarrow the concentration reading is now 0.0000 ppm.



7.2. End-point calibration

Setting the end point necessitates the use of a well-known concentration of test gas. If a certified test gas bottle (cylinder) is used, the gas concentration value can be found on the label or in the provided certificate (e.g. 480.00 ppm CO_2).

- a) Before applying the end point calibration, it is important to do a zero-point calibration with N₂ (inert gas) to set the offset to zero.
- b) Make sure that the test gas concentration does not deviate more than 10% from F.S.
- c) Purge the entire gas measurement system with a sufficient volume (1 l/min) of test gas and wait until the gas concentration reading is stable (< 1% of span).

MultiAnalyser - Conf +	Log - V0.0.132/	40158												
RS232 COM Port CO	M4	~ Sc	w Ope	n 0	lose	() CAN	CAN-ID (Hex):	300	tialize	Release				
rial Number:	Detekt	for acted:												
ata Logging Basic config	uration Config	CH1 Confi	GCH2 Co	nfig CH3	Config	CH4 Prod	uction Save/L	oad Settings						
inearisation_Ch1	(x*) 32.49551	292.1436	1052.296	-1092.3	15	Wite	Read	Pressu	re Compensati	on_Ch1				
	0.00000	0 00000						0.000	0.00000	0.00000			Wite	Read
Doss Sensitivity Oh2 to Oh1	0.00000					Witte	Read	Refere	nce preseure_	Ch1				
Cross Sensitivity Ch3 to Ch1	(a) 0.00000	0.00000		10E-6		Wite	Read			0	hPa	- 1	Wrte	Read
Cross Sensitivity Ch4 to Ch1	(a) 0.00000	0.00000		10E-6		Wite.	Read							
TempCompNullpoint_Ch1	(b) 0.00000	0.00000	0.00000	10E-6		Wite	Read							
TempCompEndpoint_Ch1	(b) 0.00000	0.00000	0.00000	10E-6		Wite	Read							
							-	Humida	ty Compensati	on_Oh1		- 		-
Endpoint Calibration Oh1	480					Wite	2	0.000	0.00000	0.00000	10E-6		Write	Read
Endpoint Factor Ch1	0.00000		-			Wite	Read	Zero D	etector Diats					
ug Factor						Wite	Read	ADC R	ef1 0	ADC	Meas 1	0	í	
Measurement Unit Oh1	ppm	_	~			Write	Read	ADC R	d2 0	ADC	Meas2	0	f 🛄	Read all
Measurement Range Oh1	500					Witte	Read	ADC R	ef3 0	ADC	Measo3	0	5 D	Nite al
Zero Detector Ch1	Set									_			1	

Figure 10: End point calibration

- (1) Enter the test gas concentration in the textbox.
- (2) Click the button [write] to perform the end point calibration.



8. Advanced User Mode

To enter the advanced user mode a password is required. This password is provided on request only. When activated, the advanced user mode allows the user to change additional parameters.

Basic configuration

Alarm Level Sources

LED current

> Filter depth

> AZF Settings

≻

Config CHs

- Linearization Coefficients
- Temperature Compensation Coefficients
- Measurement Unit
- Measurement Range
- Cross Sensitivity
- µg Factor
- Pressure Compensation Fields

Save/Load Settings

- Save settings
- Reload zero/endpoint calibration
- Overwrite all settings with a new settings file (maintenance)

MultiAnalyser - Conf + Log - V0.0.132.40158			
Interface INS232 COM Port COM4	Can Open Close O CAN CANID (Hex): 300	Initialize Release	
ierial Number: Detektor connected:			
Data Logging Basic configuration Config CH1 Co	nfig CH2 Config CH3 Config CH4 Production Save/Load Settings		
Parameterfile \\			
Load parameter from file		only Zero/Endpoint Calibration	Save parameter to file
	Password	- 🗆 X	
	Entre Processor 2		
	New Advanced Password		
	New Production Password		
	1		

Figure 8: Advanced user mode

In any tab:

- (1) Click the button [Write enable].
- (2) Type the password.
- (3) Click the button [ok].

Note: Please save the sensor settings before changing any parameters (see par. 5.5 Save/Load Settings Tab).

Subject to alteration



8.1. Panel View with Data Panel

The *Panel View* enables the user to show the relevant measurement signal in the front panel design mode. This can be useful to demonstrate measurements or run diagnostics on the sensor.

To open the Data Panel, click the button [Data Panel] (see Figure 1 button no. 32).

Note: Before the *Panel View* can be used a connection with the sensor must be established first (see par. 6).



Figure 9: Data Panel View

- (1) Data Channel Selection
- (2) Activate/ deactivate data logging
- (3) Gas component of the selected channel
- (4) Actual gas concentration readings
- (5) Raw data values (preamp signals)
- (6) Sets all channels to zero (with inert gas N₂, H₂)
- (7) Closes the Panel View, all settings will be saved
- (8) Signal plot



Figure 10: Data Panel with zoom function





Figure 11: Data Panel with detailed information

Navigate the cursor to a position on the graph to display detailed information.