

Manual

# INCACtrl device configuration tool

INCACtrl - Version V1.01R51 (Release candi	date)	
File Edit Commands Options		
	CALCO GATESS	
INCA INFO DEVICE INFO	Measure data General Calibration IO config Saved Data	
Measure point name: Measure point number: 0 Serial number:	Measure state: Time in state: Channel: Device status: Det status:	
FIRMWARE VERSION	Date/Time: Discont. chnls:	
Master (Display): Slave I:	Value 1: Pressure air pump (P1): Value 2: Pressure gas pump (P2):	
Slave II: Slave III:	Value 3: Enclosure temperature: Value 4: Pressure ambient / abs.: Value 5: Gas conject temperature:	
Slave IV: Slave V:	Value 6: IR sensor temperature: Value 7: Outer case temperature:	
MESSAGES / ERRORS	Value 8:         Parox status:           Value 9:         PWM (PI-Ctrl 1 / PI-Ctrl 2):           Value 10:         PWM (PI-Ctrl 1 / PI-Ctrl 2):	
Messages: 0 Details Errors: 0 Details	value 10:	HW test
CONFIG CHANGED	Auto read (5 s) Log data	Read data
COMMUNICATION INFO	COMMUNICATION PROGRESS	ABORT
Program Status		16:51:32

This guide provides information for using the INCACtrl software and its connection to a process gas analyser.



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#### 1 Safety notes

#### 1.1 Warnings and symbols

In the manual, the following names and symbols are used to denote particularly important information:









## NOTE

Denotes information that can make it easier to handle the process gas analyser or help prevent property damage.





#### 2 Preface

#### 2.1 Purpose

INCACtrl is a Microsoft Windows<sup>™</sup> program to serve as an interface to communicate with the UNION INCA process gas analyser. The program serves as a configuration tool and allows to

- set device specific configuration data
- set measurement-specific parameter data
- read the current measurement data from the analyser

#### 2.2 Technical requirements

The use of the program requires

- a PC with Microsoft Windows XP, 7 or 8 with an RS232 interface or a USB-to-RS232 converter
- a Null modem cable (for connection to the INCA process gas analyser)
- a USB interface for the remote service module RCM, if necessary

#### 2.3 Changes

The features of the program are subject to constant change without notice. A change list is provided to keep track of the release versions.

#### 2.4 Contact

The program is distributed by UNION Instruments GmbH and its distributors.

Via the following download link

http://www.union-instruments.com/downloads-uebersicht.html

you can download the current INCACtrl software at your own pace.



#### 2.5 Personnel and qualifications

	<b>DANGER</b>
	Serious risk of injury from exiting gas and Danger from electrical shock! The operating instructions for the INCA process gas analyser must be observed!

Gas connections and work on the electrical equipment of the INCA process gas analyser may only be performed by a professional while observing safety regulations.

#### 2.6 Safety notes

#### 2.6.1 General safety notes

A Warning
The INCA process gas analyser may only be operated when all of the protective equipment is available and operable! Additional safety notes: <i>Before the corresponding chapters in operating instructions of the process gas analyser!</i>

#### 2.6.2 Notes on specific hazards

Danger from electrical shock! Only a trained electrician may modify the electrical equipment of the INCA process gas analyser in accordance with the relevant guidelines! When the INCA process gas analyser has been opened, the parts identified by the adjacent symbol may still be live even when the master switch has been turned off! If necessary, disconnect the INCA process gas analyser from the power supply!



## <u> Warning</u>

- Leaking process gas can pose a hazard and needs to be discharged by the operator into a safe environment.
- After installation, all gas conducting parts must be checked for leaks according to national regulations.
- All repairs that require the protective covering to be opened may only be performed by trained personnel.



•

## ▲ Warning

 Switch off the INCA process gas analyser, and also linked system components if required, before carrying out maintenance work!

The gas connections may only be established by trained personnel. Follow the applicable guidelines at the installation site.



#### 2.7 Regular technician training







#### 3 Communication setup

#### 3.1 Component

For setting up the communication link and use of the program, the following hardware and software is needed.

- Microsoft Windows
- RS232 interface or USB-to-RS232 converter
- Micro-USB, if RCM installed
- Null modem cable
- UNION Instruments GmbH INCA process gas analyser
- INCACtrl, the current version is required

	NOTE
	If you have a connection to the remote service module RCM, you will find further information about communication in the document <i>Quick start guide INCA – communication</i> .
	You can download it together with the zip-file <i>INCA (Pack: Communication)</i> from the download page of Union Instruments GmbH at your own pace: <u>http://www.union-instruments.com/downloads-uebersicht.html.</u>

#### 3.2 Technical setup

The INCA process gas analyser is connected to the PC/Notebook using a Null Modem cable.



Fig. 3.1: Connection setup INCA process gas analyser





If no serial port is available on the PC, use USB-to-RS232 converter.



Fig. 3.2: Optional USB-to-RS232 converter, Digitus



Fig. 3.3: Common Null modem connection

#### 3.2.1 Hardware connection

To set up the hardware link to the INCA process gas analyser, perform the following steps:

- 1) Open the device enclosure. At the backside of the enclosure door you find the mainboard of the INCA process gas analyser.
- 2) Connect one end of Null modem cable to the marked connector in Fig. 3.1.



Fig. 3.1: Main board of the INCA process gas analyser



## ATTENTION

Danger of short-circuit!

No galvanic separation of the RS232 interface.



- 3) Connect the other end of the Null modem cable with your PC/Laptop or the USB-to-RS232 converter.
- 4) Check if the communication in the INCA process gas analyser is set to *"INCACtrl"*.

With the menu buttons on the device you can specify the setting **MENU**  $\rightarrow$  **Settings**  $\rightarrow$  **Communication**  $\rightarrow$  **INCACtrl**.





#### 4 INCACtrl setup

#### 4.1 Installation

For use of the program, no installation is required. Just copy the executable file **INCACtrl.exe** together with the **CError.h** file into a folder and start it by double clicking the start icon.



The redistributable package can be downloaded directly from Microsoft:

http://www.microsoft.com/enus/download/search.aspx?q=Redistributable+Package

Use the most current version of the redistributable package.





#### **INCACtrl Application** 5

#### 5.1 Overview



INCACtrl is a dialogue-based application. The user can choose the main functions from a menu as well as from a toolbar on the top of the main dialogue. Additional dialogue windows for configuration settings open within the different tabs when you click on available buttons.

The main dialogue window is divided as follows (see Fig. 5.1):

- Menu section (program menu) .
- Tool bar •
- Information section of the INCA process gas analyser •
- Tab section with the option to select tabs
- Information section for communication .
- Status bar .



- 3. Communication info section
- 4. Status bar of the program

- 7. Program menu

The menu and toolbar control function and commands trigger the communication between *INCACtrl* and the INCA process gas analyser.

The *INFO* section displays some specific global information of the connected device (see **section** 5.5, **page** 25).

The **COMMUNICATION INFO** section displays the status of the communication. If a communication is active, the ABORT button is activated and the user is able to abort a running communication.

The *status bar* displays some the main program information. In case of a severe error, the status bar becomes red.

The *tabs* contain the main information. Measurement data are displayed; device parameters and settings can be set and changed.



#### 5.2 Connection setup

In order to establish a connection to an INCA process gas analyser, click in the toolbar on the button *"Read config from INCA"* 

If an error occurs, check the hardware connection. Make sure that all drivers are installed (e.g. if a USB-to-RS232 converter is used), and try again.

#### In the Program menu under

#### Options $\rightarrow$ Connection Settings

you can open the dialogue window Connection Setup and specify the settings for establishing the connection (see **Fig. 5.2**).

INCACtrl V1.03R07 - release cand	lidate	
File Edit Command Options		
📲 🛍 🖬 📑 🛞	V2.00 V1.02	Connection Setup
Device info:	Measure data General Calibration IC Measure state: Time in state: Channel: Device status:	Communication option RS232 TCP/IP RS232 Auto detect COM port:
FIRMWARE VERSIONS Master (Display): Slave II: Slave II: Slave II: Slave IV: Slave V: RUNTIME INFORMATION Operation Service Fror	Date/Time: Value 1: Value 2: Value 3: Value 4: Value 5: Value 5: Value 5: Value 7: Value 8: Value 9: Value 9: Value 10:	COM port: COM6 v TCP/IP IP or host adr.: Port: Close Close
Next inspection: LOGBOOK Messages: 0 Details Errors: 0 Details COMMUNICATION THEO		Auto read (5 s) Log data
OK - Winsock init (Running)		ABORT
ommunication settings: TCP/IP@19	2.168.115.90:10001	12:27:28

Fig. 5.2: INCACtrl settings for connection setup

Under Connection Setup you can select RS232 or TCP / IP.

With the selection **RS232**, you can select the COM port directly or having the corresponding COM port selected automatically by clicking **Auto detect COM port** (see **Fig. 5.3**).

RS232	
Auto detect COM port:	
COM port:	COM6 🔻
	(5.5.5.5)

Fig. 5.3: COM port settings (RS232)



If you selected TCP / IP, please enter the IO or host address (see Fig. 5.4).

TCP/IP	
IP or host adr.:	
Port:	

Fig. 5.4: TCP / IP settings

Once connected, *INCACtrl* will check if the connected device has the most current firmware installed. If not, it will display a message and ask to upgrade the firmware. Instructions on how to upgrade the firmware can be found under 5.4.7 Firmware Update.

#### 5.2.1 Remote service module RCM (Ethernet, TCP / IP)

There is the <u>option</u> to integrate the INCA process gas analyser into an existing Ehternet network using a *remote service module RCM*.



	NOTE
E¥	Further information about communication with the remote service module RCM can be found in document <i>Quick start guide INCA – communication.</i> You can download it together with the zip-file <i>INCA (Pack: Communication)</i> from the download page of Union Instruments GmbH at your own pace: <u>http://www.union-instruments.com/downloads-uebersicht.html.</u>

#### 5.3 Start dialogue - Quick Start

When starting up the program for the first time, two buttons are available in the toolbar (see **Fig. 5.5**).

At this time, the INCA process gas analyser should be connected as described earlier before clicking this button. Connection settings are only required for communication by means of the remote service module RCM.

The program scans all available and open COM ports for a connected INCA process gas analyser.



Fig. 5.5: INCACtrl start dialogue window



#### 5.4 Control functions and commands

The following contains a brief description of the control functions and commands (see Toolbar of the program, Fig. 5.5).

#### 5.4.1 Read config from INCA

With this command you read in all data from the INCA process gas analyser and update them in all dialogue windows.

The icon for this command is



#### 5.4.2 Write config to INCA

With this command you write all changed data to the INCA process gas analyser. All changes take effect immediately.

The icon 🔀 in the section INCA INFO, Config (see Fig. 5.6) indicates that data have been changed and do not match the data on the INCA process gas analyser. With Write config to INCA you transmit the changes to the device.

The icon for this command is 🔜

INCACtrl V1.03R07 - release candidate		×
File Edit Commands Options		
INFO Device info:	Measure data General Calibration IO config Saved Data Commands	
UNION Instruments Serial number:	Measure state: Total runtime: Time in state: Time remaining in state: Channel: Time till disc. data:	
EIRMWARE VERSIONS	Date/Time: Discont. chols:	
Master (Display): Slave I: Slave II: Slave IV: Slave IV: Slave V: RUNTIME INFORMATION Operation Service Error	Value 1:         Pressure air pump (P1);           Value 2:         Pressure gas pump (P2);           Value 3:         Enclosure temperature:           Value 4:         Pressure ambient / abs.;           Value 5:         Gas cooler temperature:           Value 6:         IR 1 sensor temperature:           Value 7:         IR 2 sensor temperature:           Value 8:         Outer case temperature:           Value 9:         PVM (PI-Ctrl 1 / PI-Ctrl . 2):           Value 10:         Value 10:	HW test
LOGBOOK Messages: 0 Details Errors: 0 Details	☐ Auto read (5 s) ☐ Log data	Read data
COMMUNICATION INFO	COMMUNICATION PROGRESS	
OK - Winsock init (Running)		ABORT
Communication settings: TCP/IP@192.168.115.90	0:10001	09:55:48
	O Config	

FIG. 5.6: INCA INFO, CONTIG

#### 5.4.3 Load config from file

With this command you can read an INCA configuration file into the software INCACtrl.

The icon for this command is

#### 5.4.4 Save config to file

With this command you can save an INCA configuration file on the computer.

The icon for this command is

#### 5.4.5 Change channel / measurement point

This command is only available in multi-channel devices (more than one measurement point) and serves to change the measurement point.

The icon for this command is

#### 5.4.6 Set time

This command will set the internal clock of the INCA process gas analyser to the system time of the computer.

The icon for this command is

#### 5.4.7 Firmware Update

	NOTE
<b>H</b>	Running a firmware update deletes the data (mesurement values) saved in the device!
	Therefore save the measurement values <u>before</u> (see section 5.6.5 Saved Data, page 52).

This command allows performing a firmware update of the INCA process gas analyser.

The icon for this command is 🚟.





A firmware files consists of the name of the version and the file extension .prg, e. g.

• INCABiogasDispAddOn1xx.prg

Make sure only to upload the correct and approved firmware versions. You can get them either from the UNION Instruments GmbH website as download (<u>http://www.union-instruments.com/downloads-uebersicht.html</u>) or directly from a distributor or support technician.

To start a firmware update click the button . A dialogue field appears. Choose the prg-file with the newest version number in its name. Then click **Open**. The firmware update should then start automatically. By looking at the screen of the process gas analyser unit, the user can verify a running update (see **Fig. 5.7**).

COMMUNICATION INFO OK - Data received!	COMMUNICATION PROGRESS	ABORT
Communication (TCP/IP@192.168.115.90:10001) r	unning	13:00:58

Fig. 5.7:Running firmware update

Once the program is completely stored on the device and checksum verification has been passed, the INCA process gas analyser unit will start programming the new firmware into its program flash.

#### 5.5 Main dialogue window – INCA information section

The *INFO* section is a part of the main dialogue window in which important firmware and device data are displayed.



There are <u>five</u> sections within the *INFO* section (see Fig. 5.8).

Fig. 5.8: INFO section in the main dialogue window

#### 1. INFO

- Device Info: device name and type
- Serial number: INCA serial number

#### 2. FIRMWARE VERSION

- Version of the main board (Master (Display), LCD in the door)
- Version of the slaves (IR 1-, EC 1-, and IO-board)

#### 3. RUNTIME INFORMATION

Display of operating mode:

- **Operation:** Normal operating mode
- Service: Service message pending
- *Error:* Error pending

#### 4. LOGBOOK

• Display of errors and messages





## NOTE

The file <u>*CError.h*</u> must be stored in the same folder as <u>*INCACtrl.exe*</u> in order to display the descriptions of messages and errors. Else only the error codes of the messages and errors are displayed.

When you display saved messages or errors in the INCA process gas analyser, you can check them in detail by selecting the corresponding button *Detail*. A window appears (**Message Display** or **Error Display**, see **Fig. 5.9** or **Fig. 5.10**) and displays the corresponding messages / errors with type and date information.

Time	Туре	Message / Event	
07.03.2014 08:00:59	м	0x5005 - EVENT PURGE CALIB STARTED	
07.03.2014 08:36:48	м	0x5006 - EVENT GAS 1 CALIB STARTED	
07.03.2014 09:19:05	м	0x5006 - EVENT GAS 1 CALIB STARTED	
07.03.2014 09:41:05	м	0x5006 - EVENT GAS 1 CALIB STARTED	
07.03.2014 09:57:37	м	0x5006 - EVENT GAS 1 CALIB STARTED	
07.03.2014 10:10:26	м	0x5006 - EVENT GAS 1 CALIB STARTED	
07.03.2014 10:20:28	м	0x500B - MESSAGE ERROR CAL	;
07.03.2014 10:25:25	м	0x5005 - EVENT PURGE CALIB STARTED	
07.03.2014 17:00:02	м	0x5005 - EVENT PURGE CALIB STARTED	
07.03.2014 23:00:12	м	0x5005 - EVENT PURGE CALIB STARTED	
08.03.2014 05:00:22	м	0x5005 - EVENT PURGE CALIB STARTED	
08.03.2014 11:00:25	м	0x5005 - EVENT PURGE CALIB STARTED	
08.03.2014 17:00:26	м	0x5005 - EVENT PURGE CALIB STARTED	
08.03.2014 23:00:40	м	0x5005 - EVENT PURGE CALIB STARTED	L
09.03.2014 05:00:46	м	0x5005 - EVENT PURGE CALIB STARTED	
09.03.2014 11:00:53	М	0x5005 - EVENT PURGE CALIB STARTED	
09.03.2014 18:00:06	м	0x5005 - EVENT PURGE CALIB STARTED	
10.03.2014 00:00:12	М	0x5005 - EVENT PURGE CALIB STARTED	
•			
- Message			
-			
- Message			

Fig. 5.9: Details for messages

	Туре	Error
07.03.2014 10:20:28	CSE	(0x000E) - CH4 - H2S - O2
10.03.2014 11:32:53	Е	0x0335 - SENS PRESS GAS CHNL - chnl. 2
10.03.2014 11:47:55	Е	0x030D - SENS EC PRESSURE AIR
10.03.2014 12:01:31	Е	0x0330 - SENS ABORT CAL AIR PRESS
10.03.2014 12:07:33	Е	0x030D - SENS EC PRESSURE AIR
10.03.2014 12:22:36	Е	0x030D - SENS EC PRESSURE AIR

Fig. 5.10: Details for errors



#### 5. CONFIG

- Display if data have been changed since last reading out the INCA configuration
  - no change of configuration data between PC and INCA
  - configuration data changed on the PC

The displayed data changes tell the user if data on the PC have been changed since the last time they were read out of the device (see **section 5.4.1 Read config from INCA, page 22**). To reset the display to the icon

"no change" 🗹, you must either write the configuration to the INCA



process gas analyser (see section 5.4.2 Write config to INCA, page 22), overwriting the data on the device, or read out the configuration from the analyser again (see section 5.4.1 Read config from INCA, page 22), overwriting the data on the <u>PC</u>.



#### 5.6 Tabs, selection and display

The data received by the INCA process gas analyser can be divided into different data categories. They can be configured within the following tabs:

#### 1. Measure data

Display of current measurement data with the option to display the instrument data in intervals or continuously.

#### 2. General

Measurement settings such as cycle timers, pressure and gas cooler settings and further device configurations.

#### 3. Calibration

Calibration setup information, setting of calibration gas composition and calibration cycle timer settings.

#### 4. IO config

Configuration for measurement data output for display and RS232 output. Also setup for analogue and relay outputs.

#### 5. Saved Data

Display of the saved measurement data of the INCA process gas analyser. Also contains the option for data export into a CSV file.

#### 6. Commands

Control of the device. You can start calibration, initiate a device restart and set service mode.



#### 5.6.1 Measure Data



Fig. 5.11: Tab Measure data

- 1. General information about the measurement cycle as well as information about pump pressure, enclosure temperature and air pressure.
- 2. Read data
- Currently displayed values of the analyser with validity flag (acc. to "IO config")

Data which are marked in orange (see Fig. 5.12) are data of an active calibration.

INCACtrl V1.03R07 - release candidate - DEVE	ELOPER MODE	- <b>-</b> ×
File Edit Commands Options		
INFO Device info: INCA3011 T100-03	Measure data General Calibration IO config Saved Data Commands	
UNION Instruments         0           Serial number:         Cal_HL_15           0000/00.000 (685)         0000/00.000 (685)	Measure state:         KAL. GAS I         Total runtime:           Time in state:         01:33         Time remaining in state:           Channel:         2/2         Time til disc. data:           Device state:         OK - ningina and Data valid;	23:25:11 08:27 00:00 NOT valid
FIRMWARE VERSIONS	Date/Time: Fr 07.03.2014 09:20:38 Discont, chnls:	
Master (Display):         V1.09R08           Slave (IR 1-board):         V1.00           Slave (IC 1-board):         V1.00           Slave (IO 1-board):         V1.00            V1.00            V1.00            V1.00            V1.00            V1.00            V1.00           Operation         Ø           Ø         Service           Ø         Error           Next inspection:         29.07.2014 -> 144 days	CO2 (disc.)*         0.0*/0.0 (4027/4734)         Pressure air pump (P1):           CH4 (disc.)*         0.0*/98.5 (2754/500)         Pressure gas pump (P2):           H25 (disc.)*         0*/22 (393388)         Pressure gas pump (P2):           CH4 (disc.)*         0*/22 (393388)         Pressure anbient / abs.:             Gas cooler temperature:            IR 1 sensor temperature:            IR 2 sensor temperature:                Pressure arbitre:                IR 2 sensor temperature:                PWM (PI-Ctrl 1 / PI-Ctrl. 2):	0.57 mbar 0.08 mbar 26.22 °C 1048/1067.4 mbar () 50.22 °C (28.5%) ()  HW test
LOGBOOK CONFIG Messages: 2 Details	✓ Auto read (5 s) Log data	Read data
COMMUNICATION INFO OK - Communication successful!	COMMUNICATION PROGRESS	ABORT
Communication (TCP/IP@192.168.115.90:10001) f	inished!	09:16:44

Fig. 5.12: Measurement values of a calibration

#### 1. General information

Display of general information about the measurement cycle as well as information about pump pressure, enclosure temperature and air pressure.

With the button *HW test...* you can switch the device into test mode (see Fig. 5.13). This deactivates the automatic control and you can control the modules manually.

Me	easure data Genera	Calibration IO config	Saved Data Commands	
	Measure state: Time in state: Channel: Device status: Date/Time: CO2 (cont.) CH4 (cont.) H2S (disc.)* O2 (cont.)     	MESSEN 02:15:43 1/2 OK - running and Do 20.02.2014 13:25:59 0.0 Vol% 0.0 Vol% 0*ppm 20.8 Vol%    	Total runtime: Time remaining in state: Time till disc. data: Data valid: Discont. chnis: Pressure air pump (P1): Pressure gas pump (P2): Enclosure temperature: Pressure ambient / abs.: Gas cooler temperature: IR1 sensor temperature: IR2 sensor temperature: Outer case temperature: PWM (PI-Ctrl 1 / PI-Ctrl. 2):	03:41:58 00:00 05:42 valid NOT valid 0.34 mbar 0.59 mbar 30.32 ℃ 998/1017.3 mbar () 50.23 ℃ (26.0%) ()  HW test
			Auto read (5 s)	Read data

Fig. 5.13: Tab Measure data



#### 2. Read data

With the button *Read data* you can read frame-specific data manually (see Fig. 5.14). Once the data are read in, the dialogue window is automatically updated.

Log data
----------

Fig. 5.14: Reading the data with Read data / Auto read (5 s)

If you select **Auto read (5 s)**, the data in the tab are automatically read and displayed every 5 seconds. This enables comfortable reading of the data on the PC. The user does not need to view the display on the INCA process gas analyser and browse through different screen contents.





#### 3. Current values

Currently displayed values of the analyser with validity flag (acc. to "IO config").

#### 5.6.2 General

In the General tab, you can configure general settings for the measurements with the INCA process gas analyser.

Depending on device type (*continuous / discontinuous measurement*), the display on this tab and the configuration options vary.

In both cases, the tab is divided into three sections (see Fig. 5.15 and Fig. 5.16):

- Hardware Setting
- Device Setting
- Measure Cycle Timer

- MEASURE CYCLE TIMER	t		HARDWARE SETTING		
	Every Duratio	n		ľ	
Purge gas:	0 300	s	Min. pressure gas pump:	0.05 mbar	
Drain condensate:	0 60	s	Min. pressure air pump:	0.05 mbar	
Change channel:	0 60	s	Gas cooler temperature:	10 •	
Measurement:	0 540	s	Gas cooler temperature:		
			Number of active channels:	2 🔻	
Calibration purge gas:	600	s		every	
Calibration gas I:	600	s	H2S measurement:	1 cycles	
Calibration gas II:	600	s	Save measurement:	1 cycles	
DEVICE SETTING		_			
Language:	German	•	Unit setting for Hi and Wi:	kWh/m3 ▼	
Password:			Calc. CO2-value:		
Stop INCA when error li	ist full:				
				Read data	

Fig. 5.15: Tab General, discontinuous measurement

**1.** Hardware Setting

3. Measure Cycle Timer

2. Device Setting

32



	Measure data General	Calibration	IO con	fig S	Gaved Data Commands		
3	 - MEASURE CYCLE TIMER	Every	Duration		HARDWARE SETTING		1
	Discont.	900	300	s	Min. pressure gas pump:	0.05 mbar	
	Drain condensate:	600	60	s	Min. pressure air pump:	0.05 mbar	
	Save data:	900	0	s	Gas cooler temperature:	10 °C	
	Check pressures:	000	0	s	Number of active channels:	2 🔻	
	Calibration purge gas: Calibration gas I:		600 600	s s	H2S measurement:	every 1 cycles	
	Calibration gas II:		600	s	Save measurement:	1 cycles	
	DEVICE SETTING						2
	Language:	German	•		Unit setting for Hi and Wi:	kWh/m3 👻	
	Password:		•		Calc. CO2-value:		
	Stop INCA when error l	ist full:					
						Read data	

Fig. 5.16: Tab General, continuous measurement

1. Hardware Setting

3. Measure Cycle Timer

2. Device Setting

#### 1. Hardware Setting

In this section you can configure different hardware specific settings.

#### • Min. pressure gas pump

Determines the threshold that triggers an error if the pump pressure at the end of a Change channel cycle (discontinuous measurement) or after Check pressure (continuous measurement) is below the set value.

• Min. pressure air pump

Determines the threshold that triggers an error if the pump pressure at the end of a Change channel cycle (discontinuous measurement) or after Check pressure (continuous measurement) is below the set value.

*Gas cooler temperature* If a gas cooler is installed, the temperature of the gas cooler is set to this value.





#### Number of active channels

In multi-channel devices, you can select the number of active channels here. If only one measurement channel is available, no change is possible.

#### • H2S measurement

To increase the lifetime of electrochemical (EC) sensors, you can specify only to measure every x measurement cycle using the EC sensors. If the value is set to 1, every cycle an EC measurement is performed as well. If the value is higher than 1, then the data from the last measured cycle is used to display values and output data. This option is only enabled and activated for  $\mu$ Pulse<sup>TM</sup> EC-sensors (such as the H<sub>2</sub>S sensor).

#### • Save measurement

In a continuous measurement, the customer can specify with this option after which number of cycles the measurement values are saved. Entering 1 means that the data are saved after each cycle.

## Attention

If both <u>H2S measurement</u> and <u>Save measurement</u> are e.g. set to 4 cycles (see section 5.6.2 General, page 32), it is not sure that the current measurement value is displayed because these two functions are <u>not synchronised</u>.

#### 2. Device Setting



- Language
  - Sets the language on the display of the INCA process gas analyser

#### Password

Here the user can specify a password to prevent input directly on the device.

The password is considered active if a value higher than zero is entered and written to the instrument. Values from 1 - 9999 are possible. The system can still be configured via the PC with this option.





## NOTE

#### Forgot your password?

By entering 0 you can reset the password.

#### • Calc. CO2-value

Activates the  $CO_2$  scaling, no directly measured  $CO_2$  value is displayed. The  $CO_2$  value is derived from the other measured parameters (CH<sub>4</sub>, H<sub>2</sub>S, O<sub>2</sub>, H<sub>2</sub>).

After activating this function, the changed configuration must be transferred to the device using "Write config to INCA".



LX

## NOTE

The option Calc. CO2-value is only enabled if a CO₂ sensor is installed in the INCA process gas analyser.

#### 3. Measure Cycle Timer

This section serves to set the timer values of the different cycles for the running system. The time (in seconds) defines how long the INCA process gas analyser will last in the state before moving on. For an explanation of the states, please see the INCA process gas analyser device manual.

## NOTE

Depending on device type (<u>continuous / discontinuous measurement mode</u>), the configuration options of the two measurements types vary (see Table 1).

Table 1 lists the configuration options for the continuous and the discontinuous measurement mode.

The marker  $, \bullet$  "indicates a factory setting which can not be configured by the user.

Settings with  $\checkmark$  can be configured by the user.

Options marked with "—" are not present in the respective measurement mode.



Measurement mode Function / Option	Continuous	Discontinuous
Purge gas (Spülgas)	_	✓ (Duration)
Discont.	✓ (Every)	_
Drain condensate	•	•
Channel change	-	•
Save data	•	-
Measurement	-	•
Check pressure	•	•
Calibration purge gas, gas I, gas II	•	•

 Table 1 Configuration options in continuous or discontinuous measurement mode

#### • Purge gas

Purge gas (air) is pumped through the system to clean out the system from process gas of the previous measurement. The user can set the duration of this cycle.

• Discont.

Measurement of  $H_2$  and  $H_2S$  can only be done in the discontinuous process.

Thus, with a device type with continuous measurement mode the user can specify the cycle when  $H_2$  and  $H_2S$  are to be measured. The duration of the measurement is a password-protected setting and can only be configured by the developers of Union Instruments GmbH.

#### • Drain condensate

If the system has a gas cooler, the pump will run during that cycle to drain the condensate from the gas cooler.

#### • Channel change

The system starts and guides the process gas of the active channel through the system. This allows the pumps to build up pressure and the process gas can reach the sensors before the measurement is started. At the end of this cycle the pressure of the gas pump and air pump is checked and if either one is below its minimum set pressure, an error is generated and stored in the error list.

#### Save data

Duration after which the measurement values are present and can be saved.

#### • Measurement

Cycle in which the measurement is performed with the current set channel. The display times and output times of the measured values can be adjusted in the tab "IO config". At the end of this cycle, the measurement data are stored and can also be displayed until the next measurement cycle has finished.

#### • Check pressure

Cycle after which the pressure is checked.



#### • Calibration purge, gas I und gas II

To set the duration of a calibration with the specified gas. A calibration can be set up to start either automatically or manually through the display menu commands.

#### 5.6.3 Calibration

In the tab Calibration the user can set up the INCA process gas analyser for automatic or manual calibration with the purge gas (usually air and/or a calibration gas). Depending on the device type, there can be an option to add another calibration gas. For a calibration three basic steps need to be done:

- 1) Edit the gas composition of the gas (gas and concentration)
- 2) Edit the calibration settings for the gas (Zero point, end point (Span) and centre (Mid/Mixer).



3) Start the calibration manually (command in the screen menu or in tab Commands in INCACtrl) or automatically (configurable with INCACtrl).

You perform the first two steps in the section **GAS COMPOSITION AND CALIBRATION SETTING**, the third step can be configured under **CALIBRATION INTERVALS** (see Fig. 5.17).





	Measure data General Calibration IO config Saved Data	Commands
	GAS COMPOSITION AND CALIBRATION SETTING	CALIBRATION DATA
4	Set gas composition of: Purge gas	Sensor: CO2
	Set gas composition of: CalibGas I	Save all
	Set gas composition of: CalibGas II	Load all
	Calibration settings (all gases): Calibration settings	Show data
	CALIBRATION INTERVALS	CALIBRATION ERROR CHECK
	Calibrate after purge gas cycle:	Expert mode (no check):
	Calibrate with Purge gas: every 6 hours 👻	Factory mode:
	Calibrate with Calib. gas I: every OFF 🔹 🛞	Activate CO2 auto-cal.:
2	Calibrate with Calib. gas II: every OFF 🔍 🛞	
5		
		Read data

Fig. 5.17: Calibration tab frame

- 1. Calibration Data
- **2.** Calibration Error Check
- 3. Calibration Intervals
- **4.** Gas Composition and Calibration Setting

The button *Read Data* is designed for factory settings only.

	NOTE
	If errors or faults occur during calibration, you can find a more specific description of the error in the document <i>Quick guide INCA – error and service messages</i> .
	You can download it together with the zip-file <i>INCA (Pack: Software/Firmware)</i> from the download page of Union Instruments GmbH at your own pace: <a href="http://www.union-instruments.com/downloads-uebersicht.html">http://www.union-instruments.com/downloads-uebersicht.html</a> .



#### 1. Calibration Data

After selecting a sensor, the actually calibration data can be viewed via the button *Show data* (see Fig. 5.18).



Fig. 5.18: Calibration Data, Show data

With the button *Save all* you can save the calibration data of all sensors in one file.

With the button *Load all* you can read the saved calibration data from a file into INCACtrl. You can then view the loaded calibration data, a <u>transfer</u> to the INCA process gas analyser is <u>not possible</u>.

2. Calibration Error Check

The options <ul> <li>Factory mode</li> </ul>		NOTE
• Activate CO2 auto-cal. are password-protected factory settings and can only be edited by developers of UNION Instruments GmbH.	EF.	<ul> <li>The options</li> <li>Factory mode</li> <li>Activate CO2 auto-cal.</li> <li>are password-protected factory settings and can only be edited by developers of UNION Instruments GmbH.</li> </ul>

• Expert mode (no check)

By *activating* the option *Expert mode (no check)*, the settings of the calibration actions are not monitored by the software. In case of strong deviation of the measured gas concentration from the rated value, the calibration points are set nonetheless.



The selection of the calibration points in the dialogue window *Calibration Setting* (see Fig. 5.21, page 43) is not limited, i.e. the use can select the respective calibration points of the gases. <u>But only one calibration point can be set per gas.</u>



#### If the option

Expert mode (no check)

is activated, there is a risk of *faulty calibrations*!

Output of correct measurement values can then no longer be ensured!

If *Expert mode (no check)* is *deactivated*, the possible calibration points of the gases are firmly specified. The user can only select one calibration point per gas so that faulty calibration is not possible.



#### 3. Calibration Intervals

#### • Calibrate after purge gas cycle

If this checkbox is marked, a purge gas calibration is done automatically after each purge gas cycle in normal measurement mode.

With this setting, the sensors can be set to 0 after each measurement cycle or the end point for  $O_2$  can be specified.

#### Calibrate with Gas I

This option sets up an automatic calibration for the INCA process gas analyser. If this is activated a calibration with gas I is performed automatically in the set time intervals.

In addition, the user can select the time for calibration using the button

in the dialogue window **Calibration Time Setting**. With an hourly interval (X hours), minutes can be set as the time, with daily interval (X days) the hour and minute and in case of a weekly interval (X weeks) the day of week, hour and minute. The options are listed in **Table 2, page 41**.



Time setting Interval	Minute	Stunde	Tag
hour	Х		
days	Х	X	
weekly	X	X	Х

Table 2 Setting options for time of calibration,Calibration Time Setting

**Fig. 5.19** shows an example for a weekly interval. The calibration with the calibration gas Calib. I is done every Monday at 15:25 h.

e Edit Command	s Options					
h 🏪 💿 🖬						
INFO	Device info:	Measure data	General Calibration	IO config Saved Data	Commands	
±Um	INCA3011 T100-03	-GAS COME		TION SETTING	CALIBRATION DATA	
UNION	0	GAD COM	COTTON AND CALIDICA		CALIDICATION DATA	
mstruments	Serial number:	Set gas o	composition of:	Purge gas	Sensor: CO2	-
	Cal_HL_15	Set gas o	composition of:	CalibGas I	Save	all
	0000/00/000 (685)	Set osc	composition of	Calib -Cas II		
Master (Display)	V1.09P08	Set gas t	omposition on.	Calib. Gas II	Ludu	
Slave (IR 1-board):	V1.08	Calibratio	on settings (all gases):	Calibration settings	Show d	lata
Calibration Time Set	tur: Minute: 15 V 25 V Close	CALIBRAT Calibrate Calibrate Calibrate	ION INTERVALS after purge gas cycle: with Purge gas: e with Calib. gas I: e with Calib. gas II: e	every 6 hours * 0 every 1 week © every OFF * ©	CALIBRATION ERROR C Expert mode (no check): Factory mode: Activate CO2 auto-cal.: Read	data
Errors: 0 D	etails		TON DO CODECC			
DK - Communication suc	ccessful!	COMMUNICA	TION PROGRESS			ABORT

Fig. 5.19: Calibration Time Setting, time of calibration

• Calibrate with Gas II

Identical to Calibrate with Gas I, but not given with every device type.

NOTE
<ul> <li>The options</li> <li>Calibrate after purge gas cycle</li> <li>Calibrate with Purge gas</li> <li>are password-protected and can only be configured by developers of UNION Instruments GmbH.</li> </ul>



#### 4. Gas composition and Calibration setting

NOTE
CalibGas II is an option for INCA process gas analysers with an additional calibration gas inlet.
The option
Purge gas
is password-protected and can only be configured by developers of UNION Instruments GmbH.

Calib.-Gas I, Calib.-Gas II
 Here you can set the gas composition of the selected gas. An additional dialogue window will open automatically.
 In this dialogue window, the user must enter the Actual values (values on the gas certificate) of the gas composition of the selected gas of the mixed gas (see Fig. 5.20).





	commands Optio	NS							
NFO	omposition: Calib.	Gas I			×	Calibration	IO config Saved Data	Commands	
		Gas:	Conc.:	Unit:		D CALIBRA	TION SETTING	CALIBRATIO	N DATA
Instrumer	Component 1:	CH4 4.4 🔻	100	Vol%	•	1	Purge gas	Sensor:	CO2 🔻
	Component 2:	H2S 🔻	25	ppm	•	8	CalibGas I		Save all
IRMWAR	Component 3:	OFF -	0	Vol%	-	1	CalibGas II	J	Load all
Master (C	Component 4:	OFF -	0	Vol%	-	gases):	Calibration settings	1	Show data
Slave (IR Slave (EC	Component 5:	OFF -	0	Vol%	-	3,-		J	
Slave (IC	Component 6:	OFF -	0	Vol%	-	LS		CALIBRATIO	N ERROR CHECK
						gas cycle:		Expert mode	(no check):
			ſ	Close		as:	every 6 hours 🔻 🦉	Factory mod	e:
🔘 Ope						as I:	every OFF 🔻 🖉	Activate CO2	2 auto-cal.:
Service			_	calibrate.	man Gallo	gas II:	every OFF 👻 🙆	2	
Error									
Next inspect	ion: 29.07.201	4 -> 153 days							
OGBOOK		CONFIG	511						Read data
Messages: Frrors:	10 Details	1	•						
	TION INFO		COM	MUNICAT	ION PRO	RESS			
.OMMUNICA									

Fig. 5.20: Dialogue window Composition Calib. Gas I (using the example mixed gas  $CH_4$  and  $H_2S$ , purity 3.5)

Calibration Setting					_	-	- 1				x
CALIBRATION G	AS 0 / P	URGE G	AS								
CO2 Zero:	CH4	H2S	02								
Mid/Mixer:											
CALIBRATION G	AS I										
CO2 Zero: 🔽 Span: 🗌 Mid/Mixer: 🗌	CH4	H2S	O2								
CALIBRATION G	AS II										
CO2 Zero: Span: Mid/Mixer:	CH4	H2S	02    								
										Close	

Fig. 5.21: Dialogue window Calibration setting (using the example mixed gas CH₄ and H₂S, purity 3.5)

**Fig. 5.21** shown an example for the settings of a calibration with  $CH_4$  and  $H_2S$ . When the calibration starts, the system calibrates zero points (Zero) for  $CO_2$  and  $O_2$  and end oints (Span) for  $CH_4$  and  $H_2S$  at the end of the calibration cycle.





A running calibration can be interrupted or stopped any time. To do so, select the command Abort calibration in the screen menu at the device or go to tab Commands and click the button Abort calibration (see **Fig. 5.22**).

Measure data General Calibration	IO config Saved Data	Commands	
SYSTEM	MEASUREMENT/SERVIC	E	
Clear messages	Measurement (stream):	1 -	Start Stop
Restart system	Service mode:		OFF Set 1 h
Reset statemachine	Startup mode (readings online):		OFF On
Next state	Service check OK:		Check OK
CALIBRATION	SENSORS		
Start calib. purge gas	Select sensor:		CO2 -
Start calibration gas I	Sensor to reset:		Reset to factory
Start calibration gas II	Sensor serial no.:	ABC0797G	Set serial
Abort calibration	Reset cal. times (all sen	sors):	Reset cal. times

Fig. 5.22: Cancelling a calibration in the tab Commands

#### 5.6.4 Tab IO Config

Within this tab frame the possible data output options of the INCA process gas analyser can be configured.

The tab is divided into three sections (see Fig. 5.23)

	Measure data   General   Calibration   IO config   Saved Data   Commands	
	DISPLAY / RS232 OUTPUT	1
	Hold values (use saved values): Display auto change (5 sec):	
	Display actual measured data while 290 Max.value for display OFF: entering state (in seconds):	
	RS232 auto output: OFF  Fallback baudrate: 9600 (Anybus)	
	ANALOG OUTPUT RELAY OUTPUT	
3 🗕	Activate outputs (all):	2
	K1 - K3           Settings           K4 - K11	
	Read data	

Fig. 5.23: Tab IO Config

- 1. Display / RS232 Output
- 3.
- 2. Relay Output

3. Analog Output

#### 1. Display / RS232 output

Here you can configure the data output on the display and the RS232 output. The data of these two outputs is always the same.

	NOTE
FF	For detailed information about the connection and communication with the INCA process gas analyser refer to the document <i>Quick start guide INCA – communication</i> .
	You can download it together with the zip-file <i>INCA (Pack: Communication)</i> from the download page of Union Instruments GmbH at your own pace: <a href="http://www.union-instruments.com/downloads-uebersicht.html">http://www.union-instruments.com/downloads-uebersicht.html</a> .

• Hold values (use saved values) only for factory settings.



- **Display actual measured data while measuring** only for factory settings.
- Display auto change (5 sec)
   The display content on the INCA process gas analyser changes every 5 seconds
- *Max. Value for Display OFF* only for factory settings.
- RS232 auto output:

Activates the output of the currently measured data and system information through the RS232 interface. If activated, the data are sent every 15 seconds. Deactivated (**OFF**) is the default setting.

An optionally available Profibus module can make these data available in a Profibus system, or else the data are directly interpreted by reception and analysis. A separate document is available for interpretation (see document Quick guide INCA communication).

#### • Fallback baudrate

Setting to reduce the transfer rate to a speed that ensures error-free reception.

#### 2. RELAY OUTPUT

Relay output can be configured in this scope.

A **relay (electric)** is a switch with two positions. The relay is activated by a control circuit and can switch other circuits.

The possible commands (see **Trigger type Fig. 5.25**, **page** 50), which can be set via the software INCACtrl, are listed in **Table 3** below with a short description.

Command (Trigger type)	Meaning / Description
OFF	Relay has no function.
Alarm – Iow	Active if it falls below the set alarm threshold for the gas concentration (e.g. $CH_4 < 47$ Vol%).
gas value	This relay function can be set channel-specific.
Alarm – high gas value	Active if it exceeds the set alarm threshold for the gas concentration (e.g. $O_2 > 3$ Vol%).
	This relay function can be set channel-specific.
Error list full	Active if the error and message list is full (40 errors). Older errors are then always deleted when a new error occurs.
INCA calibrating	Active if calibration active (purge gas), Calibgas 1 and Calibgas 2 (CalibGas 1 / Gas 2).

Command (Trigger type)	Meaning / Description
Internal case temp. above	Active if the inner temperature of the enclosure exceeds the set threshold value.
Internal case temp. below	Active if the inner temperature of the enclosure falls below the set threshold value.
INCA operation	Active if the INCA process gas analyser is in operation mode (no error, no warmup).
INCA failure	Active if the INCA process gas analyser has a fatal error and the measurement procedure is stopped.
Service request 1	<ul> <li>Active if one of the set service requests takes place.</li> <li>→ Dialogue window Service-Request setting (see Fig. 5.26, page 50).</li> </ul>
Service request 2	Active if one of the set service requests takes place. → Dialogue window Service-Request setting.
Measure data valid	Active if measurement data on mA-outputs, on the display and on the field bus are "online" or being updated with new data. Only active if both <u>discontinuous and continuous</u> measurement parameters are online. This relay function can be set channel-specific.
EC measurement started	Active if discontinuous EC measurement is active and measuring.
PI-control temp. 1 (PMW)	PI-contoller 1 (e. g. for a heater control)
PI-control temp. 2 (PMW)	PI-contoller 2 (e. g. for a heater control)
Channel valve active	Active if the valve of a specific channel is open. This relay function can be set channel-specific.



Command (Trigger type)	Meaning / Description
Error (fatal, device, cal., service)	<ul> <li>Active of service and / or service messages of type</li> <li>global error</li> <li>device error, sensor error</li> <li>calibration error</li> <li>service request</li> <li>are pending.</li> <li>(see Quick guide INCA – error and service messages)</li> </ul>
Error (device, cal., service)	<ul> <li>Active of service and / or service messages of type</li> <li>device error, sensor error</li> <li>calibration error</li> <li>service request</li> <li>are pending.</li> <li>(see Quick guide INCA – error and service messages)</li> </ul>
Error (cal., service)	<ul> <li>Active of service and / or service messages of type</li> <li>calibration error</li> <li>service request</li> <li>are pending.</li> <li>(see Quick guide INCA – error and service messages)</li> </ul>
Error (device)	<ul> <li>Active of service and / or service messages of type</li> <li>device error, sensor error</li> <li>are pending.</li> <li>(see Quick guide INCA – error and service messages)</li> </ul>
Online data (cont. readings)	Active if measurement data on mA-outputs, on the display and on the field bus are "online" or being updated with new data. (only continuously measuring measurement parameters, see type plate) This relay function can be set channel-specific.

Command (Trigger type)	Meaning / Description
	Active if measurement data on mA-outputs, on the display and on the field bus are "online" or being updated with new data.
Online data (discont. readings)	(only discontinuously measuring measurement parameters, see type plate)
	This relay function can be set channel-specific.

Table 3 Settings for relay functions, Trigger type

#### • Activate outputs (all)

So far only two relays are active. Relay 1: is set if the INCA process gas analyser is running (after the warm-up phase) Relay 2: is set if a fatal error occurred Relay 3: configurable output

#### • K1 – K3

The menu *Relay Settings* offers customized configuration of the three digital outputs (see Fig. 5.24).

The available commands (**Trigger type**, see **Fig. 5.25**, **page 50**) are listed in **Table 3**, **page 49**.

	Device info: INCA3011T100-03 0	Measure d	ata General Y / RS232 OU	Calibration	n IO config	Saved Data	a Commands	inge (5 sec):	
Bolow	S	Channels	(com	Values	Unite	Switching	Invert	play OFF:	
K1:	INCA operation -	akt	H2S -	Value.	DDm -	0	ouput.		
к2:	INCA failure 👻	akt. 👻	H2S -	0	ppm v	- 0			
кз:	OFF •	akt. 👻	H2S -	0	ppm	r] 0			
	Service request settings I	PI-control te	mperature 1	]					
	Service request settings II	PI-control te	mperature 2	]				ts (all):	
							Close	K1-	КЗ К11
SET IL IN	8 Details							Read	d data

Fig. 5.24: Dialogue window Relay Settings





Relay:	Trigger type:	Channel	:	Gas:	Value:	Unit:		Switching delay [s]:	Invert output:
K1:	Alarm - high gas value	- akt.	-	02	- 6	Vol%	-	0	<b>V</b>
K2:	OFF Alarm - low gas value	akt.	-	H2S	7	ppm	-	0	<b>V</b>
K3:	Alarm - high gas value	akt.	-	CH4	- 0	Vol%	-	0	
	INCA calibrating Internal case temp. above Internal case temp. below INCA operation INCA failure	PI-cor PI-cor	ntrol te	mperature 1 mperature 2					
	Service request I Service request II								Close
	Measure data valid EC measurement started PI-control temp. 1 (PWM)								CIUSC





Fig. 5.26: Dialogue window Service-Request setting

• K4 – K11

The menu *Add-On Relay Settings* offers customized configuration of the optional additional relays K4 – K11 (see **Fig. 5.27**).



K4:		Contract In Party		Gas:		Value:	Unit:		delay [s]:	output:		<i>(</i> <b>-</b> )	
	Channel valve active	Kanal 1	•	CH4	-	50	Vol%	-	0			nange (5 sec): display OFE:	
K5:	Channel valve active 🔹	Kanal 2	•	02	-	0	Vol%	-	0		_ 1		
К6:	Measure data valid 🔹	Kanal 1	•	CO2	-	0	Vol%	-	0				
K7:	Measure data valid 🔹	Kanal 2	-	CO2	-	20	Vol%	-	0				
K8:	OFF -	akt.	-	CO2	-	0	Vol%	-	0				
К9:	OFF -	akt.	-	CO2	-	0	Vol%	-	0				
K10:	OFF -	akt.	-	CO2	-	0	Vol%	-	0		PI	л	
K11:	OFF -	akt.	-	CO2	-	0	Vol%	-	0		t	puts (all):	<b>V</b>
	Service request settings I	PI-contr	ol te	mperature	1							К (к1-	K3
	Service request settings II	PI-contr	ol te	mperature	2								K11

Fig. 5.27: Settings of the optional relays K4 to K11Add-On Relay Settings

#### 3. Analog output

In this scope the analogue output can be configured.

#### • Settings

If an analogue output module is installed in the INCA process gas analyser, the configuration of these outputs can be easily done through the dialogue window **Analog Output Settings** (see **Fig. 5.28**). Every signal can be activated or deactivated with the channel selection boxes. If **curr.** (for current measured channel) is chosen, the data is output according to the above settings no matter which channel is measuring. If a channel does not measure actively, the last measured and saved measurement value is issued.

	Channel:	Source:	Unit:	Type:	Range from:	Range to:	
Output no. 1:	akt. 🔻	• CO2 •	Vol% -	4-20mA 💌	0	100	
Output no. 2:	akt. 🔻	ОН4 🔻	Vol% 🔻	0-20mA 🔻	0	100	ata Commands
Output no. 3:	Kanal 1	H2S -	ppm -	4-20mA 🔻	0	2000	
Output no. 4:	AUS 🔻	02 -	Vol% ~	4-20mA 👻	0	25	Display auto change (5 sec):
Output no. 5:	AUS	CH4 -	Vol% ~	0-20mA 👻	0	0	Max.value for display OFF:
Output no. 6:	AUS	CH4 -	Vol% ~	0-20mA 👻	0	0	
Output no. 7:	AUS	CH4 -	Vol% -	0-20mA 👻	0	0	
Output no. 8:	AUS	CH4 -	Vol% -	0-20mA 👻	0	0	
							Activate outputs (all)
Operation Service Error ext inspection: GBOOK	29.07.2014	-> 152 days CONFIG			K	Settings	Activate outputs (all):

Fig. 5.28: Analog Output Settings



#### 5.6.5 Saved Data

The measurement data saved in the INCA process gas analyser can be displayed in the software INCACtrl (see **Fig. 5.29**).

Saved data         Data viewer and data export           Kanal 1         ■           Timestamp         CO2         CH4         H2S         O2         F           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:43         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:45         0.0 Vol%         0.0 Vol%         0.0 Ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0.0 Ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0.0 Ppm         20.9 Vol% <th>t settings:</th>	t settings:
Channel selection:         Data viewer and data export           Kanal 1         Settings           Timestamp         CO2         CH4         H2S         O2         F           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:43         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 13:15         0.0 Vol%         0.0 Vol%         0 ppm         2	t settings:
Kanal 1         Settings           Timestamp         CO2         CH4         H2S         O2         F           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:43         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:43         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:40         0.0 Vol%         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014	
Timestamp         CO2         CH4         H2S         O2         Fill           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 09:28         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 10:10         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:10         0.0 Vol%         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         <	
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26.02.2014 11:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 11:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0	0.17 mbar
26.02,2014 11:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02,2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02,2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02,2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02,2014 13:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0	0.15 mbar
26.02.2014 12:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 12:45         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0           26.02.2014 13:15         0.0 Vol%         0.0 Vol%         0 ppm         20.9 Vol%         0	0.15 mbar
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Lefe Liber 1 and 1	0.16 mbar
26.02.2014 13:45 0.0 Vol% 0.0 Vol% 0 ppm 20.9 Vol% 0	0.16 mbar
26.02.2014 14:15 0.0 Vol% 0.0 Vol% 0 ppm 20.9 Vol% 0	0.15 mbar 🏾 🍸
< III	•
Save DAT Load DAT Export CSV	Read data

Fig. 5.29: Tab Saved Data

#### Channel Selection

Selection of the measurement channel

• Data Viewer and data export settings The button Settings opens the dialogue window Save Data Settings (see Fig. 5.30). Here you can select which measurement values are displayed.

#### Save DAT

Saves measurement data from the INCA process gas analyser as a file in the INCA file format on your computer.

Load DAT

Loads saved data from INCA file for display in INCACtrl software.

#### • Export CSV

Saves measurement values of the INCA process gas analyser to a CSV file, e.g. to be edited in MS Excel.

Read Data

After selecting the corresponding channel (*Channel Selection*), you can select the button *Read Data* to load the saved measurement values of this channel from the INCA process gas analyser.

± UNION Instruments

INCACtrl V1.03R07 -	release candidate	And	
File Edit Commands	s Options		
🖳 🎦 🔒	‡∃ ⊕ ¥2.00		
INFO	Device info:	Measure data General Calibration IO config Saved Data Command	s
HUM I	INCA3011 T100-03		
UNION	0	Saved data	
Instruments		Channel selection: Data viewer and da	ata export settings:
	Serial number:	Kanal 1 👻 Settings	
	Cal_HL_15		
	0000/00/000 (685)	Meas. ID Timestamp CO2 CH4 H2S	O2 P ^
FIRMWARE VERSIONS		0 26.02.2014 09:28 0.0 // 0 0.0 Vol% 0 ppm	20.9 Vol% 0 ≡
Master (Display):	V1.09R08	1 26.02.2014 09:43 0.0 vol% 0.0 Vol% 0 ppm	20.9 Vol% 0
Cours Data Catting		0.0 Vol% 0 ppm	20.9 Vol% 0
save Data Settings		0.0 Vol% 0 ppm	20.9 Vol% 0
Cottings		0.0 Vol% 0 ppm	20.9 Vol% 0
Setungs		0.0 Vol% 0 ppm	20.9 Vol% 0
Gases:	Addition	I values: 0.0 Vol% 0 ppm	20.9 Vol% 0
CO2	V Mea	ID EC pulse 0.0 Vol% 0 ppm	20.9 Vol% 0
CH4	🔽 Time	tamp 0.0 Vol% 0 ppm	20.9 Vol% 0
V H2S	V P(ga	0.0 Vol% 0 ppm	20.9 Vol% 0
V 02	V P(air	0.0 Vol% 0 ppm	20.9 Vol% 0 🔨
	V P ab		4
	🔽 T ca	•	
	V T ou		
	I IR	Load DAT Exp	ort CSV Read data
	T co		incod data
	V EC c	nsity	
-			
Check all	Jncheck all	Close	ABORT
			10:51:27

Fig. 5.30: Save Data Settings

If data are <u>marked in orange</u>, they are data of a calibration done in the active *Expert mode* (see section 5.6.3 Calibration, Calibration Error Check, page 37) (see Fig. 5.31).

ile Edit Commands	s Options 1 ∃ ⊕ ¥2.00 1 3 0						
	Device info: INCA3011T100-03 0 Serial number: Cal_HL_15	Measure data Saved data Channel sel Kalibrierun	General Calibration ection:	IO config Sa	Data viewer and data e	export settings:	
	0000/00/000 (685)	Meas. ID	Timestamp	Calinput	CO2	P(gas)	1
FIRMWARE VERSIONS	V1 000 00	0	07.03.2014 08:10	KAL. SPÜLGAS	0.0 (0.0) Vol%	0.08 mbar	
Master (Display):	V1.09R08	1	07.03.2014 08:46	KAL. GAS I	ZERO 0.0 (0.0) Vol%	0.07 mbar	1.1
Slave (IR1-board):	V1.08	2	07.03.2014 09:29	KAL. GAS I	0.0 (0.1) Vol%	0.08 mbar	1 =
Slave (EC1-board):	V1.00	3	07.03.2014 09:51	KAL. GAS I	0.0 (0.0) Vol%	0.08 mbar	1
Slave (IO-board):	V1.08	4	07.03.2014 10:07	KAL. GAS I	ZERO 0.0 (0.0) Vol%	0.08 mbar	1
		5	07.03.2014 10:20	KAL. GAS I	ZERO 0.0 (0.0) Vol%	0.08 mbar	1
		6	07.03.2014 10:35	KAL, SPÜLGAS	0.0 (0.0) Vol%	0.08 mbar	1
RUNTIME INFORMATION	N	7	07.03.2014 17:10	KAL. SPÜLGAS	0.0 (0.0) Vol%	0.08 mbar	1.1
Operation		8	07.03.2014 23:10	KAL. SPÜLGAS	0.0 (0.0) Vol%	0.09 mbar	1
		9	08.03.2014 05:10	KAL, SPÜLGAS	0.0 (0.0) Vol%	0.08 mbar	1.1
Service		10	08.03.2014 11:10	KAL, SPÜLGAS	0.0 (0.0) Vol%	0.09 mbar	1 -
Error		•					P
Next inspection: 2	9.07.2014 -> 141 days						
LOGBOOK Messages: 19 De Errors: 1 De	conFIG etails			Save DAT	Load DAT Export (	CSV Read of	lata
COMMUNICATION INFO		COMMUNICATI	ON PROGRESS				
01. Commission from and							RODT

Fig. 5.31: Measurement values of a calibration in Saved Data with activated Expert mode

If the displayed data are <u>marked red</u>, an error has occurred during calibration (see **Fig. 5.32**). Reasons for this could be a manual cancelation by the user or a fault / an error (see document **Quick guide INCA - Error and service messages**).





INCACtrl V1.03R07 - release candidate - DEVE	LOPER MODE	_ <b>_</b> ×
File Edit Commands Options		
📑 🎦 🖬 🖬 🏦 🖓 🚟		
INFO Device info: INCA3011T100-03 0 Serial number:	Measure data General Calibration IO config Saved Data Commands Saved data Channel selection: Data viewer and data exp Kalibrierung	ort settings:
Cal_HL_15 0000/00/000 (685)	CH4 H2S 02	P(gas)
FIRMWARE VERSIONS           Master (Display):         V1.09R08           Slave (R1-board):         V1.08           Slave (E1-board):         V1.00           Slave (I0-board):         V1.08	ZERO 0.0 (0.0) Vol%         ZERO 0 (0) ppm         SPAN 20.9 (21.           %         SPAN 100.0 (93.1) Vol%         SPAN 27 (31) ppm         ZERO 0.0 (0.0)           SPAN 90.0 (99.8) Vol%         SPAN 27 (27) ppm         ZERO 0.0 (0.0)           SPAN 70.0 (90.0) Vol%         SPAN 27 (27) ppm         ZERO 0.0 (0.0)           %         SPAN 100.0 (70.1) Vol%         SPAN 27 (27) ppm         ZERO 0.0 (0.0)           %         SPAN 100.0 (70.1) Vol%         SPAN 27 (27) ppm         ZERO 0.0 (0.0)           %         SPAN 100.0 (0.0) Vol%         SPAN 27 (0) ppm         ZERO 0.0 (0.0)	0) Vol% 0.08 m Vol% 0.07 m Vol% 0.08 m Vol% 0.08 m Vol% 0.08 m U) Vol% 0.08 m
RUNTIME INFORMATION Operation Fehler Service Error Next inspection: 29.07.2014 -> 144 days	۲۱	Þ
LOGBOOK CONFIG Messages: 7 Details Errors: 1 Details	Save DAT Load DAT Export CSV	/ Read data
COMMUNICATION INFO OK - Communication successful!	COMMUNICATION PROGRESS	ABORT
Communication (TCP/IP@192.168.115.90:10001) f	nished!	10:20:11

Fig. 5.32: Error calibration, data Saved Data

#### 5.6.6 Commands

In the tab Commands you can control the device, as an alternative to entering commands on the display of the INCA process gas analyser (at the enclosure door).

The tab is divided into four sections (see Fig. 5.33).



	Measure data General Calib	ation IO config Saved Data Commands	
	SYSTEM	MEASUREMENT/SERVICE	1
4	Clear messages	Measurement (stream):	tart Stop
•	Restart system	Service mode:	DFF Set 1 h
	Reset statemachine	Startup mode (readings online):	DFF On
	Next state	Service check OK:	Check OK
	CALIBRATION	SENSORS	
З	Start calib. purge gas	Select sensor:	co2 - 2
0	Start calibration gas I	Sensor to reset:	leset to factory
	Start calibration gas II	Sensor serial no.: ABC0797G	Set serial
	Abort calibration	Reset cal. times (all sensors):	teset cal. times

#### Fig. 5.33: Tab Commands

- 1. Measurement / Service
- 2. Sensors

- 3. System
- 4. Calibration
- 1. Measurement / Service
  - Measurement (stream)

With this command you can stop a measurement. In addition, you can start a measurement by channel. After selecting a measurement channel and doing the measurement, the INCA process gas analyser returns to the initial measurement cycle.

• Service mode

Switching service mode On/Off. The service mode lasts 1 hour but can be switched off before that period has expired (*OFF*). During *Service mode*, the mA- and relay contacts of the PCB-IO are frozen. If *Service mode* is active, then the output is shown in INCACtrl on the display. In active service mode, the LED at the PCB-IO on the device flashes in orange.



## NOTE

Activating *Service mode* is only possible if the slave IO-board has a firmware version of V1.08 or higher.

#### • Startup mode (readings online)

If activated (**On**), all measurement data for the current measurement (incl. previous cycles) are issued online. In discontinuous measurement mode, the *Startup mode* is deactivated with a channel change. For a device with continuous measurement mode, the *Startup mode* is active until pure gas calibration (Purge gas Calib.) or until restart.



#### • Service check OK

Confirmation after Service check. The time until the next Service Check is then reset to 6 months.

2. Sensors



#### 3. Calibration

Starting and cancelling a calibration with purge gas (purge gas) or calibration gas (*calibration gas 1/2*).

#### 4. System

In this section, the user can reset the system or the device (*Restart system, Reset statemachine*) and delete the message display (Messages / Errors).

- **Restart system** corresponds to a cold start, comparable to pressing the reset button at the PC.
- **Restart statemachine** represents a warm start, comparable to a restart of a PC using the Windows Start menu.





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