8CWA and 16CWA Monitoring & Control unit

Short form User/Installation Manual

Copyright Notice

8CWA & 16CWA – User/Installation Manual

Opening the enclosure

The 8/16CWA enclosure consists of a rear and front part. The front part is mounted onto the rear part with 6 screws. A single screw at each corner and two screws at the center-sides.

To un-mount the front of the enclosure, unscrew the four corner screws and unlock the transparent window panel at the right-hand side to gain access to the two center screws. Open the transparent window panel 90° to gain the best access to the screw that lies underneath.

TOP-VIEW   FRONT-VIEW
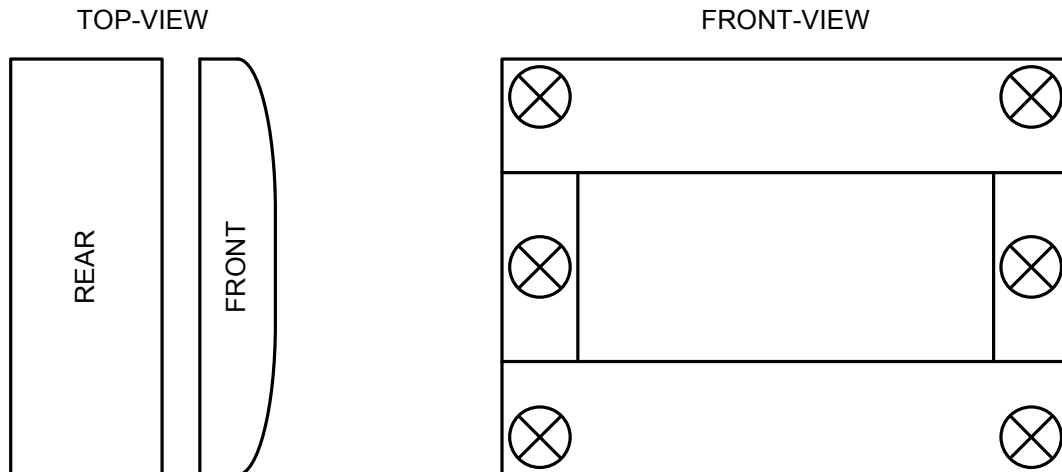
REAR   FRONT

Important Notice:
- **The front and rear enclosure parts are internally connected by a flatcable.**
- **When the front panel needs to be removed, e.g. for wall-mounting or wiring purposes, gently unplug the connector from the rear part and re-insert afterwards. *The unit must not be powered during this procedure.***

Mounting the enclosure

NON-RECOVERABLE DAMAGE TO THE PRODUCT MIGHT BE CAUSED IF THIS PROCEDURE IS NOT FOLLOWED ACCURATELY

1) Drill Holes (4x), refer to drill-plan (Appendix B) for dimensions
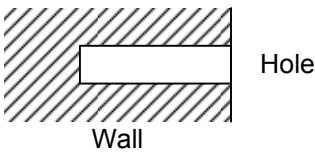
Hole

Wall

Hole diameter depends on type of screw and wall plug:
- Screws and plugs to be provided by end-user.
- Max. diameter for screw is 4 mm.

2) Equip wall-mount lug with screw (4x)

Lug
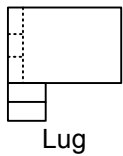
⌀ Max. diameter for screw is 4 mm

3) Equip unit housing with wall-mount lugs (4x)

Enclosure

Lug
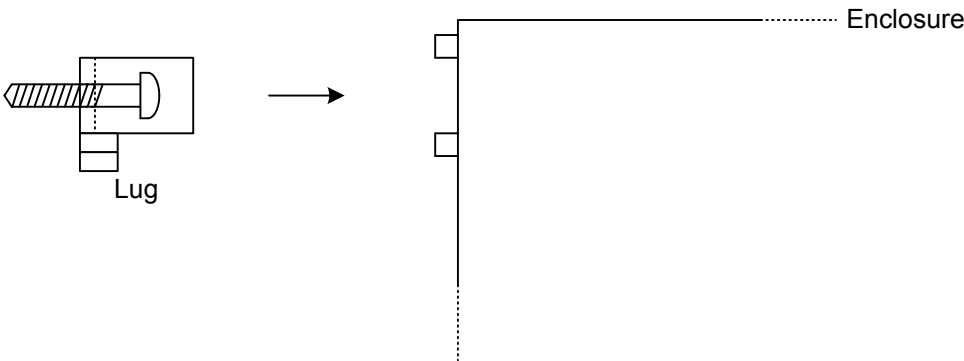
4) Mount unit housing on wall, access to screws (4x) from inside

Enclosure

Wall (+ Plug)

Tighten screws from inside
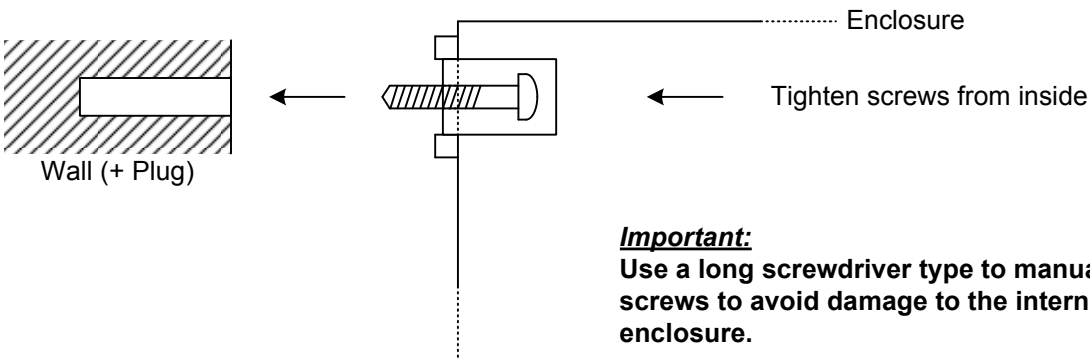
Important:
Use a long screwdriver type to manually tighten the screws to avoid damage to the internal parts of the enclosure.

Powering the unit

Schematic diagram
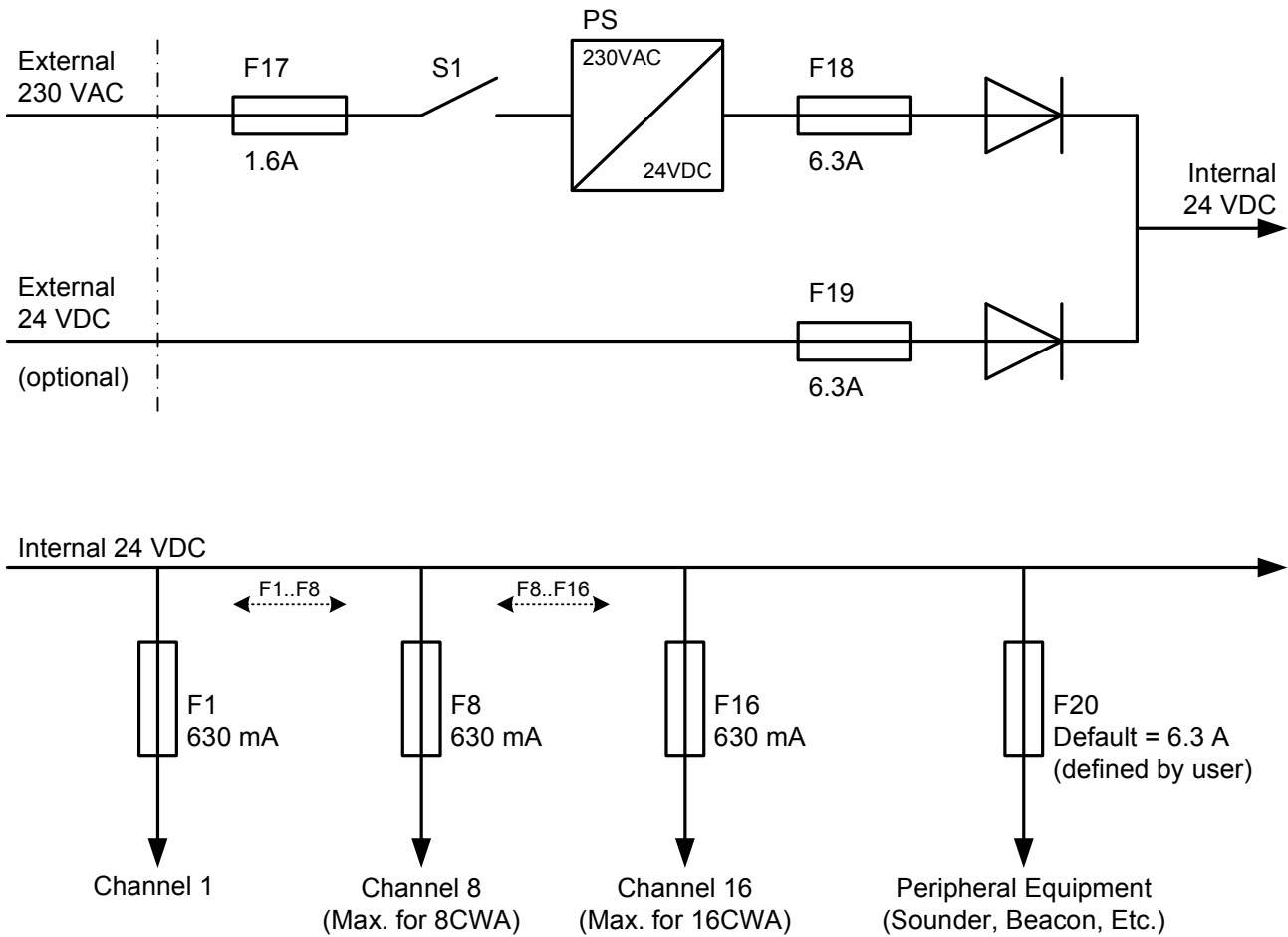
Mains Connection

By default the 8/16CWA is powered by an external 230 VAC source, fused (F17) and interruptible (S1).
The internal PS can supply 24 VDC (up to 40 W load) to power detection and peripheral equipment.

Additionally, the 8/16CWA is powered by an external 24 VDC source, fused (F19).
This is <u>optional</u> when the 8/16CWA is powered by an external 230 VAC source and total load < 40 W.
This is <u>required</u> when the 8/16CWA is powered by an external 230 VAC source and total load > 40 W.
This is <u>required</u> when the 8/16CWA is <u>not</u> powered by an external 230 VAC source.

230VAC external source to be connected on CN1:
CN1 - L   : LINE (230 VAC)
CN1 - N   : NEUTRAL
CN1 - EARTH   : EARTH

24VDC external source to be connected on CN2:
CN2 - 38   : EARTH
CN2 - 39   : GND (-)
CN2 - 40   : 24 VDC (+)

Important:
Do not exceed 40 W load on internal 24 VDC powersupply, use an additional external 24 VDC.

Connecting Analog Inputs

2-wire analog connection

Connector CN2	mA	mA
	24 V	24 V
	EARTH	E

optional

8/16CWA Unit   **2-wire Device**

3-wire analog connection

Connector CN2	mA	mA
	GND	GND
	24 V	24 V
	EARTH	E

optional

8/16CWA Unit   **3-wire Device**
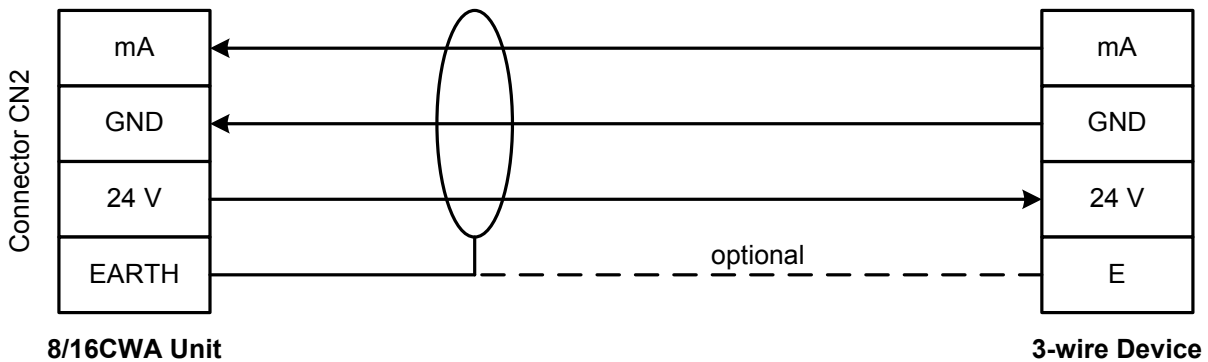
Analog devices to be connected on CN2:

CN2 -   1,   2,   3, etc.   : mA   (returning mA signal from the device, for 2 and 3 wire connections)
CN2 - 41, 42, 43, etc.   : GND   (returning ground from the device, for 3 wire connections only)
CN2 - 81, 82, 83, etc.   : 24 VDC (power to the device, for 2 and 3 wire connections)
CN2 - 121, 122, 123, etc.   : EARTH (cable screen, optionally connected at the device side)

Connection reference table

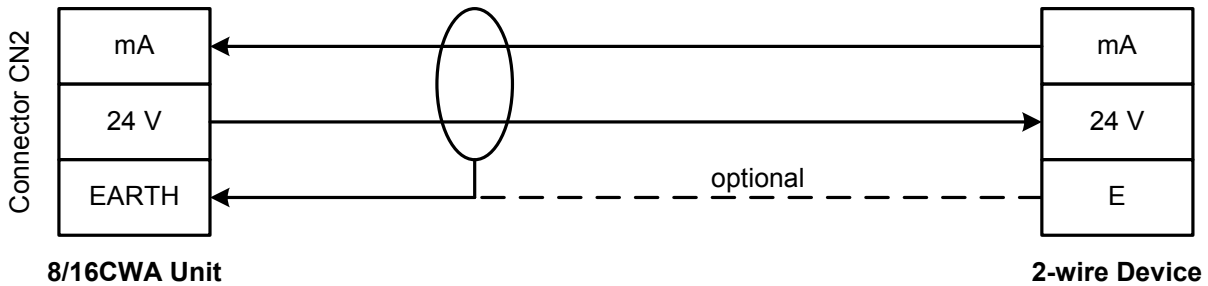| Detector	Connection	Power req.	Recommended Cable	Max. Distance
TX-FM, TX-FN, TX-KFP	2-wire	0.5 W	2x 0.75 mm^2 with braided screen.	1000 m
TX-FK, TX-KXP, UV/IR	3-wire	2.0 W	3x 0.75 mm^2 with braided screen.	500 m
TX-WAD	3-wire	4.0 W	3x 0.75 mm^2 with braided screen.	280 m
SH-WAD, SH-EXW	3-wire	6.0 W	3x 0.75 mm^2 with braided screen.	180 m

Notes:
- Values listed in above table are estimated values, suitable for quick calculations only.
- Max. distance based on 2 V drop with recommended cable. Increase core diameter for longer distances.
- The 8/16CWA is equipped with multi-type cable glands, each gland suitable for 4x 5 mm max. diameter cable.
  Upon exceeding these specifications, the end-user has to supply and install suitable glands.

Important:
- Analog inputs need to be manually configured with "In-Control" software before usage.
- Choose the correct wiring method, 2-wire or 3-wire, depending on the device's interface.
- Choose the correct wire diameter, depending on the device's power req. and cable distance.
- Do not exceed 40 W load on internal 24 VDC powersupply, use an additional external 24 VDC.

Connecting Digital Inputs

Remote Accept Function

The 8/16CWA unit is equipped with a single pre-defined digital input function, that can be used to accept an alarm event from a distance (remote accept) in stead of locally on the unit. For this, a simple "normally open" push-button is wired as follows.
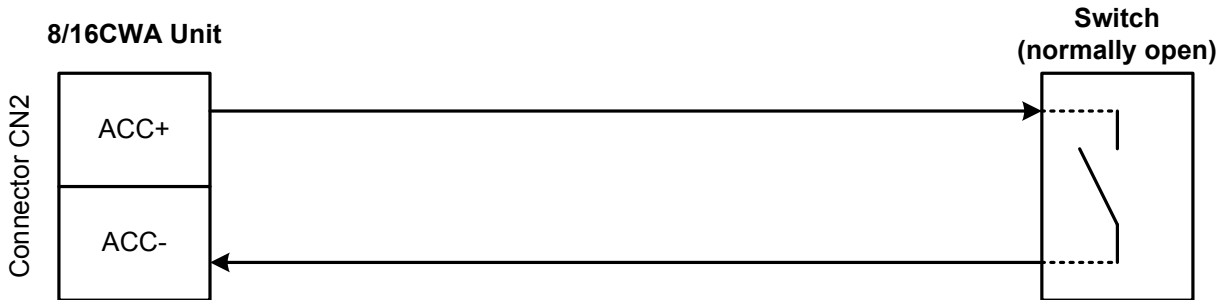
"Remote Accept" input to be connected on CN2:
CN2 - 118   : ACCEPT (+)
CN2 - 158   : ACCEPT (-)

Simulated Digital Input

Additionally, any analog input can be used to function as a simulated digital input by connecting a fixed resistor bridge between an analog input and a switch (normally open or closed). This forces a fixed 3.8 mA or 20 mA current through the analog input that can be used as "logical" on/off function. In this case, 3.8 mA can be regarded as ("open", "0", "low", etc.) and 20 mA as ("closed", "1", "high", etc.). The analog input can be configured as high or low active, thus allowing the usage of both normally open and closed switches.
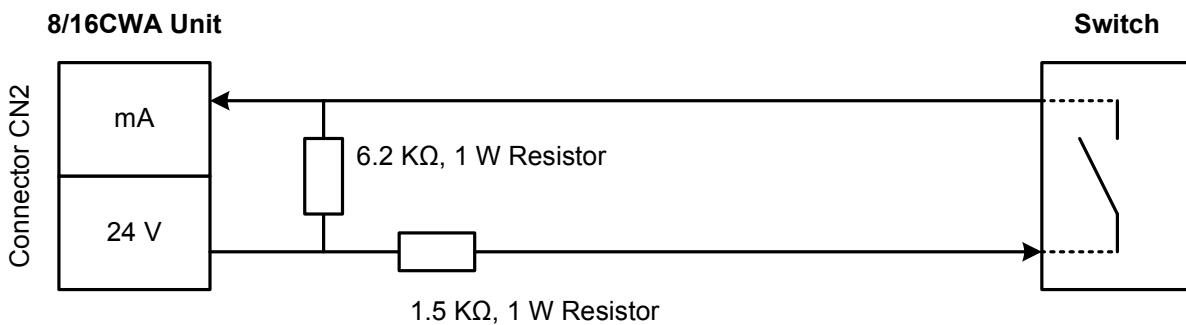
Resistor bridge to be connected on CN2:
CN2 -   1,   2,   3, etc.   : mA   (returning current from the resistor bridge)
CN2 - 81, 82, 83, etc.   : 24 VDC (power to the resistor bridge)

Important:
Analog inputs need to be manually configured with "In-Control" software before usage.

Connecting Digital Outputs

Relays

The 8/16CWA unit is equipped with 4 common relay contacts and 24 (8CWA) or 16 (16CWA) free programmable relay contacts. The common relays are for combined Error, Warning, Alarm 1 and Alarm 2 functions. The free programmable relays can be configured with "In-Control" software to trigger individual or combined relay actions on individual or combined channel alerts. This software feature allows the end-user to create a complex, yet flexible, Cause & Effect matrix, bypassing the need of complicated and time consuming hardwiring.

All relays support normally open and normally closed contacts and can be configured as "pre-energized" with "In-Control" software.

All relays can be configured as "User Acceptable" with "In-Control" software. This feature allows a user to override the specific relay action when a user locally or remotely accepts an event that triggered the specific relay. This feature is mostly used when sounders are connected to the relay, so a user can effectively silence the sounder without the need of additional override hardware.

Relay contacts on CN2:
Relay K1   : Common "Warning" relay for channels 1 ~ 8 (8CWA) or 1~16 (16CWA)
Relay K2   : Common "Alarm 1" relay for channels 1 ~ 8 (8CWA) or 1~16 (16CWA)
Relay K3   : Common "Alarm 2" relay for channels 1 ~ 8 (8CWA) or 1~16 (16CWA)
Relay K4   : Common "Error" relay for channels 1 ~ 8 (8CWA) or 1~16 (16CWA)
Relay K5~K20   : Free programmable relay function. 8CWA and 16CWA.
Relay K21~K28 : Free programmable relay function. 8CWA only.

Although all relays are potential free, the 8/16CWA provides internal 24 VDC terminals on connector CN2 to simplify the electrical connections of external peripherals.

Note:
CN2 terminal numbers for the relay contacts as well as for the 24 VDC peripheral connections differ between 8CWA and 16CWA, please refer to terminal connection drawings for more details.

Buzzer

The unit is equipped with a pre-mounted internal buzzer and an additional buzzer contact to connect an external sounding device. The external buzzer contact is **not** potential free, and is solely suitable to control a small sound device (100 mA / 24 VDC max.).

External Buzzer contacts on CN2:
CN - 117   : 24 VDC Buzzer output (100 mA max.)
CN - 157   : GND Buzzer output

Important:
- Relays need to be manually configured with "In-Control" software before usage.
- Buzzer functionality needs to be manually configured with "In-Control" software before usage.
- Buzzer functionality needs to be manually enabled by means of DIP switch SW2.
- Do not exceed 40 W load on internal 24 VDC powersupply, use an additional external 24 VDC.

Serial Communications

The 8/16CWA unit is generally equipped with 2 serial interfaces (1x RS-232 and 1x RS-485) serial interfaces.

The RS-232 interface is easily accessible on the front RJ-45 port of the unit and solely used to connect "In-Control" software for configuration and diagnostic purposes. *)

The RS-485 interface is available on terminal CN2 and used to connect one or more 8/16CWA units as slave to "SIMS" software for continuous monitoring purposes. RS-485 is a serial bus type connection that allows a single cable to be wired from one unit to the other, etc. Each unit must have the correct bus communication settings (baudrate) as well as a unique address configured by means of "In-Control" software.

RS-485 contacts on CN2:
CN - 79   : RS-485 A-Line (in)
CN - 119   : RS-485 B-Line (in)
CN - 159   : RS-485 E-Line (in)
CN - 80   : RS-485 A-Line (out)
CN - 120   : RS-485 B-Line (out)
CN - 160   : RS-485 E-Line (out)

Note:
Use jumper H1-1 to terminate the RS-485 bus.

*)
On request, the 8/16CWA unit can be equipped with a SUB-D type RS-232 connector. In this case an additional 9-pin male SUB-D is mounted that is internally connected to the RJ-45 front port. The RJ-45 front port is covered by a blind-plug and should not be used.

A SUB-D type connector allows for a more permanent RS-232 connection while the default RJ-45 connector is suitable for temporary connections e.g. a notebook with "In-Control" software.

By using the RS-232 connector for "SIMS" software, instead of the regular RS-485 port, the RS-485 interface becomes (optionally) available as *Master* on bus systems with RX and WAD type slave-devices. In master-mode, the 8/16CWA unit will continuously gather gas-detection data by means of the RS-485 bus and supports up to eight (8CWA) or sixteen (16CWA) slave devices.

When the master control function is enabled for a certain number of inputs, the corresponding analog (4~20 mA) inputs will no longer function. Consequently, their internal data sections will be continuously updated in a similar fashion by the master, thus allowing identical visualization and control functions as regular analog inputs. A mixture of regular analog inputs and RS-485 inputs is also supported.

Please note that the RS-232 interface, for both RJ-45 and/or SUB-D connectors, have the following (permanent) settings: 38400 bps, 8 databits, 1 stopbit, no parity.

Configuring the unit

Connecting In-Control Software

Use In-Control and its RJ-45 connection cable to locally configure the 8/16CWA unit.
Start the software and choose **Connect** on the CWA product range selection screen.

Once connected, the following three pages appear: **Controller**, **Channels** and **Matrix**.

Controller Page
- Shows type, production date and serial number of the unit.
- Configuration of RS-485 communication settings.
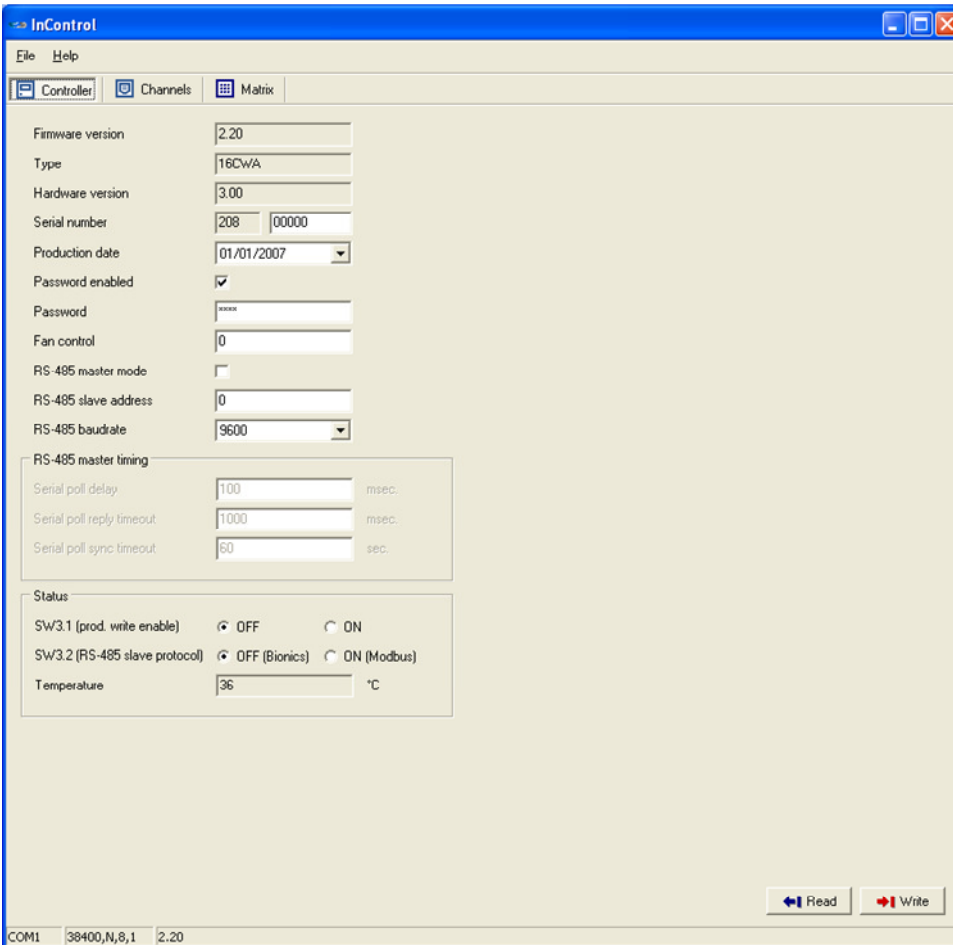- Configuration of local passcode access.

Channels Page
- Shows status and settings of analog inputs.
- Configuration of analog inputs.

Matrix Page
- Shows *Cause & Effect* matrix of analog inputs and digital outputs (relays).
- Configuration of *Cause & Effect* rules.
- Configuration of relays (Energized state and User-Acceptable).

Configuring the unit

Controller Settings

|		
Password:	Use these two fields to enable/disable user access restriction by means of a 4-digit numerical passcode. Default passcode = 0000.	
Fan control:	Temperature (°C) threshold that activates the fans. Default value = 35 °C. Use 0 °C to disable (*not recommended*).	
485 Master Mode:	Enables Master mode on the internal RS-485 interface, to be used when RX and WAD type controllers are connected to the bus.	
485 Slave address:	Communication address of the first channel of the 8/16CWA unit when it functions as a slave. Additional channel addresses are automatically assigned incrementally (base-address + n-1).	
485 Master Timing:	Advanced bus timing parameters for Master mode applications. Default values: poll-delay = 100 ms., poll-reply = 1000 ms., poll-sync = 60 ms. ***Please contact Bionics before changes to these fields are made.***	
485 Baudrate:	RS-485 bus communication speed. The following settings are automatically assigned: Parity = None, Stopbits = 1, Databits = 8. Default baudrate = 9600 bps.	
Status:	Additional (read-only) information, regarding internal DIP-Switch and temperature.	

Note:
Actual screen layout may differ per software version, hardware options and screen resolution.

Configuring the unit

Channel Settings
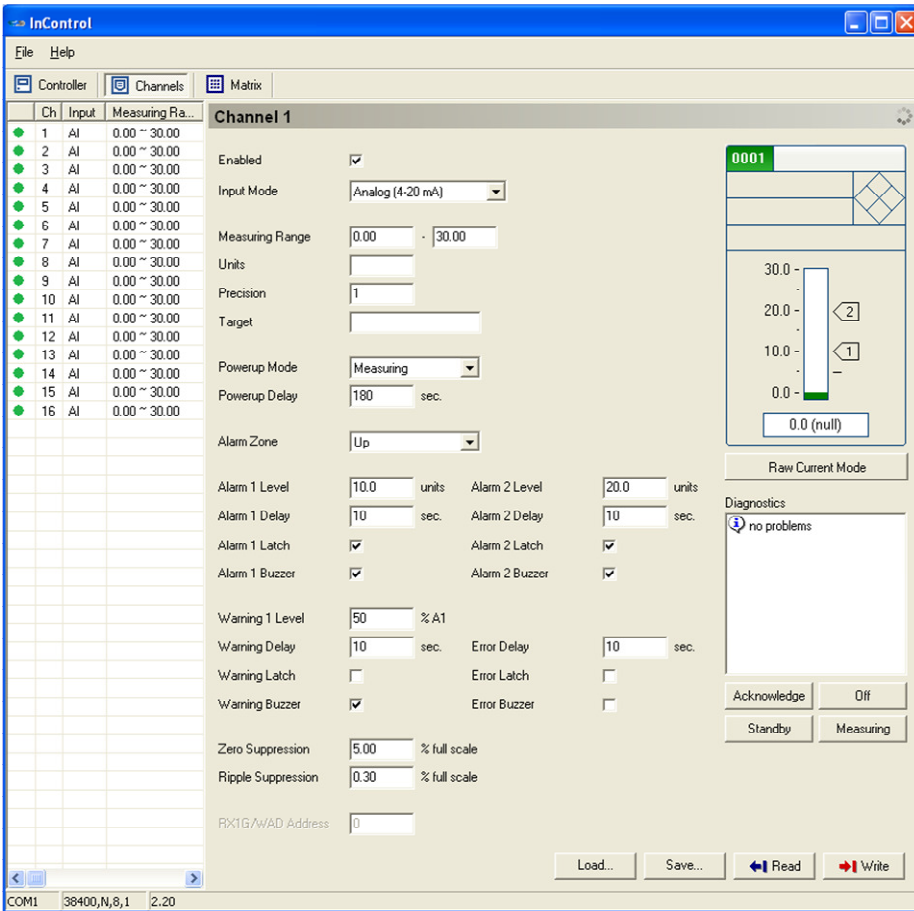
Enabled: Used to (permanently) disable a channel. It will no longer be accessible by
                    means of the bus when the 8/16CWA functions in RS-485 slave mode.

Input Mode: Analog (4~20 mA): Input functions as regular analog input (=default).
                    Digital (RS-485), RX1G: Input functions as RS-485 connection to an "RX-1G".
                    Digital (RS-485), WAD: Input functions as RS-485 connection to a "WAD".

Measuring Range: Range of connected sensor. E.g. "0 ~ 10".
Units: Measuring units of the connected sensor. E.g. "ppm".
Precision: Visualized number of digits behind decimal separator. E.g. "1 for 10.x".
Target: Measuring target of the connected sensor. E.g. "H2S".

Powerup Mode: Operation mode the channel will enter when the unit is powered on:
                    - Measuring: Channel fully functional, alarms/errors will be generated.
                    - Standby: Channel standby, alarms/errors will not be generated.
                    - Off: Channel switch off, used when no device is connected.

Powerup Delay: Time the unit waits, after power on, before above listed mode is entered.
                    During this period, all channels are in power-up standby mode.
                    After this period, all channels are evaluated and only the safe ones are
                    actually switched into measuring (when applicable).

RX1G/WAD Address: Address of the RX-1G or WAD when Input Mode is set to Digital (RS-485).

Note:
Actual screen layout may differ per software version, hardware options and screen resolution.

Configuring the unit

Channel Settings (continued)
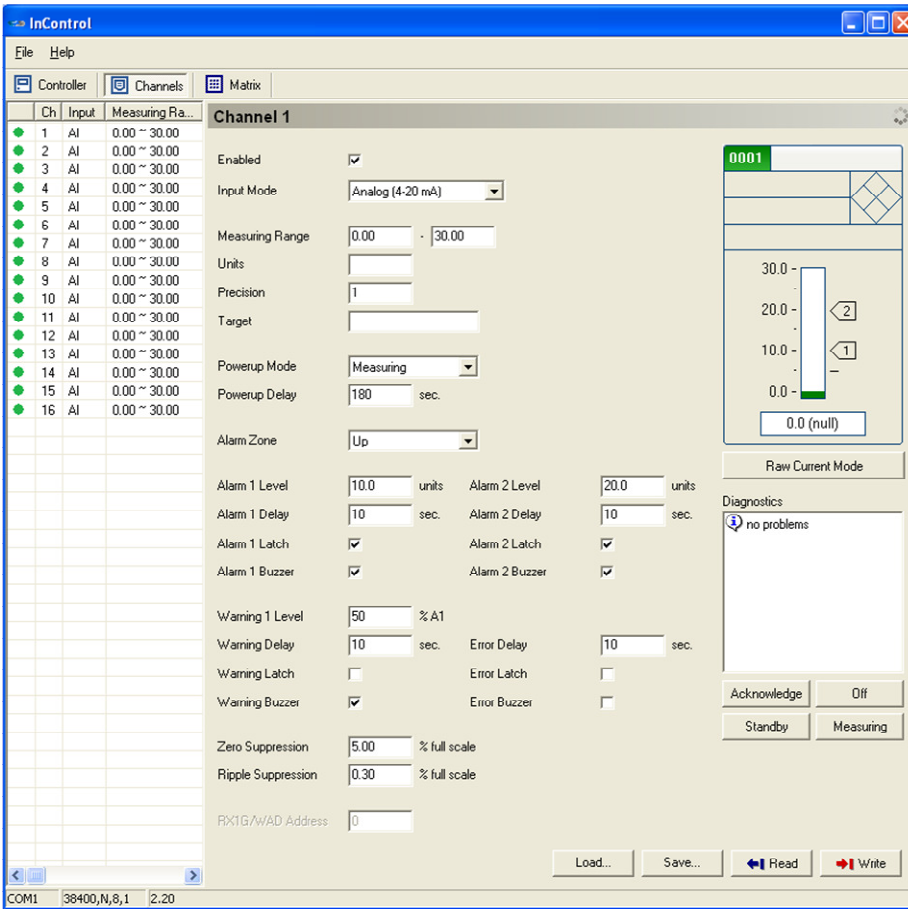
| Alarm Zone: | Directional behavior of the alert thresholds with respect to the input signal: |
	Up: Alert thresholds are set above the (upwards) sensor signal direction.
	Down: Alert thresholds are set below the (downwards) sensor signal direction.
	Region: Simultaneous operation of both Up and Down. In this case, only one alert threshold can be set for either direction.
Alert Level:	Alert sensor signal threshold(s). Specified in measuring units or % of Alarm 1.
Alert Delay:	Time the signal must exceed the alert threshold(s) before the alert is generated.
Alert Latch:	Determines the alert behavior once the sensor signal returns to a safe level.
	Enabled: alert will stay active until the user manually resets the alert condition.
	Disabled: alert will automatically deactivate without any user intervention.
Alert Buzzer Enabled:	Determines the buzzer behavior during active alert states.
	Enabled: the buzzer outputs will activate during active alert state.
	Disabled: the buzzer outputs will not activate during active alert state.
Zero Suppression:	A sensor signal below this level is suppressed to 0 %FS (zero).
Ripple Suppression:	A sensor signal alteration smaller than this offset value is ignored.

Note:
- Where applicable the term *Alert* corresponds to Warning, Alarm 1, Alarm 2 and/or Error.
- Use the "write" button to apply changes.

Note:
Actual screen layout may differ per software version, hardware options and screen resolution.

Configuring the unit

I/O Matrix Settings
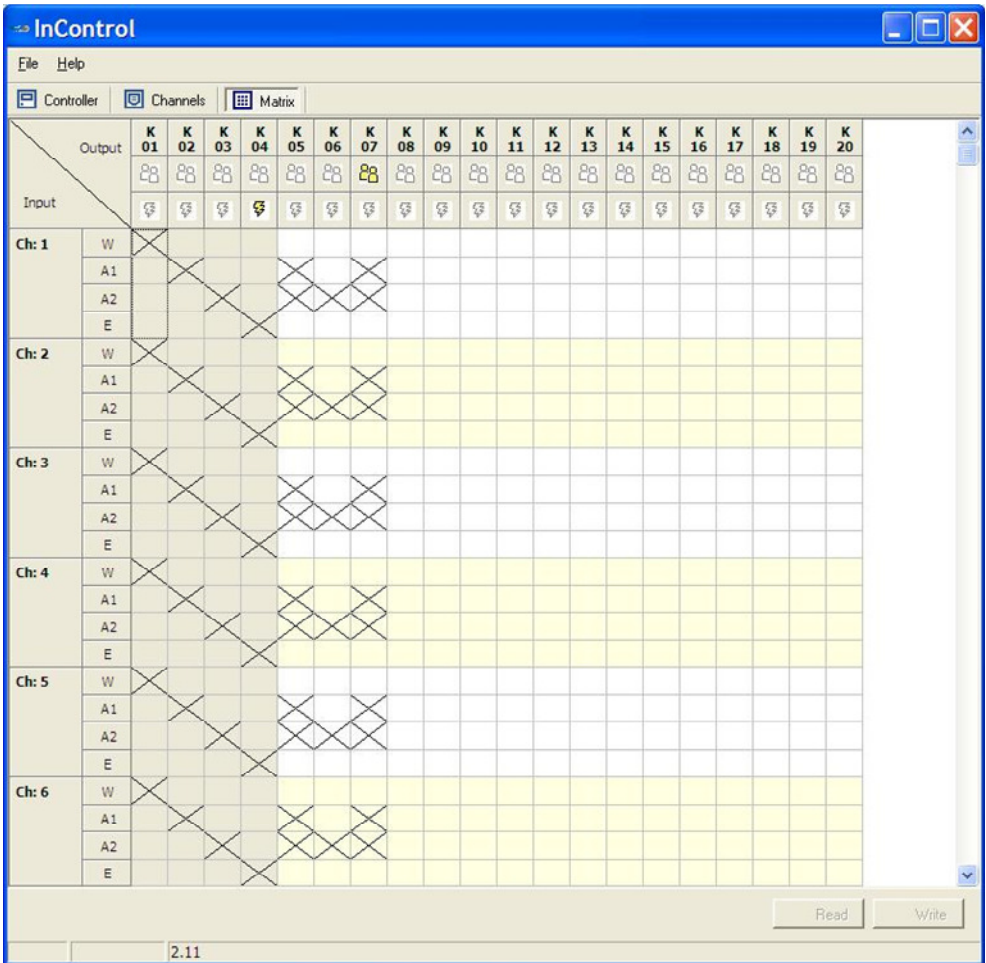
Ch: n   W: Warning alert rule. Horizontal crosses will activate the corresponding (vertical) relays.
         A1:   Alarm 1 alert rule. Horizontal crosses will activate the corresponding (vertical) relays.
         A2:   Alarm 2 alert rule. Horizontal crosses will activate the corresponding (vertical) relays.
         E: Error alert rule. Horizontal crosses will activate the corresponding (vertical) relays.

Kxx: xx numbers correspond to the actual physical relays.
         Energized Icon: When enabled, the relay is energized during normal conditions.
         User Accept Icon: When enabled, and the user accepts the alert that triggered the specific
                            relay, the relay will return to it's default state. Typically used when
                            sounding devices are connected to the relay.

Notes:
- Where applicable the term *Alert* corresponds to Warning, Alarm 1, Alarm 2 and/or Error.
- Grayed area for K1 ~ K4 can't be modified by the user, as these are the common relays.
- Each channel has four alert conditions (Warning, Alarm 1, Alarm 2 and Error) that could be triggered
  simultaneously. All corresponding rules will be executed at all times, also during simultaneous alerts.
- Use the "write" button to apply changes.

Note:
Actual screen layout may differ per software version, hardware options and screen resolution.

Configuring the unit

Simulated Digital Input

When emergency breakers or pushbuttons are connected to analog inputs, to function as a simulated digital input, follow the settings and guidelines as listed in below example.

Channel 8

Measuring Range	0	- 1
Units	ON/OFF	
Precision	1	
Target		
Powerup Mode	Measuring	
Powerup Delay	180	sec.
Alarm Zone	Up	

Alarm 1 Level	0	units	Alarm 2 Level	0.5	units
Alarm 1 Delay	0	sec.	Alarm 2 Delay	0	sec.
Alarm 1 Latch	☐		Alarm 2 Latch	☐	
Alarm 1 Buzzer Enabled	☐		Alarm 2 Buzzer Enabled	☐	

Warning 1 Level	0	% A1	Error Delay	10	sec.
Warning Delay	0	sec.	Error Latch	☐	
Warning Latch	☐		Error Buzzer Enabled	☐	
Warning Buzzer Enabled	☐				

Zero Suppression	5.00	% full scale
Ripple Suppression	0.29	% full scale

Important:
Alarm Zone must be "Up" for usage with a normally open switch.
Alarm Zone must be "Down" for usage with a normally closed switch.
Alarm 2 Delay must be set to zero, otherwise the system will not directly respond to the switch.
Alarm 2 Latch can be optionally used.
**Alarm 2 Buzzer can be optionally used.**

Note:
Actual screen layout may differ per software version, hardware options and screen resolution.

User Operation

Front Panel

The dot-matrix display typically operates in multi-channel or single-channel mode, that can be selected from the main menu. The unit will start in multi-channel mode, and automatically switches over to single-channel mode in case of a warning, alarm and/or error alert.

Multi channel mode

1	2	3	4	5	6	7	8
OK	OK	OK	OK	OK	OK	OK	STB
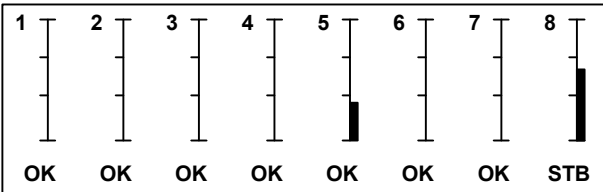
Overview of 8 channels.

Single channel mode

1	**STANDBY**
0.65 ppm Cl$_2$	
0	3
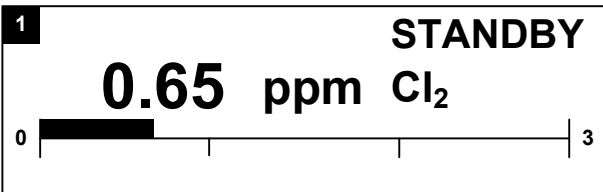
Detailed view of a single channel.

Additionally, the front panel contains a status LED for each channel and single LED as common error indication. These LEDs function as follows.

Channel Status LED
Off : Channel is either switched *off* or has an error active.
Green (flash) : Channel is (powerup) standby. No alerts will be generated.
Green : No alerts active, channel is ok.
Orange (flash) : Warning active, not yet accepted by the user
Orange : Warning active, accepted by the user
Red (flash) : Alarm 1 and/or 2 active, not yet accepted by the user
Red : Alarm 1 and/or 2 active, accepted by the user

System Error LED
Off : No errors active..
Red (flash) : Error active, not yet accepted by the user
Red : Error active, accepted by the user

The front panel has a the following 6 buttons which allows the user to interact with the device.

Enter △ Select ◁ ▷ Exit ▽
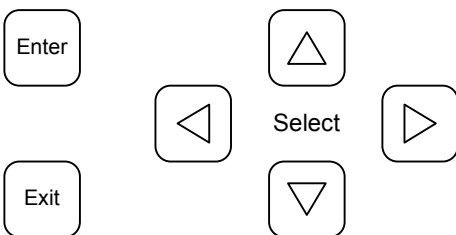
Enter: Open the main menu
         Perform actions

Exit: General "exit/escape" function

Select: Browse the menu/channels

Note: **Actual display layout may differ per firmware/hardware version.**

User Operation

Main Menu

The main menu can be activated in the single/multi channel mode by pressing the *[enter]* button. The *[up]* and *[down]* buttons aree used to scroll through the menu options. When *[enter]* is pressed, the corresponding menu option is selected. The menu and/or selected options are closed by pressing the *[exit]* button.

Multi channel mode

1	2	3	4	5	6	7	8
OK	OK	OK	OK	OK	OK	OK	STB
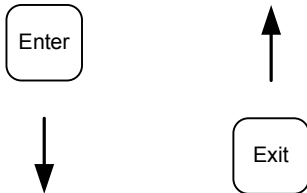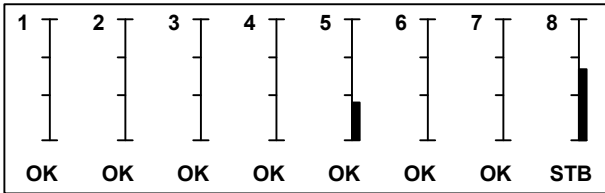
Enter

Exit

Enter / Exit menu.

Main menu

MAIN MENU
ENTER MULTI CHANNEL MODE
ENTER SINGLE CHANNEL MODE
VIEW CHANNEL INPUT CURRENTS ▼
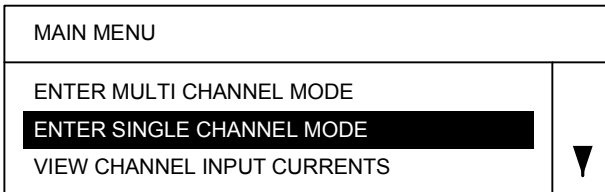
△ Select previous menu item.

▽ Select next menu item.

Main Menu options

Enter multi channel mode	: Sets display layout to visualize 8 channels simultaneously.
Enter single channel mode	: Sets display layout to visualize a single channel in detail.
View channel input currents	: Shows the raw-signal (mA) of the analog input channel.
View device properties	: Shows the properties of the device (type, serial number, etc.).
Set channels in measuring	: Used to set channels into measuring mode.
Set channels in standby	: Used to set channels into standby mode.
Set channels off (disabled)	: Used to set channels into off mode.
Hardware test menu	: Used to test specific hardware components (display, relays, etc.).

Note:
Some menu options might require a 4-digit passcode (configured by In-Control software) to enter.

Note: **Actual display layout may differ per firmware/hardware version.**

User Operation

Multi-Channel Mode

At startup the unit will automatically start in the multi-channel mode. The multi-channel mode can also be entered by selecting the main-menu option 'enter *single channel mode*'. In this mode the general channel status is shown in rows of eight. Select single-channel mode for a more detailed view.

The eight vertical bars correspond with the analog input signals (4~20 mA). The channel numbers are shown adjacent to each bar (left-top). Beneath each bar, text indicates the channel status. Optionally, each bar-graph contains tiny horizontal markers that indicate the alert thresholds.

Multi channel mode
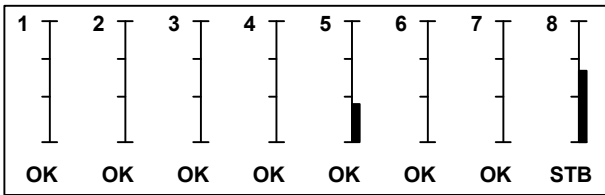
△ Select previous channel row. (n-8).

▽ Select next channel row. (n+8).

Channel Status text in multi-channel mode

OK	: No alerts active, channel is ok.
STB (flashing)	: Powerup standby, the channel is powering up (for a configured delay time).
STB	: Standby, the channel is not measuring (temporarily). No alerts will be generated.
OFF	: Off, the channel is not measuring (permanently). No alerts will be generated.
W (flashing)	: Warning active, <u>not</u> yet accepted by the user
W	: Warning active, accepted by the user
A1 (flashing)	: Alarm1 active, <u>not</u> yet accepted by the user
A1	: Alarm1 active, accepted by the user
A2 (flashing)	: Alarm2 active, <u>not</u> yet accepted by the user
A2	: Alarm2 active, accepted by the user
E (flashing)	: Error active, <u>not</u> yet accepted by the user
E	: Error active, accepted by the user

<u>*Note:*</u> **Actual display layout may differ per firmware/hardware version.**

User Operation

Single-Channel Mode

The single-channel mode can be entered by selecting the menu option 'enter *single channel mode'*. In this view detailed information is shown of a single channel and also channel-related actions can be performed. The channel selection can be changed with the *[left], [right], [up] and [down]* buttons.

Channel number

Target & Unit   Operation/Alert mode

Single channel mode

1

STANDBY

0.65 ppm Cl$_2$

0   3

Signal   Alert thresholds

Sensor range

◁   Select previous channel. (n-1).

▷   Select next channel. (n+1).

△   Select previous channel row. (n-8).

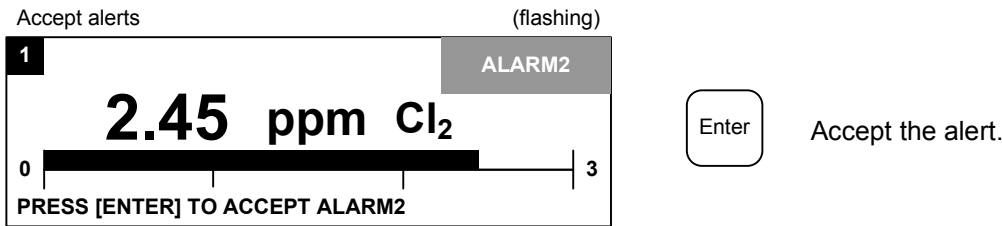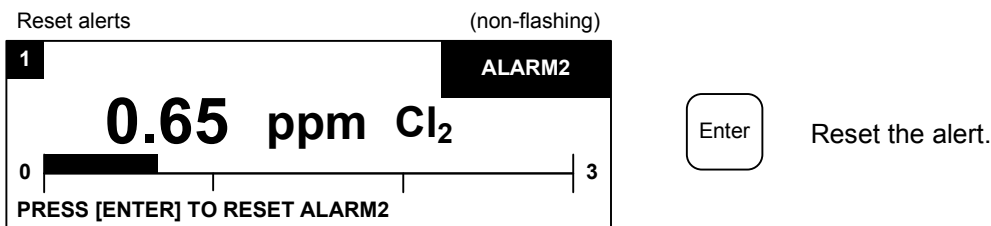▽   Select next channel row. (n+8).
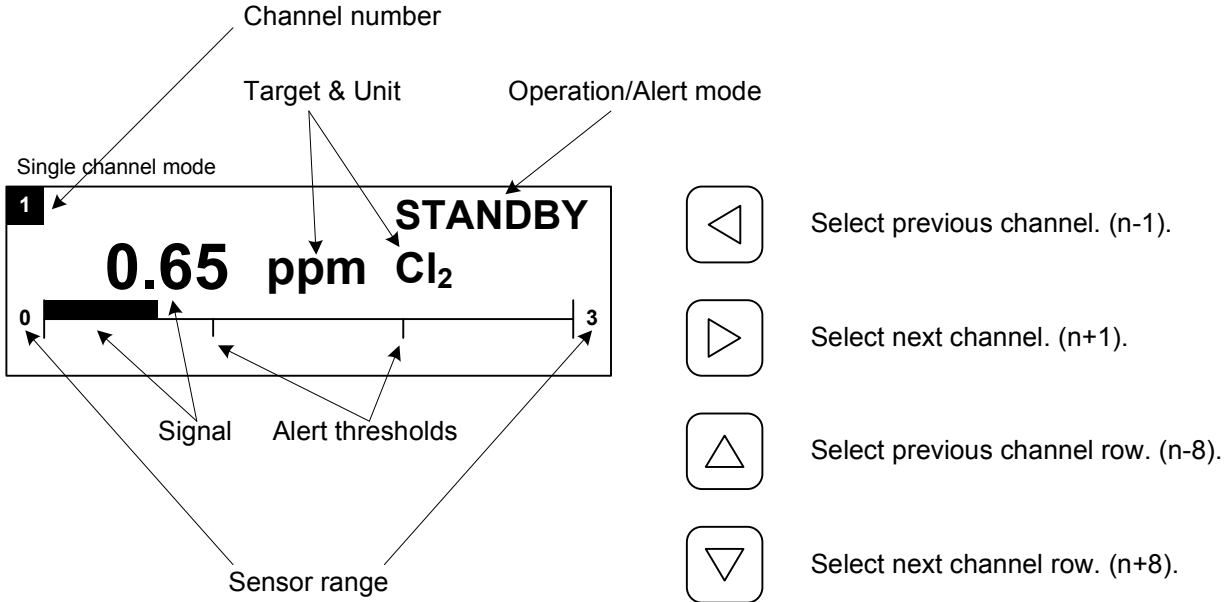
When a warning, alarm or error occurs, the unit automatically selects the channel and changes the display to single-channel mode. The user is presented with the option to accept the alert by pressing *[enter]*. When accepted, the alert text and the channel LED will stop flashing, the buzzer will be silenced, and all "acceptable" relay actions will return to their default state.

Accept alerts   (flashing)

1   **ALARM2**

2.45 ppm Cl$_2$

0   3

PRESS [ENTER] TO ACCEPT ALARM2

Enter   Accept the alert.

Once the sensor signal returns to a safe region, a manual reset message will automatically appear if the alert is configured as "latching" (with In-Control software). For non-latching alerts, the alert will reset automatically. Press *[enter]* to manually reset the active alert. Once reset, the channel LED will return to green and all relay actions will return to their default state.

Reset alerts   (non-flashing)

1   **ALARM2**

0.65 ppm Cl$_2$

0   3

PRESS [ENTER] TO RESET ALARM2

Enter   Reset the alert.

Note: **Actual display layout may differ per firmware/hardware version.**

User Operation

View channel input currents

The channel input currents view can be entered by selecting the menu option '*view channel input currents'*. The *[up]* and *[down]* buttons can be used to browse through the channels.

Channel input currents

CHANNEL INPUT CURRENTS
01: 4.81 MA (0 – 3 PPM CL2)
02: 4.45 MA (0 – 4000 PPM H2)
03: 2.04 MA (0 – 3 PPM CL2)

△ Select previous channel. (n-1).

▽ Select next channel. (n+1).

View device properties

The device properties view can be entered by selecting the menu option '*view device properties'*. The *[up]* and *[down]* buttons can be used to browse through the properties.

Device properties

DEVICE PROPERTIES	
TYPE	: 8CWA
FIRMWARE	: 1.0
SERIAL NUMBER	: 384

△ Select previous property.

▽ Select next property.

Hardware test menu

With the 'hardware test menu' option, device specific hardware components can be tested. The *[up]* and *[down]* buttons can be used to browse through the options, use *[enter]* to start the test.

Hardware test

HARDWARE TEST
TEST LEDS
TEST BUZZER
TEST DISPLAY

△ Select previous test item.

▽ Select next test item.

The following tests are available:

Test leds	: activates all front-panel LED's in sequence.
Test buzzer	: activates the buzzer for a short duration.
Test display	: activates all pixels of the dot-matrix display.
Test relays	: activates all relays in sequence.

Important Notice:
Above tests are potentially harmful, as some will active the buzzer and/or relays.

Note: **Actual display layout may differ per firmware/hardware version.**

User Operation

Set channels in measuring

By selecting the 's*et channels in measuring*' menu option, the operation mode of channels can be switched to **measuring**. In measuring mode it is possible for a channel to enter a warning, alarm or error state when the corresponding condition becomes active. The channel LED will correspond accordingly (green = ok, orange = warning, red = alarm) as well as any configured buzzer and/or relays.

Set channels in measuring

1 STANDBY **0.00** ppm Cl$_2$ 0 ———————————— 3 SET MEASURING > PRESS [ENTER]	**Enter** Set channel in measuring mode. **Exit** Return to menu.

Use *[left]*, *[right]*, *[up]* and *[down]* to select a channel and *[enter]* to set the selected channel measuring. When the channel mode has successfully changed to **measuring**, the following message is shown.
SET MEASURING > SUCCEEDED!

It might not be possible to set a channel in **measuring**. E.g. when it is already in measuring mode or when an error, warning or alarm might (accidently) become active. In these cases, on of the following messages is shown.
SET MEASURING > NOT POSSIBLE / SAFE ⇒ check sensor signal or alert settings first.
SET MEASURING > ALREADY MEASURING

Set channels in standby

With the '*set channels in standby*' menu option, channels can be set in **standby** mode in the same way as setting them in measuring. In standby mode channels can NOT generate error, warning or alarm alerts and the corresponding "green" channel LED starts blinking.

When the channel mode has successfully changed to **standby**, the following message is shown.
SET STANDBY > SUCCEEDED!

When its not possible to set a channel in **standby** mode, one of the following messages is shown.
SET STANDBY > NOT POSSIBLE / SAFE ⇒ Accept or reset the active alert first.
SET STANDBY > ALREADY STANDBY

Set channels off (disabled)

With the '*set channels off (disabled)*' menu option, channels can be set in **off** mode in the same way as setting them in measuring. In off mode channels can NOT generate error, warning or alarm alerts and the corresponding "green" channel LED will be switched off permanently. This mode is used to disable channels for long periods.

When the channel mode has successfully changed to **off**, the following message is shown.
SET OFF > SUCCEEDED!

When its not possible to set a channel in **off** mode, one of the following messages is shown.
SET OFF > NOT POSSIBLE / SAFE ⇒ Accept or reset the active alert first.
SET OFF > ALREADY OFF

Note: **Actual display layout may differ per firmware/hardware version.**

Appendix A: Technical Specifications

Item	Description
Analog input	8CWA: 8x 4-20 mA; inp. impedance 220 Ω. 16CWA: 16x 4-20 mA; inp. impedance 220 Ω. Each input has (software) configurable Error, Warning, Alarm 1, Alarm 2 and Buzzer settings.
Digital input	1x Remote accept (of Error, Warning, Alarm 1 and Alarm 2 alerts). Polarity free contact; normally open.
Digital output	1x Buzzer output (for Error, Warning, Alarm 1 and Alarm 2 alerts). On/off circuit (24 VDC, 100 mA max.).
Common relays	8CWA: 4x Relay (for Error, Warning, Alarm 1 and Alarm 2). Combined for channels 1 ~ 8. 16CWA: 4x Relay (for Error, Warning, Alarm 1 and Alarm 2). Combined for channels 1 ~ 16. Each relay has Normally Open, Common and Normally Closed contacts (30 W / 1 A max.) and is (software) configurable as Energized and/or (Remote) Acceptable.
Programmable relays	8CWA: 24x Relay. Software programmable action for channels 1 ~ 8. 16CWA: 16x Relay. Software programmable action for channels 1 ~ 16. Each relay has Normally Open, Common and Normally Closed contacts (30 W / 1 A max.) and is (software) configurable as Energized and/or (Remote) Acceptable.
Serial communications	RS-485: Internal connector; slave for SIMS software or master for RX and WAD type devices. RS-232: RJ-45 connector on front for connection of In-Control software. Note. The 8/16CWA can optionally be equipped with an external 9-pin male SUB-D connector, that is internally connected to the RJ-45 connector, suitable for permanent RS-232 communications. In this case, the RJ-45 connector is covered by a blind-plug and should not be used.
Front panel indicators / controls	8CWA: 8x Status LEDs (green, red and orange) and 1x Error LED (red) for channels 1 ~ 8. 16CWA: 16x Status LEDs (green, red and orange) and 1x Error LED (red) for channels 1 ~ 16. VF display, 140x32 dots graphic, high brightness blue green display. Manual operation by means of 6 short-travel push buttons.
Internal indicators	Each relay state is visualized by a red LED (energized). Each analog input is visualized by a green LED (signal) and a red LED (power). On-board voltages visualized by 2 red LED's (internal and external voltage).
Operating conditions	Temperature: 5 ~ 40 °C. Relative humidity: 20 ~ 80 % (non-condensing).
Power requirements	Mains: 100 ~ 240 VAC; 47 ~ 63 Hz. Consumption: 40 Watt max. External supply: 24 VDC +/- 20%.
Enclosure	Mounting: Wall (4x mounting lug included). Material: Polycarbonate, Smoke Grey (RAL 7035). Protection: IP65. Flammability: UL-94HB. Chemical resistance: High.
CE Compliance	EMC: EN 61000-6-4 and EN 61000-6-2. LVD: EN 60950-1.
Weight	Approx. 3 kg.
Dimensions	Approx. 310 (H) x 345 (W) x 145 (D) mm

Appendix B: Drill-Plan for 8CWA/16CWA Enclosure

279 mm

Hole 1/4

Hole 2/4

TOP SIDE

TOP SIDE

IMPORTANT

IF YOU PLAN TO USE THIS SHEET AS DRILL PLAN THEN CHECK THE LINES BELOW FOR THEIR CORRECT LENGTH AFTER PRINTING ON A3 FORMAT

216 mm

100 mm

100 mm

100 mm

Hole 4/4

Hole 3/4

Bionics Instrument Europe B.V.
Gas Detection & Analysis

Document:
8_16CWA_Manual_SF_v3.2.0.vsd

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