



**VKK
STANDARDKESSEL
Köthen GmbH**

Operating Manual

CES 04

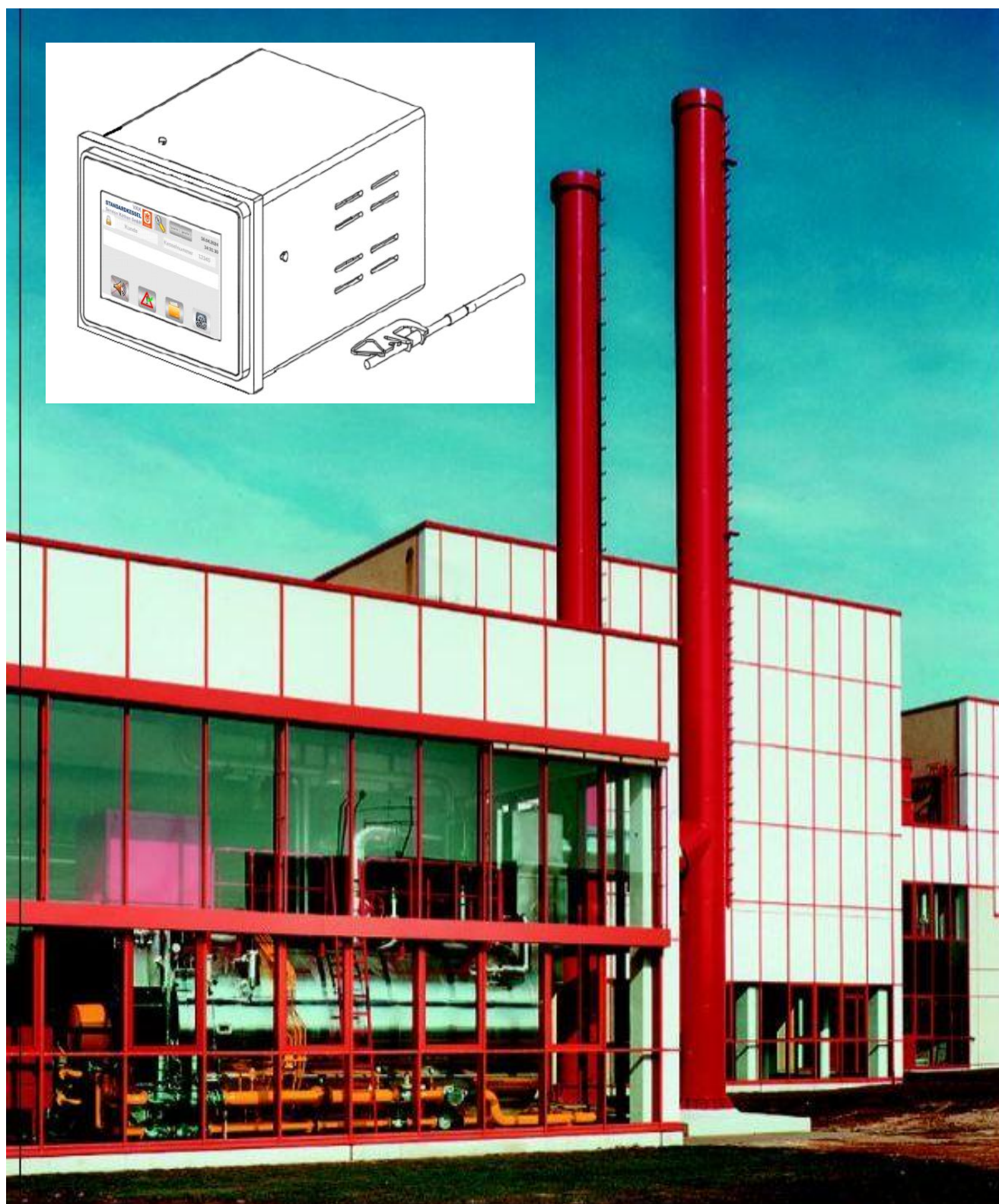
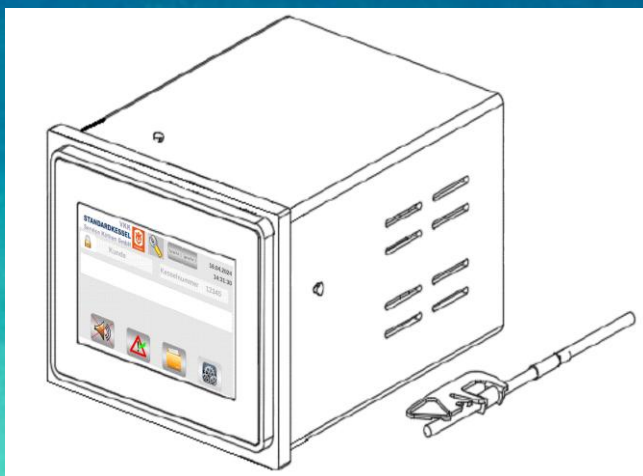
1 / 20

Edition
04.2024

Version
01

CES 04 (Combi first value fault display)

Combi first – value error Display CES 04



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	2 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

QS- Course	
signature / date	
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01	Logo change & capture 6.3.2 added	30.04.2025	Demircan / EMSR
01	Logo change	01.01.2026	Demircan / EMSR

Symbols on the appliance



EU conformity symbol



Attention, please observe operating manual!

Order ref: CES 04

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This documentation is issued by

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 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	3 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

Inhaltsverzeichnis

1	Important Information	4
1.1	Intended Use	4
1.2	Safety Instruction	4
1.3	Danger	4
2	System description	5
2.1	Overview of the functional elements	5
3	Technical data	6
4	Functional description	8
4.1	Group assignment	8
4.1.1	Mode I	9
4.1.2	Mode II	9
4.1.3	Fault messages text	10
4.1.4	Maintenance instructions for the boiler system	10
4.1.5	Output first value dual code	10
5	Electrical connection	11
5.1	Mode I terminal assignment	11
5.2	Mode II terminal assignment	11
6	Operation	12
6.1	Symbol table Buttons	12
6.2	Symbol table operation messages	13
6.3	System settings	14
6.3.1	Date and time setting	14
6.3.2	Automatic time changeover	15
6.3.3	Parameter settings	16
6.3.4	Entering fault message text	17
6.3.5	Entering operation messages	17
6.4	Fault message archive	19
7	Modernization	20

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	4 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

1 Important Information

1.1 Intended Use

The CES 04 may only be used in conjunction with the appropriate hardware to evaluate and display fault and operating messages. The wiring must be carried out in a non-reactive manner.

The device can be used as:

- Initial value fault display
- New value reports
- Operation messages



The system is delivered pre-parameterized according to the customer-specific function. (factory setting)

For warranty reasons, a change can only be made by IBS staff (VKK standard boiler) or by suitable and instructed persons!

1.2 Safety Instruction



The device may only be installed and put into operation by suitable and trained persons.

Maintenance and conversion work may only be carried out by authorized employees who have received special training.

1.3 Danger



The system's terminal strips are live during operation!

Serious injuries caused by electrical current are possible!

The device must always be unlocked before installing or dismantling the terminal strips!

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	5 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

2 System description

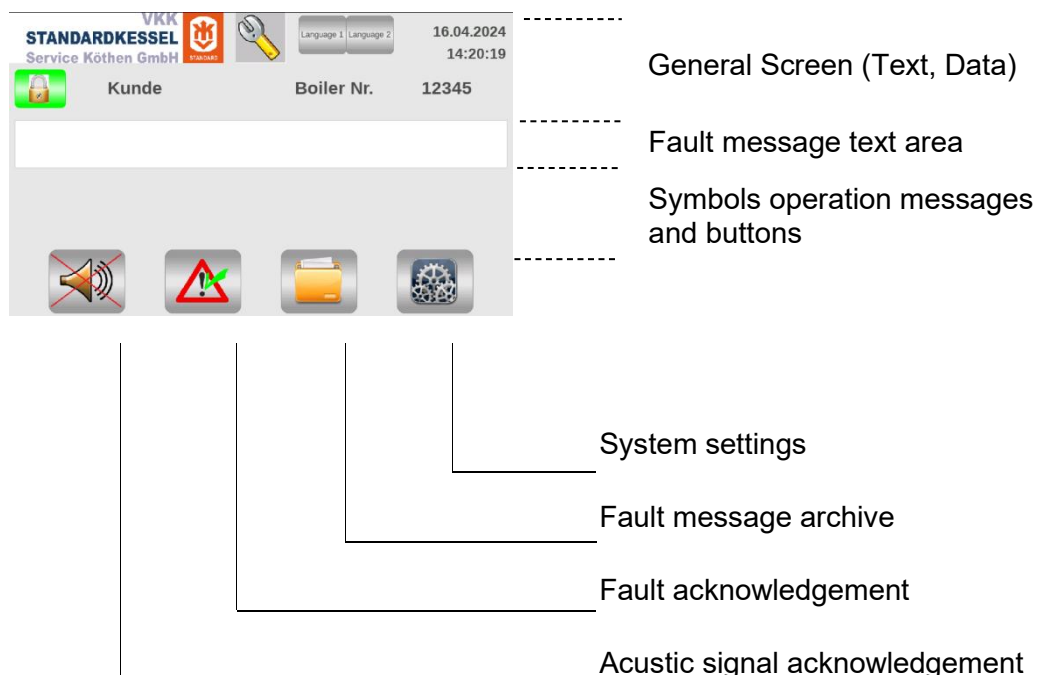
The CES 04 is designed to display fault and operating messages from steam and hot water boilers.

The system consists of a display unit with input card (18 inputs 230V AC) and an output card (5 outputs potential-free contacts) + power supply 24VDC. All components are pre-assembled, wired and tested in the housing. The fault and operating messages are displayed via a 5" touch panel.

The signals for evaluating and processing fault and operating messages are read from the existing control in a non-floating manner, processed accordingly in the software and displayed on the touch panel. Stored functions can be selected via touch operation (e.g. acknowledge message, call up message archive, horn "off").

According to the specified control function, the message texts are created in the software with an initial value or new value function, or an operational message is generated. The fault is output (displayed) in plain text and the operating message is displayed as a symbol.

2.1 Overview of the functional elements



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	6 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

3 Technical data

Power unit:

Input current	1,45/0,95A by 120/230VAC
Operating temperature	–10 °C. Bis +60 °C.

Error message inputs:

No.	max. 18
Voltage supply	120/230 V AC, 50/60Hz

Outputs:

No.	max. 5
Potential free relay	Switch-over max. 230V AC, 5A
Data output	BCD-Code (5 SIL relay)
Switching voltage	max. 230V AC
Switching current	max. 5,0A

Properties:

First value processing	adjustable
Written text output of error message	Display
Graphic operating messages	max. 6
Touch handling	
Malfunction evaluation timer	3
Time range	je 1 bis 360 Sec.
Setting of active horn time	1-30min.; constant
Selection of error text language	language 1 / language 2
Acknowledgement of error text and horn	Touchbutton
External acknowledgement of horn	Option

Storing of the last 100 error messages with details:

No. of errors	1 bis 100 (circulation archive)
Assigned error number	1 bis 18 (text)
Error start	Date and time
Error acknowledgement	Date and time

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	7 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

Overview of voltage supplied to the input terminals for the signals:

Voltage monitoring of safety loop	N'
Error message input (dep. on mode)	1 to 18
Timer inputs (dep. on mode)	T0 / T1 / T2
Synchronous input	LT

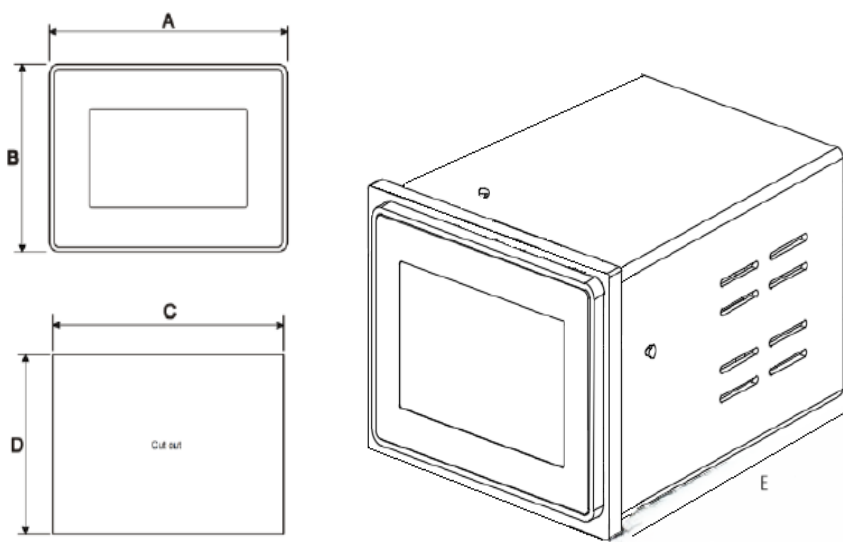
Profinet Interface:

Update in case of software changes and communication to touch panel

Display:

Touchscreen technology	capacitive
Display/backlight	TFT Color / LED
Colour	64000
Resolutio	800 X 480
Diagonale	5 (Inches)
Format	16:9
Dimming	Yes

Dimensions:



	A	B	C	D	E
	5 inches	160mm	120mm	151mm	111mm
				194mm	

Built-in dimensions: Breite:151mm ; Höhe:111mm; Tiefe:194mm

Device dimensions: Breite:160mm ; Höhe:120mm;

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	8 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

4 Functional description

The combination initial value fault display (CES 04) is configured via the display front. This means that the fault message texts and parameters such as the number of fault message inputs to be monitored, assignment of the fault message inputs to the timers, etc. are defined in a password-protected area and are stored there in a power failure-safe manner.

The CES 04 can monitor up to 18 fault message inputs. The fault message inputs are queried for faults in ascending order, i.e. the number of the smaller fault message input has the higher priority. The first contact of a limit detector that opens (signal at the input of the input card =0) is saved in the CES 04 with the date and time and shown on the display. Further opening or closing contacts of the limit value detectors no longer have any influence. The fault message inputs are only monitored again after the first fault message has been acknowledged by pressing the button  on the front of the touch panel.

Furthermore, the CES 04 has a fault message memory in which the last 100 fault messages that appeared are stored. The sequence number of the fault message, the receipt of the fault with the date and time and the acknowledgment are stored in the fault message memory.

4.1 Group assignment

Two different modes (Mode I or Mode II) can be selected during configuration.

When selecting **mode I**, the CES 04 can monitor a maximum of 18 fault message inputs. The fault signal inputs are divided into 3 groups, safety chain, general guard chain and burner guard chain.

When selecting **mode II**, the CES 04 can monitor a maximum of 17 fault message inputs. The fault signal inputs are divided into 4 groups, safety chain, general guard chain, guard chain 1 burner and guard chain 2 burners. The assignment of the fault message inputs to the groups and timers, as well as the delay time of the timer until the fault message inputs are monitored, is done in the software's configuration program. Bei der Konfiguration können zwei verschiedene Modi (Modus I oder Modus II) ausgewählt werden.

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	9 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

4.1.1 Mode I

Monitoring of fault message inputs:

If there is voltage at the LT terminal, the fault message inputs of the safety chain are monitored. If there is voltage at the LT and T0 terminals, the fault message inputs of the safety chain and the general guard chain are monitored.

If there is voltage at the terminals LT, T0 and T1, the fault message inputs of the safety chain, the general monitor chain and the burner monitor chain are monitored.

Table for Mode I

Function	L1	LT	T0	T1	T2	comments
Voltage supply device	X					1-3.Group not active
Release 1.Group (T=1 Sec.)	X	X				Safety circuit boiler
Release 2.Group (T=xx Sec.)	X	X	X			General monitoring circuit (with burner „on“)
Release 3.Group (T=xx Sec.)	X	X	X	X		Monitoring Circuit (with flue gas clap „open“)

Function	LT	T0	T1	T2	comments
1.Group	X				Emergency stop, water level, pressure limiter etc.
2.Group	X	X			Prealarm water level, gas pressure or oil pressure, etc.
3.Group	X	X	X		Limit switch flue gas clap, air min. ventilator, etc.

4.1.2 Mode II

Monitoring of fault message inputs:

If there is voltage at the LT terminal, the fault message inputs of the safety chain are monitored. If there is voltage at the LT and T0 terminals, the fault message inputs of the safety chain and the general guard chain are monitored. If there is voltage at the terminals LT, T0 and T1, the fault message inputs of the safety chain, the general guard chain and the guard chain 1 are monitored. If there is voltage at the terminals LT, T0, T1 and T2, the fault message inputs of the safety chain, the general guard chain, guard chain 1 and guard chain 2 are monitored.

Table for Mode II

Function	L1	LT	T0	T1	T2	comments
Spannungsversorgung Gerät	X					1-4.Group not active
Release 1.Group (T=1 Sec.)	X	X				Safety circuit boiler
Release 2.Group (T=xx Sec.)	X	X	X			General monitoring circuit (with burner „on“)
Release 3.Group (T=xx Sec.)	X	X	X	X		Monitor circuit 1 gas burner (with selection gas)
Release 4.Group (T=xx Sec.)	X	X	X	X	X	Monitor circuit 2 oil burner (with selection oil)

Function	LT	T0	T1	T2	comments
1.Group	X				Emergency stop, water level, pressure limiter etc.
2.Group	X	X			Prealarm water level, flue gas clap, air min.ventilator
3.Group	X	X	X		Gas pressure Min, Max, tightness control etc.
4.Group	X	X	X	X	Oil pressure Min, Max, or oil temperature etc.

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	10 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

4.1.3 Fault messages text

The CES 04 has 2 fault message text memories that can be selected in the “Language selection” menu via Language 1 and Language 2. The fault message texts can, for example, be stored in German under language 1 and in English under language 2. You can then select whether the fault message texts should be displayed in German or English.

However, the prerequisite is that the fault message texts were previously entered from the front. (password protected area)

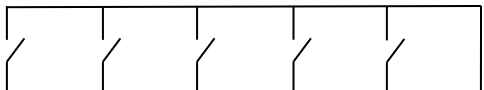
4.1.4 Maintenance instructions for the boiler system

If the maintenance notice function is switched on and the maintenance date has been reached or exceeded, a wrench with the set maintenance date appears on the touch panel display whenever the T0 terminal receives voltage.

The display can be acknowledged by pressing the button , but this image appears again each time the voltage is reapplied to terminal T0.

The display can only be switched off by entering a maintenance date that is later than the current date or by deselecting the maintenance notice function in the operating menu.

4.1.5 Output first value dual code

							
error	clamp	A16	A8	A4	A2	A1	G
0		0	0	0	0	0	
1		0	0	0	0	1	
2		0	0	0	1	0	
3		0	0	0	1	1	
4		0	0	1	0	0	
5		0	0	1	0	1	
6		0	0	1	1	0	
7		0	0	1	1	1	
8		0	1	0	0	0	
9		0	1	0	0	1	
10		0	1	0	1	0	
11		0	1	0	1	1	
12		0	1	1	0	0	
13		0	1	1	0	1	
14		0	1	1	1	0	
15		0	1	1	1	1	
16		1	0	0	0	0	
17		1	0	0	0	1	
18		1	0	0	1	0	

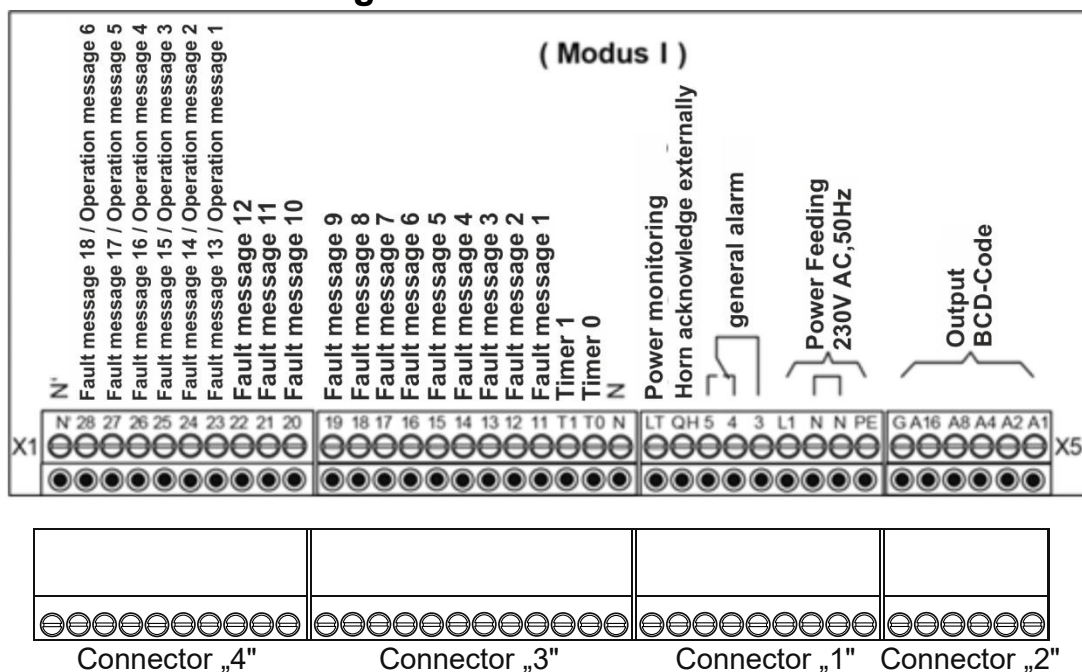
Annotation: 0 corresponds to open relay contact

1 corresponds to closed relay contact

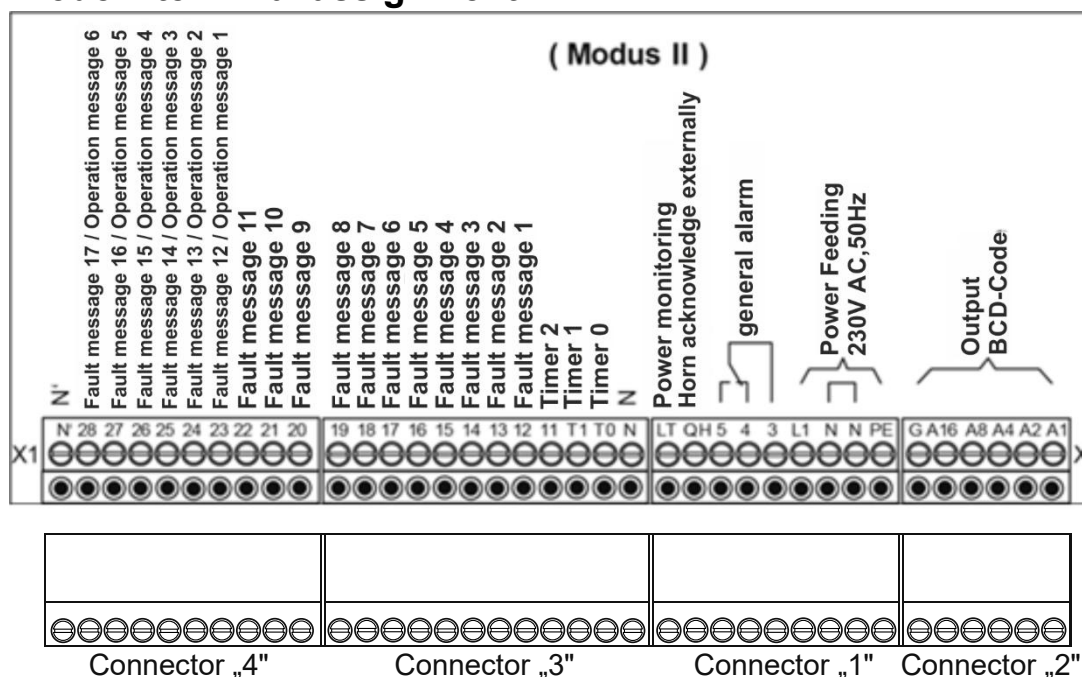
 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	11 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

5 Electrical connection

5.1 Mode I terminal assignment



5.2 Mode II terminal assignment



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	12 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6 Operation

6.1 Symbol table Buttons

Symbol symbol	Beschreibung description	Symbol symbol	Beschreibung description
	Hauptmenü / Startseite <i>main menu</i>		Touch kalibrieren <i>touch calibrate</i>
	Einstellung/passwortgeschützter Bereich <i>settings / password secured area</i>		Datum- / Uhrzeiteingabe <i>date / time settings</i>
	Bild runterscrollen <i>scroll down</i>		Betriebssystem <i>operating system</i>
	Bild hochscrollen <i>scroll up</i>		Störmeldetexteingabe <i>fault text entry</i>
	Wechseln zum nächsten Bild <i>next window</i>		Störmeldearchiv <i>fault archive</i>
	Wechseln zum vorherigen Bild <i>previous window</i>		Systembild <i>system window</i>
	Störungsquittierung <i>fault acknowledgement</i>		Hupenquittierung <i>horn acknowledgement</i>
	Bildschirm putzen <i>screen clean up</i>		Datum / Uhrzeit bestätigen <i>date / time confirmation</i>
	Wartung fällig <i>service needed</i>		

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	13 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6.2 Symbol table operation messages

Symbol symbol	Beschreibung description	Symbol symbol	Beschreibung description
	Anlage Ein <i>plant on</i>		Keine Flamme <i>no flame</i>
	Automatenfall <i>circuit breaker tripped</i>		Leitfähigkeit Max. <i>conductivity max.</i>
	Brenner 1 in Betrieb <i>burner 1 operating</i>		Speisewasserpumpe 1 <i>feedwater pump 1</i>
	Brenner 2 in Betrieb <i>burner 2 operating</i>		Speisewasserpumpe 2 <i>feedwater pump 2</i>
	Ventil <i>valve</i>		Pumpe pump
	Entsperren <i>unlock</i>		Ventilator <i>fan</i>
	Endschalter Rauchgasklappe <i>limit switch flue gas damper</i>		verriegelt <i>locked</i>
	Flamme <i>flame</i>		Wasserstand Max. <i>water level max.</i>
	Hupe aus <i>horn off</i>		Wasserstand Min. <i>water level min.</i>

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	14 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

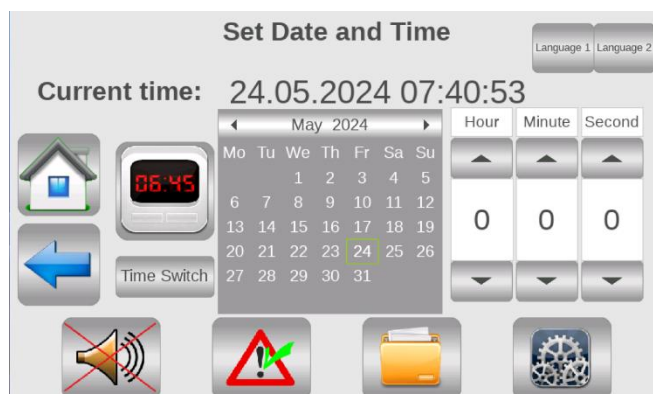
6.3 System settings

Pressing the button  takes you to the system screen for the system settings. All relevant system settings can be made using the stored touch symbols.



6.3.1 Date and time setting

By pressing the button  you can access the date and time settings. The time setting can be set manually via an input field. By pressing , the entered time is adopted in the system.



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	15 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6.3.2 Automatic time changeover

Pressing the button  takes you to the screen for automatic summer/winter time changeover.



After setting the desired time for daylight saving time, press the "Set +1h" button for the system to accept the data. Similarly, set the time for standard time and press the "-1h" button. The entire function can be turned on and off using the "Activate" button.

The next change is signaled by the "+1h" and "-1h" buttons.

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	16 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6.3.3 Parameter settings

Using the button  and then entering the corresponding system password takes you to the parameter settings page. For warranty reasons, a change can only be made by IBS staff (VKK) or by suitable and instructed persons!

The following settings are possible here:

- Date for the next maintenance
- Fault reporting mode (Mode I or Mode II)
- automatic switch-off of the horn
- Setting the times T0, T1, T2 (fault message suppression)

The maintenance due date is indicated by a flashing symbol on the start screen.



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	17 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6.3.4 Entering fault message text

The button  takes you to the input window for the fault message texts. The Fault message texts are pre-parameterized, but can also be adjusted on site (System password required). The grouping of the inputs into “X” safety chain, “T0” general guard chain, “T1” guard chain 1, “T2” guard chain 2 is done individually for each fault message input. Since the image of the other message texts 5- .. looks analogous to the figure below, it will not be discussed in more detail here. Deactivation of the channels is possible individually and can be achieved by pressing the field (for example “EIN02”).



6.3.5 Entering operation messages

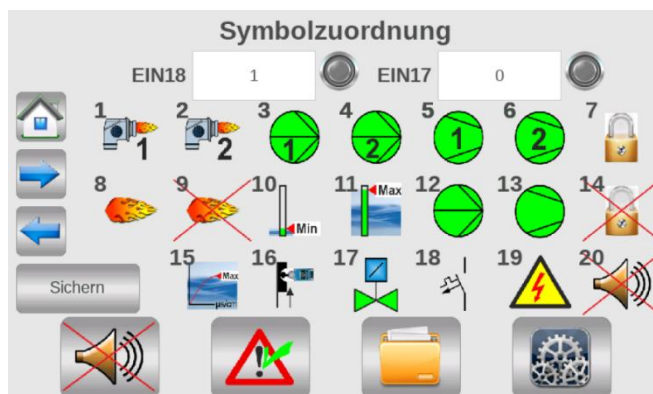
The button  takes you to the input window for the fault message texts. The Fault message texts are pre-parameterized, but can also be adjusted on site (System password required). The grouping of the inputs into “X” safety chain, “T0” general guard chain, “T1” guard chain 1, “T2” guard chain 2 is done individually for each fault message input.

The inputs 13 to 18 can be parameterized as „BM“ operation messages.



 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	18 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

Pressing  takes you to the symbol assignment page. Here you can see the inputs and the available symbols.



Assigning the symbols to the corresponding input works by entering the corresponding number of the symbol in the input field for the desired input. By activating  the circle the respective operating message is inverted. The active operational messages are displayed as an icon on the main page.

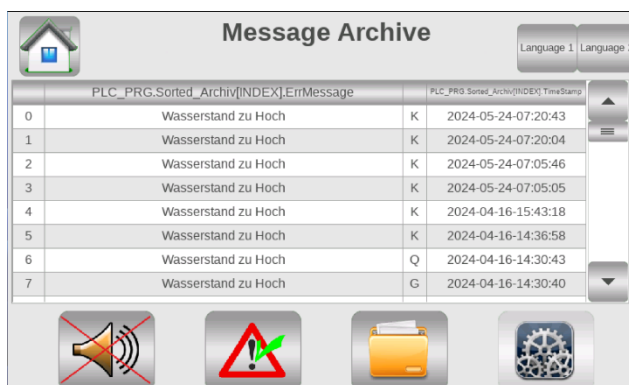


 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	19 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

6.4 Fault message archive

All initial value messages are stored in the message archive with a time stamp and the note “K” incoming, “Q” acknowledged and “G” outgoing.

Pressing the button  opens the fault message archive



The screenshot shows the 'Message Archive' screen. At the top, there is a home icon, the title 'Message Archive', and language selection buttons for 'Language 1' and 'Language 2'. Below the title is a table with two columns: 'PLC_PRG.Sorted_Archiv[INDEX].ErrMsg' and 'PLC_PRG.Sorted_Archiv[INDEX].TimeStamp'. The table contains eight rows of data, all with the message 'Wasserstand zu Hoch'. The status column shows 'K' for rows 0-5, 'Q' for row 6, and 'G' for row 7. The timestamps range from 2024-05-24 to 2024-04-16. At the bottom of the screen, there are four icons: a speaker with a red 'X' (mute), a warning triangle with a green checkmark, a folder icon, and a gear icon.

	PLC_PRG.Sorted_Archiv[INDEX].ErrMsg	PLC_PRG.Sorted_Archiv[INDEX].TimeStamp
0	Wasserstand zu Hoch	K 2024-05-24-07:20:43
1	Wasserstand zu Hoch	K 2024-05-24-07:20:04
2	Wasserstand zu Hoch	K 2024-05-24-07:05:46
3	Wasserstand zu Hoch	K 2024-05-24-07:05:05
4	Wasserstand zu Hoch	K 2024-04-16-15:43:18
5	Wasserstand zu Hoch	K 2024-04-16-14:36:58
6	Wasserstand zu Hoch	Q 2024-04-16-14:30:43
7	Wasserstand zu Hoch	G 2024-04-16-14:30:40

 VKK STANDARDKESSEL Köthen GmbH	Operating Manual	CES 04	20 / 20
		Edition 04.2024	Version 01
CES 04 (Combi first value fault display)			

7 Modernization

The modular fault display system (CES 04) is designed to replace older fault signaling systems of the VKK standard boilers.

These are the types listed below:

- SA 08.4
- SA 12.xx
- SA 15.3
- SA 18.4
- CES 03

Further information on conversion can be obtained from the EMSR specialist department.



A notice:

Existing old project files can only be used to a limited extent for implementation.

The following requirements must be met:

- **Circuit diagram is current**
- **Software file is current**
- **Software status in the old device can be read**

The software implementation is carried out using two different operating systems and must be individually adapted for each order.