Operating Manual

![motrona logo - safety - control - motion - interface]

BG200
Display and programming unit for motrona safety units
DS230/DS240/DS250/DS260

Product features:

- Touchscreen with intuitive navigation
- 1.54" OLED Display (128 x 64 pixel)
- Simple parameterization of motrona safety units (DS230/DS240/DS250/DS260)
- Editing, saving and loading of parameters
- Dual channel frequency indicator
- Individual scalable process and speed monitors

Version:	Description:
Bg200_01a_oi/cf/2/19	First edition

Table of Contents

1. Safety Instructions and Responsibility

0.0. General Safety Instructions

This operation manual is a significant component of the unit and includes important rules and hints about the installation, function and usage. Non-observance can result in damage and/or impairment of the functions to the unit or the machine or even in injury to persons using the equipment!

Please read the following instructions carefully before operating the device and <u>observe all safety and warning instructions!</u> Keep the manual for later use.

A pertinent qualification of the respective staff is a fundamental requirement in order to use these manual. The unit must be installed, connected and put into operation by a qualified electrician.

Liability exclusion: The manufacturer is not liable for personal injury and/or damage to property and for consequential damage, due to incorrect handling, installation and operation. Further claims, due to errors in the operation manual as well as misinterpretations are excluded from liability.

In addition the manufacturer reserve the right to modify the hardware, software or operation manual at any time and without prior notice. Therefore, there might be minor differences between the unit and the descriptions in operation manual.

The raiser respectively positioner is exclusively responsible for the safety of the system and equipment where the unit will be integrated.

During installation or maintenance all general and also all country- and application-specific safety rules and standards must be observed.

If the device is used in processes, where a failure or faulty operation could damage the system or injure persons, appropriate precautions to avoid such consequences must be taken.

0.1. Use according to the intended purpose

The unit is intended exclusively for use in industrial machines, constructions and systems. Non-conforming usage does not correspond to the provisions and lies within the sole responsibility of the user. The manufacturer is not liable for damages which has arisen through unsuitable and improper use. Please note that device may only be installed in proper form and used in a technically perfect condition - in accordance to the "Technical Specifications"). The device is not suitable for operation in explosion-proof areas or areas which are excluded by the EN 61010-1 standard.

0.2. Installation

The device is only allowed to be installed and operated within the permissible temperature range. Please ensure an adequate ventilation and avoid all direct contact between the device and hot or aggressive gases and liquids.

Before installation or maintenance, the unit must be disconnected from all voltage-sources. Further it must be ensured that no danger can arise by touching the disconnected voltage-sources.

Devices which are supplied by AC-voltages, must be connected exclusively by switches, respectively circuit-breakers with the low voltage network. The switch or circuit-breaker must be placed as near as possible to the device and further indicated as separator.

Incoming as well as outgoing wires and wires for extra low voltages (ELV) must be separated from dangerous electrical cables (SELV circuits) by using a double resp. increased isolation.

All selected wires and isolations must be conform to the provided voltage- and temperature-ranges. Further all country- and application-specific standards, which are relevant for structure, form and quality of the wires, must be ensured. Indications about the permissible wire cross-sections for wiring are described in the "Technical Specifications" chapter.

Before first start-up it must be ensured that all connections and wires are firmly seated and secured in the screw terminals. All (inclusively unused) terminals must be fastened by turning the relevant screws clockwise up to the stop.

Overvoltages at the connections must be limited to values in accordance to the overvoltage category II.

For placement, wiring, environmental conditions as well as shielding and earthing/grounding of the supply lines the general standards of industrial automation industry and the specific shielding instructions of the manufacturer are valid. Please find all respective hints and rules on „ www.motrona.com/download.html --> [General EMC Rules for Wiring, Screening and Earthing]".

0.3. Cleaning, Maintenance and Service Notes

To clean the front of the unit please use only a slightly damp (not wet!), soft cloth. For the rear no cleaning is necessary. For an unscheduled, individual cleaning of the rear the maintenance staff or assembler is self-responsible.
During normal operation no maintenance is necessary. In case of unexpected problems, failures or malfunctions the device must be shipped for back to the manufacturer for checking, adjustment or reparation. Unauthorized opening and repairing can have negative effects or failures to the protection-measures of the unit.

2. Functional Description

The optional BG200 unit serves as display- and programming-unit for motrona safety-relevant devices. With its intuitive operation, the BG200 is quick, easy and flexible to handle.

The unit can be used via PC or directly connected with the safety unit. The BG200 offers a wide range of functions and features (depending on the type of safety device and the DIL switch setting).
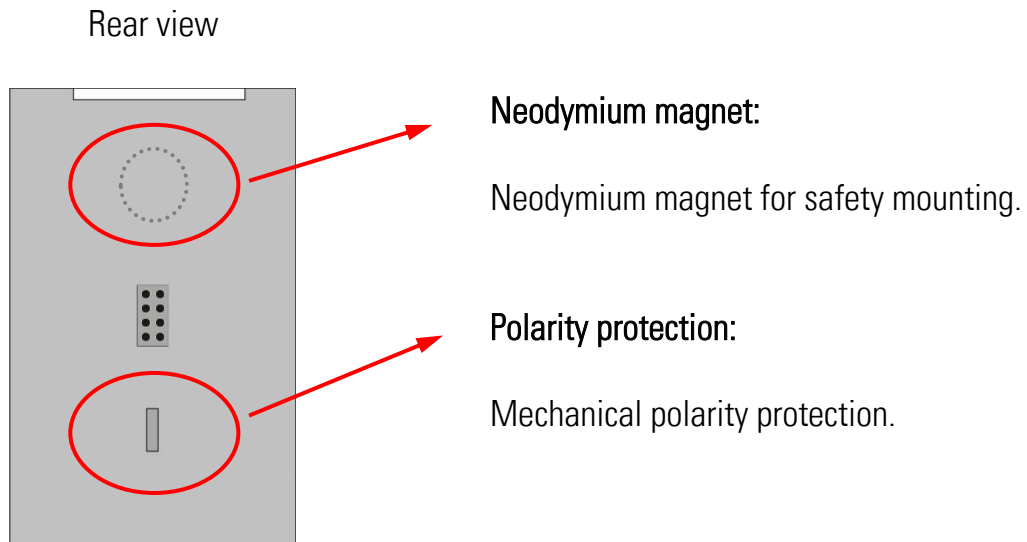
2.1. Applications on the safety device (DS230/DS240/DS250/DS260)

Plugged on a Motrona safety device (DS230/DS240/DS250/DS260), the function of the BG200 depends on the setting DIL-switch of the safety device. There are three different device modes:

- Normal operation "(see Chapter 5.1)
    - o Two-channel frequency display
    - o Individually scalable display for E. G. Speeds, production rates,...
    - o Visual Error message

- „Factory Settings" (see Chapter 5.2)
    - o No function

- „Programming Mode" (see Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**)
    - o Edit and save the BG200 parameters
    - o Edit and save the Security device parameters
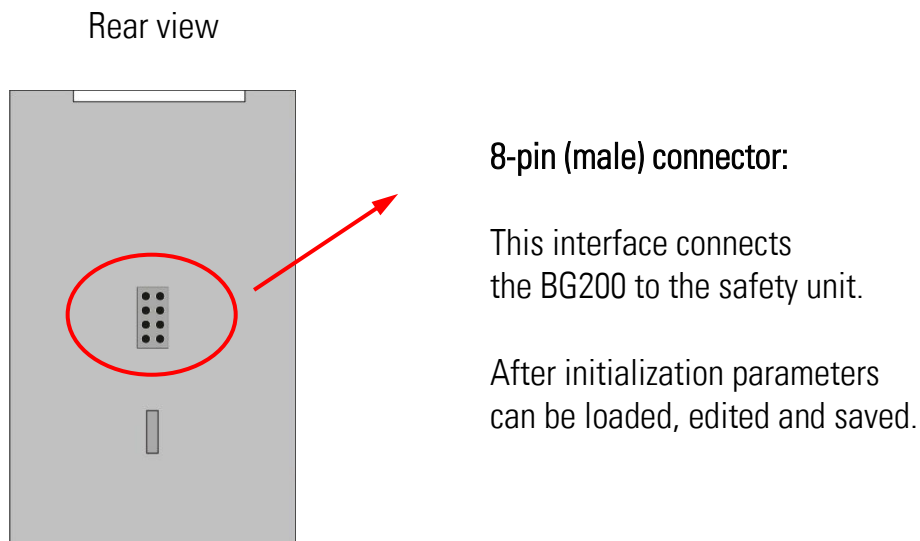   - o Copying the safety device parameters

3. Mounting On Safety Unit

The mounting of the programming unit BG200 can be done by simply plugging the programming unit at the safety device. Via the 8-position pin strip, both units will be connected. A mechanical polarity protection ensures that the device cannot be plugged wrong. Neodymium magnets ensure a safe connection.

Rear view

Neodymium magnet:

Neodymium magnet for safety mounting.

Polarity protection:

Mechanical polarity protection.

4. Electrical Connections

4.1. 8-pin (male) connector

Rear view

8-pin (male) connector:

This interface connects
the BG200 to the safety unit.

After initialization parameters
can be loaded, edited and saved.

5. Parameterizing the Safety Unit

The BG200 is operated by using the 6 buttons of the touchscreen key panel.

OK	The button OK is used to confirm entries
C	The „Cancel" resp. „ESC" button is used to leave the menu or go back one menu-level.
↑	The UP button is used to jump to the next menu item or increases the numeric value (number flashes).
↓	The DOWN button is used to jump to the previous menu item or decreases the numeric value (number flashes).
←	The LEFT button switches to the previous menu item or selects the previous position of the value to be edited (number flashes).
→	The RIGHT button switches to the next menu item or selects the next position of the value to be edited (number flashes).

⚠	For touchscreen operation, an existing connection between the BG200 and a safety unit is necessary.

5.1. Unit Mode „NORMAL OPERATION"

The DIL-switch positions of the safety unit are:	
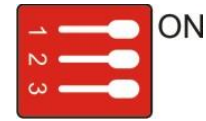
By using the arrow buttons, this mode allows to change the displays of the BG200 as follows:

5.1.1. Display 1: Frequencies (Hz)

| FREQUENCY 1 [Hz]: **+364.2** FREQUENCY 2 [Hz]: **+4254.8**	Both input frequencies of sensor1 and sensor2 are indicated with one decimal place (see "Operational Mode" of the safety unit). The indication is independent from the safety device scaling.

5.1.2. Display 2: Divergence (%)

| DIVERGENCE [%]: **+12**	Indicates the divergence of both input frequencies in percent (see "Div. Calculation" of the safety unit). The indication depends on parameters of the Sensor Menus and divergence parameters settings of the safety device.

5.1.3. Display 3: Scaled Input 1
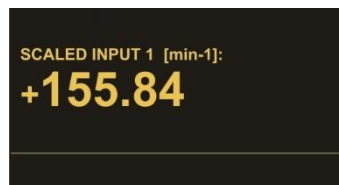
SCALED INPUT 1 [min-1]: **+155.84**	In this display, the respective input frequency of sensor1 is converted according to its adjusted parameters („OPU-Menu" in safety device) and shown in the display. *) See chapter 0

5.1.4. Display 4: Scaled Input 2
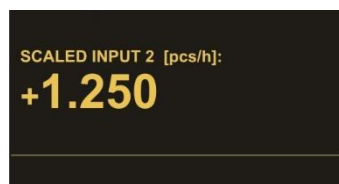
SCALED INPUT 2 [pcs/h]: **+1.250**	In this display, the respective input frequency of sensor2 is converted according to its adjusted parameters („OPU-Menu" in safety device) and shown in the display. *) See chapter 0

Examples about the indication of speed, rotational speed, production rates, … see chapter 7.

For information's about error messages in the status-line see chapter 0.

The maximum display value is +/- 999 999 999.

*) For safety devices DS23X and DS24x with a firmware version lower 04A, these parameters are in BG200.

For the safety devices DS250 and DS260 an additional display is available.

This display shows the CRC checksum of the stored parameter values in the safety device.

5.2. Modus „FACTORY SETTINGS"

The DIL-switch positions of the safety unit are:	
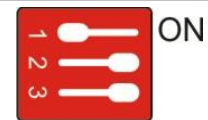
This mode is used to reset the safety unit back to its default values with the next power-up. No data entry at the BG200 is possible here!

The programming unit BG200 cannot be set to default values!

 In order to keep the actual parameter settings safety, these can be stored in the flash memory of the BG200 unit. At first the parameters must be transmitted from the safety unit into the BG200 (see chapter 5.4). Then the parameters can be stored (see chapter 5.6).

5.3. „PROGRAMMING MODE"

The DIL-switch positions of the safety unit are:	

In this mode the parameters of the programming unit BG200 or the parameters of the safety unit can be editing by the touch panel.

If the programming unit is protected by a PIN-Code, first of all enter the required PIN (see chapter 5.7).

PIN Code **0000** DIL3 - PROGRAMMING MODE	For use of the programming unit BG200 enter the „Master PIN" or the „User PIN" and confirm by OK.

If the PIN is lost, you can enter the emergency pin 6079.

5.3.1. BG200 Menu Structure

Please find the BG200 Parameter List in the chapter 6

Select Device **Display Unit** DIL3 - PROGRAMMING MODE	The first menu level serves for selection of the parameters to be edited (BG200 or Safety Unit) To edit the BG200, please select "Display Unit"

|	
Display Unit **Edit Data** DIL3 - PROGRAMMING MODE	To edit parameters, please select „Edit Data" press OK to confirm. See chapter 5.5
Display Unit **Save Data To** **Display Memory** DIL3 - PROGRAMMING MODE	To save the parameters of the BG200, please select „Save Data To Display Unit" and press OK to confirm. See chapter 5.6

For orientation, the actual menu from the first menu-level appears in the top left corner.

5.3.2. Menu Structure of the Safety Unit

Please find the relevant parameter list of the safety units in the respective operation manual!

Select Device Safety Unit
DIL3 - PROGRAMMING MODE

The first menu level serves for selection of the parameters to be edited (BG200 or Safety Unit).
To edit the safety unit, please select "Safety Unit".
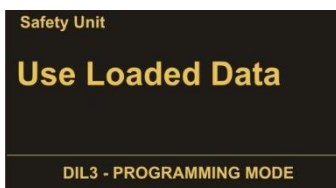
Safety Unit — Use Loaded Data
DIL3 - PROGRAMMING MODE

To edit already loaded parameters, please select „Use Loaded Data" and press OK to confirm.

See chapter 5.4

Safety Unit — Load Data From Safety Unit
DIL3 - PROGRAMMING MODE

To load actual parameters from the safety unit, please select „Load Data From Safety Unit" and press OK to confirm.

Safety Unit — Load Data From Display Memory
DIL3 - PROGRAMMING MODE

To load parameters for a safety unit from the BG200 flash memory, please select „Load Data From Display Memory" and press OK to confirm.

Safety Unit — Edit Data
DIL3 - PROGRAMMING MODE

Please select „Edit Data" and press OK to confirm.

See chapter 5.5

Safety Unit — Save Data To Safety Unit
DIL3 - PROGRAMMING MODE

To save the parameter-set in the safety unit, please select „Save Data To Safety Unit" and press OK to confirm..

See chapter 5.6

Safety Unit — Save Data To Display Memory
*DIL3 - PROGRAMMING MODE*

To save the parameter-set of the safety unit in the BG200 flash memory, please select „Save Data To Display Memory" and press OK to confirm.

For orientation, the actual menu from the first menu level appears in the top left corner.

5.4. Load Parameter

5.4.1. Parameters of the Safety Unit

The „Load Data From…"- menu can be found as follows:

Safety Unit	→	Load Data From …
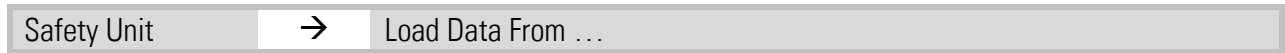
After selection of „Safety Unit" in the first menu level, the parameter-sets to be loaded are available.

|	
Safety Unit **Use Loaded Data** DIL3 - PROGRAMMING MODE	This menu option is only selectable, when data has already been loaded from the safety unit or flash memory. To edit already loaded parameters, please select „Use Loaded Data" and press OK to confirm.
Safety Unit **Load Data From Safety Unit** DIL3 - PROGRAMMING MODE	To load actual parameters from the safety unit, please select „Load Data From Safety Unit" and press OK to confirm.
Safety Unit **Load Data From Display Memory** DIL3 - PROGRAMMING MODE	To load parameters for a safety unit from the BG200 flash memory, please select „Load Data From Display Memory" and press OK to confirm.
Safety Unit **ATTENTION !** **No Data In Flash**	If „Load Data From Display Memory" is selected, but no data has been saved in the flash memory, the following hint appears: „ATTENTION! No Data In Flash"

5.4.2. BG200 Parameters

The „Load Data From …" menu is only for safety unit parameters available. The parameters for the BG200 unit are loaded directly after „Display Unit" was selected in the first menu level.

5.5. Edit Parameter

The „Edit Data"- menu can be found as follows:

| Safety Unit | → | Load Data From … | → | Edit Data … |

| Display Unit | → | Edit Data … |
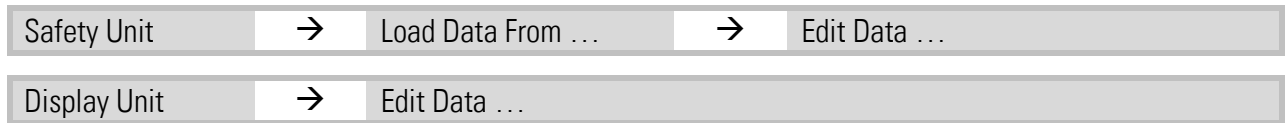
After choosing the device to be edited in the first menu level, which is followed by the selection of „Edit Data", the selectable parameter-groups are shown. All respective parameters are listed here (see chapter 6).

The selection menu of the parameter-group can be reached in the menu option „Edit Data". After confirmation by pressing OK, the respective parameter-groups are shown in the display.

Please select the parameter to edit by using the arrow buttons. The actual value of the parameter is also shown display. After pressing OK, the parameter can be edited.

By using the arrow buttons left/right, the cursor can be skipped to another position (the relevant number flashes). By using the arrow buttons up/down, the value can be changed. Press OK to confirm or C to leave the entry.

After changing parameters these must be saved.
This is important to ensure, that the changes took effect also after power-off or when the BG200 has been removed from the safety unit (see chapter 5.6).

Parameter changes of the safety unit are only effective after saving (see 5.6.1).

5.6. Save Parameter

The „Save Data To…"- menu can be found as follows:

| Safety Unit | → | Load Data From … | → | Edit Data / Save Data … |

| Display Unit | → | Edit Data / Save Data … |

5.6.1.Save Parameter to Safety Unit

The following storage locations are selectable for the safety unit parameters:

Safety Unit **Save Data To** **Safety Unit** DIL3 - PROGRAMMING MODE	Select „Save Data To Safety Unit" to save the respective parameters in that unit. Then press OK to confirm.
Safety Unit **Save Data To** **Display Memory** DIL3 - PROGRAMMING MODE	Select „Save Data To Flash Memory" to save parameters of the safety unit into the flash memory of the BG200. Then press OK to confirm.

5.6.2.Save Parameter to Display Unit

Display Unit **Save Data To** **Display Unit** DIL3 - PROGRAMMING MODE	To save parameters in the BG200, please select „Save Data To Display Unit" and press OK to confirm.

5.6.3.Storage Hints
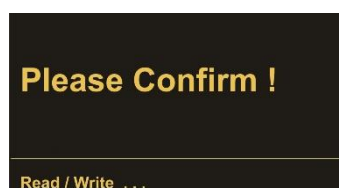
Please Confirm ! Read / Write …	To ensure a correct storage, the procedure must be confirmed with OK. The respective storage location is shown in the info line of the display.
To Exit Without **Save Press OK** DIL3 - PROGRAMMING MODE	If the menu (after changing parameters) should be left without saving, the procedure „Exit Without Save Press OK" must be confirmed with OK. Press button C to jump back to the storage menu. If the menu has been left without saving, the data are not lost. They are still available in the menu „Use Loaded Data" (see chapter 5.4).

5.7. Master PIN and User PIN

The BG200 has two password levels. The device is shipped with factory set values
Master PIN = 0000 and User PIN = 0000 and is therefore not password protected. Full access to all functions is possible. However, the BG200 control unit can be protected against unauthorized access by selecting a PIN specification not equal to 0000.

Both parameters can be changed in the menu "Unit Settings"

| Display Unit | → | Edit Data | → | Unit Settings | → | Master PIN |

| Display Unit | → | Edit Data | → | Unit Settings | → | User PIN |

You can enter a 4-digit PIN code of your choice. After confirming with OK, the change must still be saved (see chapter 5.6) so that next time the BG200 control unit is protected by a PIN code.

> ⚠ When using a "User PIN", a "Master PIN" should always be assigned too so that access to the BG200 parameters is retained.

5.7.1. Master PIN

When using the "Master PIN", the user can access all functions and parameters in the safety and operating device by entering the PIN code.

5.7.2. User PIN

When using the "User PIN", the user can only load the data stored in the operating unit of the safety device by entering the PIN code and transfer it to the safety device. Any editing of the parameters in the safety and operating device is blocked.

Only following menu items are available:

Safety Unit **Load Data From Display Memory** DIL3 - PROGRAMMING MODE	To load the parameters for a safety device from the flash memory of the BG200, select "Load Data From Display Memory" and confirm with OK.
Safety Unit **Save Data To Safety Unit** DIL3 - PROGRAMMING MODE	To save the parameter set in the safety device, select "Save Data To Safety Unit" and confirm with OK.

6. BG200 Parameter List

The parameter list of the safety units can be found in the respective operation manual.
The parameters for „Input Scaling" are listed in the following menu of the safety device:

| Safety Unit | → | Edit Data | → | OPU Menu | → | … |

Parameter-Gruppe	Parameter	Min	Max	Default
Input Scaling *)	X Factor 1	1	999999	1
	/ Divisor 1	1	999999	1
	+/- Value 1	-999999	999999	0
	Units 1	0	12	0
	Decimal Point 1	0	5	0
	X Factor 2	1	999999	1
	/ Divisor 2	1	999999	1
	+/- Value 2	-999999	999999	0
	Units 2	0	12	0
	Decimal Point 2	0	5	0

The parameters for „Unit Settings" and „Serial Settings" are listed in the following menu:

| Display Unit | → | Edit Data | → | … Settings | → | … |

Parameter-Gruppe	Parameter	Min	Max	Default
Unit Settings	Display Mode	1	3	1
	Screen Light	0	99	0
	Screen Saver	0	999	1
	Master PIN	0	9999	0
	User PIN	0	9999	0
	Touch Tones	0	1	1
Serial Settings	Unit Number	11	99	11
	Serial Baud Rate	0	10	0
	Serial Format	0	9	0

*) If the version of the safety device is lower 04A, scaling parameters are in BG200. When safety device version is higher DS23004A scaling parameters are in the "OPU Menu" of the safety device.

6.1. Input Scaling for Display 3 and 4

This Menu is in safety device as OPU Menu, when safety device version is higher DS23004A!

Parameter	Min	Max	Default
<u>X Factor 1:</u> By this value, the input frequency 1 is multiplied and visualized in the display mode 3.	-999999	+999999	1
<u>/ Divisor 1:</u> By this value, the input frequency 1 is divided and visualized in the display mode 3.	1	999999	1
<u>+/- Value 1:</u> By this value, the input frequency 1 is added / subtracted and visualized in the display mode 3.	-999999	999999	0
<u>Units 1:</u> By this value, the unit is adjusted and visualized in the display mode 3. <table><tr><td>0</td><td>Hz</td></tr><tr><td>1</td><td>kHz</td></tr><tr><td>2</td><td>m/s</td></tr><tr><td>3</td><td>km/h</td></tr><tr><td>4</td><td>mph</td></tr><tr><td>5</td><td>min-1</td></tr><tr><td>6</td><td>rpm</td></tr><tr><td>7</td><td>sek-1</td></tr><tr><td>8</td><td>rps</td></tr><tr><td>9</td><td>Stk/h</td></tr><tr><td>10</td><td>pcs/h</td></tr><tr><td>11</td><td>%</td></tr><tr><td>12</td><td></td></tr></table>	0	12	0
<u>Decimal Point 1:</u> By this value, the number of decimal places is defined and visualized in the display mode 3.	0	5	0
<u>X Factor 2:</u> see „X Factor 1"	-999999	+999999	1
<u>/ Divisor 2:</u> see „/ Divisor 1"	1	999999	1
<u>+/- Value 2:</u> see „+/- Value 1"	-999999	999999	0
<u>Units 2:</u> see „Units 1"	0	12	0
<u>Decimal Point 2:</u> see „Decimal Point 1"	0	5	0

☞ Examples for the visualization of frequencies, speed or production rates, … can be found in the chapter 7.

6.2. Unit Settings

Parameter	Min	Max	Default
Display Mode: Defines which of the four display variants serves as start-display (see chapter 5.2)	1	4	1

1	_5.2.1 Display 1: Frequency (Hz)_
2	_5.2.2 Display 2: Divergence (%)_
3	_5.2.3 Display 3: Scaled input for Speed, Rotating Speed, …_
4	_5.2.4 Display 4: Scaled input for Speed, Rotating Speed, …_

Parameter	Min	Max	Default
Screen Light: Defines the brightness of the OLED-Displays.*	0	99	0

0	Display brightness	minimal
…		
99	Display brightness	maximal

Parameter	Min	Max	Default
Screen Saver: This value is used to set the time for the screensaver.*	0	999	1

0	screen saver OFF
1	screen saver active after 1 minute
…	
999	screen saver active after 999 minutes

Parameter	Min	Max	Default
PIN Value: Defines a PIN code for access. With setting "0000" the PIN request is not active. Any other value will be overtaken as PIN code with the next power-on of the BG200.	0	9999	0
Touch Tones: This value is used to set keypad tones active / inactive.	0	1	1

0	keypad tones	OFF
1	keypad tones	ON

*) Display Unit changes like „Screen Light" or „Screen Saver" are effective immediately, but will go lost without saving (see chapter 5.6)!

6.3. Serial Settings

Parameter	Min	Max	Default
<u>Unit Number:</u>	11	99	11
Unit numbers between 11 … 99 can be assigned to the devices (default setting = 11). Unit numbers with "0" are forbidden because these are used for group- or bulk-addressing.			
<u>Serial Baud Rate:</u>	0	10	0

0	9 600 Baud
1	4 800 Baud
2	2 400 Baud
3	1 200 Baud
4	600 Baud
5	19 200 Baud
6	38 400 Baud
7	56 000 Baud
8	57 200 Baud
9	76 800 Baud
10	115 200 Baud

Parameter	Min	Max	Default
<u>Serial Format:</u>	0	9	0

0	7	data bit	parity	even	1	stop bit
1	7	data bit	parity	even	2	stop bit
2	7	data bit	parity	odd	1	stop bit
3	7	data bit	parity	odd	2	stop bit
4	7	data bit	parity	---	1	stop bit
5	7	data bit	parity	---	2	stop bit
6	8	data bit	parity	even	1	stop bit
7	8	data bit	parity	odd	1	stop bit
8	8	data bit	parity	---	1	stop bit
9	8	data bit	parity	---	2	stop bit

| Parameter	Min	Max	Default
<u>Serial Init</u>	0	1	0
This parameter determines the baud rate for the transmission of the initialization values to the operator surface OS6.0 respectively to the BG200 programming- and display unit.			
0: The initialization values will be transmitted with 9600 baud. After initialization the unit works with the user settings again.			
1: The initialization values will be transmitted with the user defined baud rate. After initialization the unit works with the user settings again.			
With settings higher than 9600 baud, the duration of the initialization procedure can be shortened.			

7. Example of an individual scalable Display

By using the arrow buttons, the unit mode of the safety device can be selected.

The programming unit works directly with the frequencies measured by the safety unit. Which inputs are used by the safety unit, must be specified in the "Operational Mode" of the safety unit.

*) If the version of the safety device is lower 04A, scaling parameters are in BG200. When safety device version is higher DS23004A scaling parameters are in the "OPU Menu" of the safety device.

Changes will be only effective after saving! See chapter 5.5

The calculation of an individual scalable display is built-up as follows:

Input Frequency	X Factor	Devisor	+/- Value
$\frac{1}{10}$ Hz	X	/	+/-
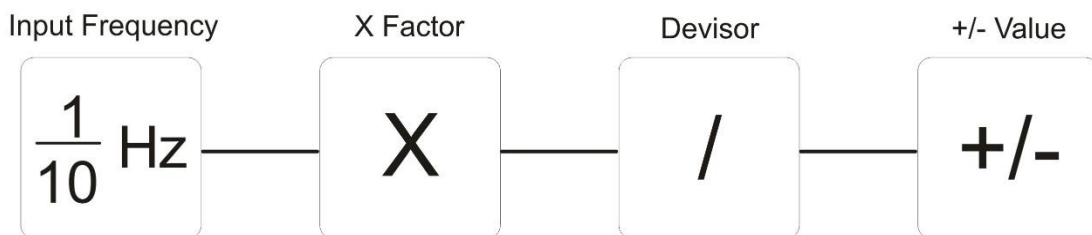
The unit ("Units") as well as the number of decimal places are freely selectable and have no influence to the accuracy of the calculation.

Examples for an input frequency of 1 kHz:

If 1000.0 [Hz] is shown in display 1 „Frequency", the parameter group „Input Scaling" can be used to adjust the following scaling's, which are then indicated in display 3.

Display 1: „Frequency"	X Factor	Divisor	+/- Value	Units	Decimal Point	Display 3/4 „Scaled Input"
1000.0 [Hz]	1	10	0	12	0	1000
1000.0 [Hz]	1	1	0	0	1	1000.0 [Hz]
1000.0 [Hz]	1	1000	0	1	1	1.0 [kHz]
1000.0 [Hz]	1	1	0	1	4	1.0000 [kHz]
1000.0 [Hz]	60	2048*	0	6	2	29.29 [rpm]

*) Number of pulses per encoder revolution

Parameters of the group „Input Scaling" see chapter 0
Display 1 „Frequency" resp. display 3/4 „Scaled Input" see chapter 5.1

8. Error Messages

8.1. Error Messages from the Safety Unit

Error- resp. status-messages will be shown below the diving line of the BG200 display.

Runtime Error / Initial Error:

Runtime Error: H 0000 0000

Error messages from the safety device are indicated as a hexadecimal number (H) given in the status line of the display. A listing of all available numbers and the associated errors can be found in the manual of the safety device.

Example:
The hexadecimal number of the error message is build-up of individual errors:

Runtime Error: H 0000 0386
H 0000 0200
H 0000 0100
H 0000 0080
H 0000 0004
H 0000 0002

8.2. Status Messages from the BG200

Error- resp. status-messages will be shown below the diving line of the BG200 display.

Communication Offline:

In case of a status message „Communication Offline"
- the serial settings must be checked resp. adjusted
- or the safety unit must be switched off and on again
  (in order to re-initialize the safety and display unit)

CRC Error:
The "CRC Error" is released in case of damaged data, when storing in resp. loading from the flash memory. The damaged data from the flash cannot be loaded or used and need to be saved again.

Readback Error:
The "Readback Error" is released if the data which were transmitted to the safety device do not correspond with the read back data.

Serial Error:
In case of errors during the serial transmission (e. g. parity errors or transmission errors), the „Serial Error" message is released. Then the BG200 must be removed and connected again for a re-initialization of the serial interface.

9. Technical Specifications

Power supply:	Input voltage: Protection: Power consumption: Connection:	directly via a motrona safety unit mechanical polarity protection approx. 100 mA 8 position pin strip
Display elements:	Display: Resolution: Brightness:	1.54" OLED display 128 x 64 pixels digitally adjustable (99 steps)
Operating elements:	Keypad: Miscellaneous:	touchscreen (6 capacitive touch-fields) key tones (switchable mute)
Data memory:	Storage medium: Data retention:	Flash EEPROM 1,000,000 cycles
Housing:	Material: Mounting: Dimensions: Protection class: Weight:	front: polycarbonate, black/yellow/clear rear: polystyrene, black plug-on motrona safety unit 50 x 80 x 15 mm / 1.969 x 3.150 x 0.591 " (plugged on safety device) IP20 approx. 50 g
Temperature range:	Operation: Storage:	-20 … +55 °C / -4 °F … 131 °F -25 … +70 °C / -13 °F … 158 °F
Conformity & standards:	EMC 2004/108/EC: Guideline 2011/65/EU:	EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 RoHs-conform

9.1 Dimensions

Front view

Side view

80 mm
3.15"

50 mm
2.0 "

15 mm
0.6"

9 mm
0,36"
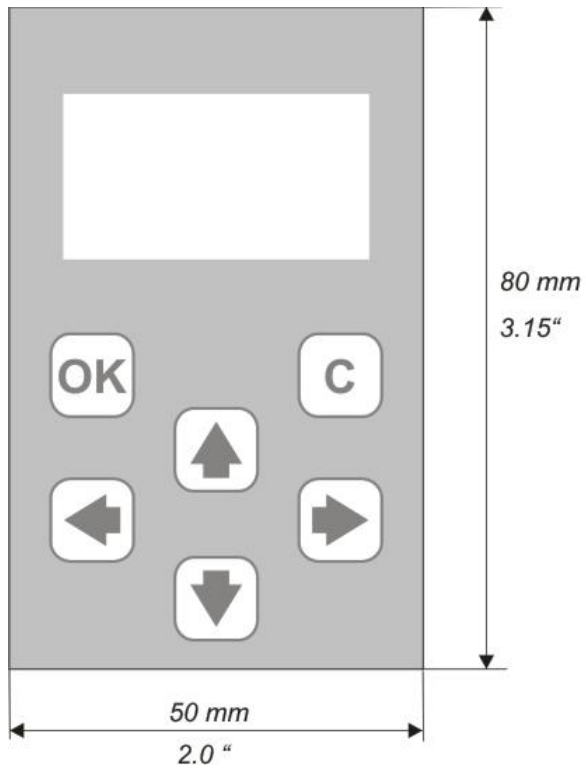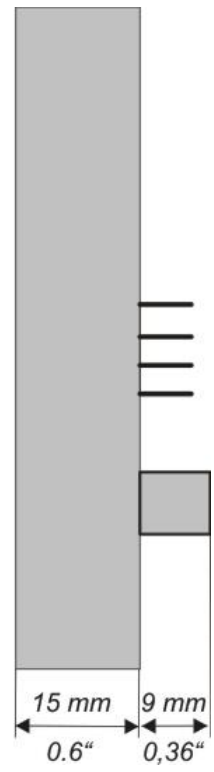
10. Installation Form

Date:	Unit: BG200
Operator:	
Software:	
Serial No.:	

Input Scaling	X Factor 1	
	/ Divisor 1	
	+/- Value 1	
	Units 1	
	Decimal Point 1	
	X Factor 2	
	/ Divisor 2	
	+/- Value 2	
	Units 2	
	Decimal Point 2	

Unit Settings	Display Mode	
	Screen Light	
	Screen Saver	
	Master PIN	
	User PIN	
	Touch Tones	

Serial Settings	Unit Number	
	Serial Baud Rate	
	Serial Format	