

# User Manual

## Programming Unit HD-FlexBrake / HD-Lock Art. No. 102900.3



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### User Manual Programming Unit HD-FlexBrake / HD-Lock

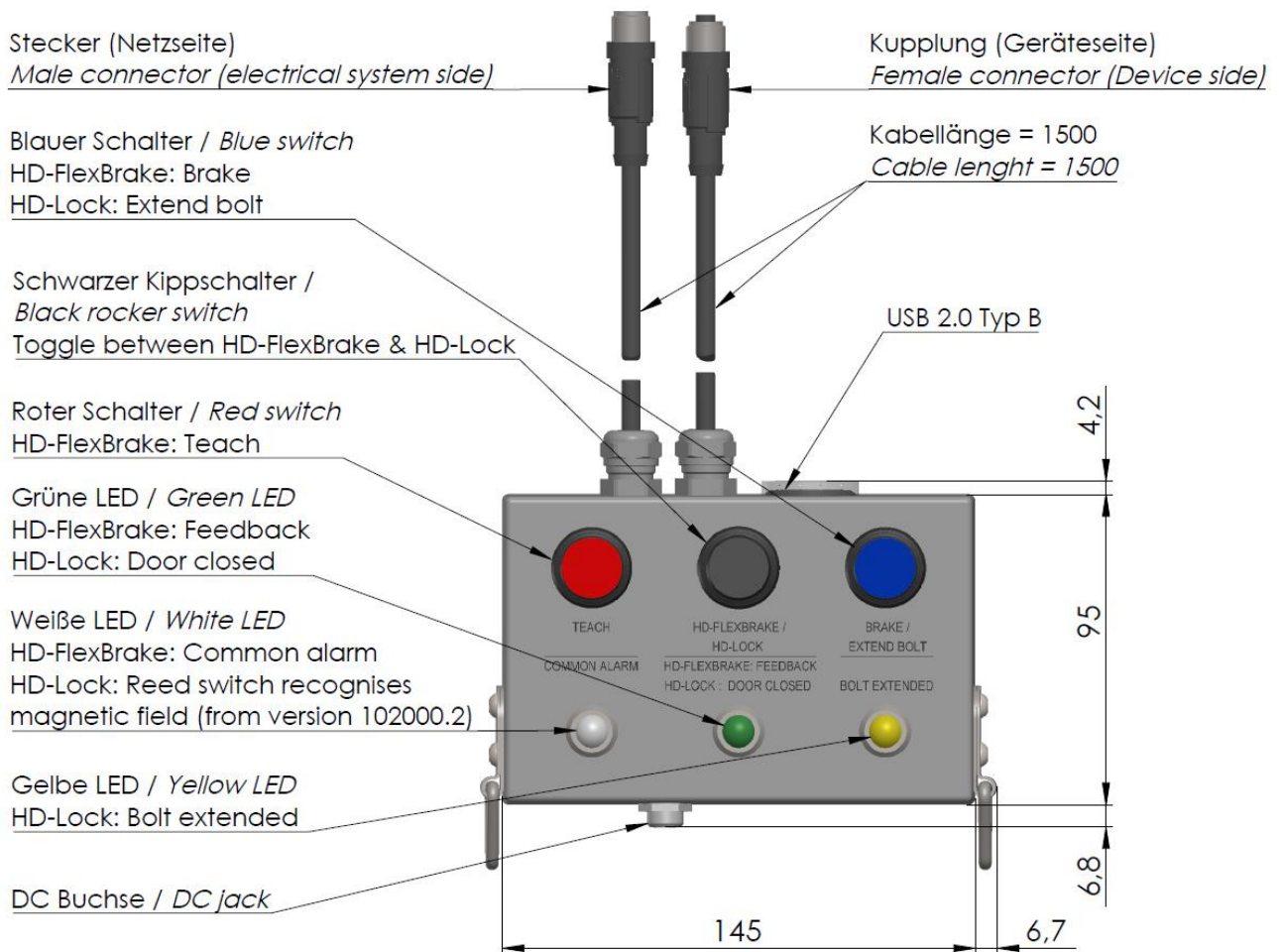
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# 1 General

The programming unit is intended for use in connection with the HD-FlexBrake or the HD-Lock. It enables manual setting of the inputs and displays the status of the outputs with LEDs. There is a USB interface that provides a connection between a PC and the HD-FlexBrake / HD-Lock.

## 1.1 Characteristics of the Programming Unit

The programming unit is designed to be splash-proof and, thanks to its aluminum housing and stainless steel and plastic inserts, it is also suitable for use in the maritime sector.



**Figure 1: Product drawing front view**

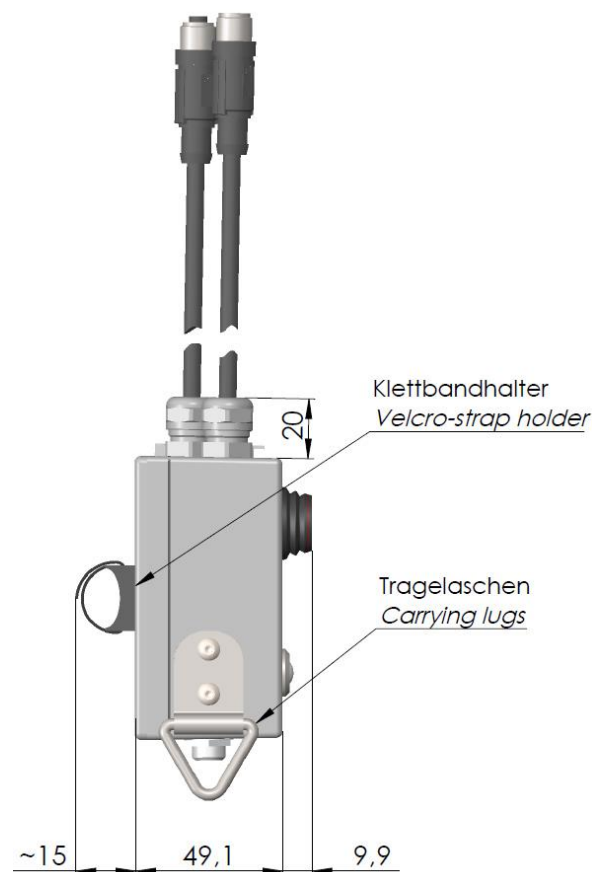


Figure 2: Product drawing side view

Following can be achieved by using the programming unit:

- Parameters of the HD-FlexBrake or HD-Lock can be changed from the PC via the USB interface
- A function check after installing the HD-Flexbrake or the HD-Lock
- Reassigning a braking angle for the HD-FlexBrake

## 2 Installation

The programming unit needs to be connected to either the HD-FlexBrake or the HD-Lock. If HD-FlexBrake or HD-Lock is already connected to the supply, this connection must first be disconnected. The cable with the female connector (device side) can be connected to the device. Then the cable with the male connector (electrical system side) can be connected to the electrical system.

Optionally, power can be supplied via a DC jack. By prefixing the programming unit all lines are disrupted except for the supply, since this is required for operation.

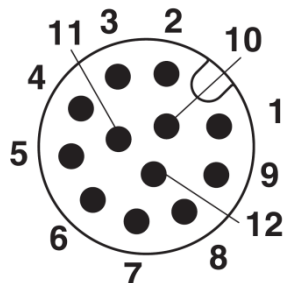
**The programming unit comes without power supply, which is why a power supply is absolutely necessary.**

Whenever possible, the programming unit should be installed in a de-energized state, i.e. a power supply with an engaging mechanism is preferable.

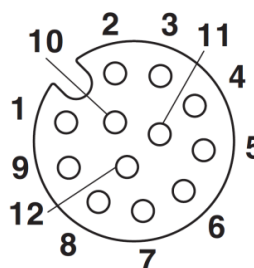
## 2.1 Electrical Interface

Pin assignment

M12 male connector



M12 female connector



Inputs and Outputs of Programming Unit

Pin	Signal		Wire color	Description
	Female connector	Male connector		
1	<b>HD-FlexBrake:</b> Teach <b>HD-Lock:</b> Bolt Extended	NC	brown	<b>HD-Flexbrake:</b> Input signal to teach an opening angle. Is connected via the red switch and 10 kΩ to VCC. <b>HD-Lock:</b> Output signal to indicate extended bolt. Is connected to GND via the yellow LED and 1.2 kΩ.
2	GND	GND	blue	The two GND-lines are connected.
3	<b>HD-FlexBrake:</b> Locked_1 <b>HD-Lock:</b> Door Closed	NC	white	<b>HD-Flexbrake:</b> Output signal for the state of a door held open by the brake. <b>HD-Lock:</b> Output signal for the state of a closed door.  Output signal is connected to GND via the green LED and 1.2 kΩ in both cases.
4	<b>HD-FlexBrake:</b> Brake en/dis_ <b>HD-Lock:</b> Extend Bolt	NC	green	<b>HD-Flexbrake:</b> Input signal for activating the brake function. <b>HD-Lock:</b> Input signal to extend the bolt.  Input signal is connected to VCC via the blue switch and 10 kΩ in both cases.
5	RXTX-N	NC	pink	Modbus signal A (RS485) is required for USB converter.
6	<b>HD-FlexBrake:</b> Locked_2	NC	yellow	<b>HD-Flexbrake:</b> Connected with VCC. Is connected with Locked_1 if output is activated. <b>HD-Lock:</b> Connected with GND. Is used to choose the Modbus.
7	RXTX-N2	NC	black	Modbus signal A (RS485) is required for USB converter.
8	RXTX-P	NC	grey	Modbus signal B (RS485) is required for USB converter.
9	VCC	VCC	red	The VCC lines are connected. Positive supply voltage.
10	RXTX-P2	NC	violet	Modbus signal B (RS485) is required for USB converter.
11	<b>HD-FlexBrake:</b> Common-Alarm_1	NC	grey/pink	<b>HD-Flexbrake:</b> Output signal for state of an existing functional error. <b>HD-Lock:</b> Internal reed switch recognizes an available magnetic field and connects through (only applicable from version 102000.2).  Output signal is connected to GND via the white LED and 5.9 kΩ in both cases.
12	<b>HD-FlexBrake:</b> Common-Alarm_2	NC	red/blue	<b>HD-Flexbrake:</b> Connected with VCC. Is connected with Common-Alarm_1 if output is activated. <b>HD-Lock:</b> Connected with mit VCC. Is connected with Common-Alarm_1 if door is closed (only applicable from version 102000.2).

## 3 Operation

### 3.1 Start-Up

The programming unit is ready for operation immediately after installation. This also applies to the HD-Lock. HD-Lock indicates its readiness by the green and yellow LEDs lighting up. However, since the power supply to the respective device was interrupted during installation, it may be necessary to reinitialize the HD-FlexBrake. After the HD-FlexBrake has been connected, its readiness is indicated by the white LED (Common Alarm) lighting up.

### 3.2 Usage with HD-FlexBrake

Before the programming unit is used with the HD-FlexBrake, the rocker switch (in the middle) must be flipped to the left.

The following indications apply to operation with the HD-FlexBrake:

*Red switch:*

- Not engaged (does not light up) ↔ The "Teach" signal is deactivated (GND).
- Engaged (lights up) ↔ The "Teach" signal is activated (VCC).

*Blue switch:*

- Not engaged (does not light up) ↔ The "Brake en/dis\_" signal is deactivated (GND).
- Engaged (lights up) ↔ The "Brake en/dis\_" signal is activated (VCC).

*White LED:*

- Does not light up ↔ The "Common-Alarm\_1" is deactivated (GND). HD-FlexBrake is not ready for work / There is an alarm.
- Lights up ↔ The "Common-Alarm\_1" is activated (VCC). The HD-FlexBrake is ready for work / There is no alarm.

*Green LED:*

- Does not light up ↔ The "Locked\_1" signal is deactivated (GND).
- Lights up ↔ The "Locked\_1" signal is activated (VCC).

Please note that the polarity of the outputs and inputs can be changed via Modbus. The indications described above represent the factory settings.

#### Activate braking

To brake the door, it must be opened at least up to the braking angle (factory setting 90 °). Braking is triggered when the brake is applied and the "Brake en/dis\_" signal is active (blue switch engaged) and "Teach" signal is inactive (red switch is not engaged).

#### Example:

If necessary, first deactivate the "Teach" signal, this means turn off the red switch so that it is no longer lit. Then activate the "Brake en/dis\_" signal, this means turn on the blue switch so that it lights up. Then open the door beyond the braking angle and let it close. The door is now automatically braked close to the braking angle and this is indicated by the "Locked\_1" signal. The green LED now lights up. If the blue switch is pressed again (blue switch is no longer lit), the brake opens and the door closes again.

## Teach new braking angle

Before activating the teach process, the door on which the HD-FlexBrake with door closer is mounted must be closed and the "Brake en/dis\_" signal must be deactivated (blue switch not engaged). Then the "Teach" signal must be activated (red switch engaged). Then open the door to the desired braking angle and let it close. The largest angle is saved as the braking angle. The function is reported by the "Locked\_1" signal toggling quickly (green LED flashes quickly). If a valid braking angle (at least 5 °) is reached, the "Locked\_1" signal changes to slow toggling (green LED flashes slowly). When the "Teach" signal is deactivated, the braking angle is saved in a non-volatile manner.

### Example:

Close the door, then deactivate the "Brake" signal (blue switch not engaged). Now activate the "Teach" signal (red switch engaged). The green LED flashes quickly for feedback. Now open the door to the desired braking angle (green LED flashes slower at a closing angle > 5 °) and let it close. Deactivate the "Teach" signal (red switch not engaged). The teach process is now complete

## Holding torque of HD-FlexBrake

A holding torque is pre-set in the factory. This is applied monodirectional against the closing door. If the holding torque is exceeded for a certain time, the brake opens.

## 3.3 Usage with HD-Lock

Before the programming device is used with the HD-Lock, the rocker switch (in the middle) must be flipped to the right.

The following indications apply to operation with the HD-Lock:

Blue Switch:

- Not engaged (does not light up) ↔ The "Extend Bolt" signal is deactivated (GND).
- Engaged (lights up) ↔ The "Extend Bot" signal is activated (VCC).

Green LED:

- Does not light up ↔ The "Door Closed" signal is deactivated (GND).
- Lights up ↔ The "Door Closed" signal is activated (VCC).

Yellow LED:

- Does not light up ↔ The "Bolt Extended" signal is deactivated (GND).
- Lights up ↔ The " Bolt Extended " signal is activated (VCC).

White LED (only with usage of HD-Lock 102000.2):

- Does not light up ↔ The door is not closed and the reed switch is open.
- Lights up ↔ The door is closed and the reed switch is closed.

Please note that the polarity of the outputs and inputs can be changed via Modbus. The indications described above represent the factory settings.

### Extend / retract bolt

In order to be able to extend the bolt, the door must be closed (green LED lights up) and the "Extend Bolt" signal must be active (blue switch engaged).

In order for the bolt to retract, the "Extend Bolt" signal must be deactivated (blue switch not engaged).

### 3.4 Change parameters using USB

With the programming device and using a PC, it is possible to visualize parameters of the HD-FlexBrake or HD-Lock and to change various parameters.

A USB 2.0 Type B connection cable is required to connect to a PC. A driver is also required, which can be requested from BSS.

## 4 Error handling

In case of malfunction following points should be considered:

- **Wiring:**
  - Are all wires connected correctly?
  - Power supply voltage 24 V?
- **Control signals:**
  - Was the respective device parameterized via Modbus differently from the factory setting?

## 5 Modbus Protocol

You will find detailed information on the ModBus interface in a separate document. Please request this from us if required.

## 6 Technical Specifications

Certifications	None
Power supply / Operation Voltage Range	24 V DC / (12...30 V DC)
Additional current per LED	approx. 10 mA
Operating temperature / Storage temperature range	5° C ... +60° C / -20° C ... +70°C
Protection Class	IP 64
Mechanical dimensions	Refer to Figure 1 and Figure 2
Weight with connection cables	approx. 800 g
Cable length	1.5 m
Material of housing	Die-cast aluminum