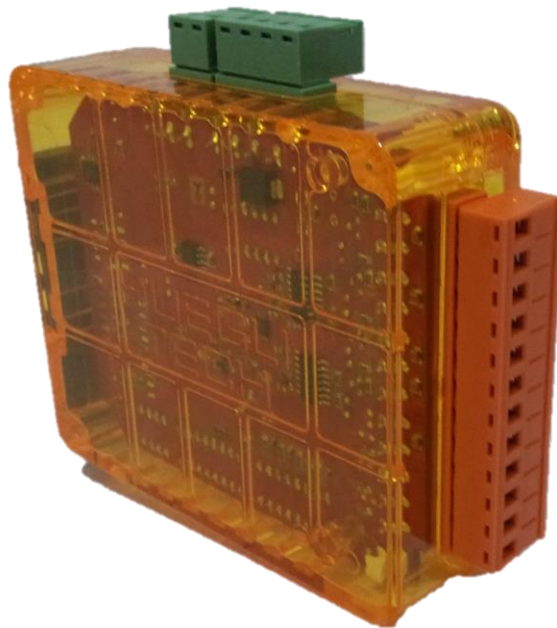# CuteLine

BOUT8 - Binary Output

Manual

Doc.-No. : CL_BOUT8_MN_EN_07.2017

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HUEGLI TECH Switzerland

Table of Contents

1   General Guidelines

1.1   What describes this manual?

This manual describes the function of the Cuteline module, which is designed for use with different gen-set controllers.

What is the purpose of the manual?
This manual provides general information how to install and operate the Cuteline module.

1.2   !! Warning !!

Some of the Cuteline functions are subjected to changes depending on SW version.
The data in this manual only describes the product and are not warranty of performance or characteristic.

Note:
Huegli Tech believes that all information provided herein is correct and reliable and reserves the right to update at any time. Huegli Tech does not assume any responsibility for its use unless otherwise expressly undertaken.

!!! CAUTION !!!

Dangerous voltage

In no case touch the *terminals for voltage and current* measurement!
Always connect grounding terminals!

All parameters are pre-adjusted to their typical values. But the set points in the "**Basic settings**" settings group **!!must!!** be adjusted before the first startup of the gen-set.

!!! WRONG ADJUSTMENT OF BASIC PARAMETERS
CAN DESTROY THE GEN-SET !!!

The following instructions are for qualified personnel only. To avoid personal injury do not perform any action not specified in this User guide !!!

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2   Mounting

The CuteLine modules are designed to be mounted on a 35 mm DIN Rail and can be easily attached and detached from the DIN rail.

To mount the module on the DIN rail, attached the upper portion of the module onto the DIN rail and press down the module until the hook clicks itself.

To remove the module from the DIN rail, simply unhook the lower part using a screwdriver and lift the enclosure from the DIN rail.

3   Electrical Connection

All connectors can be pulled out from the board for easier wiring.
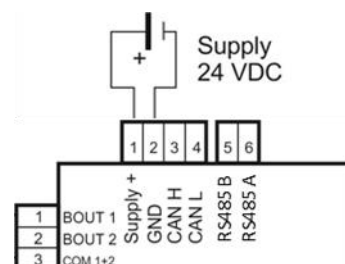
3.1   General Communication Configuration

Switch Position	Communication Configuration
SW2: 5 6 / OFF ■ ■ / ON □ □	**CAN** bus for IS-NT/IG-NT controllers
	MODBUS read-only registers accessible (19200 baud)
SW2: 5 6 / OFF □ ■ / ON ■ □	**CAN** bus for HT controllers
	MODBUS read-only registers accessible (19200 baud)
SW2: 5 6 / OFF ■ □ / ON □ ■	**MODBUS** (9600 baud) All registers
SW2: 5 6 / OFF □ □ / ON ■ ■	**MODBUS** (19200 baud) All registers

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3.2   Power Supply

The nominal supply input for CuteLine BOUT8 Module is 24 VDC but it can also work from a voltage range of 7-30VDC. The green LED on the front is turned on when the device is connected to the power supply. The supply input is reverse polarity protected.

3.3   Wiring Output Signals

Each of the 8 binary outputs can be configured to send out an active +24 VDC or switch the external device (Example: Relay) to Ground (-).

Output with Active +24VDC Signal

For this wiring, *BOUT8 sends out an active 24 VDC signal to switch on the target device(Example: Relay). The (–) of this device must be connected to the corresponding COM x+y.*

Output switching external device to Ground(-)

For this wiring, the target device (Example: Relay) has to be connected to a power supply(+) and the BOUT module corresponding input. The corresponding COM x+y must be connected to Ground.

Note: The Power Supply of the target Device must have the same level (max. -5%) as the Supply for the BOUT8 module!

For both wiring configuration, the output logic can be inverted by DIP switch 1(DIP SW1),

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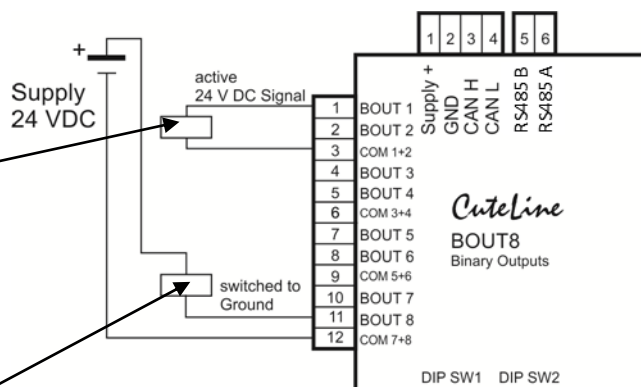
Output Logic

Depending on the wiring of the target device, the outputs are set to high or low by sending a high (1 / ON) signal from the controller. Using DIP SW 1, this logic can be inverted.

The tables below show the state of the target device depending on the wiring, DIP SW 1 setting and the signal from the controller:

Wiring for Output with Active +24VDC Signal

DIP SW2 Position & State		SW1:1		SW1:2		SW1:3		SW1:4		SW1:5		SW1:6		SW1:7		SW1:8	
		OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Output		BOUT1		BOUT2		BOUT3		BOUT4		BOUT5		BOUT6		BOUT7		BOUT8	
		Output State															
Digital Signal from Controller	0	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
	1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF

Wiring for Output switching external device to Ground(-)

DIP SW2 Position & State		SW1:1		SW1:2		SW1:3		SW1:4		SW1:5		SW1:6		SW1:7		SW1:8	
		OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Output		BOUT1		BOUT2		BOUT3		BOUT4		BOUT5		BOUT6		BOUT7		BOUT8	
		Output State															
Digital Signal from Controller	0	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON

Note: This function is protected during normal working mode which means it can be entered only while the device is powered up. After that, the position of DIP SW1 is ignored.

4 Serial Connection

The CuteLine BOUT8 Module provides two kinds of serial connection:

CAN Bus   *Various Protocols*
RS485   *Mod Bus RTU*
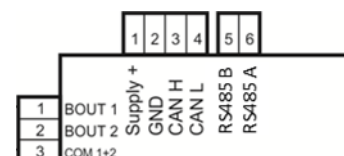
4.1 CAN Bus Connection

Using the CAN Bus connection, the bus cable must be connected to the terminals Can H(igh) and Can L(ow). If the module is the first or the last device in the bus, a termination resistor is required. There is a built-in resistor (120 Ohms) which can be activated by switching DIP SW2:8 to ON position. Shielded cable (for example, HELUKABEL CAN BUS 2x0.22) must be used for the CAN Bus connection.

Recommended Wiring
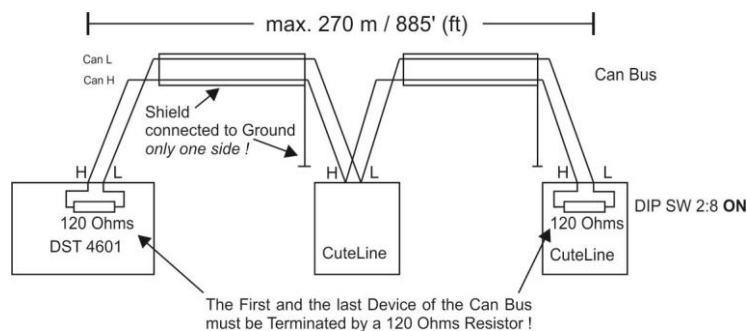
4.2 Can Bus Connection to IG-NT / IS-NT

If the device is connected to IG-NT / IS-NT, the address setting (DIP SW2) in the CuteLine module must be configured to match the settings in the Controller. In the GenConfig, the CuteLine devices should be selected as a Generic Extension -> BI (generic).
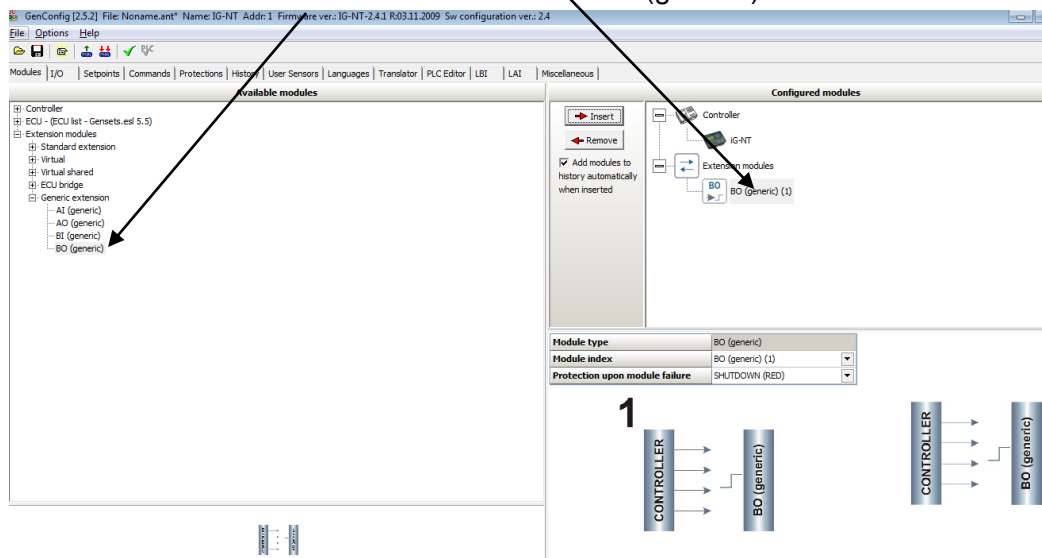
Some of the sources that can be configured to trigger the output are shown below.

Address Settings for IG-NT / IS-NT Mode
DIP Switch 2

Address	SW2:1	SW2:2	SW2:3	SW2:4	SW2:5	SW2:6	SW2:7
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	OFF	ON	OFF	OFF	OFF	OFF	OFF
4	ON	ON	OFF	OFF	OFF	OFF	OFF
5	OFF	OFF	ON	OFF	OFF	OFF	OFF
6	ON	OFF	ON	OFF	OFF	OFF	OFF
7	OFF	ON	ON	OFF	OFF	OFF	OFF
8	ON	ON	ON	OFF	OFF	OFF	OFF
9	OFF	OFF	OFF	ON	OFF	OFF	OFF
10	ON	OFF	OFF	ON	OFF	OFF	OFF
11	OFF	ON	OFF	ON	OFF	OFF	OFF
12	ON	ON	OFF	ON	OFF	OFF	OFF
13	OFF	OFF	ON	ON	OFF	OFF	OFF
14	ON	OFF	ON	ON	OFF	OFF	OFF
15	OFF	ON	ON	ON	OFF	OFF	OFF
16	ON	ON	ON	ON	OFF	OFF	OFF

NOTE:

Any changes on the address settings (DIP SW2:1 to SW2:7) are valid only after Power Down Reset.

4.3   Can Bus Connection to HT Controller (DST Mode)

If the device is connected to HT Controller, the address setting (DIP SW2) in the CuteLine module must be configured to match the settings in the Controller. In the BoardPrg, the CuteLine devices must be selected as DITEL.

Note: In DST Model, Yellow LED on the front is blinking when data are sent out.

In the BoardPrg:

I/O tab ➔ Expansion modules ➔ Key in the number of BOUT8 module to be used.
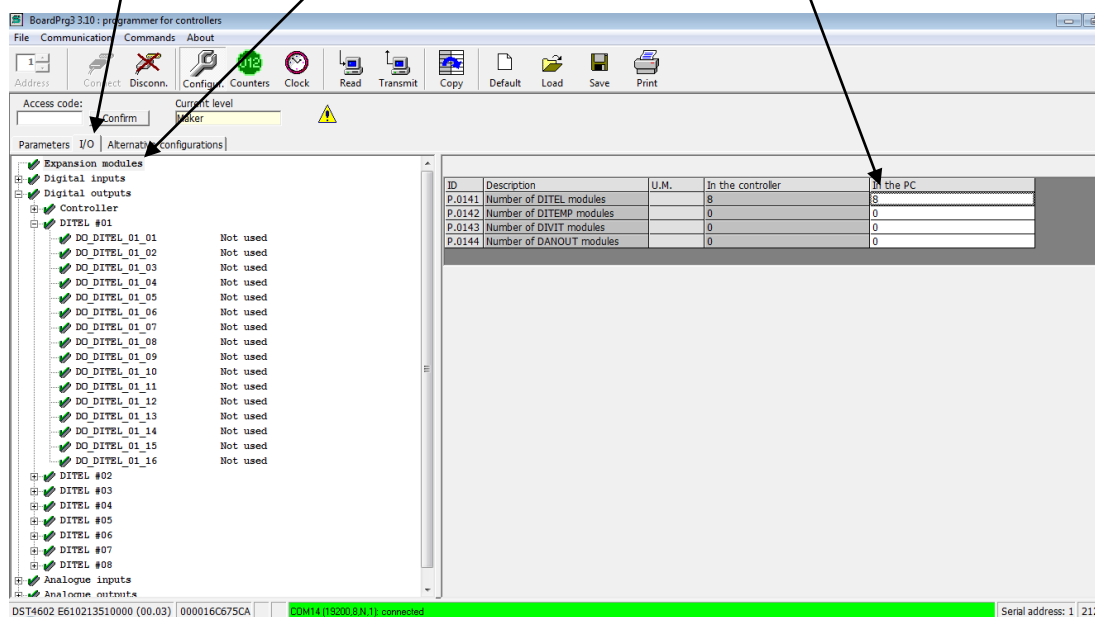
Digital Outputs ➔ Select the appropriate DO_DITEL_# ➔ Select the required function of this Output

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Address Settings for DST Mode
DIP Switch 2

Address	SW2:1	SW2:2	SW2:3	SW2:4	SW2:5	SW2:6
DO_DITEL_01_(01 to 08)	OFF	OFF	OFF	*	ON	OFF
DO_DITEL_02_(01 to 08)	ON	OFF	OFF	*	ON	OFF
DO_DITEL_03_(01 to 08)	OFF	ON	OFF	*	ON	OFF
DO_DITEL_04_(01 to 08)	ON	ON	OFF	*	ON	OFF
DO_DITEL_05_(01 to 08)	OFF	OFF	ON	*	ON	OFF
DO_DITEL_06_(01 to 08)	ON	OFF	ON	*	ON	OFF
DO_DITEL_07_(01 to 08)	OFF	ON	ON	*	ON	OFF
DO_DITEL_08_(01 to 08)	ON	ON	ON	*	ON	OFF

NOTE
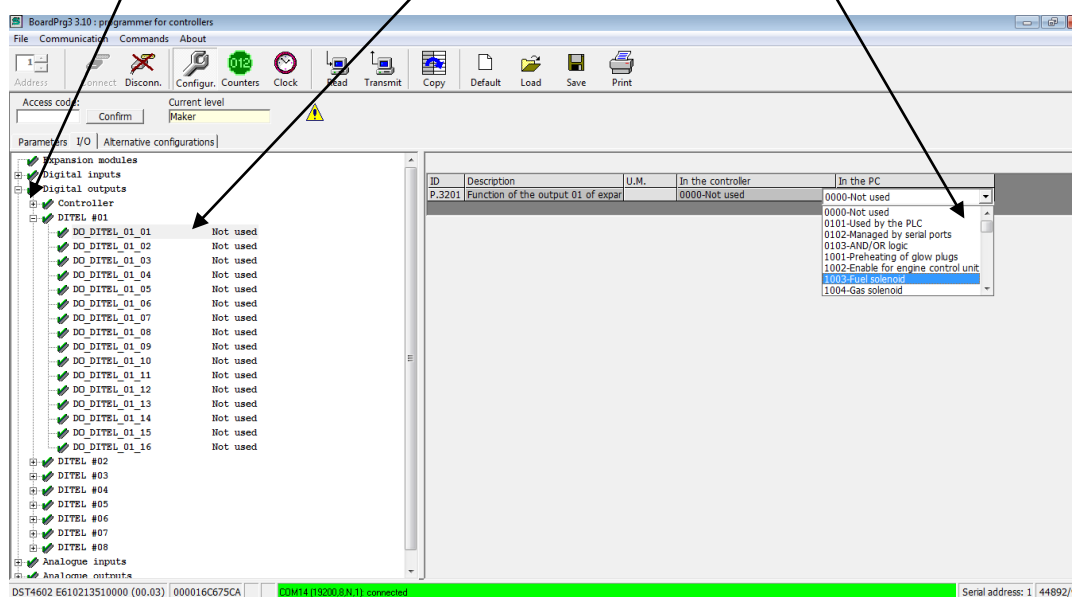**Any changes on the address setting(SW2:1 to SW2:6) are valid only after a Power Down Reset**

BOUT8 Module does not support output DO_DITEL_0*_09 to DO_DITEL_0*_16

* SW 2:4 must be ON if a Binary Input Module uses the same address

4.4   Mod Bus RTU Connection

When working in this mode, the CuteLine BOUT8 Module works as a Mod Bus Slave so the Master has to request data from it. The connection must be on the terminals RS485A and RS485B. If the module is the last device in the bus, an external 120 Ohms termination resistor must be added.

1 2 3 4	5 6
Supply + GND CAN H CAN L	RS485 B RS485 A

1 BOUT 1
2 BOUT 2
3 COM 1+2
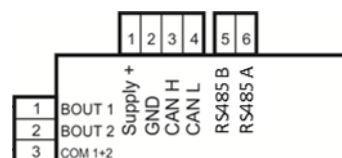
Recommended Wiring
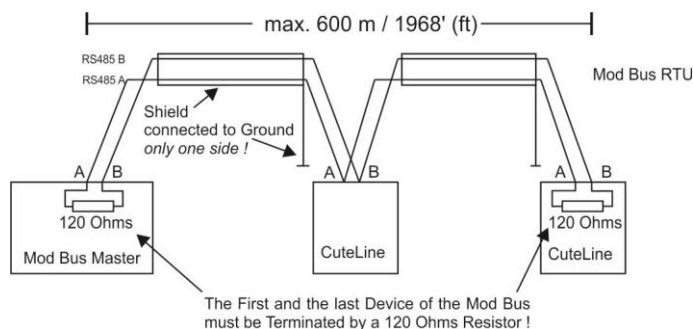
There are fixed object numbers for the 8 Binary Outputs:

00001 BOUT 1   00002 BOUT 2   00003 BOUT 3   00004 BOUT 4
00005 BOUT 5   00006 BOUT 6   00007 BOUT 7   00008 BOUT 8

The Master can read a single or several objects by using the command *01*.
To set the output, command 05 must be used.
A Read or Write command must be send from the Master every 3 seconds as a heartbeat signal.
If this signal is missing, all output will turn to OFF status for security reasons. This is to avoid a malfunction, in case the communication is interrupted.

The communication settings are 9600 / 19200 Baud (depending on DIP SW2:5), 8 Bit, 1 Stop Bit, No Parity.
The yellow LED on the front is blinking when data are sent out after a request from the Master.

Address Settings for Mod Bus RTU Mode
DIP Switch 2

Address	SW2:1	SW2:2	SW2:3	SW2:4	SW2:5	SW2:6	SW2:7
1	OFF	OFF	OFF	OFF	*	ON	OFF
2	ON	OFF	OFF	OFF	*	ON	OFF
3	OFF	ON	OFF	OFF	*	ON	OFF
4	ON	ON	OFF	OFF	*	ON	OFF
5	OFF	OFF	ON	OFF	*	ON	OFF
6	ON	OFF	ON	OFF	*	ON	OFF
7	OFF	ON	ON	OFF	*	ON	OFF
8	ON	ON	ON	OFF	*	ON	OFF
9	OFF	OFF	OFF	ON	*	ON	OFF
10	ON	OFF	OFF	ON	*	ON	OFF
11	OFF	ON	OFF	ON	*	ON	OFF
12	ON	ON	OFF	ON	*	ON	OFF
13	OFF	OFF	ON	ON	*	ON	OFF
14	ON	OFF	ON	ON	*	ON	OFF
15	OFF	ON	ON	ON	*	ON	OFF
16	ON	ON	ON	ON	*	ON	OFF

HINT

Any changes on the address settings (switches SW2:1 to SW2:7) are valid only after a Power Down Reset

* = **Baud Rate Selector**

OFF = 9600 Baud

ON = 19200 Baud

Technical Data

Power Supply ....7-30VDC, Reverse Polarity Protected

Current Consumption .... 45mA with 24VDC Input @ 25°C(Output Fully Off State)

Number of Outputs ....8, Configurable, Non-Isolated, Short-Circuit Protected

Output Current Rating .... Maximum 0.5A Per Channel

On/Off State Voltage Drop...0.2Vdc Maximum

Output Signal Delay .... Off to On State @ 10mS Maximum
....On to Off State @ 10mS Maximum

Communication Supported Protocols .... Can Bus IS/IG
....Can Bus HT Controller
....Mod Bus RTU

Operational Temperature .... -40 to +85 $^{\circ}$C (-40 to +185°F)

Storage Temperature .... -40 to +85 $^{\circ}$C (-40 to +185°F)

Relative Humidity .... 5 to 95%, Non-condensing

Dimension(Including Terminal blocks) .... 30 x 110 x 94 mm

Weight(Including Terminal blocks)... 190g

Wire Size...22 to 12 AWG

Mounting .... DIN Rail 35 mm

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