



General Override Signal Unit AS
(Operator Unit General Override)

Type **105-314** **NG001**
 NG002

Description
Operation
Installation
Maintenance and Repair

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Table of Content

TABLE OF CONTENT	I
TABLE OF FIGURES	II
TABLE OF TABLES	II
SAFETY INSTRUCTIONS	III
ABBREVIATIONS/ACRONYMS	VII
CHANGE HISTORY	VII
1 GENERAL	1-1
1.1 Mechanical construction.....	1-3
1.2 Technical data.....	1-4
1.3 CAN Bus technologie (general).....	1-5
2 OPERATION	2-1
3 INSTALLATION AND CONFIGURATION	3-1
3.1 Configuration hints.....	3-3
4 MAINTENANCE, FAULT FINDING AND REPAIR	4-1
4.1 Maintenance.....	4-1
4.2 Operation and monitoring elements of the CPU PC board and the Interface PC Board for fault finding.....	4-1
4.3 Repair.....	4-3
5 ALARM HANDLING	5-1
6 DISPOSAL	6-1

General Override Signal Unit AS
Type 105-314 NG001/NG002

Table of Figures

Figure 1-1	General Override Signal Unit AS (Operator Unit General Override)	1-1
Figure 1-2	Cross-sectional view of the General Override Signal Unit AS.....	1-3
Figure 1-3	Jumper for terminating the CAN Bus.....	1-6
Figure 2-1	Operating elements at the General Override Signal Unit AS	2-1
Figure 3-1	Location of plugs B1 and B2 to perform the connections (cross sectional view).....	3-1
Figure 4-1	Operation and monitoring elements of Interface PC Board and the CPU PC Board	4-1

Table of Tables

Table 1-1	Types of General Override Signal Unit AS 105-314	1-2
Table 1-2	Connection for CAN Bus with supply voltage at the CPU PC Board	1-6
Table 2-1	Operating elements at the General Override Signal Unit AS	2-1
Table 3-1	Terminals at Plug B1	3-2
Table 3-2	Terminals at Plug B1 (NG002 only)	3-2
Table 4-1	Operation and monitoring elements of Interface PC Board and the CPU PC Board	4-2

Drawings:

Dimensional Drawing	105-314.HP005
Connection Diagram NG 001	105-314.HP008
Connection Diagram NG 002	105-314.HP009

Safety instructions



Please note:

The General Override Signal Unit AS is an important part in the steering control system. In view of the ship's safety, particular attention must therefore be given to its care and maintenance and make sure that only original RAYTHEON Anschütz equipment/parts are used.

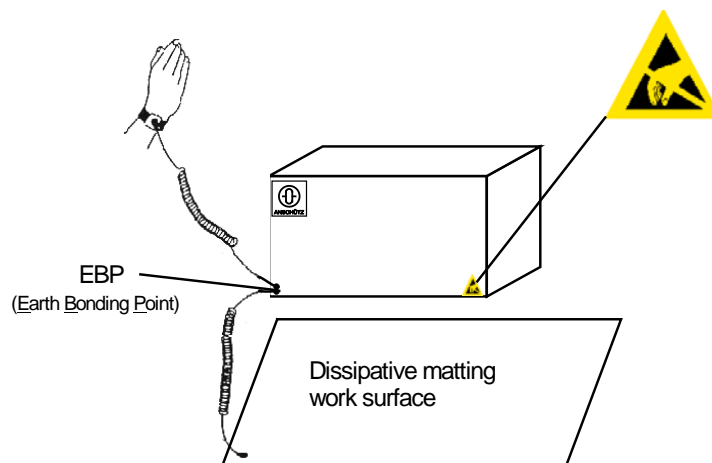


Please note:

The General Override Signal Unit AS, type 105-314 must be configured with a Configuration Tool, type NB42-232 by RAYTHEON Anschütz service personnel only.



ESD = Electrostatic Sensitive Device



Devices/assemblies which are labelled as shown are electrostatic sensitive. This label indicates, that handling or use of this item may result in damage to an ESD if proper precautions are not taken. To perform installation and/or calibration work, appropriate protective measures must be deployed. All necessary equipment for this protective measures can be supplied (on special order) with the Raytheon Anschütz Ident number 1.990106.

General Override Signal Unit AS
Type 105-314 NG001/NG002



Caution

Alarm outputs must be connected to a central Alarm Panel/Signal Unit.
Alarm Panel or Signal Unit must have an acoustic and optical indication.



Caution

this equipment includes electromechanical devices such as relays, switches or potentiometers.
Electromechanical devices are subject to wear and tear depending on operation cycles and environmental conditions.



Caution

Installation and commissioning must be performed by well-trained and qualified personnel.



Caution

While connecting cables to the equipment do not bend cables to an acute angle, pinch, twist, or impact excessive force. Cracks or damage to the cable coating can cause fire or electric shock.



Caution

When establishing cable connections ensure that the cables are disconnected from any power supply.
It is essential to ensure that all cables are disconnected from the power supply. If necessary, measure the voltage beforehand and/or disconnect the relevant distributor.



Caution

It is essential to ensure that all connections have a common ground point on the ship. Any additional components (optional) must also be connected to the common ground point.



Caution

Maintenance and repair must be performed by trained and qualified personnel who are knowledgeable in equipment safety requirements.

Device may be damaged.

Exchange of spare parts, when power is on, can cause severe damage to the equipment.

Exchange of spare parts only with the supply voltage switched off or disconnected.

Observe precautions for handling electrostatic sensitive devices.

Use care during maintenance and repair to avoid contact with energized electrical conductors. Applicable safety regulations must be followed, such as VDE, VBG 4, OSHA 1919, and other consensus safety standards.

General Override Signal Unit AS
Type 105-314 NG001/NG002



Caution

NautoSteer AS consists of two independent steering control systems that are technically separated from each other. These steering control systems can be selected by use of the steering mode selector switch.

In “NFU direct” mode the valves/steering gear are operated without use of electronics.

In “Main” mode a closed loop control system is used.

Recommendation: In case of any failure in either one of the two independent steering control systems, please switch to the other mode by use of the Steering Mode Selector Switch to retrieve the steering capabilities of the control system.

Please note: Depending on the steering philosophy, different manufacturers or different user requests, the Steering Mode Selector Switch may have different designations (as there are for example “Main Steering Switch”, “Steering Selector”, or “Mode Selector”). Its switch positions (minimum of two) may have different designations as well (as there are for example “HAND” and “AUTO”, “NFU direct” and “MAIN”, “NFU” and “FU”, or “MAIN” and “SECONDARY”).

Depending on the system design, the steering control system may not contain a Steering Mode Selector Switch. Therefore it is strongly recommended to become familiar with the steering control system in order to select the correct steering control in emergency situations.



Abbreviations/Acronyms

AS	Advanced Steering
appr.	approximately
CAN	Controller Area Network
CPU	Central Processing Unit
DIP	Dual Inline Package
Gen.	General
GND	Ground
HP	Auxiliary Paper (Hilf spapier)
LED	Light Emitting Diode
NG	Standard Device (Norm gerät)
NFU	Non Follow-Up
PCB	Printed Circuit Board
SA	Special Application
stbd	Starboard

Change History

Date	Change
20.06.2013	Initial edition

General Override Signal Unit AS
Type 105-314 NG001/NG002

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1

General

This General Override Signal Unit AS is designed to control and monitor an override function with Steering Control versus Tiller or Handwheel.

It can be installed into control desks or steering stands.

The General Override Signal Unit AS is designed for applications with a single CAN Bus technology (see also section 1.3).

Additionally it can be used to generate an override status signal.

Connection to a steering systems without CAN Bus technology is not possible.

An application for connection to a none CAN Bus technology is currently not realized.

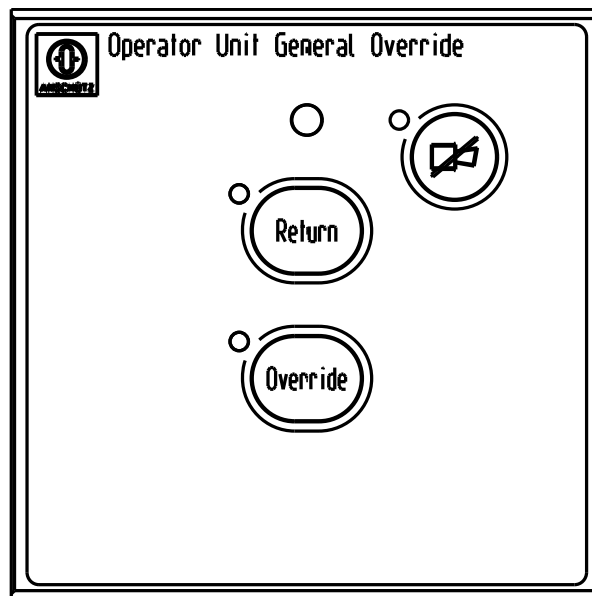


Figure 1-1 General Override Signal Unit AS (Operator Unit General Override)

To control and monitor the override function there are 3 pushbuttons with LEDs at the front plate.

Initial status:

LED "Return" lights green, LED "Override" is off.

If Steering Control operates in "Main", the Tiller for override (FU Tiller, NFU Tiller or FU Handwheel) is operated, the selected steering unit is active at once and an alarm is generated at the General Override Signal Unit AS:

- The LED at the pushbutton "ACK" lights up red.
- The LED at the pushbutton "Override" lights up green.
- The LED at the pushbutton "Return" is off.
- The signal horn gives an acoustical signal.

General Override Signal Unit AS
Type 105-314 NG001/NG002

An acknowledgment of the alarm can be performed either by pressing the pushbutton "ACK" or by pressing the pushbutton "Override".
The LED at the pushbutton "ACK" is off.

By pressing the pushbutton "Return", the override function is closed and the steering control is performed by the previously selected steering device.
The LED at the pushbutton "Return" lights up green, the LED at the pushbutton "Override" is off.

For an application in a steering system with CAN Bus technology, the General Override Signal Unit AS must be configured before (see section 3.1).

There are different types of General Override Signal Unit AS with different hardware configuration, but with the same function:

Table 1-1 Types of General Override Signal Unit AS 105-314

Type	Configurations
NG001	1 CPU PCB
NG002	1 CPU PCB, 1 Interface PC Board

The illumination is controlled by an ambient light sensor (through a covered hole at the front plate).

For type NG002 only:

When the override function is activated and acknowledged a status signal is output. Depending on the used contacts of the respective plug (plug B2 of the Interface PC Board) this status signal can be evaluated for relay output active open or active closed.

1.1 Mechanical construction

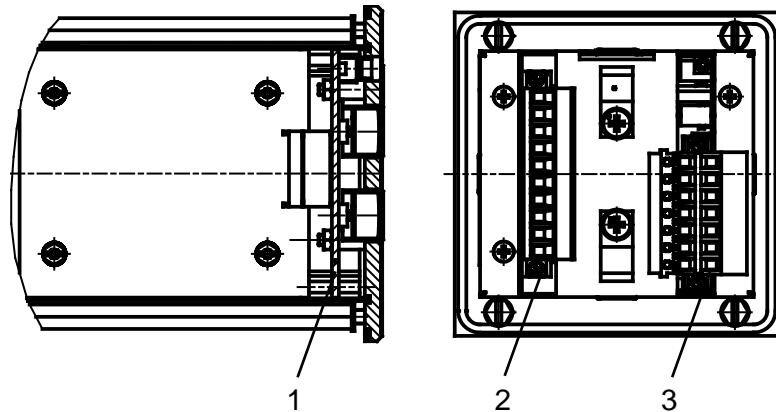


Figure 1-2 Cross-sectional view of the General Override Signal Unit AS

The General Override Signal Unit AS consists of three PC Board built in a metallic casing with a front plate.

Behind the front plate a PC Board, type 105-313.01 ([Figure 1-2/1](#)) is arranged. The front plate has a service hole for controlling the LED illumination via an ambient light sensor.

On the left side of the front plate the interface PC Board, type NB05-387 ([Figure 1-2/2](#)) is placed and on the right side the CPU PC Board, type 105-312.100 ([Figure 1-2/3](#))

The metallic casing has an earthing flat plug at the back side for a common earth connection.

General Override Signal Unit AS
Type 105-314 NG001/NG002

1.2 Technical data

For dimensions, weight and type of enclosure, see appended
Dimensional Drawing 105-314.HP005

Supply Voltage: 18V DC to 32V DC (via the CPU PCB)

Current consumption: appr. 125mA 24V/DC

Type NG002 only:

Output relay: max.30V/1A

1.3 CAN Bus technologie (general)

The CAN Bus is a Multi-Master-Bus allowing the connection of all devices and systems regardless of their task and function. This means that any number of devices can be connected. These devices must be designed for CAN Bus technology. For the CAN Bus it is essential that every CAN Bus participant is addressable via a unique address. This address is set within each bus participant or via a component (participant) which is able to look into the CAN Bus architecture.



Please note:

This CAN Bus address can be set with a Configuration Tool, type NB42-232 by RAYTHEON Anschütz service personnel only.

It cannot be changed without this tool.

Each CAN Bus participant can send and receive data via the CAN Bus. For data transmission, this data is combined with a header (address from the data source) and the data itself. The data is transmitted to the CAN Bus cyclically.

Each CAN Bus participant monitors the CAN Bus to take off the relevant data.

The CAN Bus must be terminated at both ends (within an application) via an ohm resistor (125Ω).

This terminating resistor is set by jumpers at the respective connection (see [Figure 1-3](#)).

The termination has always to be set between the termination terminal (T) and the CAN LOW terminal (L).

General Override Signal Unit AS
Type 105-314 NG001/NG002

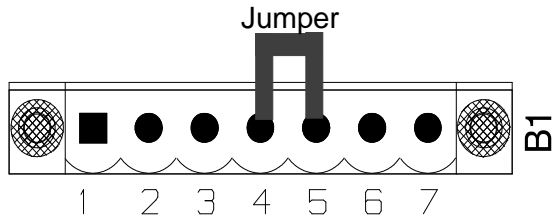


Figure 1-3 Jumper for terminating the CAN Bus

Table 1-2 Connection for CAN Bus with supply voltage at the CPU PC Board

Figure/terminal	Remarks
Figure 1-3/4	CAN bus termination (T)
Figure 1-3/5	CAN bus low (L)

For each CAN Bus, a screened 3-core twisted cable with a conductor cross-section of $\geq 0.5\text{mm}^2$ must be used (24V DC supply not considered).

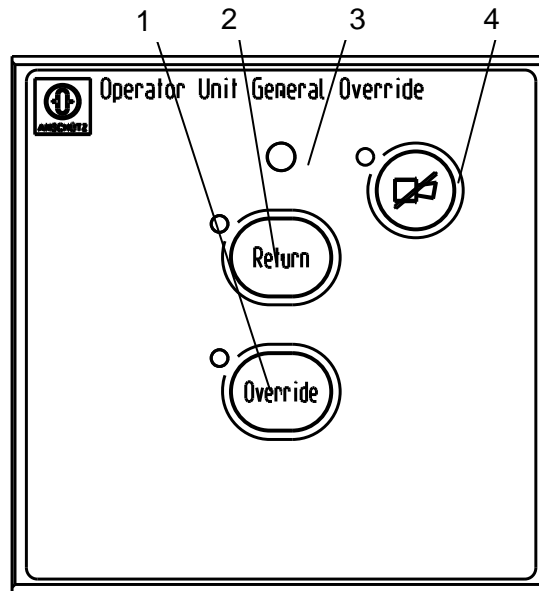


Figure 2-1 Operating elements at the General Override Signal Unit AS

Table 2-1 Operating elements at the General Override Signal Unit AS

Figure/position	Function
Figure 2-1/1	Pushbutton "Override" with LED. LED is off when the override function is not active. LED lights up green when the override function is active. Pushbutton to acknowledge an override.
Figure 2-1/2	Pushbutton "Return" with LED. LED is off when the override function is active. LED lights up green when the override function is not active. Pushbutton to close the override function. Steering control is performed by the previously selected device.
Figure 2-1/3	Hole to sense the ambient light.
Figure 2-1/4	Pushbutton with LED. To mute the internal signal horn and acknowledge an activated override. LED flashes red, means a defective Gen. Override Signal Unit AS. LED lights up blue means a request to the General Override Signal Unit AS in configuration mode only (with an external Service Tool).

After switching on the 24VDC for the CAN Bus the unit it is ready for operation, there is no separate ON/OFF switch.


General Override Signal Unit AS
Type 105-314 NG001/NG002

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3 Installation and Configuration

The installation of a General Override Signal Unit AS is performed according to appended Dimensional drawing 105-314.HP005 and Connection Diagrams 105-314.HP008 (for type NG001) and 105-314.HP009 (for type NG002).

Voltage supply and CAN Bus connection as well as the CAN Bus termination must be performed according to [Figure 1-3](#), [Table 3-1](#) and [Table 3-2](#).



Please note:

- Do not forget to connect the earthing flat plug at the backside of the housing.
- Fix all cables with an applicable strain relief.

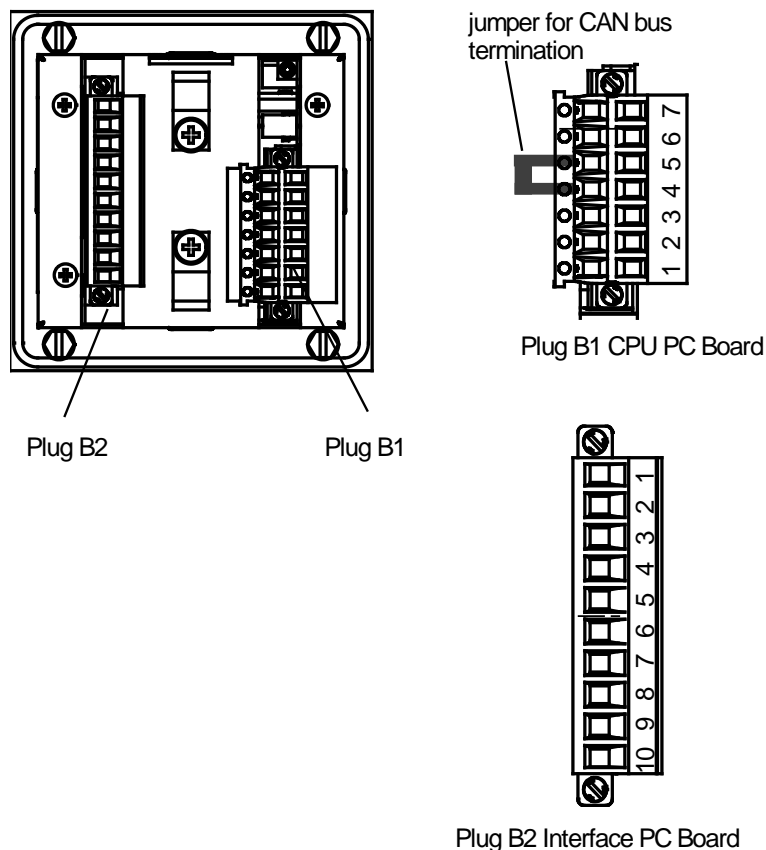


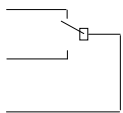
Figure 3-1 Location of plugs B1 and B2 to perform the connections (cross sectional view)

General Override Signal Unit AS
Type 105-314 NG001/NG002

Table 3-1 Terminals at Plug B1

Figure/terminal	Remarks
Figure 3-1/1	Supply voltage +1832VDC
Figure 3-1/2	Supply voltage 0 V DC
Figure 3-1/3	PE
Figure 3-1/4	CAN bus termination (T ermination)
Figure 3-1/5	CAN bus low (L ow)
Figure 3-1/6	CAN-bus (H igh)
Figure 3-1/7	CAN-bus GND

Table 3-2 Terminals at Plug B1 (NG002 only)

Figure/terminal	Remarks
Figure 3-1/1	 <p>Is used to connect the status information "Override active" from an external device.</p>
Figure 3-1/3	
Figure 3-1/2	
Figure 3-1/4	Digital In1 - OVR (override) status input
Figure 3-1/5	
Figure 3-1/6	Digital In2 - Currently not used
Figure 3-1/7	
Figure 3-1/8	
Figure 3-1/9	Analogue In - Currently not used
Figure 3-1/10	

3.1 Configuration hints

See also Manual 3963 "Service Tool, type NB42-232".

After the General Override Signal Unit AS is connected to the supply voltage and before switched to active it must be configured. This configuration can be performed with a Service Tool only.

Configurable parameters/data are (among others):

- CAN Address, CAN Group
- Type number, serial number
- Type of external device
- Give Over function enabled



Please note:

The General Override Signal Unit AS, type 105-314 must be configured with a Configuration Tool, type NB42-232 by RAYTHEON Anschütz service personnel only.



Please note:

The LED at the "ACK" button lights up blue during a calibration procedure.

General Override Signal Unit AS
Type 105-314 NG001/NG002

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4 Maintenance, Fault finding and Repair

4.1 Maintenance

The General Override Signal Unit AS is maintenance free.

4.2 Operation and monitoring elements of the CPU PC board and the Interface PC Board for fault finding

Indications of the LEDs at the CPU PC Board and the Interface PC Board may be helpful for fault diagnostics.

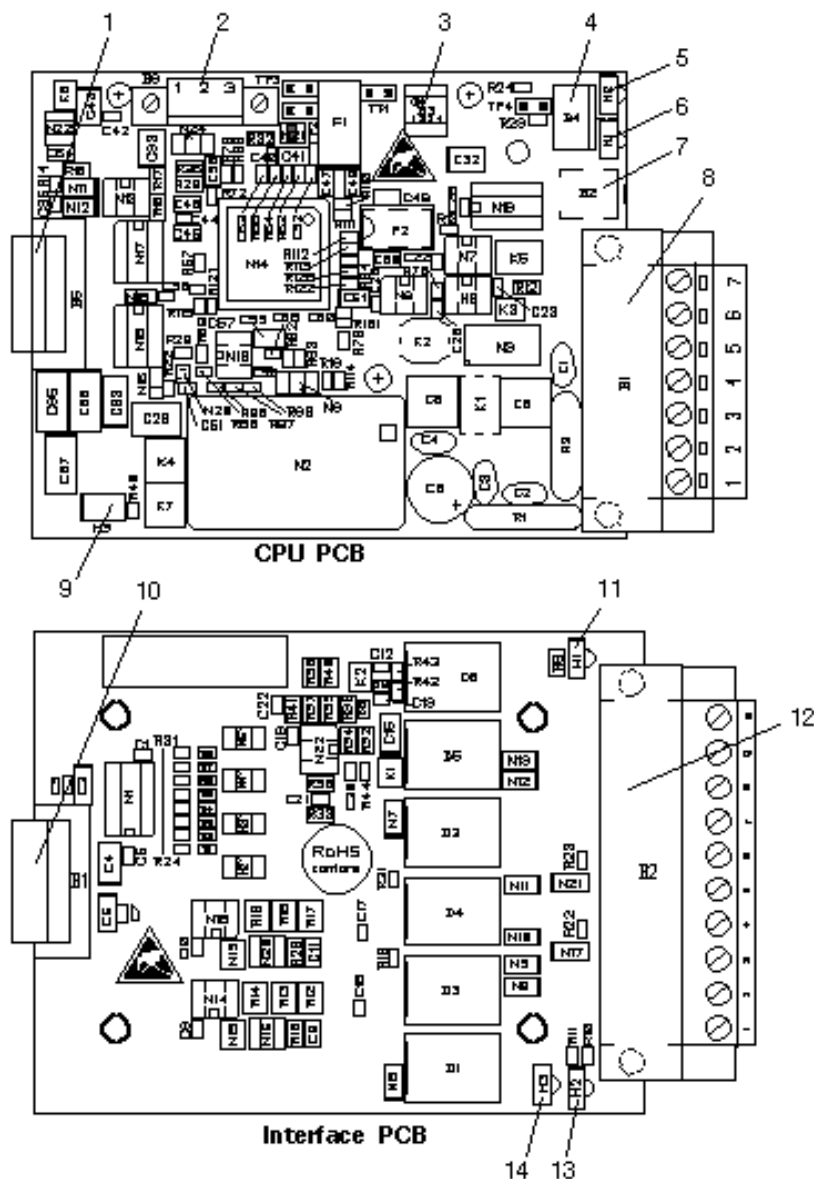


Figure 4-1 Operation and monitoring elements of Interface PC Board and the CPU PC Board

General Override Signal Unit AS
Type 105-314 NG001/NG002

Table 4-1 Operation and monitoring elements of Interface PC Board and the CPU PC Board

Figure/position	Designation/Function
Figure 4-1/1 (CPU PCB)	Plug B5 For internal connection only.
Figure 4-1/2 (CPU PCB)	Plug B2 Is used to connect external devices (status signals, analog voltages, digital information).
Figure 4-1/3 (CPU PCB)	DIP switch, development only.
Figure 4-1/4 (CPU PCB)	Reset button.
Figure 4-1/5 (CPU PCB)	LED H2 (yellow) (currently not used).
Figure 4-1/6 (CPU PCB)	LED H1 (yellow) lights up if the override function is active.
Figure 4-1/7 (CPU PCB)	Plug B2 (currently not used)
Figure 4-1/8 (CPU PCB)	Plug B1 to connect CAN Bus and supply voltage (see Table 3-1).
Figure 4-1/9 (CPU PCB)	LED H3, green = BITE o.k. red = BITE n.o.k. (PCB defect)
Figure 4-1/10 (Interface PCB)	Plug B1, for internal connection only
Figure 4-1/11 (Interface PCB)	LED H1 (yellow) lights up if Relay D1 is activated.
Figure 4-1/12 (Interface PCB)	Plug B2, to connect status inputs, digital inputs or analog inputs (see also Table 3-2).
Figure 4-1/13 (Interface PCB)	LED H2, (yellow) lights up if a signal is active at Digital Input 1
Figure 4-1/14 (Interface PCB)	LED H3, (yellow) lights up if a signal is active at Digital Input 2



4.3 Repair

A repair of the General Override Signal Unit AS is possible in manufacturers' facility only.
It has to be replaced complete.

General Override Signal Unit AS
Type 105-314 NG001/NG002

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5 Alarm handling

An internal alarm is indicated by an acoustical sound and a blinking LED (red) "ACK". By pressing the pushbutton "ACK" the acoustical signal is muted and the LED is constant alight (red).

An alarm is generated if the General Override Signal Unit AS itself fails.

General Override Signal Unit AS
Type 105-314 NG001/NG002

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6 Disposal

The General Override Signal Unit AS or components of it can be disposed according to the respective national regulations for electronic waste without harmful material (according to 2002/96EC WEEE - disposal for Waste Electrical and Electronic Equipment).

General Override Signal Unit AS
Type 105-314 NG001/NG002

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