User Manual

Art. No. 301000.0

HISAC -
RFID reader with touch function

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User Manual HISAC RFID Reader with touch function

Art no.: 301000.0
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1.1 Bus select adapted to HD-Lock (firmware V119, bootloader V11)

1 General

HISAC stands for "Highly Innovative Smart Access Control". The HISAC RFID reader (Radio Frequency Identification reader) with touch function is intended for use as an access control unit and as an electronic push button and door opener in the maritime sector.

HISAC impresses with its compact design and simple installation. This means that a simple hole in the ships hull, into which HISAC can be inserted, is sufficient. No screw connection is required to mount HISAC securely and sealed.

HISAC works with 125 KHz Hitag2 cards or tags, and 13.56 MHz Mifare Desfire cards or tags. Optionally, AES encryption can be applied to Mifare Desfire cards.
Furthermore, HISAC has a touch function, i.e. when the surface of the glass front is touched, a galvanically isolated contact closes for the time of the touch.
An acoustic detector and an RGB LED are available as feedback elements for RFID recognition and the touch function. Communication to the higher-level evaluation unit is optionally possible via a CAN or Wiegand interface.

1.1 Features of the RFID reader

- Power supply 12 V DC or 24 V DC
- RFID frequencies: 125 KHz and 13.56 MHz
- RFID reading distance: ≤ 40mm, depending on the installation situation and the RFID frequency used
- Encryption possible
- Touch function with galvanically isolated output
- Selection CAN or Wiegand protocol
- Compact design
- Easy assembly
- High degree of protection and seawater resistance when mounted
- Cable length 7 m
- Cable flame retardant, seawater resistant, recyclable, LABS-free, RoHs compliant, acid and alkali resistant, ozone resistant, UV resistant, hydrolysis resistant, drag chain resistant, torsion resistant, welding spark resistant, halogen free, silicone free, oil resistant

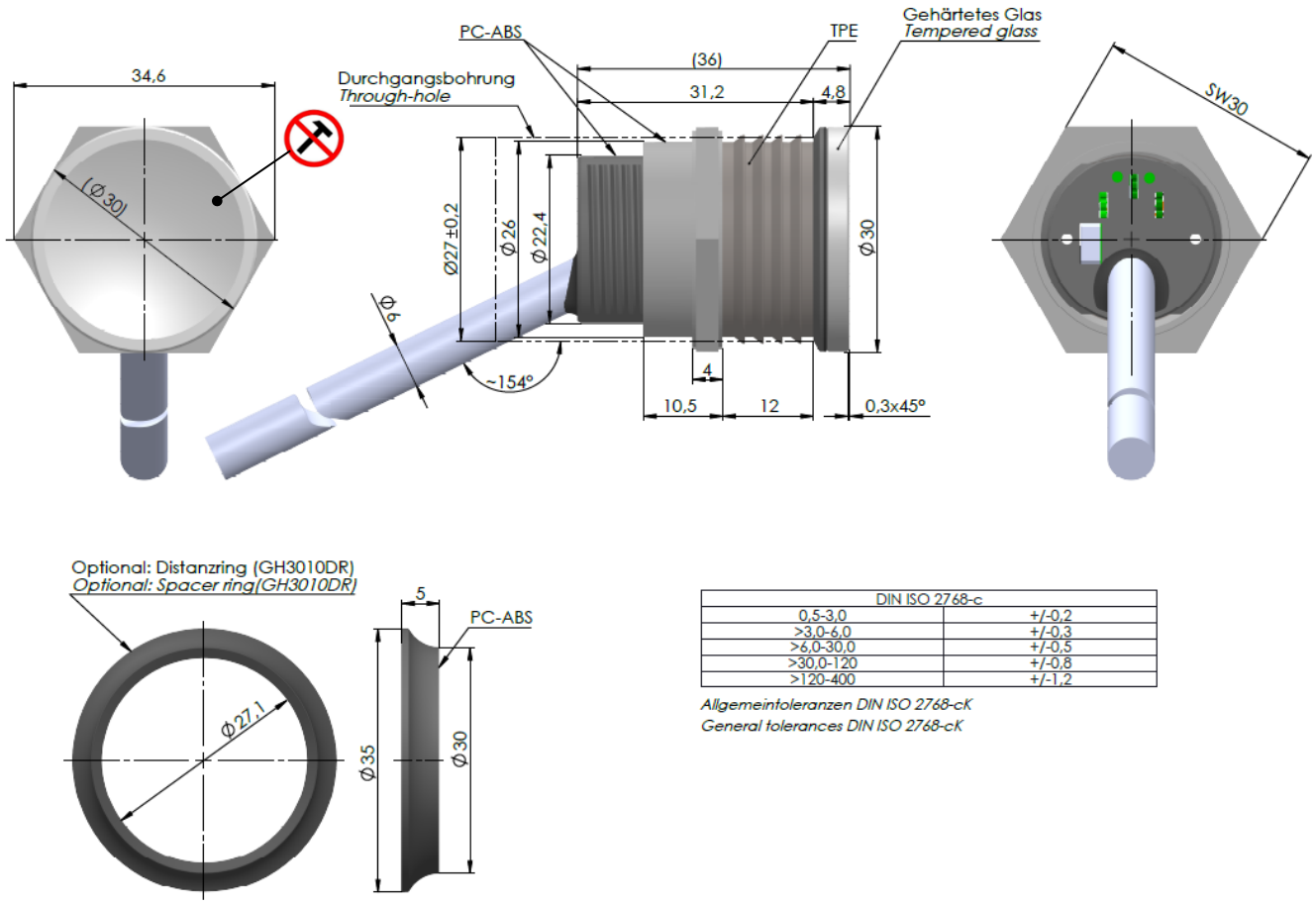
1.2 Scope of delivery

- HISAC RFID reader with touch function
- Spacer ring
- Hexagon nut for fastening
- User Manual

1.3 General installation

Drill Ø27±0.2 mm hole, pull cable through and insert HISAC into hole. Hammer blows to the unit are not permitted. The cable can then be connected.

Important:
If the cables are not needed, make sure that short circuits are avoided.



DIN ISO 2768-c	
0,5-3,0	+/-0,2
>3,0-6,0	+/-0,3
>6,0-30,0	+/-0,5
>30,0-120	+/-0,8
>120-400	+/-1,2

Allgemeintoleranzen DIN ISO 2768-cK
General tolerances DIN ISO 2768-cK

Figure 1 Product drawing HISAC

Installation in a metal wall (see page 5, figure 2):

When installing in a metallic wall (e.g. steel, aluminium), a recess with a diameter ≥ Ø120 mm and a depth of ≥16 mm must be created. The recess must be filled with a non-metallic material. The non-metallic material must be suitable to create a centrally located locating hole Ø27±0.2 mm.

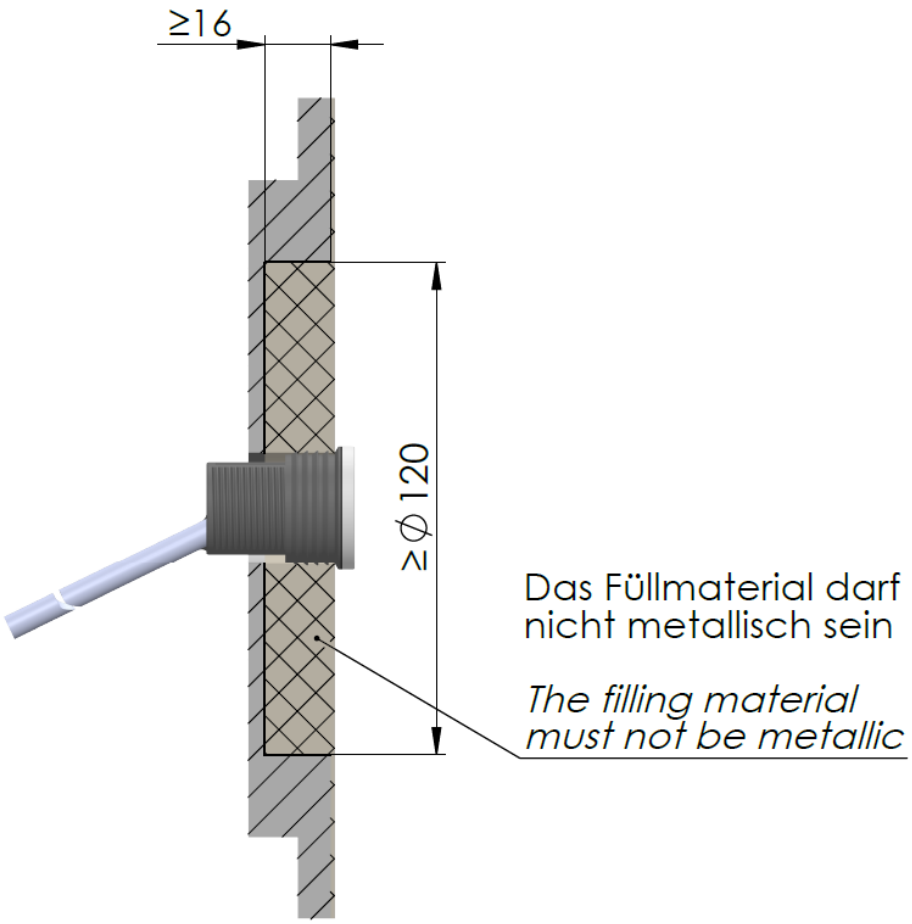


Figure 2 Installation in a metal wall

1.4 Bus- Select

Bus Select

The interface to the HISAC reader can be defined via this input.
If the input is switched to GND, the CAN interface is selected and Wiegand is deactivated. In addition, the LED inputs are deactivated (control via CAN).
If the input is switched to supply voltage potential, the Wiegand interface is selected and the CAN interface is deactivated. In addition, the LED inputs are activated.
If the input is not connected, only the LEDs are active.
The potential-free output is always active.
When booting HISAC, the bus select is reported as follows:
- CAN: 3xBeep (long)+blue
- Wiegand: 5xBeep (short)+green
- Bus off: 1xBeep (long)+red

LED input

These inputs are active in "Wiegand" and "Bus off" mode. If they are not switched on, the LEDs are off and if the voltage is greater than 2.5V or less than 0.35V, the LEDs light up.

Floating output (normally open contact)

If the touch surface is touched, Switch-1 connects to Switch-2. If touch surface is not touched, the two outputs are not connected. The maximum continuous current is 0.3 A. The maximum voltage between Switch-1 and Switch-2 is 60 V AC.

2 Connection

Cable for Wiegand/CAN/button			
Number	Wire colour	Signal	Description
1	red	12V/24V DC	Supply voltage
2	brown	LED red	Input for LED red
3	white	LED orange (blue)	Input for LED blue
4	green	LED green	Input for LED green
5	blue	GND	Zero potential (of supply voltage, and the LEDs)
6	grey	RXTX-P/D1	CAN bus High internally connected to RXTX-P-2 /Wiegand Clock
7	pink	RXTX-N/D0	CAN bus Low internally connected to RXTX-N-2 /Wiegand Data
8	violet	RXTX-P2	CAN bus High internally connected to RXTX-P
9	black	RXTX-N2	CAN bus Low internally connected to RXTX-N
10	yellow	Bus Select	Busselect (Wiegand/CAN_/Busoff-)
11	grey/pink	Switch-1	Floating output (normally open contact) Connects to Switch-2 when the surface of the reader is touched.
12	red/blue	Switch-2	Floating output (normally open contact) Connects to Switch-1 when the surface of the reader is touched.
Shield	-	-	Connected to protective circuit and is to be put on.

Cable properties:

Management	PUR, UL, S370
Description	Flexible, silicone- and halogen-free control cable with high mechanical strength. The cable is resistant to chemicals, hydrolysis and microbes. Drag chain use is possible with a bending radius of min. 10xd. Due to its resistance to welding sparks, the cable is very well suited for flexible use in robotics, machine tools and metal-cutting production. The cables meet the requirements of UL and CSA (UL10493/20549; cULus).
Outer diameter sheath	6.00 mm
Maerial cable sheath	PUR
Coat colour	BK, similar to RAL9005
Core insulation material	PP
Core colours	BN, BU, WH, GN, PK, YE, BK, GY, RD, VT, GYPK, RDBU
Strand construction	19 x 0.10 mm
Bending radius (fixed)	5 x Ø cable
Bending radius (moved)	12 x Ø cable
Temperature range (moved)	-30°C...+90°C
Temperature range (fixed)	-40°C...+90°C
Temperature range (drag chain)	-25°C...+60°C
Drag chain insert	2 million cycles
Shielding	Yes
Halogen-free	Yes
Torsion	+/-180Q/m, < 1 million cycles
Rated voltage line	≤ 300 V
Special features	flame retardant, seawater resistant, recyclable, LABS-free, RoHs compliant, acid and alkali resistant, ozone resistant, UV resistant, hydrolysis resistant, drag chain resistant, torsion resistant, welding spark resistant, halogen free, silicone free, oil resistant

3 Commissioning

After applying the operating voltage 12V DC or 24V DC, HISAC listens for 1 minute on the CAN interface to enable a firmware update. This is indicated by the LED flashing in several colours.

4 Troubleshooting

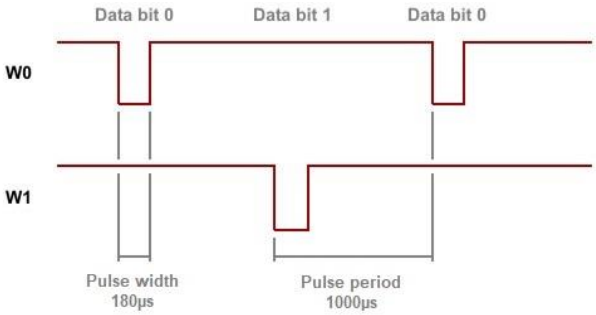
In case of malfunctions, check the following points:

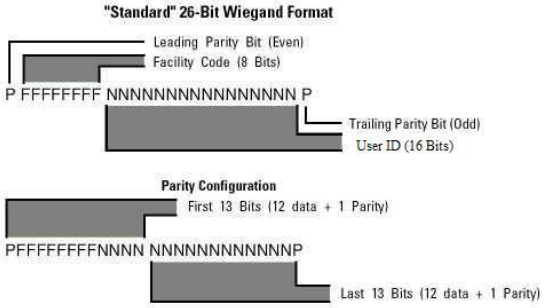
- **Wiring:**
  Are all lines connected correctly?
- **Control signals:**
  Is the supply voltage of 12V DC or 24V DC applied?
  Are the required control signals available at the HISAC?
- **Installation:**
  Is the housing damaged?
- **Operation:**
  Does the LED light up correctly?
  Does the signal transmitter report?
  Are the cards or tags read?

5 Serial interface

HISAC has the option of communicating either via Wiegand protocol (1KHz) or via CAN bus protocol. The protocol to be used is determined via the BUS-SELECT line at the time of switch-on.

Important:
The maximum voltage of the Wiegand lines for the serial interface is 24V with a current of less than or equal to 5mA. Higher voltages or currents can damage the HISAC and/or the bus system.





5.1 CAN bus protocol

HISAC can be parameterised via the CAN 2.0B protocol. The following factory settings apply to this protocol. These can be changed subsequently.

Baud rate (default)	250 kBit/s
Device ID	Identical with serial number (Extended-Identifier Format)

Detailed information on the protocols can be found in the interface description available separately. Please request this from us if required.

6 Technical data

Approvals	CE
RFID frequencies	125 KHz and 13.56 MHz
RFID read distance	≤ 40mm, depending on the installation situation and the RFID frequency used.
Operating nominal voltage / voltage range	12V DC or 24 V DC / 11... 30 V DC
Current consumption in Ruhr mode with LEDs without sound without card reading	max. 35mA/24V, 90mA/12V
Power consumption in boot mode, LED and sound	max. 150mA/24V, 150mA/12V
Current consumption during card reading (Mifare with AES), LEDs without sound	max. 55mA/24V, 130mA/12V
Current consumption during card reading (Mifare with AES), LEDs with sound	max. 200mA/24V, 250mA/12V
Current consumption during card reading (Mifare), LEDs without sound	max. 50mA/24V, 82mA/12V
Current consumption during card reading (Mifare), LEDs with sound	max 180mA/24V, 210mA/12V
Current consumption during card reading (hitag2, em4100), LEDs without sound	max. 50mA/24V, 80mA/12V
Current consumption during card reading (hitag2, em4100), LEDs with sound	max . 160mA/24V, 200mA/12V
Load capacity of the potential-free output	30V, 300 mA
Operating temperature / storage temperature range	-15° C ... +60° C / -20° C ... +70° C
Protection class	IP67 (front side, when installed)
Housing dimensions	See product drawing *Figure 1 Product drawing HISAC*
Weight with connection cable	Approx. 0.4 kg
Cable length	7 m
Material housing	PC-ABS

7 List of figures

8 Notes

Notes: