



**OEM-LF-HF-M1000-USB
NEO2**

Dual HID Mode

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1 HID Modes

The firmware allows three operation modes:

Operation Mode	Description
Standard read/write mode	The RFID device does nothing on its own. It reacts to commands.
Single HID Mode	The RFID device automatically reads UID or data from a configured RFID tag type.
Dual HID Mode	The RFID device automatically reads UID or data from a configured LF RFID tag type and an HF RFID tag type.

1.1 Important Notes

You cannot use read/write RFID commands when in HID mode.

1.2 Configuration Software

You can use the HID Setting Software for configuration.

Alternatively, you can use a terminal that is capable of handling hexadecimal data for manual configuration. This is described later in this document.

2 HID Mode Configuration Command

This command configures the HID operation modes.

The first parameter after the command code switches the HID mode ON or OFF.

The other Bytes configure what data is read and how the data is converted.

When you switch off the HID mode, only the command byte, the first parameter byte and the checksum byte must be correct.

2.1 Important Note

You cannot use read/write RFID commands when in HID mode.

2.2 Telegram from PC to RFID Device

The telegram for configuration of the HID Mode is 21 Bytes long.

The following tables describe each Byte in detail.

2.2.1 Overview of the Configuration Telegram (Table 1)

Byte#	Value	Description
1	AA	Start of Telegram
2	00	Device Address, 0x00 = all devices react to this address
3	10	Bytes of Payload to follow (Command + Parameters)
4	FD	Command Code
5	C0	Start/Stop HID mode, C0 (1100.0000) = ON, 3F (0011.1111) = OFF
6	00	In Single HID mode: Select tag type and function, please see table below, 0x30 selects Dual HID mode, only in this mode, the 3 Additional Bytes are used.
7	00	Memory Position, Blocks (Mifare) or Pages (Ultralight, ISO15693)
8	FF	Access Key for Mifare Classic memory access
9	FF	Access Key for Mifare Classic memory access
10	FF	Access Key for Mifare Classic memory access
11	FF	Access Key for Mifare Classic memory access
12	FF	Access Key for Mifare Classic memory access
13	FF	Access Key for Mifare Classic memory access
14	10	Data output format, 10 = HEX, 20 = ASCII
15	60	Mifare Classic Access Key A/B selection, 60 = Key A, 61 = Key B
16	00	Left MSB nibble: Data Position/Offset, Right LSB nibble: Data Length
17	00	Additional Byte #1: only active in Dual HID mode
18	00	Additional Byte #2: only active in Dual HID mode
19	00	Additional Byte #3: only active in Dual HID mode
20	5D	Block Check Character
21	BB	End of Telegram

2.2.2 The Single HID Configuration Byte #6 (Table 2)

Value	Description
00	HF ISO 14443A LSB
01	HF Ultralight Data
02	HF Mifare Data
03	HF Mifare Data + UID
04	HF ISO 15693 UID MSB
05	HF ISO 15693 UID + Data
06	HF ISO 14443A MSB
07	HF ISO 14443A LSB-DEC
08	HF ISO 14443A MSB-DEC
09	HF ISO 15693 MSB-DEC
0A	HF NDEF URL
0B	HF Customized use
0C	HF ISO 15693 UID LSB
0D	HF ISO 15693 UID LSB-DEC
0E	HF Customized use
0F	HF Ultralight UID + Data
10	LF Read UID LSB of read-only tag type
11	LF Read UID MSB of read-only tag type
12	LF Read UID LSB of Hitag1/S tag type
13	LF Read UID MSB of Hitag1/S tag type
14	LF Read UID LSB-DEC of Hitag1/S tag type
15	LF Read UID MSB-DEC of Hitag1/S tag type
16	LF Read UID LSB and Memory Page from Hitag1/S tag type
17	LF Read UID MSB and Memory Page from Hitag1/S tag type
18	LF Read UID LSB-DEC and Memory Page from Hitag1/S tag type
19	LF Read UID MSB-DEC and Memory Page from Hitag1/S tag type
1A	LF Read UID MSB-DEC of read-only tag type
1B	LF Read UID LSB-DEC of read-only tag type
1C	LF Reserved for future use
1D	LF Reserved for future use
1E	LF Reserved for future use
1F	LF Read FDX-B information
20	Legic Read UID
21	Legic Read ISO 15693 UID
22	Legic Read ISO 14443 A
23	Legic Read ISO 14443 B
24	Legic Read INSIDE Secure
25	Legic Read SONY FeliCa subset
30	Additional Bytes for Dual HID Mode valid (LF + HF enable)
40	UHF Read EPC (not implemented so far)

2.2.3 Additional Byte #1 (Table 3)

This Byte is only valid, when the single HID configuration Byte #6 has value of 0x30.

Value	Description
00	HF ISO 14443A LSB
01	HF Ultralight Data
02	HF Mifare Data
03	HF Mifare Data + UID
04	HF ISO 15693 UID MSB
05	HF ISO 15693 UID + Data
06	HF ISO 14443A MSB
07	HF ISO 14443A LSB-DEC
08	HF ISO 14443A MSB-DEC
09	HF ISO 15693 UID MSB-DEC
0A	HF NDEF URL
0B	HF Customized use
0C	HF ISO 15693 UID LSB
0D	HF ISO 15693 UID LSB-DEC
0E	HF Customized use
0F	HF Ultralight UID + Data
20	Legic Read UID
21	Legic Read ISO 15693 UID
22	Legic Read ISO 14443 A
23	Legic Read ISO 14443 B
24	Legic Read INSIDE Secure
25	Legic Read SONY FeliCa subset

2.2.4 Additional Byte #2 (Table 4)

This Byte is only valid, when the single HID configuration Byte #6 has value of 0x30.

Value	Description
10	LF Read UID LSB of read-only tag type
11	LF Read UID MSB of read-only tag type
12	LF Read UID LSB of Hitag1/S tag type
13	LF Read UID MSB of Hitag1/S tag type
14	LF Read UID LSB-DEC of Hitag1/S tag type
15	LF Read UID MSB-DEC of Hitag1/S tag type
16	LF Read UID LSB and Memory Page from Hitag1/S tag type
17	LF Read UID MSB and Memory Page from Hitag1/S tag type
18	LF Read UID LSB-DEC and Memory Page from Hitag1/S tag type
19	LF Read UID MSB-DEC and Memory Page from Hitag1/S tag type
1A	LF Read UID MSB-DEC of read-only tag type
1B	LF Read UID LSB-DEC of read-only tag type
1C	LF Reserved for future use
1D	LF Reserved for future use
1E	LF Reserved for future use
1F	LF Read FDX-B information

2.2.5 Additional Byte #3

This Byte is only valid, when the single HID configuration Byte #6 has value of 0x30.

This Byte gives the memory position (page number) of an LF RFID tag.

2.3 Reply from RFID Device

2.3.1 In Case of Success

AA 00 02 00 80 82 BB

The Bytes in Detail

AA = Start of Telegram
00 = Device Address
02 = Bytes of Payload
00 = Status, 00 = OK
80 = Status detail, 80 Setting successful
82 = BCC
BB = End of Telegram

2.3.2 In Case of Error

AA 00 02 01 81 82 BB

The Bytes in Detail

AA = Start of Telegram
00 = Device Address
02 = Bytes of Payload
01 = Status, 01 = Error
81 = Status detail, 81 Setting failed
82 = BCC
BB = End of Telegram

3 Examples

3.1 Single HID Mode Examples

3.1.1 Shut OFF the HID Operation Mode

AA 00 10 FD 3F 00 00 00 00 00 00 00 00 00 00 00 00 D2 BB

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 10 = Bytes of Payload (Command + Parameters)
 FD = Command Code
 3F = 3F (0011.1111) = Switch HID Operation Mode OFF
 00 = ignored parameter
 00 = ignored parameter
 00 00 00 00 00 00 = ignored parameter
 00 = ignored parameter
 00 = ignored parameter
 00 = ignored parameter
 00 = Additional Byte #1, ignored parameter
 00 = Additional Byte #2, ignored parameter
 00 = Additional Byte #3, ignored parameter
 D2 = BCC
 BB = End of Telegram

3.1.2 Factory Preset ISO14443A UID LSB

AA 00 10 FD C0 00 00 FF FF FF FF FF FF 10 60 00 00 00 00 5D BB
 AA 00 10 FD C0 00 00 00 00 00 00 00 00 10 00 00 00 00 00 3D BB (all ignored Parameters set to 0)

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 0D = Bytes of Payload (Command + Parameters)
 FD = Command Code
 C0 = C0 = Switch HID Operation Mode ON
 00 = 00: HF Mifare Data
 00 = Memory Position, ignored parameter
 FF FF FF FF FF FF FF = ignored parameter
 10 = 10: HEX
 60 = 60: Key A, ignored parameter
 00 = Data Position and Length, ignored parameter
 00 = Additional Byte #1, ignored parameter
 00 = Additional Byte #2, ignored parameter
 00 = Additional Byte #3, ignored parameter
 5D = BCC
 BB = End of Telegram

3.1.3 Read Data from Mifare RFID Tag

AA 00 10 FD C0 02 09 4B FB 5A D0 7C 63 20 60 54 00 00 00 17 BB

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 0D = Bytes of Payload (Command + Parameters)
 FD = Command Code
 C0 = C0 (1100.0000) = ON
 02 = 02: HF Mifare Data
 09 = Memory Position, Blocks (Mifare) or Pages (Ultralight, ISO15693)
 4B FB 5A D0 7C 63 = Key A
 20 = Convert to ASCII

60 = 60: Key A
 54 = left MSB nibble: Data Position 5th Byte, right LSB nibble: Data Length 4 Bytes
 00 = Additional Byte #1, ignored parameter
 00 = Additional Byte #2, ignored parameter
 00 = Additional Byte #3, ignored parameter
 17 = BCC
 BB = End of Telegram

3.1.4 UID of ISO 15693 only:

AA 00 10 FD C0 04 00 00 00 00 00 00 10 00 00 00 00 00 39 BB

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 0D = Bytes of Payload (Command + Parameters)
 FD = Command Code
 C0 = C0 = Switch HID Operation Mode ON
 04 = 04: UID of HF ISO 15693
 00 = Memory Position, ignored parameter
 00 00 00 00 00 00 = ignored parameter
 10 = 10: HEX
 00 = ignored parameter
 00 = ignored parameter
 00 = Additional Byte #1, ignored parameter
 00 = Additional Byte #2, ignored parameter
 00 = Additional Byte #3, ignored parameter
 39 = BCC
 BB = End of Telegram

3.2 Dual HID Mode Examples

3.2.1 LF Read UID LSB of Hitag1/S and Memory Page and UID of ISO14443A MSB

AA 00 10 FD C0 30 00 FF FF FF FF FF FF 10 60 00 06 16 10 6D BB

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 10 = Bytes of Payload (Command + Parameters)
 FD = Command Code
 C0 = C0 = Switch HID Operation Mode ON
 30 = 3 additional Bytes for HID Mode on Both Technologies
 00 = Memory Position for HF RFID tag
 FF FF FF FF FF FF = key for Mifare memory access
 10 = Output in HEX values
 60 = Use Key A
 00 = left MSB nibble: Data Position, right LSB nibble: Data Length
 06 = HF 14443A MSB (HF-RFID)
 16 = Read UID LSB and Memory Page from Hitag1/s tag type (LF-RFID)
 10 = Memory Position for LF RFID tag (LF-RFID)
 6D = BCC
 BB = End of Telegram

3.2.2 UID of LF read-only + UID of ISO15693

AA 00 10 FD C0 30 00 FF FF FF FF FF FF 10 60 00 04 10 00 79 BB

The Bytes in Detail

AA = Start of Telegram
 00 = Device Address
 10 = Bytes of Payload (Command + Parameters)
 FD = Command Code

C0 = C0 = Switch HID Operation Mode ON
30 = 3 additional Bytes for HID Mode on Both Technologies
00 = Memory Position for HF RFID tag
FF FF FF FF FF FF = key for Mifare memory access
10 = Output in HEX values
60 = Use Key A
00 = left MSB nibble: Data Position, right LSB nibble: Data Length
04 = HF ISO 15693 UID
10 = LF Read UID LSB of read-only tag type
00 = Memory Position for LF RFID tag
79 = BCC
BB = End of Telegram

4 Using HTerm for Configuration

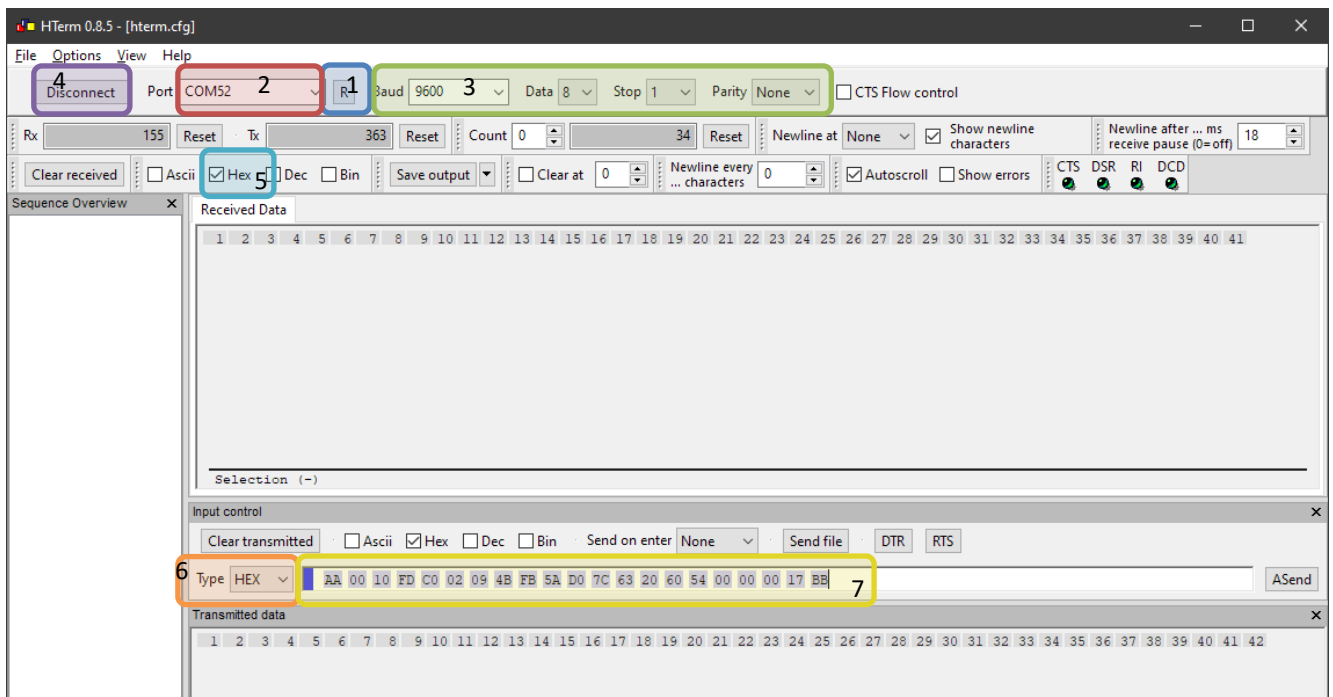
HTerm is a terminal emulator for serial communication for Windows and Linux. You can find the software in the folder “Troubleshooting/hterm” of this SDK.

4.1 Communication Parameters

- 9600 Baud (as of firmware 2022-09-13, the device uses 115200 Baud)
- 8 Databits
- 1 Stopbit
- No Parity

4.2 Initial Setting of hterm

1. Click on button [R]. This will search all available COM ports
2. Select the desired **COM port**
3. Set the **communication parameters**
4. Click on [**Connect**] to open the COM port
5. Select data format Hex for the **received data**
6. Select data format Hex for the **transmitted data**
7. Type in the **command to be sent**. Then confirm with [Enter]



Note

The button [ASend] is for automatically repeating the transmitted data. We do not use this function here.

5 Revision History

Version	Date	Notes
0.1	2021-01-21	Initial draft
0.2	2021-05-05	Missing Bytes in examples added, new examples added
0.3	2021-05-29	Details added, more examples added, deprecated information removed, configuration using HTerm included and adapted
0.4	2025-04-14	Updated HID Configuration commands