
Title Smart HMI User Manual
References

Distribution

Author	Jack Peng Peng	Date	2020-11-19
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Remarks

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1 Introduction

This document mainly instructs how to operate Smart HMI.

2 Definitions, acronyms, and abbreviations

Term	Definitions
CB	Communication Board
SW	Software
HMI	Human Machine Interface
TBD	To be determined
BLE	Bluetooth Low Energy

3 User Manual

3.1 Preconditions

Hardware Preconditions

Input voltage: DC 3V

Software Preconditions

Since the development platform of this project is windows and the target platform are android, so we need to prepare the following environment:

- Android mobile cellphone;
- Install package: RemoteHMI_V1.0.0.apk;

3.2 Install Process

Hardware installation

Link CB module and Smart HMI module, then turn on DC power. Smart HMI LCD will show the right content.

Software installation

Copy the install package to the Android mobile cellphone, and double click the apk file in the cellphone, the install process will start.



Once the installation is completed, the app icon will be shown at the cellphone top menu.



3.3 Scan BLE device

The app will start to scan the ABB Smart HMI devices once you double-click the app.

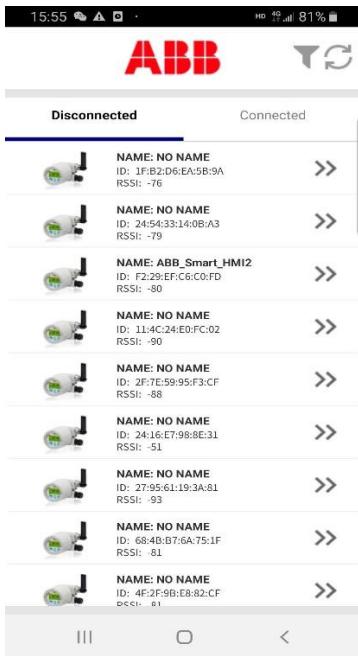


Figure 1. device list

If you want to re-scan all the BLE devices, click the refresh button on the up-right corner of the page.

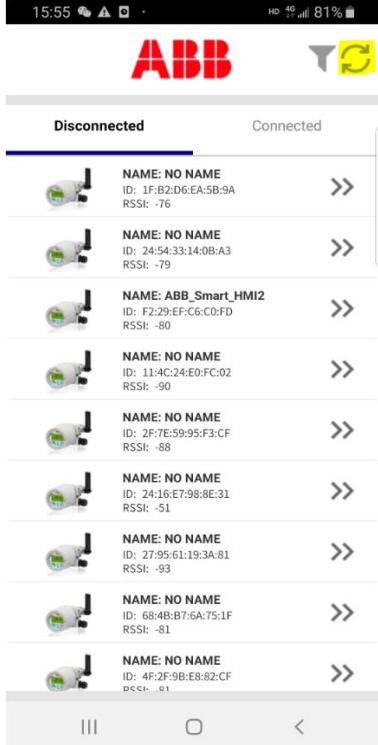


Figure 2. refresh button

3.4 Connect/Disconnect Smart HMI Device

In the device list page, there will be several items that is scanned BLE devices.

You could make the app to connect the BLE device by clicking the button on the right of the item.

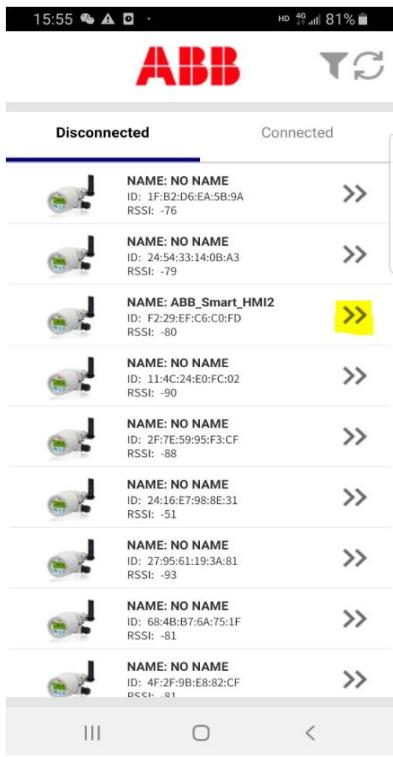


Figure 3. connect button in the device list page

Once the app connects to the BLE device, it will turn to connected page automatically.

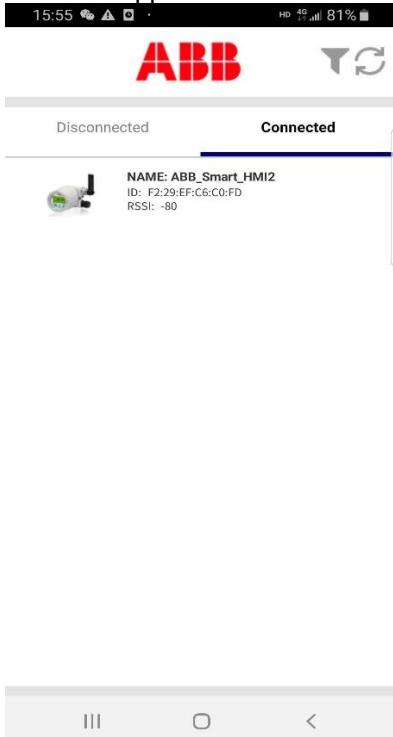


Figure 4. connected page

Click the connected device item, it will change to operate page so that you could operate the HMI menu of the smart HMI device.

Otherwise, if you want to disconnect to smart HMI device, just click the right button on the connected item.

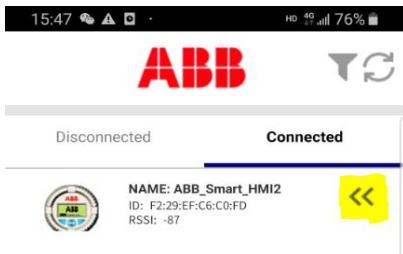


Figure 5. disconnect button in the connected page

3.5 Operate Smart HMI Device

Once the app enters operate page, the screen shows like below:

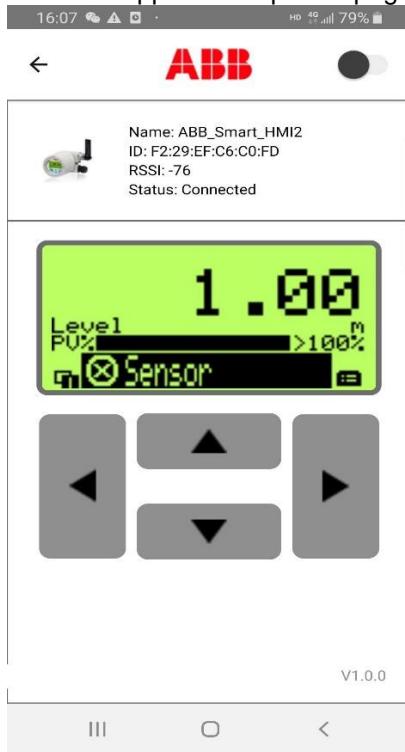


Figure 6. operate page

There are up/down and left/right buttons to operation the HMI menu once you click the buttons.

Since there are both app HMI and physical HMI, in order to keep hmi alive for each click operation at a time, the logic is that physical HMI has higher priority than app HMI. If app HMI wants operation on the buttons, the app need tell physical HMI that I want to operation in app HMI, then physical HMI will give the permission to app HMI. So there is enable/disable button to get the permission from physical HMI.

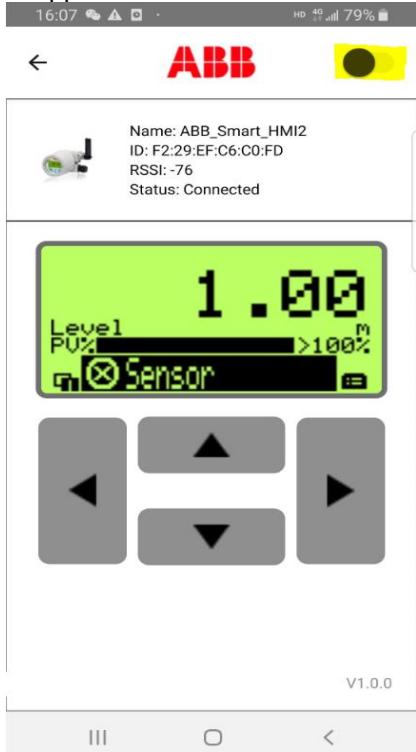


Figure 7. enable key button

3.6 Cyber Security

Disclaimer

This product is designed to be connected to and to communicate information and data via a digital communication interface. It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You shall establish and maintain any appropriate measures (such as but not limited to the application of authentication measures etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB Ltd and its affiliates are not liable for damages and / or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and / or theft of data or information.

Encryption

To secure the BLE communication between Remote HMI APP and Smart HMI device, the encryption of AES algorithm is applied. Once you want to connect to the BLE device, you need to type the crypto password with 6 numbers or characters first in the "Cryptokey" box, as the following.

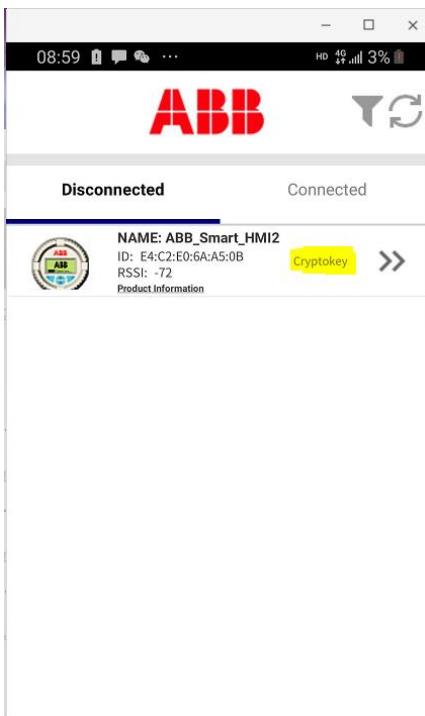


Figure 8. Cryptokey Password.

FCC STATEMENT

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1) L'appareil ne doit pas produire de brouillage;
- 2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

4 References

Ref.	Document
[1]	
[2]	
[3]	
[4]	

5 Revision History

Rev.	Description of Version/Changes	Primary Author(s)	Date
0.1	Initial revision.	Jack Peng Peng	2020-11-19