Firmware update release 1.1.3 for REX640 control and protection

Scope

This update release 1.1.3 concerns all REX640 protection relays and LHMIs delivered from the factory earlier than 10th of February 2021.

To verify whether the update applies to the protection relay and the LHMI version at hand, there are three things to check:

1. Product Connectivity Level shall be two (PCL2). This information can be checked from LHMI, WHMI or from the product label. The PCL is a part of product composition code, as the example below shows.

   REX640B10Nx + xxxx + COMx + PSMx + BIOx + **PCL2**

2. Relay Firmware version is 1.1, 1.1.1 or 1.1.2 This can be checked from LHMI or from WHMI

3. LHMI application version is dated **_earlier than_** 20-05-27-08:27. This can be checked from LHMI only.

Below figures show how to locate the above-mentioned information from the LHMI Device Information page and from the WHMI Product Identifiers page. The LHMI Device Information page can be accessed by tapping the menu bar on upper part of the LHMI screen and locating the Device Information button from the lower left-hand corner of the screen. The relay Firmware version is referred as "SW version" and the LHMI application version is referred as "HMI version". The "PCL" part of the composition code is pointed out as well.
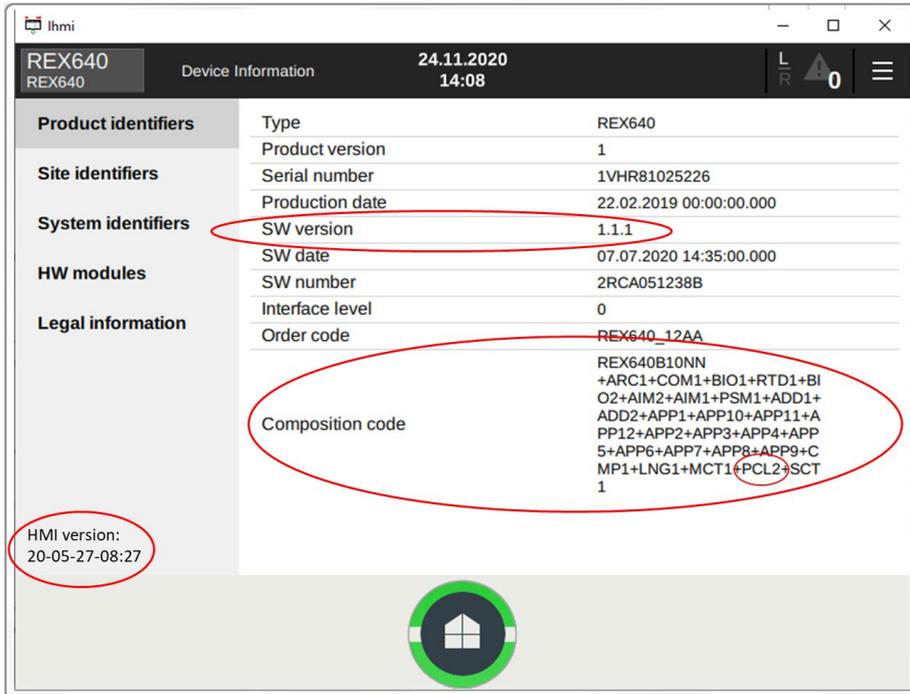
Fig 1. LHMI Device Information page
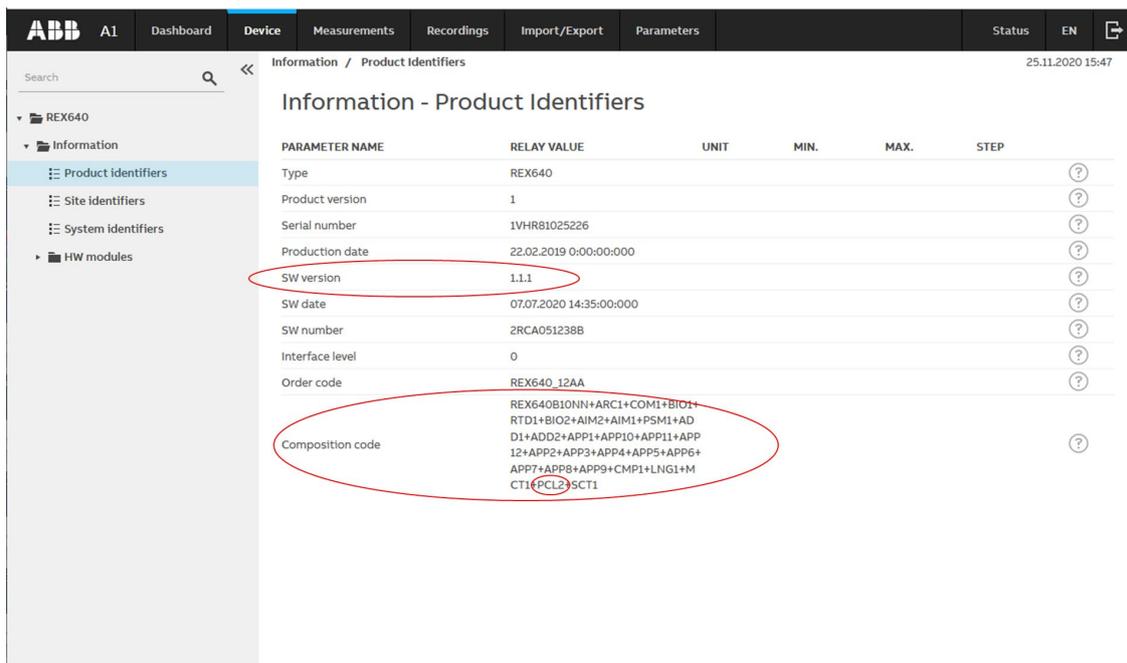
Fig 2. WHMI Product Identifiers page

Implemented usability improvements

The firmware update release includes usability and operational improvements. The following improvements have been implemented:[1]

Firmware update release 1.1.3 for relay

HMI

- LHMI performance improvement.
  Earlier LHMI might have acted slow under some heavy configurations.

Supervision

- Fixing performance issue leading to reccurring IRF116 at certain HSR and PRP network systems.
  At some HSR and PRP network systems it has been possible to experience recurring IRF116 (WD2) COM card error leading to relay self-recovery reboot.
  (Impacted FW 1.0.5 & 1.0.6.)

Communication

- Improved SFP module handling and reporting.
  (SFP Module related to Line Differential and Line Distance applications.)

- Improving secure communication stability at IEC104 and DNP3 (TLS or Application authentication enabled). Earlier there had been marginal change for Watchdog error WD10 self recovery restart at some network systems where secure communication in use at IEC104 or DNP3 protocols.

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[1] The relay firmware update may also include some minor usability improvements not listed in this note.

Firmware update release 1.1.2 for relay

Cyber Security

- Cyber Security improvements to the "Ripple20" vulnerability in TCP/IP communication stack for normal product usage conditions. Following vulnerabilities has been identified in the product and fixed by the update:
    - CVE-2020-11907
    - CVE-2020-11909
    - CVE-2020-11910
    - CVE-2020-11911
    - CVE-2020-11912

  Note! Some of the security scanners might still report existence of Ripple20 vulnerability after the update. This is a false positive, since the scanners indicate the presence of the IP stack, without being able to check the vulnerability and its fixes.

Supervision

- Improving Time counter rollover in relay's communication module that may have caused internal relay fault with error code IRF116 COM card error and relay to self-reboot after time interval(s) which is divisible by ~50 days from previous restart.

- Enhancing relay restart process from Supply voltage breaks.
  In case of Supply voltage break, on rare occasions, relay was restarting to fault (EEPROM error on slot A2) and indicating "Card error, slot A2" at Event list.

HMI

- Improvements in WebHMI to better support Google Chrome 83 & 84 new security features. previously issues was seen at least with relay settings import and login.

- Improving WebHMI access via X0/HMI port after cable disconnection.

Communication

- Improvement on GOOSE receiving. In a system where one relay is receiving GOOSE communication from multiple senders, it is possible that a communication break in one sender might impact handling of received values from other senders.

Engineering

- Improving Special Character < > & handling at User Defined Names (UDN) and alarm texts. Which earlier may have caused relay program error and preventing successful relay restart.

Firmware update release 1.1.1 for relay and LHMI application version dated 20-05-27-08:27

Supervision

- Enhancing PKI certificate handling performance and stability. Previously may have sometimes lead to memory handling issue causing watchdog reset.

- Improving security event reporting. Implementing security events both to Event Viewer Tool (EVT) and syslog when PKI certificate created or renewed.

HMI

- Enhancing LocalHMI "testing and commissioning / Secondary injection Monitoring" page function "ON/OFF" restoration while switching from Test mode to Normal mode. When returning to normal mode operation without turning temporarily deactivated function(s) back to "ON" under test mode, some function(s) have remained "OFF" instead restoring automatically its original "ON"-state.

- GOOSE and SMV Sending pages on LocalHMI might have been showing incorrect receiver names when Flexible Product Naming (FPN) used.

- Removing unnecessary repetitive "Viewed Security Event logs Succesfully" Syslog messages seen at Report Summary page when using WebHMI.

- LocalHMI update process improvements. LHMI Software update, including Modification Sales update, may have sometimes failed by timeout.

Time Synchronization

- Improving SNTP Time synchronization server switch from primary to secondary server.

- GNRLLTMS ALARM signal was not activated simultaneously with WARNING signal in case primary SNTP server lost and secondary server was disabled.

Update procedure

Firmware updates represent an integral part of ABB's life cycle management of distribution protection and control relays. The updates ensure optimized usability throughout the relay's entire life cycle by offering the latest improvements. The ideal time for a firmware update would be during periodical testing or during a maintenance break.

REX640 relays and LHMIs dispatched later 10th of February 2021 includes the stated relay firmware update 1.1.3.

Please note that ABB will not be liable for any direct or indirect costs related to the firmware update procedure. The update procedure shall be performed at the sole responsibility of the possessor of the devices.