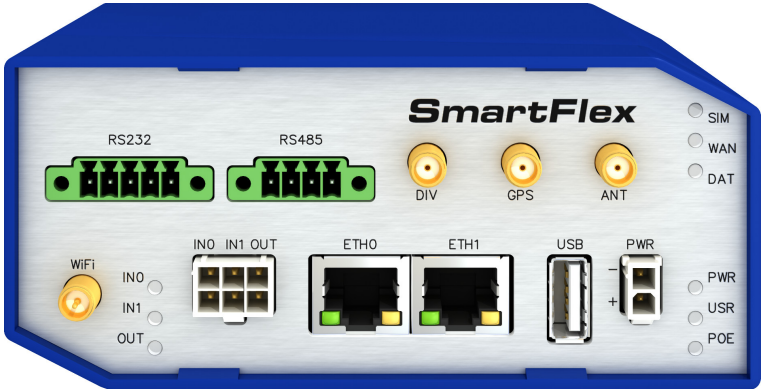




Firmware 6.3.4

RELEASE NOTES



Abstract

This document describes:

- Firmware update instructions.
- Description of all new features, fixes, and other changes implemented in the firmware.
- Known issues related to a firmware version

Firmware Details

- **Firmware version:** 6.3.4
- **Release date:** February 9, 2022
- **Compatibility:** Advantech routers; see the [Firmware Distribution Overview](#)

Please note that not all new Advantech routers are produced and shipped with the latest release of the firmware. The reason for this is usually an existing certification valid for a specific carrier or a region. For more information about the latest version of the firmware for your router, see the *Firmware Distribution Overview* document.



For current and detailed information about the router configuration see the latest version of the [Configuration Manual](#) for your router.

Product-related documents and applications including the firmware can be obtained on *Engineering Portal* at icr.advantech.cz address.

Part I

Firmware Update Instructions

General Update Instructions and Notices

HTTPS certificates: The HTTPS certificate format in the router was updated in FW 5.3.5 to improve the security. Existing HTTPS certificates on previously manufactured routers will not automatically be updated with the firmware update! It is possible to update the HTTPS certificates by deleting the files within `/etc/certs/https*` in the router (e.g. via SSH). The certificates will be re-created automatically during the router's next start.

Specific Update Instructions

New filename: If the firmware filename for your router was changed, as listed in Table 1, you will get an issue during the manual or automatic firmware update. The following warning message will appear: *You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?*

To go ahead with the **manual** firmware update, check the table below for details about recent firmware filename changes and make sure you have the correct firmware file for your router. Now, you can confirm the displayed warning message.

To go ahead with the **automatic** firmware update, rename the new firmware file (*.bin and *.ver) to the filename valid before the filename change. This should allow the router to pass through the process of automatic firmware update. Next time, the automatic firmware update feature will work as expected with no need to rename the file.

Router model	FW ver.	New filename	Original filename
SmartMotion ST352 SmartMotion ST355	6.0.2	SPECTRE-v3T-LTE.bin	BIVIAS-v3LL.bin
SmartStart SL302	6.0.3	SPECTRE-v3L-LTE-US.bin	SPECTRE-v3L-LTE-AT.bin

Table 1: Recent Firmware Filename Changes

Updating Firmware Version Earlier than 5.3.0



It is necessary to follow specific update instructions below only if you are updating from firmware older than 5.3.0.

Due to a bug in the firewall (now fixed) when a WAN device is part of a bridged interface, caution should be taken when updating in the following case:

Condition: When a WAN device is part of a bridged interface, access to that WAN device (HTTPS, SSH) is always granted regardless of configuration.

Problem: If this is your configuration, it is highly likely that you are not aware of this, so the undesired effect of the bridge firewall fix may make the router inaccessible.

Recommended Action: Enable access to both, the web and ssh services, before updating if you want to keep the current behavior (access to the WAN interface). This can be done on the *NAT* page in the *Configuration* section of the router's Web interface.

Change the root's password:

It is necessary to change the password of the *root* user when updating to the firmware version 5.3.0 or newer. The reason for this is an update of the authentication system (encryption algorithm *crypt* was changed to *MD5*; passwords are now stored in the */etc/shadow* file instead of */etc/passwd* file). The change of the password is required before setting up the remote access on the *NAT Configuration* page.

Please note that when downgrading from 5.3.0+ to an earlier firmware version, the password of the *root* user is reset to the default one, which is *root*.

Part II
Changelog



Legend: Affected products are marked as shown below for every changelog item:

Affected product Not affected product

Two-factor Authentication Support

SPECTRE 3G SPECTRE RT SPECTRE LTE-AT SPECTRE LTE-VZ
ER75i v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
SmartFlex SR300 SmartFlex SR303 SmartFlex SR304 SmartFlex SR305 SmartFlex SR306 SmartFlex SR307
SmartFlex SR308 SmartFlex SR309 SmartFlex SR310 SmartStart SL302 SmartStart SL304 SmartStart SL305
SmartStart SL306 SmartMotion ST352 SmartMotion ST355 ICR-320x ICR-321x ICR-323x ICR-324x
ICR-203x ICR-243x ICR-253x ICR-383x ICR-443x ICR-445x

We have made the required updates to allow customers to use two-factor authentication. Currently supported third-party solutions supporting the Linux PAM are [Google Authenticator](#) and [OATH Toolkit](#). For more information, see the [Configuration Manual](#) of your router, chapter *Administration -> Two-Factor Authentication*.

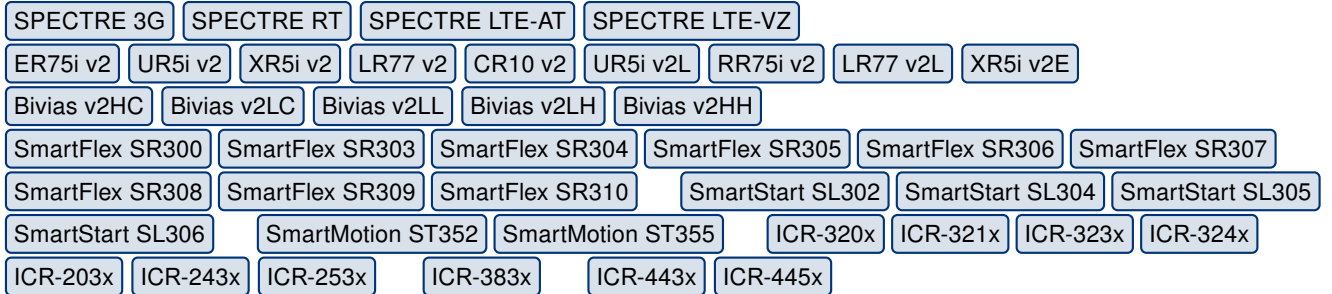
IPsec Configuration Enhancement

SPECTRE 3G SPECTRE RT SPECTRE LTE-AT SPECTRE LTE-VZ
ER75i v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
SmartFlex SR300 SmartFlex SR303 SmartFlex SR304 SmartFlex SR305 SmartFlex SR306 SmartFlex SR307
SmartFlex SR308 SmartFlex SR309 SmartFlex SR310 SmartStart SL302 SmartStart SL304 SmartStart SL305
SmartStart SL306 SmartMotion ST352 SmartMotion ST355 ICR-320x ICR-321x ICR-323x ICR-324x
ICR-203x ICR-243x ICR-253x ICR-383x ICR-443x ICR-445x

We have made several configuration enhancements to the IPsec configuration in the GUI so that the following items can be now configured:

- *2nd Remote IP Address* entry for the second remote IP address.
- MTU (Maximum Transmission Unit) entry (for route-based mode only).
- *User's Up/Down Scripts* that are executed when the IPsec tunnel is established/closed.

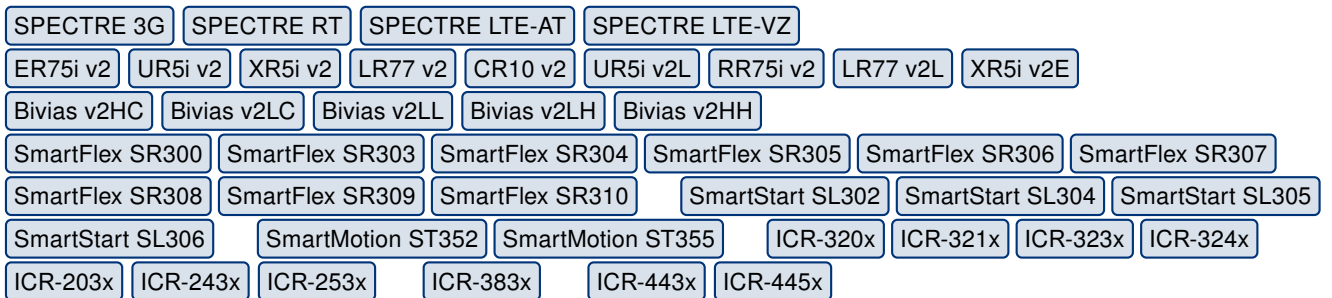
OpenVPN Configuration Enhancement



We have made several configuration enhancements to the OpenVPN configuration in the GUI so that users can now configure the following items:

- *2nd Remote IP Address* entry for the second remote IP address.
- *Local Passphrase* entry.
- *Username* and *Password* authentication can be used for relevant authentication modes.
- *User's Up/Down Scripts* that are executed when the OpenVPN tunnel is established/ closed.

Ethernet MTU Setting



We have added support for setting the MTU (Maximum Transmission Unit) for the Ethernet interfaces.

SSH Key Regenerating

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

The `OpenSSH` software does not support the private keys of 512 bits length since version 7.6. Therefore, we have added support for the manual SSH key regeneration to the increased key length.

Welcome Page Redirecting

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

If there is a welcome page in any installed Router App (User Module), the router redirects the logged user to this page after successful web login. Note that the welcome page filename should be `welcome.cgi`. If more Router Apps have the welcome page installed, the first found page is displayed.

Fixed Localhost Resolving

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have made a fix to allow the loopback IP address to resolve the `localhost` hostname.

Web Session Invalidation

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

After the user password change, all the opened web sessions are invalidated for that user account.

Fixed IPsec Issue

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have fixed the IPsec malfunction if the ID does not match the certificate subject. This issue has been recognized since firmware version 6.3.0.

Fixed SNMP Entry

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have fixed the issue with the truncated SNMP OID 1.3.6.1.2.1.1.2 (sysObjectID) entry causing an issue with the device identification in the *R-SeeNet* system.

Fixed IPv6 Scripts Backup

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have fixed an issue with the backup of the IPv6 up/down scripts during the router’s firmware update. Files /etc/scripts/ip6-up.local and /etc/scripts/ip6-down.local were not backed up and restored properly.

Fixed Linux Kernel Vulnerabilities

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

This update has fixed [CVE-2021-20322](#) (N/A), [CVE-2021-45485](#) (high), and [CVE-2021-45486](#) (low) in the Linux kernel.

Updated wpa_supplicant Program

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have updated the wpa_supplicant program to version 2.10. This update has fixed [CVE-2022-23303](#) (critical) and [CVE-2022-23304](#) (critical). For more details about this release, see the webpage at https://w1.fi/cgit/hostap/plain/wpa_supplicant/ChangeLog.

Updated hostapd Program

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have updated the hostapd program to version 2.10. This update has fixed [CVE-2022-23303](#) (critical) and [CVE-2022-23304](#) (critical). For more details about this release, see the webpage at <https://w1.fi/cgit/hostap/plain/hostapd/ChangeLog>.

Updated libnl Program

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have updated the libnl program to version 3.2.25 due to the upgrade of hostapd and wpa_supplicant programs. For more details about this release, see the webpage at <https://www.infradead.org/~tgr/libnl/>.

Updated ppp Program

SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ					
ER75i v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH				
SmartFlex SR300	SmartFlex SR303	SmartFlex SR304	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307			
SmartFlex SR308	SmartFlex SR309	SmartFlex SR310	SmartStart SL302	SmartStart SL304	SmartStart SL305			
SmartStart SL306	SmartMotion ST352	SmartMotion ST355	ICR-320x	ICR-321x	ICR-323x	ICR-324x		
ICR-203x	ICR-243x	ICR-253x	ICR-383x	ICR-443x	ICR-445x			

We have updated the ppp program to version 2.4.9. This update has fixed [CVE-2020-8597](#) (critical) and [CVE-2015-3310](#) (N/A). For more details about this program, see the webpage at <https://launchpad.net/debian/+source/ppp/+changelog>.

Updated strongSwan Software

- SPECTRE 3G SPECTRE RT SPECTRE LTE-AT SPECTRE LTE-VZ
- ER75i v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
- Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
- SmartFlex SR300 SmartFlex SR303 SmartFlex SR304 SmartFlex SR305 SmartFlex SR306 SmartFlex SR307
- SmartFlex SR308 SmartFlex SR309 SmartFlex SR310 SmartStart SL302 SmartStart SL304 SmartStart SL305
- SmartStart SL306 SmartMotion ST352 SmartMotion ST355 ICR-320x ICR-321x ICR-323x ICR-324x
- ICR-203x ICR-243x ICR-253x ICR-383x ICR-443x ICR-445x

We have updated the strongSwan software to version 5.9.5. This update has fixed [CVE-2021-45079](https://github.com/strongswan/strongswan/releases/tag/5.9.5) (critical). For more details about this release, see the webpage at <https://github.com/strongswan/strongswan/releases/tag/5.9.5>.

Part III
Known Issues

Firmware Update – Unexpected Filename

If the filename of firmware for your router was changed, you could have an issue during manual firmware update or with Automatic Update feature. This warning message will appear: *"You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?"* To fix this issue follow instructions in Part I - [Firmware Update Instructions](#).

Automatic Update – Update to Version 6.1.10

The feature of automatic firmware update will not recognize the firmware version 6.1.10 as a new version in case the installed version of firmware is from 6.1.0 to 6.1.8. To fix this issue, either update the firmware by the automatic update to version 6.1.9 first or update it manually directly to the version 6.1.10.

WiFi Configuration – Lost After Firmware Downgrade

If the firmware is downgraded to the version earlier than 6.2.0, the WiFi configuration will be lost completely.

ICR-3200 – Country Code for WiFi

The first version of the firmware for the WiFi module does not support the settings of the country code. Due to this issue, the settings of the country code made on the configuration page has no effect at all. The country code is set up during the manufacturing process according to the product destination region.

SmartStart – Cellular Network Registration

It is necessary to use router's firmware version 6.1.5 or higher if the *Telit* cellular module installed in your SmartStart router has following version of the firmware:

- *Telit LE910-EU V2* cellular module with firmware version 20.00.403 or newer,
- *Telit LE910-NA1* cellular module with firmware version 20.00.014 or newer.

Note: The model name and firmware version of the cellular module can be found on router's web GUI at *Mobile WAN Status* page in *Mobile Network Information* section.

SmartStart SL302 – Cellular Network Authentication

It is not possible to use username and password when connecting to Mobile WAN network (on *Mobile WAN Configuration* page) if your SmartStart SL302 router has the 20.00.522 firmware version inside the Telit LE910-NA1 cellular module. The version of cellular module firmware can be found at *Mobile WAN Status* page in *Mobile Network Information* section.

SmartStart SL302 – SMS in Verizon Network

SmartStart SL302 router (equipped with the *Telit* modules *LE910-SV1* or *LE910-NA1*) supports sending and receiving of SMS in *Verizon* cellular network since the firmware version 6.1.4. Please note that to support SMS receiving, cellular module with *Verizon* firmware version higher than 20.00.012 is required.