IEC 62443-4-2 SL2 Certified Routers for Industrial IoT & Enhanced Networking

- IEC 62443-4-2 SL2 Certification
- System integrity checks
- Advanced Intrusion Detection Control (AIDE)
- Secure boot
- Operating strong cryptographic algorithms
- Allowing safe Linux services only
- Trusted chain from production to operation



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IEC 62443-4-2 SL2 CERTIFIED ROUTERS

Secure boot, integrity checks, and compliance with the most up-to-date cryptographic and security recommendations. IEC 62443-4-2 SL2 Routers represent an entirely new standard in security and cybersecurity threats resistance for Advantech Cellular Routers.

The routers are intended for applications where compliance with IEC 62443-4-2 Security Level 2 is required for the relevant Industrial Automation and Control System (IACS) component. IEC 62443-4-2 defines technical security requirements for IACS components and assigns a level of protection against intentional violations using simple means, low resources, generic skills and low motivation.

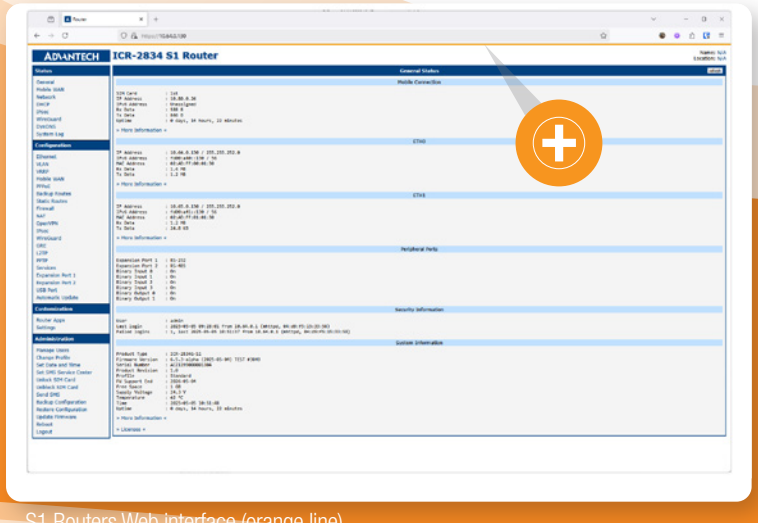
IEC 62443-4-2 SL2 ROUTER DIFFERENTIATION

	Selected differences between S1 Routers and standard	
	IEC 62443-4-2 SL2 Routers	**Standard routers**
Certification for IEC 62443-4-2 SL2 (level 2)	Yes	No
Secure boot	Yes	No
Read only filesystem with integrity checks	Yes	No
Default username	admin	root
Router App format	.raw	.tgz
Min password requirements**	12 chars, 3 classes	6 chars, 1 class
Mandatory account lock	Yes	No
Available cryptographic algorithms*	strong only	both weak and strong
Web Admin	HTTPS only	HTTP and/or HTTPS
OpenVPN Security Level	2 (medium) .. 5 (very high)	0 (weak) .. 5 (very high)
FTP, Telnet	No	Yes
FW Support End indicator	Yes	No
Advanced Intrusion Detection Environment (AIDE)	Yes	No
Encrypted firmware image	Yes	No
Using scripts**	No	Yes
Root access (sudo)	limited set of commands	full
Wi-Fi AP/Station "Extra Options"	No	Yes
HTTP Content-Security-Policy	strict	permissive
Persistent syslog	mandatory	optional
IPsec aggressive mode	No	Yes
Persistent data storage	combined (/var)	router apps (/opt), user data (/var/data)

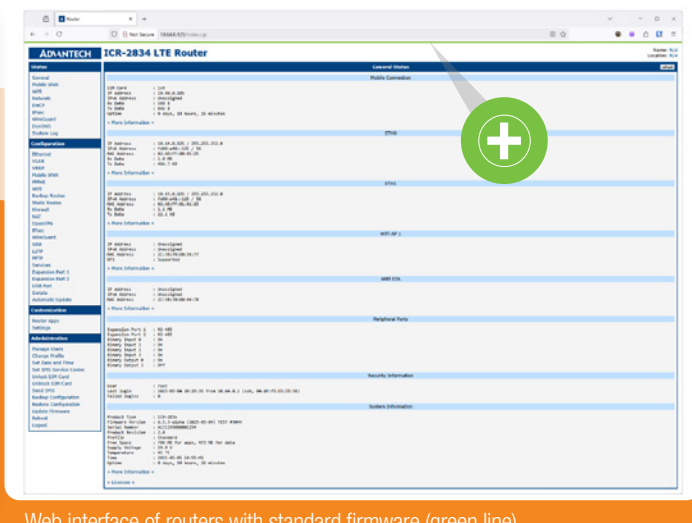
*** Weak algorithms:** strength < 128 bits (e.g. DES, 3DES, MD5, SHA-1, RSA-1024/2048)
Strong algorithms: strength ≥ 128 bits (e.g. SHA-256+, RSA-3072+, ED25519)
****** The only way to use scripts is to convert required scripts into IEC 62443-4-2 SL2 .raw Router Apps.

S1 ROUTERS GUI

What we keep the same is the familiar look of the S1 Routers' web interface for configuration. So the customer can operate a familiar interface with logical segmentation into categories



S1 Routers Web interface (orange line)



Web interface of routers with standard firmware (green line)

IEC 62443-4-2 SL2 ROUTER GUI

The SL2-certified routers retain the familiar web-based interface used for router configuration. Configuration functions are logically organized into categories, allowing users to configure and manage the router without changing the basic operating concept of the standard ICR products.

IEC 62443-4-2 SL2 ROUTER COMPATIBILITY

IEC 62443-4-2 SL2 routers do not support native scripting available on standard ICR products. This restriction is part of the controlled software environment used to support the required security capabilities.

The functionality of the routers can nevertheless be extended using dedicated Router Apps instead of scripts. These Router Apps are different from those used with standard ICR-OS firmware and are distributed in .raw format.

Customers can also develop their own Router Apps in .raw format. In such cases, the customer or software developer is responsible for the security of the developed software and for ensuring that its use does not compromise the security of the router or the intended security level of the application.

IEC 62443-4-2 SL2 routers can also be integrated with other routers, network components and monitoring or management systems. Note that in this case, the system integrator is responsible for complete system cybersecurity certification (if required).

Check the list of available S1 Router Apps here:



FAQ

Is there any difference in the GUI between standard routers and IEC 62443-4-2 SL2 routers?
The SL2-certified routers retain the familiar web-based interface used for configuration of all our routers. For users who configure the router via the GUI there is virtually no difference between a standard router and an IEC 62443-4-2 SL2-certified router. Configuration functions are logically organized into categories allowing users to configure and manage the router without changing the basic operating concept of standard ICR products. You can identify an SL2-certified router by the "S1" label in the router model name within the web GUI. The orange color scheme also distinguishes it from the green color used in the standard production web GUI.

I already have Advantech routers in my network. Is it possible to update them to become IEC 62443-4-2 SL2 routers?
No this is not possible. Routers must be ordered as IEC 62443-4-2 SL2-certified routers and produced as such directly at Advantech's manufacturing facility. The list of models holding IEC 62443-4-2 SL2 certification is available in the section "IEC 62443-4-2 SL2 Certified Models Available for Ordering" on this web page.

I am currently operating scripts on standard Advantech routers. Can I use those scripts with IEC 62443-4-2 SL2-certified routers?
Scripts are not supported on IEC 62443-4-2 SL2-certified routers for security reasons. If you need to customize router behavior you can create a Router App for IEC 62443-4-2 SL2-certified routers in .raw format and upload it to the router(s).

Can I use Router Apps designed for standard Advantech routers on IEC 62443-4-2 SL2-certified routers?
No this is not possible. Only Router Apps developed specifically for IEC 62443-4-2 SL2-certified routers and using the .raw extension can be used. See the list here.

Is the firmware for IEC 62443-4-2 SL2-certified routers regularly updated?
Yes, the firmware is continuously developed to address the latest security recommendations and improve the overall customer experience. Firmware updates are performed in the same way as with standard products using the dedicated ICR-OS S1 firmware branch.

Does a firmware update or new firmware release for IEC 62443-4-2 SL2-certified routers affect the existing certification in any way?
Every release of the ICR-OS S1 firmware branch dedicated to IEC 62443-4-2 SL2-certified routers is based on the security architecture of the original firmware that passed IEC 62443-4-2 SL2 certification. New firmware releases are developed to preserve compliance with the security requirements covered by the IEC 62443-4-2 SL2 certification.

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