



From

BT-VS/MKP

Product Management

Nuremberg

12.08.2021

## Release Letter

|           |  |
|-----------|--|
| Products: | <b><i>Combined Firmware for<br/>CPP7.3 UHD/HD/MP cameras<br/>CPP7 HD/MP cameras<br/>CPP6 UHD/MP cameras<br/>CPP5 encoders<br/>CPP4 HD cameras<br/>CPP3 cameras and encoders<br/>CPP-ENC H.264 encoders</i></b> |
| Version:  | <b><i>7.81.0719</i></b>  |

This letter contains latest information about the above mentioned firmware version.

### 1 General

This firmware release is a combined firmware package, applicable to H.264 and H.265 products based on one of the following platforms.

Changes since last release are marked in [blue](#).



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This firmware supports:

- CPP7.3 HD and UHD cameras
  - upgrade from FW < 6.50 to intermediate FW 6.50
  - [upgrade from FW 6.50 \(<6.51\) to latest FW 7.81](#)
- CPP7 HD cameras
  - upgrade from FW < 6.50 to intermediate FW 6.50
  - [upgrade from FW 6.50 \(<6.51\) to latest FW 7.81](#)
- CPP6 UHD cameras
  - upgrade from FW < 6.50 to intermediate FW 6.50
  - [upgrade from FW 6.50 \(<6.51\) to latest FW 7.81](#)
- CPP5 encoders
  - upgrade from FW 5.91 or newer to latest FW 6.31
- CPP4 HD cameras
  - upgrade from FW < 6.10 to intermediate FW 6.11
  - upgrade from FW < 6.50 to intermediate FW 6.50
  - upgrade EXTEGRA from FW 6.10 or newer to latest FW 6.32
  - upgrade from FW 6.50 (<6.51) to latest FW 7.10
- CPP3 cameras and encoders
  - upgrade from FW 4.54.0026 or newer to latest FW 5.75
- CPP-ENC encoders and decoders
  - VIP-X1600-XFM4 encoders: upgrade from FW 4.2x or newer to latest FW 5.54
  - VJT XF, VJD-3000 and VJC-7000 upgrade to latest FW 5.97

The combined firmware package includes the following build versions:

- [CPP7.3 FW 7.81.0060](#)
- CPP7.3 FW 6.50.0133
- [CPP7 H.264 7.81.0060](#)
- CPP7 H.264 6.50.0133
- [CPP6 H.264 7.81.0060](#)
- CPP6 H.264 6.50.0133
- CPP5 H.264 6.31.0010
- CPP4 H.264 7.10.0095
- CPP4 H.264 6.50.0133
- CPP4 H.264 6.32.0124\_EXTEGRA\_only
- CPP4 H.264 6.11.0026
- CPP3 H.264 5.75.0011
- CPP-ENC H.264 5.97.0013 for VJT XF family, VJD-3000 and VJC-7000
- CPP-ENC H.264 5.54.0012 for VIP X1600 XFM4

For detailed description please refer to the separate release letters.



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## 2 Important notes:

### 2.1 *End of Feature for CPP4 – Maintenance mode started*

With release of FW 7.10, feature implementation for the CPP4 platform ends, and the firmware development will switch over into maintenance mode. The firmware branch for CPP4 is now treated as a **long-term supported firmware (LTSFW)**, with its code base frozen to allow bug fixing and applying security fixes where necessary.

### 2.2 *Intermediate update steps*

To upgrade to a newer firmware version using this combined firmware package, products may require to have this firmware file uploaded multiple times until the intended firmware version is installed. Since intermediate firmware versions might have vulnerabilities that are fixed in later versions, it is advised to always install up to the most recent version.

### 2.3 *Two-factor authenticated firmware signature*

The security of the signature of the firmware file has been strengthened by using a two-factor authentication process for signing the final released firmware file. This new process has been prepared for with firmware 6.50 and comes into effect with succeeding versions.

The new signature protects from non-released versions being installed in production systems. As a result, pre-release (beta) versions, required sometimes in projects, need to have a special license installed prior to the firmware update. Requests for pre-release versions need to be handled via tech support tickets in order to allow tracking and require a concession signed by the customer.

In case a firmware must be downgraded from a device with firmware 6.51 or higher installed, the downgrade is only possible via firmware 6.50 with an updated signature. Please contact our customer service or technical support to get a link to this firmware.

Note:

This combined firmware file is not applicable to devices running firmware higher than FW 6.50 due to the two-factor authenticated release signature.

### 2.4 *Firmware file encryption*

In order to upload version 6.51 to a device running a firmware version below 6.50, you need to upgrade first to version 6.50, since older firmware versions do not support firmware file decryption. This can be achieved by uploading this firmware file multiple times until the required firmware version is installed.



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## 2.5 “Originally manufactured” certificate

Since firmware version 6.30 all cameras are prepared to receive a unique Bosch certificate during production, assigned and enrolled by Escript LRA. These certificates prove that every device is an original Bosch-manufactured and untampered unit.

Escript is a Bosch-owned company, providing the Bosch certificate authority (CA).

Deployment of the certificates in production is asynchronous to this firmware release.

## 2.6 File System Introduction on CPP4

Due to an internal file system being introduced since firmware 6.1x and architectural changes thereof, an upgrade of CPP4 cameras to firmware 6.2x and higher is only possible from firmware 6.1x versions or higher.

CPP4 cameras with previous firmware versions below 6.1x first need to upgrade to firmware 6.1x.

This can be achieved by uploading this firmware file multiple times until the required firmware version is installed.

## 2.7 Secure Element (“TPM”)

All applicable devices incorporate a secure microcontroller, which we call our Secure Element.

“A Secure Element is a tamper-resistant platform capable of securely hosting applications and their confidential and cryptographic data (for example cryptographic keys) in accordance with the rules and security requirements set by well-identified trusted authorities.”<sup>1</sup> In this specific case the requirements are defined in the Trusted Platform Module library specification defined by the Trusted Computing Group (TCG). As the Secure Element supports the main functionalities specified by TCG, the ones needed for an IoT device, it is often referred to as a “TPM”.

Due to security reasons, the firmware or functionality of the secure crypto-microcontroller cannot be altered in the field.

Thus, not all new security features become available on devices with older secure crypto-microcontroller hardware or firmware revisions.

## 2.8 CPP5

This combined firmware cannot be applied to CPP5 products with firmware version older than 5.91. It is required to upgrade to intermediate firmware 5.91 first.

## 2.9 Open Source Software

Bosch Security Systems is advocate of integrating open source software into its products. The use of open source software is noted in the *Service* menu on the *System Overview* page of every camera's web interface. For general information regarding open source software in Bosch Security Systems, please visit <http://www.boschsecurity.com/oss> .

<sup>1</sup> <https://globalplatform.org/wp-content/uploads/2018/05/Introduction-to-Secure-Element-15May2018.pdf>, page 1



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### 3 Applicable products:

#### CPP7.3

- AUTODOME IP 4000i
- AUTODOME IP 5000i
- AUTODOME IP starlight 5000i (IR)
- AUTODOME IP starlight 5100i (IR)
- AUTODOME IP starlight 7000i
- DINION IP 3000i
- DINION IP bullet 4000i
- DINION IP bullet 5000
- DINION IP bullet 5000i
- DINION IP bullet 6000i
- FLEXIDOME IP 3000i
- FLEXIDOME IP 4000i
- FLEXIDOME IP 5000i
- [FLEXIDOME IP indoor 8000i \(– X series\)](#)
- FLEXIDOME IP starlight 5000i (IR)
- FLEXIDOME IP starlight 8000i
- FLEXIDOME IP starlight 8000i (– X series)
- MIC IP starlight 7000i
- MIC IP starlight 7100i
- MIC IP ultra 7100i
- MIC IP fusion 9000i

#### CPP7

- DINION IP starlight 6000
- DINION IP starlight 7000
- DINION IP thermal 8000
- FLEXIDOME IP starlight 6000
- FLEXIDOME IP starlight 7000
- DINION IP thermal 9000 RM



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**CPP6**

- DINION IP starlight 8000 12MP
- DINION IP ultra 8000 12MP
- DINION IP ultra 8000 12MP with C/CS mount telephoto lens
- FLEXIDOME IP panoramic 6000 12MP 180
- FLEXIDOME IP panoramic 6000 12MP 360
- FLEXIDOME IP panoramic 6000 12MP 180 IVA
- FLEXIDOME IP panoramic 6000 12MP 360 IVA
- FLEXIDOME IP panoramic 7000 12MP 180
- FLEXIDOME IP panoramic 7000 12MP 360
- FLEXIDOME IP panoramic 7000 12MP 180 IVA
- FLEXIDOME IP panoramic 7000 12MP 360 IVA

**CPP5**

- VIDEOJET multi 4000
- VIP-X16XF-E



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## CPP4

- AUTODOME IP 4000 HD
- AUTODOME IP 5000 HD
- AUTODOME IP 5000 IR
- AUTODOME 7000 series
- DINION HD 1080p
- DINION HD 1080p HDR
- DINION HD 720p
- DINION imager 9000 HD
- DINION IP bullet 4000
- DINION IP bullet 5000
- DINION IP 4000 HD
- DINION IP 5000 HD
- DINION IP 5000 MP
- DINION IP starlight 7000 HD
- EXTEGRA IP dynamic 9000
- EXTEGRA IP starlight 9000
- FLEXIDOME corner 9000 MP
- FLEXIDOME HD 1080p
- FLEXIDOME HD 1080p HDR
- FLEXIDOME HD 720p
- Vandal-proof FLEXIDOME HD 1080p
- Vandal-proof FLEXIDOME HD 1080p HDR
- Vandal-proof FLEXIDOME HD 720p
- FLEXIDOME IP micro 2000 HD
- FLEXIDOME IP micro 2000 IP
- FLEXIDOME IP indoor 4000 HD
- FLEXIDOME IP indoor 4000 IR
- FLEXIDOME IP outdoor 4000 HD
- FLEXIDOME IP outdoor 4000 IR
- FLEXIDOME IP indoor 5000 HD
- FLEXIDOME IP indoor 5000 MP
- FLEXIDOME IP micro 5000 HD
- FLEXIDOME IP micro 5000 MP
- FLEXIDOME IP outdoor 5000 HD
- FLEXIDOME IP panoramic 5000
- FLEXIDOME IP outdoor 5000 MP
- IP bullet 4000 HD
- IP bullet 5000 HD
- IP micro 2000
- IP micro 2000 HD
- MIC IP dynamic 7000
- MIC IP starlight 7000
- TINYON IP 2000 family



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### CPP3

- AUTODOME Easy II IP series
- AUTODOME Junior HD, Jr HD fix
- AUTODOME 700 IP IVA
- AUTODOME 800
- AUTODOME Junior 800
- VG4 AUTODOME IP series
- VG5 AUTODOME IP series
- DINION XF 720p+, NBN-921-P
- DINION XF, NBC-455-P
- DINION 2X, NBN-498-P
- FLEXIDOME XF 720p+, NDN-921-P
- FLEXIDOME XF, NDC-455-P
- FLEXIDOME 2X, NDN-498-P
- Economy Box Cameras, NBC-225 series, NBC-255 series, NTC-255-PI
- Economy Dome Cameras, NDC-225 series, NDC-255 series
- Economy HD Box Cameras, NBC-265 series, NTC-265-PI
- Economy HD Dome Cameras, NDC-265 series, NDN-265-PIO
- Extreme series EX30 IR, NEI-30 IR Imager
- Far Infra-Red camera, VOT-320
- VIP X1 XF Single-Channel H.264 Encoder
- ~~WLAN cameras NBC-255-W and NBC-265-W~~
- Economic version VIP-X1XF-E
- Video Conference Dome IVA
- REG 1.5 IP and REG L2
- MIC IP PSU

### CPP-ENC

- VIP-X1600-XFM4
- VJT-X20/X40XF-E
- VJT-XTCXF
- VIDEOJET decoder 3000, VJD-3000
- VIDEOJET connect 7000, VJC-7000



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## 4 New Features for CPP7.3

- Support of the new indoor FLEXIDOME 8000i variants: FLEXIDOME IP indoor 8000i.
- New P-iris supported on FLEXIDOME IP starlight 8000i.
- Support of ONVIF Profile M, including MQTT event forwarding.
- China standard GB/T 28181 has been put under a global license. When GB/T 28181 shall not be available it can be disabled with a global license key. This is irreversible for customers and can only be reversed via service and repair. The license also prohibits downgrading to earlier versions which provided GB/T 28181 as standard feature.  
License key to disable GB/T 28181 is:
  - 22-01.47.01-BF365391-21ABCB3D-28699CE4-3BD3AB09-FE25CD61
- New Western Digital industrial SD cards with lifespan monitoring are supported.
- Privacy masks can be enabled and disabled via a single switch command.
- Audio alarm menu has been enhanced to allow shaping for certain audio occurrences.
  - Alarm thresholds are separated per frequency band.
  - Sensitivity can also be set separately per frequency band, if required.
- Dashboard and dashboard export have been enhanced by iSCSI information and various other settings.
- Flexible person shape can be selected in 3D tracking.



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## 5 Changes for CPP7.3

- Network authentication via 802.1x starts only after synchronization with time server, or after timeout falls back to internal time base. Authentication attempt without valid time is prohibited.
- Selection of audio encoding (G.711, L16, AAC) and AAC modes (48 kbps, 80 kbps) are now separated. Indication is given that AAC 80 kbps is not functional with the livepage via RTSP.
- SNMP MIB has been extended by manufacturer name and serial number.
- Encoder streaming base mode names are auto-generated from the configured resolutions.
- An issue with absolute position, reversed tilt movement, and incorrect pan coordinates via ONVIF is fixed.
- An issue where alarm message text was not written to the correct metadata layer is fixed.
- An issue where custom gain values were lost when switching between scene modes is fixed.
- An issue with IVA events not being forwarded via ONVIF is fixed.
- An issue with privacy mask "Auto" always being grey is fixed.
- An issue with blurry stamping on the thermal image of MIC IP 9000i is fixed.

During a penetration test, Kaspersky Lab, who was contracted by Bosch for IP camera security maturity certification, detected a vulnerability which required immediate action to ensure the security of installations using our cameras.

For more details refer to our Security Advisory BOSCH-SA-033305-BT, published at our Security Advisory web page

<https://www.boschsecurity.com/xc/en/support/product-security/security-advisories.html>

or visit our PSIRT website at <https://psirt.bosch.com>.

- An issue which provided a possibility to conduct a CSRF (Cross Site Request Forgery) attack is fixed (CVE-2021-23848).



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## 6 New Features for CPP7

- Support of ONVIF Profile M, including MQTT event forwarding.
- China standard GB/T 28181 has been put under a global license. When GB/T 28181 shall not be available it can be disabled with a global license key. This is irreversible for customers and can only be reversed via service and repair. The license also prohibits downgrading to earlier versions which provided GB/T 28181 as standard feature.  
License key to disable GB/T 28181 is:
  - 22-01.47.01-BF365391-21ABCB3D-28699CE4-3BD3AB09-FE25CD61
- New Western Digital industrial SD cards with lifespan monitoring are supported.
- Privacy masks can be enabled and disabled via a single switch command.
- Audio alarm menu has been enhanced to allow shaping for certain audio occurrences.
  - Alarm thresholds are separated per frequency band.
  - Sensitivity can also be set separately per frequency band, if required.
- Dashboard and dashboard export have been enhanced by iSCSI information and various other settings.
- Flexible person shape can be selected in 3D tracking.



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## 7 Changes for CPP7

- Network authentication via 802.1x starts only after synchronization with time server, or after timeout falls back to internal time base. Authentication attempt without valid time is prohibited.
- Selection of audio encoding (G.711, L16, AAC) and AAC modes (48 kbps, 80 kbps) are now separated. Indication is given that AAC 80 kbps is not functional with the livepage via RTSP.
- SNMP MIB has been extended by manufacturer name and serial number.
- An issue with absolute position, reversed tilt movement, and incorrect pan coordinates via ONVIF is fixed.
- An issue where alarm message text was not written to the correct metadata layer is fixed.
- An issue where OSD was missing on JPEGs when camera is running with 60 fps and image rotated is fixed.
- An issue with IVA events not being forwarded via ONVIF is fixed.
- Basemode names are auto-generated from the configured resolutions.

During a penetration test, Kaspersky Lab, who was contracted by Bosch for IP camera security maturity certification, detected a vulnerability which required immediate action to ensure the security of installations using our cameras.

For more details refer to our Security Advisory BOSCH-SA-033305-BT, published at our Security Advisory web page

<https://www.boschsecurity.com/xc/en/support/product-security/security-advisories.html>

or visit our PSIRT website at <https://psirt.bosch.com>.

- An issue which provided a possibility to conduct a CSRF (Cross Site Request Forgery) attack is fixed (CVE-2021-23848).



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## 8 New Features for CPP6

- Support of ONVIF Profile M, including MQTT event forwarding.
- China standard GB/T 28181 has been put under a global license. When GB/T 28181 shall not be available it can be disabled with a global license key. This is irreversible for customers and can only be reversed via service and repair. The license also prohibits downgrading to earlier versions which provided GB/T 28181 as standard feature.  
License key to disable GB/T 28181 is:
  - 22-01.47.01-BF365391-21ABCB3D-28699CE4-3BD3AB09-FE25CD61
- New Western Digital industrial SD cards with lifespan monitoring are supported.
- Privacy masks can be enabled and disabled via a single switch command.
- Audio alarm menu has been enhanced to allow shaping for certain audio occurrences.
  - Alarm thresholds are separated per frequency band.
  - Sensitivity can also be set separately per frequency band, if required.
- Dashboard and dashboard export have been enhanced by iSCSI information and various other settings.
- Flexible person shape can be selected in 3D tracking.

## 9 Changes for CPP6

- Selection of audio encoding (G.711, L16, AAC) and AAC modes (48 kbps, 80 kbps) are now separated. Indication is given that AAC 80 kbps is not functional with the livepage via RTSP.
- SNMP MIB has been extended by manufacturer name and serial number.
- An issue where alarm message text was not written to the correct metadata layer is fixed.
- An issue with IVA events not being forwarded via ONVIF is fixed.
- An issue with privacy mask "Auto" always being grey is fixed.
- Basemode names are auto-generated from the configured resolutions.
- An issue with wrong name stamping on lines 2 and 3 is fixed.

During a penetration test, Kaspersky Lab, who was contracted by Bosch for IP camera security maturity certification, detected a vulnerability which required immediate action to ensure the security of installations using our cameras.

For more details refer to our Security Advisory BOSCH-SA-033305-BT, published at our Security Advisory web page

<https://www.boschsecurity.com/xc/en/support/product-security/security-advisories.html>  
or visit our PSIRT website at <https://psirt.bosch.com>.

- An issue which provided a possibility to conduct a CSRF (Cross Site Request Forgery) attack is fixed (CVE-2021-23848).

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Please check the platform-specific [release notes of FW 7.81.0060](#) for completeness and details.



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## 10 Restrictions; Known Issues

- This firmware and its included platform firmware builds are not applicable to MPEG-4 products.
- The final firmware version for VIP-X1600-XFM4 modules is FW 5.54. No newer firmware will be provided for these modules.
- Configuration Manager cannot upload this Combined Firmware file to VIP-X1600-XFM4 modules. Use the module's web page instead for uploading; or use the separate firmware file.
- The final firmware version for CPP3 devices is FW 5.74. No newer firmware will be provided for these products.
- The Combined Firmware file does not load onto VG4 AUTODOME or AUTODOME Easy II via the browser when running a firmware version before 5.52.0017. The specific platform file should be used instead.
- Cameras or encoders with a minimum firmware version that is higher than the lowest firmware version in the combined firmware file may show error 0x0b in the upload history which can be ignored. Firmware upload is not affected by this.
- Video authentication using SHA hashing mechanisms are not functional if no self-signed certificate has been created yet. Opening an HTTPS connection once is prerequisite.
- Cameras with security coprocessor version 3 with an externally applied certificate will fail HTTPS connections requesting SHA256. The restriction applies to all functions using the private key from the certificate, including
  - EAP-TLS with client authentication
  - TLS-Time with client authentication
  - TLS-Syslog with client authentication

With self-signed certificate, HTTPS is fully functional.

- Creating 2048 bit keys for self-signed certificates may take more than 20 seconds, extending the initial boot cycle, which may occasionally cause a timeout on the very first HTTPS connection to a camera. The next connection attempt typically is successful.
- Software sealing does not cover all static parameters of image pre-processing and moving camera control.
- If software sealing is active and SNMP is disabled in Network -> Network Services, no SNMP trap will be sent out on seal break due to the disabled service. The seal break itself is logged.
- This combined firmware file is not applicable to devices running firmware higher than FW 6.50 due to the 2-factor release signature.
- AVIOTEK firmware is not included in this combined firmware file.

Please check the respective release letter of a camera or encoder for further device-specific restrictions.

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## 11 System Requirements

Possible clients for configuration purposes:

- Configuration Manager 7.40 or newer
- Web Browsers:
  - Google Chrome
  - Microsoft Internet Explorer 11 or higher
  - Microsoft Edge (Chromium based)
  - Mozilla Firefox

Possible clients for operation purposes:

- Bosch Video Security App 1.2 or higher
- Bosch Video Security Client 2.0 or higher
- Web Browsers:
  - Google Chrome
  - Microsoft Internet Explorer 11 or higher
  - Microsoft Edge (Chromium based)
  - Mozilla Firefox
  
- DirectX 11
- MPEG-ActiveX 6.34 or newer (for IE only)