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BT-VS/MKP-XPT

Product Management

Nuremberg

16.01.2023

Release Letter

Product:	<i>H.264 Firmware for CPP5 encoder</i>
Version:	<i>6.31.0019</i>

This letter contains latest information about the above-mentioned product.

1 General

This firmware is a maintenance release for the 16-channel video encoders VIP X16 XF E and VIDEOJET multi 4000 and is based on firmware release 6.31.0010.

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

Note:

This firmware requires FW 5.91.0006 or higher installed as prerequisite. Earlier firmware must be upgraded to version 5.91.0006 prior to upgrading to this one.



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2 Applicable products:

- VIDEOJET multi 4000
- VIP-X16XF-E

3 Important notes:

3.1 *End of Feature – Maintenance mode started*

With FW 6.30, feature implementation for this platform ended, and the firmware development switched over into maintenance mode. The firmware branch for CPP5 is treated as a **long-term supported firmware (LTSFW)**, with its code base frozen to allow bug fixing and applying security fixes where necessary.

3.2 *“Originally manufactured” certificate*

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

Escrypt is a Bosch-owned company, providing a public certificate authority (CA).

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

3.3 *TPM*

All CPP5 devices incorporate a Trusted Platform Module (TPM) with own firmware.

This TPM hardware and firmware have been enhanced over time to allow for additional security features.

Due to security reasons, the firmware or functionality of the TPM cannot be altered in the field.

Thus, not all new security features become available on devices with older TPM hardware or firmware revisions.

Also, license types are related to the TPM version and can only be applied when matching.



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4 Changes

- A vulnerability for a reflected Cross Site Scripting (XSS) is fixed (CVE- 2022-40183).
- A vulnerability for a stored Cross Site Scripting (XSS) is fixed (CVE- 2022-40184).

For more details refer to our Security Advisory BOSCH-SA-454166-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>.

5 System Requirements

- Web Browsers:
 - Microsoft Internet Explorer 11.0 or higher
 - Mozilla Firefox
- DirectX 9.0c respectively DirectX 11
- MPEG-ActiveX 5.71 respectively 6.02 or newer
- Configuration Manager 5.42 or newer



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6 Restrictions; Known Issues

- Only H.264 High Profile using CABAC is supported. CAVLC is not supported. A decoder requires supporting High Profile.
- Only IP GOP structure is supported, no B slices.
- The camera date/time will be set to default (Year 2000) after power loss exceeding the buffer period. It is important to ensure that the date/time is correct for recording. An incorrect date/time setting could prevent from correct recording.
- After firmware upload while daylight saving time checkbox is activated the time zone must be adjusted.
- After reboot, the system time re-synchronisation may be delayed up to 9 seconds for SNTP respectively up to 14 seconds for time server protocol.
- LUN size for local recording via "Direct iSCSI" is limited to 2 TB.
- VRM version 2.12 or higher is required.
- In some cases formatting errors on external iSCSI drives may occur, which might need multiple tries to overcome.
- In rare cases it may happen that the owner of an iSCSI LUN is not displayed correctly. Recording is not affected, just previous owner remains displayed.
- Throughput limit for 16 simultaneous recordings is a maximum total recording bit rate of 32 Mbps for external iSCSI recording plus a single local replay at 100% playback speed.
- FTP exported files which include audio in a format other than AAC must be renamed from .mp4 to .m4a to allow correct playback in QuickTime.
- If the memory protection inside the Internet Explorer is enabled (default setting), the automatic installation of Autoload Decoder will fail without producing an error message. Consequently, the replay page will not show video.
As a work-around, two options are available:
 - Disable memory protection in Internet Explorer and re-connect to the device.
 - Manually download the Autoload Decoder installer from the device.
The installer can be downloaded via <http://<ipaddress>/setup.exe> and started manually.
- With I-frame-only recording and audio also enabled for recording, audio will be fragmented or not audible during replay. Please disable audio recording in case of I-frame-only recording.
- With JPEG Posting active when device is booting, the first posted JPEG image may be a black image.
- Numbering of the recorded files on the replay page is not always contiguous.
If snippets across block borders belong together, like pre-alarm and alarm recording, the snippets become logically united and only the lower file number is presented in the list.
- Video and audio may be asynchronous during replay via Web page.
- If UAC is set to default in Windows 7, no snapshot or recording via LIVEPAGE is possible.
- A printout was added to telnet when sending an e-mail failed.
A more detailed printout was added for the three error cases 'could not connect to server', 'authentication failed' and 'recipient not accepted'.



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- Installation of Autoload Decoder fails if more than one NIC is installed in a PC.
- Replay using Autoload Decoder may be jerky when a device is close to or in an overload situation.
- In Firefox, no audio is audible on the Audio Settings page.
- Opera mini for mobile devices can not work in Intranets because it gets all pages through an opera proxy in the Internet. If there is no Internet connection no content is provided.
- When changing GUI language, the browser cache may have to be deleted and the web browser be reloaded before the language will be selected correctly.
- AAC audio timestamps for UDP live video streams as well as for recording streams are based on 90 kHz instead of 16 kHz to ensure compatibility with VideoSDK. AAC audio timestamps for TCP live video streams are based on the standard 16 kHz timestamps. Standard players should connect to live video with AAC audio using TCP.
- If FTP export files contain only a few frames some players might not correctly replay such a file, or the replay is too quick to recognize something. The exported file is not corrupt though it might seem so.
- Due to a limitation of the script language that is used in the background, the delay timer for event-triggered VCA starts immediately when the configuration is set. A trigger event during this period does not restart the timer. Once the timer has elapsed, operation is as desired.
- 802.1x is only usable with static IP address. DHCP does not work in combination with 802.1x.
- Quality-of-Service is not supported.
- Number of simultaneous backups is limited to four. E.g., if more than 4 alarm recordings are configured for automatic backup it is unpredictable which four recordings will be backed up.
- If motion is detected at the border of a privacy mask, motion detection overlays may reach into the privacy mask. This is only a display inaccuracy due to different block sizes of motion detection and privacy mask placement. There will never be motion detected which takes place behind a privacy mask.
- Manually configured MSS value will always be restored to 1460 (default value).
- Firmware upload stops recording when it fails or is terminated.
- FTP export file size is always 100 MB if resolution change occurred in exported time span.
- After downgrade configuration integrity cannot be ensured and settings need to be checked or re-configured.
- IE10 by default does not allow snapshots or recording from the LIVE page on local hard disk until one of the following actions is performed:
 - - uncheck the box "Enable Protected Mode" in internet options/security
 - - add the device's IP range to "Local intranet" zone
 - - add the device's IP address to the trusted sites
 - - start IE as administrator
- If an intranet site is opened, IE10 automatically runs in compatibility mode. This leads to a misbehaviour that no timeline is shown on the PLAYBACK page. Therefore the function "Display intranet sites in Compatibility View" must be disabled.



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- Changing audio format while audio is being recorded may cause unknown behaviour of the device and must be avoided.
- Since JVM 1.7.25 a „Certificate Revocation Check“ has been implemented. In networks without access to the Internet (resulting in no access to the revocation services provided by Certificate Authorities) Web browser pages that contain a Java applet will see a significant delay in startup times.
To avoid such delay, you may choose to disable on line revocation checking through the Java Control Panel (JCP).
Note that disabling on line revocation checking should only be considered in managed environments as it decreases security protections.
- With HTTPS connection in MS IE and VideoSDK 5.71 installed, swapping between stream 1 and 2 may cause the watermarking icon for stream 2 disappear.
This may happen only for TCP video streams with infinite I-frame distance and B-frames on. A fix will be delivered with VideoSDK 5.71 MR1.
- Getting the file list from Dropbox may fail if there are too many objects (files and folders). Limit is approximately higher than 500 objects but also dependent on file name length etc.
- Booting the encoder unit with video input mode “Autodetect” without cameras connected will cause it to default to NTSC input mode. Connecting PAL cameras afterwards requires a reboot.
It is recommended to follow the installation instructions to avoid this.
- Products running firmware older than 5.70.0023 do not correctly upload common firmware files and may boot into the default application. Only the separate firmware file must be applied.



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7 Previous Revisions

7.1 Changes with FW 6.31.0000

- An issue is fixed where the multicast TTL settings did not become effective for RTSP connections.
- Security fixes have been implemented for:
 - CVE-2019-11477: SACK Panic (CVSSv3.0: 7.5 HIGH)
 - CVE-2019-11478: SACK Slowness (CVSSv3.0: 7.5 HIGH)
 - CVE-2019-11479: Excess Resource Consumption Due to Low MSS Values (CVSSv3.0: 7.5 HIGH)

7.2 Changes with FW 6.31.0007

- ONVIF fixes and improvements to prove conformance with latest test tool 18.06 SR1.
- Various fixes and security improvements.

7.3 Changes with FW 6.31.0003

- Support for DSA E2800 has been added.
Multipathing is not supported.

7.4 Changes with FW 6.30.0059

- A playback issue with time jumps in recordings has been fixed.
- A playback issue with invalid time zone info in recordings has been fixed.
- An issue where alarm ring recordings may be corrupted has been fixed.
- An issue where lost packets caused recording to cease has been fixed.
- An issue that caused consumption of too many recording blocks has been fixed.



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7.5 New Features with FW 6.30.0047

Security

- The user management has been extended to allow free assignment of usernames. Each user can be assigned a user group representing live, user, or service level.
- New user management system allows to dynamically create a user for whom the password can be treated as token. Also timeout before user account expires is possible.
- Token-based authentication implemented to allow user management based on communication with Microsoft Active Directory Federation Services.
- Secure FTP connection (FTP over TLS) is implemented.
- ICMP redirect messages are not accepted anymore by default. Acceptance can be re-enabled via RCP+ command, if needed.
- Video authentication is now also possible on RTSP streaming. It can be enabled with CGI parameter 'auth=1' which requests picture info packets (payload type 97).

Recording

- Recording to iSCSI now supports LUN size up to 64 TB.

ONVIF

- ONVIF encoder profile settings can be verified via http://<ipaddress>/onvif_encoder_profiles.
- Manual focus and iris control is now supported via ONVIF command.
- Tamper detection alarms are now forwarded to and included in ONVIF event services.

VCA

- Web page layout has been improved for better usability and larger video for configuration.
- Video can now be paused during VCA configuration.
- Reference image is now stored as JPEG instead of TIFF for broader compatibility.
- JPEGs can now include VCA overlays in Live page, alarm e-mails and JPEG Posting. For JPEG snapshot a new query parameter 'VCAOverlay' can be added to the URL, e.g. <http://<ipaddress>/snap.jpg?VCAOverlay=1>.



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Miscellaneous

- HTML5 video tag is used to display a continuous MP4 video file from the camera on browsers not supporting NPAPI plug-ins (MPEG-ActiveX) like Firefox, Chrome and MS Edge.
- A “Links” section in the main navigation (blue top bar) has been added, leading to a DownloadStore page providing latest tools, apps and supportive software.
- Unicode characters are now also possible on all configuration strings.
- Time server IP address can be accepted to be overwritten by DHCP.

7.6 Changes with FW 5.92.0026/29

- An issue with day-light saving time causing recording errors with VRM-managed storage has been fixed.

Note that the day-light saving time switch in fall 2015 on the Southern hemisphere is likely to be the next trigger for this potential issue!

It is strongly recommended to update all CPP5 devices which record on VRM-managed storage **before** the next day-light saving time switch occurs.

- Replay not working in BVC and BVMS clients for negative time zones has been fixed.

7.7 Changes with FW 5.92.0023

- Increased number of ONVIF connections to 32 to allow one connection per stream.
- Increased number of ONVIF event subscriptions to 16 to allow one event subscription per video input.
- JpegSize command is now effective for snap.jpg.
- An issue where time stamping using other than European time format will cause partly double stamping has been fixed
- An issue with invalid MAC address responses has been fixed.
- An issue with DHCP not started correctly after factory default has been fixed.
- An issue with time zones above GMT +/- 10 hours and day-light saving time causing a 1 hour shift has been fixed.



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7.8 Changes with FW 5.92.0015

- An issue with wrong RTSP sequence numbers has been fixed.
- An issue with sometimes false MAC address provided has been fixed.
- An issue with privacy masks missing in first JPEG posted after reboot has been fixed.
- An issue where the image on a decoder was caused to freeze has been fixed.

7.9 Changes with FW 5.91.0006

Both applicable products have been manufactured with Flash memory from two vendors (second source) which cannot be recognized from the outside of the units.

Unfortunately, with FW 5.90 a new microcode was introduced that did not handle one of these Flash memories correctly anymore.

As a result, a firmware upgrade or downgrade from FW 5.90 with a firmware file including a boot loader may cause products equipped with the wrong-handled Flash memory to not boot anymore.

All firmware files including a boot loader have been replaced on July 25, 2014.

Firmware files downloaded from our product catalogue or DownloadStore before July 28, 2014 must not be applied to a unit running FW 5.90.

This firmware corrects the handling of the Flash memory and allows boot loader being included in future firmware if ever needed again.

Notes for VIP-X16XF-E:

- Downgrade to firmware 5.70 (also with boot loader) is possible with firmware 5.91.
- Future firmware will not accept versions below firmware 5.91 anymore, thus require firmware 5.91 as an intermediate step if the installed firmware is older than 5.91.
- Downgrade from future versions is still possible but must always use firmware 5.91 as an intermediate step.
- The performance increase for the second stream is achieved by a higher clock for the encoder chain, initiated by an updated boot loader.
The recent FW 5.90 and 5.91, both without boot loaders, do therefore not improve the performance of the encoder chain, keeping the second stream restricted to 7.5 fps maximum. If the performance increase is required, please contact our support to get a special firmware that installs a new boot loader. Doing so in a controlled environment reduces the risk of unrecoverable failures.



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7.10 New Features with FW 5.90.0064

Encoder

- Improved frame rate for restricted second stream to 12.5/15 images per second

Network

- Support of SNMP added.
- After a network link is re-established EAPOL communication is initiated to restart 802.1x authentication even if the switch does not initiate this.
- Secondary DNS server is supported.
- DNS and DHCP addressing is combined via hostname.
- SMTP port is adjustable using parameter in the ATSL script.

Recording

- Storage configuration of two iSCSI LUNs is possible on a device for local recording.
- Alarm recordings can be automatically protected.

RTSP

- Search and playback from local recordings is possible using RTSP connections. A tech note describing the feature and the parameters is available.
- The multicast settings on the device are synchronized with a RTSP multicast request.
 - If a multicast group is configured on the device and the RTSP request does not specify a multicast group, the configured session is used.
 - If no multicast group is configured on the device and the RTSP request does not specify a multicast group, a random multicast group is used.
 - If the RTSP request does specify a multicast group, this multicast group is used.
- CGI parameters were extended to allow playback from secondary recording, e.g. `rtsp://<ipaddress>/rtsp_tunnel?rec=1&inst=2`



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Miscellaneous

- A new media data watermarking/signing method based on certificates has been implemented. The video stream includes signatures from the device's certificate. By checking the signature against the certificate it received from the device, possibly even by a certification authority (CA), a client can prove if the received video stream or playback is really from the original source.
 - Video authentication can be selected from Off, Classic, MD5, SHA-1 or SHA-256.
 - The signature period can be configured to balance the required computational power with other functions required from the device to perform.
 - This new watermarking method requires VSDK 5.71 or later to be functional in the Web browser.
- Date and time information have been added to the beginning of each line in the maintenance log file.
- Support of RS-485 on serial interface, also in half-duplex mode.
- Analogue Bosch PTZ cameras that use BICOM protocol and are connected to a VIP-X16XF-E via RS-485 can be controlled via the Video Security iPad app.
- AAC audio bandwidth can be adjusted to low or medium bandwidth.
- Cloud connection status is reflected in the System Overview page
- Qualified authentication of a Bosch device based on certificates stored in the trusted-platform ID chip.

Integration

- Generalized RCP+ interface for picture settings (contrast, brightness, saturation).



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7.11 Changes with 5.90.0064

- “LIVEPAGE” has been renamed to “LIVE”.
- Menu “Advanced Mode->Network” and “Advanced Mode->Service->System Overview” page were re-structured to improve usability.
- Menus and terminology have been aligned over complete camera portfolio.
- Double-click for full-screen has been disabled for in-video-PTZ as it was often accidentally activated by fast PTZ mouse-clicks.
- Maximum I-frame distance in encoder profiles is now also based on configurable MAX_GOP_LENGTH_VALUE.
- Creation of profiles with identical name is now prohibited.
- When recording is started GOP length is set to 60 regardless of 50 or 60 Hz base modes. The default value of 60 can be modified.
- Retention time on local recordings now refers to the maximum time due to legal requirements. The former minimum retention time is not required in local recordings, thus overwrite checkboxes are discarded.
- Live Export is removed from I-Frame tab.
- The byte order of the command CONF_SET_VIRTUAL_ALARM_ID has been corrected to network byte order (big endian).
- The issue where system date and time could not be changed via ONVIF has been solved.
- An issue where a device could become inaccessible after long run-time if configured servers could not be reached has been fixed.
- An issue with IE 11 showing a message that a device may not be responding due to a long-running script when forensic search returns many events (more than 1000) has been fixed.
- An issue where older recordings were not instantly listed on opening the Playback page has been fixed.

7.12 Changes with 5.70.0028

- Encoder profiles extended to 32 profiles for 3rd party integration purposes. Only first 8 profiles are visible in GUI.
- Bug fix for missing information (SPS/PPS) in RTSP handshake.



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7.13 Changes with 5.70.0023

- Bug fix to support common firmware files for upload.
- Recording profiles are accessible if device is added to VRM.
- Bug fix for a problem with writing backup export to FTP.
- Bug fix for a problem connecting live video via Bosch Video Client.
- Bug fix for a problem with UDP flood attack to port 1756.
- Disabled NetIO server by default.

7.14 Changes with 5.70.0020

- Network Scan works even if scanning PC is not in the same subnet.
- Recording is stopped before firmware upload.
- Frame rate of secondary stream is now displayed in stream capabilities settings.
- Video In setting allows to switch video input mode to Camera, VCR or Auto Detection.
- DynDNS is now supported.
- JPEG RTP streaming is now supported.
- F12 Audio backchannel is working again in browser.
- Audio On/Off is now working.
- Dropbox Create/Remove folder now works.
- JPEG stream can be played via RCP+ connections (VideoSDK).
- Encoder Profile Web page now states 'HP' instead of 'MP'.
- Fixed issue with rule engine script and FTP posting.
- UPNP can be disabled.
- Recording status icon now shows the correct status on Storage Management and Recording Scheduler pages.
- Multicast TTL now functional with values other than 1.
- Fix for blocking after connection via ONVIF Device Manager.
- Internal timer base fixed for correct speed.
- Debounce time and Aggregation time are now stored.
- HTTP disable is now stored.



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7.15 Main Features with production release 5.70.0011

- 16 video input channels with Dual Streaming of H.264 encoded video in 4CIF resolution with up to 2 Mbps. First stream with 25/30 images per second, second stream limited to quarter frame rate and 700 kbps max.
- De-interlacing at video input and progressive encoding.
- 16 simultaneous unicast/multicast connections.
- Network-attached iSCSI recording.
- Motion detection and privacy masking.
- Audio support:
 - dual mono in for line and/or microphone
 - mono line out
 - G7.11, AAC and L16
- Four alarm inputs and one relay output.