



MoveInspect Pilot

Update information – Version 7.11

MoveInspect Pilot in general

Point state in measurement tables

The state of points is now shown in measurement tables by icons. An additional column is added to the measurement tables (targets, 6dof, pool, surface), where the user can see why the point is invalid. A tooltip shows a full description.

Support of PointGrey USB cameras

Another camera interface has been successfully integrated. Point-Grey USB cameras can now be plugged into MoveInspect Pilot. Thus, the use of MI.Probe mini is also possible with the PrimeScan.

Support of HF4 cameras with Windows 10

The use of HF4 high-speed cameras is now possible with the Microsoft Windows 10 operating system. This requires a firmware update in the HF4 cameras. Please contact your responsible support team.

Higher performance through image quality

The quality of the images shown in the 3D-scene influences the performance of MoveInspect-Pilot. A high quality slows down the software significantly and is often not needed. After every start of MoveInspect-Pilot the image quality is now set to the lowest level. The user can set an higher level with the slider but at the next start of MoveInspect Pilot this will be reset to the lowest level.

Attention: the image quality parameter only affects images shown in the 3D-scene, not the 2D-views of the images. Here we always show the images in high quality.

The image quality slider is also available in XR8-mode now.

Show blundered targets in images

Targets that were measured but are later identified as blunders during referencing or adapter/probe calculation will be shown in red color in the images.

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MoveInspect XR8

New user interface for MoveInspect XR8

To work with a MoveInspect XR8 system, the software now provides a specialized user interface. The user interface contains all functions to use the software with a MoveInspect XR8 system.

Dynamic referencing

Improvement in working with references

The selection of references as well as the activation and deactivation of references for the measurement were revised and simplified.

Dynamic referencing during probe tip calibration

It is now possible to use dynamic referencing during a probe tip calibration. This is important, if the calibration sphere has not a static position while the probe tip is calibrated. The selected reference is only valid for the probe tip calibration and can be activated and deactivated independent to the measurement settings.

This option should only be used if a dynamic reference is absolutely necessary.

MI.Probe Setup

Assistant to set up the MI.Probe

The coupling and setup of the MI.Probe is now an automated process. An assistant guides through the installation process. The MI. setup is initialized in MoveInspect Pilot under Administration – Environment – Hardware.

MoveInspect Pilot in general

Automatic connection of cameras

The camera connection is started automatically with the start of calibration or measurement menu. This speed up and simplifies the handling. The auto reconnect option for the cameras can be deactivated in the hardware settings in the software.

New option for project recording

On recording projects it is now possible to select between real time output and display, real time output only or display only for the data output.

Faster adapter search

The use of the fast adapter search allows to use approximate values for a faster adapter measurement. The adapter positions of the previous epoch are used as approximate values for the next epoch. This option only be used if the position of the adapter differs only minimally from one to the next epoch.

New data base name "MoveInspect.moveDataX"

Due to upgrades, the MoveInspect Pilot data base had to be transferred to a new format. The new name is "MoveInspect.moveDataX" instead of the previously used "MoveInspect.moveData". Because of the upgrades the data base is no longer downward compatible from this version on. A backup of the data is automatically saved before converting, so that it is still possible to use it in older versions.

Camera interfaces

From this version, cameras with FireWire technology are no longer supported.

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Calibration method for 3D Arena projects

Calibration method “Reference field and objects”

The new calibration method “Reference field and objects” enables the calibration of multi camera systems and 3D Arenas by using permanent floor and reference targets, and additionally measured scale bar distances and/or new points. With this method, it is possible to combine the advantages of floor targets, calibrated with high precision beforehand, and scale bar measurements inside the measurement volume.

Dynamic referencing

Improvement in dealing with references

It is now possible to create several references in the administration menu and change between them in the measurement menu. The selection can be restricted and/or it can be set a password protection for the reference selection.

It is also possible to load and add references via the context menu in the measurement, both in the Mini App and in the standard software modus.

MoveInspect Pilot in general

Faster connection to the cameras

Significant acceleration to connect and disconnect cameras integrated. Especially when using multi-camera systems (3D Arena) the parallelization of the connection process results in a significant time saving. Additionally, the change of camera modes has been parallelized, which results in smoother operation of the software.

Fixed minimum number of targets for adapters, probes, references and calibration panels

From this version, adapters, probes and references need at least 4 coded or uncoded targets, calibration panels at least 4 coded targets. This specification improves the reliability

of the measurement with the equipment. If prior configurations do not meet these requirements, they are marked as incompatible.

Redesign of activity window

An icon bar on the menu's left side replaces the accordion menu in the activity window. This results in more place for the submenus, and less frequent scrolling to see all information. In addition to the existing submenus, it is possible to activate an overview, which shows all submenus including title (first icon), and which enables changing menu. While creating or editing equipment in the administration menu changes are possible. In the case of changes, the user is asked to select "save" or "discard" the changes. If no changes are made the submenu closes automatically with the menu change.

Improvement of assistant for system calibration and MI.Probe calibration

The calibration assistant has been revised. The icon size is now adjusted automatically according to the display resolution available. Generally, the usability is improved.

During the MI.Probe calibration, probing details of the current measurement and probing settings are displayed.

Automated streambytes calculation

The streambytes per camera are now calculated automatically based on the connected cameras to one network. The value for streambytes in the administration menu is valid for the selected network.

Storage check before project recording

The available storage space on the hard drive is now checked before starting a project recording. If either the storage space for a given number of epochs is insufficient, or less than 300 MB on the hard drive is available, or less than ten minutes with MoveInspect HR systems or five minutes with MoveInspect HF systems can be recorded, a warning is emitted.

Rotation of camera images by 90°, 180° or 270°

For specific hardware configurations, e.g. MoveInspect DPS systems, camera images can be rotated in the 2D image overview and the single image view. The settings are saved for every camera and the images are shown rotated after software restart.

It is no longer possible to set a camera with 180° rotated sensor in the administration. There are no changes for existing cameras with 180° rotated sensor.

Integration of AICON data protocol2

The extended AICON data protocol version 2 is integrated. Especially for controlling the MoveInspect Pilot by remote access, several improvements are included. See separately listed functionalities of Receiver-DLL.

Selection of points in the 3D view

Points can now be selected both in the 3D view and in the table. The chosen points are marked in the 3D view as well as in the corresponding table. Thus, it is immediately visible which coordinates belong to which point in the 3D view.

Position-coded targets

The search radius for position-coded targets is now adjustable.

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Recommended NVIDIA settings

For NVIDIA graphic boards it is recommended to use the global presets "Workstation App - Dynamic Streaming" in the 3D settings of the NVIDIA Control Panel. Other settings may cause a high processor load, which affects working with MoveInspect Pilot.

Integration of external sensors

With MoveInspect Pilot, it is now possible to read out measurement values from IES tilt sensors and National-Instruments data acquisition devices (NI-DAQ).

Improvement of Mini App

The status bar is now available in the Mini App. Therefore, it is possible to monitor the status of the online interface, the real time interface and analyze warnings in the Mini App. In addition, the Mini App shows the status of the reference measurement, if there is an active reference in the configuration.

Integration of new data structure for project files

For handling of a large amount of data in projects a new data structure for storage is integrated. The project recording and evaluation needs less main storage and the access to a large project is faster.

Scale bar calibration assistant for determination of interior camera parameter

To determine the interior orientation of cameras the scale bar calibration assistant has been expanded. If the distortion parameters of a camera has to be determined, automatically an expanded scale bar calibration assistant starts. In the measurement volume, additional scale bar positions are required.

Integration of MoveInspect HF4 cameras

MoveInspect HF4 cameras are integrated in MoveInspect Pilot. It is now possible to process images directly from these cameras with 500 fps and 1000 fps in ROI mode.

MoveInspect Pilot in general

Integration online help

Html online help is integrated in MoveInspect Pilot. The key “F1” or the button “Online help” in the “About MoveInspect Pilot” dialog opens the html online help in the standard browser.

Expanded status bar

In addition, the status bar shows the battery state of the MI.Probe and a recording symbol, if the storage of images (BMP, PHC or NUMPHC) is active.

Display progress bar for export

The progress of export project data is displayed as progress bar.

License dialog

With the new license dialog the possibility to write c2v-files with license information and to update the license with v2c-files are added.

Data transfer to Microsoft Excel

With this new interface, it is possible to transfer directly measurement data of the MI.Probe and the active probe to Microsoft Excel.

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Connection to OptoCat software

For OptoCat customers, the use of MoveInspect Pilot is now integrated in the OptoCat software. A specially adapted license is used, to avoid the need for an AICON HASP dongle for the integrated use of MoveInspect Pilot. The measurement with several MI.Probe minis is also integrated. A probe group with MI.Probe minis can be added to the configuration. During the measurement, the MI.Probe minis are automatically detected by their geometry.

New functionality for HF cameras

The display of live images with the modes alignment and adjustment and the display of sobel images to focus the cameras is now integrated. Furthermore, projects with acquisition frequencies of up to 1,000 Hz can be recorded with smaller image range. The measurable image section is shown in the display modes for the adjustment of the cameras and during project recording.

Improvement of scale bar calibration assistant

To improve the scale bar calibration assistant, positions to be covered now have a tighter spatial limit and smaller number. Only a few positions, given by the area mask, have to be covered for each inclination of the scale bar. Scale bar measurements outside of these positions are excluded from calibration.

Furthermore, a restriction of movement has been integrated. A scale bar with correct position, inclination and distance, which has been moved too fast between two measurements, will not be accepted. The position is highlighted in yellow and indicates that the restriction of movement has been surpassed. When holding a steady position, the measurement is accepted for calibration and the position areas are highlighted in blue.

Additionally, the calibration assistant was optimized for the use with MoveInspect DPS 4-camera configuration.

Restriction to calibrated measurement volume and display in 3D

After successful calibration, the calibrated measurement volume can be displayed for each system. In 3D view, it is figured as its outlines.

During measurements and in projects, the measurement volume is usable as restriction for valid measurements. With an active restriction, all points outside the calibrated volume are automatically marked as “invalid”.

MoveInspect Pilot in general

Languages

MoveInspect Pilot is now available in Polish language, too.

New remote control “media control”

The “media control” has been installed as additional operator control for probing. The feature is available with the media keys on keyboards or remote control units.

Assignment of keys:

- Play/Pause: single trigger
- Mute or Home: start and stop continuous trigger
- Previous: remove last measurement
- Next: finish geometry measurement

Display of status information

A status bar during the measurement shows both the connecting state of the online and real time interface and warnings.

Export of PHC files with numbered uncoded points

In addition to the export of PHC files (shortcut ALT+P), where uncoded points have the number 0, it is now possible to save NUMPHC files with numbered uncoded points. The shortcut ALT+N activates/deactivates the export of NUMPHC files. It can be activated independently from the storage of the standard PHC export.

Possible use of multiple bus systems instead of switch for FireWire

FireWire camera systems can now be connected with multiple FireWire bus systems. So far, connection was possible with single bus and switch only.

Probe sounds activated

Probe sounds are activated to give feedback on the measurement success. If required, these sounds can be deactivated.

Ignoring of single probe addresses

It is now possible to exclude single probe addresses, which shall not be measured with the working system.

Surface tracking with reference

Tracking functionality can now be used together with reference points.

Rotation of cameras by 180°

For specific hardware configurations (e.g. MoveInspect DPS systems), single cameras can be rotated by 180° when setting up the system in MoveInspect Pilot.

Position-coded targets

The integration of position-coded targets allows for the solely use of uncoded targets with a fixed position and regular pattern as reference.

Easy data exchange between 3D Studio and MoveInspect Pilot

“Drag & Drop” enables an easy exchange of single coordinates or entire measurement tables between MoveInspect Pilot and 3DStudio.

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Mini-application for display of measurement and system state

Minimized version of the application for combination with inspection software

Used together with an inspection software, MoveInspect Pilot usually works in the background; therefore, relevant status information is not available directly. The mini-application makes this information visible while working with an inspection software. It can be activated during the measurement. The minimized version of MoveInspect Pilot is always on top and does only contain the most relevant data: state of system, probe and measurement results. In case of a decalibration warning, an immediate change to the calibration menu is possible. After successful calibration, the software automatically changes back to the minimized version.

MoveInspect Pilot in general

Real time interface based on TCP/IP

Data measured with MoveInspect Pilot is now available for further processing or visualization by using the real time interface on TCP/IP basis. This is also possible while capturing a session. The interface can be used either with individual customer software or with the AICON adapted visualization software LabVIEW (National Instruments). The specification is available on request.

Languages

MoveInspect Pilot is available in following languages: English, German, Slovak, French, Japanese, Italian, Spanish, Chinese, and Russian. The language can be selected within the administration menu.

Tracking of surface points

Surface points detected by MoveInspect Pilot can be tracked throughout the epochs and keep their assigned numbers.

Usage of multiple active probes and improved accuracy

An automatic probe detection now enables the use of more than one active probe in the same measurement. The software is able to distinguish all probes due to their assigned addresses, even if they are used alternately to trigger a measurement.

By defining important points and high points on the probe, targets can be matched with various priorities for the measurement. This improves both the reliability and accuracy of probe measurements, especially with the active probe.

Reset camera parameters

Default camera parameters have been applied ex works for diverse camera families. With one click on “reset parameters”, the default settings of the camera parameters used during measurement, calibration or in projects can now be recovered.

Improvement of calibration assistants

Within the panel calibration assistant it is now possible to skip or repeat steps using the new navigation buttons. The scale bar calibration assistant has been redesigned; a scale bar status information has been added.

Further changes

- The connection with and disconnection from HF cameras have been accelerated.
- When using “dynamic referencing”, a reset to the original orientation is possible either during measurement or by deleting the reference in the administration menu.
- Diverse formats can be selected for the export of project data. There is no fixed format anymore.
- The state of probe measurements is now displayed, containing information as general status, details and settings.
- The 3D display of the probe tip is adjustable in size.

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Wizard for the calibration with scale bars

Calibration with scale bars now supported by wizard

An intuitively operated wizard now compliments the already integrated calibration with scale bars in MoveInspect Pilot.

This wizard primarily guarantees the easy and reliable calibration of standard applications. Above all, it is adapted for standard systems (MoveInspect HF, MoveInspect HR Twin und Large, MoveInspect XR Twin und Large) and standard applications (several cameras on a camera beam, all cameras see the entire measuring volume). The calibration of special applications usually requires specific calibration methods. The assistant does not cover these methods.

The wizard determines the relative orientation as well as the exterior and interior orientation. The procedures are the same. For the determination of the interior orientation, more scale bar position are necessary within the measuring volume.

To use the wizard, a reference cross and a scale bar with two distances are required. One of these distances have to enable a depth measurement, i.e. measurements of distances in direction of optical axis of the cameras.

MoveInspect Pilot in general

64 bit version

In order to handle the increased data volume of dynamic applications and to integrate the available camera drivers, the complete software has been converted to a 64-bit version. From now on AICON only delivers the 64-bit version for all customers.

Usage of Prosilica driver version 1.26

As of now, the Prosilica driver 1.26 is used with this MoveInspect Pilot version. This applies to viewer, filter and SDK when using GigE cameras. Only this camera driver is approved. The driver installation must be carried out with MoveInspect Pilot.

Adjust mode for measurement and calibration

The “adjust mode” is added to the display options of measurement and calibration. By tagging the image center with a cross, this option helps to align and set up the cameras. Additionally, the exposure time of the cameras is adjusted to reach an average grey value of the images. The exposure time settings reset automatically when closing the mode.

Measurement with several camera systems

Multiple camera systems can be added to a configuration. The same reference points and targets settings (color, encoding etc.) go for all systems of one configuration.

Systems within a multiple camera configuration are calibrated separately. To carry out system-related settings, there is a photogrammetry parameters button on the display of measurements and projects for each system. Probe tip calibration and check only takes place for the currently selected system configuration. It is not possible to change while calibrating or checking.

Report function

As of this MoveInspect Pilot version, it is possible to generate both reports of the accuracy tests of scale bars and reports of the calibration or check of probe tips. Reports are viewable and storable.

Acceptance of measurements, indication of decalibrated camera system

If the average standard deviation of the measured targets is higher than the specified maximum standard deviation, a notice of a possible wrong calibration is shown. The user have to activate the maximum standard deviation, otherwise no hint is given.