USA BORESCOPES

Content

Introduction

Thank you for purchasing your *XT* Industrial Videoscope. The XT combines an integral cold LED Light Source, high resolution imager, TFT 5" High Resolution Display and Image Storage and Video Recording.

The range of applications and environmental conditions often make it difficult to capture high-quality images. The XT includes a menu driven, user friendly interface and is easy to use. Please refer to this manual to maximize the utility of your XT Videoscope.

Always keep the Operation Manual with the XT. It contains all information for safe and efficient operation. However, should you have further questions, feel free to contact our Service Team.

Warning Notices and Precautions

Read the Operation Manual care-fully before using the videoscope.

Caution! The videoscope has to be employed by skilled and qualifi ed personnel appropriate to the application. The videoscope is designed for a diversifi ed field of applications in Industry, Building and Science. Only use the videoscope as intended.

Caution! Never use the videoscope in running machines.

Caution! The videoscope should not be used in specially designated or prohibited areas.

Electric Shock! No unauthorized opening of the casing. There is high danger of electric shock due to parts being under voltage. For higher abrasion resistance the flexible and bendable probe is sheathed with tungsten. This can lead to electric shock at contact with live parts. Therefore the videoscope is never to be used in or at objects under tension.

Caution! Never look directly into the light emitting part of the videoscope. It can cause injuries of eyes. Always switch off the Light Source before changing, controlling or cleaning the objective or the distal end of the Videoscope.

Caution! Use the videoscope in environments only. The housing is protected against sprayed water. The housing if the videoscope is never to be immersed in fluids.

Caution! Using mains adapter without earth conducter and without galvanic isolation can lead to a tungsten braid being under electric tension. Therefore only use mains supplies delivered with the iRis.

Caution! If the objective is dirty the distal end may heathen up. This can lead to ignition of highly combustible materials. Furthermore it can lead to burns at direct contact. Regular cleaning should be made.

Warning Notices and Precautions

Caution! When inspecting hot objects the probe may heat up according ambient temperature. Avoid direct contact to the probe after such applications – High risk of burns.

Do not throw battery into fi re.
Do not recharge defect battery, but replace it immediately.

The XT Videoscope is an electric device and must not be disposed in domestic waste. Pursuant to European Directive 2002/96/EG on waste electrical and electronic equipment (WEEE) and its transposition to national law used up power tools have to be collected separately and returned to environmentally compatible recycling.

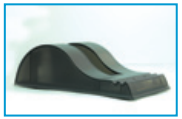
Recycling. Withdrawal of batteries pursuant to the Battery Policy: According to the German Battery Policy (BattV) we are obliged to inform you about the rules and liabilities for disposal and withdrawal of used batteries and accumulators. According to §7 German Battery Policy the end-user is obliged to return used batteries and accumulators. Contaminant-laden batteries and accumulators are marked with a crossed dustbin with the chemical symbol of the contained heavy metal under it (Cd for cadmium, Hg for mercury, Pb for lead). Batteries and accumulators must not be disposed in domestic waste and can be handed free of charge to any designated collection and withdrawal point. Of course batteries and accumulators you got from IT Concepts can be handed or sent to us.

BATTERY TO BE REMOVED OR REPLACED OUTSIDE OF THE HAZARDOUS ENVIRONMENT ONLY. CHARGING BATTERY SHOULD ONLY BE COMPLETED OUTISDE OF THE HAZARDOUS ENVIRONMENT.

Scope of Delivery

The iRis is delivered with the components shown in adjacent images.

Further interchangeable objectives or additional accessories are not included. These items you will fi nd in this manual on page 42ff., in our accessories catalogue or on our homepage www.itcworld.com. We are certainly pleased being at your disposal for personal consulting as well. well.



Charger

Rechargeable Battery
(in device when delivered)

Operation Manual

Pouch

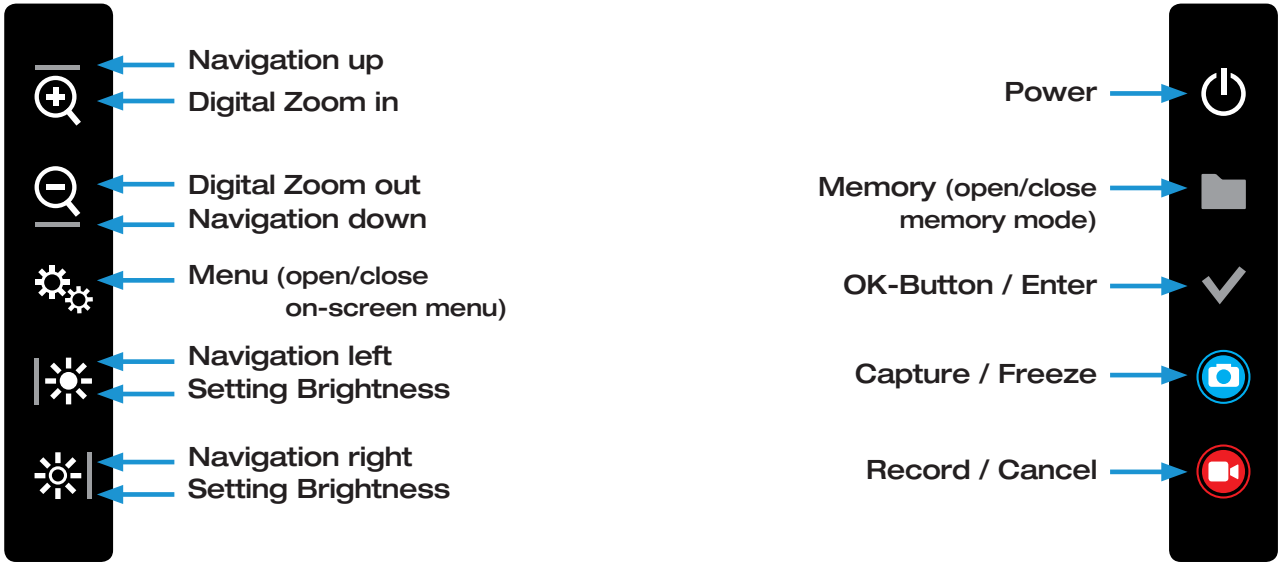
System Presentation

Live and saved images as well as video recordings are shown on the TFT Display. Image captures and video recordings can be marked with a text line.
The probe can be inserted to a cavity, e.g. a tube. The user can lock the articulating head of the probe in the desired position during inspections. The articulation can be moved in four directions (up/down and left/right) which really facilitates passing multiple covings.

Presentation

The Control Panel

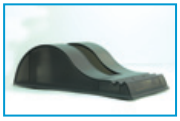
Using the control panel you can navigate through the menu structure, select and confirm functions.



Charging the Battery

Remove the battery from the Videoscope battery compartment by rotating thumbscrew counter-clockwise and removing the cover. Place the battery in the charger. The charging process is complete when charge indicator lamp continuously illuminates green.

Caution! Only use the supplied charger to charge the battery. The battery should only be removed or replaced outside of the hazardous location. Charging should only be done outside of the hazardous environment. Be sure the battery compartment is completely and properly sealed prior to use after charging and replacing the battery. The videoscope should not be used is the seal is compromised.


Charger


Rechargeable Battery
(in device when delivered)

The XT Videoscope should not be used in hazardous environments if *any* portion of the product has been compromised due to damage or handling. The insertion tube and or optical lenses must not have any cuts, separations or through holes and the LCD body and cover glass should be completely sealed. Rubber handset cuffs should be in place.

The battery and SD card should not be accessed, removed or replaced in hazardous locations. Charging should not be performed in hazardous locations.

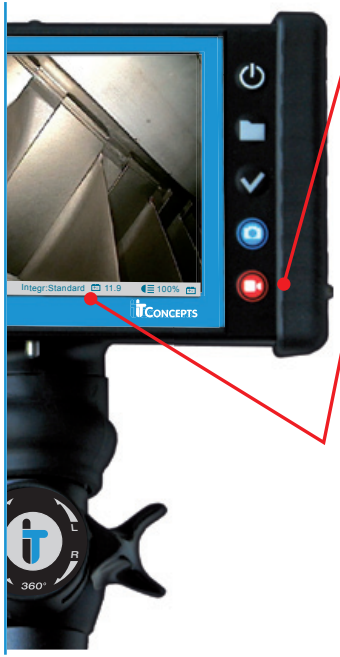
Preparing the Videoscope

Inserting the SD Card

Remove the right edge protector and put a formatted SD Card (32GB max.) into the card slot. The SD Card included with the videoscope is already properly formatted.

If the SD Card is not formatted you have to format it as described on page 17. the edge protector MUST be reinstalled prior to use of the videoscope.

Starting Inspection



Switching-on the videoscope
After having prepared the videoscope according this operation manual switch it on by pressing POWER. Please inspect the videoscope probe prior to use.

Status Indicator Line
At start-up the videoscope always is in Live Mode. At the bottom of the display the status indicator line can be seen. It shows the status of zoom, image fl ip, camera, power supply and light intensity.

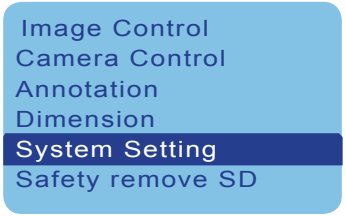
Switching-on the LED
The LED is switched on or off by a long push on the Light Source Button. With short push the intensity of the LED can be adjusted in three steps.

Language Selection

At delivery status the iRis should already be set to your language or to English.

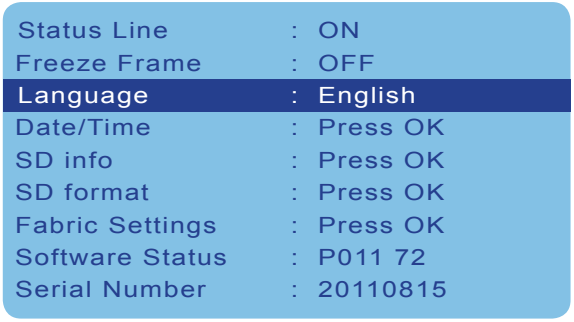
At initial operation you should check if the appropriate language is set and adjust if necessary. The following languages are available:

- English (default setting)
- German
- French
- Spanish
- Italian
- Polish
- Portuguese
- Turkish



If you want to change the language proceed as follows:

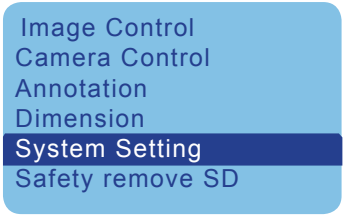
- MENU
- System Setting - OK
- Select language –
  the menu will immediately be shown in the selected language.
- To quit press MENU again

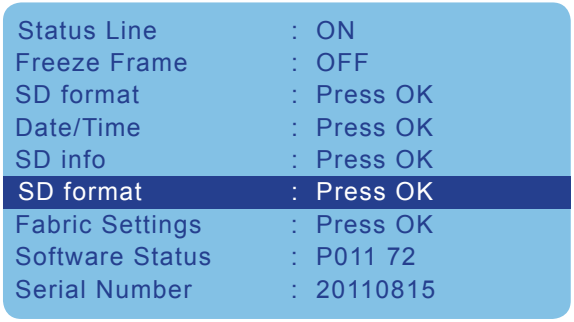


Format SD Card

The SD Card delivered with the iRis is already formatted. To format a SD Card proceed as follows:

Press MENU, select menu item System Setting and press OK. Using the arrow keys select the menu item Format SD and press OK. A confirmation prompt appears on the display. Select via arrow keys and confirm with OK.





Starting Inspection

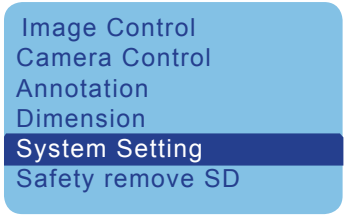
Setting Time and Date

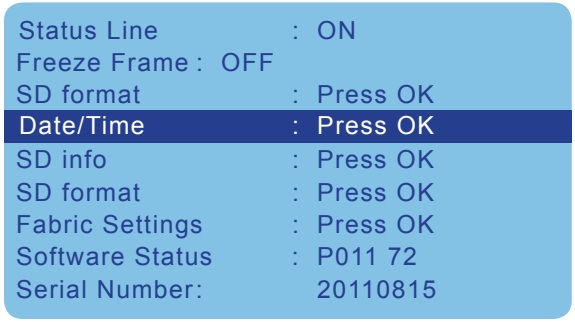
In the delivery status time and date should already be set.

At initial operation you should check time and date and set them if necessary.

If you want to change time and/or date proceed as follows:

Press MENU, select menu item System Setting and press OK. Using the arrow keys select menu item Date/Time and press OK. Set the desired time and date via the arrow keys and then confirm by pressing OK.

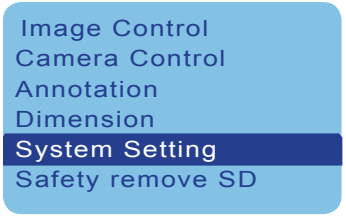




Resetting to Default Settings

By selecting the menu item Fabric Settings all manually changed and adjusted parameters can be put back to factory setting, except for date, time and text generator.

– MENU
– System Setting - OK
– Fabric Settings - OK



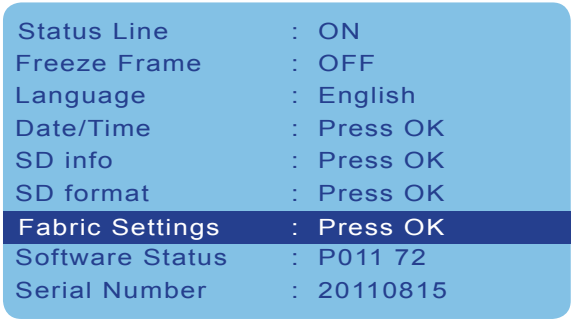
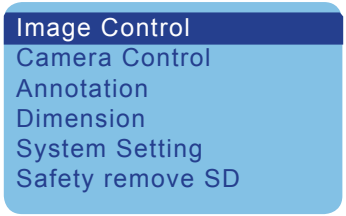


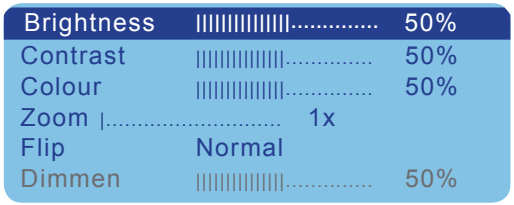
Image Control

Image parameter (brightness, contrast and colour as well as zoom and image flip) can be adjusted under Image Control in the menu.

Change the select parameter by using the arrow keys. New settings will immediately be effective. Pressing OK will reset the marked parameter to default setting. Using the MENU button will bring you back to Live Mode.

Caution! The image parameter are effective to the image displayed as well as to images and videos being saved. Image captures and video recordings will be saved as displayed.



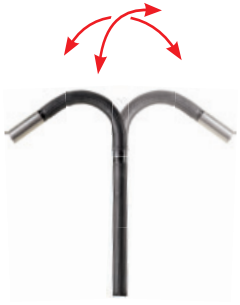


Starting Inspection

Controlling the Articulation

The articulation section can be moved in two planes by means of the levers on the handle (see fi g.).
If the levers are released during movement the articulation section will be locked in the current position.

On the image the levers are shown in „neutral“ home position. In this position the articulation section is straighten.



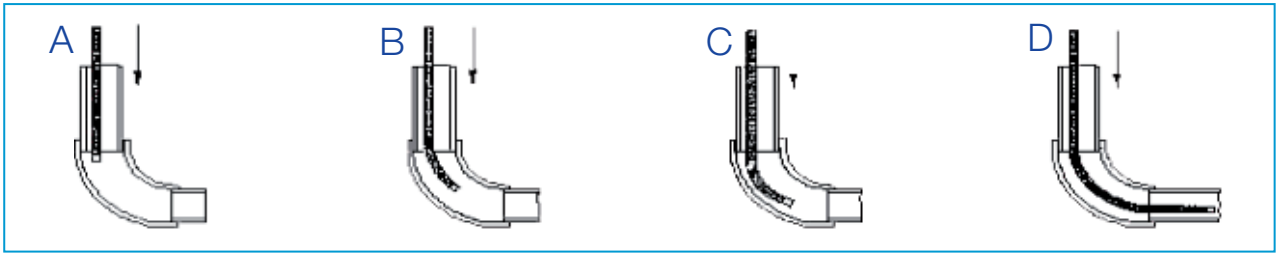
Starting Inspection

Access to the inspection object must be large enough to allow the movement of the articulating distal end. This should be verified visually or by means of design drawings before the inspection. The actions described in the following should be followed for all inspection targets. If a resistance is observed retract the probe carefully.

Fig. A
Carefully push the probe to the beginning of the coving while observing on the display.

Fig. B
Still observing on the display adapt the articulating section to the coving of the cavity by using the levers.

Fig. C and D
Continue the insertion process while always observing on the display. The angle of the articulating section has to be adapted step by step to the coving of the object. After having passed the coving the articulating section has to be straightened by putting the levers to neutral position.



Starting Inspection

Retracting the Videoscope

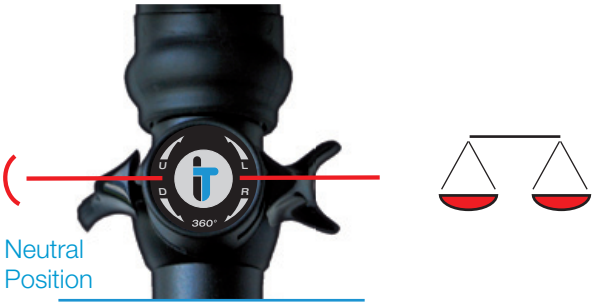
To retract the endoscope the articulating section should be free (articulation lock levers in the neutral position.

By observing on the display and appropriate movement of the levers an equal distance of the distal end to the walls of the cavity has to be kept. Avoid contacts of the distal end with the walls of the surrounding.

At resistance during the retraction it is recommended to slightly twist the probe in both senses around its longitudinal axis and at the same time carefully push and pull until the probe is released again.

Caution! Put both levers to neutral position (as shown) before retracting the scope!

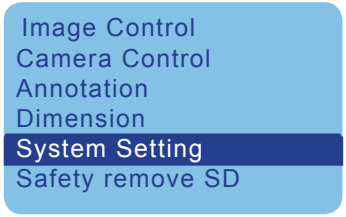
Put both levers to neutral position (as shown) before retracting the scope!

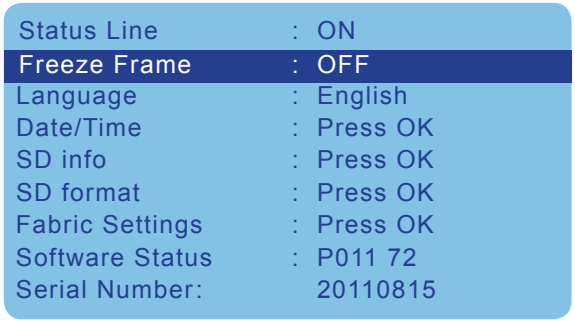


Choosing a Standard Setting

There are two standard settings available. Decide whether you want to work in Mode Freeze Frame ON or OFF for image captures and video recordings (see pages 27-29) before starting the inspection.

Press MENU, select the menu item System Setting and press OK. Using the arrow keys select Freeze Frame and choose ON or OFF.





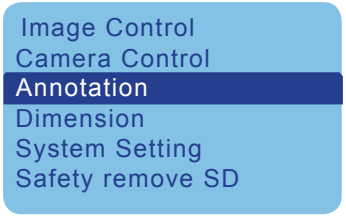
Inserting Text

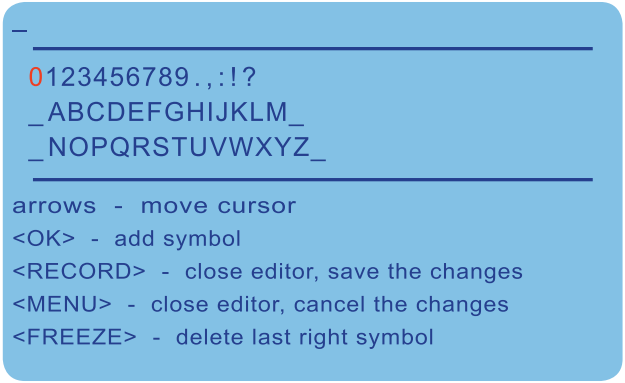
With the text generator you have the possibility to mark all images with a text commentary (a single line of 31 characters). Please insert text before saving the image.

Press MENU, select menu item Annotation and press OK,

Use the arrow keys to select the desired character and press OK. To quit and save the text press RECORD, to quit without saving press MENU.

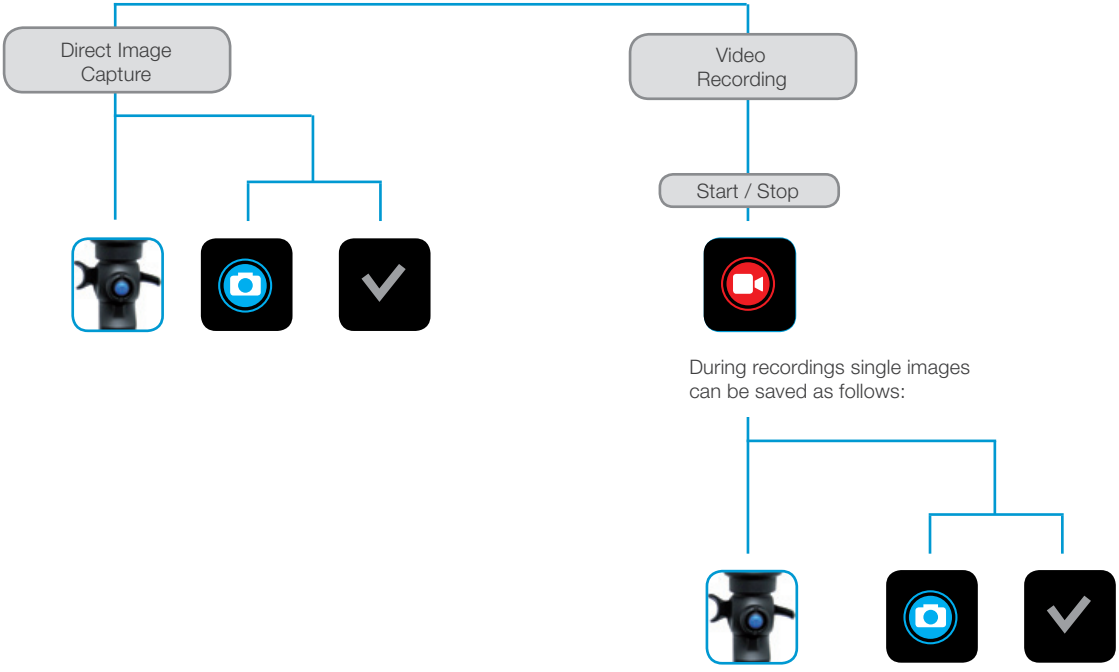
You can delete single characters by pressing FREEZE.





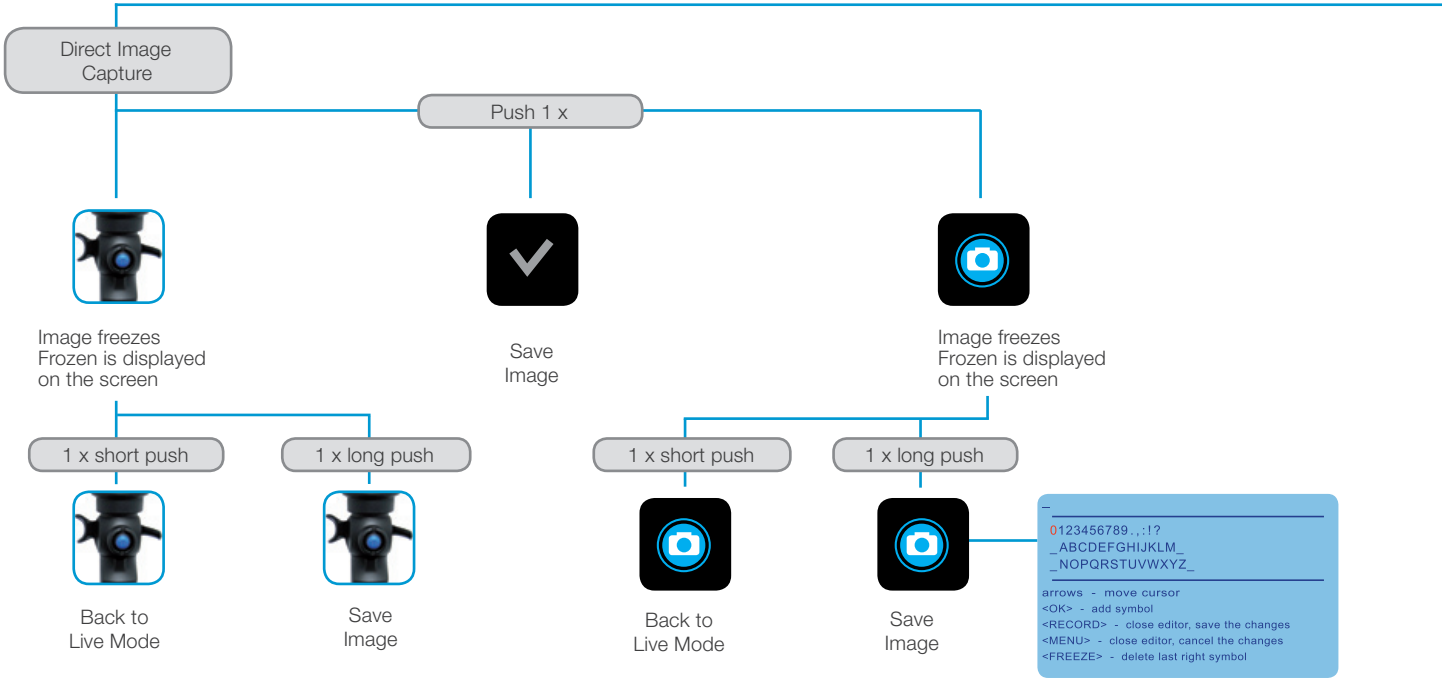
Creating and saving Image Captures and Video Recordings

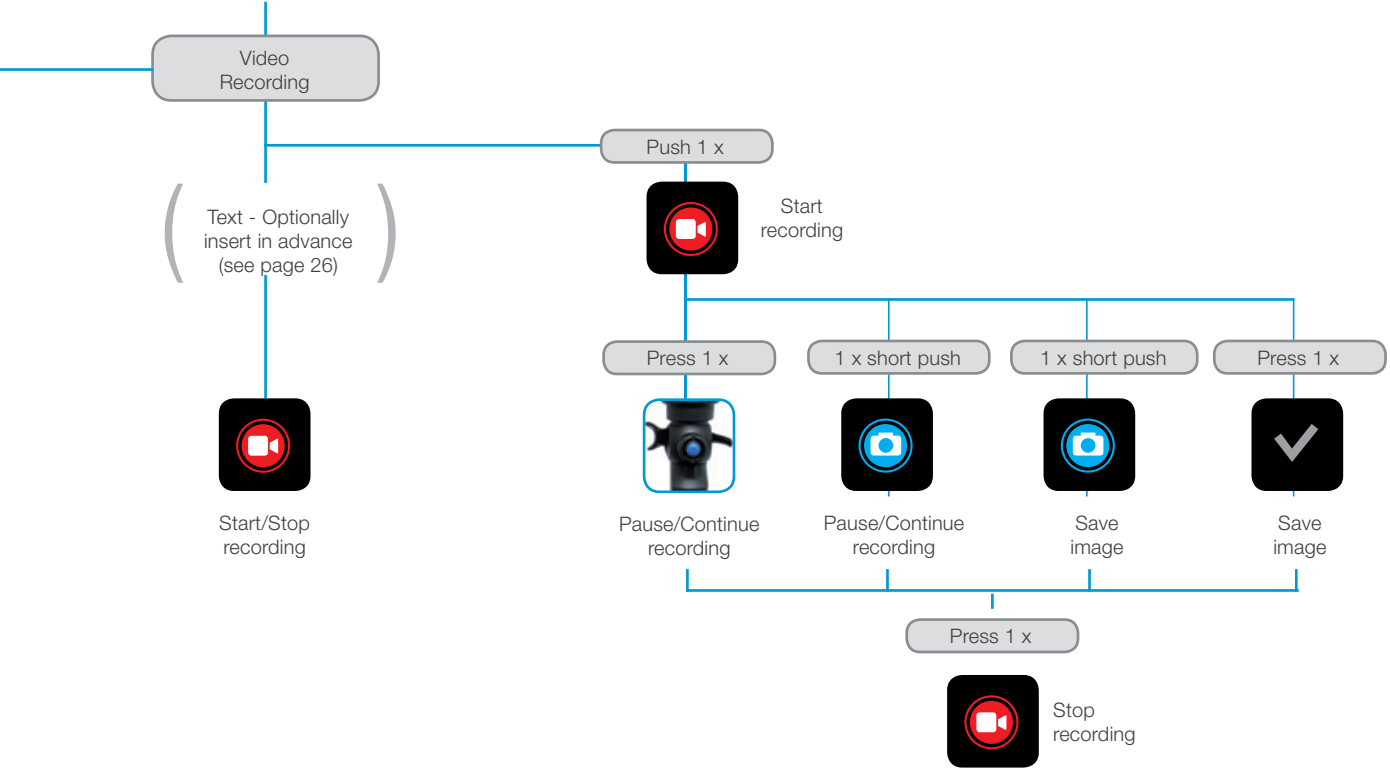
Standard Setting Nr. 1 „Freeze Frame OFF“



Creating and saving Image Captures and Video Recordings

Standard Setting Nr. 2 „Freeze Frame ON“




Video Recording
Text - Optionally insert in advance (see page 26)
Start/Stop recording
Push 1 x
Start recording
Press 1 x
1 x short push
1 x short push
Press 1 x
Pause/Continue recording
Pause/Continue recording
Save image
Save image
Press 1 x
Stop recording

Calibrating and Comparative Measuring

The iRis provides the possibility of point-to-point measuring within the image. This can be used in the Live Mode as well as in the Memory Mode.

Press MENU on the keypad. Select the menu item Dimension, select Calibration confirming with OK each time - two flags appear on the display. The distance in pixels is shown in the status indicator line.

Before you can use the Comparative Measuring you need to make a calibration as follows: Hold the distal end in your defined working distance to an object of known size (e.g. ruler). Move the active flag (displayed in white) to one side of the geometry. Press OK to switch between the flags and lead the second flag to the end of the geometry. When both flags are on the desired positions, press MENU twice, choose Dimension and Calibration afterwards, always confirming with OK.
Please insert the measure as value in front of the ":" and the unit (e.g. mm) behind of it. To save and quit Caibration press RECORD. To quit without saving press MENU. After having pressed RECORD the inserted unit appears in the display, while being in Live Mode with visible flags. Now you may save as usual (see pages 27-29). Your measuring value occurs in the saved image and video recording.

Playback of saved Images or Video Recordings

You can access all saved data.

The iRis System saves images and video recordings automatically to the SD Card as follows:

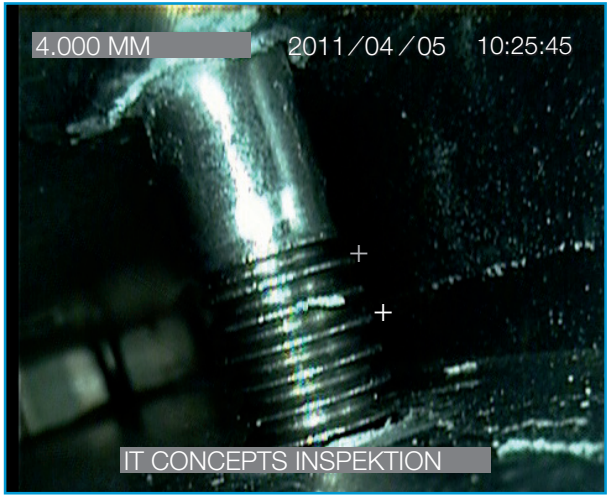
Image:

Format:	bmp
Resolution:	640 x 480 pixel
Location:	Folder Picture

Video:

Format:	avi
Resolution:	800 x 600 pixel
LOCATION:	Folder HVR

All fi les (image as well as video recording) are named by the system. Each image and video gets an automatically created fi le name consisting of date and time.



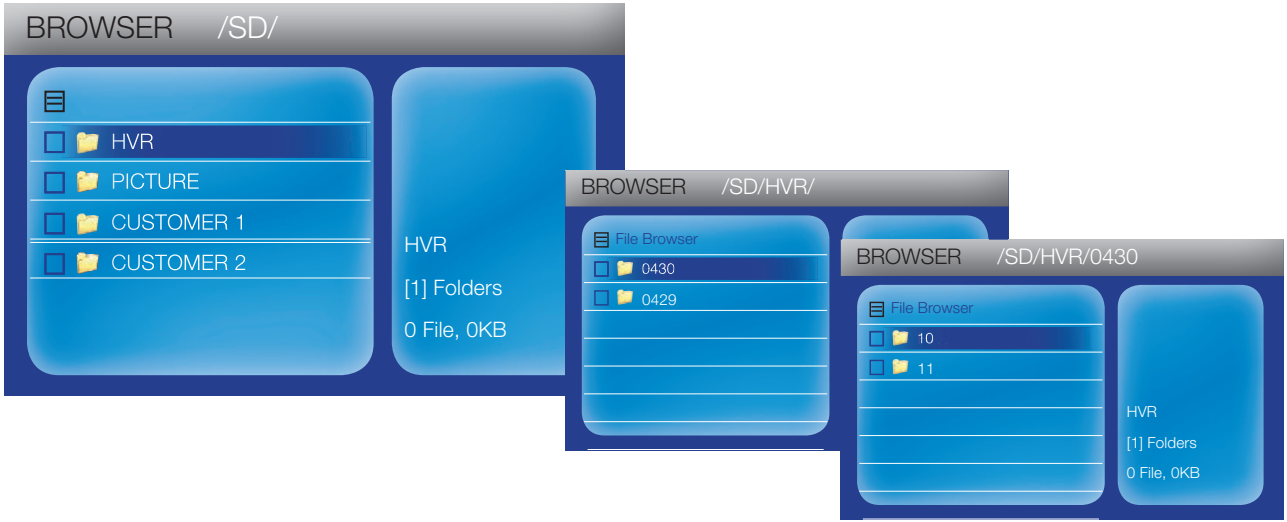
The user may create and name new folders on the removable media by connecting a card reader to your personal computer.

Playback of saved Images or Video Recordings

How to access files.

Press MEMORY to access the Browser Mode. Navigate through the folder structure to the desired fi le by using the arrow keys and the OK button

The LED Light Source is automatically switched-off in Memory Mode and reactivated when changing to Live Mode again.



Playback of saved Images or Video Recordings

Images

After having accessed the desired fi le you can con-trol it as follows by using the arrow keys and the OK button:

OK	=	Open/Flip image
Arrow keys	=	Leaf for- and backwards
Cancel	=	Back to browser

Video Recordings

After having accessed the desired fi le you can control it as follows by using the arrow keys and the OK button:

“OK“	=	Start / Stop / Pause video
“Left“	=	Rewind
“Right“	=	Fast forward
“Cancel“	=	Quit

Cleaning and Care

Basics
The following procedures should be applied after each use of the videoscope. A want of care can lead to corrosion and damages. The grade of the required cleaning depends on the degree of pollution.

Cleaning the Housing
Clean the housing with a soft and damp cotton cloth. If necessary use mild detergent and dry carefully afterwards. Do not clean display or housing under running water or immerse in liquids!

Cleaning the Probe
Wipe off dust and dirt with a soft cotton cloth. Wash the flexible part with a moist sponge. If necessary, only use neutral detergent solutions for cleaning. Dry with a clean and soft cotton cloth after cleaning.

The distal end has to be cleaned with cotton swabs (Q-Tip®) soaked with neutral detergent solution. Do not use rough or abrasive cloths for cleaning!

Cleaning and Care

Inspecting the videoscope

The probe should be inspected for damage after each use. The objective's surface should be checked and cleaned if necessary (see page 39).

The articulating section has to be checked: First push the lever U/D towards the housing and move it from one extreme position to the other, so that the articulation moves in an angle ca. +160° to ca. -130° in the vertical plane.

Then bring the lever back to the neutral position and release it. Analogical move the lever R/L, so that the articulation moves in an angle of ca. ±100° in the horizontal plane. Bring the lever back to the home position afterwards and release it.

At occurrence of any problem stop operating and contact the Customer Service of IT Concepts (see page 43).

Transport and Storage

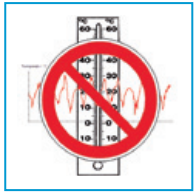
System Transport and Storage

The System needs to be dry and cleaned for storage. The levers have to be brought to neutral position.

Carefully insert the probe into the reel in the case. Push the probe slowly into the reel until you are able to place the housing in the corresponding recess without bending the probe. Afterwards push the rest of the probe thoroughly into the reel until the probe is securely placed and cannot be damaged by the case or any accessories.

Attention: Avoid bending the probe to an arc radius less than 45mm.

For larger probe lengths we recommed storage outside the transport case. At best, it should be hung at the housing.
The storing location should be protected against humidity, direct sunlight and high temperature fl uctuation. At hanging take care that the probe hangs free and doesn't butt at something.



Videoscope XT Spare Parts and Accessories

SD Memory Card
Neck Strap
DVR Clamp
Li-Ion rechargeable Battery
Charger for Li-Ion rechargeable Battery
NC2040A24 Case
Case Pocket

Technical Specifications

Operating Unit	
Display Size:	5“ (12,7cm) TFT Colour
Display Resolution:	VGA (640x480 Pixel)
Operating System:	Realtime operating System, with On-Screen-Menu
User Interface:	Direct Action Keys, Function-Keys, Arrow-Keys
Languages:	Englisch, French, Spanish, Italian, German, polish, turkish
Video interface:	Composite Video-out
Power Supply, primary:	changable Li-Ion-Battery (Charger is provided)
Measurement	
Method	Comparative Measurement Function
Documentation	
Video Format:	AVI (.avi)
Image Format:	BMP (.bmp)
Storage:	SD-HC-Memory Card up to 32GB (FAT32)
Camera Control	
Image Sensor:	Advanced image Sensor
Camera Control / Exposure:	Integration modes: Automatic, Short, Long, Manuell
White Balance:	adjustable
Gamma:	adjustable
Image Control	
Zoom:	x3.5 (Digital)
Invert:	horizontal and vertical Image Inversion
Brightness, Contrast, Colour:	adjustable
Text Annotation:	Textline for 32 letters

Technical Specifications & Certifications

Illumination			
Type:	High-Power Whitelight-LED's with fiber optic light guides		
Illumination Control:	3-steps		
Colour Temperature:	ca. 6500k		
Average Lamp Lifetime:	ca. 5000h		
Probe			
Diameter:	4.0mm	6.0mm	
Working Length:	4.9 - 13.1ft (1.5 - 3.0m)	4.9 -13.1ft (1.5 - 7.5m)	
	4.0mm	6.0mm	6.0mm SD
Working distance:	15mm - ∞	20mm - ∞	10 - 60mm
Articulation:	4-way (Control Levers)	4-way (Control Levers)	
Articulation Angle* L/R | U/D:	100°/100° | 100°/100°	100°/100° | 160°/130°	
Integrated Objective Lens:	90° FOV	90° FOV	
Braid:	Tungsten Braid on PU-Jacket		
Construction			
Monitor unit:	± 90° rotatable Display Unit		
System Weight:	2.97lb (1.35kg) Operating Unit		
Dimensions:	180mm x 105mm x 45mm		
Housing:	rugged PU, with integrated rubber shock caps		
Protection Class:	IP53		
Operating Environment			
Tip Operating Temperature:	+14°F to 176°F (-10°C to +80°C)		
System Operating Temperature:	-13°F to 115°F (-25°C to +45°C)		
Storage Temparature:	-13°F to 115°F (-25°C to +45°C)		
Manufactoring			
Country:	Germany		

UL Class 1 Division 2: File # E477160

ATEX Certified: ITVS17ATEX9828X

MIL STD 810G; Method 511.6

NFPA 70: Class 1 Division 2

ISO 9001

CE Compliant

IP53