



User Guide



WELL-CAMERA.1-N

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1.Important Notice

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This guide refers to “WellCamera.1-N” HW version 1.0

Torino, ITALIA 2016

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2.Warranty and safety instructions

Read these instructions carefully before using the product:

- Warranty will be void, if the product is used in any way that does not follow the instructions given in this manual.
- Warranty will be void if any part of Well-camera.1-N has been tampered with.
- The device must be used only according to the instructions described in this manual. Faultless and safe operation of the device can be guaranteed only if the transport, storage, handling and operation of the device is appropriate.
- To prevent damage, use only original accessories or those approved by PASI srl.
- The box is waterproof only if closed. When a suitable location has been selected for the Well-camera.1-N, it must be ensured that no water can get into the device under any conditions. Direct sunlight is also to be avoided. It is not recommended that the Well-camera.1-N is installed on a strongly vibrating surface.

3.Introduction

The Well-camera.1-N is a device designed and assembled by P.A.S.I. srl, a leading company in Italy in the production of instruments for inspection, geology and geophysics.

Taking advantage of our wide experience in designing and manufacturing TV systems for borehole and well applications, PASI has created the innovative WELL-CAMERA.1-N; this compact and lightweight device is the answer for anybody who are looking for an easy-to-use, reliable and affordable tool for quick in-field video inspections.

A complete WELL-CAMERA.1-N system consists of:

- Reel and Camera head;
- Control Unit with integrated LCD, USB2.0 grabber board and microphone;
- Battery charger.

Main technical features are:

- internal 12V rechargeable battery / external 12V battery connecting cable;
- camera head waterproof up to 35 bar (approx. 350m of freshwater column);
- wide angle lens 120° - available 90° view option;
- integrated monitor 9" TFT LCD;
- 8x high intensity LED, with regulation knob;
- integrated audio/video grabber board USB2 for recording on external PC;
- Available lengths: **100m, 200m, 300m, 400m, 500m.**

This guide details the technical specifications and how to use the device. Please follow these guidelines.

4. Technical specifications

Camera Head Specifications

Diameter	40mm
Length	150mm
Sensor Type	CCD 1/3"
Resolution	700 lines
Lens	2.9mm fixed lens
Minimum intensity required	0.005 lux @ F1.2
Light type	8X high intensity LEDs
Waterproof protection	IP68, submergible up to 350m (35bars)

Monitor Specifications

Display	9" TFT LCD
Wide Screen	16:9 or 4:3
System	NTSC/PAL
Resolution	800x480 pixel

Control Unit Specifications

Power Supply	Internal or external 12V battery, for up to 8 hours of field use
Digital Output	Integrated USB 2.0 audio/video grabber board + microphone for saving movies and vocal comments directly to any external PC
Analog Video Output	BNC connector
Weight	6Kg
Size	30.6cm X 23.4cm X 13cm

NOTE:

Batteries are very sensitive devices and care must be taken to preserve their life. Remember to:

- do not completely discharge the battery and if it happens do not store the control unit with the low battery level.
- If you don't use the device for many days, it's always better to give it a cycle of use and recharge (for example every 10/15 days) with the battery fully charged before store it again.
- When only the 10% led indicator is ON you should stop to use the camera without an external power supply (battery or power adapter for charging the device).

5. User interface Description

Main Panel



FIGURE 1 - MAIN PANEL

Connectors on the panel

In Figure 1 the top panel of the Well-camera.1-N is shown. Starting from the bottom left:

- USB: mini USB connector to connect the Well-camera.1-N to an external PC for video recording.

- Ext.Batt/Charg: 3 poles male connector to connect the battery charger or an external battery.
- Mic: Internal microphone;
- Knob to adjust the light intensity;
- On/Off switch with battery level indicator;
- Video Out: Analog video output;
- Camera Line: 4 poles female connector to connect the Control Unit to the winch of the camera cable;

NOTE:

For video recording you should refer to the Manhattan Video Grabber documentation provided in the pack and not included this manual.

6. Installation

What's inside

The Well-camera.1-N is composed of the following parts:

- Control Unit;
- Winch with camera cable and camera head;
- 1 black cable with two 4 pins male connectors to connect the winch to the Central Unit;
- 1 USB cable to connect the Control Unit to an external PC for video and audio recording;
- 1 charger;
- Cable for connecting external battery (optional).

Check List

The following points must be considered when installing the Well-camera.1-N.

1. After placing the components of the Well-camera.1-N in the inspection site, connect one end of the 4-pin black cable male connectors to the winch of the camera;
2. Connect the other end of the 4 pins male cable to the “Camera Line” connector on the panel of the Control Unit. The Well-camera.1-N must be switched off while connecting the cable of the Camera Line. In Figure 3 the control is showed unit properly connected to the winch with cable and camera head;
3. It is recommended you turn on the Well-camera.1-N when the above points have been carried out;
4. If the battery is discharged, you can use the Well-camera.1-N during charging or using an external battery.




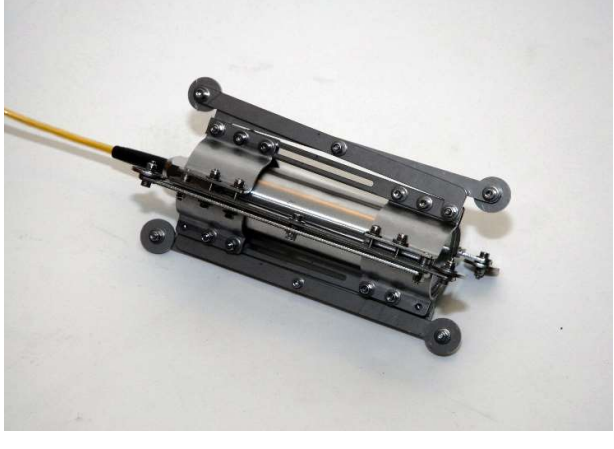
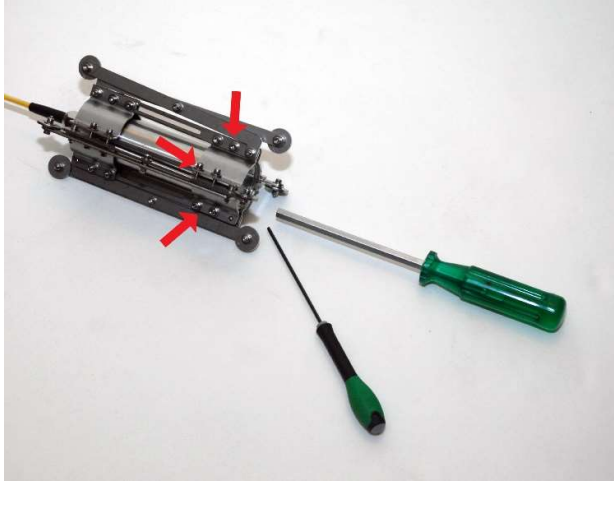
FIGURE 2 - WELL-CAMERA.1-N CONTROL UNIT CONNECTED TO THE WINCH WITH 100M CABLE AND CAMERA HEAD

Video Recording

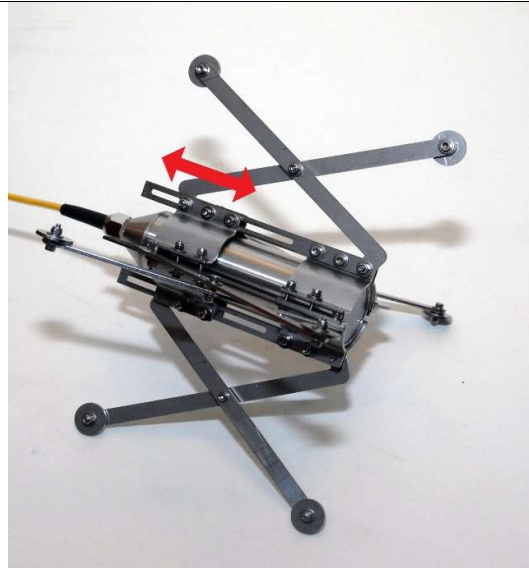
For instructions on video recording please refer to the Manhattan Video Grabber documentation included.

7. Accessories

Horizontal centering device (Optional)

<p>1) Well-Camera head.</p>	
<p>2) Insert Well-Camera head in the centering device as shown in the picture.</p> <p>Be sure to mount the Well-Camera head in the right direction: the front side of the camera head fits the narrowest part of the centering device, indicated by a label.</p>	
<p>3) Tighten the bolts of the centering device with the special tools as shown in the picture</p>	

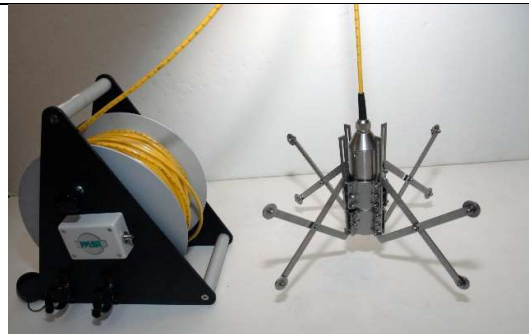
4)The diameter of the centering device can be adjusted as indicated by sliding the two flanges along the device




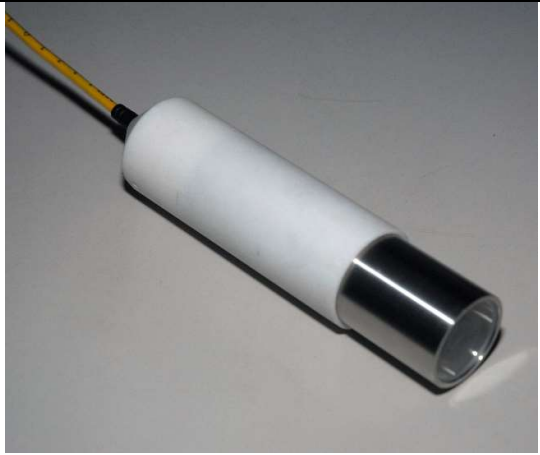
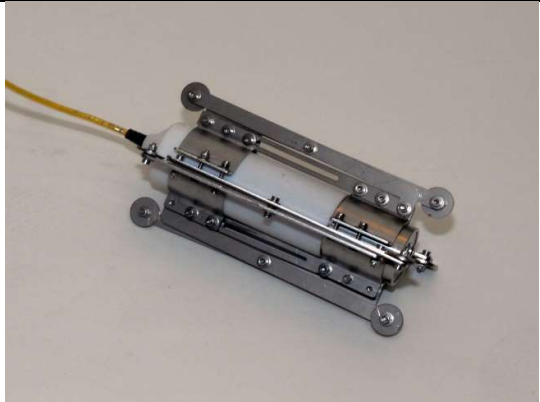
5)Fix into position by tightening the bolts & the screws as shown in the picture.



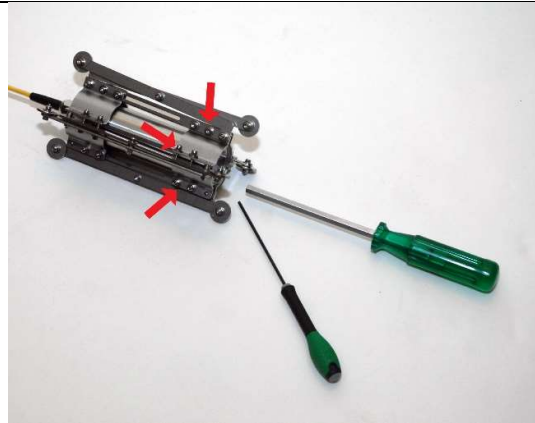
6)The Well Camera with the centering devices is now ready to use



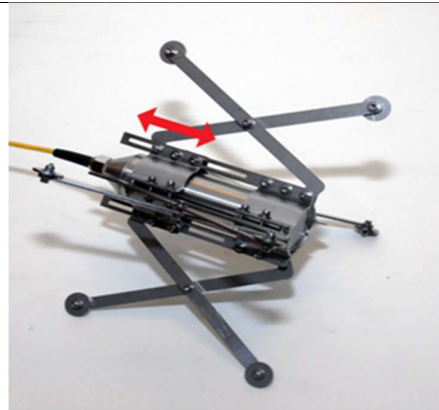
How to mount and use the horizontal centering device with the aspo (optional)

1) Well-Camera head	 A cylindrical metal camera head with a yellow cable attached to the left side.
2) Insert the Well-Camera head in the Teflon shield.	 The camera head is inserted into a white cylindrical Teflon shield, with the metal tip protruding from the right end.
3) Insert Well-Camera head in the centering device as shown in the picture. Be sure to mount the Well-Camera head in the right direction: the front side of the camera head fits the narrowest part of the centering device, indicated by a label).	 The camera head assembly is mounted inside a complex metal centering device with multiple adjustment screws and a label on top.

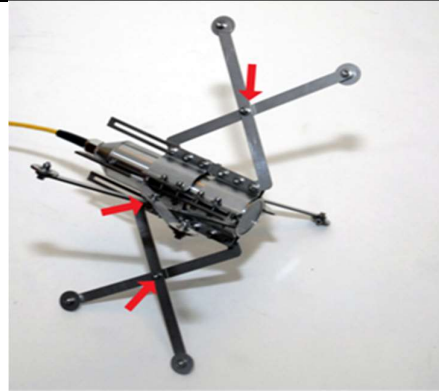
4) Tighten the bolts of the centering device with the special tools as shown in the picture



5) The diameter of the centering device can be adjusted as indicated by sliding the two flanges along the device



6) Fix into position by tightening the bolts & the screws as shown in the picture



7) Fix the ASPO fiber glass cable to the teflon shield as shown in the picture.



8) The Well Camera with the ASPO option and centering device is now ready to use.



Installation and use of the adjustable pulley assembly (Optional)

- 1) Unscrew anticlockwise the clamp until it reaches the thickness of the borehole casing, then tighten it by screwing it clockwise until it is secure. The clamping device can be regulated for a thickness from 0 to 9.3 cm.
- 2) Align the blue pulley with the centre of the shaft, unscrew it by using a wrench measure #17 (not supplied with the accessory). Once the desired position is reached, secure the blue pulley by tightening the wrench clockwise.
- 3) Insert the camera head in the well, by placing the connecting cable into the groove of the pulley.



FIGURE 3 - THE POSITION OF THE BLUE PULLEY CAN BE REGULATED

Installation and use of the suspending tripod with pulley (Optional)





FIGURE 4 - SUSPENDING TRIPOD WITH PULLEY

How to adjust the height of the tripod:

- 1) Loosen the three screws at the base of the tripod legs to adjust their length in order to reach the right position to allow the Well-camera. 1-N to be lower vertically and centred in the borehole.
- 2) Pass the camera head and its cable carefully inside the pulley bracket and then slowly lower the camera head inside the well.
- 3) The cable reel has a braking system to optimize the camera head descent speed: turn the knob clockwise to descend faster or turn anticlockwise to slow down.

How to mount and use the centering device for vertical use and the 90° view option (Optional)

1) Well-Camera head	
<p>2) Insert the Well-Camera head in the vertical centering device and mount the elastic band as shown.</p> <p>The centering device can be fixed at different opening diameters by sliding the adjusting ring along the camera head body. The ring can be fixed simply by tightening the screw clockwise.</p> <p>The centering device can be regulated from 80mm to 260mm of diameter.</p>	

3) The 90°view option can be mounted using its own special mounting ring simply by tightening the screw clockwise.

The distance between the mirror and the camera front glass can be regulated by sliding the 90°view option mounting bracket and tightening its screws clockwise.

We recommend you use the 90°view option together with the vertical centering device.

