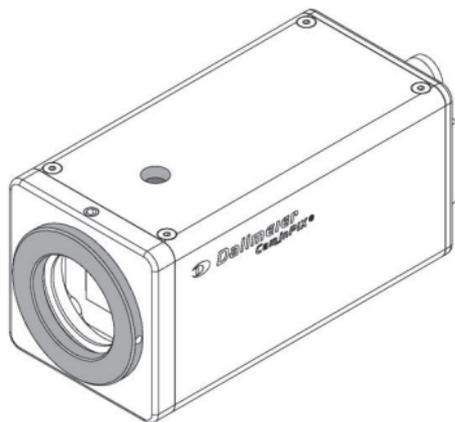


Operating instructions

Color Video Camera

DF2000A



***Please store these instructions
for future use!***

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1 About this document

Validity

This document is valid for the **DF2000A** color camera.
Firmware revision 1.2 - 3.0.15 / Version 1.4

Operating instructions

Connection assignment, lens mounting and configuration are described in these operating instructions.

Storing the documents

Store the operating instructions in an accessible location near the product and keep it in readable condition.

Signs and symbols used

Attention!

Contains information on the prevention of damage and malfunctions.

Note

Contains information on limitations of properties or their characteristics.

Tip

Here you will find useful information on safe usage, background information and recommendations.

Reference point (e.g. see Page ...)

References to pages, chapters or figures containing additional information are found here.

Words appearing in ***bold and cursive*** generally indicate menu commands.

Abbreviations in this document:

AC	=	A lternating C urrent
AGC	=	A utomatic G ain C ontrol
DC	=	D irect C urrent
DC-AI	=	D irect C urrent A uto I ris
ESD	=	E lectrostatic D ischarge
NTSC	=	N ational T elevisi S ystem C ommittee
PAL	=	P hase A lternation L ine
PT	=	P an T ilt
PTZ	=	P an T ilt Z oom
UTC	=	U p- T he- C oax
UWDR	=	U ltra- W ide D ynamic R ange

2 For your safty

Only use the camera if it is in proper technical working condition, for the intended purpose and while keeping safety and potential dangers in mind. Observe the technical specifications and the corresponding instructions and/or documentation. Have malfunctions that could compromise safety eliminated immediately! This applies especially for damage to the power supply.

Use professionals

Installation, mounting, connection, start-up and configuration of the DF2000A may only be performed by trained and authorized professionals (installers).

As far as not expressly specified otherwise, this specification also applies for the maintenance, testing and repair of the camera.

Read and understand instructions



Read the documentation for the camera carefully and completely before using the camera.

Observe the rated voltage

The applied voltage must constantly match the rated voltage of the camera (see technical data).

Protection against condensation

Wait approx. 8 hours for the camera to reach room temperature before starting it up.

Expansion components/peripheral devices

Use only expansion components conforming with the technical specifications.

Connection of the camera



Connection of the camera to a recording system or control panel may only occur while the camera is de-energized. Pull the mains plug!

Penetration of foreign bodies and liquids

The camera may not be subjected to moisture or rain. No objects or liquids may penetrate into the camera.

Note ambient conditions at mounting site

The camera was designed for indoor use. When used outdoors, the camera must be mounted in an appropriate weatherproof housing.

Do **not** install/operate the camera in places:

- with steam or oil vapors (e.g. kitchen)
- near sources of strong radiation, i.e. X-rays, radio transmitters or magnetic fields
- with corrosive surroundings (e.g. gases or salt water)
- with large scale dust and dirt.
- with an ambient temperature above 50 °C.

Danger when opening camera



If it is necessary that the camera be opened, unplug the power plug before opening.

❑ ESD measures



Certain components of the camera may be damaged or destroyed by electrostatic discharge, even while disconnected from the power supply.

Carry out equipotential bonding. Carry out work only with the appropriate ESD protective measures in place.

❑ Do not make modifications

Dallmeier electronic GmbH & Co.KG accepts no liability for damage resulting from unauthorized or improper modifications to the camera.

❑ Mount the camera securely

The camera must be mounted securely to prevent injury to others (e.g. via falling camera) or damage to the camera.

❑ Observe regulations

Inform yourself on local regulations and requirements before using the camera. Also observe the local laws regarding data, working and environmental protection.

❑ Observe ratings

Ensure compliance with all technical ratings, operating conditions (Appendix) and requirements at the installation site.

❑ Disposal



Disconnect the camera from the power supply. Remove the power cable and all the expansion components / peripheral devices. Return the camera to your respective sales partner.

3 General information

3.1 Delivery scope

Included in delivery scope:

1 x DF2000A camera

1 x operating instructions

1 x hexagonal wrench 6 mm

3.2 Transportation and packaging

Store the original packaging for transportation at a later date. Dallmeier electronic is not responsible for damage resulting from unprofessional/improper transportation.

Shipping should only occur in the original packaging.

If the original packaging is no longer available, ensure that the packaging used sufficiently protects the unit against damage, moisture, heat and cold.

3.3 Certificates

The following certifications were in effect for the DF2000A camera at the time this document was produced:

- CE
- UVV-Kassen

3.4 Warranty

The warranty period is 36 months.

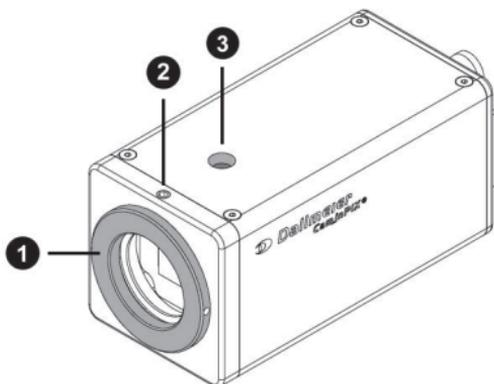
The terms and conditions valid at the signing of the contract apply.

4

Notes on operating the camera

- ❑ The camera can be operated at 12 V DC or 24 V AC.
- ❑ The DF2000A was designed for use with CS-mount lenses. An adapter ring is required for use with C-mount lenses. Note the lens type before using it. When using C-mount lenses without an adapter ring, the camera could be damaged. This applies especially for the sensors.
- ❑ Lenses with DC control can be used for automatic iris control. Video signal-controlled lenses are not supported.
- ❑ If the camera or the cable connected to the cable is located near sources of strong radiation, the video picture may be distorted.
- ❑ The camera is equipped with automatic gain control (AGC). In low light the picture may be altered (e.g. noise). This is not a camera malfunction.
- ❑ The quality of the video picture depends on the lens used, the lighting and the monitor used to display the video picture.
- ❑ Automatic white balance depends on the lighting used and can cause color distortions in artificial light.
- ❑ Poor lighting can lead to faulty white balance.

5 Equipment and connections



1 Lens mount and back focus adjustment

The lens mount (threaded ring) is suitable for holding **CS lenses**. The threaded ring is also used to set the back focus (back focus Chapter: Setting the back focus).

2 Setting screw

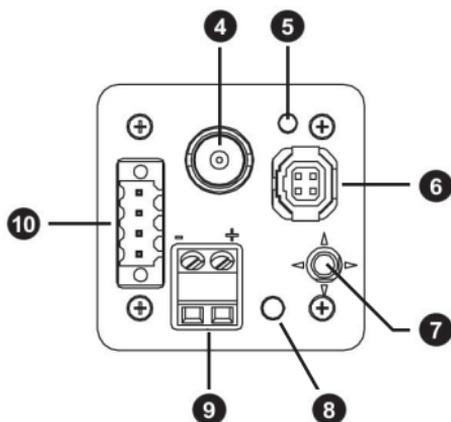
Setting screw (2 mm Allen screw) for loosening/locking the threaded ring when setting the back focus (back focus Section: Setting the back focus).

3 1/4" thread insert

A 1/4" thread insert is located above and below for mounting the camera to a tripod, a wall mount etc.

! Only use screws with a max. length of 7 mm for mounting. Longer screws could damage the camera.





4 Video signal output (Video OUT)

A composite video signal (CVBS) is output at the BNC jack. The signal complies with either the PAL or the NTSC standard, depending on the signal system setting.

5 Operating voltage display

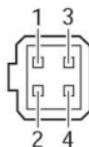
The LED illuminates when the camera is supplied with power.

6 Connection for iris control

Control voltage for automatic iris control on lenses with DC control is available at this connection.



Check the plug for correct contact assignment (see table) before connecting the lens.



Pin No.	DC Iris
1	Damping -
2	Damping +
3	Drive +
4	Drive -

7 Selector

The selector is used for menu selection and to set the corresponding parameters.

8 Set button

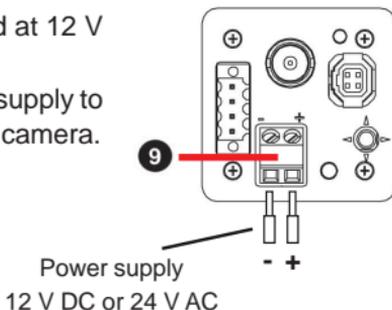
Press the Set button in normal operation at least 2 seconds to display the camera menu.

Once the camera menu is displayed, a specific menu item or setting is activated when the Set button is pressed.

9 Power supply connection

The camera can be operated at 12 V DC or 24 V AC.

Connect the cable for power supply to the screw terminals **9** of the camera.



You must ensure correct polarity of the cable when using 12 V DC.

Use insulated cables. The cables for power supply may not contact the housing of the camera.



If used in North America, note the following:

You must use a UL-certified, limited-power Class 2 power supply unit (12 V DC / 0.42 A or 24 V AC / 0.20 A) for the camera power supply.

10 RS232c interface

A PT can be controlled via the RS232c (pin 1). The PT is controlled via the video cable by using UTC. For control via UTC, you require a recording system with the UTC function from the DMS/DLS product series.

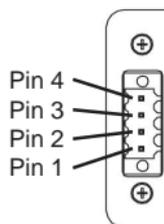
Check for correct contact assignment.

PIN4 = RX input of camera

PIN3 = ground

PIN2 = ground

PIN1 = TX output of camera for PT

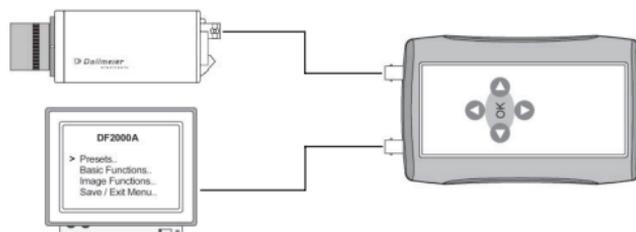


Customer-specific adaptation for control of the camera via the RS232c interface is available on request.

6 UTC Remote Box

The UTC Remote Box (accessory) is a special on-site aid. If the camera is already installed, it can be configured via the UTC Remote Box. Direct access to the camera, e.g. on a mast, is not necessary. The buttons on the box correspond to the **Selector** and the **Set button** on the camera in all functions.

The UTC Remote Box is installed on the video cable between the camera and the monitor or between the camera and the recorder.

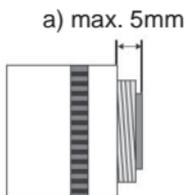


7

Connection and installation

7.1 Attaching the lens

- ! The length (a) of the lens thread (see following figure) plus any protruding parts may not exceed 5 mm, as otherwise the sensor could be damaged.



Check whether it is a CS-mount lens.
If a C-mount lens is used, an appropriate adapter ring is to be used.

- ! The camera is pre-configured for use with DC-controlled lenses. For lenses with manual iris setting, the configuration (☞ Section 8.1) is to be changed accordingly.

- ! Ensure that dirt does not end up on the sensor. Use only clean compressed air if cleaning is necessary. Under no circumstances may liquids or cotton wool be used for cleaning.

Remove the protective cap from the lens mount.
Screw the lens onto the camera without using force.

7.2 Setting the back focus

The back focus is the distance between the lens support on the camera and the picture sensor. Optimum focus is only possible when the correct distance is set.

It may be necessary to set the back focus in individual cases due to production tolerances of the lens.



The iris of the lens must be open as wide as possible (smallest iris value) to set the back focus. For lenses with automatic iris control, you will require an ND filter (gray filter) to prevent the iris from closing in bright light.

Setting for lenses with a fixed focal distance

If the focus cannot be set exactly by turning the focus ring (lens), proceed as follows:

- 1) Point the camera at an object with sufficient contrast. The distance to the object should be greater than 1,000 x the focal distance.
- 2) Open the iris on the lens.
- 3) Set the distance at the lens to infinity (∞).
- 4) Loosen the setting screw **2** on the camera with the accompanying hexagonal wrench.
- 5) Rotate the lens ring **1** until the optimum focus is achieved.
- 6) Tighten the setting screw again.

Setting for lenses with a variable focal distance (zoom)

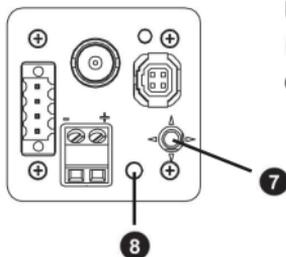
If the focus changes as the focal distance changes, proceed as follows:

- 1) Point the camera at an object with sufficient contrast at a distance of approx. 2 m.
- 2) Open the iris on the lens.
- 3) Set the maximum focal distance (Tele) at the lens.
- 4) Set the optimum focus with the focus ring.
- 5) Set the smallest focal distance (wide angle).
- 6) Loosen the setting screw **2** on the camera.
- 7) Rotate the lens ring **1** until the optimum focus is obtained.

You may need to repeat Steps 3, 4, 5 and 7 several times to obtain the best results.

- 8) Tighten the setting screw **2** again.

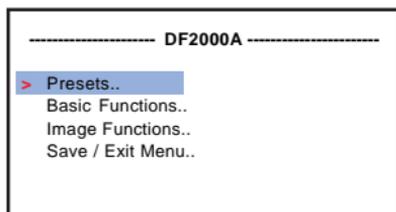
8 Configuration



Use the Set button **8** and the Selector **7** to call up the menus and to set certain camera properties.

Displaying the menu

Switch the camera on. The operation indicator (LED) must illuminate.



- Press and hold the **Set button** for 2 to 3 seconds.

The **main menu** is displayed on the monitor.

The cursor (>) is located on the first line at **Presets**.

Two dots after a menu item, e.g. **Presets..**, indicates that additional configuration options are available in a submenu. One dot means that the selected entry (command) is executed by pressing the Set button.

- Press the **Selector** up or down (▲ ▼) to select a menu item from the list.
- Press the **Set button** to call up the selected submenu or to execute the command.
- Press the **Selector** to the right or left (◀ ▶) to change the respective setting value.



To return from a submenu to the higher-order menu, select **Previous Page** and press the **Set button**.

To make things easier, „⇒ **Set button**“ appears in the following whenever pressing of the Set button is required.

Saving settings

- Select **Save / Exit Menu** ⇒ **Set button** in the main menu.
- Select **Save Settings** < **Yes** > ⇒ **Set button** in the submenu.
The new settings are accepted. The camera switches to normal operation.

Cancelling configuration

- Select **Save / Exit Menu** ⇒ **Set button** in the main menu.
- Select **Save Settings** < **No** > ⇒ **Set button** in the submenu.
Configuration is cancelled. The camera switches to normal operation. Changes made are not accepted.

8.1 Configuration for lenses with manual iris

If you use a lens with manual iris setting, the factory presets must be changed before any further configuration occurs.

- Select **Basic Functions** ⇒ **Set button** in the main menu.
- Choose **Lens Select** and move the selector to the left or right until the < **Manual** > entry next to Lens Select is displayed.
- Select **Previous Page** ⇒ **Set button**.

In the main menu you can now decide whether you would like to make additional settings or save your change and switch back to normal operation (see above).

8.2 Presets

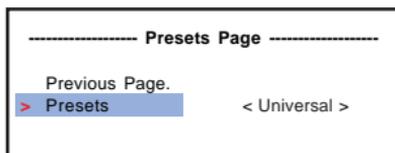
The presets allow you to very easily adapt the camera configuration to the on-site conditions to achieve the best possible video picture.

< **Universal** > is set as the preset at the factory.

Selecting a preset

- Select **Presets** ⇨ **Set button** in the main menu.
- Select the desired preset next to **Presets** with the **Selector**.

You can call up additional information or make additional settings for each preset by pressing the Set button.



Activating a preset

- When you have decided on a preset, select **Previous Page**.
- Select **Save / Exit Menu** ⇨ **Set button** in the main menu.
- Select **Save Settings < Yes >** ⇨ **Set button** in the submenu.

The following presets are available:



Universal

Used for scenes with very high contrast, e.g. with backlighting from the sun or lights/lamps, with hard shadows and heavy contrasts.

The maximum dynamic scope of the camera is used. Large differences in brightness are adjusted.



Universal / Sh

- Used for scenes with very high contrast.

The camera controller is geared toward shadowy areas.

Detail resolution in the shadowy area is optimized.

Bright areas of the picture are displayed brighter than normal.



Normal

- Used for scenes with average contrast.

e.g. indirect lighting with weak shadowing and a normal amount of contrast. The dynamic scope of the camera is limited, and minimal differences in brightness are covered. Detail resolution in brightly lit areas is optimized.



Fluoresc

- Used indoors with artificial light.

e.g. when recording inside buildings with artificial lights and weak contrast.

Detail playback in the bright area is optimized.

Typical flickering with neon lights is compensated.



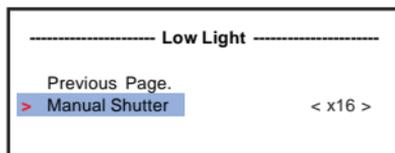
Low Light

- Used with minimal lighting.

With this preset the correct exposure is controlled via the shutter.

If you select **Low Light** ⇒ **Set button**, the **Low Light** submenu appears.

The shutter/exposure time can be set between x2 and x16 with **Manual Shutter**.



8.3 Basic Functions

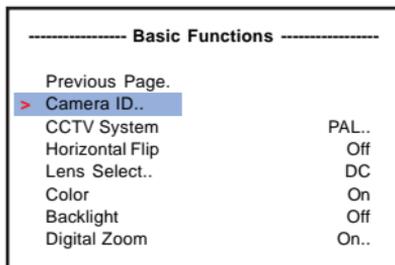
In the Basic Functions area you can make essential settings and specifications for picture display. Select the entry **Basic Functions** ⇨ **Set button** in the main menu.

8.3.1 Camera ID

With **Camera ID** you can enter a unique name for the respective camera.

The maximum length of the ID is eight characters.

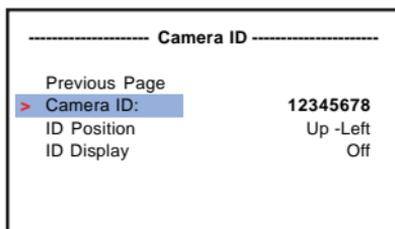
Select **Camera ID** ⇨ **Set button**.



Entering characters

Select **Camera ID**.

Select the appropriate character with the **selector** (right/left). The next position is activated each time the **Set button** is pressed, and you can enter the next character.



Position of the ID in the video picture

Select **ID Position**.

Select the desired position with the **selector** (right/left).

Showing/Hiding

Select **ID Display**.

Choose between **On** and **Off** with the **selector** (right/left). If you select **On**, the entered camera ID is displayed at the selected position in the video picture (normal operation).

8.3.2 CCTV System

□ Setting the signal system

Select **CCTV System**.

Choose between **PAL** and **NTSC** with the selector (right/left).

< **PAL..** > is set as default.

□ Setting the video level

After selecting the signal system you can correct the video level in a submenu if necessary. For this purpose, press the **Set button** after setting the signal system.

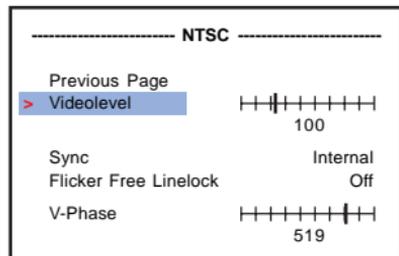
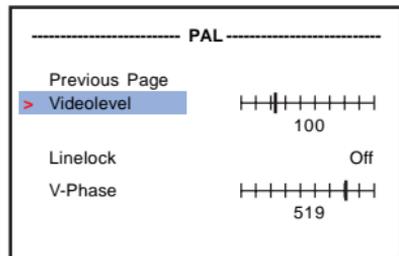
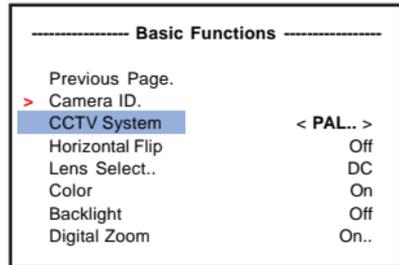
The video level can be changed with the selector.

□ Setting the synchronization

- With **PAL** choose between **On** and **Off** for **Linelock**. The **V-Phase** can be adjusted if necessary.

- With **NTSC** choose between **Internal** and **Linelock** for **Sync**. The **V-Phase** can be adjusted if necessary.

If you operate the camera with **NTSC** (60 Hz) with a 50 Hz mains frequency (e.g. in Japan), the flicker effect can be prevented with **Flicker Free Linelock = On**.



8.3.3 Horizontal Flip

If picture recording occurs via a mirror, the picture must be flipped to obtain an accurate-to-side presentation.

Select **Horizontal Flip** and press the selector to the right or left to switch between **On** and **Off**.

----- Basic Functions -----	
Previous Page.	
Camera ID.	
CCTV System	PAL..
> Horizontal Flip	< On >
Lens Select..	DC
Color	On
Backlight	Off
Digital Zoom	On..

8.3.4 Lens Select

Choose **Lens Select**.

Press the selector and choose < **Manual** > for lenses with manual iris control or < **DC** > for auto iris lenses.

----- Basic Functions -----	
Previous Page.	
Camera ID.	
CCTV System	PAL..
Horizontal Flip	On
> Lens Select..	< DC >
Color	On
Backlight	Off
Digital Zoom	On..

8.3.5 Color

In certain cases it may make sense to deactivate color playback.

Select **Color**.

You can switch between < **B/W** >, < **B/W w/Burst** > and < **Color** > with the selector.

With < **B/W w/Burst** >, the video picture is black and white. The menus are displayed in color and can be read easier.

----- Basic Functions -----	
Previous Page.	
Camera ID.	
CCTV System	PAL..
Horizontal Flip	On
Lens Select..	DC
> Color	< On >
Backlight	Off
Digital Zoom	On..

8.3.6 Backlight

When recording against back-lighting, e.g. from windows, glass doors or other sources of light, the Backlight function prevents blanking of the object to a great degree.

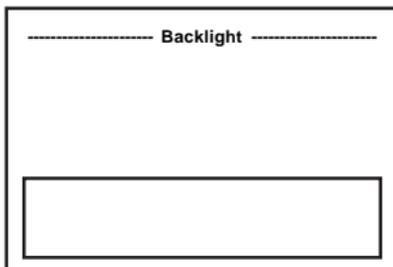
The camera analyzes the light conditions within the field of view and controls the lighting parameters accordingly.

----- Basic Functions -----	
Previous Page.	
Camera ID.	
CCTV System	PAL..
Horizontal Flip	On
Lens Select..	DC
Color	On
> Backlight	< Off >
Digital Zoom	On..

❑ Predefined fields of view

Select **Backlight**.

Choose between < **Up** >, < **Down** > and < **Center** > with the selector. The designation describes the predefined position of the field of view in the video picture (in the example: **Down**).



❑ Freely-defined field of view

Select **Backlight**.

Select < **Set..** > ⇒ **Set button** with the selector.

The field of view is displayed in white.

With each additional press of the **Set button**, the color of the rectangle changes, and with it the possible shape of the modification when the selector is pressed.

White: The position of the field of view can be changed with the selector.

Green: The field of view can be enlarged with the selector.

Red: The field of view can be reduced with the selector.

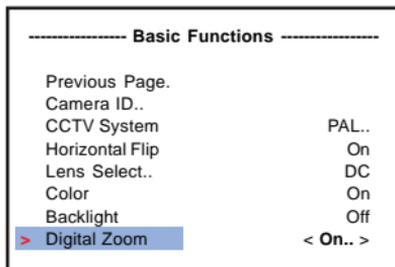
Once you have set the size and position, press the **Set button** for approx. 2 seconds. You are back in the **Basic Functions** menu.

8.3.7 Digital Zoom

Select **Digital Zoom**.

Choose the entry < **On..** > ⇨ **Set button** with the selector.

Set the zoom factor next to **Zoom** in the submenu.

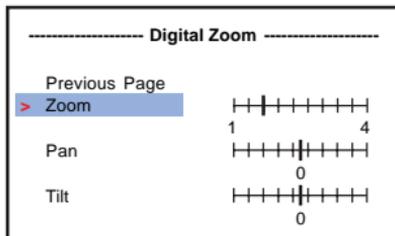


! Digital pan and tilt is only possible if a zoom factor has already been set.

Select **Pan** to pan. Move the selector to the right or left.

Select **Tilt** to tilt.

Move the selector to the right or left.



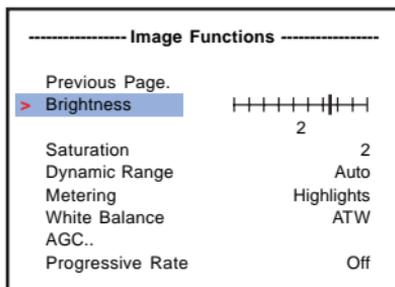
! The **Backlight** and **Digital Zoom** functions are mutually exclusive. If Backlight is activated, Digital Zoom is automatically deactivated, and vice versa.

8.4 Image Functions

Select the entry **Image Functions** ⇨ **Set button** in the main menu.

8.4.1 Brightness

You can set the brightness with the selector after selecting **Brightness**.



8.4.2 Saturation

You can set the color saturation with the selector after selecting **Saturation**.

8.4.3 Dynamic Range

Dynamic Range designates the scope of contrast between the brightest and darkest points in the picture. With automatic Dynamic Range, the distribution of brightness values is automatically adapted to the recording scenario.

The desired scope of contrast is set with the selector and encompasses five levels, in addition to automatic adaptation (Auto), which you can choose with the selector.

8.4.4 Metering

With **Metering** you decide whether the balance point measurement is to be based on bright points (< **Highlights** >) or dark points (< **Shadows** >) in the picture.

8.4.5 White Balance

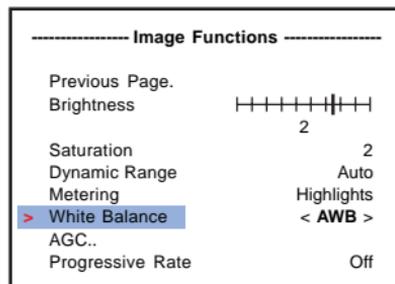
With **White Balance** you can influence the white balance of the camera.

Choose the desired setting with the selector.

AWB

With < **AWB** > automatic white balance is carried out for the situation current at the time of measurement.

With light and therefore color temperature modifications, no new measurement for white balance is carried out.

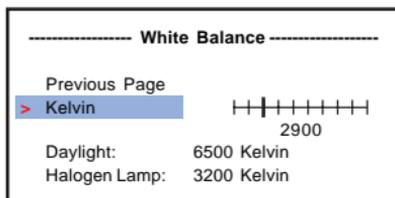


❑ **ATW**

With **ATW** (Auto Tracking White Balance) the white balance is continually recalculated. The white balance is readjusted accordingly in different recording conditions.

❑ **Manual**

With the setting < **Manual..** > ⇨ **Set button**, you can carry out the white balance manually as desired.

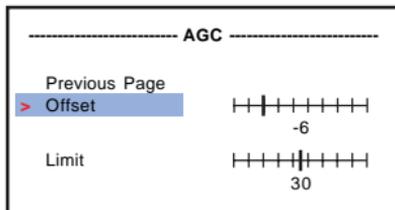


8.4.6 AGC

With **AGC** (Automatic Gain Control) the amplitude of the video signal is raised in poor light conditions. The point of use and maximum gain can be set in the submenu.

With the **Offset** slider you set the point of use when regulation is activated.

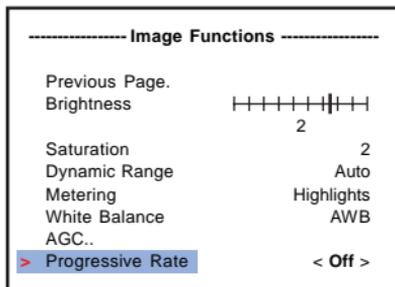
With the **Limit** slider you set the maximum gain.



8.4.7 Progressive Rate

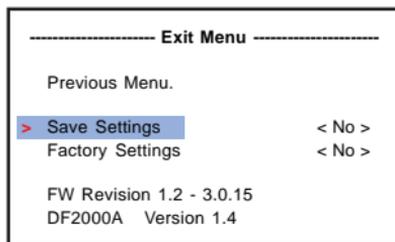
With **Progressive Rate** you can set whether and how often a picture is to be transferred unmodified.

Improved saturation and contrast can be achieved via multiple transmissions of individual pictures.



8.5 Exit Menu

To exit the configuration and return to „normal mode“ you have two options.



❑ Save Settings

- If you would like to save the changes made to the configuration, select the option < **Yes** > ⇒ **Set button** next to **Save Settings**.
- If you would like to keep the existing configuration, select the option < **No** > ⇒ **Set button** next to **Save Settings**.

❑ Factory Settings

- To reset the configuration to the state of delivery, select < **Yes** > ⇒ **Set button** next to **Factory Settings**.



All changes made up to this point are lost with **Factory Settings = Yes**.

A1 Menu structure

DF2000A - Main menu

Presets..
 Basic Functions..
 Image Functions..
 Save / Exit Menu..

Presets..

< Universal >
 < Normal >
 < Universal / Sh >
 < Low Light.. >
 < Fluoresc >

Manual Shutter

x2 - x16

Basic Functions..

Camera ID..
 CCTV System < PAL.. >
 < NTSC.. >
 Horizontal Flip < Off >
 < On >
 Lens Select < DC >
 < Manual >
 Color < On > < B/W >
 < B/W w/Burst >
 Backlight < Off >
 < Up >
 < Down >
 < Center >
 < Set.. >
 Digital Zoom < Off >
 < On .. >

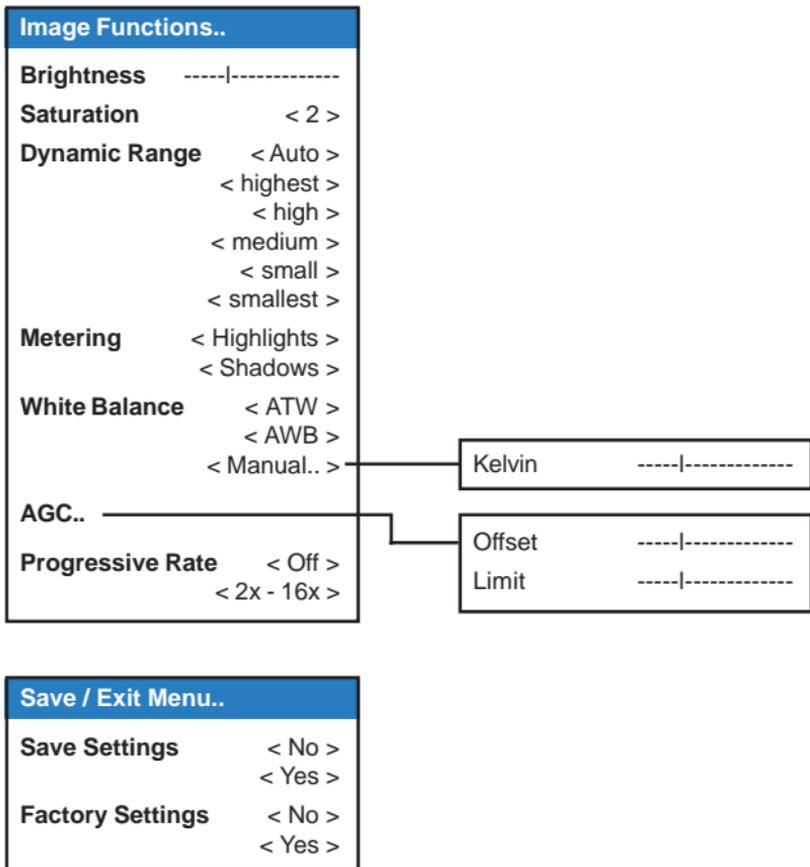
Camera ID: max. 8 signs
 ID Position up left etc.
 ID Display On, Off

Videolevel ----|-----
 Linelock On, Off
 V-Phase -----|-----

Videolevel ----|-----
 Sync internal, linelock
 Flicker Free Linelock On, Off
 V-Phase

Backlight field height
 width
 position

Zoom ----|-----
 Pan ----|-----
 Tilt ----|-----



A2 Technical Data

Image device	1/3" sensor
Pixel	720 H x 540 V
Video Norm	NTSC / PAL selectable 525 lines / 60 Hz (NTSC) 625 lines / 50 Hz (PAL)
Synchronization	Internal or line lock AC (AC input required)
Resolution	480 TV lines (horizontal) 460 TV lines (vertical)
Dynamic range	101 dB nominal 126 dB maximal
Sensitivity	< 0.8 Lux at f1.2, 50 IRE
Signal-to-noise ratio	> 50 dB (AGC off)
Control	Joystick / OSD and UTC / OSD
White balance (2,000 K to 11,000 K possible)	ATW, AWB, Manual
Video output	CVBS 1.0 Vpp at 75 Ohm
Lens selection	Manual lenses DC auto-iris lenses
Lens mount	CS mount C mount with 5 mm adapter
Operating temperature	-10° bis 50° C (14° to 122° F) 0° bis 35° C (32° to 95° F) recommended
Power source	12 V DC +/- 5% 24 V AC +/- 5% (50/60 Hz)

Power consumption	3.9 W (12 V DC) 4.3 W (24 V AC)
Weight (without lens)	approx. 270 g
Dimensions (without lens)	95 (L) x 45 (H) x 45 (W) cm
Functions	Backlight compensation AGC (Automatic Gain Control) Presets horizontale image flip Digital zoom



Declaration of Conformity

Product: DF2000A
Manufacturer: Dallmeier electronic GmbH & Co.KG
Cranachweg 1
D - 93051 Regensburg

As manufacturer we declare that the products named above are in accordance with the following EC-Directives:

- Electromagnetic compatibility 89/336/EWG

The following specifications were applied:

DIN EN 55022: 1998-04 class B

DIN EN 55024: 2002-11

(DIN EN 61000-4-2: 2001-12, DIN EN 61000-4-3: 2001-12,
DIN EN 61000-4-4: 2002-07, DIN EN 61000-4-5: 2001-12,
DIN EN 61000-4-6: 2001-12, DIN EN 61000-4-8: 2001-12)

DIN EN 61000-3-2: 2001-12

DIN EN 61000-3-3: 2002-05

Regensburg, 10.05.2005

Dieter Dallmeier
General Manager