WRC-1

Wireless Remote Control Instruction Manual

As of: June 2000

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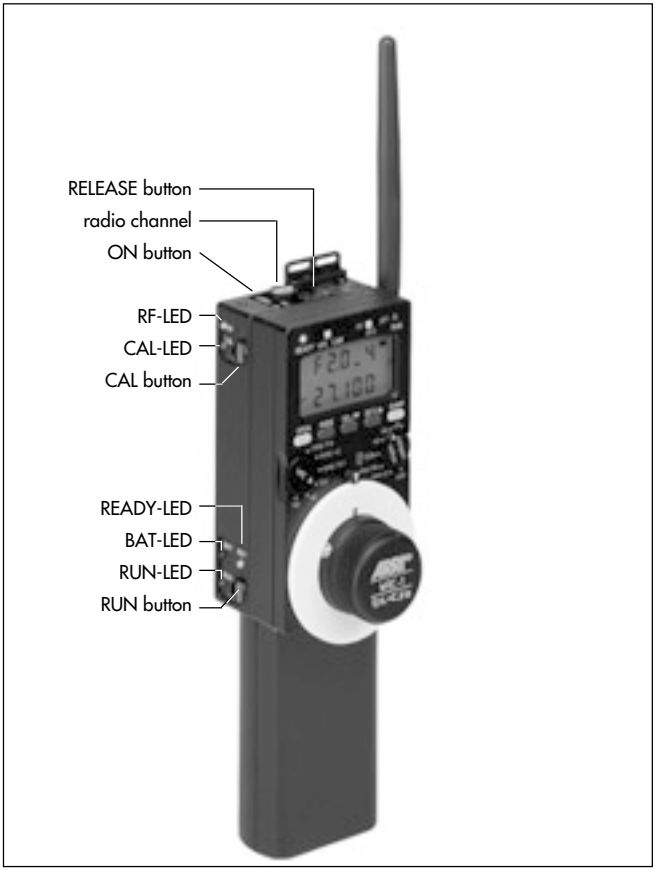
IRIS sliding switch
RUN-LED
WRC/CAM sliding switch
READY-LED
READY WRC CAM
ON OFF
IRIS
RUN
F2.0_4"
27.100
SEL button
MODE button
SET button
OPEN/PHASE button
RAMP button
OPEN
PHASE
MODE
SEL/▼
SET/▲
RAMP
WRC rotary switch
COMPENSATION rotary switch
handwheel
ARRI
WRC-1
fps,◁,Iris


RELEASE button
radio channel
ON button
RF-LED
CAL-LED
CAL button
READY-LED
BAT-LED
RUN-LED
RUN button

1. Contents

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2. Safety Instructions

- The WRC-1 has been thoroughly tested for quality of workmanship and operating functions before leaving the factory.
- To ensure optimal performance, it is essential that you acquaint yourself with this instruction manual and that you follow the operating instructions described.
- Assembly and initial operation should only be carried out by qualified personnel already familiar with the equipment and the assembly procedures!
- In wet weather the normal safety precautions for handling electrical equipment should be taken!
- Do not use solvents for cleaning!
- Do not loosen any screws which are secured with paint!
- Use only original ARRI spare parts and accessories!
- Always return the equipment to an authorised dealer for repairs!

Explanation of the Symbols in this Instruction Manual

➪ **photo** indicates objects which are shown in the photographs or drawings.

- Warnings:

Caution! – means danger of injury
Injury to the user possible
Warning! – means damage to the equipment possible.

Note: Supplementary instructions, or improper use is possible.

Product specifications

When ordering parts or accessories, or if any questions should arise, please advise your type of product and serial number.

3. Introduction

The Wireless Remote Control WRC-1 is a handy remote control unit for use with all of the latest generation of ARRIFLEX camera models: ARRIFLEX 16SR 3/Advanced, 16SR 3 HS/Advanced, 535, 535B, 435, 435ES

It enables the user to remotely control:
- the camera speed,
- the shutter angle of the mirror shutter, and
- the aperture of the lens (iris),

providing a wide range of compensation options for constant exposure.

The range of functions offered by the WRC-1 is automatically adapted to the limits of the camera and the lens control motor to which it is connected. The large handwheel permits sensitive adjustment of operational values, and easy programming of end-stops for user-defined minimum and maximum values.

The illuminated LCD provides quick, precise and comprehensive information about all the settings, the status of the camera and the WRC-1, including all warnings.

The WRC-1 is the perfect addition to the ARRI Wireless Lens Control System. Connected to the Wireless Main Unit WMU-1 of the Wireless LCS it enables all functions to be remotely controlled. The WRC-1 can also be connected to the camera via cable using the Wireless Handgrip Attachment WHA-1 of the Wireless LCS system. However, the lens remote-control functions are not available in this mode.

3.1 Some typical applications

Exposure compensation

Differences in exposure, such as occur when moving from outdoor to indoor in one take, can be easily, accurately and repeatedly compensated for using the WRC-1.
A user defined program, which can be repeatedly activated, is used to control either the iris or the shutter angle of the mirror shutter – in this case the visible depth of field of the image does not change.

Altering the depth of field

Intentional adjustment of the depth of field at a constant camera speed is another option available with the WRC-1. In this case the mirror shutter angle is adjusted, using the WRC-1, and the resulting difference in exposure is automatically compensated with the iris of the lens.

Speed ramps

Altering the camera speed also changes the film exposure time. In order to hold the film exposure constant when changing the camera speed, either the shutter angle of the mirror shutter or the aperture of the lens must be adjusted accordingly. The WRC-1 allows the camera speed to be changed while simultaneously retaining a constant exposure. Several different compensation methods can be selected. Example: the camera ramps up from 24 fps to 48 fps. Two compensation options are available:

Compensation	fps	Shutter Angle	Aperture	Result
None	24	180	5.6	OK
	48	180	5.6	1 T-stop under-exposed
Shutter Angle	24	90	5.6	OK
	48	180	5.6	OK
Aperture	24	180	5.6	OK
	48	180	4	OK

The required compensation type can be simply selected using the COMPENSATION rotary switch on the WRC-1.

The camera speed can either be adjusted using the handwheel, or it can be pre-set by programming a speed ramp, which is activated by pressing the RAMP button.

Note: Adjusting the iris alters the depth of field. Adjusting the shutter angle, on the other hand, does not alter the depth of field. A small shutter angle and a rapid camera movement, or fast-moving objects, may result in stroboscopic effects.

Adjusting the shutter angle when using HMI light may result in inconsistent film exposure.

3.2 Functions

The WRC/CAM sliding switch is used to select the operating mode ➪ **photo**.

3.2.1 CAM mode

In CAM mode, the operator can access the same settings and modes that are directly available on the camera itself. The display on the WRC-1 shows the same information as the camera display.

The MODE, SEL, SET and RAMP buttons have the same functions as their respective counterparts on the camera. A RUN LED is also integrated.

In the CAM mode, the OPEN button on the WRC-1 serves as the PHASE button on the camera.

In CAM mode the WRC-1 serves purely as a camera remote control unit, without any wider programming options. The handwheel, the WRC and the COMPENSATION rotary switches are without function in this operating mode.

3.2.2 WRC mode

The WRC mode offers convenient programming and easy adjusting of the camera speed, the shutter angle and the iris of the lens.

If the iris control is not activated (IRIS sliding switch 'OFF'), the OPEN button serves as the PHASE button on the camera ⇨ **photo**.

The left rotary switch (WRC) ⇨ **photo** is for selecting the parameter which is to be changed
(master value; for definition, see Glossary):

- camera speed,
- shutter angle or
- iris.

The right rotary switch (COMPENSATION) ⇨ **photo** is for setting how the change in exposure caused by the adjustment is to be compensated for
(slave values; for definition, see Glossary).

Example: the WRC rotary switch is set to fps, the COMPENSATION rotary switch is set to Iris. The camera speed is adjusted with the handwheel, while the WRC-1 automatically keeps the film exposure constant, adjusting the iris of the lens.

Depending on the chosen settings and the compensation method, different ramp times are possible. The minimum ramp time is calculated by the WRC-1.

Note: The term 'adjust' as used in this instruction manual describes each direct adjustment of a parameter using the handwheel.
Parallel to this adjustment, the WRC-1 can automatically compensate the resultant difference in exposure.

The term 'ramp' describes adjustment actions which automatically take place over a predefined period of time, i.e. these actions are not directly controlled using the handwheel. They run continuously for a predefined period of time after pressing the RAMP button. Resultant differences in exposure can also be compensated for.

3.2.2.1 Overview of the settings available with the WRC rotary switch

- fps

In the 'FPS' mode the camera speed can be adjusted by turning the handwheel. The end-stops of the handwheel can be defined by the user within the limits of the attached camera model.
(master value: camera speed)

- ramp fps

In the 'RAMP FPS' mode the camera speed is changed from one value to another over a pre-defined period time. The speed ramp is started by pressing the RAMP button.
(master value: camera speed + ramp duration)

- ◄

In the '◄' mode the mirror shutter angle can be adjusted by turning the handwheel. The end-stops of the handwheel can be defined by the user for the required shutter angle range.
(master value: mirror shutter angle)

- ramp ◄

In the 'RAMP ◄' mode the shutter angle is changed from one value to another over a pre-defined period time. The shutter angle ramp is started by pressing the RAMP button.
(master value: mirror shutter angle + ramp duration)

- Iris

In the 'IRIS' mode the iris of the lens can be adjusted by turning the handwheel. The end-stops of the handwheel can be defined by the user for the required aperture range.
(master value: iris of the lens)

- ramp Iris

In the 'RAMP IRIS' mode the iris of the lens is changed from one value to another over a pre-defined period time. The iris ramp is started by pressing the RAMP button.
(master value: iris of the lens + ramp duration)

3.2.2.2 Overview of the settings available with the COMPENSATION rotary switch

- off

In the 'OFF' position there is no exposure compensation for the programmed ramp functions or the handwheel adjustments.
(no slave values)

- Iris

In the 'IRIS' position the handwheel adjustments or the programmed ramp functions are compensated for by automatically adjusting the iris of the lens for a constant exposure.
(slave value: iris of the lens)

- ◄

In the '◄' position the handwheel adjustments or the programmed ramp functions are compensated for by automatically adjusting the mirror shutter angle for a constant exposure.
(slave value: mirror shutter angle)

- Iris / ◄ 50%

In this mode the exposure compensation is divided equally between the shutter angle of the camera and the iris of the lens.
(slave values: iris of the lens + mirror shutter angle)

- max. Iris

In this mode the change in the exposure is compensated for by the iris of the lens. If the adjustment range of the iris is not sufficient for the given end values, the remaining rest will be compensated for by the mirror shutter angle. In this case, the shutter angle proportion is evenly distributed over the entire compensation range.
(slave values: iris of the lens + possibly mirror shutter angle)

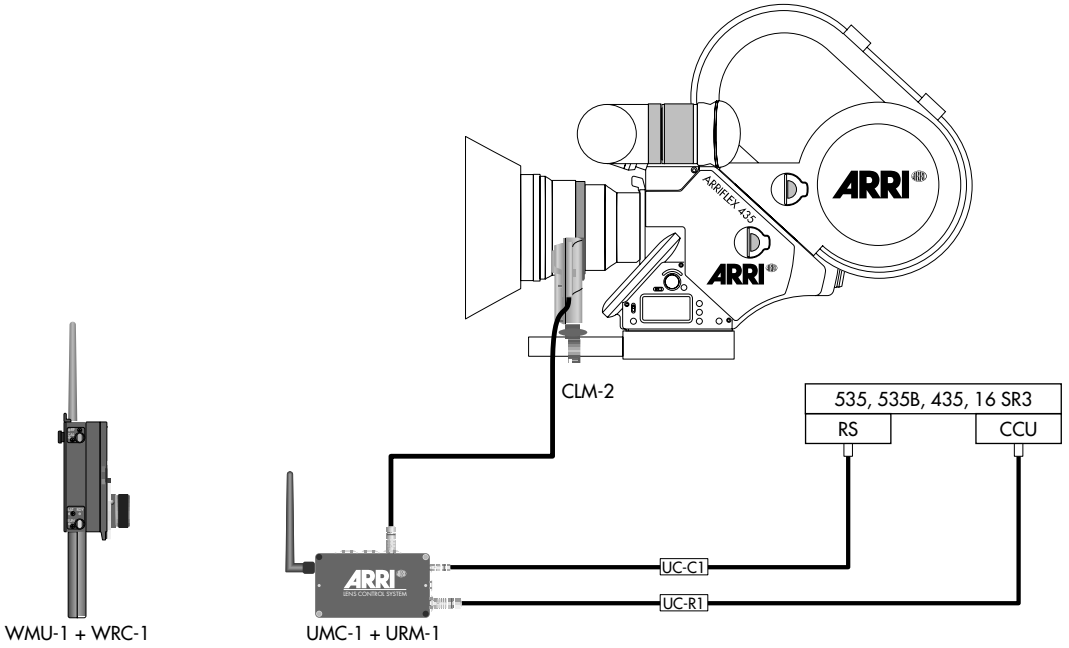
- max. ◄

In this mode the change in the exposure is compensated for by the mirror shutter angle. If the adjustment range of the shutter angle is insufficient for the given end value, the remaining rest will be compensated for by the iris of the lens. In this case, the aperture proportion is evenly distributed over the entire compensation range.
(slave value: mirror shutter angle + possibly the iris of the lens)

- user

With this function ramps can be created which do not result in constant exposure.

The iris of the lens, the shutter angle and the camera speed can be combined as required.


ARRIFLEX 435
ARRI
ARRI
CLM-2
535, 535B, 435, 16 SR3
RS
CCU
UC-C1
UC-R1
WMU-1 + WRC-1
UMC-1 + URM-1

4. Setup

4.1 WRC-1 in wireless mode

In order to be able to use the WRC-1 in wireless mode, it must be mounted on a Wireless Main Unit (WMU-1). The Wireless Main Unit supplies the WRC-1 with power and establishes the radio link with the camera.

An Universal Motor Controller (UMC-1) with an Universal Radio Module (URM-1) must be mounted on the camera. The UMC-1 and the URM-1 establish the radio link outgoing from the camera. A Lens Control Motor CLM-2 for controlling the iris can be connected to the Universal Motor Controller UMC-1.

For details about setting up the LCS components, refer also to the LCS instruction manual.

Note: In order to operate the WRC-1 the following EPROM versions must be used:

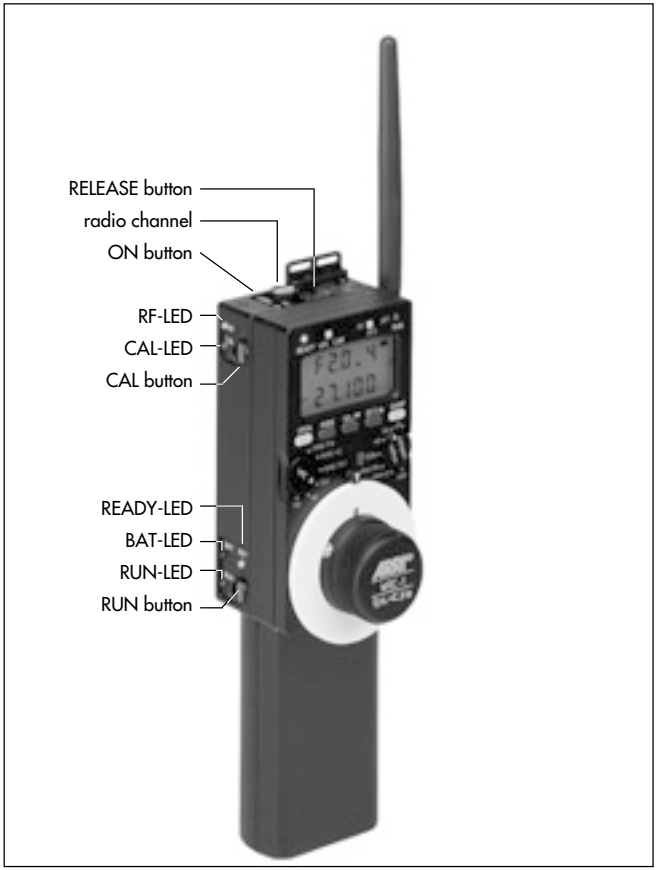
WMU-1:	01.50 or higher
UMC-1:	01.50 or higher
ARRIFLEX 435	2.4 or higher

Please contact your nearest ARRI dealer or one of the service stations to update the EPROMs or to acquire the latest software version.

Required system components:

WRC-1	K2.52087.0
WMU-1	K2.52052.0
with WBU-2 battery	K2.52088.0
WAC-1 charger	K2.52072.0
UMC-1	K2.52040.0
with UC-C1 cable [K2.52046.0 as replacement]	
dovetail adapter	K2.52080.0
URM-1	K2.52048.0
UC-R1 cable	K2.52079.0
for iris control additionally	
CLM-2	K2.52036.0
possibly with console	K2.52035.0

Note: CLM-1 motors cannot be used as iris motors for the WRC-1!



4.1.1 Mounting the WRC-1 on the Wireless Main Unit (WMU-1)

- Switch off the Wireless Main Unit WMU-1 by pressing the ON/OFF button ⇨ **photo**.
- If an operating unit is already attached, remove it by pressing the RELEASE button ⇨ **photo**.
  Swing out the unit and then remove it by pulling it upwards.
- With the wide black pin ⇨ **photo** pointing forward, insert the WRC-1 into the free space on the Wireless Main Unit WMU-1. Then press the WRC-1 onto the WMU-1 until the module audibly snaps into position.

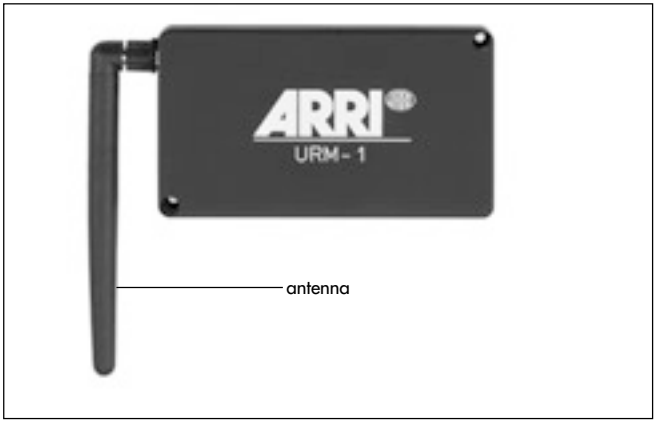
Note: The WRC-1 cannot be mounted on a WMU-1 together with other modules.

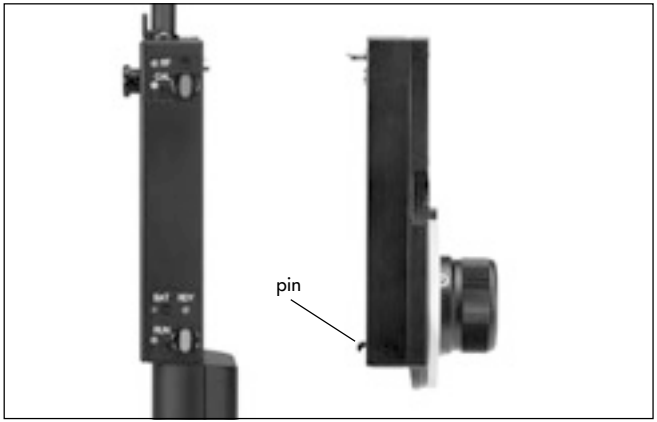
Note: Do not separate the hand control units from one another when they are switched on, as this can result in randomly set lens limits.

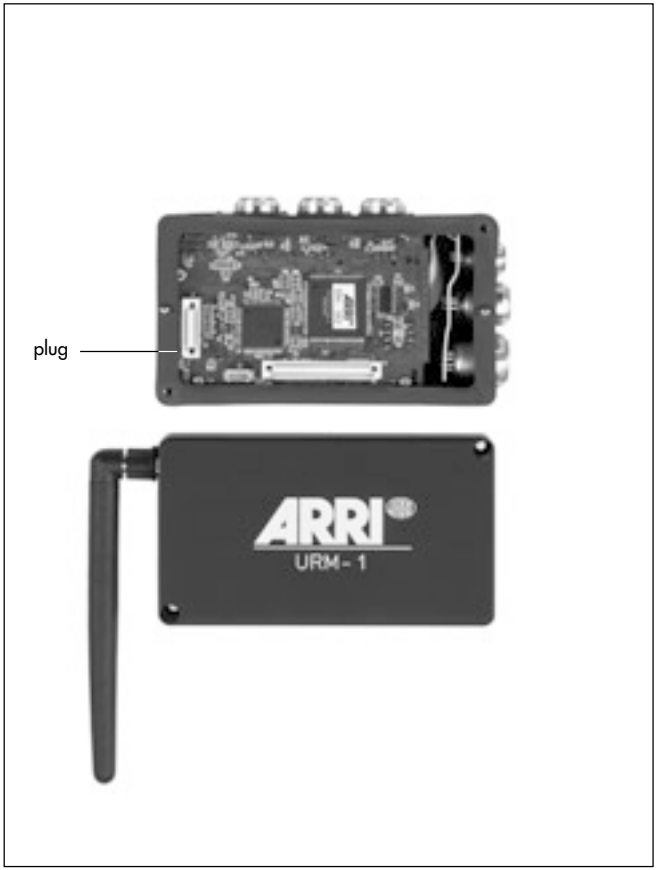
4.1.2 Attaching the UMC-1 and URM-1 to the camera

For wireless operation the UMC-1 must be equipped with an URM-1.

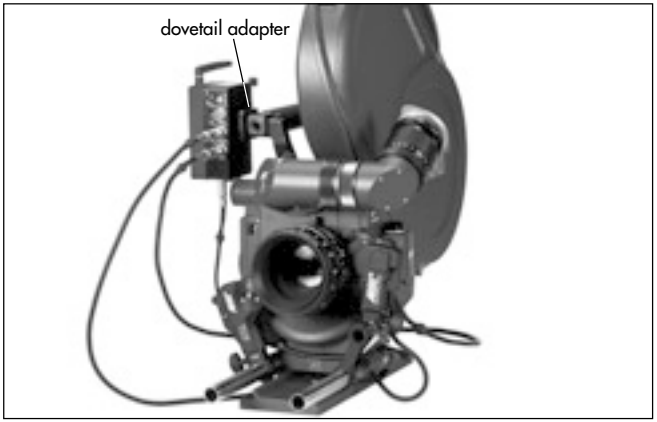
- Screw the antenna ➪ **photo** into the threaded bushing on the URM-1.
- Unscrew the two allen screws ➪ **photo** from the cover of the UMC-1 and then remove the cover.







- Place the URM-1 onto the UMC-1, align both plugs ➪ **photo** with each other and do not tilt them while attaching.
- Screw the URM-1 tight to the UMC-1 with the two allen screws.
- Attach the Universal Motor Controller UMC-1 with the URM-1 to the camera using the dovetail adapter ➪ **photo** with a 3/8" threaded bolt (K2.52080.0).
- Connect the RS socket on the camera with the RS socket on the UMC-1 using the UC-C1 cable.



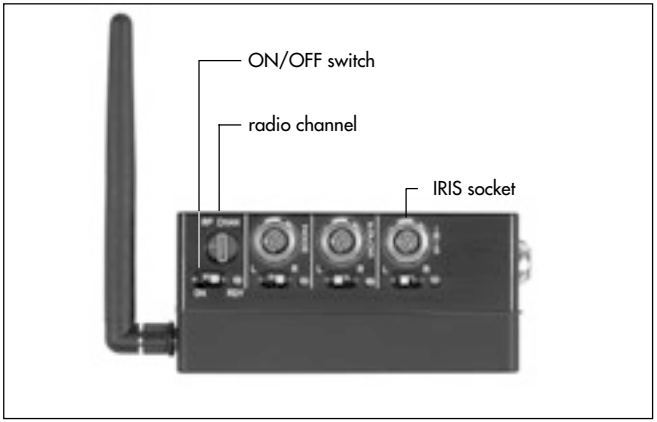
- Connect the CCU socket on the camera with the CCU socket on the UMC-1 using the UC-R1 cable.

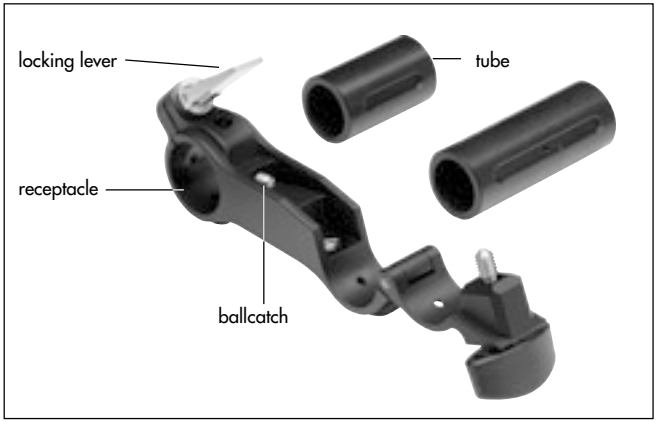
- Select the same radio channel on the UMC-1 as is set on the WMU-1 ➪ **photo** (see LCS Instruction Manual, chapter 5.1.2.1). If several lenses are to be remotely controlled independently of each other, the radio channels 0 and 5, 1 and 6, and 3 and 7 can not be used simultaneously.

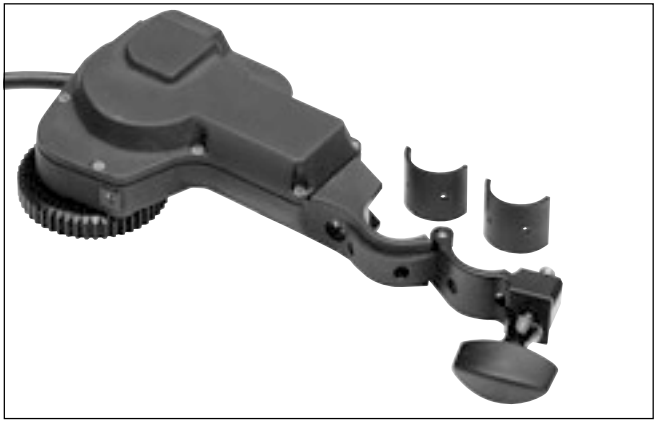
Due to local telecommunications regulations for the 2.4 GHz band only certain channels are available sometimes. Only allowed radio channels must be used.

Switch setting	Countries
0	USA, Canada, Mexico, New Zealand, Europe except France and Spain
1	USA, Canada, Mexico, New Zealand, Europe except France and Spain
2	Europe except Spain
3	USA, Canada, Mexico, New Zealand, France
4	Japan
5	Australia
6	Australia
7	Spain
8,9	see switch setting 0

- Switch on the UMC-1 using the ON/OFF switch ➪ **photo**.







Setup with Iris control

A CLM-2 motor must be mounted if the iris of the lens is to be controlled by the WRC-1.

Mounting the CLM-2 motor with/without console

Console order number: K2.52035.0

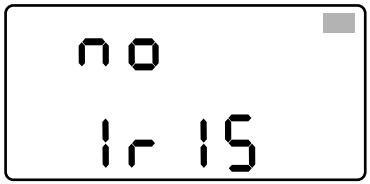
- Flip up the locking lever ➪ **photo** and screw back the ballcatch ➪ **photo** with a screwdriver until it disappears completely in the bracket.
- Push the tube ➪ **photo** flush into the console receptacle, taking care that the slit in the tube points towards the ballcatch.
- Screw the ballcatch out of the bracket until the tube can no longer be pushed out of the bracket.
- Turn the locking lever until a slight resistance can be felt, then press the lever downwards.
- Fasten the motor unit CLM-2 to the console tube.

- Fasten the console to the support rods so that the motor unit's drive gear engages with the gear of the lens ring. Ensure as little play as possible!

The motor unit CLM-2 can also be mounted directly onto the support rods without the console.

- Connect the CLM-2 motor to the iris socket of the UMC-1.

Note: All iris-related functions of the WRC-1 are not available if the CLM-2 motor is not connected. The WRC-1 then displays the 'NO IRIS' warning.



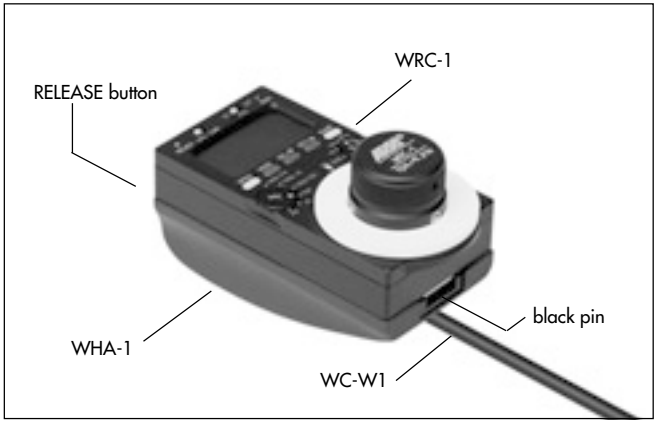
assembly with console

4.2 WRC-1 in cable mode

Connected with a cable to the camera only those fuctions of the WRC-1 are available which relate to the camera speed and the shutter angle. The iris of the lens cannot be controlled in the cable mode because the iris motor cannot be accessed.

Required system components:

WRC-1 ..... K2.52087.0
WC-W1-S cable K2.52089.0
WHA-1 ..... K2.52070.0



4.2.1 Mounting the WRC-1 on the Wireless Handgrip Attachment (WHA-1)

- If a control unit is already attached remove it by pressing the release button. Swing out the unit and then remove it by pulling it upwards.
- Insert the WRC-1 into the available free space on the WHA-1 (Wireless Handgrip Attachment) with the wide black pin pointing forward ➪ **photo**. Then press the WRC-1 onto the WHA-1 until the module audibly snaps into position.
- Connect the WHA-1 to the CCU socket of the camera using the WC-W1-S cable.

5. Operation

5.1 Operating modes

5.1.1 CAM mode

The operating elements of the WRC-1 control the same functions as the corresponding elements on the camera: MODE, SEL, SET, and the RUN LED. In CAM mode, the OPEN button corresponds to the PHASE button on the camera. The RAMP button corresponds to the PROG button on the camera. The handwheel and the WRC- and COMPENSATION rotary switches are without function in this operating mode.

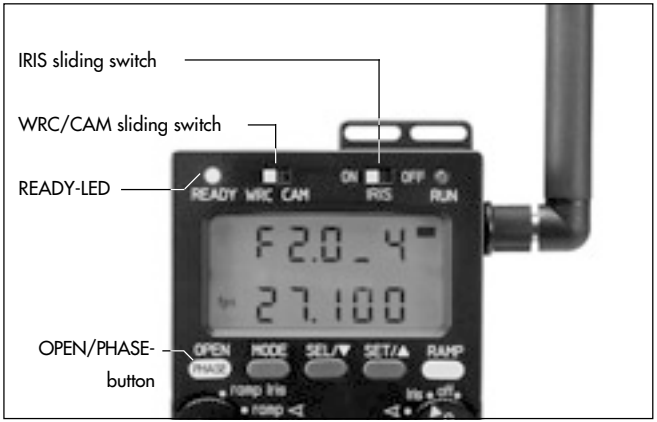
- All functions are comprehensively described in the camera instruction manuals and are not repeated.

The display of the WRC-1 shows the same information as the camera display in this operating mode.

Note: If the WRC-1 is only to be used in this operating mode, it is advisable to set the WRC/CAM sliding switch to CAM before the WRC-1 is switched on. This ensures that the set frame rate or a programmed shutter angle in the camera's PS/CCU mode and the WRC-1 in WRC mode is not unintentionally altered.
In WRC mode the WRC-1 overwrites the camera's shutter angle and speed settings (see Important instructions).
Camera programs which have been stored in the camera via the CCU or the LCC are not affected.

Forward or reverse run is set in the same way as on the camera itself.

Note: With the ARRIFLEX 535 forward or reverse run is set in the same way as on the ARRIFLEX 535B, 435, 16SR 3/Advanced.



5.1.2 WRC mode

In this mode the WRC-1 offers convenient and quick access to camera functions and additional programming options.

- Set the sliding switch on the camera from NORM to PS/CCU ➪ **photo**.
  The display of the WRC-1 flashes with the warning 'not PSCCU' until the camera's sliding switch is set to PS/CCU.

- Set the WRC/CAM sliding switch to WRC ➪ **photo**.

- The IRIS sliding switch governs whether the WRC-1 activates its control over the iris motor (IRIS 'ON'), or whether a connected iris motor is controlled by another unit (IRIS 'OFF'). This must be set before switching on the WRC-1.

If the iris control is not activated (IRIS sliding switch 'OFF'), the OPEN button serves as the PHASE button on the camera ➪ **photo**.

Forward or reverse run is set in CAM mode and in the same way as on the camera itself.

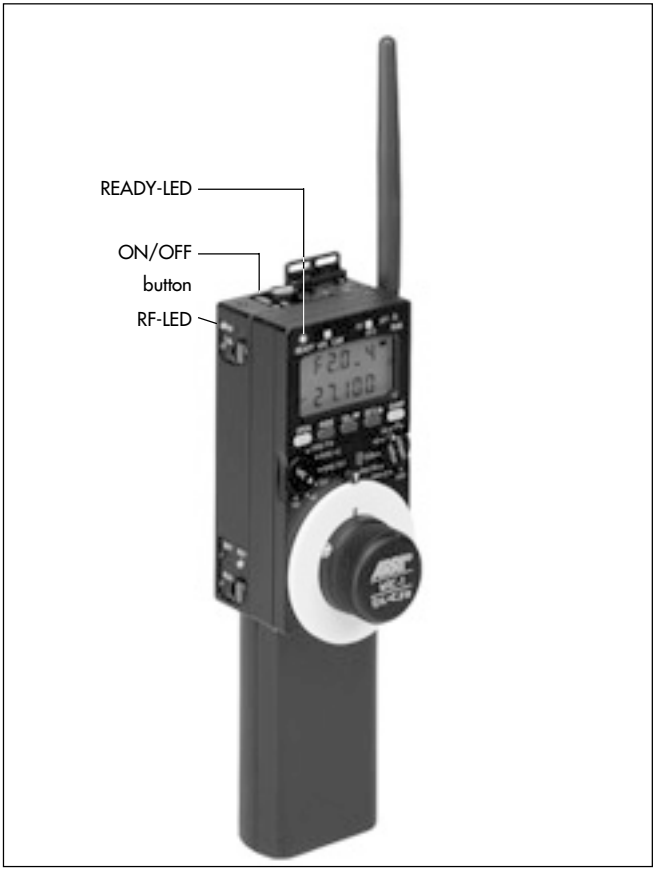
5.2 Switching on

The WRC-1 does not have its own ON/OFF switch. In wireless mode it is switched on by pressing the ON button on the Wireless Main Unit (WMU-1) ➪ **photo**. In cable mode it is supplied with power via the cable from the camera as soon as this is switched on. When in use, the background of the LCD of the WRC-1 is illuminated as long as it is active.

The READY LED of the WRC-1 ➪ **photo** changes from flashing red to a steady green once the communication has been established with the camera. The WRC-1 is now ready for use. In wireless mode the quality of the radio connection must be read from the RF LED of the Wireless Main Unit (WMU-1) ➪ **photo**.

Note: The ZMU must always be switched on first if cable and wireless units are used together.

The WRC-1 and ICU-1 may not be operated simultaneously.



5.3 Important instructions

- The WRC-1 controls
  - the camera speed,
  - the mirror shutter angle, and
  - the iris of the lens.

  All three parameters directly influence the exposure of the film. In order to avoid unwanted results, and to prevent the likelihood of incorrect use, all those parameters controlled by the WRC-1 must be set and controlled by the user. This also applies when one of these parameters is not required for the currently selected remote control: only when all three parameters have been set (speed, mirror shutter angle and the aperture) the film exposure is fully defined.
  These values are defined separately for each mode, i.e. the parameters can and must be individually set for each mode.
  Example: first of all a speed ramp is programmed and shot. Then only the shutter angle is remotely controlled for a transition from an outdoor take to an indoor take. It would not be desirable to continue using those settings that had been active at the end of the speed ramp for the next take. Instead, the values set by the user for the respective modes are active after switching over to the other mode.

- When operating in WRC mode, the speed or mirror shutter angle should not be set on the camera itself, as these are repeatedly written over by the WRC-1. The WRC-1 is an active unit and its settings have priority over those of the camera. The camera retains the last settings sent by the WRC-1 in its memory. This applies when switching from WRC mode back to CAM mode, as well as when disconnecting the WRC-1 from the camera.

- All programmed end-stops and parameters set on the WRC-1 are stored for as long as required, even when the unit has been switched off. It is therefore possible that end-stops for the handwheel had been programmed, which are not available when using this WRC-1 with another camera model (e.g. high-speed settings). The WRC-1 recognizes the connected camera model, but does not independently change the stored values. If these stored values should lie outside of the range available for the connected camera model, a warning is displayed.

In WRC mode the WRC-1 overwrites the camera-internal settings for the camera speed and the mirror shutter angle.
This can result in the following takes being incorrectly exposed if the set values are not checked. In practice this means, for instance, that the angle of the mirror shutter set by the WRC-1 is retained; this also applies when switching back from PS/CCU to NORM.
The shutter angle is not automatically reset to 180°!

- All programs set using the WRC-1 are only stored in the WRC-1 itself, and not in the camera. The RAMP function of the WRC-1 therefore is not identical with the camera's own program function. It is therfore also independent of a program which has been stored in the camera using the CCU or the LCC. These camera programs cannot be altered using the WRC-1. They can only be activated and started in CAM mode like using the operating buttons close to the camera display.

- The ZMU must always be switched on first if cable and wireless units are used together.

- The WRC-1 and ICU-1 may not be operated simultaneously.

The WRC-1 continuously sends values to the camera when adjustments are carried out using the handwheel or during ramp functions. The radio connection must therefore function perfectly, otherwise the correct exposure is not ensured. The user must check that the RF LED is always on green while the ramp function is running!

- If a warning is displayed that the compensation limit values cannot be adhered to (readings 'ANGLE RANGE', 'IRIS RANGE', 'SPEED RANGE'), while switching over the WRC or the COMPENSATION rotary switches, the end-stops or limit values are still programmed as described. The exceeded values can then be corrected in the relevant submenus.

- All warnings, such as when end-stops or limit values are exceeded, are only shown in the main menu. The submenus, on the other hand, are only used to define all relevant values.

- If exposure compensation is not possible with the set options – e.g. adjusting the iris cannot be compensated for at the same time by the iris – the WRC-1 displays the message 'NO FUNC' (no function) in the main menu.

The camera can still be run for test purposes even if the READY LED on the WRC-1 lights up red or flashes. In this case, however, the exposure may not comply with the values set in the in the WRC-1.

- In order to avoid inconstant exposure, all adjustment processes and ramps under 6 fps are started in the camera's dark phase. At these speeds, brief delays of up to 0.7 seconds at 1 fps may occur until the adjustment or the ramp is started.

- A non-linar phase is integrated into those adjustment processes and ramps which run at speeds of under 4 fps to avoid inconstant exposures. As a result the adjusted parameters do not move continuously.

- In order to operate the WRC-1 the following EPROM versions must be used:
  WMU-1: ..... 01.50 or higher
  UMC-1:..... 01.50 or higher
  ARRIFLEX 435 ..... 2.4 or higher
  Please contact your nearest ARRI dealer or one of the service stations to update the EPROMs or to acquire the latest software version.

- As the end-stops of the iris ring on the ARRIMACROS are changed with the focusing action, the ARRIMACROS may not be used with the LCS or the WRC-1 system.

5.4 Using the menus

5.4.1 Main menu

The main menu is indicated by a black bar in the top right corner of the display ➪ **photo**. The currently adjusted value and the value of one of the two possible exposure compensations are shown in the display.

If PROG is also displayed ➪ **photo**, a time-controlled ramp function (ramp Iris, ramp ∢, ramp fps) has been selected using the WRC rotary switch. In this mode the handwheel is without function in the main menu, as the ramp is started with the RAMP button. In the three other WRC rotary switch positions (fps, ∢, Iris) a parameter can be adjusted directly using the handwheel. The display shows the respective value and an automatically generated compensation value.

Note: All warnings, such as when end-stops or limit values are exceeded, are only shown in the main menu. The submenus are only used to define all relevant values.

Note: If exposure compensation is not possible with the set options – e.g. adjusting the iris cannot be compensated at the same time by the iris – the WRC-1 displays the message 'NO FUNC' (no function) in the main menu.

In the main menu limit values, end-stops for the handwheel (definition: see Glossary or 5.4.2.1 Limit values), or fixed values (definition: see Glossary or 5.4.2.2 Fixed values below) for the exposure cannot be pre-set. The main menu valid for each operating mode is explained later on with the respective mode.

- By pressing the SET button values that are currently not displayed can be checked, e.g. the current shutter angle and the camera speed can be checked in the iris main menu.

- Press the MODE button to change from the main menu to the submenus. Press the MODE button again to enter the next submenu until the main menu mode reappears.

The submenu sequence can vary according to the operating modes selected using the WRC- and COMPENSATION rotary switches.

5.4.2 Submenus

The submenus are used to define the end-stops of the handwheel and all relevant limit and fixed values.

5.4.2.1 Limit values

A so-called limit value is either the left or the right end-stop of the handwheel, or the start and end value of a time-controlled ramp.
The limit values for the master value are always defined in the first submenu.

- Defining the handwheel's end-stops:
  If a function has been selected using the WRC rotary switch which provides remote control with the handwheel (Iris, ◄‡, fps), the two values for the left and the right handwheel end-stop are defined in the first submenu.

- Defining the start and end values of a ramp:
  If a function has been selected using the WRC rotary switch which controls a program over a pre-defined period of time (ramp Iris, ramp ◄‡, ramp fps), the start and end values of the ramp are defined in the first submenu; e.g. the start and the end speed in the case of a speed ramp.

The value in the first line of the display corresponds to the left handwheel end-stop or the start value of the ramp.
The value in the second line of the display corresponds to the right handwheel end-stop or the end value of the ramp.

5.4.2.2 Fixed values

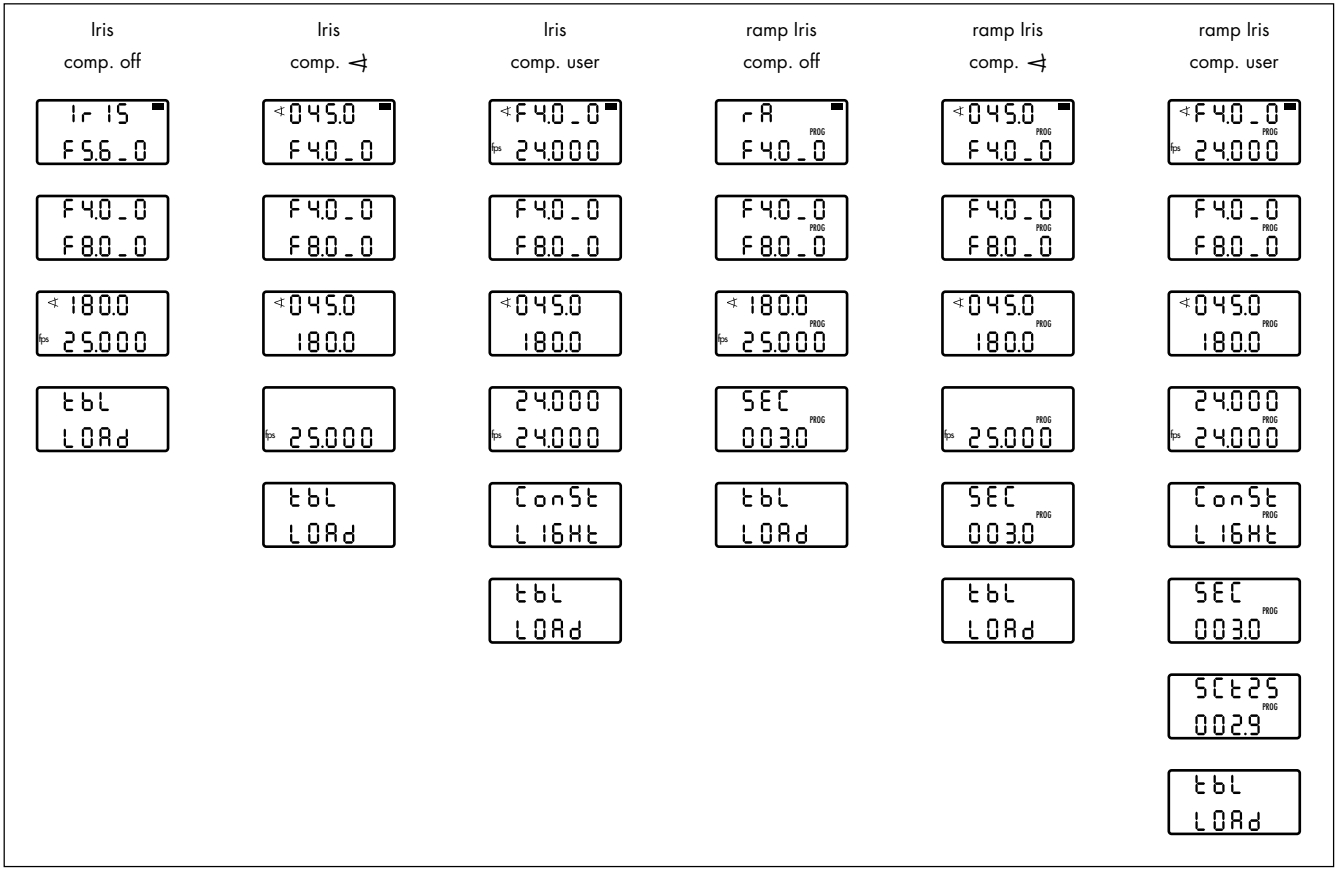
The remaining parameters for the film exposure are defined in the following submenus. Example: If the camera speed has been selected as the parameter to be adjusted, the shutter angle and the aperture of the lens must be defined in the next submenus, if they are controlled by the WRC-1. If a ramp function has been selected, the duration of the ramp must also be entered.

Note: Multiple limit values are defined if changes in exposure are automatically compensated for – example: Iris compensated with the shutter angle; the aperture of the lens alters during the adjustment (master value) and the shutter angle is adjusted automatically as a compensation. One of the two limit values for the shutter angle can be assigned; the other limit value is automatically calculated by the WRC-1. It must be ensured that the available adjustment range is not exceeded.

- Press the MODE button to change from the main menu to a submenu. Each further press of the MODE button takes the user to the next submenu, until the main menu mode reappears.
- In a submenu press the SEL button for longer than 2 seconds to activate the edit mode, in which values can be defined.
- The flashing digits can be edited using the handwheel.
- By pressing the SEL button the adjusted value is stored and the next digits are activated. After the last digit has been entered the edit mode is exited.

If only plain figures are to be adjusted, the decimal positions can easily be set to '0' by pressing the SET button. The values for the next line can then be entered.

The submenus cannot be edited while the camera is running.


Iris
comp. off
Ir IS
F5.6_0
F4.0_0
F8.0_0
180.0
25.000
tbL
LOAd
Iris
comp. ◁
045.0
F4.0_0
F4.0_0
F8.0_0
045.0
180.0
25.000
tbL
LOAd
Iris
comp. user
F4.0_0
24.000
F4.0_0
F8.0_0
045.0
180.0
24.000
24.000
ConSt
L16Ht
tbL
LOAd
ramp Iris
comp. off
rA
PROG
F4.0_0
F4.0_0
PROG
F8.0_0
PROG
180.0
25.000
PROG
SEC
003.0
PROG
tbL
LOAd
ramp Iris
comp. ◁
045.0
PROG
F4.0_0
F4.0_0
PROG
F8.0_0
045.0
PROG
180.0
PROG
25.000
SEC
003.0
PROG
tbL
LOAd
ramp Iris
comp. user
F4.0_0
PROG
24.000
F4.0_0
PROG
F8.0_0
045.0
PROG
180.0
24.000
PROG
24.000
ConSt
PROG
L16Ht
SEC
003.0
PROG
SCt25
PROG
002.9
tbL
LOAd

5.5 Controlling the iris (master value: Iris)

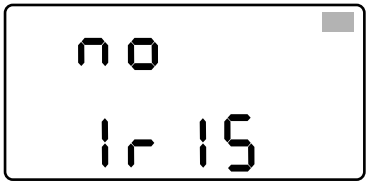
If the aperture of the lens (iris) is to be controlled by the WRC-1, a lens motor CLM-2 must be mounted on the camera and connected to the UMC-1/URM-1.

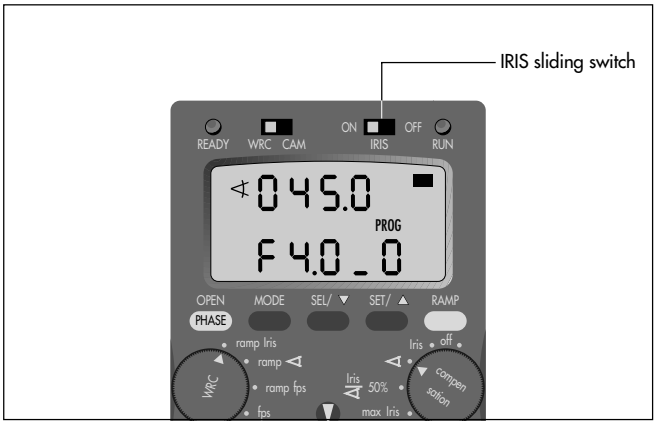
Note: The iris can only be adjusted using CLM-2 motors. If a CLM-1 motor is used the warning 'NO IRIS' is displayed.

When switching on the WRC-1, the IRIS sliding switch ➪ **photo** is used to determine whether the WRC-1 ('IRIS ON') or another unit (e.g. a WFU-1) ('IRIS OFF') controls the connected iris motor.

- The IRIS sliding switch must be set to 'ON' before turning on the WRC-1.

If the IRIS sliding switch is not set to 'ON' and an operating mode is selected, which requires an iris motor, the warning 'NO IRIS' is displayed. This warning is also displayed if the IRIS sliding switch is set to 'ON' although a CLM-2 motor has not yet been connected. In this case the CLM-2 motor must be connected to the IRIS socket on the UMC-1.

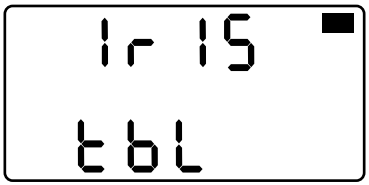




First the end-stops of the lens must be calibrated and the engraved T-stops must be assigned in the WRC-1 (as described below) for each lens being used.

As the end-stops of the iris ring on the ARRIMACROS change when the lens is focussed, the ARRIMACROS may not be used with the LCS or the WRC-1 system.

Before assigning the T-stop values and calibrating the end-stops of the iris ring of the lens, check all the motors you want to use to be firmly attached to the support rods of the bridge plate.



5.5.1 Assigning the T-stops

The adjustable T-stops (1, 1.4, 2, 2.8, 4, 5.6, etc.) must be correctly assigned in the WRC-1 to the various positions engraved on the iris ring of the lens. The iris cannot be remotely controlled until the respective positions have been assigned. This assignment is stored in the WRC-1 in a table (tbl).

- If a lens has not yet been selected and the T-stops have not yet been assigned (condition on delivery from the factory, or the active iris table has been deleted from the memory), a flashing warning appears – 'IRIS TBL' – when the WRC-1 is switched on with the IRIS sliding switch set to the position 'ON'. Press the MODE button once to enter the input mode.

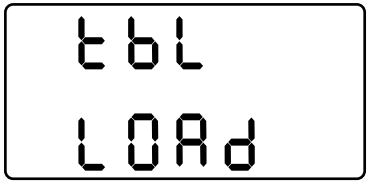
- If a lens has already been selected and T-stops have been assigned previously, the menu for programming the T-stops of the iris is always the last submenu before returning to the main menu in the WRC rotary switch position 'IRIS'.
  Press the MODE button three times in the WRC rotary switch position 'IRIS' and the COMPENSATION rotary switch at 'OFF' until 'TBL LOAD' appears on the display.

Note: Depending on the selected function and compensation, this input menu can also be found in other relevant positions by repeatedly pressing the MODE button.

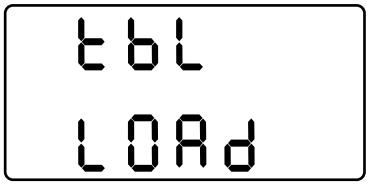
In the table submenu, it is possible to:
- load factory- and user-defined iris tables, menu option 'TBL LOAD',
- delete iris tables from the active memory (factory- or user-defined iris tables are not deleted), menu option 'TBL DEL',
- edit iris tables, menu option 'TBL EDIT', or
- store user-defined iris tables on one of the 10 available memory areas. menu option 'TBL STORE'.

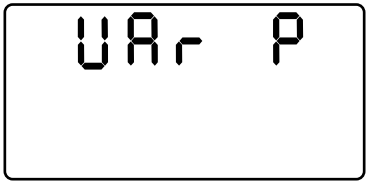
- The required function is selected using the handwheel and then activated by pressing the SEL button.

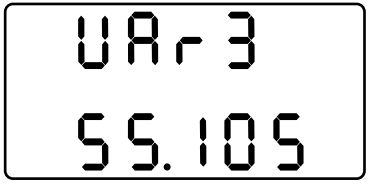
For the Zeiss Ultra Primes, the Variable Primes, the High-speed set, and the Standard set iris tables are already programmed in the WRC-1. For other lenses iris tables can be stored.
10 memory areas are available.



The values of the last lens used may still be active and stored in the WRC-1.
All settings and the active iris table should therefore always be checked in order to avoid incorrect exposures!







5.5.1.1 Loading iris tables for Zeiss Ultra Primes, Variable Primes, High-speed, Standard or user-defined lenses ('TBL LOAD')

The iris tables for the factory pre-defined lenses require that a standard gear ring is used on the lens motor (50 teeth). If other gear rings are used, the T-stop scale must be completely programmed from scratch. This also applies if a gear adapter ring is used with the lens.

The pre-defined iris tables are loaded as follows:

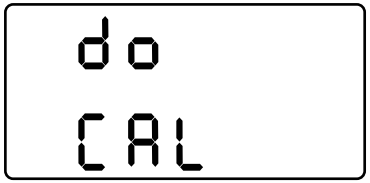
- If 'IRIS TBL' flashes on the display when the WRC-1 is switched on, the MODE button must be pressed once to enter the 'TBL LOAD' mode.
  If a lens has already been selected and the T-stops have been assigned previously, the menu for selecting the lens can be entered in the WRC rotary switch position 'IRIS' and the COMPENSATION rotary switch set to 'OFF' by pressing the MODE button three times.

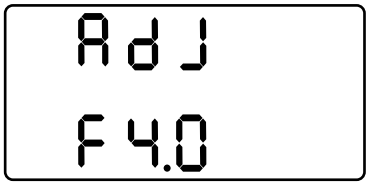
- Then press the SEL button. The lens type is shown in the first line of the display.

Pre-defined lens types are:

Display:	**Lens set:**
UP	ARRI Zeiss Ultra Primes
VAr P	ARRI Zeiss Variable Primes
HS 35	ARRI Zeiss High-speed lenses for 35mm film
Std35	ARRI Zeiss Standard lenses for 35mm film
HS 16	ARRI Zeiss High-speed lenses for 16mm film
User	lens previously defined by the user

- Select the required lens set using the handwheel. Then press the SEL button. The focal length then appears in the second line of the display.
- Select the focal length using the handwheel. Confirm the selection by pressing the SEL button.
- The display now shows the command 'DO CAL'. Start the calibration by pressing the CAL button on the WMU-1 ➪ **photo**.





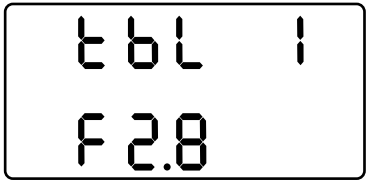
- 'ADJ' now flashes in the first line of the display.
  A T-stop value is shown in the second line.

- Adjust the iris ring to the displayed value using the handwheel.

- The T-stop is assigned by pressing the SET button.
  This is indicated in the first line with an 'I' next to 'TBL'.
  This defines the entire iris table.
  'DONE' is shown on the display for one second.

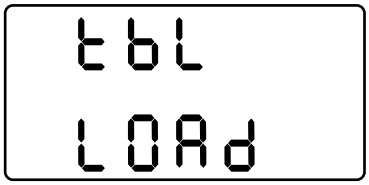
- The display then shows 'TBL' in the first line,
  and the letter 'F' and a T-stop value in the second line.
  The individual T-stops available for this lens must now be checked using the handwheel!
  An 'I' is shown in the first line of the display next to 'TBL' for every T-stop programmed for this lens.

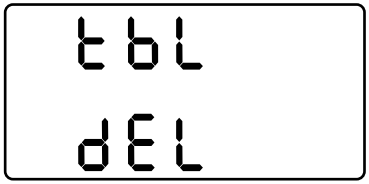
Note: Only full T-stops are accessible for checking to speed up the process in this mode.



After loading the iris table, all individual T-stops on the lens must be checked by adjusting with the handwheel in order to avoid incorrect exposures!

- Press the MODE button to go back to the table menu (TBL LOAD, TBL DEL, TBL EDIT, TBL STORE).
- To go back to the main menu press of the MODE button again.





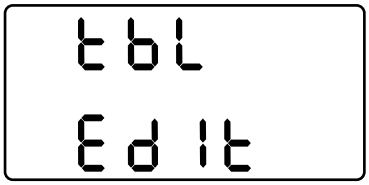
5.5.1.2 Programming an iris table for other lenses ('TBL EDIT')

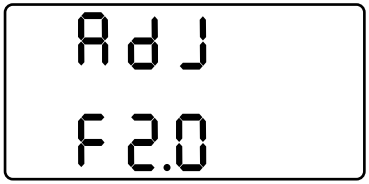
- If 'IRIS TBL' flashes on the display when the WRC-1 is switched on, the MODE button must be pressed once to enter the 'TBL LOAD' mode.
  If a lens has already been selected and the T-stops have been assigned previously, the menu for selecting the lens can be entered in the WRC rotary switch position 'IRIS' and the COMPENSATION rotary switch set to 'OFF' by pressing the MODE button three times.

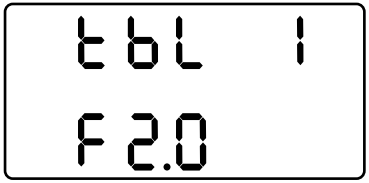
The values for the last lens used may still be stored and active in the WRC-1. All settings and the active iris table should therefore always be checked in order to avoid incorrect exposures!

- To delete an old assignement (iris table), turn the handwheel until 'DEL' is shown in the second line of the display. Then press the SEL button. 'TBL' flashes in the first line. Press the SET button to finally delete the old assignement. 'DONE' is shown on the display for one second.

- Press the CAL button on the WMU-1 to start the calibration process before entering any values.
- Turn the handwheel until 'TBL EDIT' is displayed. Press the SEL button to go to the input mode.
- Turn the handwheel to the left until the first T-stop of the iris ring of the lens being used is shown in the second line of the display.
  This must be a full T-stop from the standard T-stop range.
- Then press the SEL button. 'ADJ' now flashes in the first line of the display.
- Adjust the iris ring of the lens to the displayed value using the handwheel.
- The T-stop is assigned by pressing the SET button. This is indicated in the first line with an 'I' next to 'TBL'.
- In case you need to delete this assignment, press the SET button again. The 'I' next to 'TBL' disappears again.
- Turn the handwheel until the next T-stop on the iris ring of the lens being used is shown on the display. Assign this and the next T-stops as described above.







Note: If the T-stop scale of the lens being used is linear, it is sufficient to enter just two T-stops, which must be at least four T-stops apart, in order to define the iris table. If the T-stop scale is not linear, all the T-stops must be assigned individually.

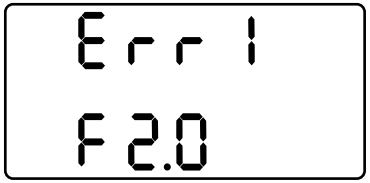
After programming the iris table, all individual T-stops on the lens must be checked by adjusting with the handwheel in order to avoid incorrect exposures!

Note: If the lens has a CLOSE position, this must also be defined, as the iris table only applies up to the last value before the CLOSE position! When assigning, the CLOSE position is programmed after the highest possible T-stop setting.

Note: For compensating the exposure, only the range between full T-stops may be used! Example: the iris scale of the lens reaches from T2.2 to 22. The values for T4 and T16 are assigned. The resulting usable range reaches from T2.8 to T22, as T2.2 is not a T-stop from the standard T-stop range (T2.0).

Note: If a T-stop value has been assigned which cannot be correct, a warning is displayed; e.g. T-stop 11 cannot lie between 5.6 and 8. The incorrectly positioned value must be deleted.

If the iris table should remain available after using another lens, it must be stored as described below. This also applies when an iris table has been re-edited.

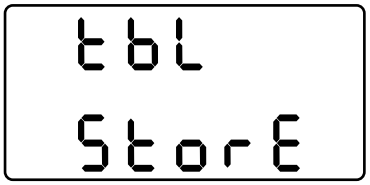


5.5.1.3 Storing an iris table ('TBL STORE')

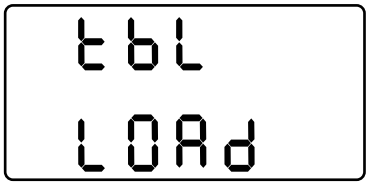
After assigning the T-stops the resulting iris table can be stored for later use.

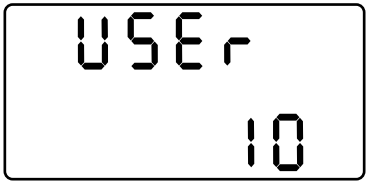
- Press the MODE button in the submenu for assigning the T-stops to go back to the table menu (TBL LOAD, TBL DEL, TBL EDIT, TBL STORE).
- Turn the handwheel until 'STORE' is shown in the second line.
- Press the SEL button. 'STORE' is displayed in the first line, and the number of the memory area is shown in the second line.
- Select the number of the required memory area using the handwheel. 10 memory areas are available.

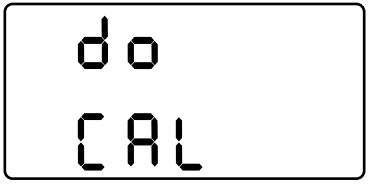
When storing, existing table data in this memory area are overwritten without warning!



- The iris table is stored by pressing the SEL button. 'DONE' is displayed for one second.
- Note down the number of the memory area together with the programmed lens to simplify activating lenses at a later time.







5.5.1.4 Loading a user-defined iris table ('TBL LOAD')

- If 'IRIS TBL' flashes on the display when the WRC-1 is switched on, the MODE button must be pressed once to enter the 'TBL LOAD' mode.
  If a lens has already been selected and the T-stops have been assigned previously, the menu for selecting the lens can be entered in the WRC rotary switch position 'IRIS' and the COMPENSATION rotary switch set to 'OFF' by pressing the MODE button three times.

- Turn the handwheel until 'LOAD' is displayed in the second line; confirm the selection by pressing the SEL button.

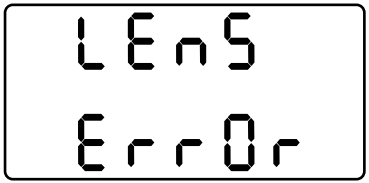
- Select 'USER' with the handwheel. Then press the SEL button. The required memory area can be selected in the second line using the handwheel (see Chapter 5.5.1.2 Storing an iris table, directly preceding this chapter).

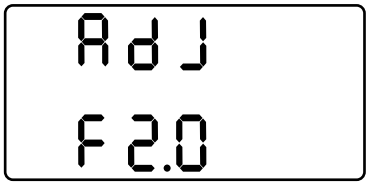
- Confirm the selection by pressing the SEL button.

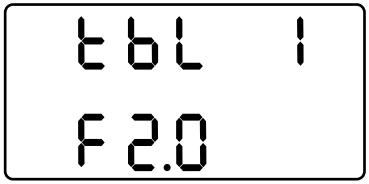
- The display now shows the command 'DO CAL'. Start the calibration process by pressing the CAL button on the WMU-1.

The WRC-1 is not able to check whether the selected user-defined iris table is actually compatible with the lens being used. An error message can only be displayed if the iris motor reaches the end-stops of the lens during calibration, and these had been positioned elsewhere while the lens was being programmed.

- If the wrong iris table has been unintentionally selected (e.g. by choosing the wrong memory area), and the iris motor strikes unexpected end-stops during the calibration process, the warning 'LENS ERROR' is displayed. Press the SEL or SET button to go to the mode for assigning the T-stops. The current T-stops can be reassigned.







- If the lens has been successfully calibrated, 'ADJ' flashes in the first line of the display.
  A T-stop value is shown in the second line.

- Adjust the iris ring of the lens to the displayed value using the handwheel.

- The T-stop is assigned by pressing the SET button.
  This is indicated in the first line with an 'I' next to 'TBL'.
  This defines the entire iris table. 'DONE' is displayed for one second.

- The display then shows 'TBL' in the first line,
  and the letter 'F' and a T-stop value in the second line.
  All individual T-stops must be checked by adjusting with the handwheel! An 'I' is shown in the first line of the display next to 'TBL' for every T-stop assigned for this lens.

After loading the iris table, all individual T-stops on the lens must be checked by adjusting with the handwheel in order to avoid incorrect exposures!

- Press the MODE button to go back to the table menu (TBL LOAD, TBL DEL, TBL EDIT, TBL STORE). To go back to the main menu press of the MODE button again.

Note: If a previously programmed iris table is re-edited, the corresponding table must first be loaded from its memory area as described above. The handwheel must then be turned in the table menu (TBL LOAD, TBL DEL, TBL EDIT, TBL STORE) until 'EDIT' is displayed in the second line. Confirm with the SEL button to return to the edit mode for this table.

5.5.1.5 Important instructions for programming the iris of the lens

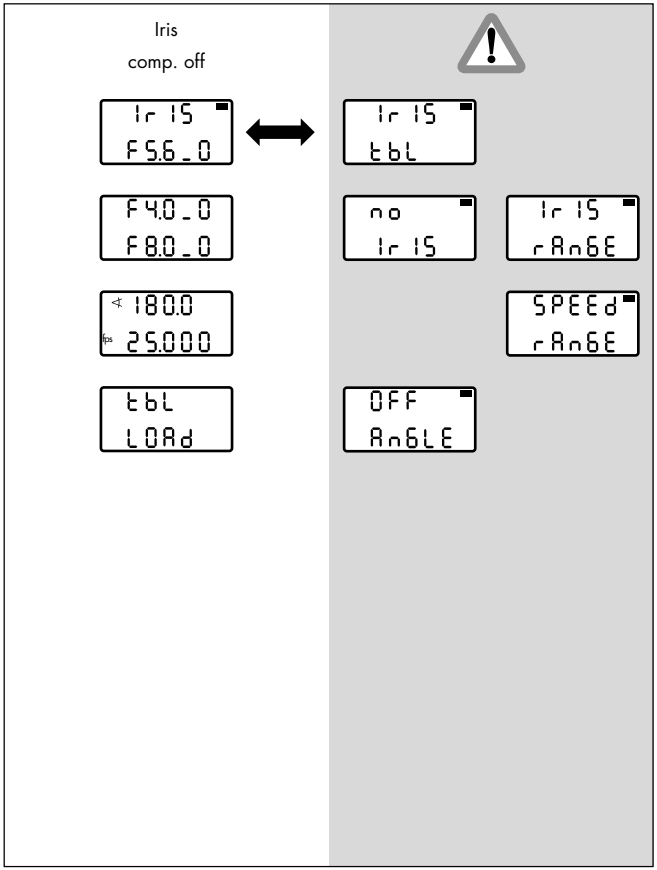
- If the lens has a CLOSE position, this must also be defined, as the iris table only applies up to the last value before the CLOSE position! When assigning, the CLOSE position is programmed after the highest possible T-stop setting.

- If the T-stop scale of the lens being used is linear, it is sufficient to enter just two T-stops, which must be at least four T-stops apart, in order to define the iris table. If the T-stop scale is not linear, all the T-stops must be assigned individually.

- For compensating the exposure, only the range between full T-stops may be used! Example: the iris scale of the lens reaches from T2.2 to 22. The values for T4 and T16 are assigned. The resulting usable range rechaes from T2.8 to T22, as T2.2 is not a T-stop from the standard T-stop range (this would be T2.0, for example).

- The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

- To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.



5.5.2 Iris / compensation off

The iris can be manually adjusted within the pre-defined end-stops of the handwheel.

Differences in exposure are not automatically compensated for.

The main menu shows 'IRIS' in the first display line, and the currently adjusted T-stop in the second line.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the

selected speed cannot be attained with this camera). Correct parameters must be set before the camera is started!

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings. The OPEN button is without function while the camera is running.

By pressing the SET button the currently set shutter angle (if controlled by the WRC-1) can be shown in the first display line. The currently set camera speed is shown in the second display line.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

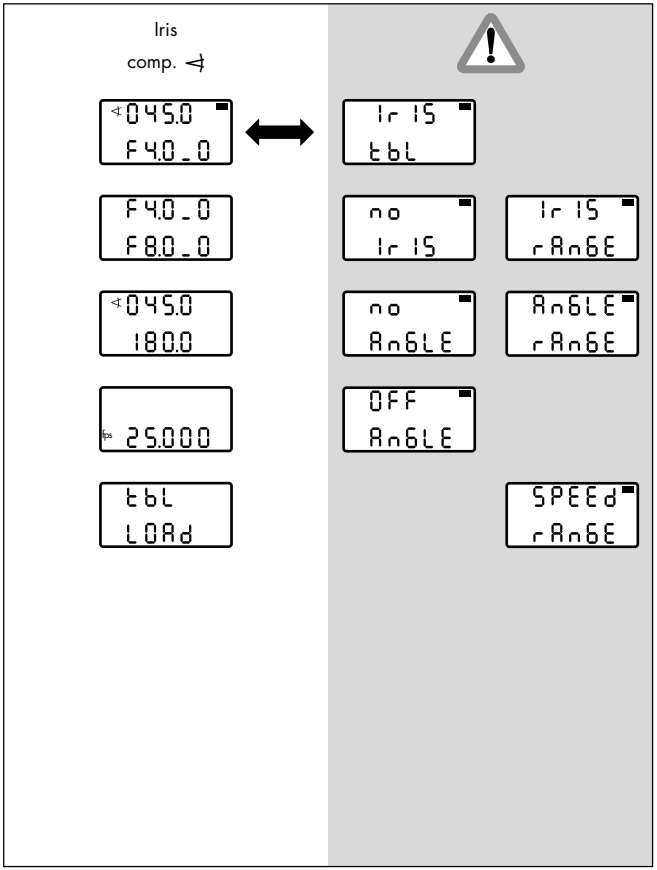
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The left and right end-stop for the handwheel (minimum and maximum aperture) can be defined. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds. The T-stop value in the first display line flashes. The required value can now be adjusted using the handwheel.
Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
To define the fixed values for the mirror shutter angle (if controlled by the WRC-1), and the camera speed, use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to enter the next submenu. The table menu has already been described under 5.5.1.
- Press the MODE button to go back to the main menu.



5.5.3 Iris / compensation shutter angle

The iris can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Iris).
The exposure is automatically compensated for with the mirror shutter angle. The visible depth of field can be altered with this function.

The first line of the main menu shows the shutter angle, which is automatically calculated within the pre-defined limits. The second line shows the currently adjusted T-stop of the lens using the handwheel.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

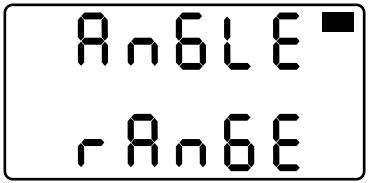
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (examples: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected. The connected camera does not have an electronically adjustable mirror shutter);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed cannot be attained with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button.
The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

By pressing the SET button the currently set camera speed can be shown in the second display line.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.



- Press the MODE button in the main menu to enter the first submenu. The left and right end-stop of the handwheel (minimum and maximum aperture) can be defined. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds. The T-stop value in the first display line flashes. The required value can now be adjusted using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

If the compensation range available with the shutter angle is exceeded, the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The settings for the iris or the shutter angle must be corrected accordingly! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

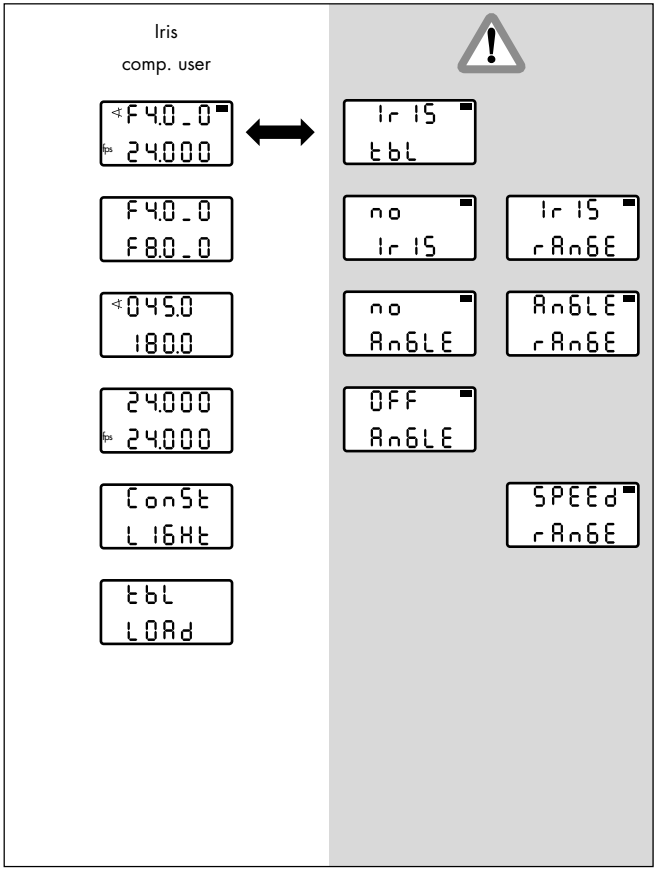
- Press the MODE button to go to the next submenu.
  The limit values for the shutter angle can be defined:
  The shutter angle is automatically adjusted to compensate the exposure while the iris is adjusted with the handwheel. One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the iris) can be defined; the other limit value is automatically calculated by the WRC-1.

- Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the first digits flash in the first or second display line.
  These can now be adjusted using the handwheel.
  The automatically calculated other limit value is shown in the other display line.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0', by pressing the SET button.
  The minimum shutter angle corresponds to the selected maximum aperture (smallest T-stop number).

- Press the MODE button to go to the next submenu.
  The fixed value for the camera speed is defined using the SEL and SET buttons and the handwheel.

- Press the MODE button to enter the next submenu. The table menu has already been described under 5.5.1.

- Press the MODE button to go back to the main menu.



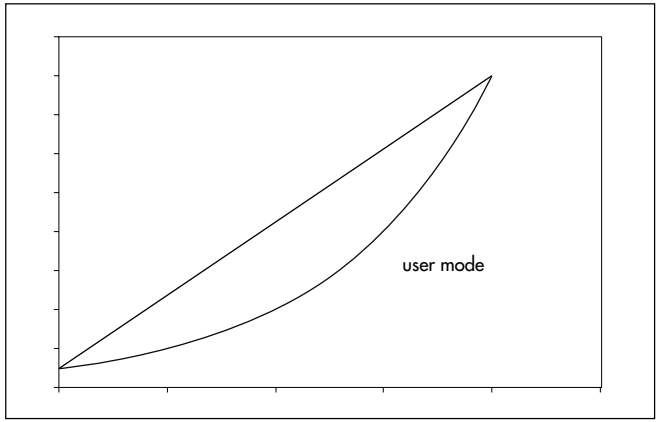
5.5.4 Iris / compensation user

Using the handwheel, the iris can be manually adjusted within the user-defined end-stops, simultaneously together with the values for the shutter angle and the camera speed. If appropriate values are selected, either the exposure can be kept at a constant level, or an adjustment process can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◅ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel. If a ramp function is selected (ramp Iris, ramp ◅ or ramp fps), a ramp duration can be defined. In this case the handwheel is without function in the main menu.

Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.



The main menu shows the symbol '◄' in the first display line for adjusting the shutter angle (if controlled by the WRC-1) and the currently adjusted T-stop (if controlled by the WRC-1). By pressing the SET button the currently adjusted mirror shutter angle can be shown in the first line of the display. The current camera speed is displayed in the second line. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed cannot be attained with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

By pressing the SET button the currently adjusted shutter angle (if controlled by the WRC-1) can be shown in the first display line.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The left and right end-stop for the hand-wheel (minimum and maximum aperture) can be defined. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
The T-stop value in the first display line flashes.
The required value can now be adjusted using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
The values in the second display line can be set accordingly.

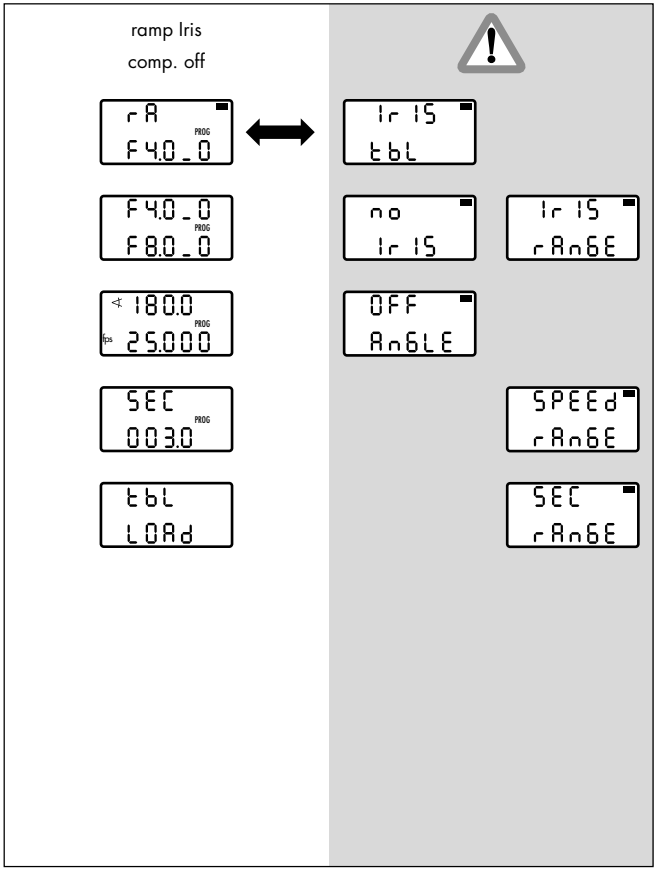
- Press the MODE button to go to the next submenu.
To define the values for the minimum and maximum shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the MODE button to go to the next submenu. To define the values for the minimum and maximum camera speed, use the SEL and SET buttons and the handwheel. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered while the handwheel is adjusted.

- Press the MODE button to go to the next submenu. The table menu has already been described under 5.5.1.

- Press the MODE button to go back to the main menu.



5.5.5 Ramp iris / compensation off

The iris of the lens is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button (ramp, definition see Glossary).

Differences in exposure are not automatically compensated for.

The main menu shows 'RA' in the first line to indicate the ramp function, and the currently adjusted T-stop of the lens in the second line.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the

iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

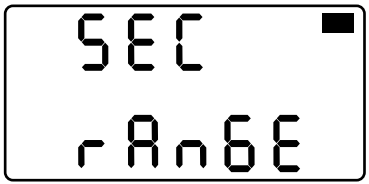
By pressing the SET button the currently set shutter angle (if controlled by the WRC-1) can be displayed in the first display line, the currently set camera speed is shown in the second display line.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum aperture of the lens can be defined.
  The first display line shows the start value of the aperture, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The T-stop value in the first display line flashes.
  The required value can now be adjusted using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.



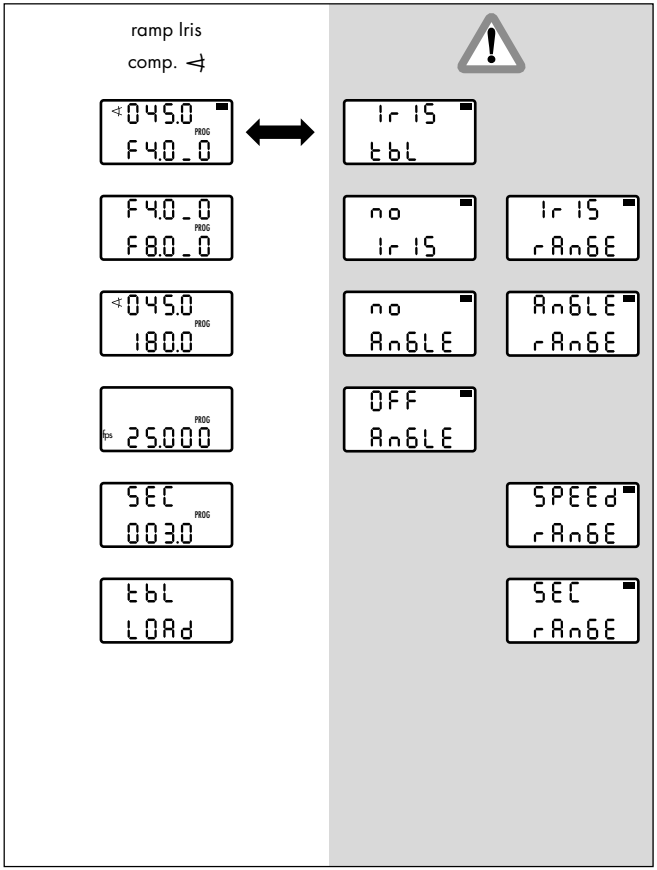
- Press the MODE button to go to the next submenu.
  To define the fixed values for the mirror shutter angle (if controlled by the WRC-1) and the camera speed, use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to go to the next submenu.
  To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The table menu has already been described under 5.5.1.
- Press the MODE button to go back to the main menu.



5.5.6 Ramp iris / compensation shutter angle

The iris of the lens is continuously adjusted within the pre-set limit values (master value: Iris) over a pre-defined period of time after pressing the RAMP button (ramp, definition see Glossary).
The mirror shutter angle is automatically adjusted by the WRC-1 within the pre-defined limit values, to compensate the exposure.
The visible depth of field can be altered with this function.

In the main menu the automatically calculated shutter angle is shown in the first display line, and the current T-stop is shown in the second line.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

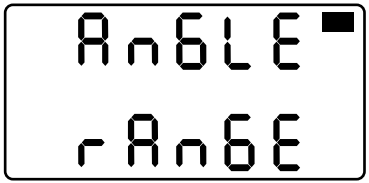
By pressing the SET button the currently set camera speed can be shown in the second display line.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum aperture can be defined.
  The first display line shows the start value of the aperture, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds. The T-stop value in the first display line flashes. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

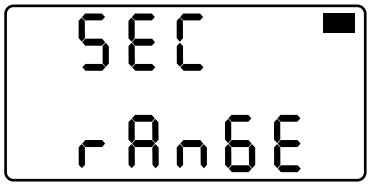


If the compensation range available with the shutter angle is exceeded, the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The settings for the iris or the shutter angle must be corrected accordingly! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu.
  The limit values for the shutter angle can be defined.
  The shutter angle is automatically adjusted by the WRC-1 to compensate the exposure, while the iris is being adjusted. One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the iris) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds. Depending on the definable limit value, the first digits flash in the first or second display line. These can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line.
  Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is automatically set to '0', by pressing the SET button.
  The minimum shutter angle corresponds to the selected full aperture (smallest T-stop number).

- Press the MODE button to go to the next submenu. The fixed value for the camera speed is defined using the SEL and SET buttons and the handwheel.

- Press the MODE button to go to the next submenu. To enter the the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

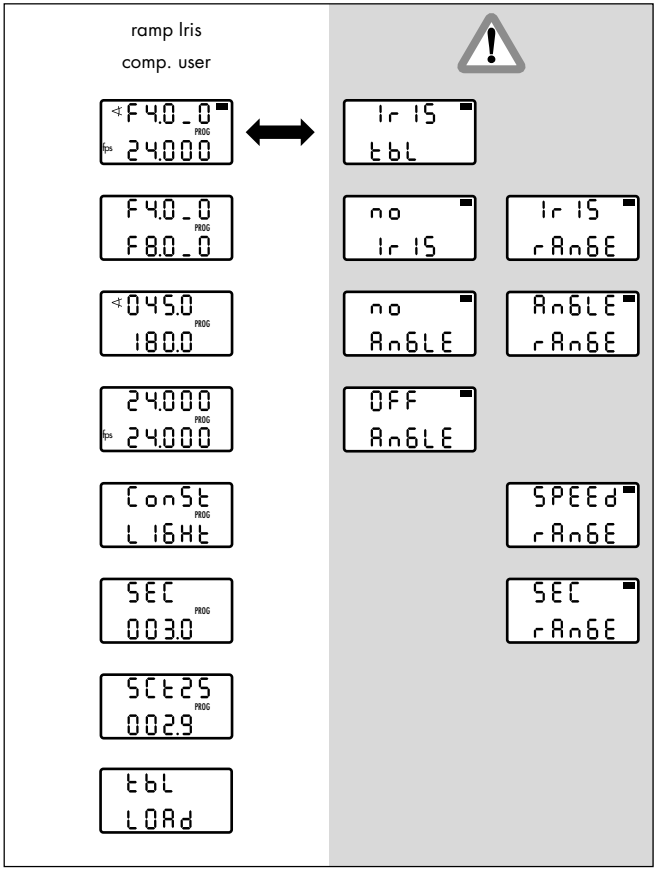


A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The table menu has already been described under 5.5.1.

- Press the MODE button to go back to the main menu.



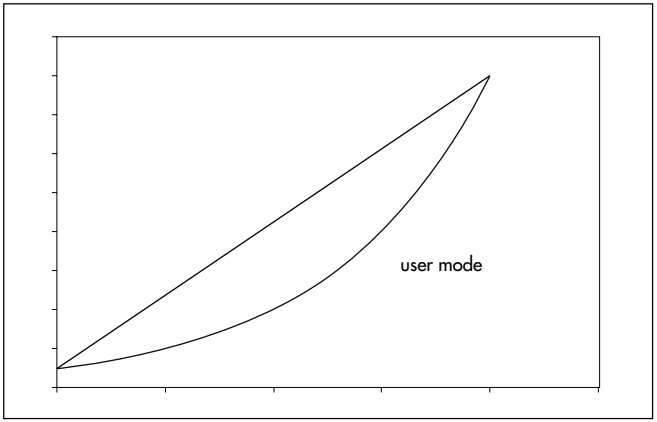
5.5.7 Ramp iris / compensation user

The iris of the lens is continuously adjusted, together with the shutter angle (if controlled by the WRC-1) and the camera speed, within the freely definable limits over a pre-defined period of time after pressing the RAMP button in the camera run.
If appropriate values are selected, either the exposure can be kept at a constant level, or a ramp can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◅ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel.
If a ramp function is selected (ramp Iris, ramp ◅ or ramp fps), a ramp duration can be defined. The ramp is started while the camera is running by pressing the RAMP button. In this case the handwheel is without function in the main menu.

Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.



The main menu shows the symbol '◄' in the first line of the display for adjusting the shutter angle (if controlled by the WRC-1) and the currently adjusted T-stop. The currently adjusted mirror shutter angle (if controlled by the WRC-1) can be shown in the first display line by pressing the SET button. The currently adjusted camera speed is displayed in the second line.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

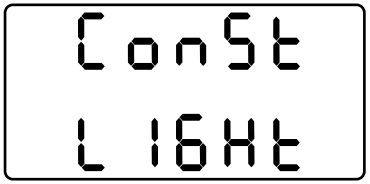
- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum aperture can be defined.
  The first display line shows the start value of the aperture, and the second line the value at the end of the ramp.

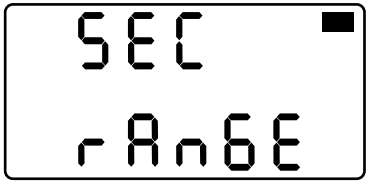
- Press the SEL button for longer than 2 seconds.
  The T-stop value in the first display line flashes. The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  The first display line shows the start value of the shutter angle, and the second line the value at the end of the ramp.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum camera speed, use the SEL and SET buttons and the handwheel.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered during the ramp.





- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

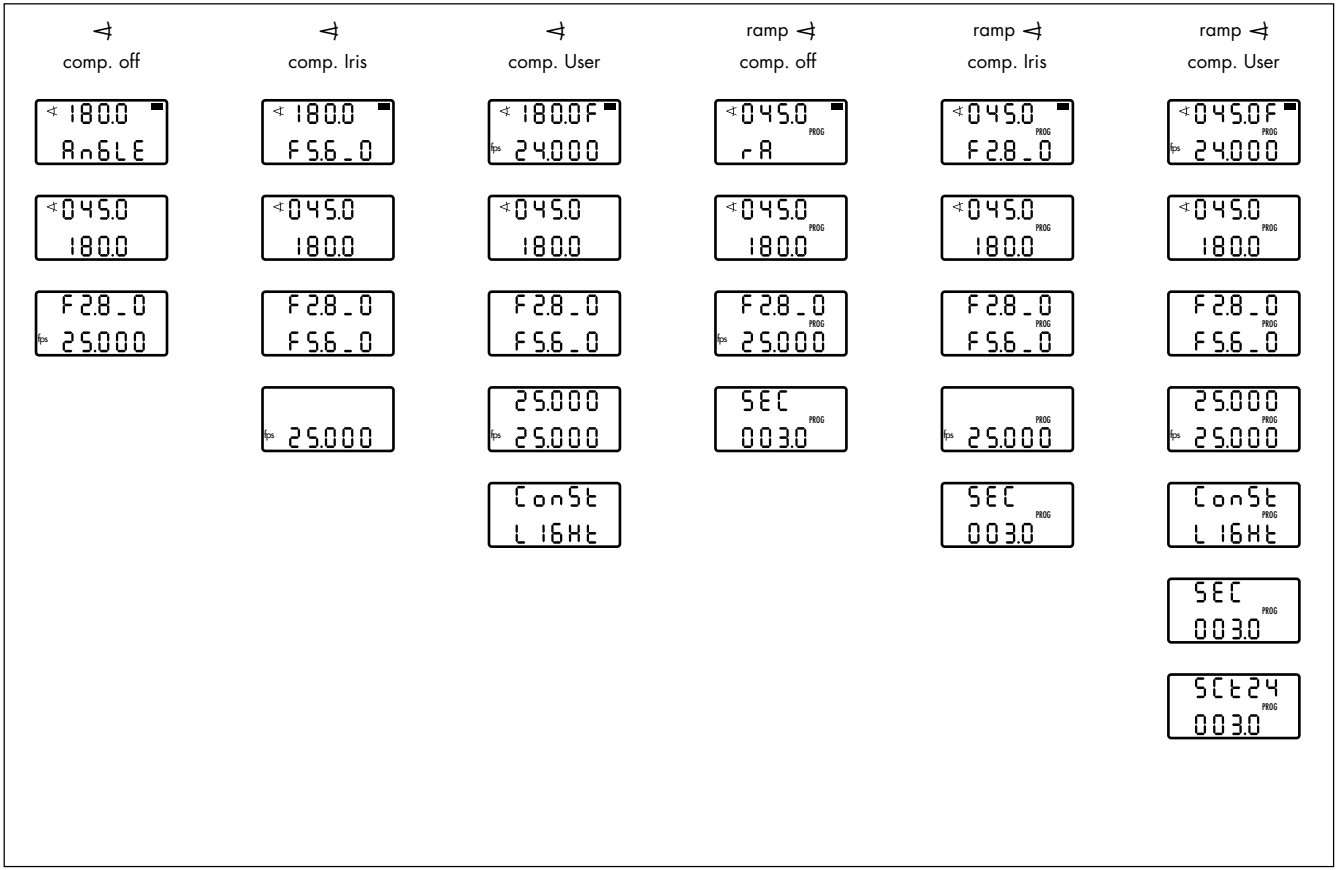
Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

Note: While the ramp duration is being set, the display shows the automatically calculated screen time in the first display line, which corresponds to the selected projection speed (see the next two bullet points).

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

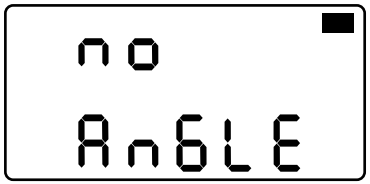
- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.

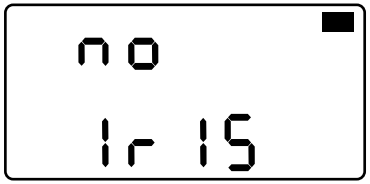

comp. off
180.0
AnGLE
045.0
180.0
F2.8_0
fps 25.000
comp. Iris
180.0
F5.6_0
045.0
180.0
F2.8_0
F5.6_0
fps 25.000
comp. User
180.0F
fps 24.000
045.0
180.0
F2.8_0
F5.6_0
25.000
fps 25.000
ConSt
LIGHt
ramp comp. off
045.0
PROG
rA
045.0
PROG
180.0
F2.8_0
PROG
fps 25.000
SEC
PROG
003.0
ramp comp. Iris
045.0
PROG
F2.8_0
045.0
PROG
180.0
F2.8_0
PROG
F5.6_0
PROG
fps 25.000
SEC
PROG
003.0
ramp comp. User
045.0F
PROG
fps 24.000
045.0
PROG
180.0
F2.8_0
PROG
F5.6_0
25.000
PROG
fps 25.000
ConSt
PROG
LIGHt
SEC
PROG
003.0
SCt24
PROG
003.0

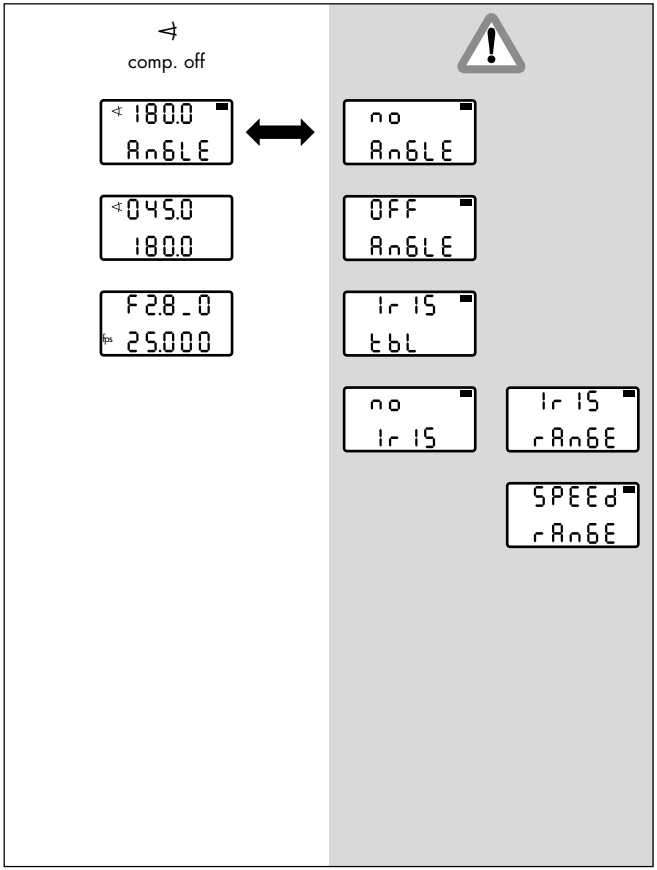
5.6 Controlling the mirror shutter angle

For cameras without an electronically adjustable mirror shutter, the warning 'NO ANGLE' is displayed in the main menu when selecting a function for the shutter angle. The READY LED flashes green.



If the iris of the lens is not controlled by the WRC-1, the warning 'NO IRIS' appears in the main menu when selecting a WRC function or compensation which requires the iris ring to be controlled.





5.6.1 Shutter angle / compensation off

The mirror shutter angle can be manually adjusted within the pre-defined end-stops of the handwheel.

Differences in exposure are not automatically compensated for.

The main menu shows the currently adjusted mirror shutter angle in the first display line, and 'ANGLE' in the second line.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is

set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

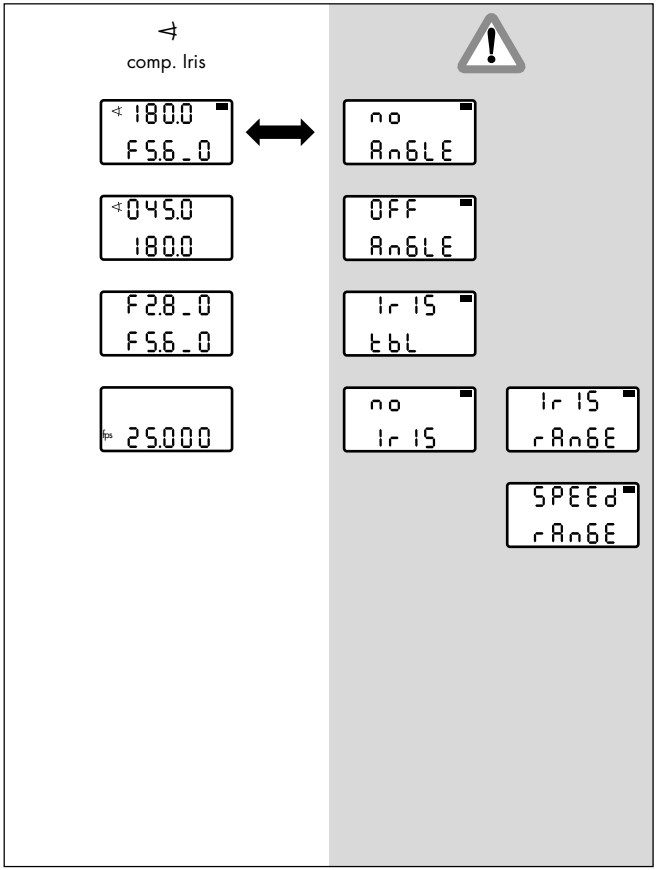
By pressing the SET button, the currently set T-stop (if controlled by the WRC-1) can be displayed in the first display line, and the currently set camera speed is shown in the second display line.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stop of the handwheel (minimum and maximum mirror shutter angle) can be defined.
  The first display line shows the value for the left handwheel end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  To define the fixed values for the aperture of the lens (if controlled by the WRC-1) and the camera speed, use the SEL and SET buttons and the handwheel, as described above.
  The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

- Press the MODE button to go back to the main menu.



5.6.2 Shutter angle / compensation iris

The mirror shutter angle can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Shutter angle).
The exposure is automatically compensated for with the iris of the lens. The visible depth of field can be altered with this function.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The main menu shows in the first display line the currently adjusted mirror shutter angle. The second display line shows the currently adjusted T-stop of the lens, which is automatically calculated within the pre-defined limit values. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

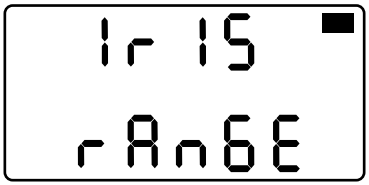
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

By pressing the SET button, the currently set camera speed can be shown in the second display line.

- Press the MODE button in the main menu to enter the first submenu. The values for the left and right end-stop of the handwheel (minimum and maximum mirror shutter angle) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  The limit values for the iris can be defined.
  The iris is automatically adjusted to compensate the exposure while the shutter angle is adjusted using the handwheel. One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the shutter angle) can be defined; the other limit value is automatically calculated by the WRC-1.

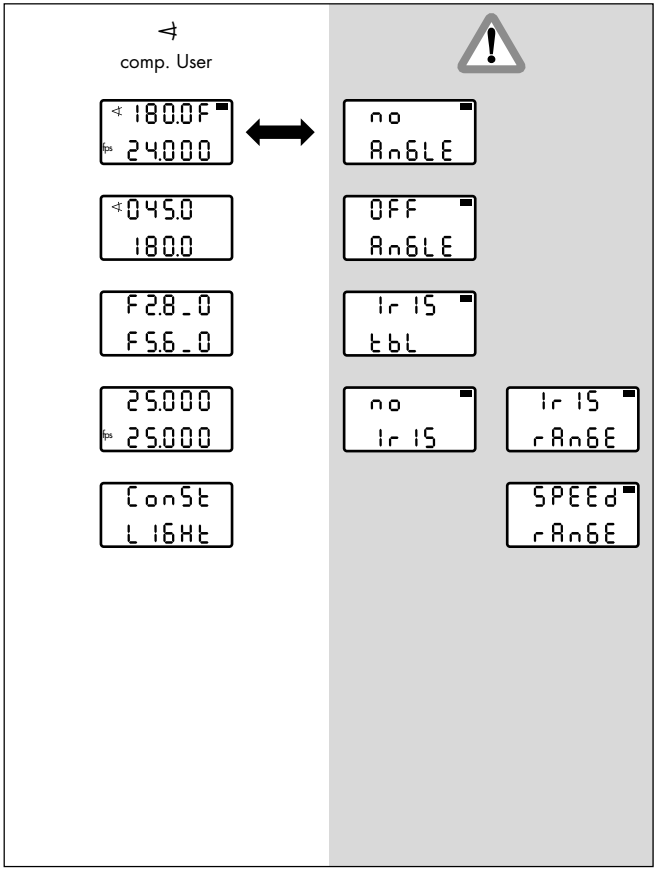


Press the SEL button for longer than 2 seconds.
Depending on the definable limit value, the T-stop value flashes in the first or second display line.
This can now be set using the handwheel.
The automatically calculated other limit value is shown in the other display line.
Press the SEL button again to switch to the decimal.
The selected T-stop is confirmed and the decimal set to '0' by pressing the SET button.
The maximum aperture (smallest T-stop number) corresponds to the selected minimum shutter angle opening.

If the compensation range available for the iris ring is exceeded (e.g. the start T-stop is at the beginning or end of the adjustment range), the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The settings for the iris or the shutter angle must be corrected accordingly! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu. To define the fixed value for the camera speed, use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to go back to the main menu.



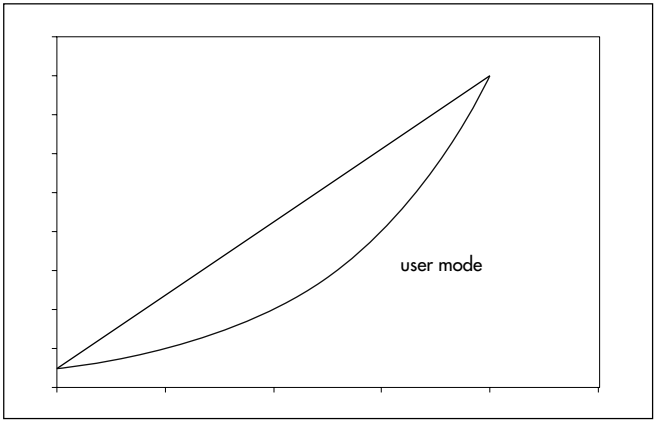
5.6.3 Shutter angle / compensation user

Using the handwheel, the mirror shutter angle can be manually adjusted within the user-defined end-stops, simultaneously together with the values for the camera speed and the iris (if controlled by the WRC-1).
If appropriate values are selected, either the exposure can be kept at a constant level, or an adjustment process can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◅ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel.
If a ramp function is selected (ramp Iris, ramp ◅ or ramp fps), a ramp duration can be defined. In this case the handwheel is without function in the main menu.

Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.



The main menu shows the symbol '◄' and the currently adjusted shutter angle in the first display line. If the iris is also controlled by the WRC-1, this is indicated by an 'F' at the end of the first display line. The currently adjusted T-stop can be shown in the first display line by pressing the SET button. The currently adjusted camera speed is shown in the second display line.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button (if controlled by the WRC-1). The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The end-stops for the handwheel (minimum and maximum shutter angle) can be defined. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

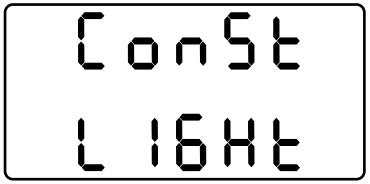
- Press the SEL button for longer than 2 seconds. The shutter angle value in the first display line flashes. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

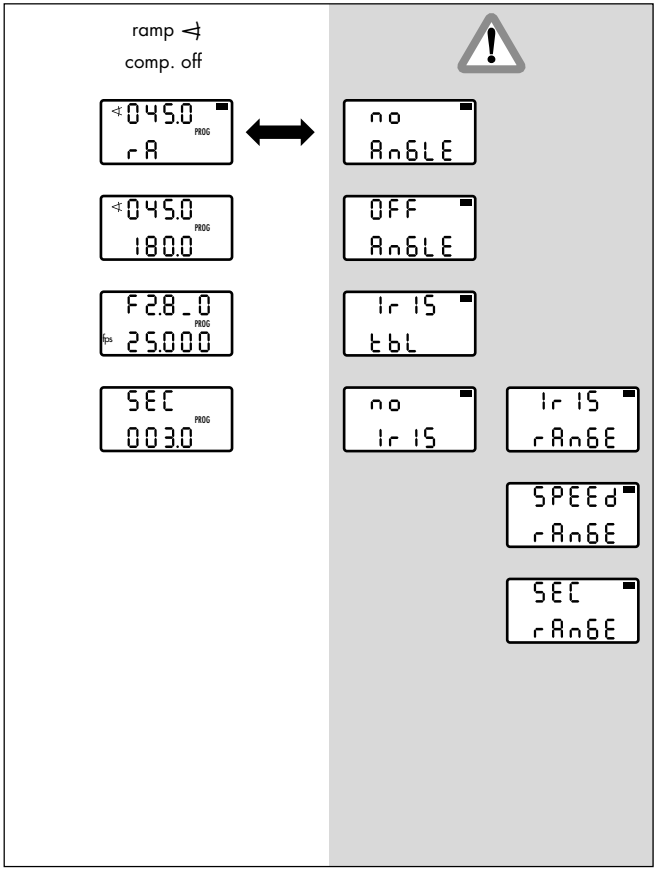
- Press the MODE button to go to the next submenu. To define the values for the minimum and maximum aperture (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above. The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum camera speed, use the SEL and SET buttons and the handwheel.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered while the handwheel is adjusted.

- Press the MODE button to go back to the main menu.





5.6.4 Ramp shutter angle / compensation off

The mirror shutter angle is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (ramp, definition see Glossary).

Differences in exposure are not automatically compensated for.

The main menu shows the current mirror shutter angle in the first display line and 'RA' for the ramp function in the second line.

The 'PROG' symbol indicates that the time-controlled ramp function has been selected.

By pressing the SET button, the currently set T-stop can be shown in the first display line (if controlled by the WRC-1), and the currently set camera speed is shown in the second display line.

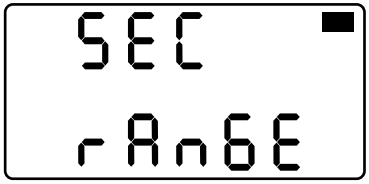
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu.
Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum shutter angle can be defined.
  The first display line shows the start value of the shutter angle, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.



- Press the MODE button to go to the next submenu. To define the fixed values for the aperture of the lens (if controlled by the WRC-1) and the camera speed, use the SEL and SET buttons and the handwheel, as described above.

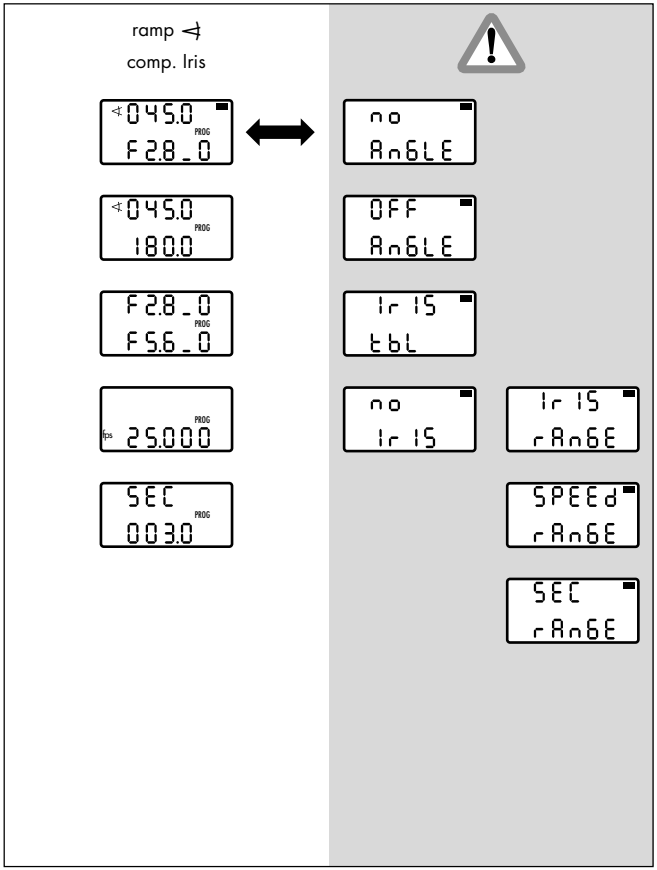
The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go back to the main menu.



5.6.5 Ramp shutter angle / compensation iris

The shutter angle is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (master value: Shutter angle).
The iris of the lens is automatically adjusted by the WRC-1 within the pre-defined limit values to compensate the exposure. The visible depth of field can be altered with this function.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

In the main menu the current shutter angle is shown in the first display line. The automatically calculated T-stop is shown in the second line.
The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently set camera speed can be shown in the second display line.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

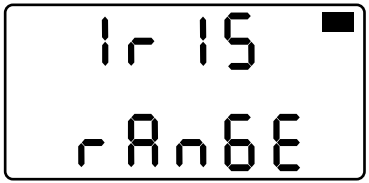
Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum shutter angle can be defined.
  The first display line shows the start value of the shutter angle, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.



If the compensation range available with the iris ring is exceeded, the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The settings for the iris or the shutter angle must be corrected accordingly! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu.
  The limit values for the aperture can be defined.
  The iris is automatically adjusted by the WRC-1 to compensate the exposure, while the shutter angle is ramped. One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the shutter angle) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the T-stop value flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the decimal. The T-stop value is confirmed, and the decimal is set to '0', by pressing the SET button.

The maximum aperture (smallest T-stop number) corresponds to the selected minimum shutter angle.

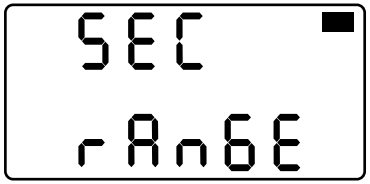
- Press the MODE button to go to the next submenu. To enter the fixed value for the camera speed, use the SEL and SET buttons and the handwheel.

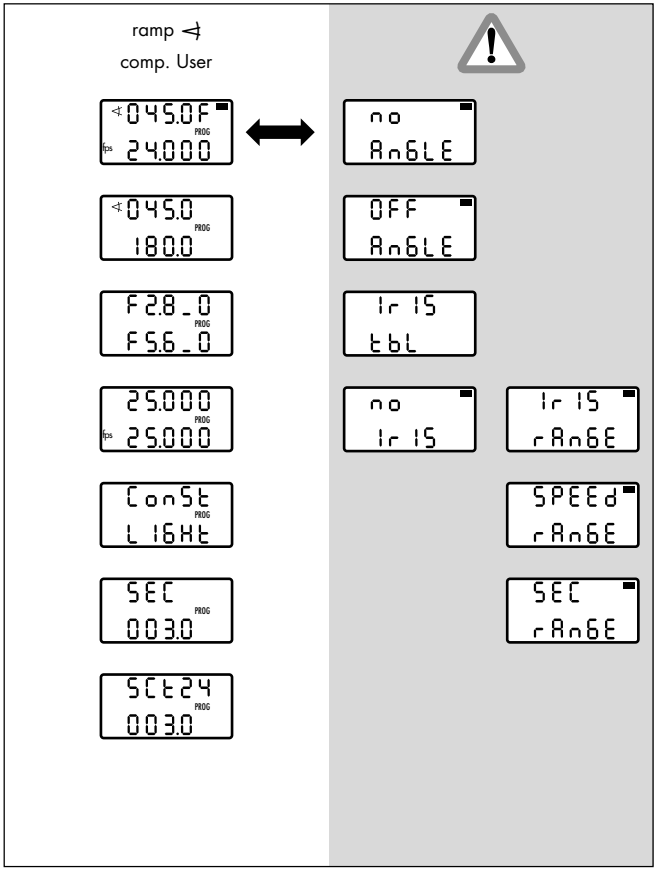
- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go back to the main menu.





5.6.6 Ramp shutter angle / compensation user

The shutter angle is continuously adjusted, simultaneously together with the aperture (if controlled by the WRC-1) and the camera speed, within the freely definable limits over a pre-defined period of time after pressing the RAMP button in the camera run. If appropriate values are selected, either the exposure can be kept at a constant level, or a ramp can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◁ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel.
If a ramp function is selected (ramp Iris, ramp ◁ or ramp fps), a ramp duration can be defined. The ramp is started while the camera is running by pressing the RAMP button. In this case the handwheel is without function in the main menu.

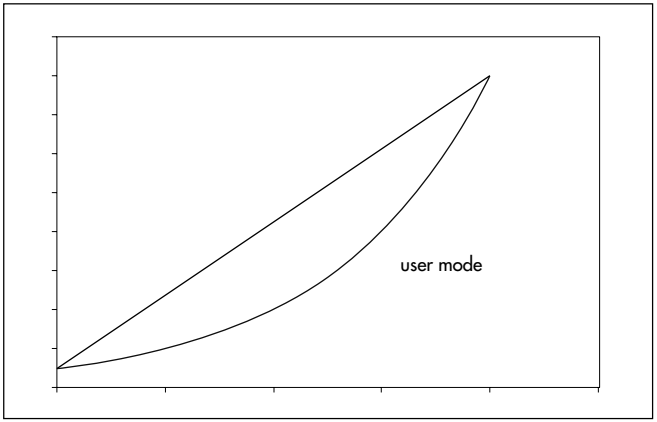
Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.

The main menu shows the symbol '◄' and the currently adjusted shutter angle in the first display line. If the iris is controlled by the WRC-1, this is indicated by an 'F' at the end of the first display line. The currently adjusted T-stop can be shown in the first display line by pressing the SET button. The current camera speed is displayed in the second display line.

Note: The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button (if controlled by the WRC-1). The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.



The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a

parameter has been exceeded (example: the selected speed is not available with this camera); readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

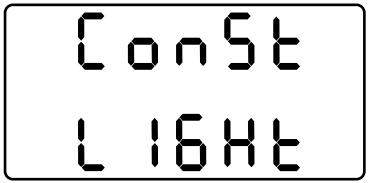
- Press the MODE button in the main menu to enter the first submenu. The limit values (minimum and maximum shutter angle) can be defined.
  The first display line shows the start value of the shutter angle, the second line shows the value at the end of the ramp.

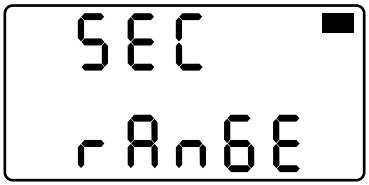
- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum aperture (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above. The first display line shows the start value of the aperture, and the second line the value at the end of the ramp.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum camera speed, use the SEL and SET buttons and the handwheel. The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered during the ramp.





- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

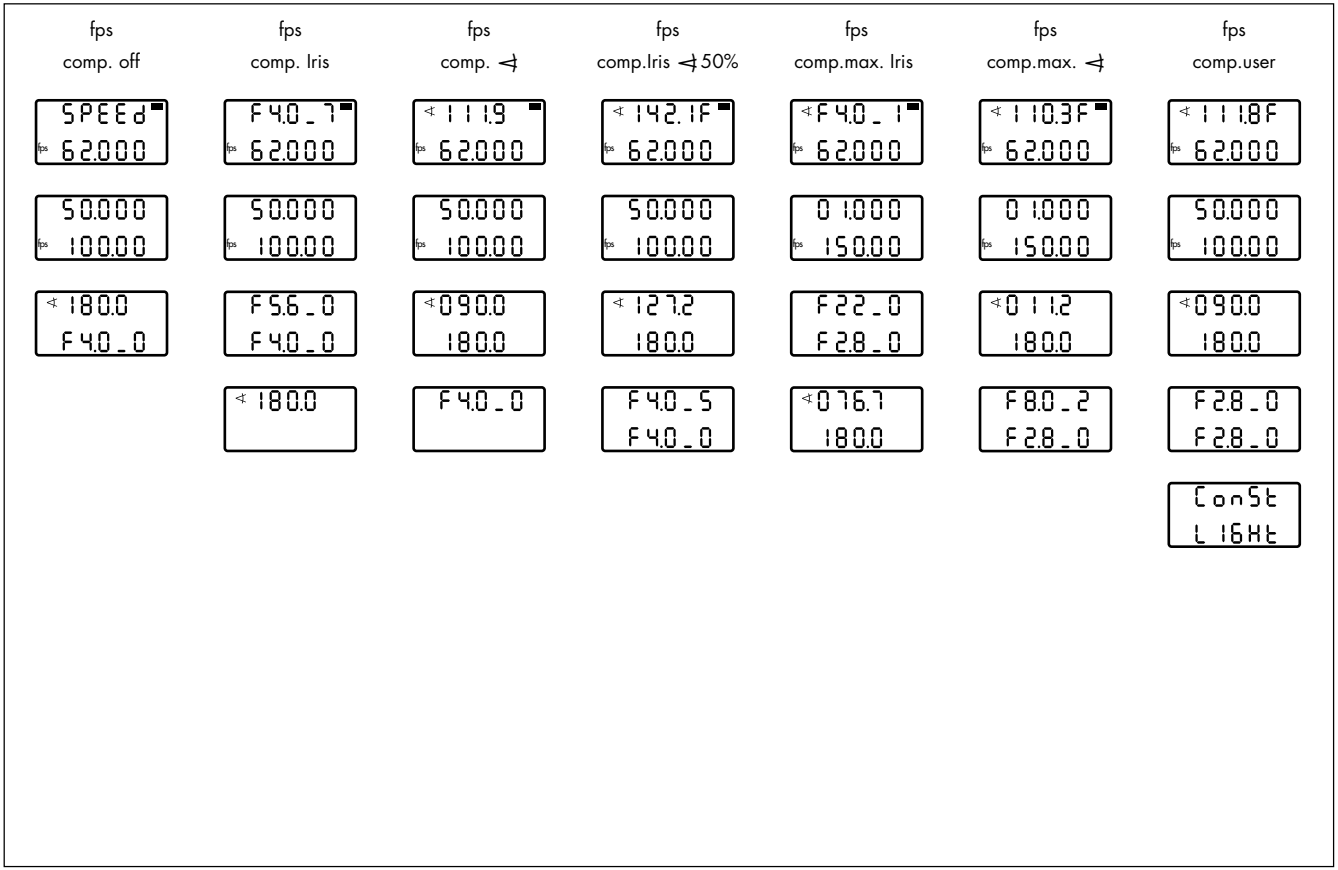
Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

Note: While the ramp duration is being set, the display shows the automatically calculated screen time in the first display line, which corresponds to the selected projection speed (see the next two bullet points).

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.


fps
comp. off
SPEEd
62.000
50.000
100.00
180.0
F4.0_0
fps
comp. Iris
F4.0_7
62.000
50.000
100.00
F5.6_0
F4.0_0
180.0
fps
comp. ◁
111.9
62.000
50.000
100.00
090.0
180.0
F4.0_0
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100.00
127.2
180.0
F4.0_5
F4.0_0
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comp.max. Iris
F4.0_1
62.000
01.000
150.00
F22_0
F2.8_0
076.7
180.0
fps
comp.max. ◁
110.3F
62.000
01.000
150.00
011.2
180.0
F8.0_2
F2.8_0
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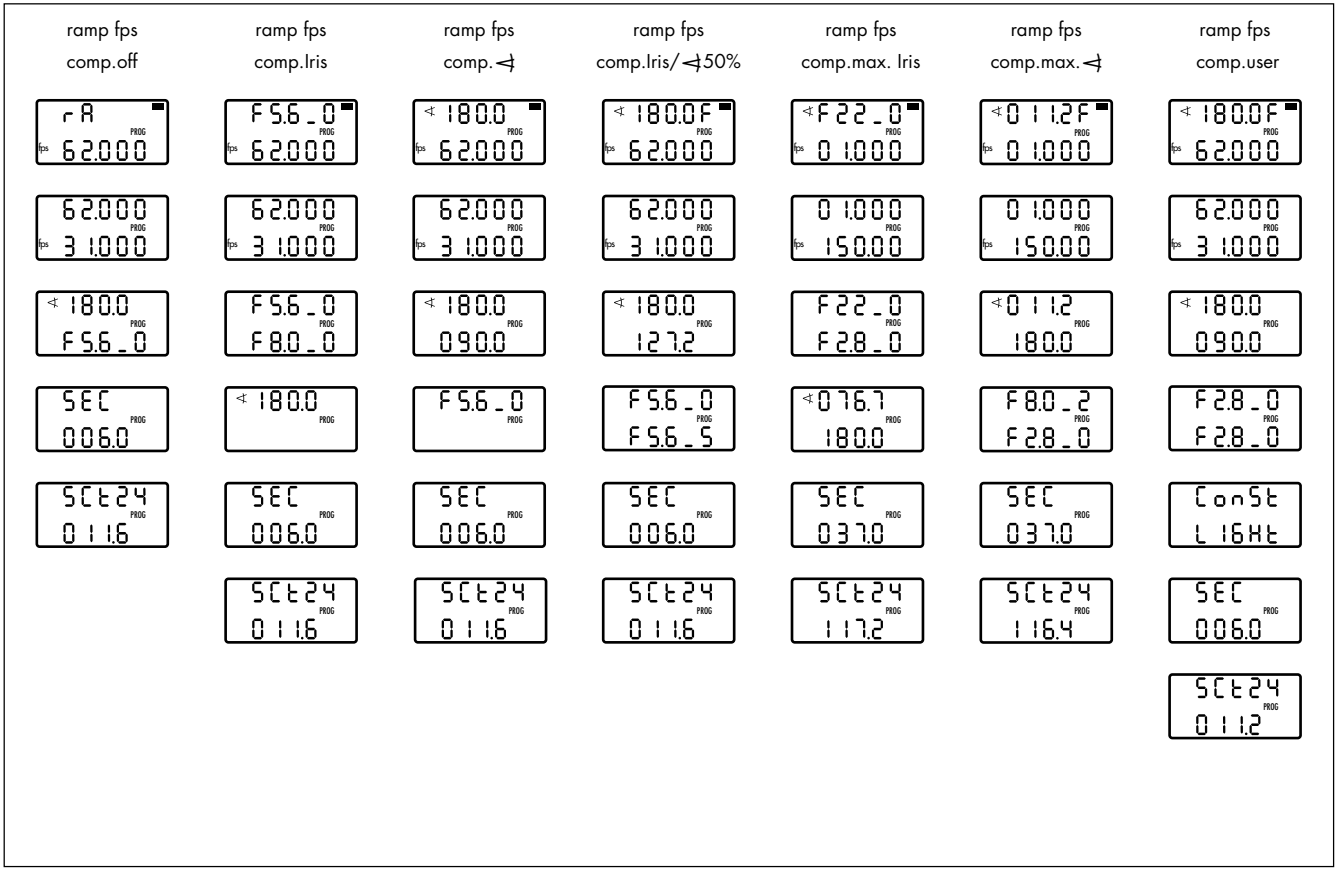
ramp fps
comp.off
rA
62.000
62.000
31.000
180.0
F5.6_0
SEC
006.0
SCt24
011.6
ramp fps
comp.Iris
F5.6_0
62.000
62.000
31.000
F5.6_0
F8.0_0
180.0
SEC
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SCt24
011.6
ramp fps
comp.◁
180.0
62.000
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180.0
090.0
F5.6_0
SEC
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SCt24
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ramp fps
comp.Iris/◁50%
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180.0
127.2
F5.6_0
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SCt24
011.6
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comp.max. Iris
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01.000
150.00
F22_0
F2.8_0
076.7
180.0
SEC
037.0
SCt24
117.2
ramp fps
comp.max.◁
011.2F
01.000
01.000
150.00
011.2
180.0
F8.0_2
F2.8_0
SEC
037.0
SCt24
116.4
ramp fps
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SEC
006.0
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PROG

5.7 Controlling the camera speed

5.7.1 Speed / compensation off

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel.

Differences in exposure are not automatically compensated for.

The main menu shows 'SPEED' in the first display line, and the currently adjusted camera speed in the second display line.

By pressing the SET button, the currently set shutter angle (if controlled by the WRC-1) can be shown in the first display line and the currently set T-stop (if controlled by the WRC-1) is shown in the second display line.

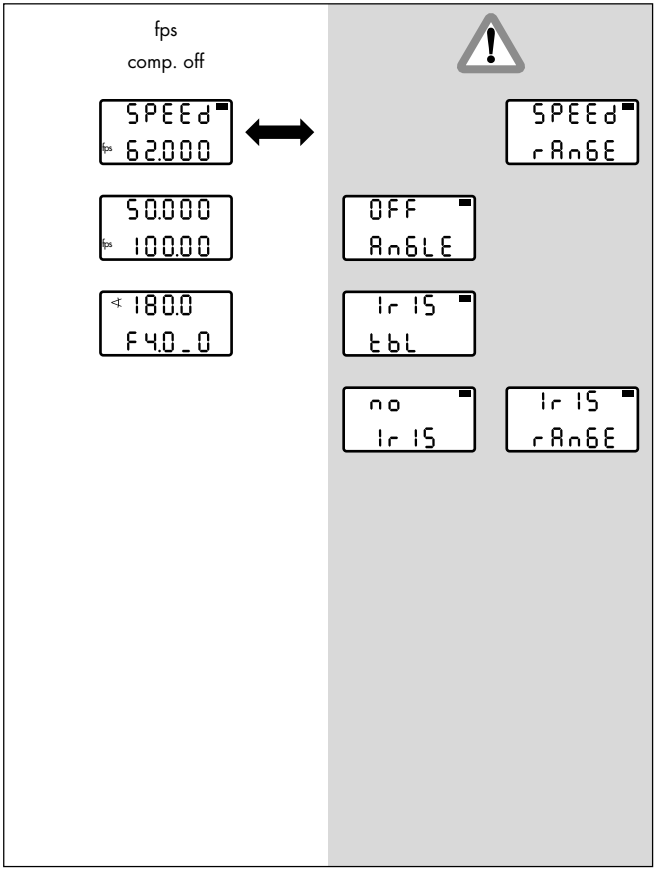
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

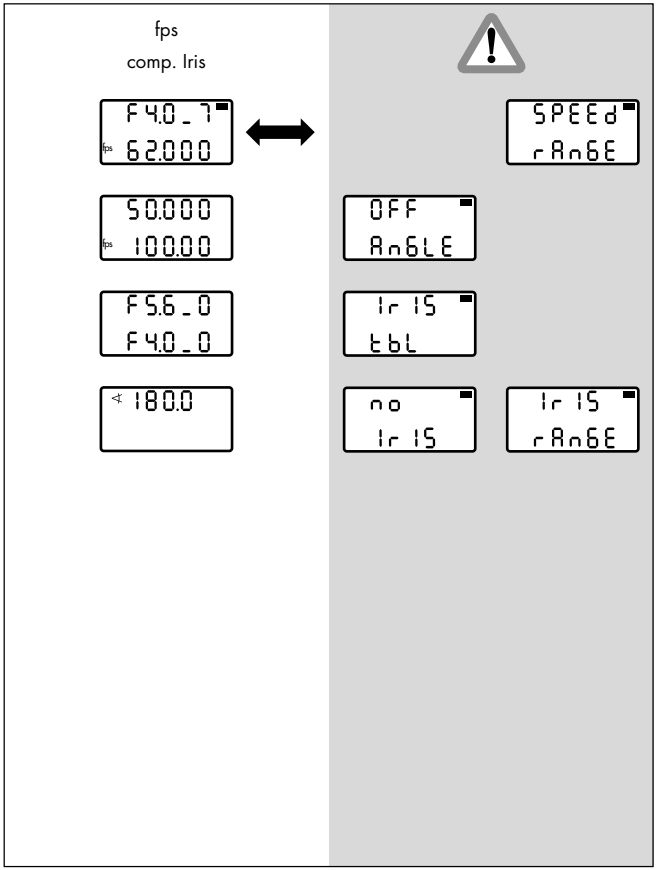
- Press the MODE button in the main menu to enter the first submenu. The end-stops for the handwheel (minimum and maximum camera speed) can be defined. The first display line shows the value for the left handwheel end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  To define the fixed values for the mirror shutter angle (if controlled by the WRC-1) and the aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  If the aperture of the lens is controlled by the WRC-1, the display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

- Press the MODE button to go back to the main menu.





5.7.2 Speed / compensation iris

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Camera speed).
The exposure is automatically compensated for with the iris of the lens while the camera speed is adjusted with the handwheel.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the aperture of the lens, which is automatically calculated within the pre-defined limits. The second line shows the currently adjusted camera speed using the handwheel. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

By pressing the SET button, the currently set shutter angle (if controlled by the WRC-1) can be shown in the first display line.

Note

The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

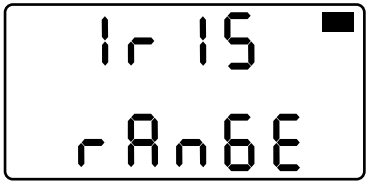
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The end-stops for the handwheel (minimum and maximum camera speed) can be defined. The first display line shows the value for the left handwheel end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

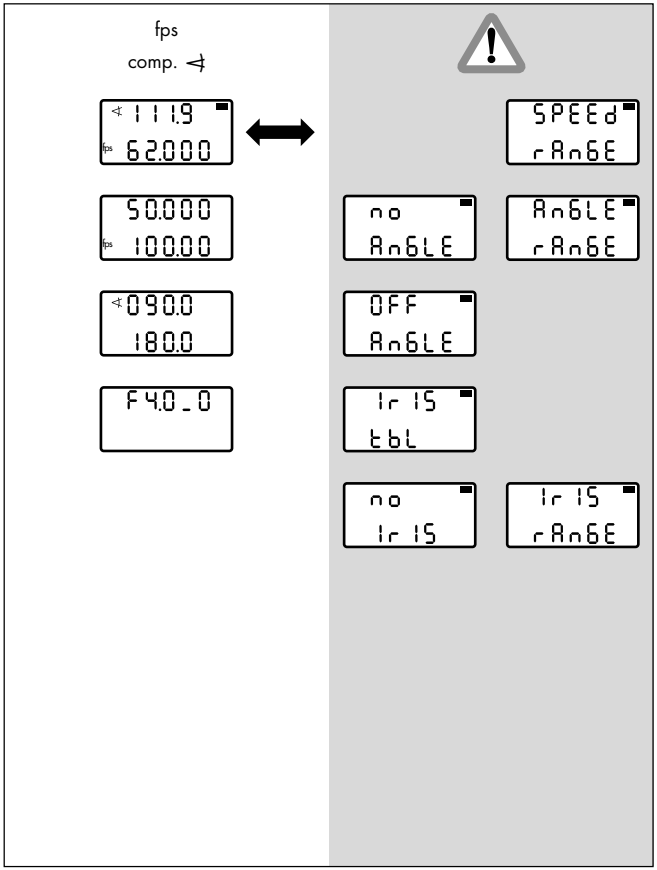
- Press the MODE button to go to the next submenu. The limit values for the aperture of the lens can be defined.
  The aperture is automatically adjusted by the WRC-1 for a constant exposure, while the camera speed is adjusted with the handwheel. One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the T-stop display flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The selected T-stop is confirmed and the decimal set to '0' by pressing the SET button.
  The full aperture (smallest T-stop number) corresponds to the selected maximum camera speed.

If the compensation range available for the iris ring is exceeded (e.g. the start T-stop is at the beginning or end of the adjustment range), the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The setting for the iris or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



- Press the MODE button to go to the next submenu. To define the fixed value for the mirror shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to go back to the main menu.



5.7.3 Speed / compensation shutter angle

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Camera speed).
The exposure is automatically compensated for with the mirror shutter angle.

If the electronic shutter angle control on the camera has been switched off (the shutter angle has been set manually), the warning 'OFF ANGLE' flashes in the main menu. Switch on the electronic shutter angle control on the camera (see camera instruction manual).

The first line of the main menu shows the mirror shutter angle, which is automatically calculated within the per-defined limits. The second line shows the currently adjusted camera speed using the handwheel.

By pressing the SET button, the currently set T-stop (if controlled by the WRC-1) can be shown in the first display line.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

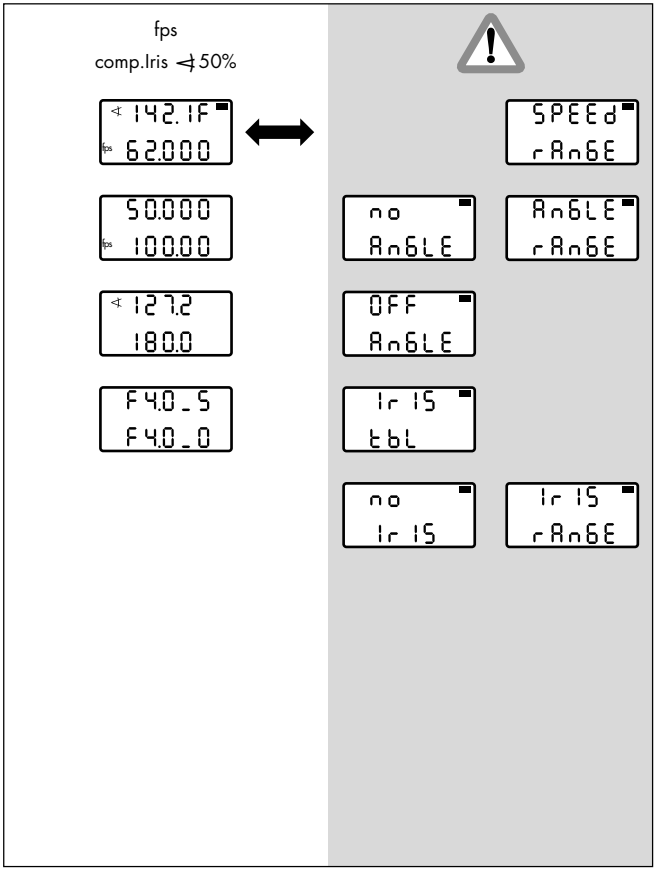
- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stop of the handwheel (minimum and maximum camera speed) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  The limit values for the mirror shutter angle can be defined.
  The shutter angle is automatically adjusted to compensate the exposure while the camera speed is adjusted with the handwheel. One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the shutter angle display flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The selected shutter angle is confirmed and the decimal is set to '0' by pressing the SET button.
  The minimum shutter angle corresponds to the selected minimum camera speed.

If the compensation range available for the shutter angle is exceeded (e.g. the start shutter angle is at the beginning or end of the adjustment range), the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu mode. The limits for the shutter angle range or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu. To define the fixed value for the aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
- Press the MODE button to go back to the main menu.



5.7.4 Speed / compensation iris and shutter angle 50%

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Camera speed).
The exposure is automatically compensated for with the iris and the shutter angle at equal proportions.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the mirror shutter angle, which is automatically adjusted within the pre-defined limit values. The symbol 'F' at the end of the first line indicates the additional control of the iris. The second line shows the currently adjusted camera speed using the handwheel.

By pressing the SET button, the automatically adjusted T-stop can be shown in the first display line. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note

The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

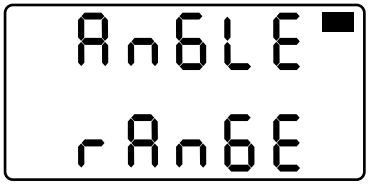
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stop of the handwheel (minimum and maximum camera speed) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

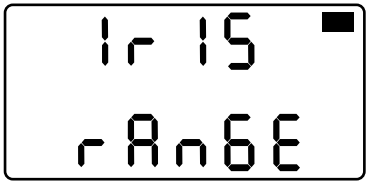
- Press the MODE button to go to the next submenu.
  The limit values for the mirror shutter angle can be defined.
  Both the mirror shutter angle and the aperture are automatically adjusted as an exposure compensation while the camera speed adjusted with the handwheel.
  One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the shutter angle display flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line.
  Press the SEL button again to switch to the next digit.
  The selected shutter angle is confirmed and the decimal is set to '0' by pressing the SET button.
  The minimum shutter angle corresponds to the selected minimum camera speed.

If the compensation range available for the shutter angle is exceeded (e.g. the start shutter angle is at the beginning or end of the adjustment range), the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The limit values for the shutter range or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

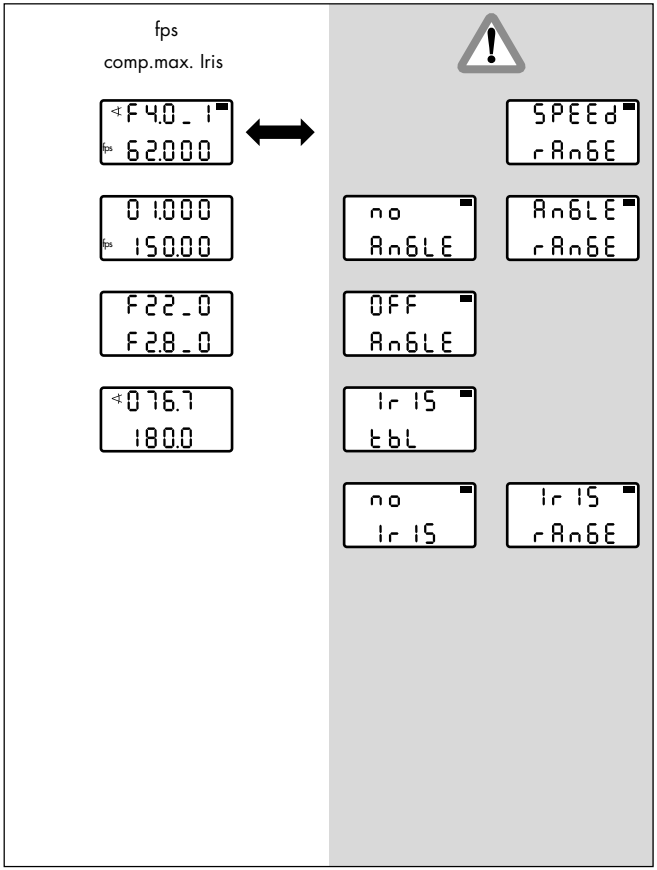


- Press the MODE button to go to the next submenu. To define the adjustment range for the aperture of the lens, use the SEL and SET buttons and the handwheel, as described above.

If the compensation range available with the aperture is exceeded, the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The limit values for the iris or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



- Press the MODE button to go back to the main menu.



5.7.5 Speed / compensation max. iris

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Camera speed).
The exposure is automatically compensated for by adjusting the aperture of the lens. If the adjustment range of the iris is not sufficient for the given end values, the rest will be compensated for by the mirror shutter. In this case, the shutter angle proportion is evenly distributed over the entire compensation range.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the symbol '◁' for the adjustment of the mirror shutter angle and the T-stop of the lens, which is automatically adjusted within the pre-defined limit values. The second line shows the currently adjusted camera speed using the handwheel.

Note: The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

By pressing the SET button, the automatically adjusted mirror shutter angle can be shown in the first display line.

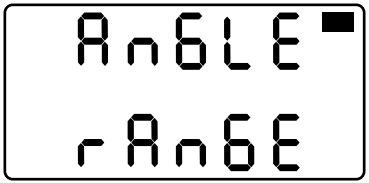
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stop of the handwheel (minimum and maximum camera speed) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

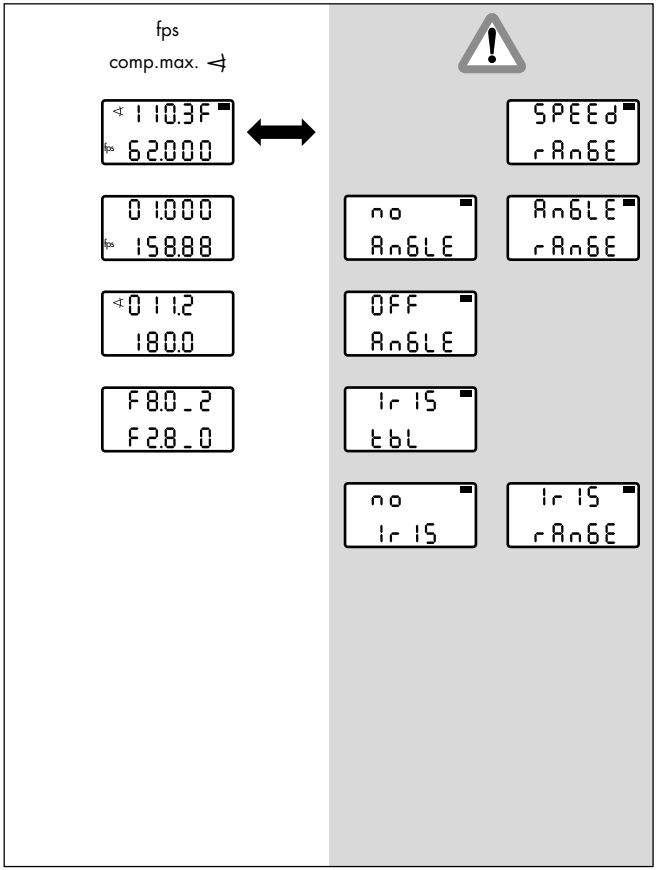
- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the other positions. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.



- Press the MODE button to go to the next submenu.
  The limit values for the aperture of the lens can be defined. Both the aperture and the shutter angle (if necessary) are automatically adjusted to compensate the exposure while the camera speed is adjusted with the handwheel. The two limit values (minimum and maximum T-stop) can be selected as required.
  Press the SEL button for longer than 2 seconds.
  The T-stop value in the first display line flashes.
  This can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

If the compensation range available with the shutter angle is exceeded, the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The limit values for the iris, the shutter angle or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu.
  To define the adjustment range for the mirror shutter angle, use the SEL and SET buttons and the handwheel, as described above.
  One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the shutter angle display flashes in the first or second display line. This can now be set using the handwheel.
  The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The selected shutter angle is confirmed and the decimal is set to '0' by pressing the SET button.
  The minimum shutter angle corresponds to the selected minimum camera speed.
- Press the MODE button to go back to the main menu.



5.7.6 Speed / compensation max. shutter angle

The camera speed can be manually adjusted within the pre-defined end-stops of the handwheel (master value: Camera speed).
The exposure is automatically compensated for by adjusting the mirror shutter angle. If the adjustment range of the shutter angle is insufficient for the given end value, the rest will be compensated for by the aperture of the lens. In this case, the iris proportion is evenly distributed over the entire compensation range.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the mirror shutter angle, which is automatically adjusted within the the pre-defined limit values.
The symbol 'F' indicates the additional adjustment of the iris at the end of the first display line.
The second display line shows the currently adjusted camera speed using the handwheel.

By pressing the SET button, the automatically adjusted T-stop can be shown in the first display line. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

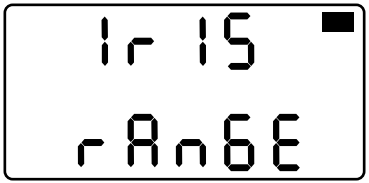
Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stop of the handwheel (minimum and maximum camera speed) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

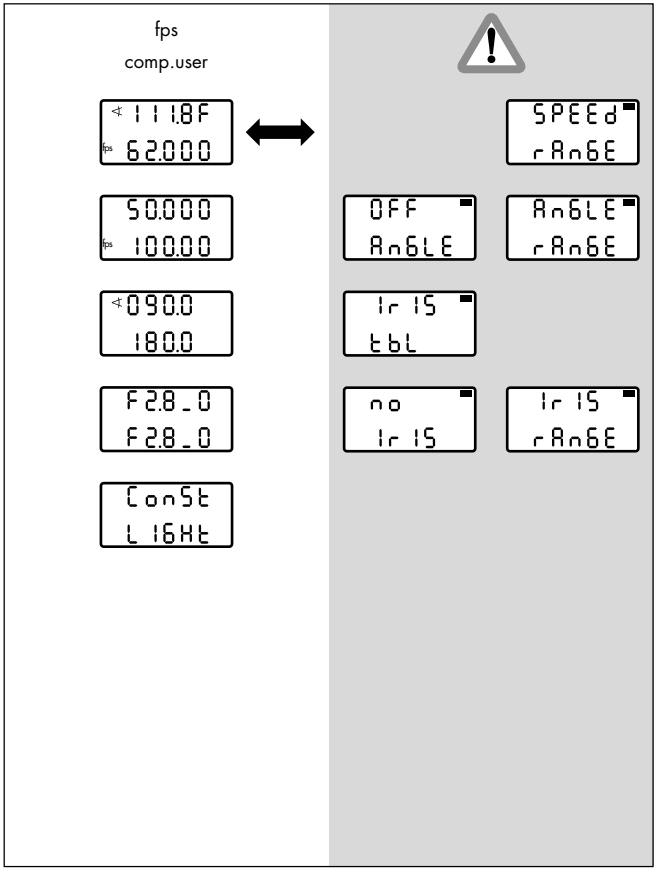


- Press the MODE button to go to the next submenu. The limit values for the mirror shutter angle can be defined. Both the mirror shutter angle and the aperture of the lens (if necessary) are automatically adjusted to compensate the exposure while the camera speed is adjusted with the handwheel.
  The two limit values (minimum and maximum shutter angle) can be selected as required.
  Press the SEL button for longer than 2 seconds.
  The shutter angle shown in the first display line flashes. This can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.
  The first display line shows the value for the left handwheel end-stop, the second line shows the value for the right end-stop.

If the compensation range available with the aperture is exceeded (e.g. the start value is at the beginning or end of the adjustment range) the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu.
The limit values for the shutter angle, the iris or the camera speed must be corrected! The

camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu.
  The limit values for the iris can be defined using the SEL and SET buttons and the handwheel.
  One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the T-stop display flashes in the first or second display line.
  This can now be set using the handwheel.
  The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The selected T-stop is confirmed and the decimal is set to '0' by pressing the SET button.
  The full aperture (smallest T-stop number) corresponds to the selected maximum camera speed.
- Press the MODE button to go back to the main menu.



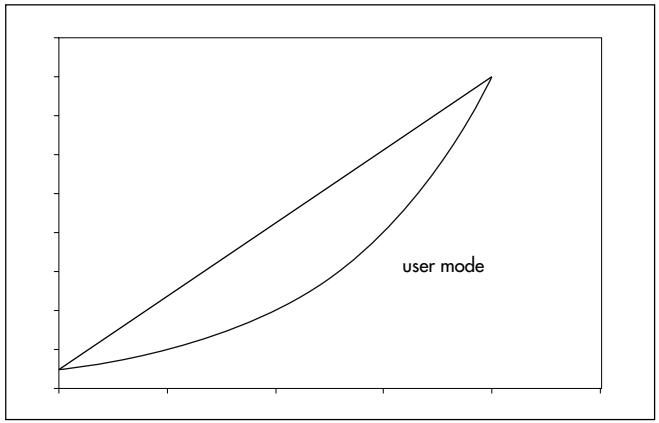
5.7.7 Speed / compensation user

Using the handwheel, the camera speed can be manually adjusted within the pre-defined end-stops, simultaneously together with the values for the shutter angle (if controlled by the WRC-1) and the iris (if controlled by the WRC-1).
If appropriate values are selected, either the exposure can be kept at a constant level, or an adjustment process can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◅ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel.
If a ramp function is selected (ramp Iris, ramp ◅ or ramp fps), a ramp duration can be defined. In this case the handwheel is without function in the main menu.

Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.



The first line of the main menu shows the currently adjusted shutter angle (if controlled by the WRC-1).
If the iris is controlled by the WRC-1, this is indicated by an 'F' at the end of the first display line. By pressing the SET button, the currently adjusted aperture can be shown in the first display.
The second line shows the currently adjusted camera speed.

Note: The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button (if controlled by the WRC-1). The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the left and right end-stops of the handwheel (minimum and maximum camera speed) can be defined.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

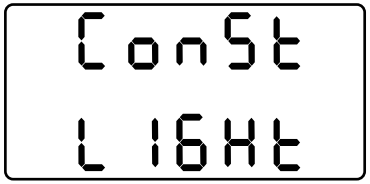
- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digit. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

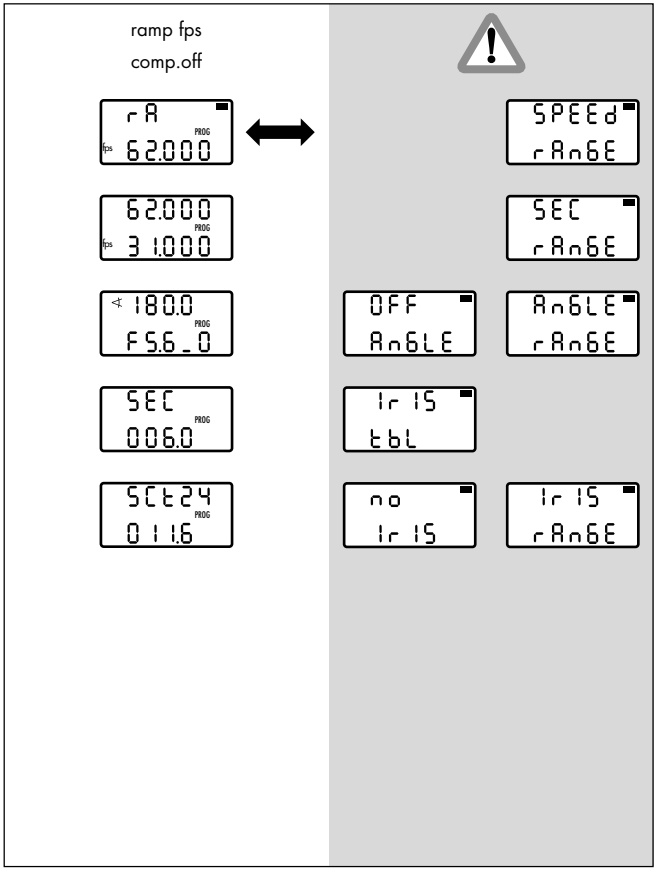
- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  The first display line shows the value for the left end-stop, the second line shows the value for the right end-stop.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered while the handwheel is adjusted.

- Press the MODE button to go back to the main menu.





5.7.8 Ramp speed / compensation off

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (ramp, definition see Glossary).

Differences in exposure are not automatically compensated for.

The first line of the main menu shows 'RA' to indicate the ramp function, and the active camera speed in the second line.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently set shutter angle (if controlled by the WRC-1) can be shown in the first display line, and the currently set aperture (if controlled by the WRC-1) in the second display line.

Note

The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu.
Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

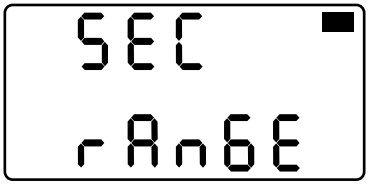
The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digits.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu. To define the fixed values for the mirror shutter angle (if controlled by the WRC-1) and the aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.

The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.



- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

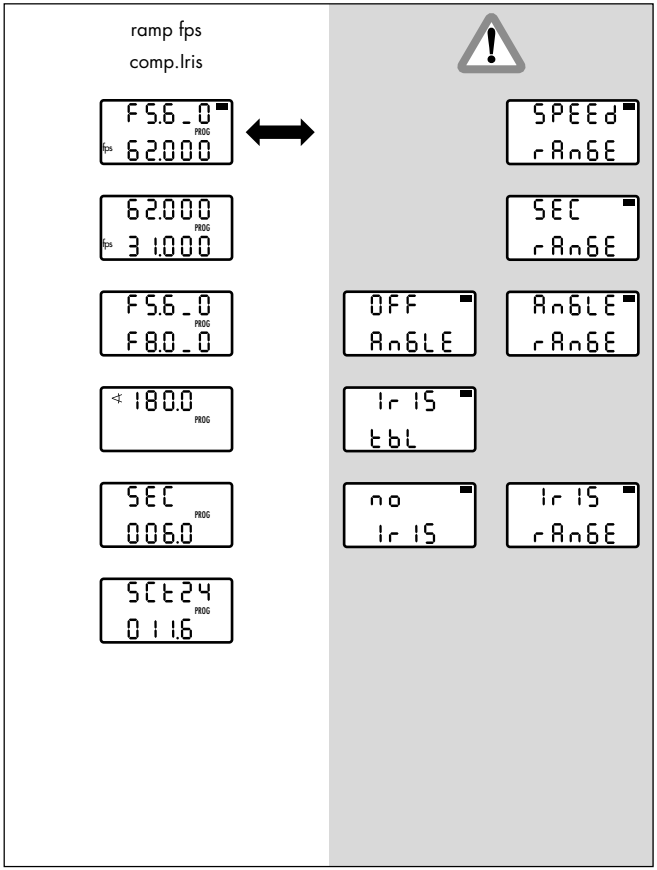
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.



5.7.9 Ramp speed / compensation iris

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (master value: Camera speed).
The iris is automatically adjusted by the WRC-1 within the pre-defined limit values to compensate the exposure.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the automatically calculated T-stop. The current camera speed is shown in the second line.
The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently set shutter angle (if controlled by the WRC-1) can be shown in the first display line.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

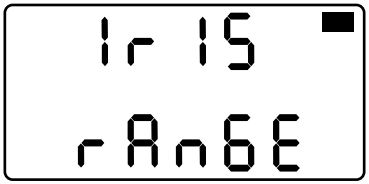
Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.



- Press the MODE button to go to the next submenu.
  The limit values for the aperture can be defined.
  The aperture is automatically adjusted by the WRC-1 to compensate the exposure while the camera speed is ramped. One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the T-stop value flashes in the first or second display line.
  This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit.
  The T-stop value is confirmed, and the decimal is set to '0', by pressing the SET button.
  The full aperture (smallest T-stop number) corresponds to the selected maximum camera speed.

If the compensation range available with the aperture is exceeded, the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The limit values for the iris or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu.
  To define the fixed value for the mirror shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to go to the next submenu.
  To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

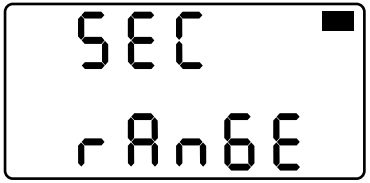
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

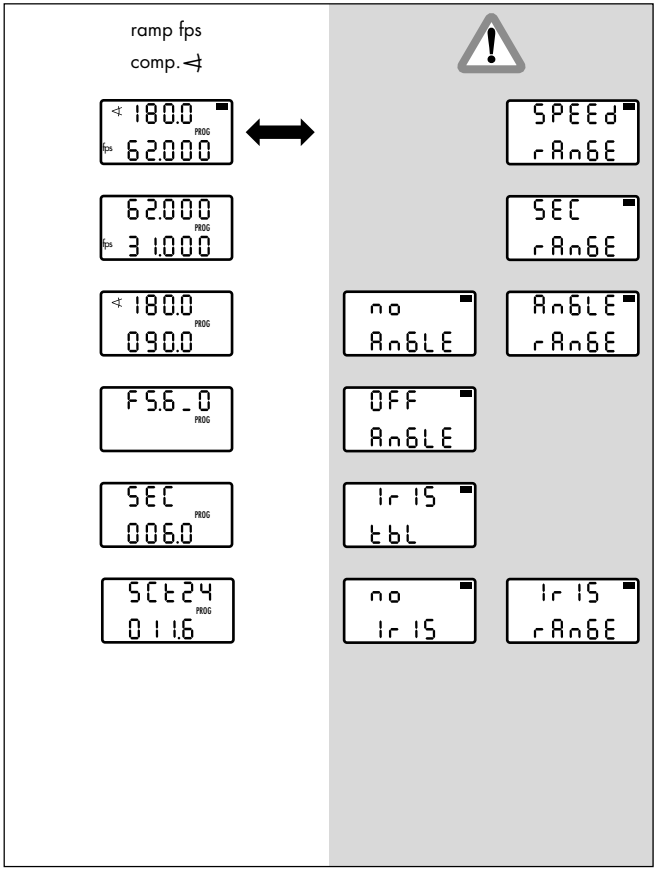
Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu.
  The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.





5.7.10 Ramp speed / compensation shutter angle

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (master value: Camera speed).
The mirror shutter angle is automatically adjusted by the WRC-1 within the pre-defined limit values, to compensate the exposure.

The first line of the main menu shows the automatically calculated value of the shutter angle. The current camera speed is shown in the second line.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently set T-stop (if controlled by the WRC-1) can be shown in the first display line. The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

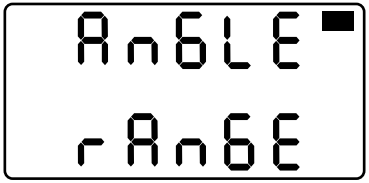
With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digits.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  The limit values for the shutter angle can be defined.



The shutter angle is automatically adjusted by the WRC-1 to compensate the exposure while the camera speed is ramped. One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
Press the SEL button for longer than 2 seconds.
Depending on the definable limit value, the shutter angle value flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The shutter angle value is confirmed, and the decimal is set to '0', by pressing the SET button.
The minimum shutter angle (smallest shutter angle) corresponds to the selected minimum camera speed.

If the compensation range available with the shutter angle is exceeded, the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The limit values for the shutter angle or the camera speed must be corrected!
The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

- Press the MODE button to go to the next submenu. To define the fixed value for the aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.

- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

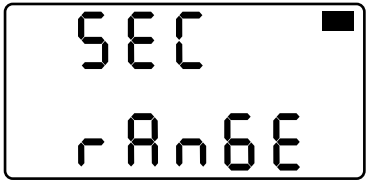
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

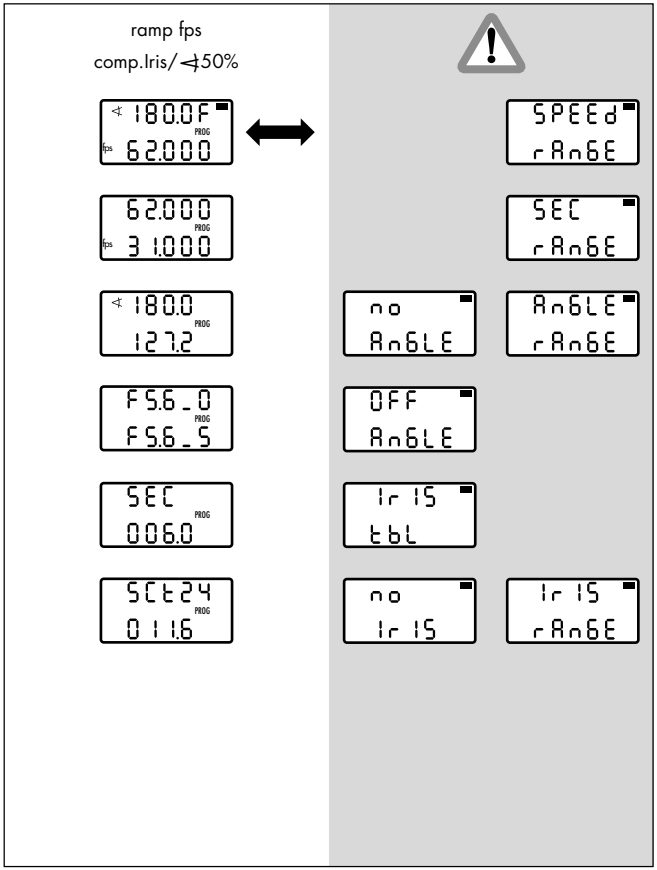
Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.





5.7.11 Ramp speed / compensation iris and shutter angle 50%

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after pressing the RAMP button in the camera run (master value: Camera speed).
The iris of the lens and the mirror shutter angle are automatically adjusted by the WRC-1 to equal proportions within the pre-defined limit values, to compensate the exposure.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the automatically calculated value of the shutter angle and the symbol 'F' to indicate the iris control. The second line shows the current camera speed.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently adjusted T-stop can be shown in the first display line. The display shows full T-stops followed by the tenth of a T-stop.
Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before initating the camera run!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

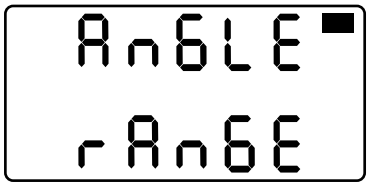
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes. The required value can now be set using the handwheel. Press the SEL button again to switch to the next digits. The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

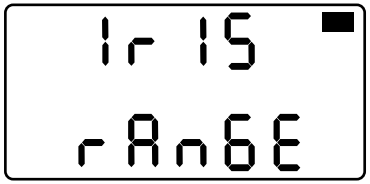
- Press the MODE button to go to the next submenu.
  The limit values for the shutter angle can be defined. The shutter angle is automatically adjusted by the WRC-1 to compensate the exposure while the camera speed is ramped. One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds. Depending on the definable limit value, the shutter angle value flashes in the first or second display line. This can now be set using the handwheel. The automatically calculated other limit value is shown in the other display line. Press the SEL button again to switch to the next digit. The shutter angle value is confirmed, and the decimal is set to '0', by pressing the SET button. The minimum shutter angle (smallest shutter angle) corresponds to the selected minimum camera speed.

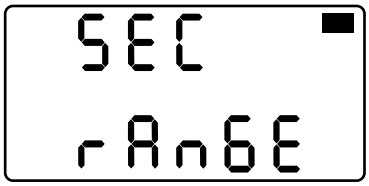
If the compensation range available with the shutter angle is exceeded, the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The limit values for the shutter angle or the camera speed must be corrected!
The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



- Press the MODE button to go to the next submenu. The limit values of the aperture can be defined using the SEL and SET buttons and the handwheel.

If the compensation range available with the aperture is exceeded, the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The limit values for the shutter angle, the iris or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!





- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel.

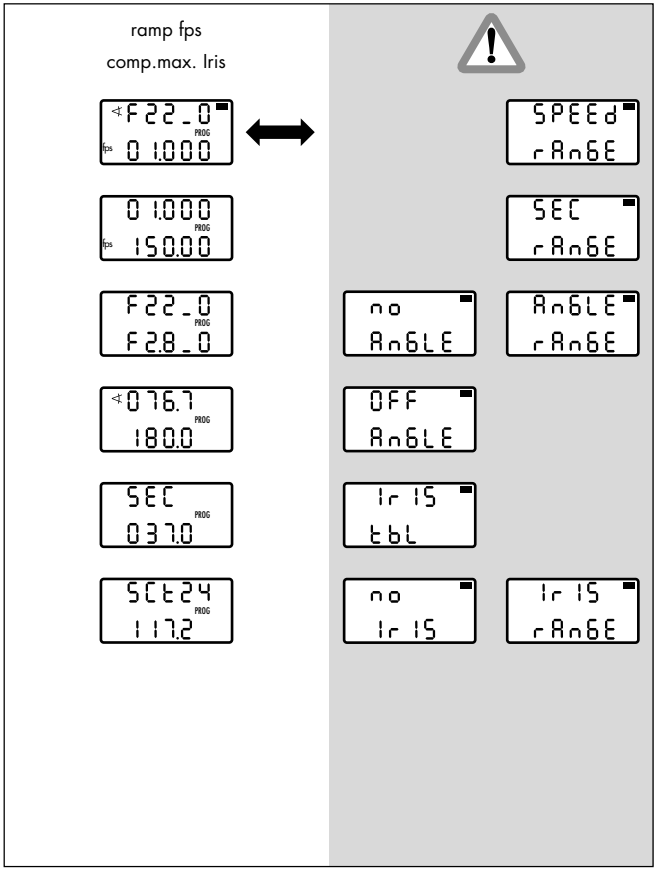
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.



5.7.12 Ramp speed / compensation max. iris

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after the RAMP button is pressed in the camera run (master value: Camera speed).
The aperture of the lens is automatically adjusted by the WRC-1 within the pre-defined limit values, to compensate the exposure. If the adjustment range of the aperture is not sufficient for the given end values, the rest will be compensated for by the mirror shutter. In this case, the shutter angle proportion is evenly distributed over the entire compensation range.

If the iris control is not available, the flashing warning 'NO IRIS' is displayed in the main menu. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The first line of the main menu shows the symbol '◁' to indicate the shutter angle control, and the current T-stop, which is automatically calculated. The second line shows the current camera speed.
The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently adjusted shutter angle can be shown in the first display line.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera).
Readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again. This does not alter the programmed settings. The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

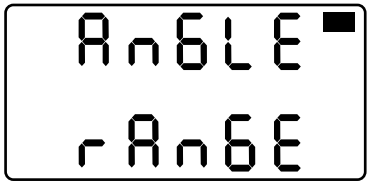
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

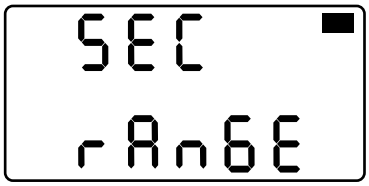
- Press the SEL button for longer than 2 seconds.
  The shutter angle value in the first display line flashes.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digits.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button. The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  The limit values for the aperture of the lens can be defined.
  Both the iris and the shutter angle (only if necessary) are automatically adjusted by the WRC-1 to compensate the exposure while the camera speed is ramped.
  The two limit values (minimum and maximum aperture) can be selected as required.
  Press the SEL button for longer than 2 seconds.
  The T-stop value in the first display line flashes.
  This can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.
  The first display line shows the start value of the aperture, and the second line the value at the end of the ramp.

If the compensation range available with the shutter angle is exceeded, the READY LED flashes green and the warning 'ANGLE RANGE' flashes on the display after returning to the main menu. The limit values for the iris, the shutter angle or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



- Press the MODE button to go to the next submenu.
  The limit values for the mirror shutter angle can be defined using the SEL and SET buttons and the handwheel.
  One of the two limit values (minimum or maximum shutter angle, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the shutter angle value flashes in the first or second display line.
  This can now be set using the handwheel.
  The automatically calculated other limit value is shown in the other display line.
  Press the SEL button again to switch to the next digit.
  The selected shutter angle is confirmed and the decimal is set to '0' by pressing the SET button.
  The minimum shutter angle corresponds to the selected minimum camera speed.



- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

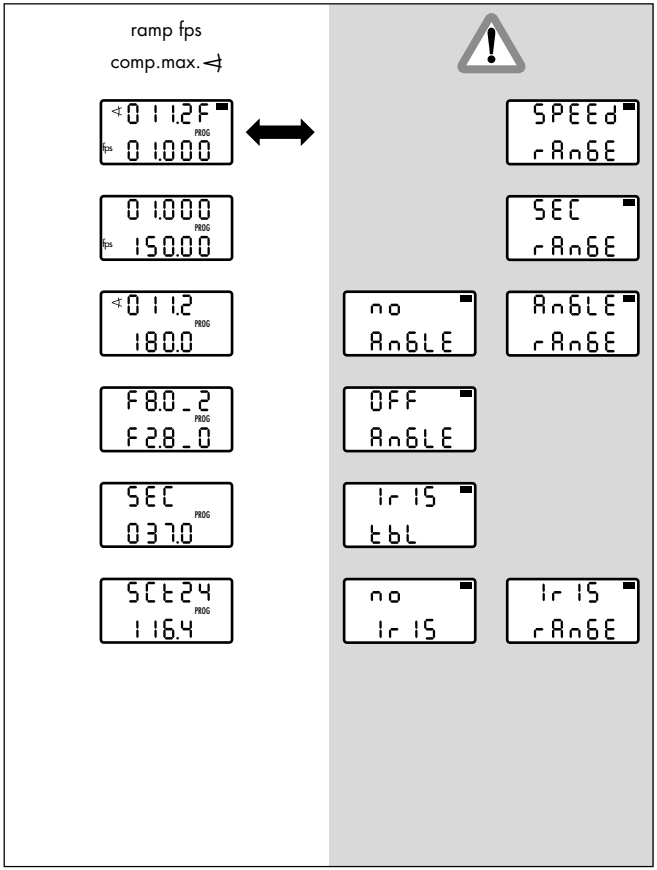
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.



5.7.13 Ramp speed / compensation max. shutter angle

The camera speed is continuously adjusted within the pre-defined limit values over a pre-defined period of time after the RAMP button is pressed in the camera run (master value: Camera speed). The mirror shutter angle is automatically adjusted by the WRC-1 to compensate the exposure. If the adjustment range of the shutter angle is insufficient for the given end value, the rest will be compensated for by the aperture of the lens. In this case, the aperture proportion is evenly distributed over the entire compensation range.

The first line of the main menu shows the automatically calculated value of the shutter angle and the symbol 'F' to indicate the iris control. The second line shows the current camera speed.

The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

By pressing the SET button, the currently adjusted T-stop can be shown in the first display line. The display shows full T-stops followed by the tenth of a T-stop.
Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a parameter has been exceeded (example: the selected speed is not available with this camera);
readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button. The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

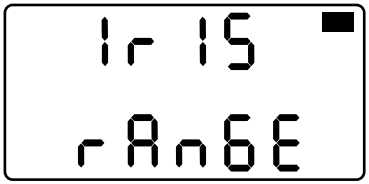
With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

- Press the MODE button in the main menu to enter the first submenu. The limit values for the minimum and maximum camera speed can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

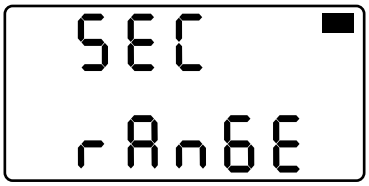
- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digits.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu. The limit values for the mirror shutter angle can be defined. Both the mirror shutter angle and the iris of the lens (if necessary) are automatically adjusted to compensate the exposure while the camera speed is ramped.
  The two limit values (minimum and maximum shutter angle) can be selected as required.
  Press the SEL button for longer than 2 seconds.
  The shutter angle shown in the first display line flashes. This can now be set using the handwheel.
  Press the SEL button again to switch to the next digit.
  The first digits are confirmed, and the decimal is set to '0' by pressing the SET button. The values in the second display line can be set accordingly.
  The first display line shows the start value of the ramp, and the second line the end value.

If the compensation range available with the iris is exceeded (e.g. the start value is at the beginning or end of the adjustment range) the READY LED flashes green and the warning 'IRIS RANGE' flashes on the display after returning to the main menu. The limit values for the shutter angle, the iris or the camera speed must be corrected! The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



- Press the MODE button to go to the next submenu.
  The limit values for the aperture of the lens are defined, using the SEL and SET buttons and the handwheel.
  One of the two limit values (minimum or maximum aperture, depending on the adjustment direction of the camera speed) can be defined; the other limit value is automatically calculated by the WRC-1.
  Press the SEL button for longer than 2 seconds.
  Depending on the definable limit value, the T-stop value flashes in the first or second display line. This can now be set using the handwheel.
  The automatically calculated other limit value is shown in the other display line.
  Press the SEL button again to switch to the next digit.
  The selected T-stop value is confirmed, and the decimal is set to '0', by pressing the SET button.
  The full aperture (smallest T-stop number) corresponds to the selected maximum camera speed.



- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

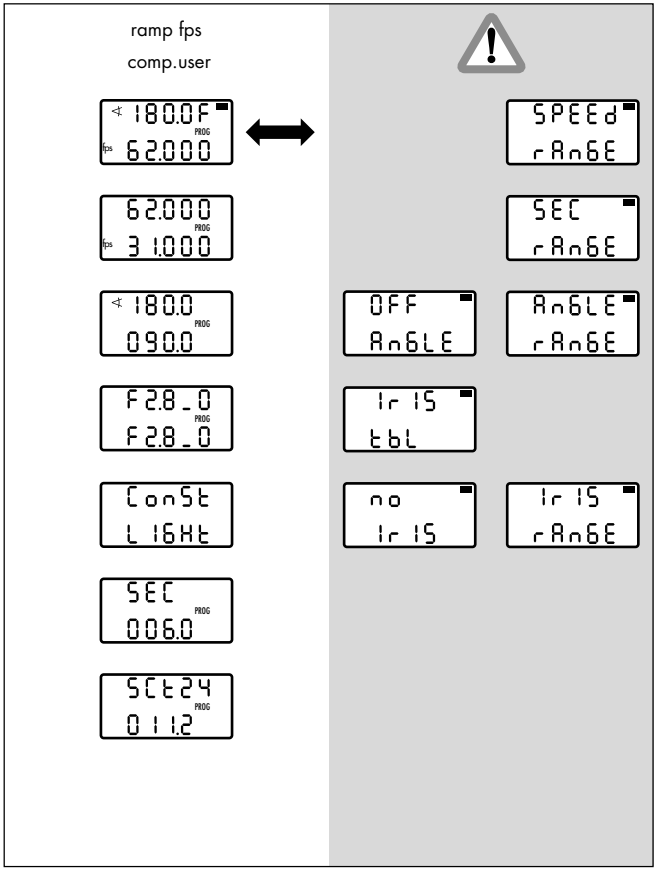
A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!

Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

- Press the MODE button to go back to the main menu.



5.7.14 Ramp speed / compensation user

The camera speed is continuously adjusted, together with the iris (if controlled by the WRC-1) and the mirror shutter angle (if controlled by the WRC-1) within the freely definable limits over a pre-defined period of time after pressing the RAMP button in the camera run.
If appropriate values are selected, either the exposure can be kept at a constant level, or a ramp can be defined to change the exposure as required (e.g. fading in or out).

Note: The function of the user mode always remains the same, irrespective of the position of the WRC rotary switch (Iris, ◅ or fps): The timing of the simultaneous adjustment processes is controlled using the handwheel.
If a ramp function is selected (ramp Iris, ramp ◅ or ramp fps), a ramp duration can be defined. The ramp is started while the camera is running by pressing the RAMP button. In this case the handwheel is without function in the main menu.

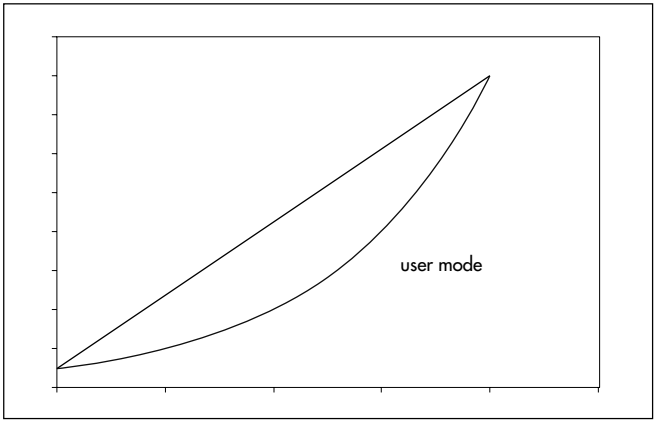
Differences in exposure are not automatically compensated for.

In the user mode, all adjustments are not carried out linearly within the adjustment time, as in the other WRC modes. For this reason, ramp durations may be different, compared to those in the other WRC modes.

The main menu shows the currently adjusted shutter angle in the first line. If the aperture is being controlled by the WRC-1, this is indicated by an 'F' at the end of the first display line. The currently adjusted T-stop can be shown in the first display line by pressing the SET button.
The current camera speed is displayed in the second line.

Note: The display shows full T-stops followed by the tenth of a T-stop. Example: T-stop 2.8 plus half a T-stop is shown as 2.8_5. The tenths of a T-stop are linearly divided between the two full T-stop positions.

Note: To check the image in the viewfinder, the iris can be opened completely by pressing the OPEN button (if controlled by the WRC-1).
The iris remains open until the OPEN button is released again.
This does not alter the programmed settings.
The OPEN button is without function while the camera is running.



The 'PROG' symbol indicates that a time-controlled ramp function has been selected.

Note The following warnings may be displayed:
'IRIS TBL' – a valid iris table has not yet been activated;
readings with 'NO' in the first display line indicate that the selected function is currently not available (example: 'NO IRIS' although the iris control is activated on the WRC-1, the iris motor has not yet been connected);
readings with 'RANGE' in the second display line indicate that the adjustment range of a

parameter has been exceeded (example: the selected speed is not available with this camera); readings with 'OFF' in the first display line indicate that this function is deactivated on the camera (example: shutter angle of the 435 is set manually = 'OFF ANGLE').
Correct parameters must be set before the camera is started!

The handwheel is without function in the main menu. Press the RAMP button when the camera is running to start the ramp. The camera can be started, by pressing the RUN button on the WMU-1.

The ramp can be reversed, by pressing the RAMP button again: the ramp then reverses its direction until it reaches the start value again. For best results wait until the end of the ramp.

With most lenses, the T-stops before the end-stops are not exact due to the tolerances involved. In order to avoid incorrect exposure, the adjusted iris range should not contain these values.

With the iris wide open a lens-related reduction in brightness towards the edge of the image may occur, looking like an incorrect exposure. The exact values are dependent on the lens type and must be determined with test shots.

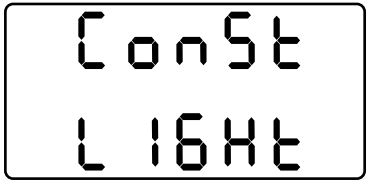
- Press the MODE button in the main menu to enter the first submenu. The limit values (minimum and maximum camera speed) can be defined.
  The first display line shows the start value of the camera speed, and the second line the value at the end of the ramp.

- Press the SEL button for longer than 2 seconds.
  The first digits in the first display line flash.
  The required value can now be set using the handwheel.
  Press the SEL button again to switch to the next digits.
  The first digits are confirmed, and the decimal positions are set to '0' by pressing the SET button.
  The values in the second display line can be set accordingly.

- Press the MODE button to go to the next submenu.
  To define the values for the minimum and maximum shutter angle (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  The start value of the shutter angle is shown in the first display line, and the end value is shown in the second line.

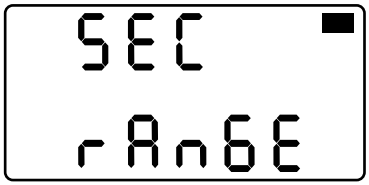
- Press the MODE button to go to the next submenu.
  To define the values for the aperture of the lens (if controlled by the WRC-1), use the SEL and SET buttons and the handwheel, as described above.
  The start value of the aperture is shown in the first display line, and the end value is shown in the second line.

- If the defined values result in a constant exposure, the display shows 'CONST LIGHT' when the MODE button is pressed. If this reading is not shown, the exposure is altered during the ramp.



- Press the MODE button to go to the next submenu. To enter the ramp duration, use the SEL and SET buttons and the handwheel, as described above.

A previously set ramp duration may now exceed the technically fastest possible adjustment, if the ramp duration is simply kept from an old program. The READY LED then flashes green and the warning 'SEC RANGE' is shown in the main menu. The ramp duration must be corrected. The camera can still be started for test purposes in spite of the flashing warning. However, the exposure may be incorrect!



Note: The shortest possible ramp time is adjusted by turning the handwheel to the left end-stop. The maximum ramp time is 100 seconds.

Note: While the ramp duration is being set, the display shows the automatically calculated screen time in the first display line, which corresponds to the selected projection speed (see the next two bullet points).

- Press the MODE button to go to the next submenu. The screen time for the selected ramp duration can be displayed.
  The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

- Press the SEL button for longer than 2 seconds to select the required projection speed. Press the SEL button repeatedly to switch between the three available values. The selected projection speed is confirmed by pressing the SET button.

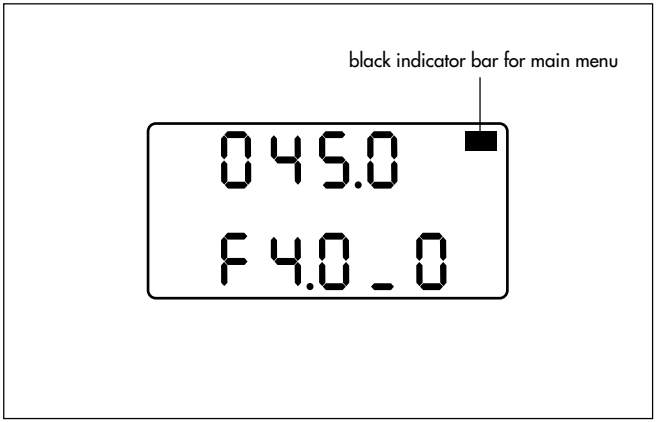
- Press the MODE button to go back to the main menu.

6. Warnings

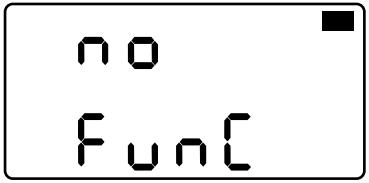
Warnings are only displayed in the WRC mode, and only in the main menu ⇨ **photo** (indicated by a black bar in the top right of the display). In CAM mode, only warnings are displayed, which also appear on the camera display.

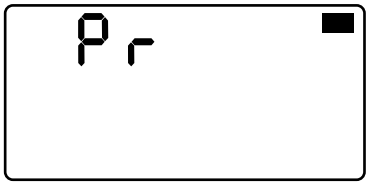
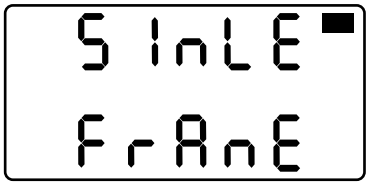
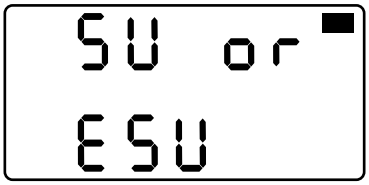
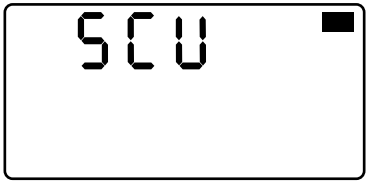
All flashing displays (including LEDs) indicate a warning.

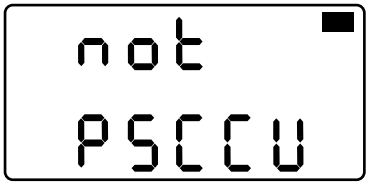
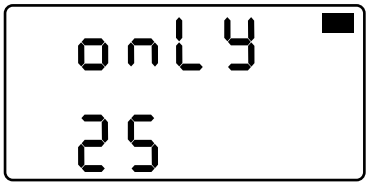
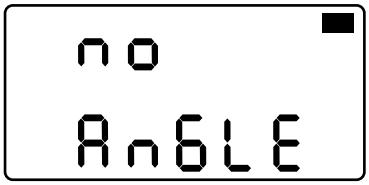
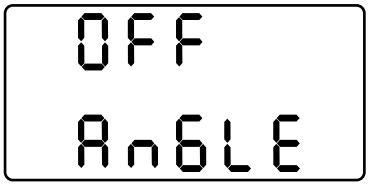
Note: All warnings displayed on the WMU-1 are described in the LCS Manual

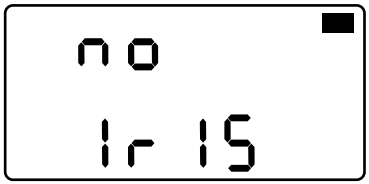
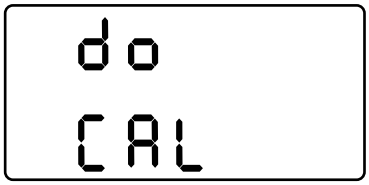
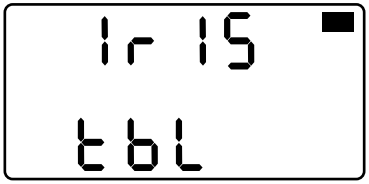


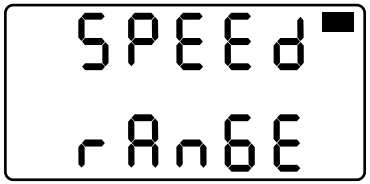
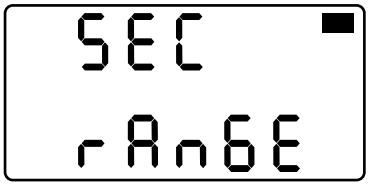
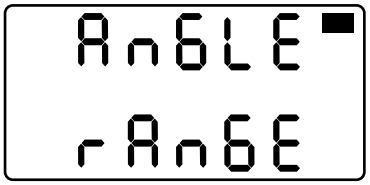
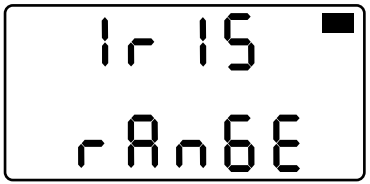
A function has been selected which cannot technically be realised.
Example: the iris adjustment cannot be compensated for a constant exposure at the same time by the iris (or a function in combination with the iris, e.g. iris / ◄ 50 %).
Set a permitted combination using the WRC and COMPENSATION rotary switches.



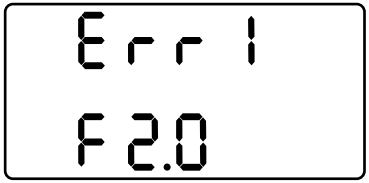
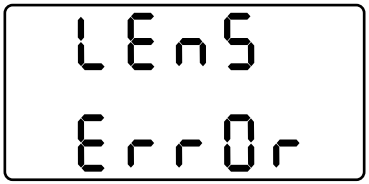
	The connected camera is in the program mode; the program activated in the camera has priority. The camera program must be deactivated if the WRC-1 is to be used for controlling (see Camera instruction manual).
	A single frame unit is attached to the camera. The single frame unit controls the mirror shutter and the camera speed. The single frame unit must be deactivated if the WRC-1 is to be used for controlling. (see Single Frame/Capping Shutter instruction manual).
	An ESU-1 or VSU is connected to the camera. These units control the corresponding camera functions. The ESU-1 or VSU must be disconnected from the camera if the WRC-1 is to be used for controlling. Warning: risk of improper use!
	A SCU is connected to the camera. This unit controls the corresponding camera functions. The SCU must be disconnected from the camera if the WRC-1 is to be used for controlling. Warning: risk of improper use!

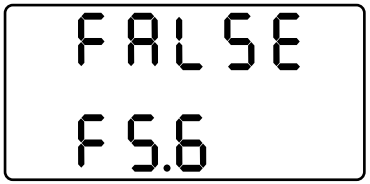
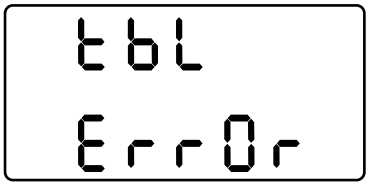
The selector switch on the camera is not set to PS/CCU (or to CCU on the ARRIFLEX 535A). Set the camera selector switch to PS/CCU.	
With the ARRIFLEX 535A only a fixed reverse speed of 25 fps is available via the WRC-1.	
The connected camera does not have an electronically adjustable mirror shutter. The exposure cannot be compensated for using the mirror shutter. Another kind of compensation must be selected using the COMPENSATION rotary switch.	
The electronic shutter angle adjustment on the camera is deactivated – the shutter angle has been mechanically set. Release the mechanical locking of the shutter angle and switch on the electronic shutter angle control on the camera.	

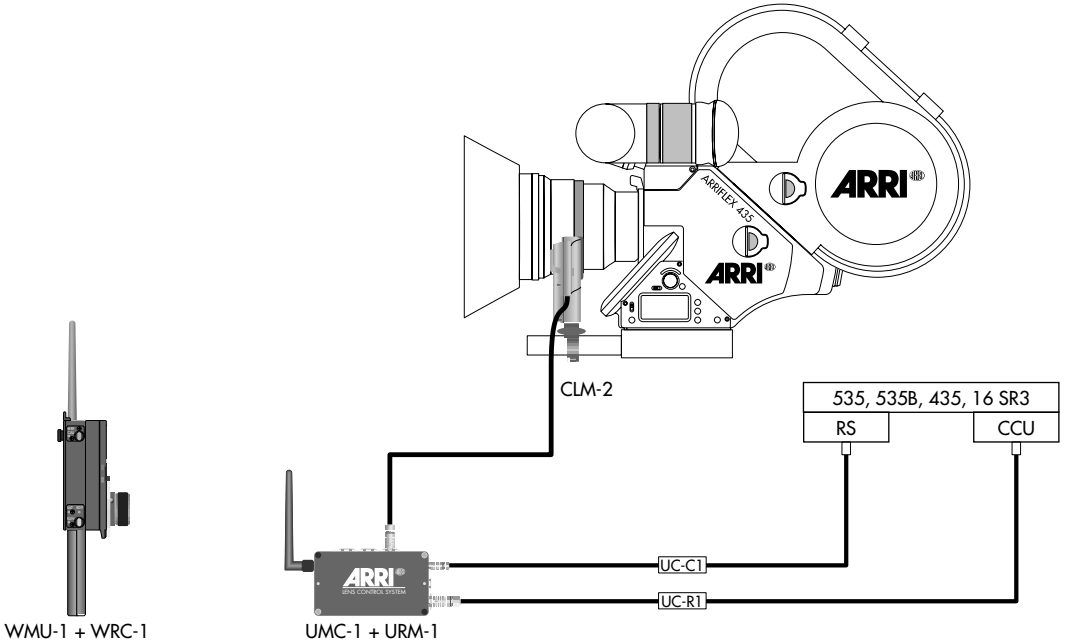
	No iris motor is connected to the UMC-1, a CLM-1 is connected as the iris motor, or the IRIS sliding switch is set to OFF and a function has been selected which requires the iris to be controlled or the calibration process is running. Connect a CLM-2 iris motor, or set the IRIS sliding switch to ON and then switch the WRC-1 (and WMU-1) off and on again to reset the units, or select a WRC function which does not require an iris control.
	Command to calibrate the lens. Press the CAL button on the WMU-1.
	An iris table is not activated. Connect the iris control as described in chapter 4.1.2, calibrate the lens and assign the T-stops as described in chapter 5.5.1!

The programmed camera speed values lie outside of the available range (e.g. the WRC-1 has been programmed for a high-speed camera, but a standard model is now connected).	
The ramp time cannot be executed for technical reasons. Set an executable (longer) ramp time.	
An adjusted shutter angle value, or the automatically calculated angle, lies outside of the available range. Set executable limit values for the shutter angle range.	
The adjusted iris limit values or end-stops lie outside of the adjustment range of the iris. Define new iris limit values or end-stops.	

Warnings when programming iris tables

	A T-stop has been programmed which cannot be correct, e.g. T-stop 2.0 cannot lie between 2.8 and 4. The incorrectly positioned value must be deleted and reset.
	The adjustment range of the iris ring is not compatible with the selected lens even though it has been re-calibrated. The selected lens is not compatible with the adjustment range of the choosen lens. Use the correct lens, or select the right lens when programming. If the device is checked and found to be set properly, either the end-stops of the lens have probably been reset or another iris ring has been mounted. In this case, the lens can be programmed in the user mode (see chapter 5.5.1.2 Programming iris tables for other lenses).

The T-stop value set on the lens lies outside of the permitted range. Reset the T-stop on the lens.	
The loaded table contains an error, or it is not compatible with the lens mounted on the camera. Re-program the T-stops.	


ARRI
ARRIFLEX 435
ARRI
CLM-2
535, 535B, 435, 16 SR3
RS
CCU
UC-C1
UC-R1
ARRI
SENS CONTROL SYSTEM
WMU-1 + WRC-1
UMC-1 + URM-1

7. Quick guide

This quick guide is aimed at users who have already read the instruction manual, and who are very familiar with the system.
Warning: no reference is made in this chapter to possible operating errors – this chapter therefore does not include any warnings!

7.1 Connecting the devices

System components required for wireless operation

WRC-1 ..... K2.52087.0
WMU-1 ..... K2.52052.0
with WBU-2 battery K2.52088.0
WAC-1 charger K2.52072.0
UMC-1 ..... K2.52040.0
with UC-C1 cable [K2.52047.0 as replacement]
dovetail adapter K2.52080.0
URM-1 ..... K2.52048.0
UC-R1 cable K2.52079.0

for iris control additionally
CLM-2 ..... K2.52036.0
possibly with console K2.52035.0

Note: CLM-1 motors cannot be used as iris motors for the WRC-1.

- In order to operate the WRC-1 the following EPROM versions must be used:
  WMU: ..... 01.50 or higher
  UMC: ..... 01.50 or higher
  ARRIFLEX 435 ..... 2.4 or higher

The dovetail adapter (K2.52080.0) can be used to firmly attach the UMC-1 to the camera.

The UC-C1 cable links the UMC-1 and the RS socket on the camera, while the UC-R1 cable connects the UMC-1 and the CCU socket. Set the PS-CCU/NORM switch on the camera to PS-CCU.

System components required for cable operation

WRC-1 ..... K2.52087.0
WC-W1-S cable K2.52089.0
WHA-1 ..... K2.52070.0

7.2 Basic operating modes

7.2.1 CAM mode

Set the WRC/CAM sliding switch to CAM. In this operating mode the display on the WRC-1 is identical to the camera display. The settings on the camera can be adjusted by pressing the MODE, SEL and SET buttons. The OPEN button serves as the PHASE button on the camera.

7.2.2 WRC mode

Set the WRC/CAM sliding switch to WRC. This mode provides access to advanced remote control options, which allow different ramps to be programmed with the corresponding exposure compensation options.

IRIS ON/OFF

The IRIS sliding switch is used when switching on the WRC-1 to determine whether the WRC-1 should control the iris motor (IRIS 'ON') or not.
As the T-stops on the ARRIMACROS change when the lens is focussed, the ARRIMACROS may not be used with the LCS or the WRC-1 system.

7.3 Operation

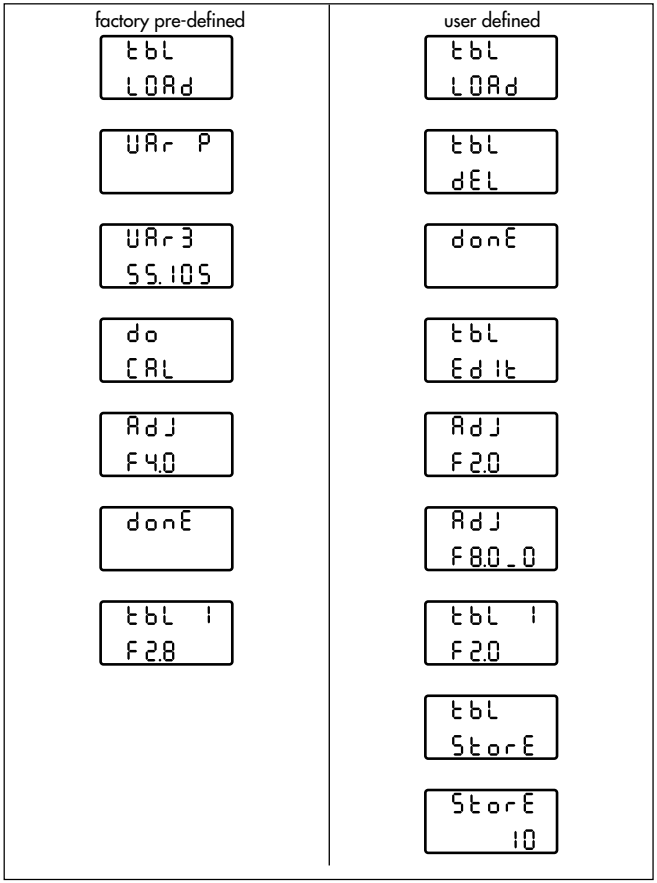
With the WRC-1 the
- cameral speed,
- the mirror shutter angle and
- the iris of the lens

can be adjusted using the handwheel.
Programs (ramps) can be created to automatically adjust the controlled operating functions for a pre-defined period of time. Changes in exposure can be compensated for by automatically adjusting one or two of the other controllable parameters.

The WRC-1 does not have its own ON/OFF switch. It is activated via the devices to which it is connected (e.g. the WMU-1).

- The WRC rotary switch is used to select the master value which is to be adjusted (camera speed, shutter angle, iris), and determines whether the adjustment is to be made manually using the handwheel (iris, ◄‡, fps), or whether it is to be time-controlled (ramp Iris, ramp ◄‡, ramp fps) and started by pressing the RAMP button in the camera run.
- The camera can be started by pressing the RUN button on the WMU-1.
- The COMPENSATION rotary switch is for defining whether, and how, the difference in exposure resulting from adjusting the master value is to be compensated for. The COMPENSATION rotary switch governs the slave values.

Please read the operating instructions in chapter 5.3 and chapter 5.5.1.5!



7.3.1 Iris control

- Before using the iris control functions, the T-stops engraved on the lens being used must be assigned in the WRC-1 and the lens' end-stops must be calibrated. If a lens has not yet been selected and assigned to the T-stop values in the WRC-1 (condition on delivery from the factory, or the active iris table has been deleted from the memory), a flashing warning 'IRIS TBL' appears when the WRC-1 is switched on with the IRIS sliding switch set to the position 'IRIS ON'.
  Press the MODE button to switch to the input mode.
  If a lens has already been selected and programmed, the menu for selecting lenses or assigning T-stops can be accessed in the WRC rotary switch position 'IRIS'.
  The so called table menu is the last submenu before returning to the main menu.

- Press the MODE button three times in the main menu in the WRC rotary switch position 'IRIS' with the COMPENSATION rotary switch at 'OFF' until 'TBL LOAD' is shown on the display.

- Loading factory-defined or previously programmed lenses:
  Press the SEL button and select the required lens set using the handwheel.

Display:	**Lens set:**
UP	ARRI Zeiss Ultra Primes
VAr P	ARRI Zeiss Variable Primes
HS 35	ARRI Zeiss High-speed set for 35mm film
Std35	ARRI Zeiss Standard set for 35mm film
HS 16	ARRI Zeiss High-speed set for 16mm film
User	lenses previously defined by the user

  Confirm the selection by pressing the SEL button.
  Choose the required focal length using the handwheel and confirm the selection by pressing the SET button.
  Then calibrate the lens by pressing the CAL button on the WMU-1
  and set the displayed T-stop value ('ADJ' is shown in the first display line) using the handwheel. Check the T-stop on the lens.
  Confirm by pressing the SET button.
  Check the other available T-stops by adjusting them with the handwheel.

- Defining iris tables for other lenses:
  To avoid operational errors, turn the handwheel until 'TBL DEL' appears in order to delete an iris table which may already have been set.
  Press the SEL button – 'DEL' flashes on the display.
  Press the SET button to confirm – 'DONE' is displayed for a second.
  Then turn the handwheel until 'TBL EDIT' is displayed and confirm by pressing the SEL button.
  Turn the handwheel to the left until the first T-stop given on the iris ring of the lens being used is shown in the second line of the display.
  This must be a full T-stop from the standard T-stop range.
  Then press the SEL button.
  'ADJ' now flashes in the first line of the display.
  Set the iris ring to the displayed value using the handwheel.
  The T-stop value is programmed by pressing the SET button.
  This is indicated in the first line by an 'I' next to 'TBL'.
  In case you need to delete a wrong assignment, press the SET button again. The 'I' next to 'TBL' disappears again.
  Turn the handwheel again until the next value given on the iris ring of the lens being used is shown on the display.
  Program this and the next values as described above.
  If the iris scale of the lens being used is linear, it is sufficient to enter just two T-stop values, which must

however be at least four T-stops apart, in order to define the iris table.
If the iris scale is not linear, all the T-stops must be programmed.
After programming the iris table, the T-stops on the iris ring of the lens must be controlled by adjusting with the handwheel and visually checking the lens.

If the created iris table should remain available for later use, it must be stored. This also applies when an iris table has been re-edited.

- Storing iris tables:
  The handwheel must then be turned in the table menu (TBL LOAD, TBL DEL, TBL EDIT, TBL STORE) until 'STORE' is displayed in the second line.
  Confirm the selection by pressing the SEL button – 'STORE' is displayed in the first line,
  and the number of the memory area is shown in the second line (10 memory areas are available).
  Select the number of the required memory area using the handwheel and store the iris table by pressing the SEL button.
  Note down the number of the memory area together with the programmed lens to simplify activating lenses at a later time.

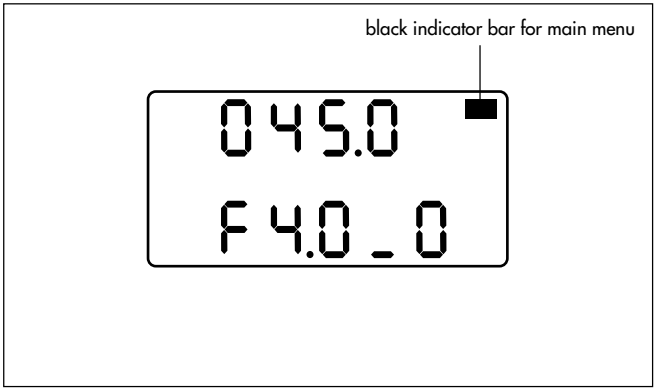
7.3.2 Entering values

The main menu is indicated by a black bar ⇨ **photo** in the top right corner of the display. The currently adjusted value and the value of one of the two possible exposure compensation options are shown in the display.

If 'PROG' is also shown, a time-controlled ramp function (ramp Iris, ramp ⋖, ramp fps) has been selected using the WRC rotary switch. In this case, the handwheel is without function in the main menu.
In the three other WRC rotary switch positions (fps, ⋖, iris) a parameter can be adjusted manually using the handwheel. The display shows the adjusted value and an automatically calculated and adjusted compensation value.

- Press the MODE button to go to the first submenu to define the end-stops of the handwheel or the limit values of the master value of a ramp.
  Press the MODE button again to go to the next submenu.

- Press the SEL button for longer than 2 seconds in order to activate the input mode in a submenu.
  The adjustable digits flash.
  These can now be set by turning the handwheel.
  Press the SEL button again to activate the next digits.



  This procedure is repeated until all the positions have been set. The first digits are confirmed, and the decimal positions are set to '0', by pressing the SET button.

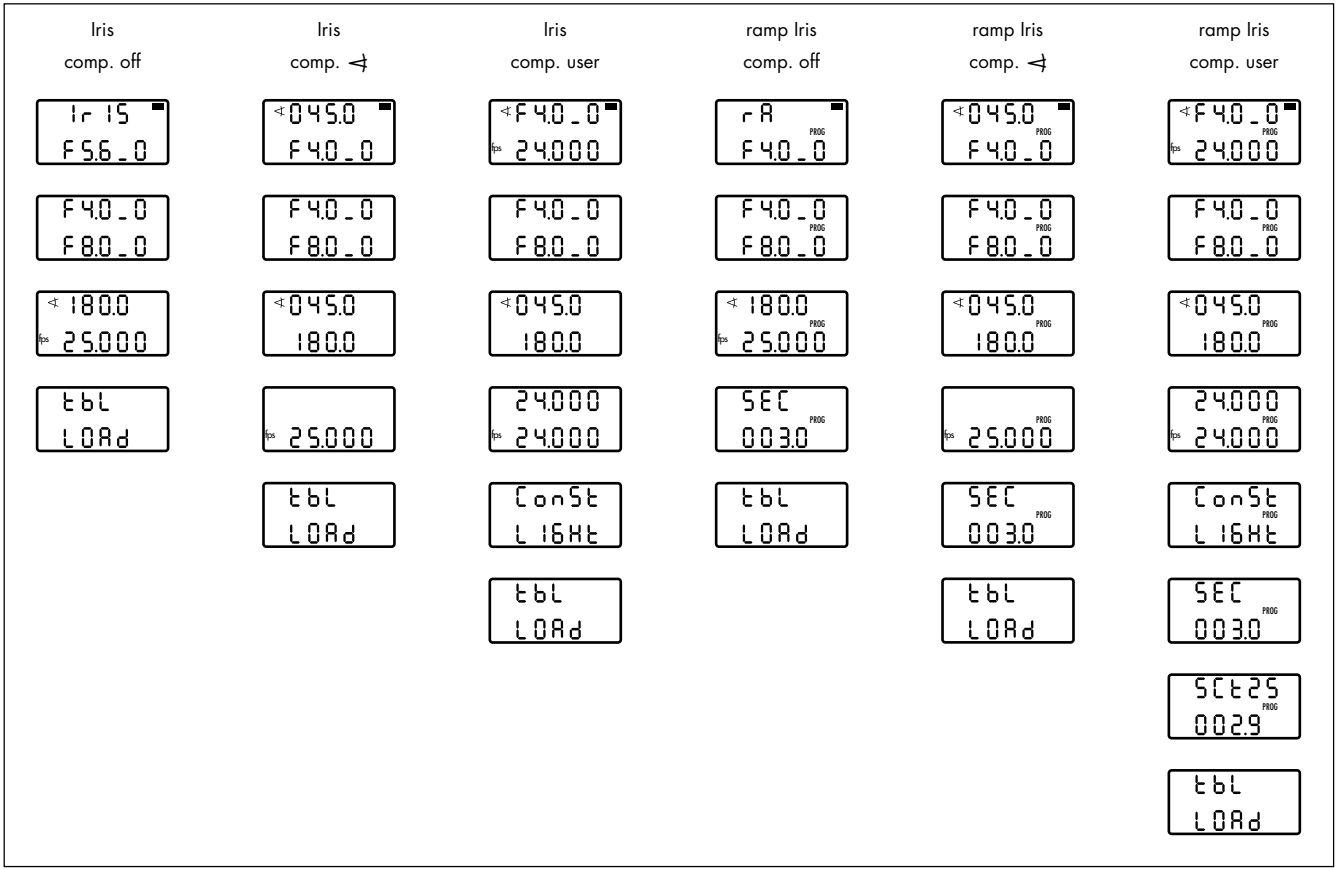
- The end-stops of the handwheel or the limit values of the master value of a ramp are always defined in the first submenu –
  i.e. selected master value: camera speed – the limit values for the camera speed are defined in the first submenu.

- The remaining exposure-related parameters are defined in the following submenus, if the corresponding functions are controlled by the WRC-1.

The ramp duration is set,
the screen time is displayed when a corresponding function is selected,
and the reading 'CONST LIGHT'
confirms a constant exposure resulting from the values set in the user-defined mode.

The corresponding submenus for each adjustable combination of master values and compensations can be seen in the following illustrations or chapter 5 of this instruction manual.

If technically executable limit values are exceeded when defining the different parameters (e.g. settings are entered for a high-speed camera model, then a normal production camera is used), a warning is displayed in the main menu '(exceeded parameter) + RANGE' and the READY LED flashes green (in all submenus). The set values must then be corrected.
If a function is not available (e.g. the camera being used does not have an electronically adjustable mirror shutter) the reading 'NO + (function designation)' is displayed. Another compensation option or control function must be selected.


Iris
comp. off
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F5.6_0
F4.0_0
F8.0_0
180.0
25.000
tbL
LOAd
Iris
comp. ∢
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F8.0_0
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PROG
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003.0
PROG
tbL
LOAd
ramp Iris
comp. user
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PROG
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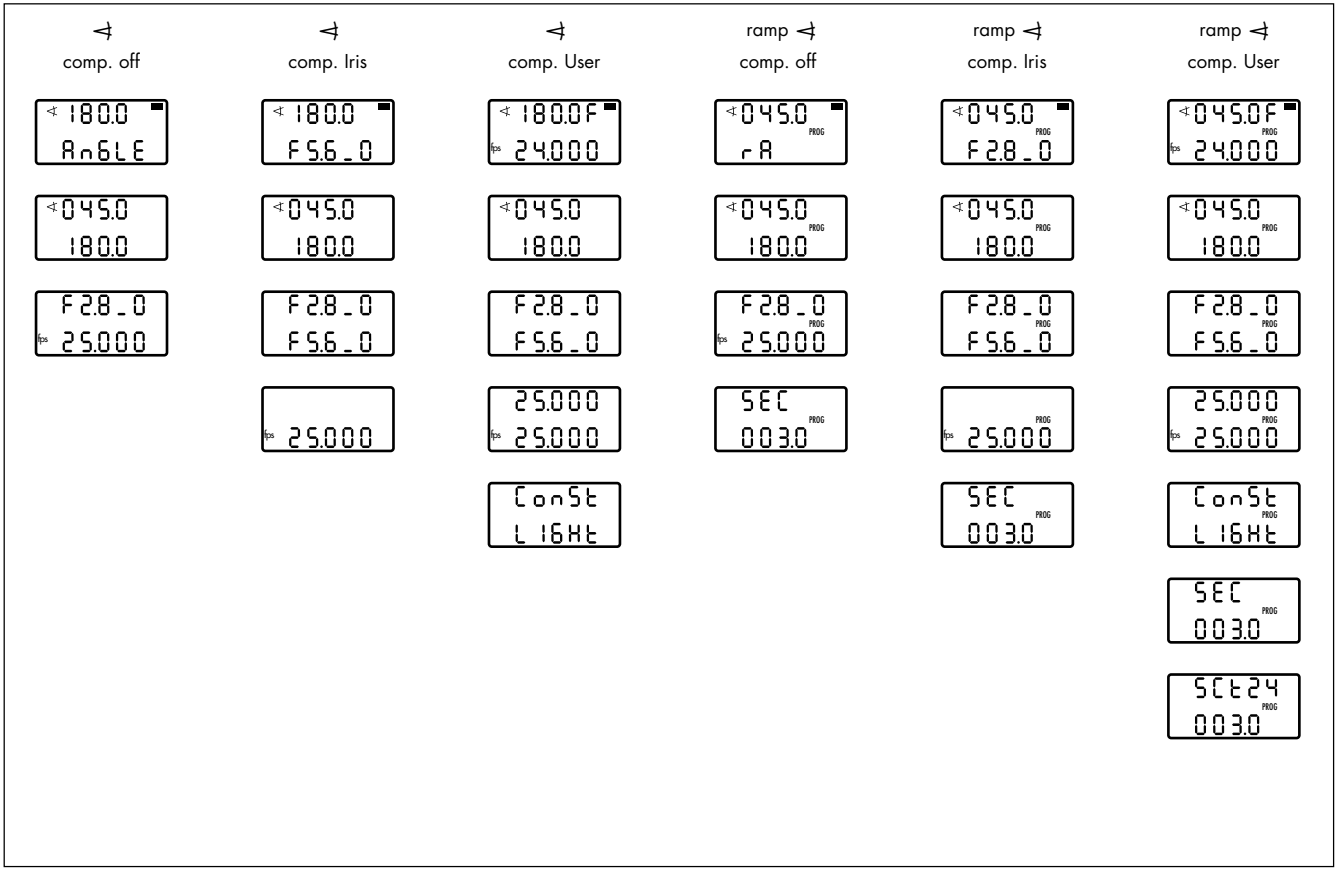
PROG
SCt25
PROG
002.9
tbL
LOAd


comp. off
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comp. Iris
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F5.6_0
fps 25.000
comp. User
180.0F
fps 24.000
045.0
180.0
F2.8_0
F5.6_0
25.000
fps 25.000
ConSt
LIGHt
ramp comp. off
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PROG
180.0
F2.8_0
PROG
fps 25.000
SEC
PROG
003.0
ramp comp. Iris
045.0
PROG
F2.8_0
045.0
PROG
180.0
F2.8_0
PROG
F5.6_0
PROG
fps 25.000
SEC
PROG
003.0
ramp comp. User
045.0F
PROG
fps 24.000
045.0
PROG
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F2.8_0
PROG
F5.6_0
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SCt24
PROG
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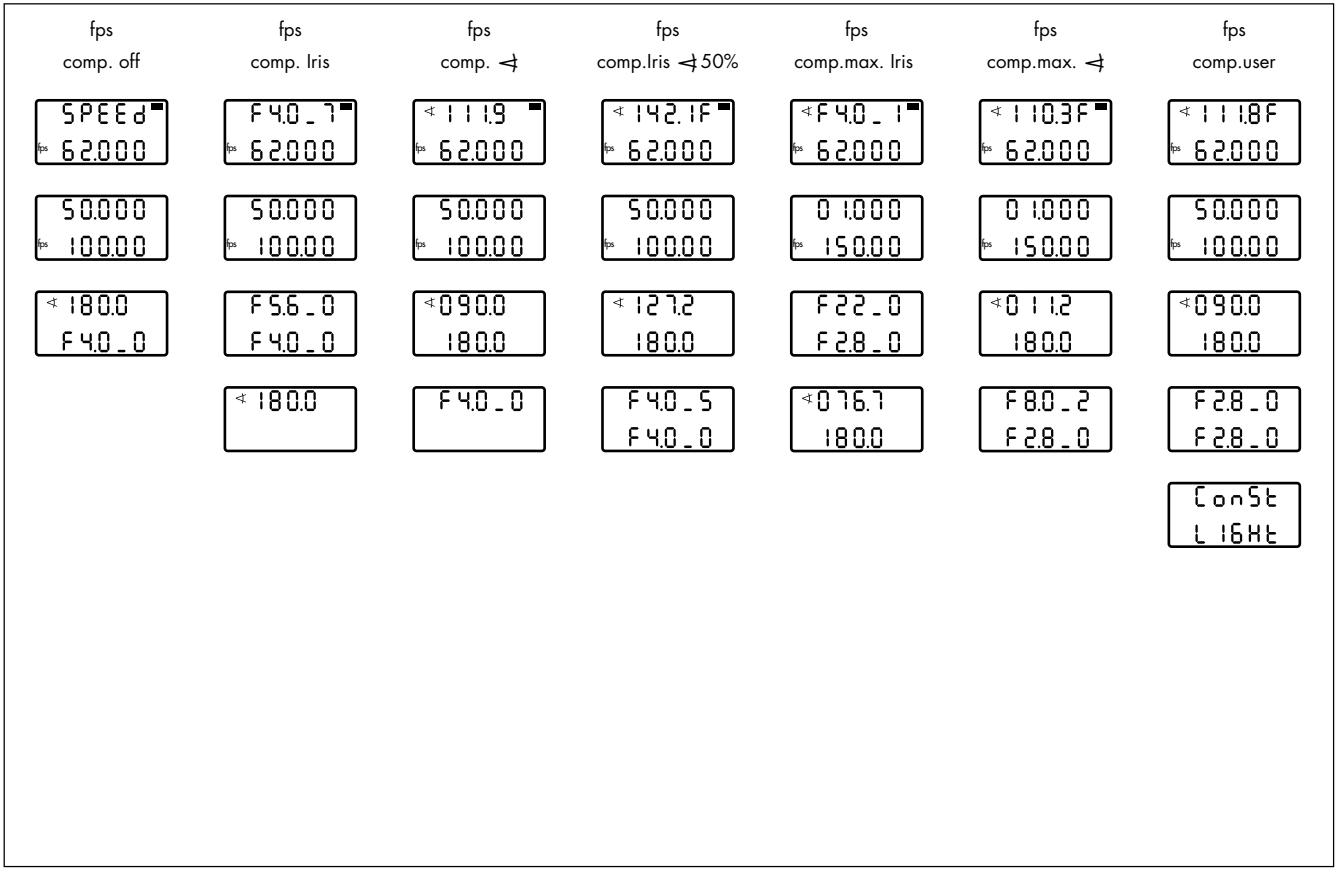
fps
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F4.0_0
fps
comp. Iris
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F5.6_0
F4.0_0
180.0
fps
comp. ◁
111.9
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50.000
100.00
090.0
180.0
F4.0_0
fps
comp.Iris ◁ 50%
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100.00
127.2
180.0
F4.0_5
F4.0_0
fps
comp.max. Iris
F4.0_1
62.000
01.000
150.00
F22_0
F2.8_0
076.7
180.0
fps
comp.max. ◁
110.3F
62.000
01.000
150.00
011.2
180.0
F8.0_2
F2.8_0
fps
comp.user
111.8F
62.000
50.000
100.00
090.0
180.0
F2.8_0
F2.8_0
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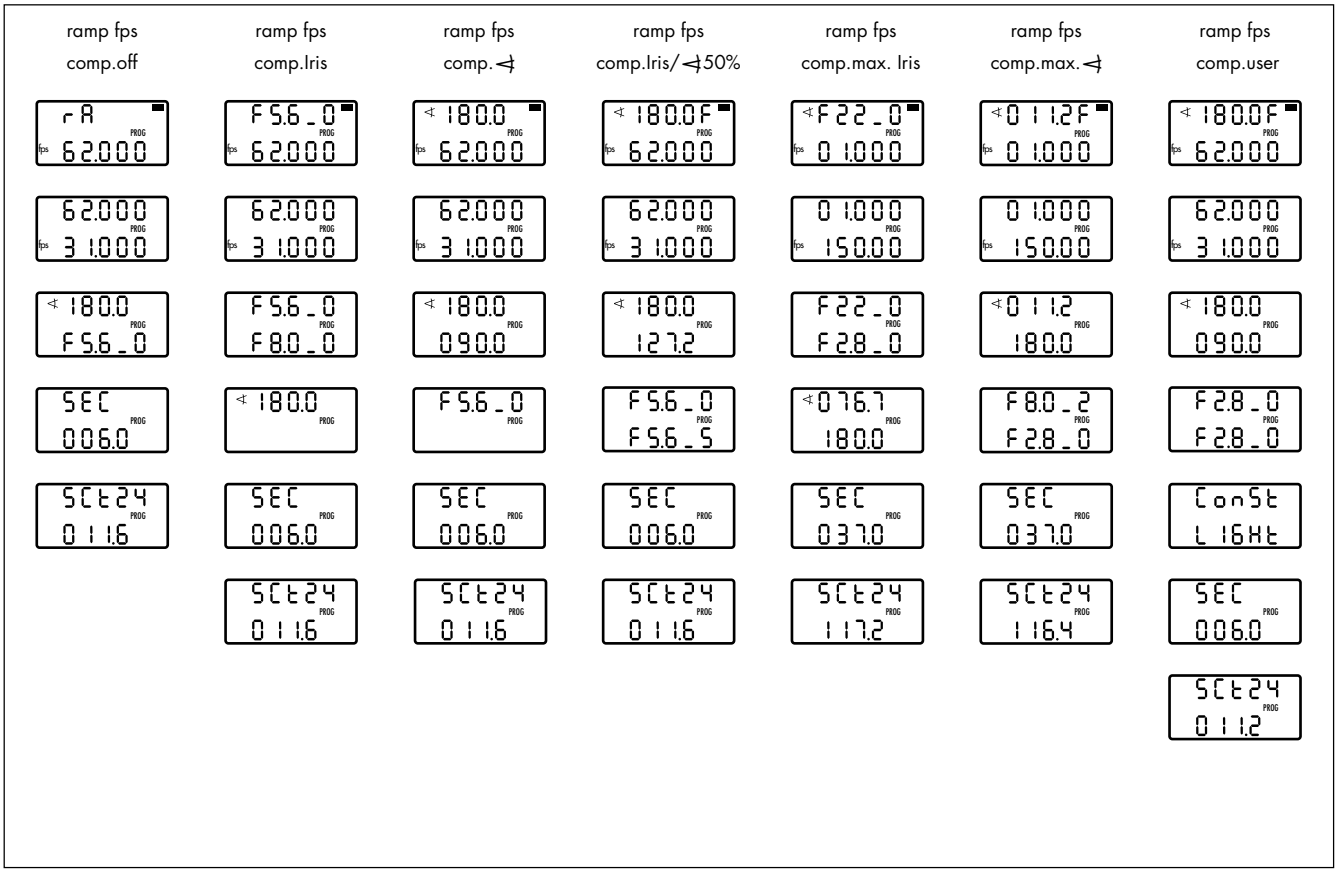
LIGHt


ramp fps
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ramp fps
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F5.6_0
SEC
006.0
SCt24
011.6
ramp fps
comp.Iris/◁50%
180.0F
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31.000
180.0
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F5.6_0
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006.0
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076.7
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SCt24
117.2
ramp fps
comp.max.◁
011.2F
01.000
01.000
150.00
011.2
180.0
F8.0_2
F2.8_0
SEC
037.0
SCt24
116.4
ramp fps
comp.user
180.0F
62.000
62.000
31.000
180.0
090.0
F2.8_0
F2.8_0
ConSt
LIGHt
SEC
006.0
SCt24
011.2
PROG
fps

8. Glossary

Adjusting: The term 'adjust' as used in this instruction manual describes a manual alteration of one of the adjustable parameters using the handwheel.

Ramp: The term 'ramp' describes adjustment actions which run automatically over a predefined period of time after pressing the RAMP button in the camera run, i.e. these adjustments are not controlled using the handwheel.

Master value: The parameter which is to be primarily adjusted, i.e. the iris of the lens, the mirror shutter angle, or the camera speed.

Slave value: Adjusting the master value alters the film exposure. This difference in exposure can be automatically compensated for by the WRC-1. To do this, the WRC-1 adjusts the other parameters, e.g. altering the camera speed can be compensated for by the iris of the lens or by the shutter angle as required.

Limit value: A limit value is either the left and right handwheel end-stop, or the start and end value of an adjusted parameter in the case of a time-controlled ramp.

Fixed value: After defining the limit values, the remaining exposure-related parameters which do not change when adjustments are being made must also be defined.
Example: if the camera speed has been selected as the parameter to be adjusted, the shutter angle and the aperture must be defined in the next submenus, if these are controlled by the WRC-1.

Screen time: The screen time is the time (in seconds) needed for a projection at a selected standard projection speed: 24, 25 and 30 fps are available.

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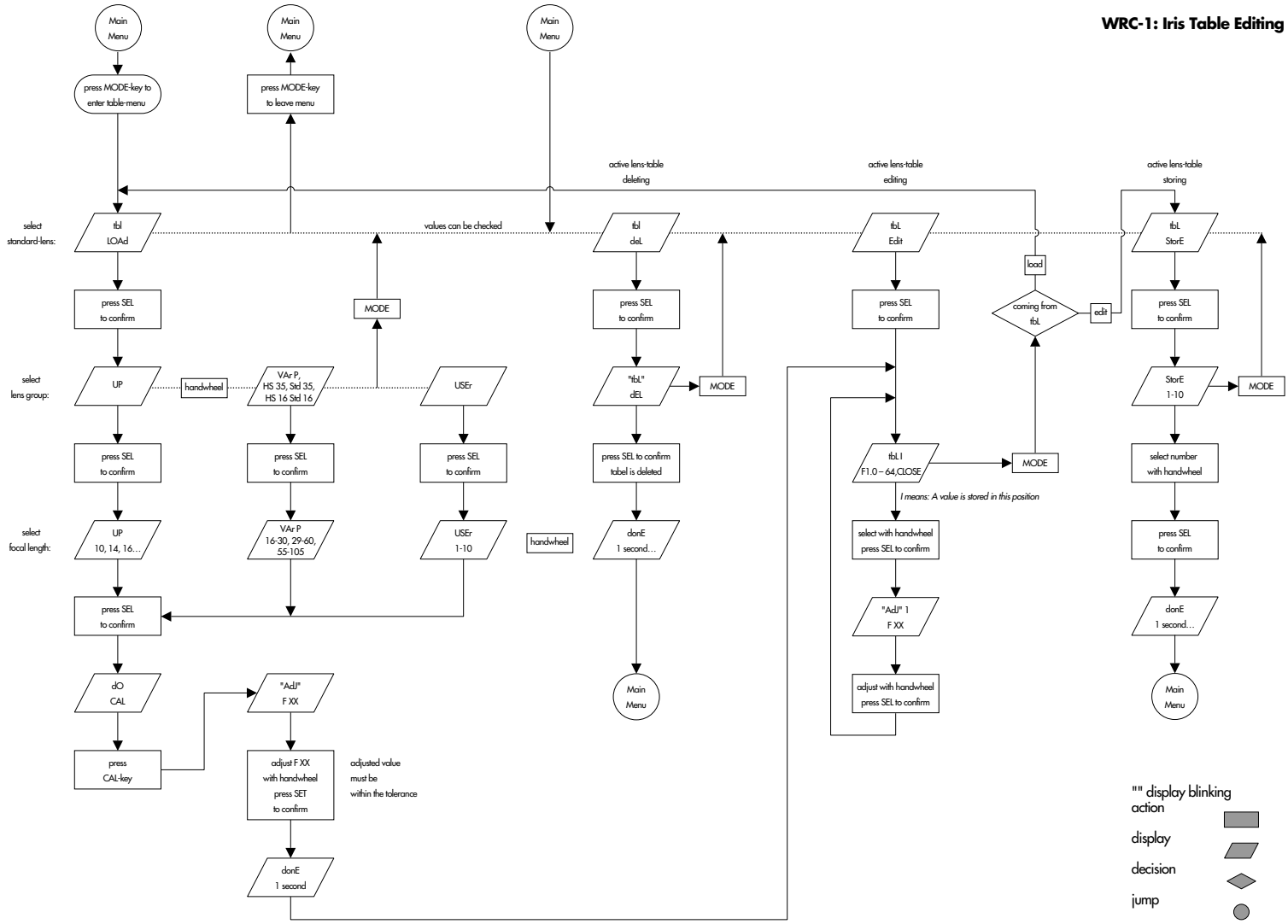
WRC-1: Iris Table Editing



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