

Operating instructions

br n c o l o r Minipuls D160

Before use

Please read all the information contained in these operating instructions carefully. They contain important details on the use, safety and maintenance of the appliance. Keep these operating instructions in a safe place and pass them on to further users if necessary. Observe the safety instructions.

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Safety information

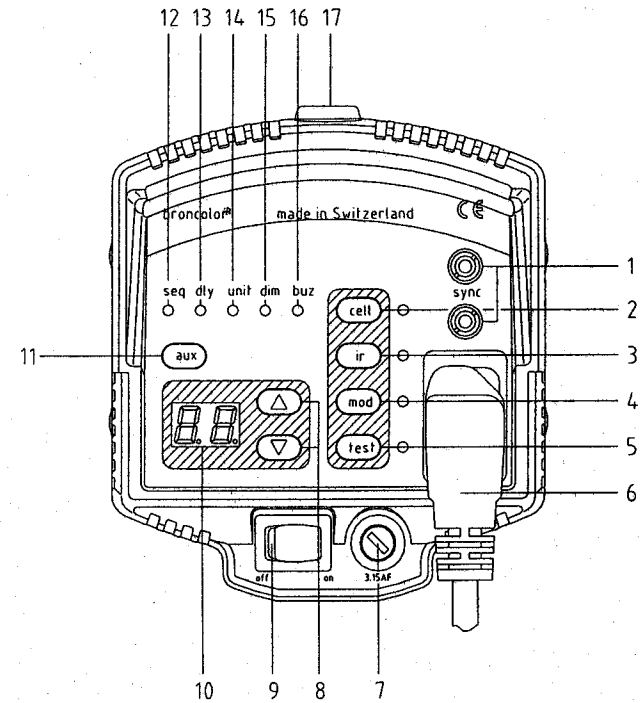
Attention: Read before start-up

- Prior to replacing the fuse, light bulb or flash tube, discharge the unit and disconnect from power. Allow the unit to cool off for 10 minutes before replacing the bulb or flash tube.
- Only those types of fuses indicated on the fuse label may be used. This is particularly important for fusing the halogen lamp which may burst if the wrong fuse is used.
- Only sand-filled fuses may be used. Sand-filled fuses can be identified by the opaque body of the fuse.
- The devices are designed for use in dry rooms. Protect them against splash water and against excessive exposure to dust.
- The devices are not suitable for use in an explosions-hazard environment.
- The accessories mounted to the unit may heat up to high temperatures under specific conditions. Handle with care !
- To protect against the effects of radiated heat, the unit must not be pointed at heat-sensitive and flammable surfaces from less than 1 meter away.
- Do not block the cooling louvers on the unit.
- Flash light contains, similar to sunlight, a specific portion of UV light. The undesirable side effects on skin and eyes are considerably reduced by using flash tubes with UV coating. Without these or other protective filters, use extreme care when shooting.
- Even when disconnected from power, dangerous voltages may remain within the interior of the device. For this reason, devices should only be opened by our broncolor repair service.
- For safety reasons, never operate a unit without the protecting glass in place.

Controls and displays Minipuls D160

1. Sync socket
2. Photo cell on/off
3. IR receiver on/off
4. Modelling lamp on/off
5. Test key, green ready lamp
6. Connector for mains cable
7. Fuse
8. Energy control up/down
9. Main switch on/off
10. Power display
11. Additional functions (aux)
12. Flash sequence
13. Flash delay
14. Unit address
15. Charging dimmer
16. Buzzer
17. IR receiver cell and photo cell

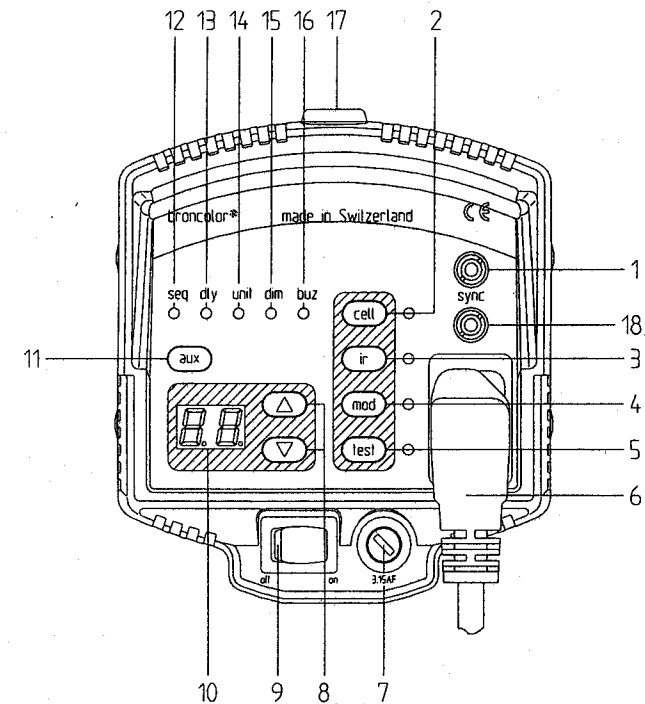
Front panel of Minipuls D160



Controls and displays Minipuls D160 plus

1. Sync socket
2. Photo cell on/off
3. IR receiver on/off
4. Modelling lamp on/off
5. Test key, green ready lamp
6. Connector for mains cable
7. Fuse
8. Energy control up/down
9. Main switch on/off
10. Power display
11. Additional functions (aux)
12. Flash sequence
13. Flash delay
14. Unit address
15. Charging dimmer
16. Buzzer
17. IR receiver cell and photo cell
18. Socket for computer link

Front panel of Minipuls D160 plus



1. Minipuls D160 / Minipuls D160 plus

We are delighted that you have chosen the high quality product broncolor Minipuls D160. With proper care it will render you many years of good service.

2. Application

This mains (AC-line) supplied studio flash unit is designed for professional photography only. In countries with earthed mains systems, use a three-wire extension cable.

3. Commissioning

- 3.1 Remove the transparent plastic hood by rotating. Insert the flash tube in accordance to point 10 and plug in the modelling light. Press desired reflector and protecting glass into the mounting and rotate in any direction.
- 3.2 Please check that the mains (AC-line) supply corresponds to the information on the label of the unit. Connect unit to earthed power supply.
- 3.3 Switch on main switch (9) and modelling light (4).
- 3.4 Green control lamp (5) will illuminate: this is how the unit shows that it is ready.

4. Energy control

Use the "up/down" keys (8) to control the flash energy (flash intensity) within a range of 4 f-stops (standard setting, extension to 5-stops see table under chapter 14). A value of 10 in the display indicates maximum intensity, 6 minimum. Whole numbers are full f-stop increments, decimals indicate 1/10 f-stop increments. Brief pressure on the "up/down" keys, (8) runs the power up (or down) by a 1/10 f-stop increment, prolonged pressure by a full f-stop. The display (10) then blinks until charging or discharging has stabilised at the new level.

5. Modelling light

- 5.1 Minipuls D160 units are equipped with a halogen modelling lamp. The modelling light is switched on with the "mod" key (4).
- 5.2 The brightness of the modelling light can be set proportionally to the flash intensity. To assure proportionality when operating units with different power output ratings, the units have various proportionality levels.
- 5.3 The proportionality level of the modelling light can be selected by pressing the "mod" key for 1 second when the modelling light is off. Repeatedly pressing the "up/down" key (8) toggles through the following operating modes:

P This level can be selected if only D160s are being used (highest proportionality level). Proportional modelling light rated 1200 J.

P1 Proportional modelling light with broncolor power packs rated 6400 J.

P2 Proportional modelling light with broncolor power packs rated 3200 J.

P3 Proportional modelling light with broncolor power packs rated 1600 J.

P4/5 If a Minipuls D160 is operated at a relatively low output level, the halogen modelling light will be relatively weak and yellowish. To counteract this problem, the Minipuls D160 is equipped with two additional modelling light proportionality levels. P4 for 800 J and less, P5 for 400 J and less.

HI The unit operates with full modelling light power independent of the selected flash output.

LO The unit operates at a lower power level for reduced current consumption and a longer halogen lamp service life.

When the "mod" LED is blinking, the "HI" or "LO" levels can also be selected by pressing the "up" or "down" key (8) for a longer period of time.

After the setting has been performed, the standard display can be activated by briefly pressing the "mod" key.

Pressing the "mod" key for 1 second when the modelling lamp is on will give direct access to the HI mode. To return press "mod" again.

6. Release and remote control

- 6.1 Photo cell (cell) and Infrared receiver (ir)

The photo cell can be switched on or off by using the "cell" key (2), the infrared receiver by using the "ir" key (3). If they are activated the green LED light(s) up.

After a flash sequence the photo cell, if activated, is blocked and the green indicating lamp blinks. By pressing the "cell" key the cell is re-activated.

6.2 Infrared flash release channels

Minipuls D160s can be triggered with broncolor infrared transmitters. Two different receiver channels are available.

The IR flash release feature is switched on and off by briefly pressing the IR-key. When the IR-receiver is switched on, the respective LED will light up. The IR remote control of the other functions is always enabled.

When the key is pressed for a longer period of time, the digital display will show the active trigger channel and the respective LED will blink. The up/down keys are used to select the channel:

1 = selective triggering on channel 1 (transmission time 1/500 s)

2 = selective triggering on channel 2 (transmission time 1/500 s)

3 = non-selective triggering on channel 1 and 2 (transmission time 1/1000 s, default setting)

After the setting has been made, the standard display is activated by briefly pressing the IR key.

Caution: for selective triggering, all units in the room must be set to 1 or 2 (none to "3") and all photocells must be switched off.

6.3 Sync socket (1)

Synchronous cables art. no. 34.111.00 or 34.112.00 may be plugged into the socket to release flashes via cable.

6.4 "test" key (5)

Key (5) allows the Minipuls D160 to be manually released. The respective LED lights up when the flash voltage precisely corresponds to the selected value. The LED extinguishes during charging and discharging and the power display will blink.

6.5 Remote Control

The remote control of Minipuls D160 is operated by the remote control units Servor d. If Minipuls D160 is switched to "stand-by" via the remote control unit, the decimal point of the main display will blink. The Minipuls D160 can be "re-activated" either by the remote control unit or by pressing any key on the front panel.

6.6 Servor addresses

Addresses will be assigned to each unit for individual control. This is explained in chapter 9.

6.7 Servor remote control channels

Remote control may be performed via 2 separate channels (studio work stations). This is explained in chapter 9.

7. Flash ready signals visual/audible

7.1 The visual ready signal is the green LED at the "test" key (5). It lights up only when the unit is fully charged. After a flash this LED goes out and lights up again when the unit is fully charged once more.

7.2 The audible signal "buzzer" sounds when the power capacitors are at 100% charge. It may be switched on or off. This is explained in chapter 9.

7.3 Audible fault signal

When the flash discharge fails, a warning signal of approx. 3 s duration will sound and the display of the relevant lamp base will flash.

8. Slow charge

The slow charge mode is activated by pressing the "down" key (8) when switching on the unit. By switching the unit off and on again the slow charge is deactivated.

9. Selecting additional functions

The "aux" key (11) is used to select additional functions. Repeated actuation of the key toggles through the following modes:

"Set sequence"	LED "seq" blinks
"Set delay"	LED "dly" blinks then return to
"Standard display"	no LED blinks

The default settings can be changed if the "aux" key (11) is pressed for a long period of time (1 s). Repeated actuation of the key then toggles through the following modes:

"Set unit address"	LED "unit" and right-hand numeral of display blink
"Set studio channel"	LED "unit" and left-hand numeral of display blink
"Set dim function"	LED "dim" blinks
"Set buzzer"	LED "buz" blinks then return to
"Standard display"	no LED blinks

To set the additional functions and change the default settings, select the respective operating mode (example: "Set sequence"). The digital display will then show the actual value which can be changed with the "up/down" key (8). If a setting is entered which deviates from the default value, the respective LED will remain lit as a reminder after the display returns to standard.

If the unit is switched off and on again, it will be in the "standard display" mode. Previously set additional functions will be erased. All other settings are retained. See section 14 for details on how to save additional functions as well.

9.1 Sequence (flash series) (seq) (12)

Each trigger signal releases the number of flashes selected under "sequence" in a range from 1 to 50 flashes. Stop an ongoing sequence by pressing the "aux" key (11).

Briefly press the "aux" key (11) to access the sequence setting mode. The display shows 00. Press the "up/down" key (8) to select the desired number of flashes (max. 50).

9.2 Delay (dly) (13)

The value entered here defines the delay between the trigger signal and the flash in a range from 0.1 to 9.9 s. The sequence and delay cannot be entered simultaneously.

Briefly pressing the "aux" key (11) twice activates the flash delay mode. Then press the "up/down" key to adjust the delay time from 0.1 s to 9.9 s.

9.3 Studio / Address (unit) (14)

Pressing the "aux" key (11) for a longer period of time accesses the setting mode for studio numbers and unit addresses. If the right-hand side of the display (10) blinks, you can set the "Address No." of the compact unit by pressing key (3). (If you are working with Servor d, it is recommendable to choose an address between 1 and 4 because the Servor d only supports these addresses.)

Briefly press the "aux" key (11) again to access the studio number setting mode. Then press the "up/down" key (8) to change the studio numbers (when working with Servor d, please set studio channel 1 [factory setting].)

9.4 Charging dimmer (dim) (15)

If the dim function is switched on (on), the modelling light will extinguish when charging takes place. This feature can be used as a visual flash monitor and to reduce the current load on weak mains (AC-lines).

To access the charging dimmer setting mode, press "aux" key (11) in the sequence long-short-short. Change the setting by briefly pressing the "up/down" key (8).

9.5 Buzzer (buz) (16)

With this function the ready buzzer can be switched on (on). The alarm tone will remain audible even if the ready buzzer is switched off.

To access the buzzer setting mode, press "aux" key (11) in the sequence long-short-short-short. Change the setting by briefly pressing the "up/down" key (8).

10. Flash tube

The flash tube is a plug-in type. To replace it, fire a flash, disconnect unit from power supply, and allow to discharge and cool off for ten minutes. Then press the spring radially inward and carefully remove the old tube and insert the new one. The spring is an electrical contact but also prevents the tube from falling out.

11. Protecting glass

For safety reasons, never operate a unit without the protecting glass in place.

12. Fuse

The fuse (5) is located on the rear of the unit. Sand-filled fuses with a value 3.15 AF may only be used (sand-filled fuses can be identified by their opaque fuse container). Using an incorrect fuse is dangerous: it may cause the halogen lamp to burst. The correct fuse is therefore included with each original broncolor replacement lamp.

13. Heat build-up and monitoring

Depending on the accessories used, high temperatures can hold in the unit in the proximity of the halogen lamp. Therefore, it is recommendable to hold the unit with the rear handle or at the stand adapter. Because of the intensity of heat radiation, when the modelling light is on keep the unit at a distance of at least 1 metre from flammable surfaces.

th display

If excessively high temperatures build up inside despite the fan cooling effect, the charge mode will be blocked for a certain period of time and a long audible signal will be generated. The display will show "th" during the cool-down period. The fan continues to operate, thus accelerating the cooling effect.

A1 display

The unit is equipped with an automatic afterglow blackout. If the flash tube exhibits afterglow (for example at the end of its service life), this blackout will block further charging to prevent consequential damage. In this status, the ready lamp is no longer green. The blackout can be cancelled by switching the unit off and on again.

A2 display

This display indicates that the unit has overcharged. Please switch unit off and wait a few minutes before switching it on again. If the error persists, contact customer service.

Flash monitor

At the end of their service lives, flash tubes often fail to trigger. An intermittent tone is generated by the unit when this phenomenon occurs. The tone will cease when the tube flashes correctly again or the unit is switched off.

14. Default settings

The default settings can be viewed and in some instances changed with the following procedure:

- Switch the unit on. Simultaneously press the "aux" and "mod" keys for 5 seconds. The green LED array will blink to indicate that you are in the programming mode.
- Briefly actuate the "aux" key to toggle between the "seq" or "dly" display. In the programming mode, these displays have the following meaning:
 - "seq" is lit: The display shows the function number of the function to be set according to the table below. The required function number is chosen with the keys "up" or "down" (8).
 - "dly" is lit: The display shows the actual value of the function.
- The setting can be changed with the "up" or "down" key (8).
- If the displayed value consists of more than 2 numerals, the "up" or "down" key (8) can be actuated to toggle between the groups of two numerals. The active numeral group is indicated by the LED "unit", "buz" or "dim".
- Return to standard mode by pressing "aux" for a long period of time (1 s) or by switching unit off and on again.

Function number	Meaning and possible settings
0	Release number of the software ("unit" is lit) Software number ("dim" is lit)
1	"on" : The flash energy setting range is extended to 5 f-stops (10 - 5.0). The lowest f-stop level exhibits greater tolerances with regard to colour and repetitive accuracy
2	"on" : activated additional functions are saved even if the unit is switched off
3	Flash energy display range: 10 : Display range 10 - 6 = default setting 9.6 : Display range 9.6 - 5.6 corresponding to Grafit 2/A2 etc. 8.6 : Display range 8.6 - 4.6 corresponding to Grafit 4/A4 etc. 7.6 : Display range 7.6 - 3.6 corresponding to Pulso 8 If function 1 is active, the variation range is increased by one f-stop
4	Flash counter : "buz" is lit: xxxxXX "dim" is lit: xxXXxx "unit" is lit: XXxxxx
5	Delivery date: "unit" is lit: Month "dim" is on: Year
6	Country code

15. Battery operation

If no mains (AC-line) power is available, use the 12-volt car battery converter. The modelling light cannot be used in this mode (excessive load on battery) and must be removed.

- Switch off modelling light and pull it out.
- Connect converter to the 12-volt car battery with the + and - connector clamps.
- Connect unit to converter; Switch on converter and unit.
- After flash work, switch off converter during pauses. Charge battery if needed by allowing the car engine to run.
- 1 Minipuls D160 can be connected to the converter.

16. Mounting

The stand adapter is located below the housing. The adapter accommodates standard broncolor® bolts and 16 mm-Manfrotto® pins.

Make sure the lamp is firmly attached to the stand before operating. The click-stops of the locking handle can be adjusted by pulling it out.

The bracket art. no. 35.228.00 is available for suspension mounting. Should the unit be suspended without bracket on a broncolor® bolt, then the attached safety bolt must be screwed into the bottom part of the stand adapter. This safety bolt is not required for stand mounting. A safety cable must be installed whenever the lamphead is suspended.

17. Umbrella bracket

The umbrella reflector (art. no. 33.496.00) is used in conjunction with umbrella diffusers and reflectors. The umbrella handle is inserted into the special holder in the stand adapter.

18. Flash release

The release is possible via sync cable, infrared, photocell or with manual trigger button.

The units are fitted with a synchronous circuit with low working voltage to protect the camera contact. This synchronous circuit may not be switched parallel with outside brands since the latter work with high synchronous voltage.

The infrared receiver integrated in the unit is used for a wireless release by the following units:

- IRQ transmitter
- IRX 2 transmitter
- FCM 2 lightmeter and contrast photometer
- FCC flash colourmeter chronoscope

When in use, make sure that the receiver cell of the unit is not obstructed by obstacles.

19. Accessories

The Pulso bayonet system allows you to use the full line of broncolor reflectors. For a complete summary, please consult the broncolor system catalogue, "Be Creative with Light. And with System."

20. Service/repair

Your broncolor compact unit is a precision device which will work for many years without malfunctions if you take proper care of it. If malfunctions do arise, please do not attempt to open the unit to repair it yourself. Even when the unit is shut off, dangerous voltages may remain within the interior of the device. Leave service and repairs to our broncolor repair service.

21. Technical data

Flash energy	1200 J (Japanese version 1000 J)
F-stop at 2 m 100 ISO, P50//P70	64 7/10 // 45 7/10
Flash duration t 0.1 (t 0.5)	1/250 s (1/1000 s)
Charging time (for 100% of selected energy)	230 V / 50 Hz: 0,4 - 1,8 s 120 V / 60 Hz: 0,5 - 2,2 s Japanese version: 0,7 - 3,2 s Can be switched to slow charging mode
Ready display	Visual with LED and audible (can be switched off); signals when 100 % of selected energy is reached
Control range	5 f-stops in 1/10 f-stop intervals
Modelling light	halogen 650 W with 200-240 V halogen 300 W with 100-120 V
Flash release	selectable photocell, synchronous cable (2 connections), manual release button, wireless via infrared transmitter IRX 2, IRQ, FCM 2, FCC
Remote control	Wireless with infrared transmitter Servo d. The unit is prepared for connection to PC/MAC by means of an interface (accessory)
Stabilised flash voltage	+/- 0,5%
Standards	73/23/CEE and 89/336/CEE
Power requirements	
Europe/USA:	220 V-240 V, 50 Hz, 10 A and 110 V-120 V, 60 Hz, 16 A
Japan:	100 V, 50 Hz, 16 A and 200 V, 50 Hz, 10 A
Cooling	fan
Dimensions	495x120x195 mm
Weight	4,5 kg

Subject to change in the interest of technical development.

22. Modification set PC / Mac

There is a possibility to adapt the Minipuls D160 unit to Minipuls D160 plus. The modification comprises an interface board, a connecting cable and the software. The link allows the user to control all functions from the monitor.