CE

broncolor
The Light

Bron Elektronik AG
CH-4123 Allschwil
Schweiz (Switzerland)

BEDIENUNGSANLEITUNG
OPERATING INSTRUCTION
MODE D'EMPLOI

broncolor
pulso

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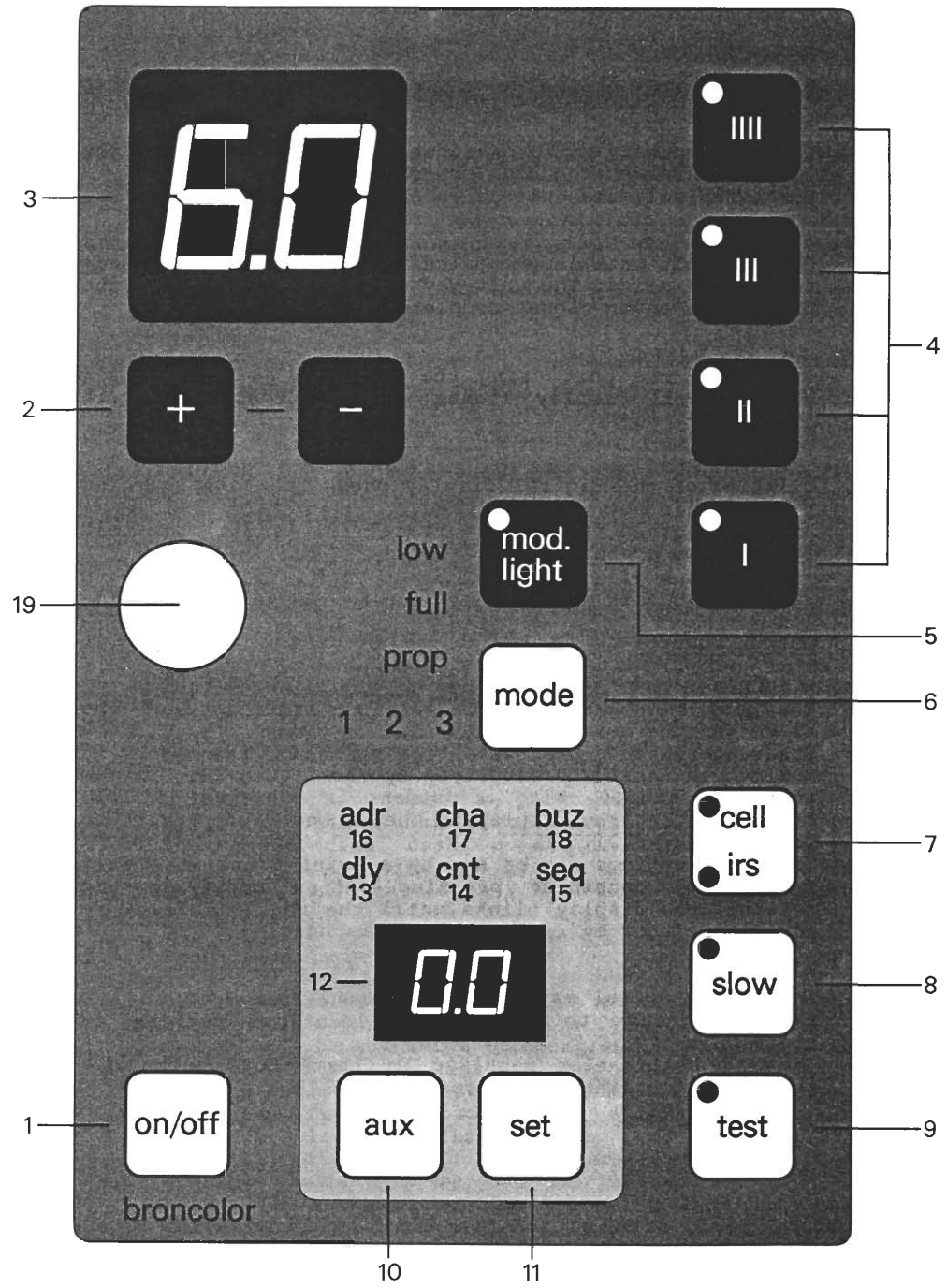


1. Startup

1.1 Check if power supply matches the information on the label underneath the blue protective cover.
For technical data, please refer to page 33.

1.2 Connect unit with lampheads using grounded mains connector to the mains. The unit may only be operated with the protective cover closed completely.

1.3 Switch on the unit using the "on/off" pad. For a few seconds, all display lights on the front panel will light up.

1.4 Blinking of the digital display shows that the charging procedure is not yet completed.
After the green ready light "test" (9) is lit, the unit is ready to operate.

2. Output Control

2.1 The pads "+/-" are used to vary the intensity of the flash and the modelling lights.
Its range extends over 4 f-stops or in a ratio 1:16.
Maximum intensity is displayed by the figure 10. Minimum intensity by 6.0. Fine adjustment is achieved in 1/10 f-stop settings by displaying the second digit after the point (e.g., 6.2).
The 1/10 settings may be set by a brief press, the full f-stops by continued pressing. After modifying the setting, the display blinks until the required level is achieved either by recharging or discharging.

2.2 Intensity control may be reprogrammed from 1/10 to 1/3 f-stop settings to achieve the identical setting as older units.
The pad combination required is listed under the description Auxiliary Functions (Item 9.11).

3. Lamphead Connections

3.1 The 4 lamphead connections at the Pulso units are marked I - IIII on the blue protective cover. They may be switched individually using the pads (4). The red LEDs near the 4 pads show which lamphead(s) is (are) operating at this particular time. Non-used connections cannot be turned on. Newly connected lampheads are automatically turned on.

4. Modelling Light

4.1 The two pads "mod. light" (5) and "mode" (6) and the "on/off" switch at the lamp base are used to control the modelling light.

4.2 The pad "mod. light" (5) is the "on/off" switch for the modelling light in all lampheads. It does not have any effect either on the flash nor on proportionality.

4.3 During the charging process of the Pulso units 2/4 100/120 Volt version and for Pulso 8 of the 220/240 Volt version, the modelling light is strongly reduced to prevent any overload of the mains. The halogen lamp is not completely turned off to avoid any effect on its service life.
This precautionary measure programmed by the factory may be overridden in some modes so that in specific cases the interfering dark break is avoided. The pad combination required is listed under the description Auxiliary Functions (Item 9.12).

4.4 Proportionality

By proportionality, we mean the ratio of intensity between flash and modelling light.
In order to guarantee proportionality and thus the correct analysis of lighting when Pulso power packs of varying capacity are used, the Pulso units are provided with the function pad "mode" allowing setting the brightness level via three stages "prop 1", "prop 2" and "prop 3". If differing units are used, the highest possible number is set on all units. The units are shipped ex works with Pulso 2 power packs allowing the three settings "prop 1/2/3", Pulso 4 power packs the settings "prop 1/2" and Pulso 8 only the setting

"prop 1". In addition, all units have the setting "low" and "full".

Operating modes using "mode":

Pos. "low" Modelling light of all lampheads on low level (increasing life of the modelling light, reduced power consumption).

Pos. "full" Modelling light on all lampheads full, independent of flash output and type of power pack (checking camera setting).

Pos. "prop 3" for Pulso 2 brightest proportionality setting,

Pos. "prop 2" for Pulso 4 brightest proportionality setting, at the same time, correct setting for Pulso 2 if combined with Pulso 4 power packs.

Pos. "prop 1" for Pulso 8 brightest proportionality setting, at the same time, correct setting for Pulso 2 and Pulso 4 if combined with Pulso 8.

The "prop" positions interlocked at the factory may be reinstated if required.
Cancelling this interlock may be useful in specific cases to combine units of varying wattage modelling lamps. For information please consult with broncolor sales and service departments.

5. Photocell and IRS Receiver

5.1 Photocell and IRS receiver can be switched on or off.
The LEDs on pad (7) show if the photocell and/or the IRS receiver is on.

6. Slow Charge

6.1 If the power supply available has a low amp rating use pad "slow" (8) to extend recycling time.

7. Flash Triggering, Visual Ready Indicator

7.1 A test flash may be triggered using the pad "test" (9). The green LED near the pad is extinguished until the unit has charged completely (100 % ready indicator).

8. Audible Ready Indicator

8.1 The unit is equipped with an audible signal which confirms that the unit is ready to operate again after the flash has been triggered.
For further information, please refer to Item 9.7.

9. Auxiliary Functions

The two pads "aux and set" (10 and 11) together with the second auxiliary LED display are used to set several auxiliary functions.

9.1 Setting Additional Functions

By briefly pressing pad "aux" (10), a second digital display will be shown and, in sequence, the displays "dly", "cnt", "seq".

By prolonged pressing on the pad "aux", "adr" is displayed and, if pressed again, the displays "cha" and "buz" will show.

9.2 Triggering Delay "dly"

A delay between the triggering signal (camera shutter, IRS, Servor, photocell) and the flash may be selected in position "dly" ranging from 0.1 to 9.9 s.

A brief tap of the pad "set" sets the 1/10 seconds display, continued pressing sets the full seconds.
After 9.9 s the counter starts again at 0.1 s.

If several units are used, all must be set to the "dly" mode in order to achieve a correct functioning of the photocell. If no delay is intended for some units, **0.0** must be entered.

Multiple flash, stroboscopic effect

Stroboscopic effects may be created using several Pulso units by series triggering in uniform or varying time intervals in the "dly" mode.
For example, the first unit may be set to 0.1 s, the second one to 0.2 s and the third to 0.3 s delay. The exposure then shows three images separated from one another by 0.1 s time intervals.

Repeats

After flashing, the display will blink until the pad "set" is pressed again to repeat the procedure. If a continuous repeat is intended without pressing the pad "set", use the program listed under Item 9.13.

9.3 Flash Counter

The unit will count flash discharges up to 99 in position "cnt" (14). To reset to 0, press pad "set".

9.4 Flash Sequence

In position "seq", an intended number of flashes may be preselected.
Tapping the pad "set" changes the units, continued pressing changes the tens of the display. A maximum of 50 flashes may be set.
Manual, cable or IRS triggering starts in the sequence. Once completed, the display blinks until the pad "set" is again pressed to repeat the action. If several units are to be used in this procedure, only the unit with the longest recycling time needs to be programmed, the others will follow via the photocell.

9.5 Address Selection

Each unit is given an address for the Servor remote control.
To set this, enter the mode "adr" using the pad "aux" (10) and select the intended address (1-8) using the pad "set". Leave this mode using the pad "aux"; the address set remains in the memory.

9.6 Selecting Transmission Channels for Studio Work Station I + II

The mode "cha" allows setting two different studio channels. The first digit on the left shows the studio channel by displaying a I or a II for remote control. Up to two times 8 units may be remote controlled at separate working stations in the same studio. If the digit at the left blinks, the pad "set" may be used to set the intended studio channel. By pressing the pad "aux" again, the digit on the right for the IRS channel will blink.

IRS channel

Pulso units may be triggered using the existing IRS and IRI transmitters without cables.
The IRS 2 channel transmitter allows triggering via two separate channels so that work may be performed at two work stations in the same studio without resorting to cables.
The channel is selected in the mode "cha". Use the pad "set" to set the intended channel. If the display shows "1", the incorporated receiver will only respond to the new transmitter with the channel set to 1. On "2", the receiver responds on transmission channel 2 only and on "3", the receiver responds to all transmitters. To operate with the existing IRS and IRI transmitters, select position "3".

9.7 Audible Ready Indicator

The mode "buz" allows turning the audible ready indicator on and off. The illuminated digit shows "1" if the signal is on. The illuminated digit shows "0" if the signal is disconnected. To turn the buzzer on or off, use the pad "set".

9.8 Misfiring Signal

If improperly operated or if a flash tube fails, a 10 s buzz will sound.
Flash tube failures are further indicated by the LED the pad for the channnel involved (4) blinking.

9.9 Memory Functions

In case of power failure of any kind, all information will remain in the memory.
The auxiliary functions "dly", "cnt", "seq" are excep-

tions; when the pad "on/off" is pressed, they are not stored so as to prevent undesired operation when power is restored. These functions will, however, be memorised in case of unintentional power failure or power interruption.

9.10 Programming Various Functions

The following applies to the input of program modifications:

- Plug unit in
- Press pad "off" to turn off unit (if it is on)
- Input desired program code by pad combination
- Use pad "set" to make intended modification
- Following this, turn off unit using the pad "on/off" and then turn it on again.

9.11 Output Settings 1/10 or 1/3 f-stops

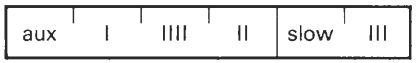
the small LED display shows:

0 = 1/10 f-stop

1 = 1/3 f-stop

9.12 Cancelling Modelling Light Reduction During Recycling

Feasible as of program version 1.08. For 100/120 Volt Pulso 2/4 and for the 220 Volt Pulso 8, the permissible number of flashes is reduced to approximately half.



0 = no modelling light reduction during recycling

1 = modelling light "off" during recycling

2 = modelling light strongly reduced during recycling

9.13 Cancelling the Interlock for Repetition of "dly"

0 = repetition of the mode "dly" requires reactivating pad "set"

1 = function of mode "dly" may be repeated any number of times

9.14 Supply Voltage for Modelling Light

Operating Pulso power packs with undervoltage of 200 Volt requires a modification of the proportionality of the modelling light.

0 = 220/240 Volt

1 = 200 Volt

9.15 Thermal Control

Pulso units are provided with a thermal control to prevent any damages by overheating under extreme loads.
The following data apply for continuous flashing and are considered reference values for the number of flashes per series until the thermal control disconnects the unit.

Pulso 2 = 200 flashes

Pulso 4 = 100 flashes

Pulso 8 = 75 flashes

{ (1st series from cold start, 2nd series apx. 40 % of the number indicated)

These data are a function of ambient temperature and for this reason may be used as reference values only.
Once the limit temperature is reached, the misfiring signal indicator will sound for apx. 5 seconds and the LED display will show:

hh = hh ermo

After illumination of this display, the unit must remain connected to the supply for the computer to assess the cooling-off time. If disconnected the cooled-off unit would be considered as still overheated when reconnected to the mains and would stimulate an appropriate cooling-off period.

9.16 Afterglow monitor

Any erroneous afterglow of a flash tube (continuous discharge) is signalled by an acoustical signal of apx. 5 seconds and the LED digits display:

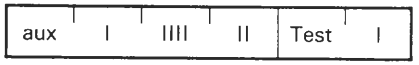
After checking the malfunction, the display may be cleared using the pad "on/off".

9.17 Total counter

As of version 1.08, the unit is equipped with a counter summing the total of all flashes. The following code allows reading the sum:

for the first 4 digits of the 6-digit counter display

xxxx.. (100-999900)



for the digits 5 and 6

....xx (1-99)

10. Lampheads

The Pulso line includes 4 types of lampheads.

Pulso 2
Pulso 4
Pulso 8
Pulso Twin 2 with two lamp cables to connect to two power packs.

10.1 Lamphead Operating Modes

The designations of the lampheads match those of the corresponding power packs P2/P4/P8. However, the lampheads may also be used with power packs of lesser output.
In addition, the P2 lamphead may be used with the Pulso 4 power pack provided the selected flash energy does not exceed 1600 J. An identification within the power pack prevents any flash with excessive intensity. If incorrectly combined, the flash will not function and the LED near the pad of the lamphead involved blinks or a misfiring signal is sounded. Refer to table "Combinations" (Item 11.).

10.2 Replacing the Flash Tubes P2 and P4

The flash tubes are of the plug-in type. For the lampheads Pulso 2 and Pulso 4, a separate glass cover is available.
Before replacing any tube, remove the lamphead from the power pack.
Once this is done, pull the glass cover straight out of its spring mountings.
Push the reflector section in the direction of the lamphead so that the flash tube socket is accessible.
Grab the flash tube at the socket and pull it out of the plug socket.
When you replace it, make sure that the ceramic socket is plugged in all the way to the stop.

10.3 Replacing the Flash Tubes P8 and Twin

The flash tubes of lampheads P8 and Twin are mounted together with the glass cover on the ceramic socket.
To replace them, grab the glass cover and carefully pull them straight out.
When replacing them, plug the ceramic socket in all the way to the stop.

10.4 Halogen Lamp

Depending on the voltage, the halogen lamp is either of the plug-in or the screw-in version. For the 220/240 Volt version, plug-in type 650 W halogen lamps are used. 300 W halogen lamps may be used in which case the proportionality is reduced.

For 100-120 Volt version, 250 W halogen E 14 screw type lamps are used.

10.5 Modelling Light Switch

The modelling light switch on the lamp base is used to check the illumination effect with the modelling light. Heated, the lamp filament is extremely sensitive. For this reason, we recommend turning the halogen lamp off when moving the lampbase.

10.6 Cooling Blower

The cooling blower in the lamp base provides sufficient cooling even for rapid flash sequences. It continues operating when the halogen modelling light is turned off.

10.7 Fuses at the Lamp Base

The halogen lamp is protected by a safety fuse. When you replace the halogen lamp, replace the fuse, too. You must make sure that only fuses of prescribed values are inserted to avoid any damage. Replacement lamps for this reason are supplied with spare fuses. In addition, each lamp is equipped with a spare fuse.

10.8 Lamp Connectors

The lamp connectors are fitted with a mechanical lock which prevents any unintentional loosening. To connect them, lift the protective cover of the power pack and plug in the lamp connector slightly tilted forward; press the connector into the lock on the rear end.

To disconnect, depress the locking spring underneath the lamp cable and pull out the connector.

The unit is switched off by lifting the protective cover so as to ensure safe operation of the connectors.

10.9 Reflectors

Reflectors and part of the accessories are to be attached to the lamp base using the bayonet mounting.
This mounting is secured by a lock so that the reflectors may be rotated by 300° without falling out of the mounting.
To remove the reflector or the accessories, rotate these to the stop. Undo the lock then by pushing the slide on top of the lamp housing backwards and by lifting the reflector out of its mounting by continuing to rotate it.

The large Pulsoflex reflectors are best put down on a clean surface with the diffusor, the lamp base can then easily be inserted into the reflector.

Technical data *pulso*

	pulso 2	***pulso 4***	***pulso 8***
Flash power	*1600 J*	*3200 J*	*6400 J*
f-stop in 2 m distance 100 ° ISO reflector P 65	*64 1/3*	*90 1/3*	*128 1/3*
Flash duration (T 0.5)	*1/600 s–1/2000 s*	*1/300 s–1/1000 s*	*1/230 s–1/800 s*
Recycling time 100% charge	*0.5–1.9 s**	*0.7–3.6 s**	*0.9–4.8 s**
Shortest recycling time with partial flash power		*as pulso 2*	*as pulso 2*
**(at 70% indication according to DIN 19011 these data are reduced by 25%)*			
Operation	*touch buttons servor-remote control for all functions*		
Lamphead connections	*4*	*4*	*4*
Power distribution	*symmetrical*	*symmetrical*	*symmetrical*
Power control	*touch buttons*	*touch buttons*	*touch buttons*
Control range in 1/10 f-stop settings	*4 f-stops*	*4 f-stops*	*4 f-stops*
Modelling light 650 W 220/240 V 250 W 100/120 V	*proportional to flash power + 5 additional functions for proportionality equalization*	*as pulso 2*	*as pulso 2*
Triggering	*cordless with infrared transmitter, via photocell, with cync cable, open flash button*	*as pulso 2*	*as pulso 2*
Stabilized flash votage	*± 1%*	*± 1%*	*± 1%*
Radio/TV interference suppression	*meets SEV/VDE requirements class N*	*as pulso 2*	*as pulso 2*
Power supply	*220/240 V 10 A 100/120 V 15 A*	*220/240 V 10 A 100/120 V 15 A*	*220/240 V 6 A*
Dimensions mm/in	*226 × 338 × 362 (8 4/5" × 13 1/3" × 14 1/2")*	*226 × 338 × 420 (8 4/5" × 13 1/3" × 16 1/2")*	*226 × 338 × 556 (8 4/5" × 13 1/3" × 21 4/5")*
Weight	*12 kg (26 1/2 lbs)*	*15 kg (33 lbs)*	*21 kg (46 1/3 lbs)*

11. Combination possibilities Pulso/Flashman with current units

	Pulso 2	Pulso 4	Pulso 8
Pulso head 2	□	1	○
Pulso Twin head	□	1	○
Pulso head 4	○	□	○
Pulso head 8	○	□	□
Standard lamp base 600 Hazy lamp base 600	2	2,3	2
Cumulite 2x6000	○	○	4
Striplite	○	○	8
Universal lamphead 1500 Hazy lamp base 1500	□	1	○
Twin universal lamp base Twin Hazy lamp base	2	1,2	○
Spotlight	□	1	○
Spot projector	5	1,5	○
Effect light	6	6	○
Cumulite 4x1500	5,7	3,5,7	○
Striplite 2x1500	7,8	3,7,8	○
Boxlite 30	7,8	1,7,8	○
Boxlite 40	7,8	1,7,8	○

□ operation possible ○ operation not possible

explanation of ciphers see page "Comments"

Comments

1 Operation possible up to 1600 J per lamp cable

2 Use of only one lamphead per power pack possible

3 Replace jumper by corresponding resistor, as otherwise operation possible only up to 1600 J per lamp cable

4 Only two lamp cables for Pulso 8 approved

5 Tube must be changed for electrical reasons

6 Operation possible up to max. 800 J per lamphead

7 Lampheads manufactured prior to 1983 need modification to allow higher voltage

8 Operation possible with limited flash sequence --- see label on lamphead! ---