# User Manual
Functional Description

Radio System for Studio Flash Equipment

914.0MHz: RFS Transceiver Module L7272.03/ L7272.13/ L7272.23
916.5MHz: RFS Transceiver Module L7272.01/ L7272.11/ L7272.21

Bron Elektronik AG, 4123 Allschwil, Switzerland

The application concerns the data transmission from an operator console (MAC/PC) to the flash units of a Photo Studio, in both directions, as well as the transmission of a flash trigger signal from the camera to all of the flash units.
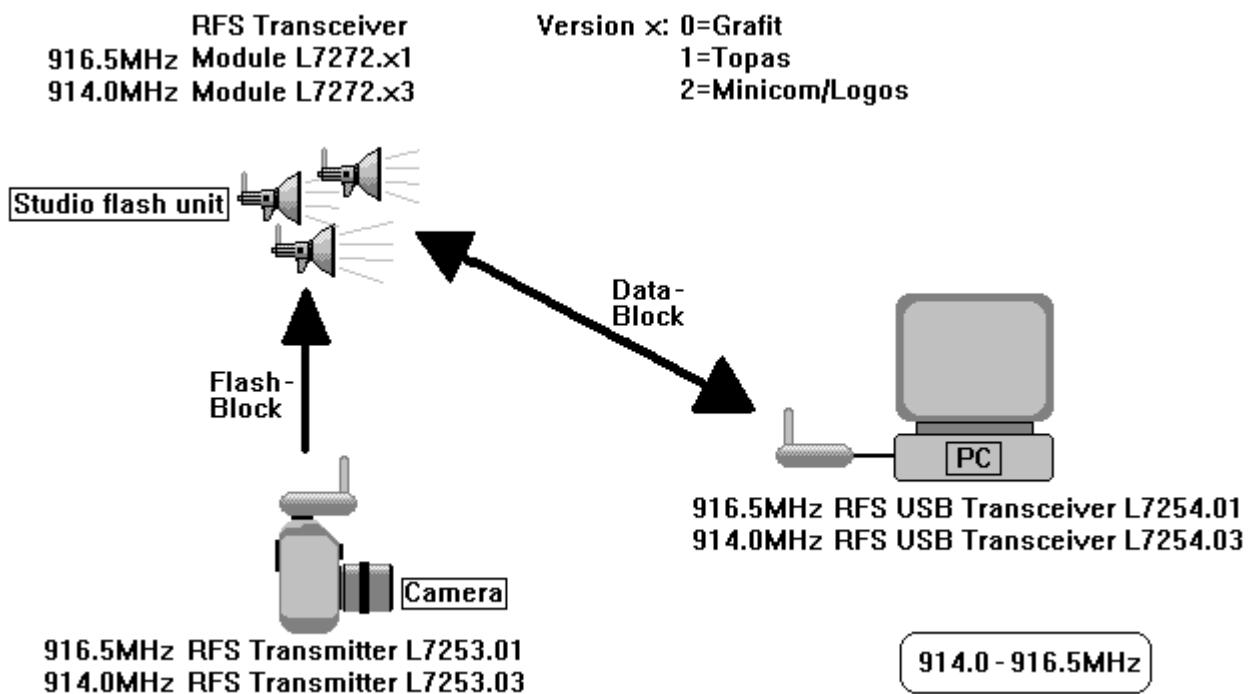
# --------------- Studio flash unit ----------------

The radio equipment in the studio flash unit consists of a RFS transceiver module (three versions) and a unit specific RFS interface

916.5MHz

Flash unit „Grafit":   **RFS Transceiver Module L7272.01** and RFS Interface L 7273.00
Flash unit „Topas":   **RFS Transceiver Module L7272.11** and RFS Interface L 7275.00
Flash unit „Minicom/Logos": RFS Transceiver Module L7272.21 and RFS Interface L 7274.00

914.0MHz

Flash unit „Grafit":   **RFS Transceiver Module L7272.03** and RFS Interface L 7273.00
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Flash unit „Minicom/Logos": RFS Transceiver Module L7272.23 and RFS Interface L 7274.00
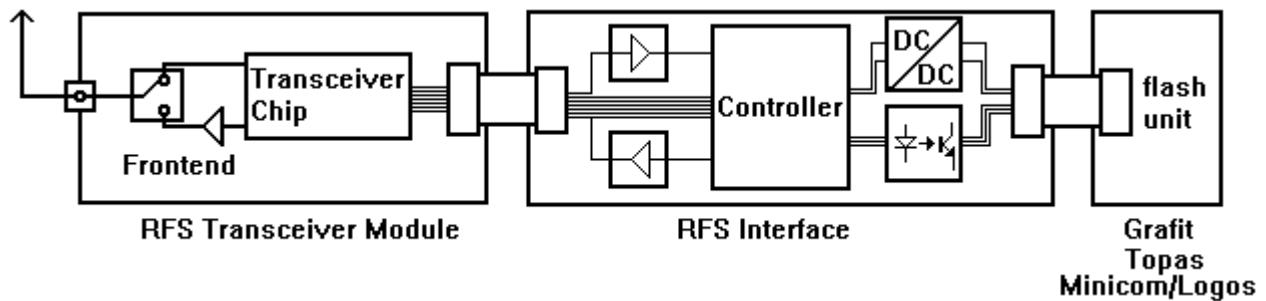
RFS Transceiver Module specifications (typical):

- Output power: 12dBm
- Frequency: 914.0 – 916.5MHz
- Modulation: ASK
- RF input impedance   50 ohms
- Data rate / Data format: 38.4 kBaud $\rightarrow$ 76.8kBit in Manchester
- Transmission time flash triggering: 0.625ms – 0.833ms
- Transmission time data-block: 1.9ms – 10.4ms
- Size: 35mm x 52mm x 12mm
- Operating voltage: 3V
- Operating current: 2mA receive mode
         10µA power down mode

Interface connector:

Pin	Description
1	3V_PA: power amplifier
2	RXDATA: 76.8kBit Manchester (baud rate= 38.4kBaud)
3	Ground
4	TXMOD: 76.8kBit Manchester (baud rate= 38.4kBaud)
5	PA_IO: power amplifier control, 0=receive, 1=transmit
6	**CNTRL1:**
7	**CNTRL0:**
8	3V: power input

CNTRL1:	CNTRL0:	control
0	0	power down mode
0	1	OOK transmit mode
1	0	ASK transmit mode
1	1	receive mode

Transmission format

Data format: MSB first

Flash-block:
- **Preamble**   11100110 01100110   optimisation of DC-balance
- **Start symbol „Flash":**   01110001 11010110   Manchester modified
- **ID (Studio no.)**   01010101 01010110 $\rightarrow$ ID=1   (Manchester)

Data-block:
- **Preamble:**   11100110 01100110   optimisation of DC-balance
- **Start symbol „Data":**   01110001 11011001   Manchester modified
- **Block number:**   ...   each new block receives a new block number, but not a repetition.
- **Byte count:**   ...
- **Start info:**   01011010 01011001
- **Studio ID:**   01010101 01010110 $\rightarrow$ ID=1   (Manchester)
- **Unit ID:**   ...
- **n data**   ... ...   max. 50 Byte
- **Check sum:**   ...
- **End Symbol „Data":**   01110110 00100110   Manchester modified

A dual directional data transmission only takes place when the setting on the flash units or the operator console (MAC/PC) is adjusted. This reduces the probability of a collision with a flash-block. A correctly transmitted data-block is confirmed with an ACK. An unconfirmed data-block is repeated.

A flash-block is not repeated.

Flash unit Grafit: RFS Transceiver Module L7272.01/ L7272.03 and RFS Interface L7273.00

The RFS transceiver module and the RFS interface are connected by a flat cable. A straight SMC connector is soldered, on the front end, onto the transceiver module and a ¼-wave antenna is mounted. The RFS transceiver module has a soldered-on shield.
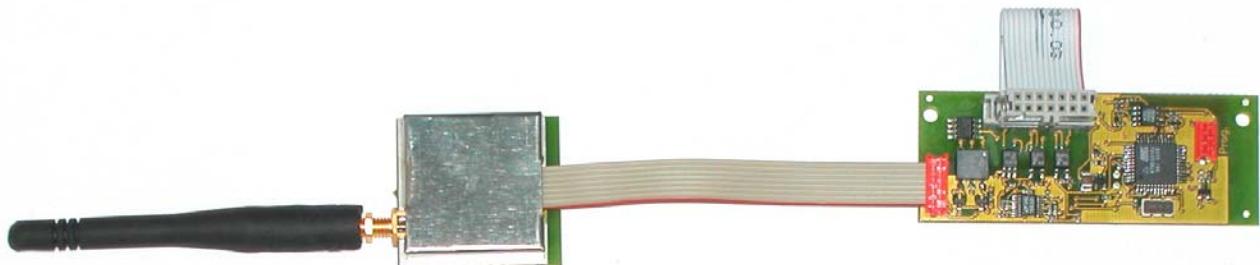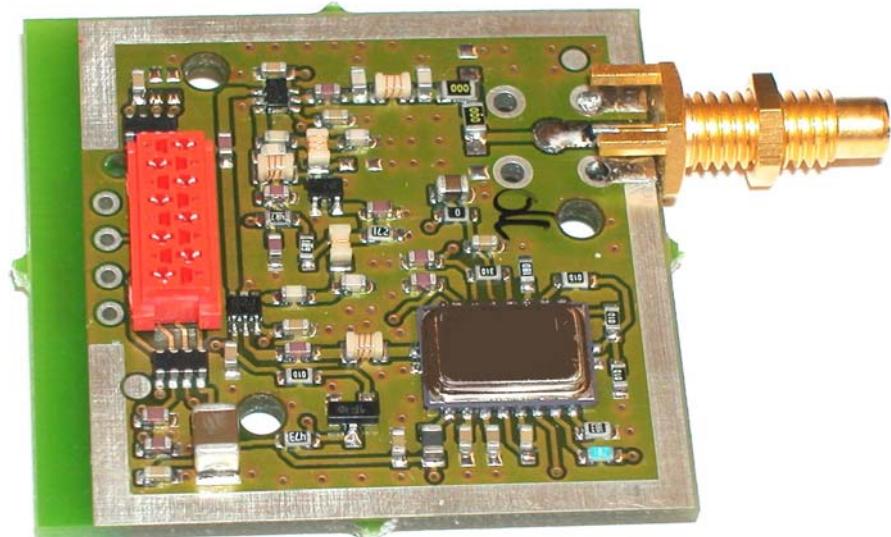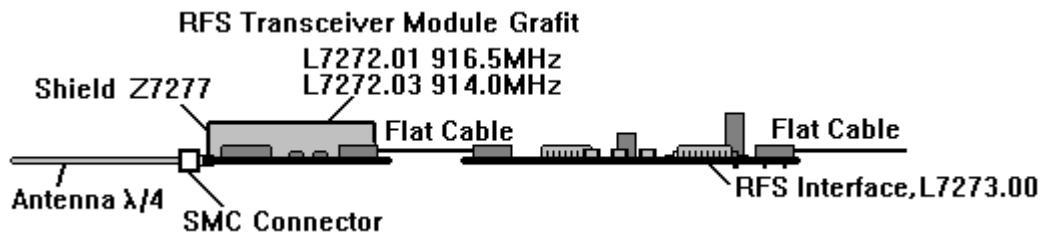
Flash unit Grafit

Flash unit Topas: RFS Transceiver Module L7272.11/ L7272.13 and RFS Interface L7275.00

The RFS transceiver module and the RFS interface are connected by a flat cable. An angle SMC connector is soldered onto the RFS transceiver module and a ¼-wave antenna is mounted.
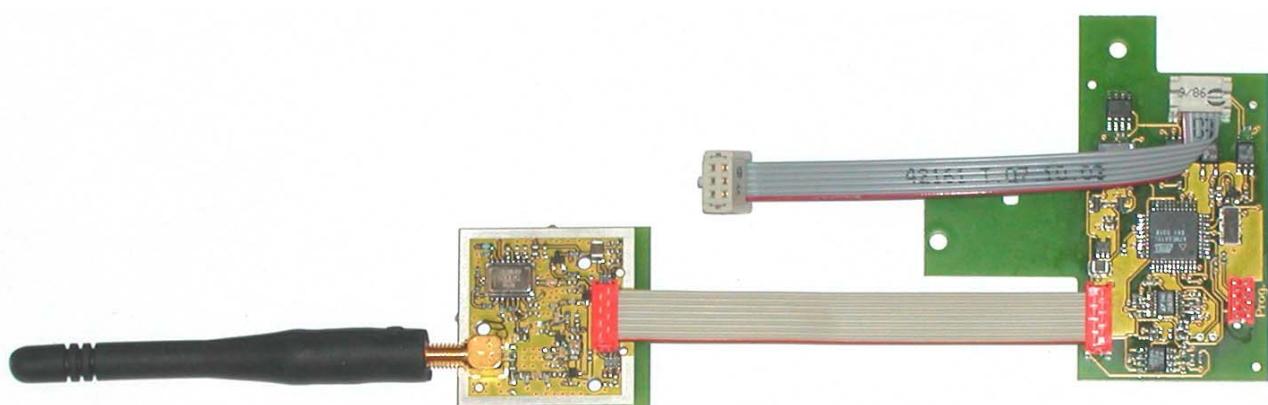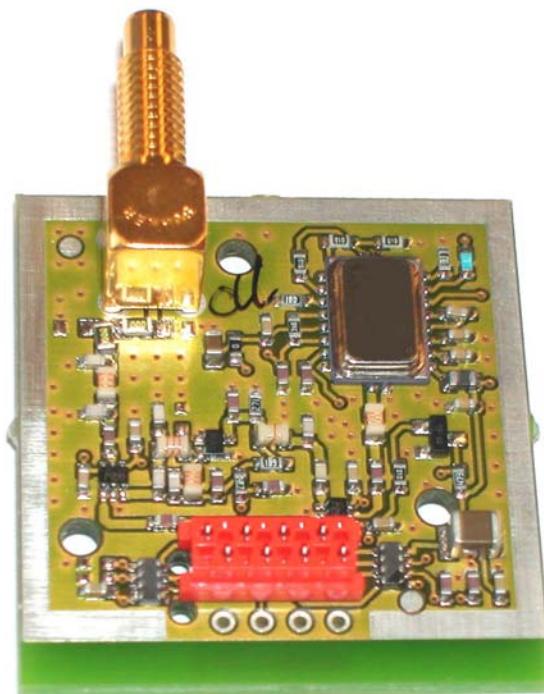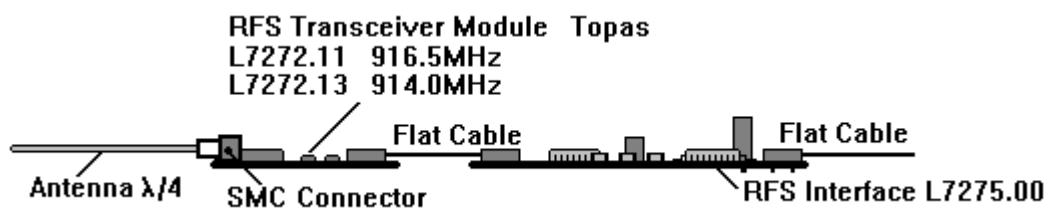
Flash unit Topas
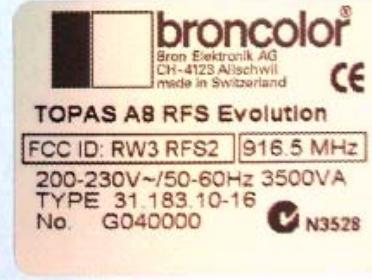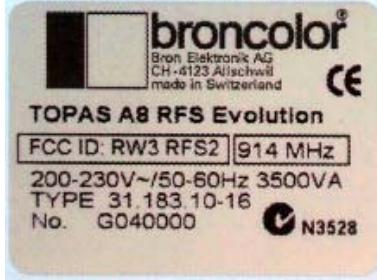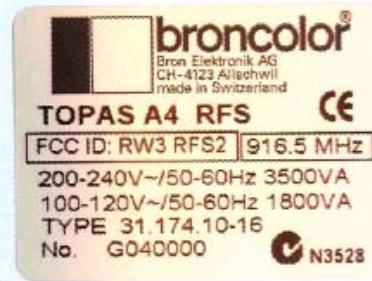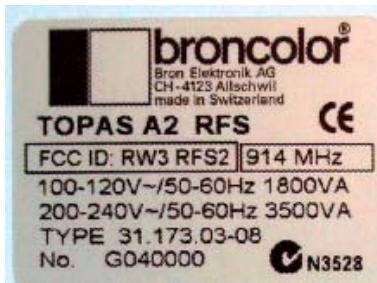
Flash unit Topas

Flash unit Minicom/Logos: RFS Transceiver Module L7272.21/ L7272.21 and RFS Interface L7274.00

The RFS transceiver module is attached directly onto the RFS interface. The rod-type antenna Z7276.00 is soldered into the RFS transceiver module. In the RFS interface, there are no components assembled in the section around the RFS transceiver module. In this section, the Cu-surface, together with a metal frame, serve as a shield.
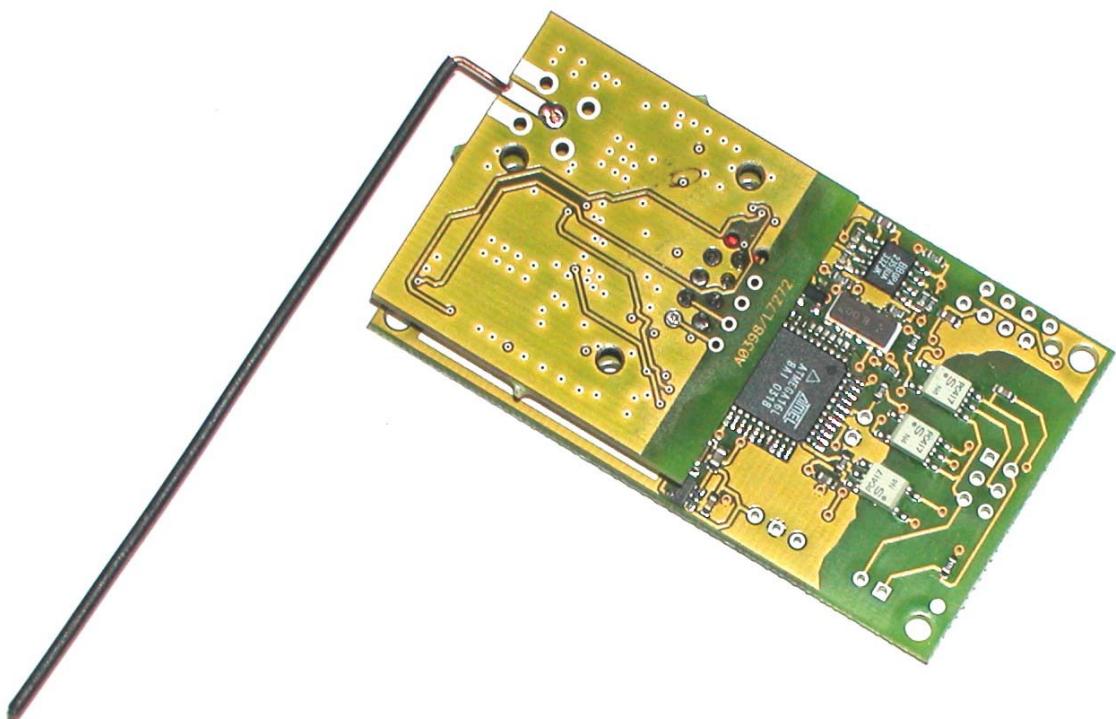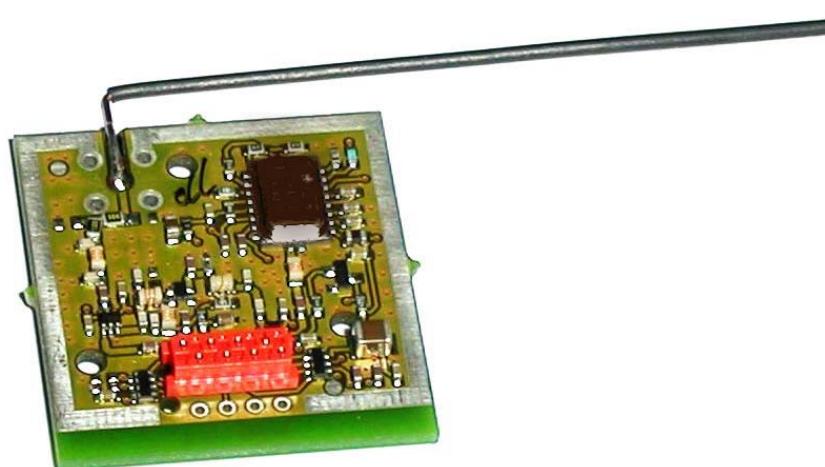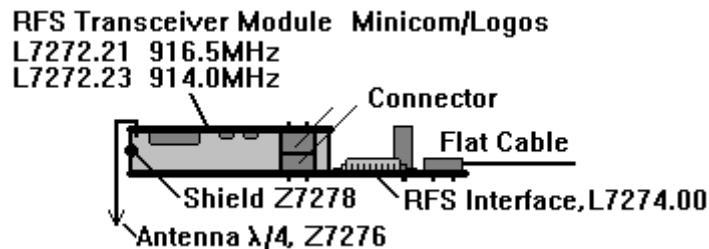
Flash unit Minicom
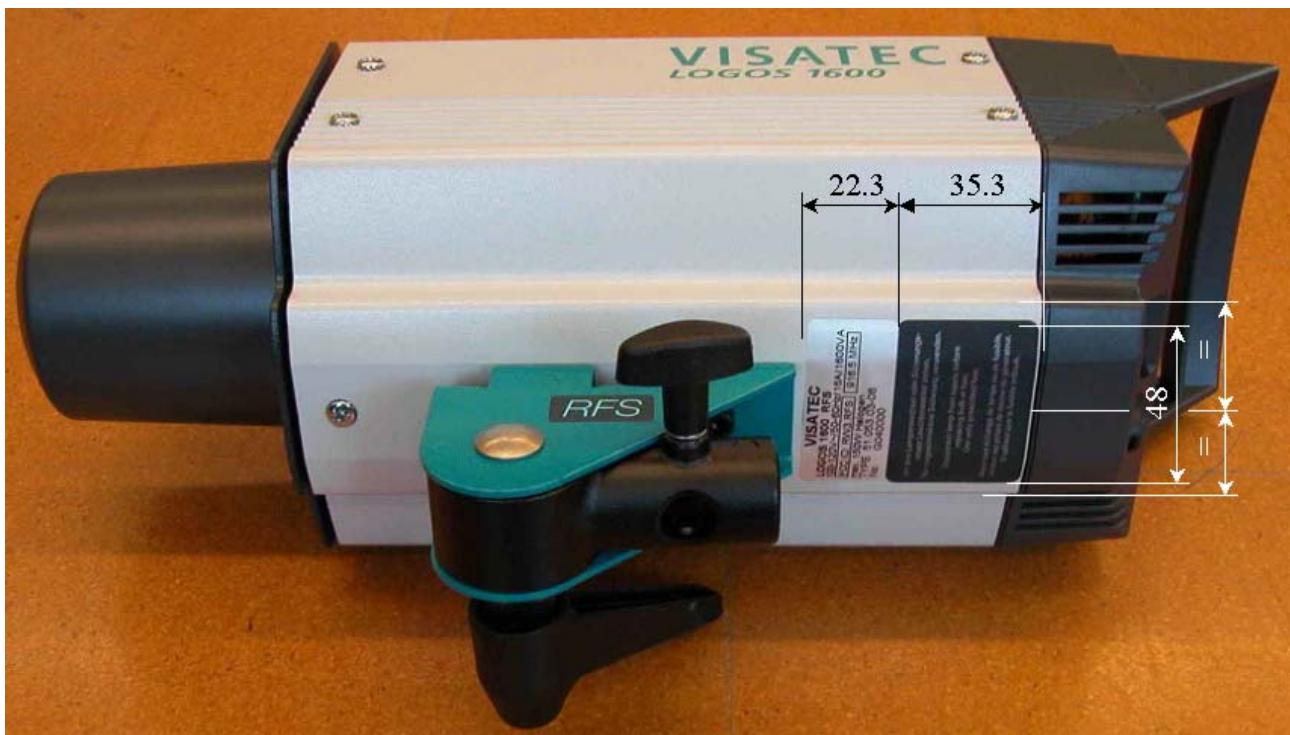
Flash unit Logos
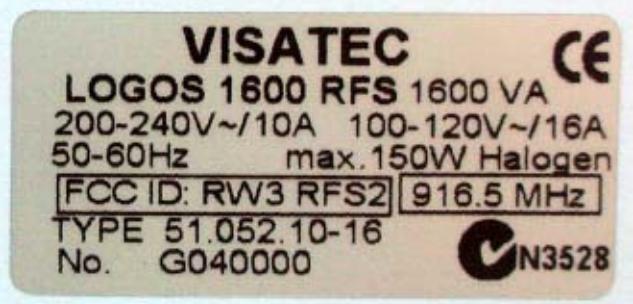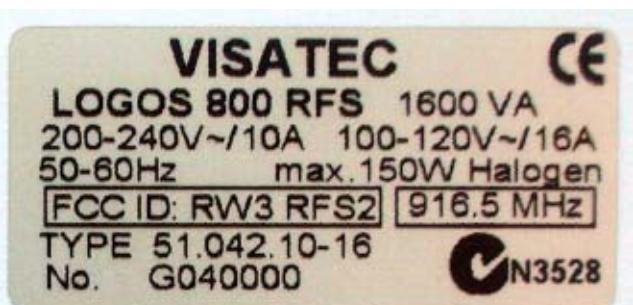
SMC-Antenna No. 40462.00

PRODUCT CODE :- SMCUHFF915MHz .

Manufacturer : R.W. Badland Ltd. England
Tuned frequency :-915 Mhz .
Gain [unity] ¼ wave 0 db
Radiator::- flexible plastic coated
Base :-   moulded in situ
Length : - 80 mm
Diameter :-   Base :-   9.5mm
                    Centre :- 4.1 mm
                     Tip :-   7 mm
VWSR :- better than 1.5 : 1
Band width @ 2 : 1 VWSR 5%

Operating Instructions   b r o n c o l o r
Minicom 40 / 80

Before use

We are very pleased you have chosen a broncolor Minicom compact unit which is a high-quality product in every respect. If used properly, it will render you many years of good service.
Please read 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.

Contents   page

Important safety instructions

This unit is designed for professional photography and is to be handled by skilled staff only. When using your studio flash equipment, basic safety precautions should always be followed, including the following:

1. Read and understand all instructions before using.

2. Close supervision is necessary when any appliance is used near children. Do not leave appliance unattended while in use.

3. Care must be taken as burns can occur from touching hot parts.

4. Do not operate appliance with a damaged cable or if the appliance has been dropped or damaged – until it has been examined by a qualified service person.

5. Position the cable so that it will not be tripped over, pulled, or contact hot surfaces.

6. If an extension cable is necessary, a cable with a current rating at least equal to that of the appliance should be used. Cables rated for less amperage than the appliance may overheat. When using a cable reel, it must be completely unrolled before use to prevent overheating of the cable.

7. For safety reasons, never operate the appliance without the protecting glass in place.

8. Always unplug appliance from electrical socket before cleaning and servicing and when in use. Never jerk cable to pull plug from socket. Grasp plug and pull to disconnect.

9. Let appliance cool completely before putting away.

10. When putting away and winding up cables, take care they do not get in contact with hot parts of the appliance.

11. To reduce the risk of electric shock, do not immerse this appliance in water or other liquids.

12. To reduce the risk of electric shock, do not open this appliance, but take it to a qualified service person when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.

13. To avoid a risk of fire, electric shock or any injuries to persons, use only accessories which are recommended by the manufacturer.

14. Connect this appliance to an earthed socket.

Attention:
Read before starting up the compact unit

- Prior to replace fuses, modelling lamp or flash tubes, discharges the unit and disconnect it immediately from power supply. Prior to replacing the modelling lamp or flash tube, let the unit cool down for a period of 10 minutes.

- The unit is designed for use in dry conditions. Protect it form water and from excessive exposure do dust.

- The unit is not suitable for use in an environment where there is a risk of explosure.

- The accessories mounted onto to the compact unit may heat up to high temperatures under specific conditions. Handle with care.

- With due allowance for heat radiation, units with more than 100 W modelling light may be directed against inflammable surfaces only at a minimum distance of 1 meter.

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

- 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 and glass covers with an UV coating. Without these or other protective filters, use with extreme care when shooting.

- Even when disconnected from the power supply, dangerous voltages may remain inside the unit. For this reason, units should be opened by authorized broncolor service shops.

- Do not block the cooling louvers on the unit

- Only fuses of the type indicated on the safety label may be used. This is especially important for the halogen lamp which can explode when used with the wrong fuse.

  Only use sand-filled fuses. They can be identified by their opaque fuse container.

Controls and displays

1. Photocell on/off

2. IR-receiver and/or RFS-Interface on/off

3. Umbrella holder

4. Mains switch on/off

5. Modelling light on/off

6.1 Sync socket (when required, usable as connection socket for computer link)

6.2 Sync socket

7. Test release, ready display green

8. Connection socket for mains cable

9. Fuse

10. Auxiliary functions (aux)

11. Operating mode modelling light

12. Flash sequence

13. Charging dimmer

14. Buzzer

15. Slow charge

16. Appliance address (for Minicom 40 RFS / Minicom 80 RFS)

17. Digital flash energy display

18. Energy control up/down

19. IR-receiver and photocell

Front panel for Minicom 40 / 80

19

broncolor®   made in Switzerland

1

2

broncolor   made in Switzerland

3

18

cell   off

17

4

ir/rf

prop seq dim buz slow unit

11   mod   on   5

12   sync
com   6.1

13   aux

14   test   sync   6.2

15   7

16

10

9   8

3.15AF
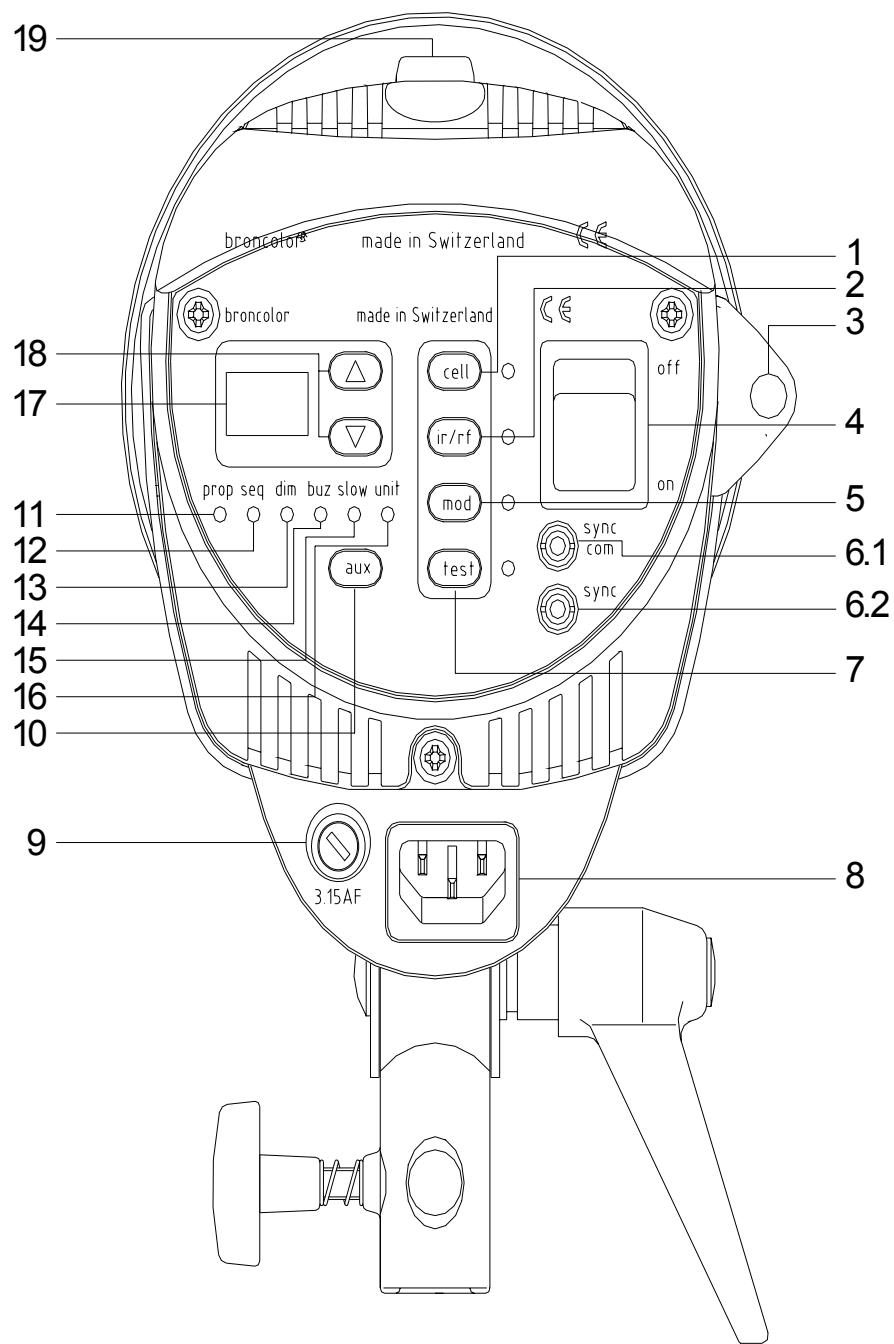
1. Application Minicom

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

2. Start up

2.1   Mains voltage

The compact units Minicom 40 and Minicom 80 are available in two different versions:

a) As a bi-voltage-unit, of which the technical data are optimised for a mains voltage of 200 - 240 V. If this version is operated with a mains voltage of 100 – 120 V, the following restrictions result:

Mains voltage 120 V: doubling of the charging time

Mains voltage 100 V: doubling of the charging time as well as reduction of the maximum flash energy of 250 J (Minicom 40) respectively 500 J (Minicom 80), extension of the flash duration by 20 %

b) As a bi-voltage-unit, of which the technical data are optimised for a mains voltage of 120 V. If this version is operated with a mains voltage of 200 – 240 V or 100 V, the following restrictions result:

Mains voltage 230 V: doubling of the charging time

Mains voltage 100 V: Extension of the charging time by 20% as well as a reduction of the maximum flash energy of 250 J (Minicom 40) respectively 500 J (Minicom 80), extension of the flash duration by 20 %

Attention: The operating voltage of the modelling lamp must correspond to the mains voltage.

2.2   Earthed mains

Connect unit to current supply always using an earthed mains plug.

2.3   Start up

In the proximity of the halogen lamp, the unit, depending on the accessories used, can acquire high temperatures. For this reason, we recommend to touch the unit only on the rear handle or on the stand adapter. Due to the intense heat radiation when a modelling light is in operation, keep the unit at a minimum distance of 1 meter from flammable surfaces.

1.) Remove the transparent plastic cap by turning and releasing the unlocking slide at the same time. Insert modelling lamp and flash tube as per instructions in chapter 8. Put on the protecting glass as well as the desired light shaper and turn in any direction.

2.) Please check that the mains supply corresponds to the information on the label of the unit. Connect unit to earthed mains.

3.) Switch on the unit with the mains switch (4). During charging, the digital flash energy display (17) flashes, afterwards the value is indicated continuously. Additionally the green control lamp of the ready display (7) is illuminated.

4.) Set the desired flash energy by means of the energy control keys "up / down" (18).

5.) Switch IR-receiver, photocell or RFS-interface on or off depending on the exposure situation.

6.) If required, plug in synchronous cable in one of the sync sockets (6.1) or (6.2).

3. Energy control

Use the „up/down" keys (18) to control the flash energy (flash intensity) within a range of 4 f-stops. A value of 10 indicates maximum intensity, 6 the minimum. Whole numbers correspond to whole f-stops, decimal places to tenth f-stop steps. There is the option, to extend the control range up to 5 f-stops (see chapter 11), where in the underneath range a slightly higher exposure-tolerance has to be expected. Brief pressure on the energy control keys "up/down" (18) changes the setting by a 1/10 interval, prolonged pressure by 1/1 f-stop interval. The energy display (17) then flashes until charging or discharging have stabilized the new level of energy.

4. Modelling light

4.1 General

The Minicom units are equipped with a halogen modelling lamp. The modelling light is switched on by the key "mod" (5). When switched on, the green diode lights up. To protect the lamp filament from damage, it is advisable to switch off the modelling lamp when handling the compact unit.

In chapter 7 you can find the instructions how to set the different operating modes (modelling light proportionality).

Attention: The operating voltage of the modelling lamp must correspond to the mains voltage.

4.2 Proportionality

The brightness of the modelling light can be set proportionally to the flash intensity. To assure proportionality also when units with different power output ratings are operated together, the units have various proportionality levels. Proportionality is guaranteed if the identical prop level has been set for all units. The higher the digit, the brighter the modelling light.

The following operating modes are possible:

"P" This level can be set if either only Minicom 40 or only Minicom 80 are in use (most intense proportional modelling light). That means, the modelling light is proportional to the energy level 300J respectively 600J.

"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"   This proportionality level is optimised for an output level of 800 J. Recommended modelling light when using Minicom 80 in combination with Minicom 40.

"P5"   If an unit is operated at a lower output level, the modelling light will be relatively weak and yellowish. To counteract this problem, the Minicom compact units are equipped with the additional modelling light proportionality level "P5". It is optimised for the output level 400 J and less. Thus the brightness of the modelling light can be increased.

"HI"   The unit operates at full modelling light, independent of flash output.

"LO"   The unit operates at lower lighting level, independent of flash output, to reduce power consumption and extend the service life of the halogen lamps.

Pressing the "mod" key (5) for 1 second when the modelling light is on, will give direct access to the "HI" mode. To return to the previous mode briefly press the "mod" key.

4.3   Replacing the halogen lamps

Before replacing the halogen lamp, it is essential to discharge the unit by flashes, immediately afterwards, disconnect it from the power supply.

The halogen lamps are plug-in types. First the protecting glass has to be pulled off carefully in an axial direction (avoid tilting). The protecting glasses for the compact unit Minicom have a marking line and the glass rim has 2 grooves. When removing the protecting glass from the unit the marking line must be situated at the top. Taking into consideration the service life, the halogen lamp should not be touched with bare hands. To exchange the lamp, it must be pulled out of the plug socket in an axial direction.

When inserting, ensure that the lamp is fully pushed back in. When engaging the protecting glass into the locking mechanism of the Minicom compact unit, the marking line must be situated at the top. After having engaged the protecting glass, it must be slightly turned, to prevent accidental loosening.

5.   Release

The flash release is enabled when 75% of the selected energy is available. Please note however , that the ready indicator is activated only at 100% charge (Kap. 6). The release is possible by means of a sync cable, infrared, photocell, or "test" key.

When releasing via the photocell or the IR-receiver, ensure that the receiving cell of the unit is not obstructed by obstacles.

The appliance has a synchronous circuit with a low onload voltage to protect your camera contact. The synchronous circuit may not be connected in parallel with products of other manufacturers which operate with high synchronous voltage.

5.1   Photocell

The photocell can be switched on or off by using the "cell" key (1). If it is activated the green LED lights up. After a flash sequence, an active photocell will be blocked and the green LED blinks. By pressing the "cell" key, the photocell is reactivated.

5.2   Infrared receiver / RFS-interface (ir/rf)

The IR receiver and, if available, the RFS interface can be switched on and off with the key „ir/rf" (2). Optionally it can be established, if with this key, every time, both functions (IR and RFS) or just one of the two can be switched on or off (see chapter 11). Is one or both functions active, the green display lights up.

5.3   Infrared flash release channel

The Minicom compact units can be released with broncolor infrared transmitters. When the unit is triggered via infrared, the flash release is effected with a time delay of 1/1000 s.

The IR receiver integrated in the unit is used for a wireless release by with following units:
-   IRQ transmitter
-   IRX 2 transmitter
-   FCM 2 lightmeter and contrast photometer
-   FCC colour temperature measuring unit

5.4   Sync sockets

The synchronous cables, art. no. 34.111.00 respectively 34.112.00, may be plugged into the sync sockets (1) or (2) to release flashes via cable

5.5   "Test" key

This „test" key (7) allows manual release of the compact unit Minicom. The respective LED lights up when the flash voltage corresponds exactly to the selected value. During charging and discharging the LED goes out and the flash energy display (17) blinks.

6.   Ready display visual /audible

6.1   **The visual ready display** is the green LED at the „test" key (7). It lights up only when unit is at 100% charge. After releasing the flash this LED goes out until the unit is fully charged again.

6.2   **The audible ready signal** „buzzer" sounds when the unit is at 100 % charged. It may be switched on or off (chapter 7).

6.3 <u>Audible fault signal</u>

When the flash discharge fails, a warning signal of approx. 3 s duration will sound and the flash energy (17) of the compact unit will flash.

7. Setting additional functions

The "aux" key (10) is used to set the additional functions. With repeated actuation of the key the following modes can be selected:

- Setting proportionality level of the modelling light   LED "prop" blinks (11)
- Define sequence (serial flashes)   LED "seq" blinks (12)
- Charging dimmer switch on / off   LED "dim" blinks (13)
- Buzzer switch on / off   LED "buz" blinks (14)
- Slow charge switch on / off   LED "slow" blinks (15)
- Setting appliance address / studio address   LED „unit" blinks (16)
- Return to standard display   no LED blinks

After the setting has been performed, the standard display can be re-activated by pressing the "aux" key (10) or automatically after a waiting period of approx. 30 seconds.

To select the additional functions and appliance settings, choose the respective LED (e.g. „charging dimmer switch on/off). The digital display (17) will then show the actual selected value which can be changed by the energy control keys „up/down" (18). If a setting is entered which deviates from the standard setting value or a function is activated, the respective LED will remain lit as a reminder after the display returns to standard (exception: function "prop").

If the unit is switched off and on again , it will be in the "standard display" mode. Previously set additional functions are retained.

7.1 Setting proportionality level of the modelling light (prop)

The proportionality level of the modelling light can be selected by briefly pressing the energy control keys „up/down" (18).

With repeated actuation of the key the following modes can be set, each shown respectively on the digital display (17): LO, P, P1, P2, P3, P4, P5, HI.

7.2 Sequence (serial flashes) (seq)

This function allows to set a defined number of flash discharges from 1 to 50. By briefly pressing the energy control keys „up/down" (18) the required number of flashes can be selected.

With a long pressure on the energy control keys "up/down", the setting changes in intervals of ten. Each release signal triggers the selected number of flashes. A current sequence can be aborted by a long pressure on the energy control keys "up/down" or by switching off and on again the unit. The function is switched off, by setting the number of flashes to „0".

7.3 Charging dimmer / boost function (dim)

The „dim" function can be switched on or off (on/--) by briefly pressing the energy control keys "up/down" (18). When switching on the "dim" function with the modelling light on (green LED of the "mod" key (5) lights up), the modelling light switches off while charging takes place. This feature allows visual flash control, to fade out the modelling light during flash sequences or to reduce the current load on weak mains.

If the "dim" function is activated when the modelling light is <u>switched off</u> (green LED of the "mod" key (5) is off), the boost function will be activated. In this mode, the modelling light remains on as a visual flash monitor <u>during</u> charging.

7.4 Buzzer switch on/off (buz)

The ready buzzer signals when the unit is at 100 % charge. The buzzer is switched on or off (on/--) by briefly pressing the energy control keys "up/down" (18). The warning signal also functions with the buzzer switched off.

7.5 Slow charge switch on/off (slow)

In case of weak mains power supply lines, charging time may be extended to approx. double the standard value. The slow charge mode is switched on or off (on/--) by briefly pressing the energy control keys "up/down" (18).

7.6 Studio / appliance address (unit)

The compact units Minicom are also available as versions with built-in RFS Interface (**R**adio **F**requency **S**ystem). For remote control respectively flash release via radio, an individual appliance address and a studio desk top (remote control channel) can be assigned to each RFS unit by means of the function "unit" (16).

To carry out the settings, dial the LED „unit" using the „aux" key (10). The digital display (17) shows the letter "U", followed by an appliance number between 1 and 8. By briefly pressing the energy control keys "up/down" (18), the required value can be selected. When pressing again the "aux" key, the digital display shows the letter "C", followed by a studio number between 1 and 8. By briefly pressing the energy control keys "up/down", the required value can be selected.

8. Flash tube

The flash tube is coated to ensure an optimal colour temperature. For your security, only original flash tubes must be used. For safety reasons, never operate a unit without protecting glass in place.

8.1 Replacing the flash tube

The flash tube is a plug-in type. To replace the flash tube, discharge the unit by flashes, disconnect it from power supply and let it cool off for ten minutes (to discharge the flash capacitors)

1.) The protecting glasses for the compact unit have a marking line and the rim of the glass has 2 grooves. When taking off the protecting glass of the unit the marking line must be situated at the top. Pull off the protecting glass carefully in an axial direction. (Avoid tilting).

2.) Press the spring radially inward and pull the flash tube out of the socket in an axial direction (do not touch the flash tube with bare hands)

3.) Insert the new flash tube and press the spring radially inward. When inserting ensure that the ceramic socket is fully pushed back in. The spring serves as well as contact and prevents accidental loosening of the flash tube.

4.) Replace the protecting glass. When engaging the protecting glass into the locking mechanism of the Minicom compact unit the marking line must be situated at the top. After having engaged the protecting glass it must be slightly turned to prevent accidental loosening.

5.) Connect the unit to the power supply, now it is ready for use again.

9. Protecting glass

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

10. Fuse

The fuse (9) is located on the rear of the unit. Sand-filled fuses with value 3.15 AF may only be used (sand-filled fuses can be identified by their opaque fuse container). Using wrong fuses is dangerous; it may cause the halogen lamp to burst. Original broncolor replacement lamps are therefore delivered with the correct fuse.

11. Basic settings ex work

The basic settings ex work can be viewed and in some instances changed with the following procedure:

When the unit is switched on, simultaneously press the "mod" (5) and "aux" (10) keys for approx. 5 seconds (the LED array "prop" / "seq" / "dim" / "buz" / "slow" / "unit" blinks to indicate that you are in the programming mode).

Additionally the LED of the "mod" (5) key is lit. The digital display (17) shows the function number 0. The other function numbers can be selected by pressing the energy control keys "up/down" (18).

By briefly pressing the "aux" key, the digital display shows the actual value respectively the actual setting within the selected function number. The LED of the "mod" key does not light up in this mode. Within the function numbers 1, 2, 3 and 9, the settings can be changed with the energy control keys "up/down".
Concerning the function numbers 0 and 4 – 8, the different pairs of these multiple digit values can be shown by means of the energy control keys "up/down".

Return to normal operation by pressing (1 s) the "aux" key, by switching the unit off and on again or automatically after a period of 20 seconds.

Function number	Meaning and possible settings
0	Program version: Standard display Program number: after pressing the energy control „down" key
1	Control range flash energy: Setting ex work: "off" (--). Display "on" the control range of the flash energy is extended on to 5 f-stops (10 - 5.0).
2	Sensibility of the photocell: Setting ex work: "on" This function reduces the sensibility of the photocell. If the function is activated the digital display shows the value "off".
3	Definition function „ir/rf": Setting ex work: digital display shows the value "3" = IR receiver and RFS Interface (if available) activated. Display value "1" = only IR receiver activated Display value "2" = only RFS Interface activated.
4	Flash counter: Figure group in the display: xxxx**XX** = standard display Figure group in the display: xx**XX**xx = after pressing the energy control „up" key Figure group in the display: **XX**xxxx = after pressing the energy control „up" key
5	Series number of the unit: Figure group in the display: xx**XX**
6	Series number of the unit: Figure group in the display: **XX**xx
7	Production date of the unit: Figure group in the display: xx**XX** = month
8	Production date of the unit: Figure group in the display: **XX**xx = year
9	Reduction of the modelling light: Setting ex work: "off" (--) The activation of this function is recommended on power mains with great fluctuations. The voltage for the modelling lamp is reduced (light output ./. 1/3 f-stop), which results in a longer service life of the halogen lamp. If this function is activated, the digital display shows the value "on".

12. Protective facilities / Fault indication

12.1 Cooling fan

The cooling of flash tube, modelling lamp and internal electronics is effected by a cooling fan. It also runs when the modelling light is turned off. The cooling works on two levels, the fan runs smoothly when small flash sequences are effected. With longer flash sequences, the cooling fan switches to the higher level.

12.2 Display "th"

If excessively high temperatures build up inside despite the fan cooling, the charge mode will be blocked and a long audible signal will be generated. The modelling light is blocked as well for about 6 minutes. The digital display shows the indication "th" during the cooling period. The cooling process is accelerated by the fan which is still in operation.

Attention: Do <u>not</u> switch off the unit during the cooling period! If the unit is switched off too early, only a small number of flashes can be effected until the next blockout, when switching on again the unit, despite a long break, because the processor could not completely pursue the cooling process.

12.3 Display "A1"

The unit is equipped with an automatic afterglow blockout. If the flash tube exhibits (e.g. at the end of its service life) afterglow, this blockout will block further charging to prevent consequential damage. This status is also discernible by the ready display, which is no longer green. The blockout can be cancelled by switching the unit off and on again.

12.4 Display "A2"

This indication is shown, when the unit is overcharging. Switch off the unit and switch it on again after a few minutes. If this fault continues to exist, please contact an after-sales service centre

12.5 Acoustic flash monitoring

At the end of their service life, flash tubes often have triggering interruptions. This fault is indicated by an audible, intermittent signal. The signal disappears when the flash tube flashes properly again or the unit is switched off.

12.6 Monitoring of the modelling light

If the compact units Minicom are connected to 200 V – 240 V mains voltage, after previously having been operated on 100 V - 120 V mains voltage, they will release an audible signal and the modelling light will blink at a safely reduced voltage. This function serves as a reminder that the modelling lamp must be exchanged, and also to protect against damage of the lamp. Switch the unit off and on again to return to standard operation.

13. Car battery converter

If no mains power is available the 12 V-car battery converter can be used to charge the unit (**only for 230 V units**). The modelling light cannot be used in this operating mode (excessive load on the battery) and must be removed.

- Switch off the modelling light and remove the halogen lamp

- Connect the converter with the + and – connector clamps to the 12 V car battery.

- Connect the unit to the converter and switch on the unit and the converter

- Switch off the converter during pauses after flash work. Charge battery if needed by allowing the car engine to run.

Two compact units Minicom can be connected to one converter. Approx. 200 flashes of 300 J respectively 100 flashes of 600 J are possible with a fully charged battery.

14. Mounting

The stand adapter is located below the housing. The adapter is designed for standard broncolor® bolts (12 mm) and Manfrotto® pins (16 mm).

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

There are three possibilities for suspended mounting:

a) The bracket of the compact unit is mounted upwards. To this purpose, dismount the bracket by removing the locking lever as well as the two retaining screws at the side of the unit. Turn over the bracket by directing the stand support upwards. Afterwards insert the bracket in the lower guide rail of the housing and re-insert the locking lever as well as the two retaining screws. In this case the enclosed locking pin must be screwed into the lower part of the stand adapter. This is not required for stand mounting. In this kind of suspended mounting, compared with the following option, the front panel of the unit is still readable (instead of hanging upside down) and the cooling efficiency is not reduced.

b) It is also possible to tilt the compact unit to enable mounting of the bracket with upwards directed stand support. Also in this case the enclosed locking pin must be screwed into the lower part of the stand adapter.

c) An alternative bracket for suspended mounting is available under art. no. 35.228.00. The above mentioned instructions are also valid for this application.

Attention: A safety cable must be installed whenever the unit is suspended.

15. Umbrella holder

Diffusing and reflex umbrellas are used in conjunction with the umbrella reflector (art. no. 33.496.00).The umbrella bar is inserted into the special holder in the stand adapter.

16. Accessories

By using the Pulso-bajonet the whole range of broncolor reflectors is at your disposal. You will find the complete overall view in the broncolor system catalogue „creative work with light and with system".

17. Service / repair

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

18. Technical data

	Minicom 40	Minicom 80
Flash energy	300 J (100 V: 250 J)	600 J (100 V: 500 J)
F-stop in 2 m distance 100 ISO, reflector P50 // P70	32 5/10 // 22 5/10 (100 V: 32 2/10 // 22 2/10)	45 5/10 // 32 5/10 (100 V: 45 2/10 // 32 2/10)
Flash duration t 0.1 (t 0.5)	1/900 s (1/2500 s) with mains voltage 110 – 240 V	1/420 s (1/1500 s) with mains voltage 110 – 240 V
	Flash duration with mains voltage 100 V: ca. 20% longer	
Charging time (for 100% of the selected energy)	230 V / 50 Hz: 0,3 – 0,9 s 120 V / 60 Hz: 0,3 – 1,2 s 100 V / 50 Hz: 0,3 – 1,5 s	230 V / 50 Hz: 0,4 – 1,4 s 120 V / 60 Hz: 0,4 – 1,9 s 100 V / 50 Hz: 0,4 – 3,0 s
	Can be switched to slow charge mode	
	<u>Attention</u>: The above mentioned charging times do not apply to units being operated on alternative mains voltages.	
	The technical data for these units are optimised for a certain mains voltage (200-240 V or 120 V). If the unit is operated with a alternative mains voltage the charging time increases. When operating the unit with mains voltage of 100 V the maximum flash energy reduces to 250J (Minicom 40) respectively to 500J (Minicom 80).	
Controls	Illuminated digital display, LED-display as well as dust and scratch-proof illuminated silicone keyboard	
Control range of flash energy (Japan: ⅓ f-stop less)	Over 4 f-stops in 1/10 f-stop increments (1:16); Can be extended to 5 f-stops (1:32)	
Modelling light	Halogen max. 300 W	
	Proportional to the flash energy as well as „full" and "low" settings. Proportionality adjustable to all broncolor flash systems and the different output levels. **Attention:** The operating voltage of the modelling lamp must correspond to the mains voltage.	
Flash release	Manual release button, photocell (can be switched off), infrared receiver (can be switched off), sync cable FCM 2, FCC, IRX2, IRQ	
Ready display	Visual and audible (can be switched off) signals when 100% of selected energy is reached	
Flash monitoring	Visual: Dim and boost function for modelling light Audible: Buzzer	
Additional function	- Sequences (serial flashes up to 50 flashes) - Sensibility of the photocell may be reduced	
Number of sync sockets	2	
Stabilized flash voltage	+/- 1,5%	
Cooling	Fan	
Standards	EC standards 73/23, UL 122	
Power requirements	200-240 V / 50-60 Hz: 6 A 100-120 V / 50-60 Hz: 10 A	
	Minicom 40	Minicom 80
Dimensions (L x W x H)	286 x 154 x 194 mm	286 x 154 x 194 mm
Weight kg	3,0	3,3

19. broncolor Minicom RFS / Minicom plus

The compact units Minicom are also available as unit version with integrated 8 channel RFS Interface (**R**adio **F**requency **S**ystem). Each channel (studio) can control up to 8 units. This interface allows remote control respectively flash release by radio via transmitter RFS as well as by means of a transceiver RFS via PC or Macintosh computer. When controlling via screen, 4 storage spaces for different lighting situations are at your disposal.

19.1 Modification to Minicom RFS

There is the possibility, to modify Minicom compact units later on with a RFS interface. The modification will be made by the customer service centre of our broncolor agency in your country.

19.2 Minicom plus
Because of the laws in some countries, the use of the broncolor radio system is not allowed. Therefore the Minicom compact units are also available in the version Minicom Plus (that means with cable remote control). Besides the cable connection between the compact unit and the computer, the application with RFS is almost identical.

Attention: There is no camera transmitter available for Minicom!

19.3 Technical data

	Minicom RFS	Minicom plus
Remote control	With integrated 8 channel RFS interface (**R**adio **F**requency **S**ystem) for the remote control of the unit by radio via transceiver RFS from PC or Macintosh computer. Each channel (studio) can control up to 8 units.	With integrated interface for the remote control of the unit by cable from PC or Macintosh computer. Each channel (studio) can control up to 8 units.
Flash release	Transmitter RFS, Transceiver RFS (besides the options in chapter 18)	analogue chapter 18
Operational distance outdoors	Up to 30 m	Length of the connection cable from the computer to the unit: 5m Length of the connection cable between the units 2,5 m
Operational distance in closed rooms	up to20 m	see above
Range	up to 300 m	see above
Number of sync sockets	2	1 (the second sync socket is configured as connection for the computer cable)

Norms	UL 122, EC norms73/23, 89/336 and 99/5
	
	ERM EN 300 220-1,-3
	
	EMC EN 301 489-1,-3
	           EN 60950
	           EN 50371
	           FCC Part 15
	           This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
	           (1) This device may not cause harmful interference and	

Subject to change in the interest of product enhancement.

20. Order numbers for diverse spare parts /accessories

Flash tube 5500 K for Minicom 40 / 80	Art. no. 34.307.55
Halogen modelling lamp 300 W / 120 V	Art. no. 34.225.XX
Halogen modelling lamp 300 W / 230 V	Art. no. 34.231.XX
Halogen modelling lamp 150 W / 230 V	Art. no. 34.250.XX
Halogen modelling lamp 150 W / 120 V	Art. no. 34.251.XX
Protecting glass clear 5500 K	Art. no. 34.336.55
Protecting glass clear 5900 K	Art. no. 34.336.59
Protecting glass mat 5500 K	Art. no. 34.337.55
Protecting glass mat 5900 K	Art. no. 34.337.59
Fuse 3.15 AF	Art. no. 37137.00
Protection cap for transport, transparent	Art. no. Z6750.00
Mains cable CH 200-240V	Art. no. 39084.00
Mains cable USA 100-120V	Art. no. 39085.00
Mains cable Europe 200-240V	Art. no. 39086.00
12 V battery converter	Art. no. 36.450.XX
Bracket for suspended mounting	Art. no. 35.228.00

Operating Instructions

V I S A T E C
LOGOS 800 / 1600

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.

Contents   Page

Important safety instructions

When using your studio flash equipment, basic safety precautions should always be followed, including the following:

1. This mains supplied studio flash is designed for professional photography.

2. Read and understand all instructions before using.

3. Close supervision is necessary when any appliance is used near children. Do not leave appliance unattended while in use.

4. Care must be taken as burns can occur from touching hot parts.

5. Do not operate appliance with a damaged cable or if the appliance has been dropped or damaged – until it has been examined by a qualified service person.

6. Position the cable so that it will not be tripped over, pulled, or contact hot surfaces.

7. If an extension cable is necessary, a cable with a current rating at least equal to that of the appliance should be used. For your own safety, use a three-wire extension cable. Cables rated for less amperage than the appliance may overheat. When using a cable reel, it must be completely unrolled before use to prevent overheating of the cable.

8. For safety reasons, never operate the appliance without the protecting glass in place.

9. Always unplug appliance from electrical socket before cleaning and servicing and when not in use. Never jerk cable to pull plug from socket. Grasp plug and pull to disconnect.

10. Let appliance cool completely before putting away.

11. When putting away and winding up cables, take care they do not get in contact with hot parts of the appliance.

12. To reduce the risk of electric shock, do not immerse this appliance in water or other liquids.

13. To reduce the risk of electric shock, do not open this appliance, but take it to a qualified service person when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.

14. To avoid a risk of fire, electric shock or any injuries to persons, use only accessories which are recommended by the manufacturer.

15. Connect this appliance to an earthed socket.

Attention:
Read before starting up the compact unit:

- Prior to replacing fuses, modelling lamp or flash tubes, discharge the unit and disconnect it immediately from power supply. Prior to replacing the modelling lamp or flash tube, let the unit cool down for a period of 10 minutes.

- The unit is designed for use in dry conditions. Protect it from water and from excessive exposure to dust.

- The unit is not suitable for use in an environment where there is a risk of explosion.

- The accessories mounted onto to the compact unit may heat up to high temperatures under specific conditions. Handle with care.

- With due allowance for heat radiation, units with more than 100 W modelling light may be directed against inflammable surfaces only at a minimum distance of 1 meter.

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

- 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 and glass covers with an UV coating. Without these or other protective filters, use with extreme care when shooting.

- Even when disconnected from the power supply, dangerous voltages may remain inside the unit. For this reason, units should be opened by authorized VISATEC service shops.

- Do not block the cooling louvers on the unit.

- Only fuses of the type indicated on the safety label may be used. This is especially important for the halogen lamp which can explode when used with the wrong fuse.

    Only use sand-filled fuses. They can be identified by their opaque fuse container.

Controls and displays

1. Sync socket (when required, usable as connection socket for computer link)

2. Sync socket

3. Photocell on / off

4. Modelling light on / off

5. Test release, ready display green

6. Connection socket for mains cable

7. Fuse

8. Energy control up / down

9. Mains switch on / off

10. Digital flash energy display

11. Auxiliary functions (aux)

12. Operating mode modelling light

13. Flash sequence

14. Charging dimmer

15. Buzzer

16. Slow charge

17. Photocell

18. Appliance address (for LOGOS 800 RFS / LOGOS 1600 RFS)

Front panel for LOGOS 800 / 1600

12 13 14 15 16 17 18

Visatec   made in Switzerland   CE

prop seq dim buz slow unit   sync / com — 1

11 — aux   cell   sync — 2

3

mod — 4

test — 5

off on   3.15AF

10   9 8   7   6
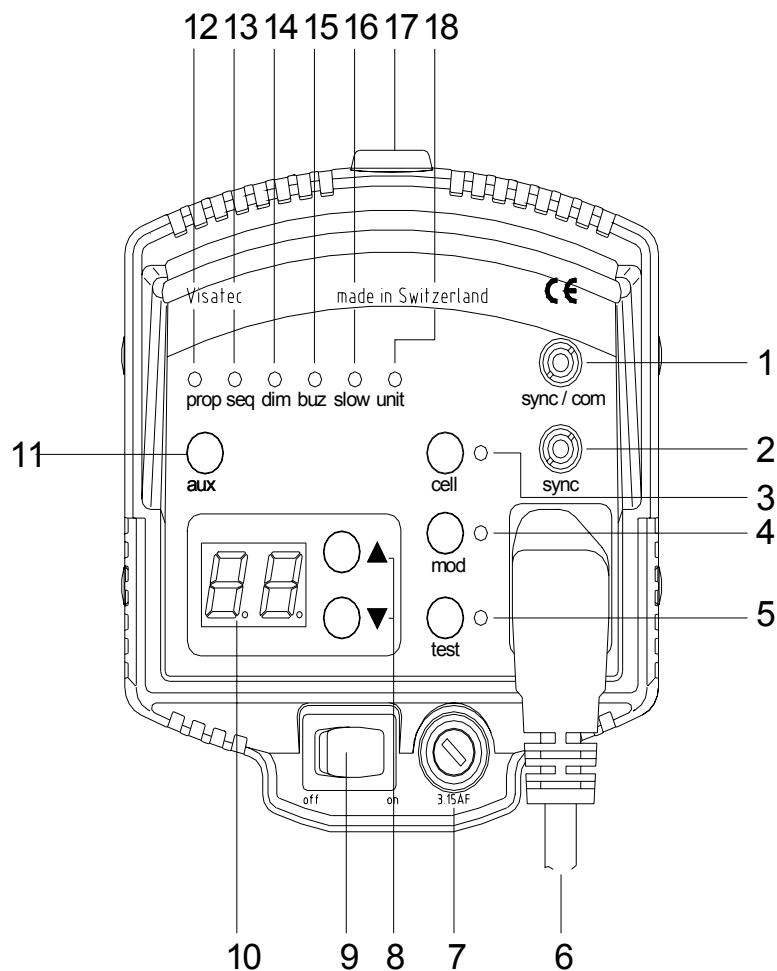
1. Application LOGOS

We are very pleased you have chosen a VISATEC LOGOS compact unit which is a high-quality product in every respect. If used properly, it will render you many years of good service.

This mains supplied studio flash is designed for professional photography. For your own safety, use a three-wire extension cable when required.

2. Start up

2.1 Mains voltage

The compact units LOGOS 800 and LOGOS 1600 are available in two different versions:

a) As a bi-voltage unit, of which the technical data are optimised for a mains voltage of 200 - 240 V. If this version is operated with a mains voltage of 100 – 120 V, a doubling of the charging time results.

b) As an unit, which is exclusively designed for mains voltage of 100 - 120 V.

2.2 Earthed mains

Connect unit to current supply always using an earthed mains plug.

2.3 Start up

In the proximity of the halogen lamp, the unit, depending on the accessories used, can acquire high temperatures. For this reason, we recommend to touch the unit only on the handle at the rear or on the stand adapter. Due to the intense heat radiation when a modelling light is in operation, keep the unit at a minimum distance of 1 meter from flammable surfaces.

1.) Remove the grey plastic protecting cap by turning and releasing the unlocking slide at the same time. Insert modelling lamp and flash tube as per instructions in chapter 8. Put on the protecting glass as well as the desired light shaper and turn in any direction.

2.) Please check that the mains supply corresponds to the information on the label of the unit. Connect unit to earthed mains.

3.) Switch on the unit with the mains switch (9). During charging, the digital flash energy display (10) flashes, afterwards the value is indicated continuously. Additionally the green control lamp of the ready display (5) is illuminated.

4.) Set the desired flash energy by means of the energy control keys "up / down" (8).

5.) Switch photocell (17) on or off, depending on the exposure situation.

6.) If required, plug in synchronous cable in one of the sync sockets (1) or (2).

3. Energy control

Use the „up / down" keys (8) to control the flash energy (flash intensity) within a range of 4 f-stops. A value of 10 indicates maximum intensity, 6 the minimum. Whole numbers correspond to whole f-stop intervals, decimal places to tenth f-stop steps.

Brief pressure on the energy control keys "up / down" (8) changes the setting by a 1/10 interval, prolonged pressure by 1/1 f-stop interval. The energy display (10) then flashes until charging or discharging have stabilized the new level of energy.

4. Modelling light

4.1 General

The LOGOS compact units are equipped with a very bright 150 W halogen modelling lamp. The modelling light is switched on by the key "mod" (4). When switched on, the green diode lights up.

In chapter 7 you can find the instructions how to set the different operating modes (modelling light proportionality).

4.2 Proportionality

The brightness of the modelling light can be set proportionally to the flash intensity. To assure proportionality also when units with different power output ratings are operated together, the units have various proportionality levels. Proportionality is guaranteed if the identical prop level has been set for all units. The higher the digit, the brighter the modelling light. The proportionality levels of the LOGOS compact units are compatible with those of the broncolor units.

The following operating modes are possible:

"P"   This level can be set if either only LOGOS 800 or only LOGOS 1600 are in use (most intense proportional modelling light). That means, the modelling light is proportional to the energy level 300J respectively 600J.

"P1"   weak proportional modelling light, applicable for all types of units

"P2"   recommended modelling light when using LOGOS 1600 (also in combination with LOGOS 800)

"P3"   recommended modelling light when using only LOGOS 800

"P4/5"   If an unit is operated at a lower output level, the modelling light will be relatively weak and yellowish. To counteract this problem, the LOGOS compact units are equipped with two additional modelling light proportionality levels: "P4" for 150 J or less and "P5" for 75 J or less. Thus the brightness of the modelling light can be increased.

"HI"   The unit operates at full modelling light, independent of flash output.

"LO"   The unit operates at lower lighting level, independent of flash output, to reduce power consumption and extend the service life of the halogen lamps.

Pressing the "mod" key (4) for 1 second when the modelling light is on, will give direct access to the "HI" mode. To return to the previous mode briefly press the "mod" key.

The halogen lamp can be plugged in; when exchanging, do not touch the lamp with bare hands. Please note that the flash tube must be pulled out before exchanging the halogen lamp.

5. Release

The flash release is enabled when 85 % of the selected energy is available. Please note, however, that the ready indicator is activated only at 100 % charge (chapter 6). The release is possible by means of a sync cable, photocell or the manual release key.

5.1   Photocell (cell)

The photocell can be switched on or off by using the "cell" key (3). If it is activated the green LED lights up. After a flash sequence, an active photocell will be blocked and the green LED blinks. By pressing the "cell" key, the photocell is reactivated.

When releasing via the photocell, ensure that the receiving cell of the unit it not obstructed by obstacles.

Because the photocell is also infrared-sensitive, the compact unit can be wirelessly released in a simple way by using a small flash unit with an infrared-permeable filter in front, mounted onto the camera. The VISATEC flash trigger is available under article number 56.200.00.

5.2   Sync sockets

The synchronous cable, art. no. 54.104.00, may be plugged into the sync sockets (1) or (2) to release flashes via cable.
The appliance has a synchronous circuit with a low onload voltage to preserve your camera contact. The synchronous circuit may not be connected in parallel with products of other manufacturers which operate with high synchronous voltage.

5.3   "Test" key

This "test" key (5) allows manual release of the compact unit LOGOS. The respective LED lights up, when the flash voltage corresponds exactly to the selected value. During charging and discharging, the LED goes out and the output display blinks.

6. Ready display visual /audible

6.1   <u>**The visual ready display**</u> is the green LED at the "test" key (5). It lights up only when the unit is at 100 % charge. After releasing the flash, this LED goes out until the unit is fully charged again.

6.2 __The audible ready signal__ „buzzer" sounds when the unit is at 100 % charge. It may be switched on or off (chapter 7).

6.3 __Audible fault signal__

When the flash discharge fails, a warning signal of approx. 3 s duration will sound and the display (10) of the compact unit will flash.

7. Setting additional functions

The "aux" key (11) is used to set the additional functions. With repeated actuation of the key the following modes can be selected:

- Setting proportionality level of the modelling light   LED "prop" blinks (12)
- Define sequence (serial flashes)   LED "seq" blinks (13)
- Charging dimmer switch on / off   LED "dim" blinks (14)
- Buzzer switch on / off   LED "buz" blinks (15)
- Slow charge switch on / off   LED "slow" blinks (16)
- Setting appliance address / studio address   LED „unit" blinks (18)
- Return to standard display   no LED blinks

After the setting has been performed, the standard display can be re-activated by pressing the "aux" key (11) or automatically after a waiting period of approx. 30 seconds.

To select the additional functions and appliance settings, choose the respective LED (eg „charging dimmer switch on / off"). The digital display (10) will then show the actual selected value which can be changed by the energy control keys "up / down" (8). If a setting is entered which deviates from the standard setting value or a function is activated, the respective LED will remain lit as a reminder after the display returns to standard (exception: functions "prop" and "unit").

If the unit is switched off and on again, it will be in the „standard display" mode. Previously set additional functions are retained.

7.1 **Setting proportionality level of the modelling light (prop)**

The proportionality level of the modelling light can be selected by briefly pressing the energy control keys "up / down" (8). With repeated actuation of the key the following modes can be set, each shown respectively on the digital display (10): P, P1, P2, P3, P4, P5, HI, LO.

7.2 Sequence (serial flashes) (seq)

This function allows to set a defined number of flash discharges from 1 to 50. By briefly pressing the energy control keys "up / down" (8), the required number of flashes can be selected. With a long pressure on the energy control keys "up / down" (8), the setting changes in intervals of ten. Each release signal triggers the selected number of flashes. A current sequence can be aborted by a long pressure on the energy control keys "up / down" (8) or by switching off and on again the unit.

7.3 Charging dimmer / boost function (dim)

The "dim" function can be switched on or off (on/--) by briefly pressing the energy control keys "up / down" (8). When switching on the "dim" function with the modelling light on (green LED of the "mod" key (4) lights up), the modelling light switches off while charging takes place. This feature allows visual flash control, to fade out the modelling light during flash sequences or to reduce the current load on weak mains.

If the "dim" function is activated when the modelling light is <u>switched off</u> (green LED of the "mod" key (4) is off), the boost function will be activated. In this mode, the modelling light remains on as a visual flash monitor <u>during</u> charging.

7.4 Buzzer switch on / off (buz)

The ready buzzer signals when the unit is at 100 % charge. The buzzer is switched on or off (on/--) by briefly pressing the energy control keys "up / down" (8). The warning signal also functions with the buzzer switched off.

7.5 Slow charge switch on / off (slow)

In case of weak mains power supply lines, charging time may be extended to approx. double the standard value. The slow charge mode is switched on or off (on/--) by briefly pressing the energy control keys "up / down" (8).

7.6 Studio / appliance address (unit)

The compact units LOGOS are also available as versions with built-in RFS Interface (**R**adio **F**requency **S**ystem). For remote control respectively flash release via radio, an individual appliance address and a studio desk top (remote control channel) can be assigned to each RFS unit by means of the function "unit" (18).

To carry out the settings, dial the LED „unit" using the "aux" key (11). The digital display (10) shows the letter "U", followed by an appliance number between 1 and 8. By briefly pressing the energy control keys "up / down" (8), the required value can be selected. When pressing again the "aux" key (11), the digital display (10) shows the letter "C", followed by a studio number between 1 and 8. By briefly pressing the energy control keys "up / down" (8), the required value can be selected.

8. Flash tube

The flash tube is coated to ensure an optimal colour temperature. For your security, only original flash tubes must be used. For safety reasons, never operate a unit without protecting glass in place.

If the compact unit LOGOS 800 is used for longer flash sequences, we recommend to employ the flash tube for LOGOS 1600 / SOLO 1600B - Art. no. 54.301.00.

8.1   Replacing the flash tube

1.) To replace the flash tube, discharge the unit by flashes, disconnect it from power supply and let it cool off for ten minutes (to discharge the flash capacitors).

2.) Remove the protecting glass.

3.) First pull out the ignition cable and then the flash tube (do not touch the flash tube with bare hands).

4.) Insert the new flash tube.

5.) Re-insert the ignition cable.

6.) Replace the protecting glass.

7.) Connect the unit to the power supply, now it is ready for use again.

9.   Protecting glass

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

10. Fuse

The fuse (7) is located on the rear of the unit. Sand-filled fuses with value 3.15 AF may only be used (sand-filled fuses can be identified by their opaque fuse container). Using wrong fuses is dangerous; it may cause the halogen lamp to burst. Original VISATEC replacement lamps are therefore delivered with the correct fuse.

11. Basic settings ex work

The basic settings ex work can be viewed and in some instances changed with the following procedure:

When the unit is switched on, simultaneously press the "mod" and "aux" keys for approx. 5 seconds (the LED array "prop" / "seq" / "dim" / "buz" / "slow" / "unit" blinks to indicate that you are in the programming mode).

Additionally the LED of the „mod" key is lit. The digital display shows the function number 0. The other function numbers can be selected by pressing the energy control keys "up / down" (8).

By briefly pressing the „aux" key, the digital display shows the actual value respectively the actual setting within the selected function number. The LED of the „mod" key does not light up in this mode. Within the function numbers 1 and 7, the settings can be changed with the energy control keys "up / down" (8). Concerning the function numbers 0 and 2 – 6, the different pairs of these multiple digit values can be shown by means of the energy control keys "up / down" (8).

Return to normal operation by pressing (1 s) the „aux" key, by switching the unit off and on again or automatically after a period of 20 seconds.

Function number	Meaning and possible settings
0	Program version: Standard display Program number: after pressing the energy control "down" key (8)
1	RFS Interface switch on / off (only for RFS versions): Setting ex work: "on" (LED "unit" is lit). With RFS Interface switched off, the digital display shows the value "--".
2	Flash counter: Figure group in the display: xxxx**XX** = Standard display Figure group in the display: xx**XX**xx = after pressing the energy control "down" key (8) Figure group in the display: **XX**xxxx = after pressing the energy control "down" key (8)
3	Series number of the unit: Figure group in the display: xx**XX**
4	Series number of the unit: Figure group in the display: **XX**xx
5	Production date of the unit: Figure group in the display: xx**XX** = month
6	Production date of the unit: Figure group in the display: **XX**xx = year
7	Reduction of the modelling light: Setting ex works: "off" (--) The activation of this function is recommended on power mains with great fluctuations. The voltage for the modelling lamp is reduced (light output ./. 1/3 f-stop), which results in a longer service life of the halogen lamp. If this function is activated, the digital display shows the value "on".

12. Protective facilities / Fault indication

12.1 Cooling fan

The cooling of flash tube, modelling lamp and internal electronics is effected by a cooling fan. It also runs when the modelling light is turned off. The cooling works on two levels, the fan runs smoothly when small flash sequences are effected. With longer flash sequences, the cooling fan switches to the higher level.

12.2 Display "th"

If excessively high temperatures build up inside despite the fan cooling, the charge mode will be blocked and a long audible signal will be generated. The modelling light is blocked as well for about 6 minutes. The digital display shows the indication "th" during the cooling period. The cooling process is accelerated by the fan which is still in operation.

12.3 Display "A1"

The unit is equipped with an automatic afterglow blockout. If the flash tube exhibits (e.g. at the end of its service life) afterglow, this blockout will block further charging to prevent consequential damage. This status is also discernible by the ready display, which is no longer green. The blockout can be cancelled by switching the unit off and on again.

Attention: Do <u>not</u> switch off the unit during the cooling period! If the unit is switched off too early, only a small number of flashes can be effected until the next blockout, when switching on again the unit, despite a long break, because the processor could not completely pursue the cooling process.

12.4 Display "A2"

This indication is shown, when the unit is overcharging. Switch off the unit and switch it on again after a few minutes. If this fault continues to exist, please contact an after-sales service centre.

12.5 Acoustic flash monitoring

At the end of their service life, flash tubes often have triggering interruptions. This fault is indicated by an audible, intermittent signal. The signal disappears when the flash tube flashes properly again or the unit is switched off.

12.6 Monitoring of the modelling light

If the compact units LOGOS are connected to 200 V – 240 V mains voltage, after previously having been operated on 100 V - 120 V mains voltage, they will release an audible signal and the modelling light will blink at a safely reduced voltage. This function serves as a reminder that the modelling lamp must be exchanged, and also to protect against damage of the lamp. Switch the unit off and on again to return to standard operation.

13. Car battery converter

If no mains power is available, the 12 V car battery converter can be used to charge the unit (**only for 230 V units**). The modelling light cannot be used in this operating mode (excessive load on the battery) and must be removed.

* Before removing respectively replacing the flash tube and the modelling lamp, switch off the modelling light, discharge the unit, then immediately disconnect it from mains supply and let it cool down for 10 minutes.

* Remove the flash tube.

* Remove the halogen lamp (modelling).

* Connect the converter with the + and – connector clamps to the 12 V car battery.

* Connect the unit to the converter and switch on the unit and the converter.

* Switch off the converter during pauses after flash work. Charge battery if needed by allowing the car engine to run.

One compact unit LOGOS can be connected to one converter. Approx. 200 flashes of 300 J respectively 100 flashes of 600 J are possible with a fully charged battery.

14. Mounting

The stand adapter is located below the housing. The adapter is designed for standard broncolor® bolts (12 mm) and Manfrotto® pins (16 mm).

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

A bracket for suspended mounting is available under art. no. 35.228.00. If the unit should be suspended without bracket on a broncolor® bolt, the enclosed locking pin must be screwed into the lower part of the stand adapter. This is not required for stand mounting. A safety cable must be installed whenever the unit is suspended.

15. Umbrella holder

Diffusing and reflex umbrellas are used in conjunction with the umbrella reflector (art. no. 53.457.00). The umbrella bar is inserted into the special holder in the stand adapter.

16. Accessories

The compact unit LOGOS is equipped with an interlocking VISATEC bajonet, which permits a 360° rotation of the mounted light shapers. For this reason, the whole range of VISATEC accessories assortment is at your disposal. You will find the complete overall view in the VISATEC system catalogue.

16.1 Mounting of barn doors

The barn doors are attached onto the fastening braces on the reflector.

17. Service / repair

Your VISATEC compact unit is a precision device which will work for many years without malfunction if you take proper care of it. If nevertheless malfunctions do arise, please do not attempt to open the unit to repair it yourself. Even when the unit is switched off, dangerous voltages may remain within the interior of the device. Always leave service and repairs to the VISATEC after-sales service.

18. Technical data

	LOGOS 800	LOGOS 1600
Flash energy	300 J (100 V: 250 J)	600 J (100 V: 500 J)
F-stop at 1 m distance 100 ISO, standard reflector	45 (100 V: 32 7/10)	64　　　(100 V: 45 7/10)
Flash duration t 0.5 (t 0.1)	1/800 s (1/250 s) with mains voltage 110 – 240 V	1/600 s (1/150 s) with mains voltage 110 – 240 V
	Flash duration with mains voltage 100 V: approx. 20% longer	
Charging time (for 100 % of the selected energy)	230 V / 50 Hz: 0,3 – 1,2 s 120 V / 60 Hz: 0,3 – 1,2 s 100 V / 50 Hz: 0,3 – 1,5 s	230 V / 50 Hz: 0,5 – 1,9 s 120 V / 60 Hz: 0,4 – 2,0 s 100 V / 50 Hz: 0,4 – 3,0 s
	Can be switched to slow charge mode	
	With LOGOS 800 / 1600 – version 230 V (bi-voltage)**:** Automatic adaptation to the respective mains voltage Attention: The above mentioned charging times for 100 – 120 V do **not** apply 　　　　　to the bi-voltage version.	
Controls	Illuminated digital display, LED line and keyboard	
Control range of flash energy (Japan: ½ f-stop less)	Over 4 f-stops in 1/10 f-stop increments (1:16)	
Modelling light	Halogen max. 150 W Proportional to flash energy as well as "full" and "low" settings. Proportionality adjustable to all VISATEC flash systems and the different output levels (except VISATEC LITEPAC).	
Flash release	Manual release button, infrared-sensitive photocell (can be switched off), sync cable, VISATEC flash release	
Ready display	Visual and audible (can be switched off), signals when 100% of selected energy is reached	
Flash monitoring	Visual:　　Dim and boost function for modelling light Audible:　　Buzzer	
Additional function	Sequence (serial flashes) up to 50 flashes	
Number of sync sockets	2	
Stabilized flash voltage	+/- 1,5%	
Cooling	Fan	
Standards	EC standard 73/23, UL 122	
Power requirements	200-240 V / 50-60 Hz:　　6 A 100-120 V / 50-60 Hz:　　10 A	
Dimensions (L x W x H)	120 x 195 x 276 mm	120 x 195 x 276 mm
Weight kg	2,6	3,1

Subject to change in the interest of product enhancement.

19. VISATEC LOGOS RFS / LOGOS plus

The compact units LOGOS are also available as unit versions with integrated 8 channel RFS Interface (**R**adio **F**requency **S**ystem). Each channel (studio) can control up to 8 units. This interface allows remote control respectively flash release by radio via transmitter RFS as well as by means of a transceiver RFS via PC or Macintosh computer. When controlling via screen, 4 storage spaces for different lighting situations are at your disposal.

19.1 Modification to LOGOS RFS

There is the possibility, to modify LOGOS compact units later on with a RFS interface. The modification will be made by the customer service centre of our VISATEC agency in your country.

19.2 LOGOS plus

Because of the laws in some countries, the use of the VISATEC radio system is not allowed. Therefore the LOGOS compact units are also available in the version LOGOS Plus (that means with cable remote control). Besides the cable connection between the compact unit and the computer, the applications with RFS is almost identical.

Attention: There is no camera transmitter available for LOGOS plus!

19.3 Technical data

	LOGOS RFS	LOGOS plus
Remote control	With integrated 8 channel RFS interface (**R**adio **F**requency **S**ystem) for the remote control of the unit by radio via transceiver RFS from PC or Macintosh computer. Each channel (studio) can control up to 8 units.	With integrated interface for the remote control of the unit by cable from PC or Macintosh computer. Each channel (studio) can control up to 8 units.
Flash release	Transmitter RFS, Transceiver RFS (beside the options in chapter 18)	analogue chapter 18
Operational distance outdoors	up to 30 m	Length of the connection cable from the computer to the unit: 5m Length of the connection cable between the units: 2,5 m
Operational distance in closed rooms	up to 20 m	see above
Range	up to 300 m	see above
Number of sync sockets	2	1 (the second sync socket is configured as connection for the computer cable)

Norms	UL 122, EC norms73/23, 89/336 and 99/5	
	ERM	EN 300 220-1,-3
	EMC	EN 301 489-1,-3
		EN 60950
		EN 50371
		FCC Part 15
		This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
		(1) This device may not cause harmful interference and
		(2) This device must accept any interference received, including interference that may cause undesired operation.
		Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Subject to change in the interest of product enhancement.

20. Order numbers for diverse spare parts / accessories

Halogen modelling lamp 150 W / 120 V	Art. no. 54.251.XX
Halogen modelling lamp 150 W / 230 V	Art. no. 54.252.XX
Flash tube, coated, to LOGOS 800 / SOLO 800B	Art. no. 54.300.00
Flash tube, coated, to LOGOS 1600 / SOLO 1600B	Art. no. 54.301.00
Protecting glass, clear	Art. no. 54.400.59
Fuse 3.15 AF	Art. no. 37137.00
Mains cable CH 200-240 V	Art. no. 39084.00
Mains cable USA 100-120 V	Art. no. 39085.00
Mains cable Europe 200-240 V	Art. no. 39086.00
Protection cap for transport, grey	Art. no. Z3620.00
Bracket for suspended mounting	Art. no. 35.228.00
12 V battery converter	Art. no. 36.450.XX

Operating instructions

<div align="right">

b r o n c o l o r
Grafit A2/A4

</div>

Before use

We are pleased you have chosen a broncolor Grafit A power pack which is a high-quality product in every respect. If used properly, it will render you many years of good service. 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.

Contents   page

Important safety instructions

When using your photographic equipment, basic safety precautions should always be followed, including the following:

1. Read and understand all instructions before using.

2. Close supervision is necessary when any appliance is used near children. Do not leave appliance unattended while in use.

3. Care must be taken as burns can occur from touching hot parts.

4. Do not operate appliance with a damaged cable or if the appliance has been dropped or damaged - until it has been examined by a qualified service person.

5. Position the cable so that it will not be tripped over, pulled, or contact hot surfaces.

6. If an extension cable is necessary, a cable with a current rating at least equal to that of the appliance should be used. Cables rated for less amperage than the appliance may overheat. When using a cable reel, it must be completely unrolled before use to prevent overheating of the cable.

7. When plugging in and unplugging lamp plugs, the unit must be switched off.

8. Always unplug appliance from electrical socket before cleaning and servicing and when not in use. Never jerk cable to pull the plug from the socket. Grasp plug and pull to disconnect.

9. Let appliance and connected lamp bases cool completely before putting away.

10. When putting away and winding up cables, take care they do not come into contact with hot parts of the appliance.

11. To reduce risk of electric shock, do not immerse this appliance in water or other liquids.

12. To reduce the risk of electric shock, do not open this appliance, but take it to a qualified service person when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.

13. The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.

14. Connect this appliance to a grounded socket.

Attention:
Read before starting up the power pack

- Prior to replacing fuses, light bulbs or flash tubes, discharge the power pack and disconnect from power supply. Disconnect the lamp base from the power pack.

- These units are designed for use in dry conditions. Protect them from water and from excessive exposure to dust.

- The units are not suitable for use in an environment where there is a risk of explosion.

- The accessories mounted onto the lamp bases may heat up to high temperatures under specific conditions. Handle with care!

- With due allowance for heat radiation, lamp bases with more than 100 W modelling light may be directed against inflammable surfaces only at a minimum distance of 1 m.

- For safety reasons, never operate the lamps without the protecting glass in place.

- 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 and glass covers with a UV coating. Without these or other protective filters, use with extreme care when shooting.

- Even when disconnected from the power supply, dangerous voltages may remain inside the unit. For this reason units should be opened by authorized broncolor service persons only.

- Do not block the cooling louvers on the unit.

- **broncolor** power packs and lamp bases meet an extremely high safety standard. When connecting **broncolor** products to other manufacturers' products, integrated safety measures may become ineffective. Due to different design features and contact assignment of the lamp plugs of other brands, the user himself/herself may even be at risk. We offer no guarantee and accept no liability for damages which may be caused by this type of usage.

Controls and displays

1.   Mains switch

2.   Voltage selector 110V/230V

3.   Circuit breaker

4.   Sync socket

5.   Connection socket for mains cable

6.1   Outlet I

6.2   Outlet II

6.3   Outlet III

7.1   Lamp base switch 1, on/off

7.2   Lamp base switch 2, on/off

7.3   Lamp base switch 3, on/off

8.   Power selector per lamp +/-

9.   Digital power display per lamp

10.   Master power selector +/-

11.   Photocell

12.   Digital master power display

13.   Photocell on/off

14.   IR receiver cell

15.   IR receiver and/or RFS-interface on/off

16.   Modelling light on/off

17.   Test key, ready light green

18.   4 line LCD display

19.   Cursor up/down

20.   Reset key

21.   Auxiliary functions setting key

12 11 10 9 8 7.3 7.2 7.1

3

2

1

13
14
15
16
17

cell
ir
mod
test

broncolor   made in Switzerland

18

19 20 21

V ^   reset   − +

off on   sync

2 1 3 4 5

6.3

6.2

6.1
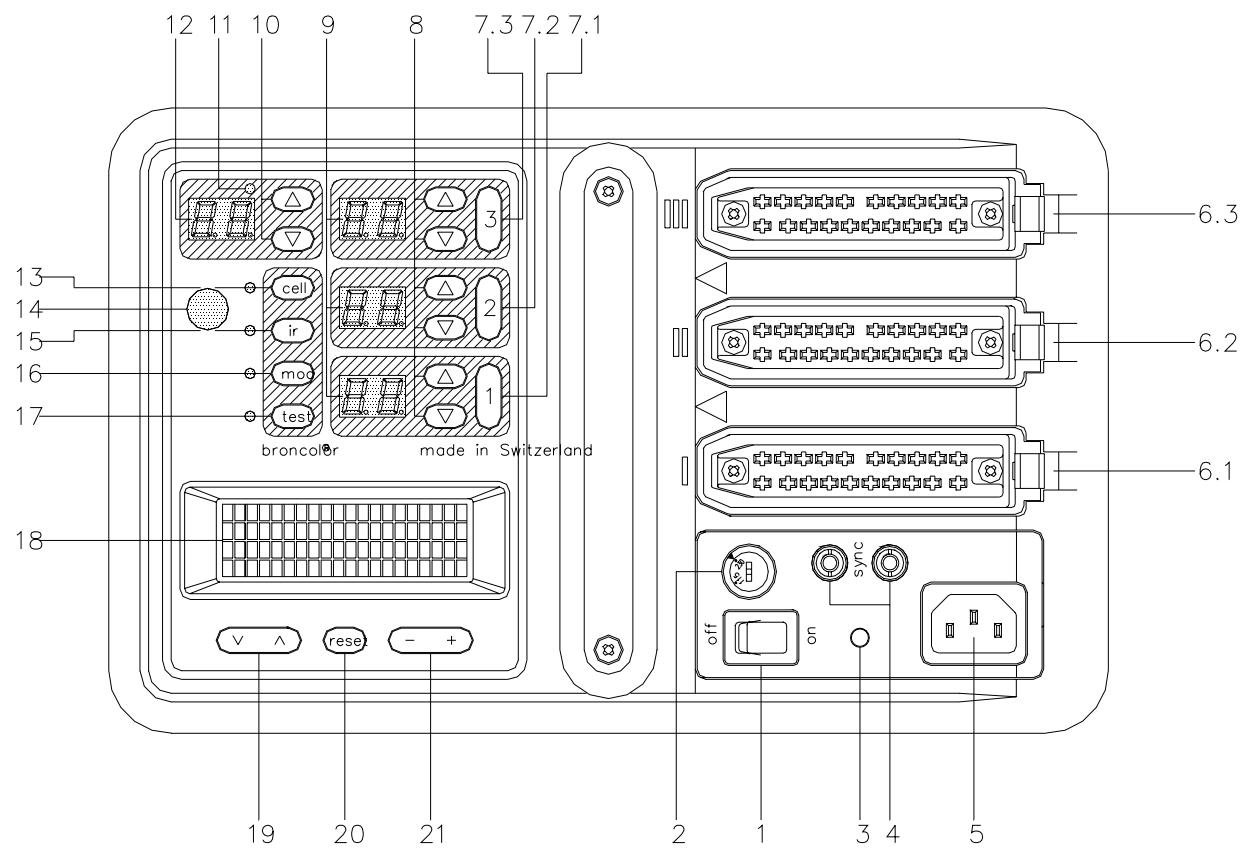
1. <u>Application Grafit A</u>

This mains (AC-line) supplied studio flash unit is designed for professional photography only. For your safety use a three-wire extension cable when required.

2. <u>Start up</u>

2.1   <u>Mains voltage / voltage selector</u>

Set the unit to the required mains voltage by turning voltage switch (2) with a coin or screwdriver.

The unit is designed for 230V, 120V or 100V according to voltage of country. If a different voltage than the original one is selected, the following limitations come into force:

230V unit on 120V: Can only be operated with power up to level 9.
                        The charging time becomes longer.
120V unit on 230V: The recycling time becomes longer
100V unit on 230V: The recycling time becomes longer

2.2   <u>Earthed Mains</u> (AC-line)

Connect unit to current supply always using earthed mains plug.

2.3   <u>Start up</u>

Use the mains (AC-line) switch (1) to power-up unit. During the charging process the digital master power display (12) flashes, after which, it becomes continuous.

3. <u>Energy control</u>

3.1   <u>Grafit A2/A4</u>

Use the "+/-" keys (10) to control the flash energy (flash intensity) on both main outlets (I, II) within a range of 6 7/10 f-stops, and when including reserve lamp III within a range of 4 f-stops. A value of 10 in the display indicates maximum intensity, 3.3 resp. 6 minimum. Whole numbers are full f-stop intervals, decimals indicate 1/10 f-stop steps. Brief pressure on the "+/-" keys (7.1, 7.2, 7.3, 10) runs the power up (or down) by a 1/10 f-stop interval, prolonged pressure by a full f-stop. The display (12) then blinks until charging or discharging has stabilized the new level.

3.2   1/10 or 1/3 f-stop increments control
The fractional power level adjustment can be programmed for 1/10 or 1/3 f-stop intervals; the units are factory set to 1/10 steps. For reprogramming to 1/3 steps see chapter 7.

3.3   Individual energy distribution (Asymmetry)

The Grafit A power packs incorporate a circuit for selectively distributing the power between the lamp base outlets. If outlet III is used as well, it has the highest flash energy. To ensure an optimum quality of colour temperature it is recommended to limit the maximum asymmetry of the flash power between each individual lamp outlet to three f-stops. The unit indicates this limitation if applicable.

4.   <u>Lamp base outlets</u>

Lamp base outlets of the Grafit units are marked with the Roman numerals I to III.

All outlets may be switched individually (7.1, 7.2, 7.3). The LED (9) indicates the flash energy for each separate lamp base. For newly connected lamp bases, the connection will be automatically activated.

5.   <u>Modelling light</u>

5.1   The "mod" key (16) switches on the modelling lamps for all connected lamp bases. When switched on, the green LED (Liquid Electronic Display) lights up. Lamp bases also have an additional modelling lamp switch. You may also operate the modelling light proportionally (Chapter 5.2) and adapt it to the various maximum outputs of **broncolor** power packs.

5.2   Proportionality

In chapter 8 is an explanation of how to set the various operating modes (modelling light proportionality).

Stages prop1, prop2, prop3, prop4 and prop5 are used to adapt the modelling light brightness of power packs with different output. The setting "modelling light proportional" duly allows for the output set, the number of lamp bases as well as an asymmetrical energy distribution.

Proportionality is guaranteed if the identical operating mode has been set for all power packs. The higher the digit, the brighter the modelling light.

The following operating modes are possible:

"prop1"   This level allows matching of the Grafit A units to the proportional control of the Pulso 8 power pack.

"prop2"   Proportional modelling light - brightest level with Grafit A4.

"prop3"   Proportional modelling light - brightest level with Grafit A2.

"prop4/5"   If you use a power pack with less power it is known that the halogen modelling light is relatively weak and yellowish. To solve this problem the power packs have been provided with two additional proportional light levels. If the power of the Grafit A4 is lower than "8.0" and of the Grafit A2 lower than "9.0" you can increase the modelling light immensely with "prop4".

               If the power of the Grafit A4 is lower than "7.0" and of the Grafit A2 lower than "8.0" you can increase the modelling light immensely with "prop5".

"P.Max."   When working only with one power pack in asymmetrical operation; using the level "P.Max.", the lamp base with the highest flash energy will be operated with full modelling light and the others will operate proportionally, corresponding to their selected power.

"full"   All lamp bases with full modelling light, independent of flash output, type of power pack and output distribution.

"economy"   Lighting level reduced for all lamps to reduce power consumption and extend the burning life of the tungsten-halogen lamps.

Highest possible proportionality settings when combining packs of different output:

	Nano 2 Topas A2 Grafit A2 Mobil	Nano A4 Topas A4 Grafit A4	Topas A8
Nano 2 Topas A2 Grafit A2 Mobil	P3 (or "P" when only using Nano 2)	P2	P1
Nano A4 Topas A4 Grafit A4	P2	P2 (or "P" when only using Nano A4)	P1
Topas A8	P1	P1	P1

Example 1:   A power pack Grafit A2 is operated together with a power pack Topas 8. The modelling light is proportional when both are set to mode "prop1".

Example 2:   A power pack Grafit A4 is operated together with a Grafit A2. The modelling light is proportional and highest possible when both are set to mode "prop2".

5.3   Reduced modelling light intensity

To avoid overloading the mains supply (AC-line), the 100-120 volt versions of the power packs reduce the modelling light intensity during charging. You can clear this factory-installed program if the power rating of the mains supply (AC-line) is sufficient - see key combinations in section 8.11 of the programming additional functions. When working with limited-power on the mains supplies (AC-line) you can also slow down the charging rate with the additional functions "slow charging" - this reduces the risk of blowing the supply fuses.

5.4   Modelling light switch on lamp base

The switch on the lamp bases permits selective lighting control with the modelling light. To avoid damage to the lamp filament, always switch off the modelling light before moving the lamp base.

6. Release and remote control

6.1   Photocell (cell)

The photocell can be switched on or off by using the "cell" key (13). If it is activated the green LED lights up.

After a flash sequence, an active photocell will be blocked and the green LED blinks. By pressing the "cell" key the cell is reactivated.

6.2   Infrared receiver (ir)

The IR receiver can be switched on or off with the key "ir" (15). If the function is active, the green display lights up.

6.3   Infrared flash channels

You can trigger Grafit A power packs from broncolor infrared transmitters. These have two different channels. Setting instructions are stated in chapter 8.

If a power pack is triggered via infrared, the flash release follows with a time delay. If the setting of the IR channel is "all" the delay is 1/1000s, if the setting is selective it is 1/500s.

Important: when selective triggering is selected, all units in operation must be set to 1 or 2 (none on "all") and all the photocells should be switched off.

6.4   RFS interface
The RFS interface of the RFS version of the Grafit A units can be switched on or off as an additional function on the display by using the toggle key (21). (See chapter 8).

6.5   Sync socket (4)

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

6.6   "Test" key (17)

This key (17) allows manual release of the power pack as soon as 70% of the set energy is available.

6.7   Remote Control

The remote control of the power pack Grafit A is operated by the Remote Control units Servor 3 and Servor d. If the power pack is switched to "stand-by" via the remote control unit, the decimal point of the main display will blink. The power pack can be "re-activated" either by the remote control unit or by pressing any button on the front panel.

6.8   Remote control channels

Remote control by the means of servor or RFS may be performed via separate channels (studio workstations). This is explained in chapter 8.

6.9   Power pack addresses

Addresses will be assigned to each power pack for individual control. This is explained in chapter 8.

7.   Flash ready signals visual/audible

7.1   The **visual ready signal** is the green LED at the "test" key (17). 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 8.

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

8. <u>Setting additional functions</u>

<u>Meaning of additional symbols on display</u>

■   Indicates that one or several additional functions are active

!   Frames fault / alarm messages

∗   Frames help text

Suggested default value for a certain setting

<u>Help function</u>

Advance the cursor to the "Additional"
function and press the toggle-key v or ∧ for
about 2 seconds to display an explanation of
the function. The text begins and ends with
"∗" characters. To quit the help function,
press the toggle switch again.

<u>Function</u>	<u>possible settings</u>
With the toggle-key v ∧ (19, on the front panel at the bottom left) the cursor can be moved up or down to select the various functions.	With the +/- key (21, on the front panel at the bottom right) different settings can be made.

8.1   ***Lamp 3, 2, 1***
        Display of the lamp power   - ***..J***   (joules)
                                                     - ***..%***   (percentage)

8.2   ***Modelling light***
        Choice of the proportional level   - ***prop1***
        (see as well chapter 4.)   - ***prop2***
                                                     - ***prop3***
                                                     - ***prop4***
                                                     - ***prop5***
                                                     - ***P.Max.***
                                                     - ***full***
                                                     - ***economy***

8.3   ***Sequence***
        In this mode you can select a number of   *- off*
        flashes to be triggered automatically.   *- 2-50* (when t 0.1 (min), and interval
                                                         shorter 0,200s only
                                                           2-15)

8.4   ***t 0.1*** (flash duration setting)
        When operating lamp I or II, you can select   - ***(min.)*** "flash duration"
        the flash duration (t 0.1). Lamp III may not   On this setting the shortest flash
        be used simultaneously. The unit always   duration will always be selected
        indicates the t 0.1 value of the lamp with the   automatically regardless of the CTC
        longest total flash duration.   control system.

                                                         - ***(opt.)*** "flash duration"
                                                           The most suitable flash duration will
                                                           automatically be selected to obtain the
                                                           optimum colour temperature.

                                                           If the colour temperature is changed
                                                           with the broncolor FCC, an arrow
                                                           appears on the display next to the
                                                           "(opt.)".

                                                         - ***1/125*** (only Grafit A4)   w/o CTC
                                                         - ***1/250***   w/o CTC
                                                         - ***1/500***   w/o CTC
                                                         - ***1/1000***   w/o CTC
                                                         - ***1/2000***   w/o CTC
                                                         - ***1/4000***   w/o CTC
                                                         - ***1/6000***   w/o CTC

8.5   ***Interval***
        This function allows to define the time   - off
        between the flashes and therefore to delay the   - "delay time" (shortest charging
        flash sequence.   time - 50.00s)
        The interval setting cannot be used when:
        charging time is long and there are unsuitable
        supply voltages.

8.6	***Delay*** of the first flash	
	You can delay triggering of the first flash by 0,01s - 50,00s.	- ***off*** - ***0,01s - 50,00s***

8.7	***Alternate*** (ping-pong release)	
	This provides the option of determining the release sequence of 2 power packs, i.e., only one power pack triggers per IR signal, while the other is at rest. This function allows performing faster photographic sequences.	- ***off*** - ***1*** (1. unit in succession) - ***2*** (2. unit in succession)

8.8	**Preset sequence**	
	Pre-programmed series of flashes with different intensity and different intervals (only outlets I+II). If this function is switched on the following settings are blocked: - output control - power selector per lamp - lamp 1-3 - modelling light - sequence - t 0.1 - interval - alternate triggering of the flash	- No. 1 - No. 2 - No. 3 - etc. - No. 16 (Details see chapter 11)

8.9	***Charging time*** (slow charging)	
	In case of weak power supply lines, charging time may be extended.	- ***fast*** - ***slow***

8.10	***Memory 1 + 2***	
	All setting can be stored and recalled later on.	- Press the "+" key for 2s to store all settings (STORE) - Press the "-" key for 2s to recall a previously stored setting (RCL)

8.11 **_DIM_**
This function dims the modelling light during the recycling time (min. 0,5s). It allows a visual flash control and the extinction of the modelling light during sequences.

- **_ON_**
- **_OFF_**

8.12 **_Buzzer_**
The audible signal sounds when the power capacitors are 100% charged up. You can switch on resp. off the signal.

- **_ON_**
- **_OFF_**

8.13 **_IR channel_**
The Grafit power packs use two different channels for selective triggering of specific power packs or groups (studio workstations).

- **_all_** (the unit will release on all IR signals)
- **_1_** (the IR transmitter must be set correspondingly)
- **_2_** (the IR transmitter must be set correspondingly)

8.14 **_IR channel / RFS interface_**
With Grafit A RFS power packs the IR-channel is defined in the additional functions "IR/RF" by briefly pressing the +/- (21). Extended pressure on the +/- key switches the RFS function on resp. off.

IR- channel
- **_all_** (the unit will release on all IR signals)
- **_1_** (the IR transmitter must be set correspondingly)
- **_2_** (the IR transmitter must be set correspondingly)

RFS- Interface
-   _ON (RFS interface is switched on)_
-   -- (RFS interface is switched off)

8.15 **_Studio / Gen._**
Studio = workstation
Extended pressure on of the key -/+ sets the workstation .

_01/20_
Servor
Enables the choice between studio 01 or 02.
RFS
Enables the choice between studio 01 to 10

power pack = power pack address
Brief pressure on the key -/+ sets the power pack address for remote control.

_01/20_
Servor
Enables the choice between address 01 to 08.
RFS
enables the choice between address 01 to 10

8.16 **_Flash count_**

Counts the already released flashes. By pressing extensively on the -/+ key the counter can be set back to 0.

8.17   ***Total count***
Every flash discharge is counted.

8.18   ***Max. Display***

1/10 f-stop	**- 10**
The Grafit units can display flash output in	**- 9**
1/10 f-stop over a range of 6,7 f-stops. All	**- 8**
Grafit power packs are factory-set to show	**- 7**

values from 10 to 3.3. 10 indicates the maximum and 3.3 the minimum output level. The display range can be shifted downwards in order to correspond with units of different power (Grafit A2/A4). The result will be the same number on the display for the same amount of selected power

Grafit A2   value 8 = 1600J
Grafit A4   value 9 = 3200J
Pulso 8   value 10   =   6400J

10	**9**	**8**	**7**
10			
9	9		
8	8	8	
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4
3.3	3	3	3
	2.3	2	2
		1.3	1
			0.3

1/3-f stop	*- 1/3*

For the display in 1/3 steps the power range is shown +9 to -11.

General:
With the remote control servor 3, we recommend retaining the standard setting (maximum energy = 10) since complications in the display in the command mode "all" may arise otherwise.

8.19   ***Store Aux***

Grafit A power packs are factory-set to clear	*- on*

all programming function adjustments on
loss of mains supply power, for whatever
reason. This avoids operating errors on
subsequent startup.

- off

8.20   ***Language***
To simplify the operation, you can select
your language.

- G
- E
- F
- etc.

8.21   ***Progr. Release***
Shows the software release of the EPROM.

8.22   ***Country***
The country code is for sales and service.

8.23   ***Delivery date***
First operation

8.24   ***Serial number***
For service and sales

Reset key

-    When pressed briefly, the cursor jumps on the line "modelling light".

-    When pressed for 2s, the settings (sequence, t 0.1, interval, delay, alternate, preset sequence,
     charging time) are switched off.

-    When pressed for more than 10s, the unit is reset to the factory setting.

9. Protective facilities / Fault indication

Fault / alarm messages are framed with "!" characters on each line.

9.1   Cooling

The cooling fan switches to a higher speed after some flashes

9.2   Thermal overheating display

To protect against overheating after extended series of flashes, the unit will power down for a number of minutes. At that stage, the following message will appear on the LCD display: "XX min. COOLING BREAK, DO NOT DISCONNECT" The cooling time is shortened if the unit remains connected and switched on.

9.3   Afterglow

In case of afterglow of an older flash tube, the LCD display will show the corresponding message.

9.4   Circuit breaker (3)

In the event of an electrical malfunction, the circuit breaker will automatically disconnect the power pack from the power source. The unit can be restarted by pressing the circuit breaker button. If it disconnects again immediately, the power pack must be serviced by an authorised technician.

10. Lamp bases

The following information applies to Pulso, Primo and Picolite lamp bases.

10.1   Replacing flash tubes

Prior to any change of the flash tube, the lamp base must be disconnected from the power pack!

Lamp bases use plug-in flash tubes.

Normally the Pulso and Primo flash tube 1600 J have the UV-coating directly on the flash tube. In this case the protecting glass used must be clear. The protecting glasses as and the flash tubes 1600 J are available in the versions UVE coated (5500 K) and uncoated (5900 K). Therefore, the Pulso and Primo lamp bases can be supplied upon request with an uncoated flash tube and a coated protecting glass.

The flash tubes 3200 J for Pulso and Primo lamp bases as well as the flash tubes for Picolite are available only uncoated for thermal reasons. Therefore those lamps must be used with a UV-coated protecting glass.

The flash tube and protecting glass of the Pulso 8 lamp bases form one module.

10.1.1 Pulso-/Primo lamp bases up to 3200 J

To change the flash tube, carefully pull off the protecting glass. Pull straight, without tilting. Lamp bases manufactured from 1996 on, have the upper of the three springs holding the protecting glass differently shaped to provide a better hold. When removing the protecting glass it is necessary to first pull out the glass from the bottom springs. Release the contact spring (only Primo lamp) and again be sure to pull the flash tube straight along the lamp base axis.

When inserting the tube check that the ceramic base is fully pushed back in, and that for the Primo lamp bases the contact spring rests on the inside ignition wire.
Then the protecting glass has to be re-inserted in front of the modelling light and flash tube. It is held by three springs. Because the Primo lamp base can be operated with 1600 J flash tubes as well as with 3200 J flash tubes, a corresponding warning sign is supplied with each flash tube. Please stick this warning sign on the lamp base plug when inserting the flash tube.

10.1.2 Pulso 8 lamp base

The flash tube is only available with a built-in protecting glass. When exchanging the flash tubes or replacing the modelling lamp, hold the flash tube carefully on the protecting glass and pull out in axial direction. When inserting the flash tube check that the ceramic base is fully pushed back in.

10.1.3 Picolite small lamp

This small lamp has a plug-in flash tube with spring fastener. For thermal reasons the UV-coating is on the protecting glass. The protecting glass is available in the versions UVE-coated (5500 K) and UVE-matt coated (5500 K).

To change the flash tube release the spring ring and remove the protecting glass. The flash tube must be pulled out straight along the lamp base axis. When inserting the tube be sure that it is fully pushed in. Finally replace the protecting glass and fasten with the spring ring.

10.2 Changing the halogen lamp

The halogen lamps are also plug-in or screw-in. Taking the lifespan into consideration, the halogen lamp should not be handled with bare hands. Exchange of the halogen lamp is practically indentical to that of the flash tube.

The Primo and Picolite lamp base can be operated on the local mains (AC-Line) voltage (100V-240V) when a halogen lamp is used which corresponds to the voltage.

10.3   Cooling fan

A cooling fan in the lamp base cools the flash tube and modelling lamp. It also runs when the modelling lamp is turned off.

10.4   Thermal protection

The lamp bases have been fitted with an automatic thermal protection. Should the lamp base overheat (e.g. by impeding the flow of cooling air), the modelling light is shut off. Nevertheless you may continue producing flashes. The Picolite, however, has an additional thermal protection which limits the number of flashes.

10.5   Lamp base plugs

The lamp base plugs and sockets have mechanical interlocks to prevent inadvertent disconnection. When plugging in, ensure that those interlocks engage completely. To unplug, push down the locking spring below the cable guide and lift out the plug. The power pack must be switched off to plug-in and to unplug.

10.6   Reflectors

Primo and Pulso lamp bases have a bayonet fitting to take reflectors. The small lamp Picolite has an integrated reflector.

10.7   Fuses

Only sand-filled fuses of the type indicated on the type plate may be used; otherwise the halogen lamp may explode.

11. Preset sequence (preprogr. series of flashes)

Table 1:
Grafit A2 with one lamp + Grafit A4 with one or two lamps

number	1. flash delay	energy	2. flash delay	energy	3. flash delay	energy	4.flash delay	energy
1	0s	7.2	0.02s	8.2				
2	0s	7.2	0.04s	8.2				
3	0s	7.2	0.08s	8.2				
4	0s	7.2	0.16s	8.2				
5	0s	7.2	0.02s	7.2	0.04s	8.2		
6	0s	7.2	0.04s	7.2	0.08s	8.2		
7	0s	7.2	0.08s	7.2	0.16s	8.2		
8	0s	7.2	0.16s	7.2	0.32s	8.2		
9	0s	5.2	0.02s	6.2	0.04s	7.2	0.06s	8.2
10	0s	5.2	0.04s	6.2	0.08s	7.2	0.12s	8.2
11	0s	5.2	0.08s	6.2	0.16s	7.2	0.24s	8.2
12	0s	5.2	0.16s	6.2	0.32s	7.2	0.48s	8.2
13	0s	5.2	0.02s	6.2	0.06s	7.2	0.14s	8.2
14	0s	5.2	0.04s	6.2	0.12s	7.2	0.28s	8.2
15	0s	5.2	0.08s	6.2	0.24s	7.2	0.56s	8.2
16	0s	5.2	0.16s	6.2	0.48s	7.2	1.12s	8.2

Table 2:
Grafit A2 with two lamps

number	1. flash delay	energy	2. flash delay	energy	3. flash delay	energy	4. flash delay	energy
1	0s	7.2	0.02s	8.2				
2	0s	7.2	0.04s	8.2				
3	0s	7.2	0.08s	8.2				
4	0s	7.2	0.16s	8.2				
5	0s	7.2	0.02s	7.2	0.04s	8.2		
6	0s	7.2	0.04s	7.2	0.08s	8.2		
7	0s	7.2	0.08s	7.2	0.16s	8.2		
8	0s	7.2	0.16s	7.2	0.32s	8.2		
9	0s	6.1	0.02s	6.1	0.04s	7.1	0.06s	8.1
10	0s	6.1	0.04s	6.1	0.08s	7.1	0.12s	8.1
11	0s	6.1	0.08s	6.1	0.16s	7.1	0.24s	8.1
12	0s	6.1	0.16s	6.1	0.32s	7.1	0.48s	8.1
13	0s	6.1	0.02s	6.1	0.06s	7.1	0.14s	8.1
14	0s	6.1	0.04s	6.1	0.12s	7.1	0.28s	8.1
15	0s	6.1	0.08s	6.1	0.24s	7.1	0.56s	8.1
16	0s	6.1	0.16s	6.1	0.48s	7.1	1.12s	8.1

These diagrams are provided as an explanation of table 1

Delay since moment of triggering

Nr.	0.00s	0.02s	0.04s	0.06s	0.08s	0.10s	0.12s	0.14s	0.16s	0.18s	0.20s	0.22s	0.24s	0.26s	0.28s	0.30s	0.32s	0.34s	0.36s	0.38s	0.40s	0.42s	0.44s	0.46s	0.48s	0.50s	0.52s	0.54s
1	7.2	8.2																										
2	7.2		8.2																									
3	7.2				8.2																							
4	7.2								8.2																			
5	7.2	7.2	8.2																									
6	7.2		7.2		8.2																							
7	7.2				7.2				8.2																			
8	7.2								7.2								8.2											
9	5.2	6.2	7.2	8.2																								
10	5.2		7.2		7.2		8.2																					
11	5.2			6.2					7.2				8.2															
12	5.2								6.2								7.2								8.2			
13	5.2	6.2		7.2				8.2																				
14	5.2		6.2				7.2								8.2													
15	5.2				6.2								7.2															
16	5.2								6.2																7.2			

☐   Energy / time

0.56s	0.58s	0.60s	0.62s	0.64s	0.66s	0.68s	0.70s	0.72s	0.74s	0.76s	0.78s	0.80s	0.82s	0.84s	0.86s	0.88s	0.90s	0.92s	0.94s	0.96s	0.98s	1.00s	1.02s	1.04s	1.06s	1.08s	1.00s	1.12s
8.2																												
																												8.2

These diagrams are provided as an explanation of table 2

Delay since moment of triggering

Nr.	0.00s	0.02s	0.04s	0.06s	0.08s	0.10s	0.12s	0.14s	0.16s	0.18s	0.20s	0.22s	0.24s	0.26s	0.28s	0.30s	0.32s	0.34s	0.36s	0.38s	0.40s	0.42s	0.44s	0.46s	0.48s	0.50s	0.52s	0.54s
1	7.2	8.2																										
2	7.2		8.2																									
3	7.2			8.2																								
4	7.2								8.2																			
5	7.2	7.2	8.2																									
6	7.2		7.2		8.2																							
7	7.2			7.2					8.2																			
8	7.2								7.2							8.2												
9	6.1	6.1	7.1	8.1																								
10	6.1		6.1		7.1		8.1																					
11	6.1				6.1				7.1				8.1															
12	6.1								6.1								7.1								8.1			
13	6.1	6.1		7.1				8.1																				
14	6.1		6.1				7.1								8.1													
15	6.1				6.1								7.1															
16	6.1								6.1																7.1			

▢ Energy / time

24

0.56s	0.58s	0.60s	0.62s	0.64s	0.66s	0.68s	0.70s	0.72s	0.74s	0.76s	0.78s	0.80s	0.82s	0.84s	0.86s	0.88s	0.90s	0.92s	0.94s	0.96s	0.98s	1.00s	1.02s	1.04s	1.06s	1.08s	1.10s	1.12s
8.1																												
																												8.1

12. __Technical data__

	Grafit A2	Grafit A4
Flash energy	1600 J	3200 J
f-stop at distance of 2 m (6 1/2 ft.), 100 ISO, reflector P70	64 2/10	90 2/10
Flash duration t 0.1 (t 0.5)	1/150 - 1/6000 s (1/450 - 1/10000 s)	1/80 - 1/6000 s (1/240 - 1/10000 s)
	Flash duration and energy automatically regulated for optimum colour temperature. Flash duration can be preselected.	
Charging time (for 100% of selected energy)	Version 1: 0.03 - 1.3 s (230 V) Version 2: 0.03 - 1.6 s (120 V) Version 3: 0.03 - 2.2 s (100 V)	Version 1: 0.04 - 2.6 s (230 V) Version 2: 0.04 - 3.2 s (120 V) Version 3: 0.04 - 2.2 s (100 V)
	Can be switched to slow charging mode for low-amperage power outlets	
Ready display	Visual and audible (can be switched off); signals when 100 % of selected energy is reached	
Lamp base outlets	2 main connectors with flash cut-off and 1 reserve connector	
Power output distribution	Symmetrical and variable asymmetrical	
Controls	Illuminated silicone keyboard, resistant to dust and scratches. Wireless remote control of all functions with infrared Servor e, alternatively, can be controlled with PC and Macintosh®.	
Control range	6 7/10 f-stops for main connectors, 4 f-stops for reserve connector, in 1/10 or 1/3 f-stop intervals Displayed simultaneously in joules and f-stops, joules switchable to percentage	
Colour temperature	CTC (Colour Temperature Control) for uniform or deliberately variable colour temperature with broncolor FCC (Flash Color Chronoscope)	
Modelling light	Halogen, max. 3 x 650 W at 200 - 240 V Halogen, max. 3 x 300 W at 100 - 120 V Proportional to flash energy and «full» and «low» settings. Proportionality adjustable to other broncolor power packs and their various output ranges	
Additional functions	Flash sequences, triggering delay, selectable flash duration, slow charging, ping-pong release, stroboscopic effects with one or more power packs, choice of two infrared channels; etc. User-friendly menu-driven design. Menu text available in multiple languages (German, English, French, etc.)	
Flash release	Manual release button, photocell (can be switched off) infrared receiver, sync cable, FCM 2, FCC, IRX2, IRQ	
No. of sync sockets	2	
Stabilized flash voltage	+/- 0.5%	
Standards	UL 122, EC standard 73/23, 89/336 and 99/5UL 122	
Power requirements	Version 1: 220-240V / 50Hz, switchable to 120V / 60 Hz, current consumption 10A, longer series with shorter charging times 16A. Version 2: 110-120V / 60Hz, switchable to 230V / 50Hz, current consumption 15A. Version 3: 100V / 50Hz, switchable to 230V / 50Hz, current consumption 15A.	
Dimensions	288 x 180 x 311.5 mm	288 x 180 x 407.5 mm
Weight kg	8	11

13. Grafit A RFS / Grafit A plus

The power packs Grafit A are also available as an unit version with integrated 10 channel RFS interface (**R**adio **F**requency **S**ystem). Each channel (Studio) can control up to 15 units. This interface allows remote control respectively flash releases by radio via transmitter RFS as well as by means of a transceiver RFS via PC or Macintosh computer. When controlling via screen, 4 storage spaces for different lighting situations are at your disposal.

13.1   Modification to Grafit A RFS

There is the possibility, to modify the Grafit A power packs later on with a RFS interface. The modification will be made by the customer service centre of our broncolor agency in your country.

13.2   Grafit A plus

Because of the laws in some countries, the use of the broncolor radio system is not allowed. Therefore the Grafit A power pack is also available in the version Grafit A plus (that means with cable remote control). Besides the cable connection between the power pack and the computer, the application with RFS is almost identical.

Attention: there is no camera transmitter available for Grafit A plus!

13.3   Technical data

	Grafit A RFS	Grafit A plus
Flash release	Transmitter RFS, transceiver RFS (besides the options in chapter 12)	Analogue chapter 12
Remote control	- With integrated 10 channel RFS interface (**R**adio **F**requency **S**ystem) for the remote control of the unit by radio via transceiver RFS from PC- or Macintosh computer. Each channel (Studio) can control up to 15 units. - with IR-manual remote control servor d for the control of the main functions of the Grafit A.	- With integrated interface for the remote control of the unit by cable from PC or Macintosh computer. Each channel (Studio) can control up to 15 units. - With IR- manual remote control servor d for the control of the main functions of the Grafit A
Operational distance outdoors	Up to 50 m	Length of the connection cable from the computer to the unit: 5 m Length of the connection cable between the units: 2,5 m
Operational distance in closed rooms	Up to 30 m	See above
Range	Up to 300 m	See above
Number of sync sockets	1 (instead of the second sync socket there is the radio antenna)	1 (the second sync socket is configured as connection for the computer cable)

Technical data (continuation)

Standards	UL 122, EC-standards 73/23, 89/336 und 99/5	
	ERM	EN 300 220-1,-3
	EMC	EN 301 489-1,-3 EN 60950 EN 50371 FCC Part 15 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Subject to change in the interest of product enhancement.

Operating Instructions   b r o n c o l o r
Topas A2/A4/A8

Before use

We are very pleased you have chosen a broncolor Topas compact unit which is a high-quality product in every respect. If used properly, it will render you many years of good service.
Please read 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.

Content   Page

Important safety instructions

This unit is designed for professional photography and is to be handled by skilled staff only. When using your studio flash equipment, basic safety precautions should always be followed, including the following:

1. Read and understand all instructions before using.

2. Close supervision is necessary when any appliance is used near children. Do not leave appliance unattended while in use.

3. Care must be taken as burns can occur from touching hot parts.

4. Do not operate appliance with a damaged cable or if the appliance has been dropped or damaged – until it has been examined by a qualified service person.

5. Position the cable so that it will not be tripped over, pulled, or contact hot surfaces.

6. If an extension cable is necessary, a cable with a current rating at least equal to that of the appliance should be used. Cables rated for less amperage than the appliance may overheat. When using a cable reel, it must be completely unrolled before use to prevent overheating of the cable.

7. The power pack must be switched off while plugging in or unplugging the lamp head plugs.

8. Always unplug appliance from electrical socket before cleaning and servicing and when in use. Never jerk cable to pull plug from socket. Grasp plug and pull to disconnect.

9. After use, let appliance as well as the connected lamp heads cool down completely before putting away.

10. Put away and wind up the cables so that they do not touch hot parts of appliances and lamps.

11. To reduce the risk of electric shock, do not immerse this appliance in water or other liquids.

12. To reduce the risk of electric shock, do not disassemble this appliance, but take it to a qualified serviceman when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.

13. The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.

14. Connect this appliance to an earthed socket.

Attention:
Read before starting up the power pack

- Prior to replacing fuses, modelling lamps or flash tubes, discharge the power pack and disconnect from power supply. Disconnect the lamp base from the power pack.

- These units are designed for use in dry conditions. Protect them from water and from excessive exposure to dust.

- The units are not suitable for use in an environment where there is a risk of explosion.

- The accessories mounted onto the lamp bases may heat up to high temperatures under specific conditions. Handle with care!

- With due allowance for heat radiation, lamp bases with more than 100 W modelling light may be directed against inflammable surfaces only at a minimum distance of 1 m.

- For safety reasons, never operate the lamps without the protecting glass in place.

- 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 and glass covers with a UV coating. Without these or other protective filters, use with extreme care when shooting.

- Even when disconnected from the power supply, dangerous voltages may remain inside the unit. For this reason units should be opened by trained personnel only.

- Do not block the cooling louvers on the unit.

- **broncolor** power packs and lamp bases meet an extremely high safety standard. When connecting **broncolor** products to other manufacturers' products, integrated safety measures may become ineffective. Due to different design features and contact assignment of the lamp plugs of other makes, the user himself/herself may even be at risk. We offer no guarantee and accept no liability for damages which may be caused by this type of usage.

Controls and displays

1.   Mains switch

2.   Circuit breaker

3.   Keys for individual power distribution

4.   Slave cell on/off

5.   IR receiver on/off

6.   Modelling light on/off

7.   Test key, ready light green

8.   Additional functions (aux)

9.   Display symmetrical power distribution

10.   Buzzer

11.   Slow charge

12.   Charging dimmer

13.   Operating mode modelling light

14.   IR receiver cell

15.   Digital power display per lamp

16.   Slave cell

17.   Energy control up/down

18.   Sync socket

19.1 Lamp base outlet 1

19.2 Lamp base outlet 2

20.   Connection socket for mains (AC-line) cable

broncolor

made in Switzerland
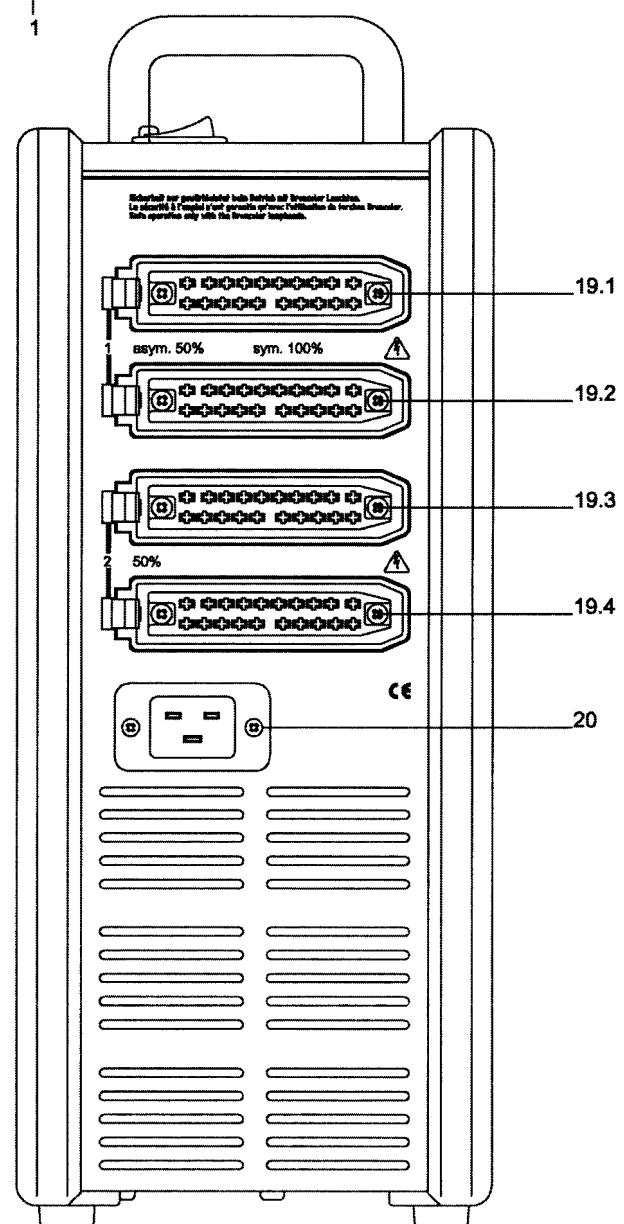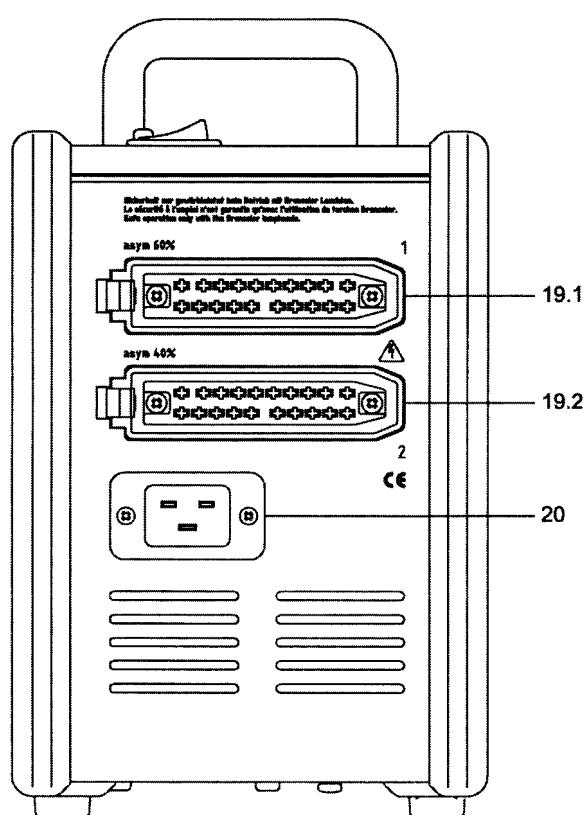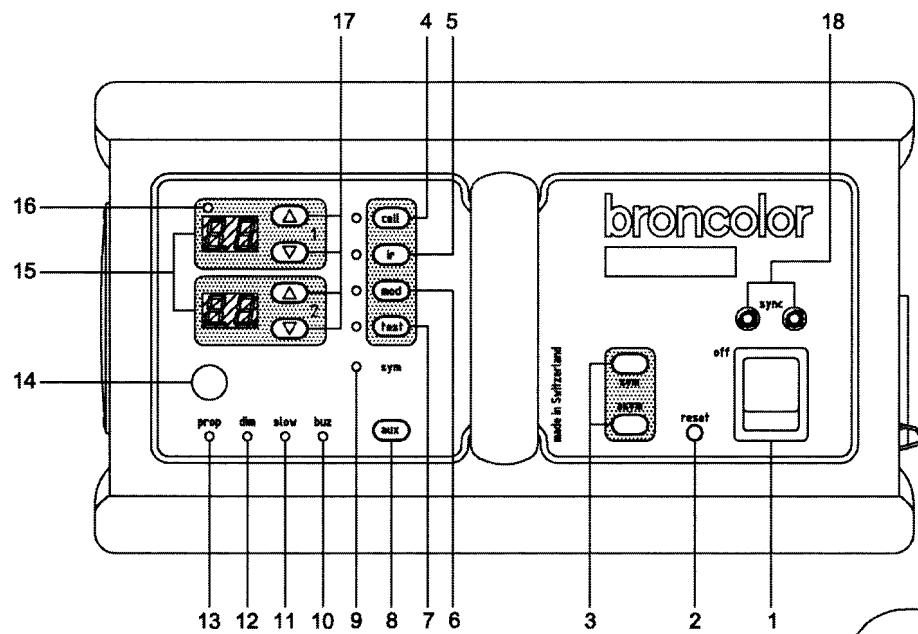
1.   Application Topas A

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

This mains (AC-line) supplied studio flash unit is designed for professional photography. For your safety, use a three-wire extension cable when required.

2.   Commissioning

2.1   Mains (AC-line) voltage

The power packs Topas A2 and Topas A4 automatically adapt to the respective mains (AC-line) voltage between 240 V and 100 V. When the unit is operated on 100 V the following limitations come into force:

- maximum flash energy Topas A2:   1200 J instead of 1600 J
- maximum flash energy Topas A4:   2400 J instead of 3200 J
- the flash duration is extended by about 20%

The Topas A8 Evolution power pack is designed only for mains voltage 200 – 240 V.

Bitte kontrollieren Sie, ob Ihre lokale Netzspannung mit den Angaben auf dem Typenschild des Gerätes übereinstimmt. Vergewissern Sie sich auch, dass die Halogenlampen (Einstelllicht) der angeschlossenen Leuchten ebenfalls mit der entsprechenden Netzspannung übereinstimmen.

2.2   Earthed Mains (AC-line)

Connect unit to current supply always using earthed mains plug.

2.3   Start-up

Use the mains (AC-line) switch (1) to power-up unit. During the charging process the digital power displays (15) of the two lamp outlets (1 and 2) flash, after which, they become continuous. Additionally the green ready light (7) is lit.

3.   Energy control

3.1.   <u>Variation of the energy</u>

Use the "up/down" keys (17) to control the flash energy (flash intensity) on both lamp outlets (1 and 2) within a range of 5-stops. Whole numbers are full f-stop intervals, decimals indicate 1/10 f-stop steps.

Brief pressure on the "up/down" keys runs the power up (or down) by a 1/10 f-stop interval, prolonged pressure by a full f-stop. The energy displays (15) then blink until charging or discharging has stabilized the new level.

3.1.1   <u>Topas A2 / Topas A4</u>

The maximum flash energy corresponds to value 10, the minimum to value 5. It is possible to extend the control range by Topas A2 to 6 f-stops and by Topas A4 to 6,5 f-stops (see chapter 9). Additionally the control range can be extended in the asymmetrical mode with following f-stops values by choosing the specific lamp outlet: by Topas A2: +1,3 f-stops and by Topas A4 +1,7 f-stops.

3.1.2   <u>Topas A8 Evolution</u>

The maximum flash energy corresponds to value 10, the minimum to value 6. It is possible to extend the control range by 5 f-stops (see chapter 9). Additionally the control range can be extended in the asymmetrical mode by one f-stop by choosing the specific lamp outlet or channel.

3.2   <u>Symmetrical or individual energy distribution</u>

Topas A power packs can be switched from symmetrical to individual (asymmetrical) energy distribution for each lamp base outlet. Press the keys "sym" or "asym" to select the required operating mode (3). The green control lamp of the display "sym" (9) lights up when the unit is in symmetrical operation. In the asymmetrical mode each lamp outlet is individually controllable. The only exception is the Topas A8 Evolution, which four lamp outlets are controlled in pairs over two individual, controllable channels.

3.2.1   Topas A2 on mains (AC-line) 110 V-240 V

If the unit is set to individual energy distribution the power is divided between the two lamp base outlets as follows:

Lamp outlet 1 = 60%.
The control range of the flash energy extends between 1000 J down to 30 J
(optional down to 15 J)

Lamp outlet 2 = 40%.
The control range of the flash energy extends between 600 J down to 20 J
(optional down to 10 J)

3.2.2   Topas A4 on mains (AC-line) 110 V - 240 V

If the unit is set to individual energy distribution the power is divided between the two lamp base outlets as follows:

Lamp outlet 1 = 70%.
The control range of the flash energy extends between 2200 J down to 70 J
(optional down to 25 J)

Lamp outlet 2 = 30%.
The control range of the flash energy extends between 1000 J down to 30 J
(optional down to 10 J)

3.2.3   Topas A8 Evolution on mains (AC-line) 200 V -240 V

If the unit is set to individual energy distribution the power is divided between the two lamp base outlets I and II (1) respectively III and IV (2):

Lamp base outlet 1:
- with one lamp on lamp base outlet I or II = 50%
- with two lamp on lamp base outlet I or II = 25% per outlet

Lamp base outlet 2:
- with one lamp on lamp base outlet III or IV = 50%
- with two lamp on lamp base outlet III or IV = 25% per outlet

The control range of the flash energy extends per outlet:
a) by using of a lamp base outlet:
up 3050 J down to 190 J (optional down to 95 J)
b) by using both lamp base outlets:
up 1525 J down to 95 J (optional down to 50 J)

In asymmetrical mode, a maximum of 3050 J can be drawn from each lamp socket respectively channel by Topas A8 Evolution. Consequently Topas A Evolution power packs are in asymmetrical mode compatible with all broncolor lamp bases. Should the total power pack energy of 6100 J be triggered from one individual lamp base, a Pulso Twin lamp must be used, which, in comparison with a Pulso 8 lamp, results in a shorter flash duration.

If the power pack Topas A8 Evolution works in symmetrical mode, the full power pack energy of 6100 J can be drawn from any socket. This requires the use of a Pulso 8 lamp however. For security reasons, smaller lamps are blocked in this operating mode. The advantage of the Pulso 8 lamp in comparison with the Twin lamp is its single and longer lamp cable, which is also suitable for large installations.

3.2.5   Operation Topas A2 on mains (AC-line) 100 V

If the unit is set to individual energy distribution the power is divided between the two lamp base outlets as follows:

Lamp base outlet 1 = 60%.
The control range of the flash energy extends between 700 J down to 45 J
(optional down to 20 J)

Lamp base outlet 2 = 40%.
The control range of the flash energy extends between 500 J down to 30 J
(optional down to 15 J)

3.2.6   Operation Topas A4 on mains (AC-line) 100 V

If the unit is set to individual energy distribution the power is divided between the two lamp base outlets as follows:

Lamp base outlet 1 = 70%.
The control range of the flash energy extends between 1700 J down to 105 J
(optional bis 55 J)

Lamp base outlet 2 = 30%.
The control range of the flash energy extends between 700 J down to 45 J
(optional bis 20 J)

3.2.7   <u>Stabilisation of the colour temperature</u>

The power packs Topas A2 and Topas A4 are equipped with an automatic stabilisation of the colour temperature (CTC light). In this way the colour can be maintained, in symmetrical operation, at a constant temperature over a range of about 3 f-stops within +/- 150 K.

4.   Lamp base outlets

The two lamp base outlets (19.1 / 19.2) of the Topas A2 / A4 are marked with the numbers 1 and 2.

The four lamp base outlets (19.1 / 19.2 / 19.3 / 19.4) of the Topas A8 Evolution are defined in pairs with the numbers 1 and 2 on the two outlets. Each outlet respectively channel can be switched on individually. The luminous number display (15) show the flash energy of the respective lamp or channel.

The broncolor lamp assortment can be applied without limitations with Topas A2 and Topas A4. Only the lamp bases Pulso 8 can be used with Topas A8 Evolution in symmetrical mode.

5.   Modelling light

5.1   <u>General</u>

The "mod" key (6) switches on the modelling lamps for all connected lamp bases. When switched on, the green LED lights up. Lamp bases also have an additional modelling lamp switch.

Note: Please note, the voltage of the modelling lamp must correspond with the mains voltage.

5.2   <u>Proportionality</u>

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. Proportionality is guaranteed if the identical prop level has been set for all power packs. The higher the digit, the brighter the modelling light.

The following operating modes are possible:

„P1"   Proportional modelling light with broncolor power packs up to 6400 J
(= setting ex works for Topas A8)

„P2"   Proportional modelling light with broncolor power packs up to 3200 J
(= setting ex works for Topas A4)

„P3"   Proportional modelling light with broncolor power packs up to 1600 J
(=setting ex works for Topas A2)

„P4/5" If a power pack is operated at a low output level, the halogen modelling light will
be as known relatively weak and yellowish. To counteract this problem, the
Topas is equipped with two additional modelling light proportionality levels: P4
for 800 J and less, P5 for 400 J and less. Thus the brightness of the modelling
light can be increased.

„HI"   All lamp bases operate at full modelling light power independent of flash output.
This setting will allow video recordings using the modelling lamps.

„LO"   Lighting level is reduced for all lamps independent of the flash output to reduce
power consumption and extend the burning life of the halogen lamps.

Pressing the "mod" key (6) for 2 seconds when the modelling lamp is on will give direct
access to the "HI" mode. To return to previous mode briefly press "mod" again.

Highest possible proportionality settings when combining devices of different output:

	Topas A2 Grafit A2 Nano 2 Mobil	Topas A4 Grafit A4 Nano A4	Topas A8 Evolution
Topas A2 Grafit A2 Nano 2 Mobil	P3	P2	P1
Topas A4 Grafit A4 Nano A4	P2	P2	P1
Topas A8 Evolution	P1	P1	P1

Example 1: A power pack Topas A2 is operated together with a power pack Topas A8
Evolution. The modelling light is proportional and most intense when both
are set to mode "prop1".

Example 2: A power pack Topas A4 is operated together with Grafit A2. The modelling
light is proportional and highest possible when both are set to mode
"prop2".

5.3   Modelling light switch on lamp base

The switch on the lamp bases permits selective lighting control with the modelling light. To avoid damage to the lamp filament, we recommend, always switch off the modelling light before moving the lamp base.

6.   Release and remote control

The flash release is enabled when 75% of the selected energy is available. Please note, however, that the ready indicator is activated only at 100% charge (chapter 7).
By triggering through the "cell" or infrared receiver (IR) you must be careful, that the infrared receiver of the device is not disturbed by hindrances.

6.1   Slave cell (cell)

The slave cell can be switched on or off by using the „cell" (4). Is the function activated the green LED light(s) up. After a flash series an active cell is blocked, and the green LED light(s) up. By pressing the „cell" button, the blocking is over.

By triggering through the "cell" or infrared receiver (IR) you must be careful, that the infrared receiver of the device is not disturbed by hindrances.

6.2   Infrared-receiver (ir/rf)

The infrared receiver can be switched on and off by using the „ir/rf" (5) key. If the function is activated the green LED light's up.

By triggering through the "cell" or infrared receiver (IR) you must be careful, that the infrared receiver of the device is not disturbed by hindrances.

6.3   Infrared flash release channel

You can trigger Topas A power packs from broncolor infrared transmitters. If a power pack is triggered via infrared, the flash is released after a transmission delay of 1/1000 s.

6.4   RFS-Interface (ir/rf)

The RFS interface by the power packs Topas A in RFS version is switched on/off through the key „ir/if" (5) together with the infrared receiver. As option you can change the settings of this key (see chapter 9), if you wish to switch on/off both functions or only the infrared receiver. If one of these functions is activated, the green LED light(s) up.

6.5   Remote control channels

The remote control can only be used with the power packs Topas A RFS and operates by radio over the separate channels (studio working stations). This is explained in chapter 9.

6.6   Addresses power packs

The assignment of addresses by radio for each device is only possible with the power packs Topas A RFS. This allows the individual operation within the same studio working station. This is explained in chapter 9.

6.7   Sync socket

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

6.8   „Test" key

The key (7) allows manual release of the power pack (look chapter 7.1).

7.   Flash ready signals visual/audible

7.1   **The visual ready signal** is the green LED at the "test" key (7). It lights up only when the unit is fully charged with the regulated flash energy.   .
After a flash the energy displays (15) of the occupied lamb base outlets blink and the 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 of the regulated flash energy. It may be switched on or off (chapter 8).

7.3   **Audible fault signal**

When the flash discharge fails, a warning signal of approx. 3s duration will sound and the display (15) of the respective lamp base will blink.

8.   Setting additional functions

The "aux" key (8) is used to select additional functions. Repeated actuation of the key toggles through the following display modes:

- Select proportionality level of the modelling light   LED "prop" blinks (13)
- Set DIM   LED "dim" blinks (12)
- Set slow charging   LED "slow" blinks (11)
- Set buzzer   LED "buz" blinks (10)
- Return to standard display   no LED blinks

Nach erfolgter Einstellung Rückkehr zur Normalanzeige entweder durch Betätigen der Taste „aux" (8) oder automatisch nach einer Wartezeit von 4 Sekunden.

To set the additional functions select the respective LED (example: "Set dim"). The digital display 2 (15) will then show the actual value which can be changed with the "up/down" key (17). If a setting is entered which deviates from the basic setting value, the respective LED will remain lit as a reminder after the display returns to standard (exception: function „prop"). If the unit is switched off and on again, it will be in the "standard display" mode. Previously set additional functions are retained.

8.1   **Set proportionality level of the modelling light (prop)**

The proportionality level of the modelling light can be selected by a brief pressure on the "up/down" key (17) of the lamp base switch 2. With repeated actuation of the key the following modes can be set, each shown respectively on the digital display 2 (15): P1, P2, P3, P4, P5, HI, LO.

8.2 Set charging dimmer (dim)

The dim function can be switched on or off (on/--) by briefly pressing the "up/down" key (17) of outlet 2. If the dim function is switched 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).

8.3 Set slow charge (slow)

In case of weak mains (AC-line) power supply lines, charging time may be extended to approx. double the standard value. The slow charge mode is switched on or off (on/--) by briefly pressing the "up/down" key (17) of the outlet 2.

8.4 Set buzzer (buz)

The ready buzzer sounds when the power capacitors are 100% charged up. The ready buzzer is switched on or off (on/--) by briefly pressing the "up/down" key (17) of the outlet 2. The alarm tone will remain audible even if the ready buzzer is switched off.

8.5 Sequences (series of flashes)

This function is selected with a prolonged pressure (1 s) on the key "test" and it permits to set a defined number of flash discharges from 1 to 8 (displays "n1" to "n8"). When the function is activated, i.e. a value between "n1" and "n8" is selected, the luminous display no. 1 (15) shows alternately the selected value of flash energy and the sequence of flashes. The function is inactivated again by selecting the value "n0". Returning to the former operating mode, is effected by pressing the key "aux" (8).

9. Basic settings ex works

The basic settings ex works can be viewed and in some instances changed with the following procedure:

Switch the unit on. Simultaneously press the "mod" (7) and "aux" (8) keys for 5 seconds. Digital display 2 (15) shows the selected function number and digital display 1 (15) shows the actual setting. Both values can be changed with the "up"/"down" key (17).

The LED array will blink "cell"-"ir/rf"-"mod"-"test"-"sym" to indicate that you are in the programming mode. In functions number 0 and 3, pressing the "up"/"down" key of the digital display 1 (15) will toggle through the "prop", "dim" or "slow" green LED display in order to show different parts of a multi-digit display.

Function number	Meaning and possible settings
0	Program version ("prop" is lit) Program number ("dim" is lit)
1	Setting ex works: off „on": Extended setting range of the flash energy. The detailed values are noticed in section 3.1 of chapter 3. The lowest f-stop level exhibits greater tolerances with regard to colour and repetitive precision. The flash release is not guaranteed for all lamp devices.
2	Setting ex works: off „off": by pressing the key „ir/rf" (5) only the infrared receiver can be switched on or off „on": by pressing the key „ir/rf" (5) the RFS interface together with the infrared receiver can be switched on or off

3	Flash counter: "slow" is lit: xxxx**XX**
	                  "dim" is lit: xx**XX**xx
	                  "prop" is lit: **XX**xxxx

4	Delivery date: Month
5	Delivery date: Year
6	Country code
7	*Settings of the working studio working station:* By pressing the keys „up/down" (17) of the lamp display number 1 (15) you can address the working station („01" to „10"). You can address up to 10 studio working stations.
8	*Settings of the power pack address:* By pressing the keys „up/down" (17) of the lamp display number 1 (15) you can address the desired power pack („01" to „10"). Per studio working station you can address up to 10 different devices.

Return to normal operation by pressing the "aux" key or by switching off and on again the unit.

10. Protective facilities / Fault indication

10.1 Display "th"

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.

During the cool-down period "th" shows on the display of lamp base outlet 2 (15). The display of lamp base outlet 1 shows in "countdown" procedure the remaining duration of the cooling process. The fan continues to operate, thus accelerating the cooling effect.

Attention: Do not switch off the power pack while it is cooling down. If the power pack is switched off too early, it is likely, in spite of a long break, that only a few flashes are possible when switching on again the unit, because the processor has not been able to follow the entire cooling process.

10.2 Display "A1"

The unit is equipped with an automatic afterglow blockout. If the flash tube exhibits afterglow (for example at the end of its service life), this blockout will block further charging to prevent consequential damage. A1 will show on the display of lamp base outlet 2 (15). In this status, the ready lamp is no longer green. The blockout can be cancelled by switching the unit off and on again.

10.3 Circuit breaker

In the event of an electrical malfunction, the circuit breaker (2) will automatically disconnect the power pack from the power source. The unit can be restarted by pressing the circuit breaker button. If it disconnects again immediately, the power pack must be serviced by authorized service staff.

10.4 Monitoring of the modelling light

If the power pack is connected to 200-240 V mains (AC-line) voltage, after previously having been operated on 100-120 V mains voltage, it will release an audible signal and the modelling light will blink at a safely reduced voltage. This function serves as a reminder that the modelling lamp must be exchanged, and also to protect against bursting of the lamps. Switch the unit off and on again to return to standard operation.

10.5 Accustic control flash release

At the end of life the flash tubes often show flash trigger suppression. This damage is indicated by the device through a intermittent sound. The sound disappears, when the flash tube flashes again correctly or the device is switched off.

Note: By Topas A8 Evolution the acoustic flash control release is active, if per channel one of the two lamp sockets are occupied.

11. Service/repair

Your broncolor power pack 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.

12. Car battery converter

If no mains (AC-line) power is available, use the 12 V/220 V 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 disconnect the lamp from the power pack.
- 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 Topas A can be connected to the converter.

13. Lamp bases

The following information applies to Pulso, Primo and Picolite lamp bases.

13.1   Replacing flash tubes

Prior to any change of the flash tube, the lamp base must be disconnected from the power pack!

Lamp bases use plug-in flash tubes.

The Pulso, Primo and Unilite flash tubes 1600 J normally have the UV coating directly on the flash tube. In this case an uncoated protecting glass has to be used. The protecting glasses as well as the flash tubes 1600 J are available in the versions „UVE coated" (5500 K) as well as uncoated (5900 K). For this reason the lamp bases Pulso and Primo can also be fitted with uncoated flash tubes and coated protecting glasses.

The flash tubes 3200 J for Pulso and Primo lamp bases as well as for the small lamp Picolite are for thermal reasons only available uncoated. Because of that an UV coated protecting glass must be used with these lamp bases.

The flash tube and protection glass of the Pulso 8 lamp base form one module.

13.1.1 Pulso / Primo and Unilite lamp bases up to 3200J

To change the flash tube, carefully pull off the protecting glass. Pull straight, without tilting. Lamp bases manufactured from 1996 on, have the upper of the three springs holding the protection glass differently shaped to provide a better hold. When removing the protection glass it is necessary to first release the glass from the bottom spring.

Release the contact spring (only Primo lamp) and again be sure to pull the flash tube straight along the lamp base axis. When inserting the tube check that the ceramic base is fully pushed back in, and that for the Primo lamp bases the contact spring rests on the internal ignition.

Finally, the protecting glass must be re-inserted before the modelling lamp and flash tube. It is held by three springs. As Primo lamp bases can be used with 1600 J tubes as well as 3200 J tubes, a corresponding warning sticker is supplied with each flash tube which must be affixed to the lamp plug when inserting the tube.

13.1.2 Pulso 8 Leuchte

The flash tube is available only with integrated protecting glass. When exchanging the flash tube or replacing the modelling lamp, hold the flash tube carefully on the protecting glass and pull out in an axial direction. When inserting the flash tube check that the ceramic base is fully pushed back in.

13.1.3 Small lamp Picolite

This small lamp has a plug-in flash tube with spring fastener. For thermal reasons the UV-coating is on the protecting glass. The protecting glass is available in the versions "UVE coated" (5500 K) and "UVE matt coated" (5500 K).

To change the flash tube release the spring ring and remove the protecting glass. The flash tube must be pulled out straight along the lamp base axis. When inserting the tube be sure that it is fully pushed in. Finally, replace the protecting glass and fasten with the spring-ring.

13.2   Changing the halogen lamp

The halogen lamps are also plug-in or screw-in. Taking the lifespan into consideration, the halogen lamp should not be handled with bare hands. Exchange of the halogen lamp is practically identical to that of the flash tube.

The Primo and Picolite lamp base can be run on the local mains (AC-line) voltage (100-240 V) when a halogen lamp is used which corresponds to the voltage.

13.3   Cooling fan

A cooling fan in the lamp base cools the flash tube and modelling lamp. It also runs when the modelling lamp is turned off.

13.4   Thermal protection

The lamp bases have been fitted with an automatic thermal protection. Should the lamp base overheat (e.g. by impeding the flow of cooling air), the modelling light is shut off. Nevertheless you may continue producing flashes. The Picolite, however, has an additional thermal protection which limits the number of flashes.

13.5   Lamp base plugs

The lamp base plugs and sockets have mechanical interlocks to prevent inadvertent disconnection. When plugging in, ensure that those interlocks engage completely. To unplug, push down the locking spring below the cable guide and lift out the plug. The power pack must be switched off to plug-in and to unplug.

13.6   Reflectors

Pulso and Primo lamp bases have a bayonet fitting to attach reflectors. The Picolite small lamp has a built-in reflector.

13.7   Fuses

Only sand-filled fuses of the type indicated on the type plate may be used; otherwise the halogen lamp may burst.

14. Topas A RFS

The power packs Topas A are also available as unit version with integrated 10 channel RFS Interface (**R**adio **F**requency **S**ystem). Each channel (studio) can control up to 10 units. This interface allows remote control respectively flash release by radio via the transmitter RFS as well as by means of a transceiver RFS via PC or Macintosh computer. When controlling via screen, 4 storage spaces for different lighting situations are at your disposal.

14.1   Modification to Topas A RFS

There is the possibility, to modify Topas A power packs later on with a RFS interface. The modification will be made by the customer service centre of our broncolor agency in your country.

14.2   Topas A PLUS

Because of the laws in some countries, the use of the broncolor radio system is not allowed. Therefore the power packs Topas A are also available in the version Topas A Plus (that means with cable remote control). Besides the cable connection between the power pack and the computer, the application with RFS is almost identical.

Attention: *There is no camera transmitter available for Topas A Plus !*

14.3   Technical data

	Topas A RFS	**Topas A plus**
Flash release	Transmitter RFS, transceiver RFS (besides the options in chapter 15)	Analogue chapter 15
Remote control	- With integrated 10 channel RFS interface (**R**adio **F**requency **S**ystem) for the remote control of the unit by radio via transceiver RFS from PC- or Macintosh computer. Each channel (Studio) can control up to 10 units. - with IR-manual remote control servor d for the control of the main functions of the Topas A.	- With integrated interface for the remote control of the unit by cable from PC or Macintosh computer. Each channel (Studio) can control up to 10 units. - With IR- manual remote control servor d for the control of the main functions of the Topas A
Operational distance outdoors	Up to 50 m	Length of the connection cable from the computer to the unit: 5 m Length of the connection cable between the units: 2,5 m
Operational distance in closed rooms	Up to 30 m	See above
Range	Up to 300 m	See above
Number of sync sockets	1 (instead of the second sync socket there is the radio antenna)	1 (the second sync socket is configured as connection for the computer cable)

15. Technical data

	Topas A2	Topas A4
Flash energy	1600J (Japan 1200J)	3200J (Japan 2400J)
F-stop at distance of 2m 100ISO,reflector P70	64 2/10	90 2/10
Flash duration t 0.1 (t 0.5) with 230 V / 120 V	1600J: 1/300s (1/1000s) 1000J: 1/400s (1/1300s) 600J: 1/500s (1/1600s)	3200J: 1/150s (1/600s) 2200J: 1/180s (1/800s) 1000J: 1/250s (1/1300s)
Charging time (for 100% of selected energy)	230V, 120 V: 0,4 - 1,8s 100 V: 0,5 - 2s Can be switched to slow charge mode	230V, 120 V: 0,4 - 3,4s 100 V: 0,5 - 4s
	Automatic adaptation to the respective mains (AC-line) voltage	
Ready display	Visual and audible (can be switched off), signals when 100% of selected energy is reached	
Lamp base outlets	2	2
Power output distribution	Symmetrical and individual variable (asymmetrical)	
Controls	Fully illuminated silicone keyboard and LED display, as option functions can be controlled from PC or Macintosh through cable or radio	
Control range of flash energy (Japan: ½ f-stop less)	Topas A2: 5 f-stops in intervals of 1/10 (1:32); to switch to 6 f-stops (1:64)	
	Topas A4: 5 f-stops intervals of 1/10 (1:32); To switch to 6.5 f-stops (1:90)	
	By selecting the corresponding lamp outlet in asymmetrical mode additionally 1.3 f-stops by Topas A2, 1.7 f-stops by Topas A4	
Maximum asymmetry	6.2 f-stops	5.6 f-stops
Modelling light	Halogen max. 2 x 650 W at 200-240 V Halogen max. 2 x 300 W at 100-120 V Proportional to flash energy and „full" and „low" settings. Proportionality adjustable to other broncolor power packs and compact units and their various output ranges.	
Flash release	Manual release button, photocell (can be switched off), infrared receiver (can be switched off), sync cable, FCM 2, FCC, IRX2, IRQ or optionally RFS radio equipment	
Release control	Optical: Dim function of the modelling light, acoustic: buzzer	
Additional function	Sequences (flash series)	
No. of sync sockets	2	
Stabilized flash voltage	+/- 1%	
Standards	UL 122, EC-standards 73/23, 89/336 and 99/5	
	ERM EN 300 220-1,-3	

	EMC EN 301 489-1,-3
	            EN 60950
	            EN 50371
	            FCC Part 15
	            This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:	

	(1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation.	
	Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.	
Power requirements	200-240 V / 50 Hz: 10 A 110-120 V / 50-60 Hz: 16 A 100 V / 50 Hz: 16 A	
Dimensions (L x B x H)	280 x 162,7 x 272 mm	280 x 162,7 x 322 mm
Weight kg	5,8	8

Technical data (continuation)

	Topas A8 Evolution with lamp base Pulso G, Primo, Unilite or Pulso Twin	Topas A8 Evolution with Pulso lamp base 8
Flash energy	2 x 3050 J (4 x 1525 J)	6100 J
F-stop at distance of 2m 100ISO, reflector P65	128 (Pulso Twin)	128
Flash duration t 0.1 (t 0.5) with 230 V	3050J: 1/150s (1/600s) 1525J: 1/300s (1/1200s)	6100J: 1/50s (1/230s)
Charging time (for 100% of selected energy)	0,5 – 5,2s Can be switched to low charge mode	0,5 – 5,2s
	Topas A8 Evolution is previewed for a voltage of 200 – 240 V.	
Ready display	Visual and audible (can be switched off), signals when 100% of selected energy is reached	
Lamp base outlets	4	
Power output distribution	Symmetrical and individual variable (asymmetrical)	
Controls	Fully illuminated silicone keyboard and LED display, as option functions can be controlled from PC or Macintosh through cable or radio	
Control range of flash energy (Japan: ½ f-stop less)	4 f-stops in intervals 1/10 (1:16); can be switched to 5 f-stops (1:32). By selecting the corresponding lamp outlet in asymmetrical mode additionally 1 f-stop	
Maximum asymmetry	5 f-stops	
Modelling light	Halogen max. 4 x 650 W by 200-240 V Proportional to flash energy and „full" and „low" settings. Proportionality adjustable to other broncolor power packs and compact units and their various output ranges.	
Flash release	Manual release button, photocell (can be switched off), infrared receiver (can be switched off), sync cable, FCM 2, FCC, IRX2, IRQ or optionally RFS radio equipment	
Release control	Optical: Dim function of the modelling light, acoustic: buzzer	
Additional function	Sequences (flash series)	
No. of sync. sockets	2	
Stabilized flash voltage	+/- 1%	

Standards	UL 122, EC-standards 73/23, 89/336 and 99/5
	
	ERM EN 300 220-1,-3
	
	EMC EN 301 489-1,-3
	           EN 60950
	           EN 50371
	           FCC Part 15
	           This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
	
	           (1) This device may not cause harmful interference and
	           (2) This device must accept any interference received, including interference that may cause undesired operation.
	
	Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.	

Power requirements	200-240 V / 50 Hz: 10 A 110-120 V / 50-60 Hz: 16 A 100 V / 50 Hz: 16 A	
Dimensions (L x B x H)	280 x 162,7 x 446 mm	
Weight kg	12,6	

Technical data (continuation)

Standards	UL 122, EC-standards 73/23, 89/336 und 99/5
	ERM EN 300 220-1,-3
	EMC EN 301 489-1,-3 EN 60950 EN 50371 FCC Part 15 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Subject to change in the interest of product enhancement.