





senso A1  
**broncolor**

senso A2  
**broncolor**

# OPERATING INSTRUCTIONS | BRONCOLOR SENSO A2 | A4 LITOS FLEX 70X70

## Before use

We are pleased you have chosen a broncolor Senso 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. Observe the safety instructions.

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## IMPORTANT SAFETY INSTRUCTIONS

broncolor flash light systems should be utilised exclusively for professional photo shootings by qualified personnel. Before starting up your flash light equipment carefully read all the information in your operating instructions. The safety instructions in the operating instructions must be strictly followed!

- > Read and understand all instructions before using!
- > Remove the transport protection and the packing material!
- > Close supervision is necessary when any appliance is used near children. Do not leave the flash light appliance unattended while in use!
- > Flash light contains, similar to sunlight, a specific portion of UV radiation! The undesirable side effects on skin and eyes are considerably reduced by using flash tubes or protecting glasses with UV safety measures! Nevertheless, taking pictures at close distances with unprotected skin and eyes should be avoided! Also avoid eye contact with the light source! The maximum daily UV radiation according to IEC 60335-2-27 / DIN 5031-10 is: 50 J/m<sup>2</sup>. This value should not be exceeded!
- > With due allowance for heat radiation, the distance between the lamp and a person or between the lamp and inflammable or heat sensitive surfaces should be at a minimum distance of 1 m!
- > The power pack must be switched off to plug-in and to unplug! The lamp plugs and sockets have mechanical interlocks! 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 from the socket!
- > Prior to replacing flash tubes, halogen lamps, protecting glasses or fuses, disconnect the power pack and the lamp from the power supply! Prior to replacing the halogen lamp or the flash tube, the lamp should cool down for 10 min.!
- > broncolor flash light systems should only be equipped with original broncolor flash tubes, original broncolor combustible and packing material, original broncolor accessories, and also original broncolor spare parts!
- > broncolor power packs, lamps and accessories meet an extremely high safety standard! When connecting broncolor lamps to power packs of other brands or broncolor power packs to lamp bases or accessories of other brands, 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!
- > Only lamps which are approved for operation with this power pack should be utilised!
- > Only earthed extension cables which are approved for operation with the corresponding lamp should be utilised!
- > To avoid the risk of fire, electric shock or injury to persons utilise exclusively the accessory recommended by the manufacturer!
- > Check that the mains voltage corresponds to the information on the type plate of the unit!
- > The flash light equipment is designed for use in dry conditions and in an ambient temperature from 0°C to 35°C (32°F to 95°F)! The flash light equipment has to be protected from wetness, condensation, from dripping and splash water, humidity, dirt, sand, metal chips and exposure to dust!

- > Protect the flash light equipment from electromagnetic fields, shock and vibration!
- > Protect the flash light equipment from heat and frost! If the power pack freezes continuous loss of power output and serious technical damage can result!
- > Sudden temperature differences can cause condensation water in the unit! In such situations the equipment must stay for 1 hour in a well-ventilated area to acclimatise to the new temperature before start up!
- > Do not operate the units in an environment where there is a risk of explosion!
- > The power pack and lamps should not be operated in or near water! Attention: high voltage!
- > The power pack and the lamps should not be immersed in water or other liquids! It could cause an electric shock!
- > Remove the rubber cap on the front side of the lamp before connecting it to the power pack!
- > For safety reasons, never operate the lamp base without the protecting glass in place! UV-coated protecting glasses or UV-coated flash tubes must be utilised as a protection against UV radiation for eyes and skin!
- > Before operation the lamp has to be fastened on a stand or a suspension device! The lamp must be locked by tightening the mounting screw!
- > Only sand-filled fuses of the type indicated on the fuse type plate may be used! Sand-filled fuses can be identified by their opaque body! With incorrect fuse protection the halogen lamp may burst!
- > Filters or diffusers should not be fastened directly on the flash tube, halogen modelling lamp or protecting glass!
- > Do not operate appliance with a damaged earthed cable. Cables which are damaged or twisted must be replaced!
- > The unit must only be connected to an earthed socket, or an emergency power generator!
- > 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!
- > The unit is suitable for operation with a motor generator provided that the voltage lies within all the load conditions (including capacitive load) and within the tolerance limit of 200-264 V or 95-135 V! From experience this means that only electronic stabilised motor generators are to be utilised! When operating on unstabilised motor generators, voltage peaks of 300 V and more have been observed! This can lead to damages for which we assume no liability!
- > Never operate the unit and lamps inside a bag or a box!
- > The ventilation slots on the unit or on the lamp should not be covered!
- > Pay attention when laying, clearing away or rolling up cables that they do not make contact with hot surfaces or parts of lamps and that they will not be tripped over by people!
- > Do not touch the connection socket for mains cable and lamp outlets on the power pack and do not poke inside it with metal objects!

## IMPORTANT SAFETY INSTRUCTIONS

- > Flash tubes, halogen modelling lamps and protecting glasses heat up to a high operating temperature, this also applies to the front side of the lamps! Therefore the attachments also assume high temperatures! Handle with care! Contact with hot components can cause injuries!
- > Do not come into contact with glass or metal whilst operating the flash light system!
- > Let the unit and its connected lamp base cool completely after use and before packing!
- > Always unplug appliance from electrical socket before cleaning, servicing and when not in use! Never jerk cable to pull the plug from the socket. Grasp plug and pull to disconnect!
- > Dropped or damaged units or lamps must be checked by a specialist before reconnection!
- > To reduce the risk of electric shock, never open the power pack or lamps! Dangerous voltages could still remain inside the unit even after it has been disconnected from the mains supply. Therefore, take the unit to an authorised broncolor service station when service or repair work is required. Incorrect reassembly can cause electric shock, even when the unit is closed.

### **Shipping instructions Senso A2 / A4:**

- > Use original broncolor packing for the transport of the power pack!

### **Shipping instructions lamps:**

- > Use original broncolor packing for the transport of the lamps. Before shipping flash tubes, halogen lamp and protecting glass, pack them with our protective packing material (foam plastic and transport cap). If the protective packaging is incomplete, remove flash tube, halogen lamp and protecting glass from the lamp and send them separately!

# 1. APPLICATION OF BRONCOLOR SENSO POWER PACK

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

## 2. START UP

### 2.1 Mains voltage

As a standard feature, all the Senso power packs are supplied as multi-voltage units. Ensure that the mains selector switch (19) is set to the correct voltage.

Senso power packs A2 and A4 supply for operating voltages 100-240 V, a constant 1200 J or 2400 J.



**Attention: Ensure that the operating voltage of the modelling lamp corresponds to the local mains supply (max. 650 W on 200-240 V or 300 W on 100-120 V). The modelling lamp protection function (L120) is also available, which is described in detail in section 9.5.**

### 2.2 Earthed mains (AC-line)

Whenever possible, connect unit to current supply always using an earthed mains plug.

### 2.3 Start up

Use the mains (AC-line) switch (12) to power up the unit. During the charging process, the corresponding digital power distribution display (15 and 17) blinks, after which, it becomes continuous. If no lamp is connected "----" appears in the display (15 and 17).

### 3. LAMP OUTLETS

Senso power pack has 3 lamp outlets. The flash energy is divided between them as follows:

Channel 1 over the lamp outlet with the numerical 14.1

Channel 2 over the lamp outlets with the numerical 14.2 and/or 14.3.

Lamp plugs and sockets have a mechanical locking device to prevent them from accidentally coming loose. When plugging in, ensure that the front part of the plug is inserted first, and that the rear locking device locks completely into place. To release, press down the locking device spring under the cable guide and lift out the plug from the socket. The power pack must be switched off whilst plugging in and unplugging.



Each channel is individually controllable (1 and/or 16 or 2 and/or 18). The digital power distribution displays (15 and 17) indicate the set energy of each individual channel according to the set mode (symmetry / asymmetry). In symmetry mode, only the upper digital display (15) is lit, in asymmetry mode both displays are lit (15 and 17).

### 4. ENERGY CONTROL

#### 4.1 Introduction

Senso power packs can be set for symmetric or asymmetric power distribution by actuating the "sym/asym" rocker switch (3). Power levels can be differentiated with rocker switches (1 and 2) as well as with the illuminated silicone keys "▼/▲" (16 and 18). All setting changes are confirmed with an acoustic signal. In the symmetric mode, the entire output energy of 1200/2400 joules (Senso A2/Senso A4) is available at lamp outlet 14.1, 14.2 or 14.3; if several lamps are connected, the energy is distributed uniformly to all outputs.

The actuation of rocker switches (1 and 2) allows unneeded capacitors to be bypassed, which reduces the energy input level.





**Attention:** When regulating the energy control by means of the rocker switches (1 and 2), the colour temperature remains constant.

Silicone keys "▼/▲" (16 and 18) are used for fine adjustment of the energy. Pressing and holding the keys will adjust the settings in full f-stops while short actuations effect changes in 1/10 f-stop intervals. Until the newly selected energy level is attained by further charging or discharging, the corresponding digital displays (15 and/or 17) will blink and the "test" key (13) extinguishes. The availability of the new energy level is announced by a beep (if the buzzer function is enabled) and by the "test" key (13), which lights up.



#### 4.2 Switchover power display

The output level can be displayed either in f-stops or energy (joules/watt-seconds). To change the display mode, press the "test" key (13) for 2 seconds.



#### 4.3 Energy distribution

The Senso distributes power as follows:

Symmetric: > see 4.4

The lamps can be connected to any outlet, power distribution is symmetric.

Asymmetric: > see 4.5

Lamp outlets 14.1, 14.2, and 14.3 can be used separately.



#### 4.4 Examples power distribution in the symmetric mode

To select the symmetric mode, set the rocker switch (3) to "sym". The total flash energy is indicated only by the upper display (15); the lower display (17) is automatically deactivated.

When several lamps are connected, the maximum total energy is symmetrically distributed to all connected lamps. This means that when two (three) lamps are connected, half (one third) of the displayed energy is distributed to each lamp.



**Attention:** In the symmetry mode, power selection is also defined with the two rocker switches (1) and (2)!

The energy distribution with different rocker switch settings is as follows (for the maximum energy display, the power selector 16 must be set to the highest value):

**Examples for 1/1 control via switch (1):**

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/1 Switch (2) = 1/1	Outlet (14.1) Outlet (14.2) Outlet (14.3)	10	1200 joule	2400 joule
Switch (1) = 1/1 Switch (2) = 1/2	Outlet (14.1) Outlet (14.2) Outlet (14.3)	9.6	900 joule	1800 joule
Switch (1) = 1/1 Switch (2) = 1/4	Outlet (14.1) Outlet (14.2) Outlet (14.3)	9.3	750 joule	1500 joule

**Examples for 1/2 control via switch (1):**

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/2 Switch (2) = 1/2	Outlet (14.1) Outlet (14.2) Outlet (14.3)	9.0	600 joule	1200 joule
Switch (1) = 1/2 Switch (2) = 1/4	Outlet (14.1) Outlet (14.2) Outlet (14.3)	8.6	450 joule	900 joule

**Example for 1/4 control via switch (1):**

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/4 Switch (2) = 1/4	Outlet (14.1) Outlet (14.2) Outlet (14.3)	8.0	300 joule	600 joule

Further reductions can be set in 1/10 or full f-stop intervals with the power selector switches (16). In the symmetry mode, approx. 106 joules is the lowest possible flash energy level with the Senso A4 (or 53 joules with the Senso A2). This energy can be further reduced when 2 or 3 lamps are connected. The lamps can be selectively powered via all three outlets (14.1, 14.2, and 14.3).

#### 4.5 Examples power distribution in the asymmetric mode

To select the asymmetric mode, set the rocker switch (3) to "asym". The energy levels of both channels are indicated by displays (15 and 17). In the setting "1/1", each channel delivers at most half of the possible total energy.

When operating two lamps on channel 2, the energy is equally distributed to both lamp outlets (14.2 and 14.3).

The energy distribution with different rocker switch settings is as follows (for the maximum energy display, the power selector keys 16 and 18 must be set to the highest value):

##### Examples for 1/1 control via switch (1):

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/1	Outlet (14.2) Outlet (14.3)	9.0	600 joule	1200 joule

or:

Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/1	Outlet (14.2) Outlet (14.3)	8.0 8.0	300 joule 300 joule	600 joule 600 joule

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/2	Outlet (14.2) Outlet (14.3)	8.0	300 joule	600 joule

or:

Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/2	Outlet (14.2) Outlet (14.3)	7.0 7.0	150 joule 150 joule	300 joule 300 joule

Switch	Outlet	f-stop value	Output Senso A2	Output Senso A4
Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/4	Outlet (14.2) Outlet (14.3)	7.0	150 joule	300 joule

or:

Switch (1) = 1/1	Outlet (14.1)	9.0	600 joule	1200 joule
Switch (2) = 1/4	Outlet (14.2) Outlet (14.3)	6.0 6.0	75 joule 75 joule	150 joule 150 joule

etc. ...

Power selector switches (16 and 18) make it possible to individually reduce the energy level per channel by up to two further f-stops. When both lamp outlets (14.2 and 14.3) are active, the energy per lamp on channel 2 can be reduced to 13 joule/26.5 joule (A2/A4).

#### 4.6 Power distribution tables (Senso A2 and A4)

##### 4.6.1 Symmetric mode

(one lamp connected to any lamp outlet)

Channel 1, rocker switch (1) on setting	Channel 2, rocker switch (3) on setting	Control range by means of keys Senso A2 and A4	Power in joules Senso A2	Power in joules Senso A4
1/1	1/1	8.0 - 10	300 - 1200	600 - 2400
1/1	1/2	7.6 - 9.6	227 - 900	450 - 1820
1/1	1/4	7.3 - 9.3	184 - 750	369 - 1500
1/2	1/2	7.0 - 9.0	150 - 600	300 - 1200
1/2	1/4	6.6 - 8.6	113 - 450	227 - 900
1/4	1/4	5.5 - 8.0	53 - 300	106 - 600

##### 4.6.2 Asymmetric mode

(one lamp per channel)

Channel 1 or 2, rocker switch (1 or 3) on setting	Control range by means of keys Senso A2 and A4	Power in joules Senso A2	Power in joules Senso A4
1/1	7.0 - 9.0	150 - 600	300 - 1200
1/2	6.0 - 8.0	75 - 300	150 - 600
1/4	4.5 - 7.0	26.5 - 150	53 - 300

##### 4.6.3 Asymmetric mode

(2 lamps on channel 2)

Channel 2, rocker switch (3) on setting	Control range by means of keys Senso A2 and A4	Power in joules per lamp Senso A2	Power in joules per lamp Senso A4
1/1	7.0 - 9.0	75 - 300	150 - 600
1/2	6.0 - 8.0	37.5 - 150	75 - 300
1/4	4.5 - 7.0	13 - 75	26.5 - 150

## 5. MODELLING LIGHT

The "mod" key (7) switches on the modelling light for all connected lamps. When switched on, the blue LED on the right, next to the "mod" key, will light up. All broncolor lamps have also an additional modelling lamp switch. Furthermore, it is possible to operate the modelling light proportionally to the flash light output.



**Attention: Please ensure that the modelling lamp voltage corresponds with the local mains (AC-line) voltage (100-120 V / 200-240 V)!**

### Operating modes

The following operating modes are possible:

- "full"** All lamps with full modelling light, independent of flash output, type of power pack and power distribution.
- "prop"** Brightness of the modelling light is automatically proportional to intensity of flash.

## 6. RELEASE

### 6.1 RFS 2 interface (Radio Frequency System)

Senso power packs are standard-equipped with a 99-channel RFS 2. Up to 99 devices can be controlled per channel. The antenna is not visible – it is integrated in the power pack. RFS 2 can be switched on or off with the "rf" key (4). When RFS 2 is activated, the blue LED to the right of the "rf" key will light up. For flash triggering via RFS 2, the channel of the power pack (studio address) must correspond to the channel of the RFS 2 transceiver. The channel (studio address) is defined by pressing the "aux" key (9) once, followed by the selection of the channel with the "▼/▲" keys (16). By pressing the „aux" key (9), the actually set studio address (Stxx) appears in display (15), and the unit number (Unxx) being currently used appears in display (17). The unit number is not relevant for the release by RFS 2 (see also 9.1).



The channel and unit selection mode can be exited by pressing the "aux" key several times. Alternatively, the Senso will automatically return to the ready mode after about 7 seconds.

### 6.2 Photocell (cell)

The photocell can be switched on or off using the "cell" key (13). If it is activated, the blue LED on the right, next to the key, lights up.

### 6.3 Sync socket

The broncolor synchronous cables (art. no. 34.111.00 and 34.112.00) may be plugged into the socket (10) to trigger flashes via cable.



### 6.4 "test" key

This key (13) allows manual release of the power pack. Flash release is possible as soon as 70 % of the set energy is available.

The visual ready signal (13), however, lights up only when 100 % is available.



## 7. REMOTE CONTROL

The remote control system has 99 channels (studio addresses) with up to 99 unit addresses per channel. The channels assign each an independent workstation. Each flash unit within a workstation is identifiable by its own unit address. Every other workstation can each operate up to 99 flash units. Therefore, flash units of multiple workstations are clearly identifiable (see also 9.1)



**Important: The Senso RFS 2 interface allows remote flash triggering and only limited remote control of the flash energy, i.e. only power selectors (16 and 18) can be adjusted (by up to 2.5 f-stops). Rocker switches (1 and 2) cannot be remote controlled. The Senso can be configured in such a way that a warning signal sounds when an energy limit has been reached (see section 9.4).**

### 7.1 Remote control channels (RFS 2 studio address)

Remote control by means of RFS 2 may be performed via separate channels (studio workstations). These can be set in the power pack (see section 9.). All flash units within a studio workstation must have the same channel number (studio address).

### 7.2 RFS 2 unit addresses

Individual unit addresses can be assigned to each power pack (see section 9.). These are used for individual control of the flash units by means of PC/MAC. This function is not yet available.

## 8. DISPLAYS VISUAL/AUDIBLE

### 8.1 The visual ready signal

This is the blue LED at the "test" key (13). It lights up only when the unit is fully charged or discharged. After triggering a flash, this LED goes out, and lights up again when the unit is fully charged once more. The visual ready signal is easy to read even in dark rooms due to its bright, blue illumination.



### 8.2 The audible ready signal

A "beep" tone sounds when 100 % charge is achieved or when the discharge process is finalised. The signal can be switched on or off.

## 9. ADDITIONAL FUNCTIONS AND SETTING OPTIONS

The "aux" key (9) is used to set the additional functions. Each brief actuation of the key consecutively selects the following operating modes:

- Set studio/unit address
  - Slow charge (option for weak mains)
  - Buzzer / ready tone
- > LED "address" blinks
  - > LED „slow“ blinks
  - > LED „buz“ blinks

After the settings have been made, the "aux" key can be actuated to return to the normal display mode; this will happen automatically within about 7 seconds.

The respective LED is activated to allow additional functions to be set. The displays of the two channels indicate the current settings which can be changed with the "▼/▲" keys (16 and/or 18). When the power pack is switched off and on again, it will be in the "normal display" mode – additional function settings are preserved.



### 9.1 Set studio / unit address

The "address" function allows a studio workstation and an individual unit address to be assigned to the Senso power pack.

#### 9.1.1 Assignment of studio workstation (St):

The "address" LED is activated with the "aux" key (9). The display of channel 1 (15) indicates the letters "St" followed by the currently selected studio workstation. A brief actuation of the power selector keys "▼/▲" (16) of channel 1 assigns the chosen studio workstation. A longer actuation of the power selector keys "▼/▲" (16) changes the setting in tens intervals. Up to 99 workstations can be assigned ("01 to "99"). All units that need to be triggered from the same camera must have the same studio number.

#### 9.1.2 Assignment of unit address (Un):

The display of channel 2 (17) indicates the currently selected unit address. A brief actuation of the power selector keys "▼/▲" (18) of channel 2 assigns the chosen unit address.

A longer actuation of the power selector keys "▼/▲" changes the setting in tens intervals. Up to 99 different unit addresses ("01 to "99") can be assigned to each studio workstation.

### 9.2 Enable/disable slow charging (slo)

The LED "slow" is selected using the „aux“ key (9). The "slow charge" mode can be switched on or off (on/--) by briefly actuating the power selector keys "▼/▲" (18) of channel 2. "slow" for longer charging times is an option for weak mains and motor generators. When the slow charge mode is selected, the LED next to "slow" will light up.

### 9.3 Enable/disable buzzer / ready tone (buz)

The LED "buz" is selected using the „aux" key (9). The ready buzzer sounds when the 100% charge is available. The ready buzzer can be switched on or off (on/--) by briefly actuating the power selector keys "▼/▲" (18) of channel 2. When the buzzer tone is enabled, the LED next to "buz" will light up.

### 9.4 Enable/disable "beep" alarm tone (bEEP)

The alarm tone will sound when an underride/override of the permissible control range occurs while adjustments are being attempted. The info index is opened by simultaneously pressing the "aux" (9) and "mod" (7) keys for 2 seconds. Actuate the keys (16) of channel 1 to select the "bEEP" option and select either "on" to activate or "--" to deactivate the function using keys (18) of channel 2. Exit the info index by actuating the "aux" key (9).

### 9.5 Modelling light option "L120"

Senso power packs allow the use of 120 V modelling lamps in 100–230 V regions without having to exchange the lamps. The info index is opened by simultaneously pressing the "aux" (9) and "mod" (7) keys for 2 seconds. Actuate the keys (16) of channel 1 to select the "L120" option and select either "on" to activate or "--" to deactivate the function using keys (18) of channel 2. Exit the info index by actuating the "aux" key (9).



**Note: Switching from 115 V to 230 V with the mains selector switch (19) automatically enables the L120 function. The protective function allows the use of a 120 V modelling lamp when the unit is set on 230 V. When changing to a 230 V modelling lamp, it is strongly recommended to deactivate the L120 protective function.**

# 10. PROTECTIVE FACILITIES / FAULT INDICATIONS / ...

## 10.1 Cooling

The heat dissipated by all key power pack components is constantly monitored by the on-board processor. This protects the power pack against overheating and optimises its service life. In the standby mode and if only the modelling light is used, the power pack fan is disabled. It begins to operate as soon as this becomes necessary after a certain number of flashes have been fired.

## 10.2 Thermal overheating display

To protect against overheating after extended flash series, the unit will automatically switch off. At that stage, the following message will appear on the upper LCD display (15): "th" and the approximate time required for cooling will appear on the lower display. The cooling time is shortened if the unit remains connected and switched on. Therefore, do not disconnect the unit from the mains supply.

## 10.3 Circuit breaker (11)

In the event of an electrical malfunction, the circuit breaker (11) 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 service station.

## 10.4 Overview info and alarm index

Activate the info index by simultaneously pressing the "aux" (9) and "mod" (7) keys for 2 seconds:

### Display 1 (15)    Display 2 (17)

<i>PROG</i>	<i>43.00 (EXAMPLE)</i>	Software version
<i>BEEP</i>	<i>0M/--</i>	Alarm "over range" or "under range"
<i>L120</i>	<i>0M/--</i>	Modelling light always with 120 V
<i>C000</i>	<i>234 (EXAMPLE)</i>	Daily flash counter (reset with ▼ key)
<i>S-NR</i>	<i>1234 (EXAMPLE)</i>	Serial number
<i>DATE</i>	<i>1209 (EXAMPLE)</i>	Delivery date ex works (mmyy)
<i>C-00</i>	<i>5234 (EXAMPLE)</i>	Flash counter total (cannot be reset)

Exit the info index by pressing the "aux" key (9) for 1 second.

### Alarm index

Display 1 (15)	Display 2 (17)	Fault description	Measures
<i>R0</i>	<i>U230</i>	Mains selector switch wrongly set	<ol style="list-style-type: none"> <li>1. Switch off unit (12)</li> <li>2. Switch over mains selector switch (19)</li> <li>3. Switch on unit (12)</li> </ol>
<i>R1</i>		Afterglow of flash tube at end of its service life	<ol style="list-style-type: none"> <li>1. Switch off unit (12)</li> <li>2. Disconnect lamp from power pack</li> <li>3. Let flash tube cool down</li> <li>4. Replace flash tube</li> <li>5. Start up lamp and power pack again</li> </ol>
<i>R2</i>		Flash capacitors are overcharged	<ol style="list-style-type: none"> <li>1. Switch off unit</li> <li>2. Wait 1 minute</li> <li>3. Switch on unit</li> <li>4. Should the fault occur a second time, the unit must be checked by a service station</li> </ol>
<i>TH</i>	<i>1</i>	Compulsory cooling phase to protect the power pack	<ol style="list-style-type: none"> <li>1. Wait until countdown finishes,</li> <li>2. The unit is ready for operation</li> </ol>
<i>R4</i>		Discharge resistor is overheating	Please contact your service partner
<i>R5</i>	<i>L1</i> <i>L2</i> <i>L3</i>	The flash tube on lamp L1/L2/L3 has not flashed.	<ol style="list-style-type: none"> <li>1. Switch off unit</li> <li>2. Unplug lamp</li> <li>3. Control flash tube (tightness of contact, ignition wire on glass) and eventually replace</li> <li>4. Plug in lamp and switch on unit</li> <li>5. Test flashes</li> <li>6. Should the problem still exist, attempt steps 1-5 with a new flash tube</li> <li>7. If the problem cannot be remedied, please contact your service partner</li> </ol>
<i>R6</i>	<i>BATT</i>	Back-up battery for thermal monitoring is empty	Please contact your service partner regarding exchange of back-up battery
<i>R7</i>		Fan does not rotate	<ol style="list-style-type: none"> <li>1. Switch off unit</li> <li>2. Please contact your service partner</li> </ol>

## 11. LAMP COMPATIBILITY

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All broncolor lamps are electrically compatible with the Senso power packs. The most popular lamps, such as the Litos, Pulso and Unilite range, as well as Ringflash (C and P) may be used with the Senso power packs without any limitations. Increased flash duration for Pulso, Unilite and Ringflash -> see section 13. Technical data.

Particularly for the small lamps, there are thermal limitations which must be taken into consideration when using them with the Senso power pack (see corresponding max joule / min. on the lamps).

## 12. SERVICE/REPAIR

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Your broncolor power pack 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. Therefore, always let our broncolor service station carry out repairs or service work.

## 13. TECHNICAL DATA SENSO POWER PACKS



	<b>Senso A2</b>	<b>Senso A4</b>
<b>Flash energy</b>	1200 J	2400 J
<b>f-stop at 2 m (6 ½ ft), 100 ISO, Litos lamp and P70 reflector</b>	f 45.8	f 64.8
<b>f-stop at 2 m (6 ½ ft), 100 ISO, Litos lamp and Litos reflectorr</b>	f 32.1	f 45.1
<b>f-stop at 2 m (6 ½ ft), 100 ISO, Pulso G lamp and P70 reflector</b>	f 45.7	f 64.7
<b>Flash duration t 0.1 (t 0.5) at 230 V</b>	<b>Litos:</b> 1200 J: 1/180 s (1/600 s) 600 J: 1/360 s (1/1200 s) <b>Pulso G / Unilite:</b> 1200 J: 1/100 s (1/300 s) 600 J: 1/200 s (1/600 s)	<b>Litos:</b> 2400 J: 1/90 s (1/300 s) 1200 J: 1/180 s (1/600 s) <b>Pulso G / Unilite:</b> 2400 J: 1/50 s (1/150 s) 1200 J: 1/100 s (1/300 s)
<b>Charging time (for 100% of selected energy)</b>	0.4 - 1.5 s (200-240 V) 0.4 - 1.5 s (110-120 V) 0.5 - 1.9 s (900 J und 100 V) 0.5 - 2.7 s (1200 J und 100 V)	0.4 - 2.8 s (200-240 V) 0.4 - 2.9 s (110-120 V) 0.5 - 3.9 s (1800 J und 100 V) 0.5 - 5.1 s (2400 J und 100 V)
<b>Ready display</b>	Visual and audible (can be switched off)	
<b>Lamp outlets</b>	3	
<b>Power distribution</b>	2 channels with selectable symmetric/asymmetric power distribution	
<b>Controls</b>	Dust- and scratch-resistant illuminated silicone keypad as well as two LED displays	
<b>Flash energy control range</b>	5.5 f-stops (1 lamp)	

## TECHNICAL DATA PART 2



	<b>Senso A2</b>	<b>Senso A4</b>
<b>Modelling light</b>	200 - 240 V: Halogen max. 3 x 650 W 100 - 120 V: Halogen max. 3 x 300 W Proportional to flash energy and "full" setting.	
<b>Flash triggering</b>	Manual release button, photocell (can be switched off), sync cable, RFS 2 transceiver	
<b>Radio (RFS2, 2.4 GHz)</b>	Outdoor range up to 200 m (656 ft) Indoor range up to 50 m (164 ft)	
<b>Number of sync sockets</b>	1	1
<b>Dimensions (L x W x H) excl. handle</b>	203 x 148 x 218 mm (8 x 5.8 x 8.6")	203 x 148 x 300 mm (8 x 5.8 x 11.8")
<b>Weight of power pack</b>	4.6 kg (10.1 lbs)	6.9 kg (15.2 lbs)
<b>Stabilised flash voltage</b>	+/- 1 %	
<b>Power requirements</b>	200-240 V / 50 Hz 110-120 V / 50-60 Hz 100 V / 50 Hz <b>[Adjustable to available mains voltage with mains selector switch]</b>	
<b>Standards</b>	EN 60065/A1, EN 55014, EN 300 220-1/-3, EN 50371, EN 60950, EN 301 489-1/-3, as per EEC directives 2006/95, 2004/108, 99/5, 96, 95	

## 14. LITOS LAMP

Compact lamp developed especially for Senso power packs with heat-resistant, fibreglass-reinforced, impact-resistant polyamide case and integrated pan/tilt head for one-hand operation. Stabilised fan power supply suitable for 100-240 V mains. The bayonet is identical with that of other broncolor lamps, providing access to a comprehensive line of light shapers and accessories.



### 14.1 Multi-functional reflector

The Litos lamp comes with a reflector (or umbrella reflector) that doubles as a protective cover. To remove the reflector, rotate it anti-clockwise and pull it out of the slot holes. To install the reflector on the lamp, remove the rubber cap - this can be lifted out of the locking device with a slight pull in the opposite direction of the arrow-shaped opening. Turn the reflector over and rotate it to secure it with the bayonet holders in the apertures provided for this purpose. The reflector is securely mounted when a click is heard.

To remove the reflector, rotate it as far as it will go. Then pull the lever on the upper side of the lamp to the rear. Rotate the reflector further, anticlockwise, and now it can be pulled out of the apertures.



**Attention: For safety reasons, the Litos lamp and Litos flash tube must be operated only with Senso power packs. The lamp must be fitted with a suitable modelling lamp. For operation with the supplied reflector, the modelling lamp must have a maximum rating of 300 W.**

### 14.2 Modelling light switch

The switch on the lamp is used to switch the modelling light on and off. To avoid damage to the lamp filament, always switch off the modelling light before moving the lamp.

### 14.3 Replace flash tube



**Attention: Before replacing the flash tube, make sure the lamp plug is disconnected from the power pack! Let the lamp cool down for at least 10 minutes before replacing the flash tube!**

The flash tube is a plug-in type.

First, remove the reflector if attached. By turning, carefully pull the protective glass out of the fastening clips in the axial direction (avoid jamming).

Press the end of the flash tube holder spring down and then press this spring beneath the flash tube as far in as necessary and hold it there to axially remove the flash tube out of its socket.

When inserting a new flash tube, make sure the contact pins go all the way in. Then, reposition the protective glass in front of the modelling lamp and the flash tube by turning it in an axial direction as far as it will go. When the protective glass engages with the fastening clips of the lamp, make sure the clips snap into the cutouts of the protective glass to prevent unintended detachment.

#### 14.4 Replace halogen lamp



**Attention: Before replacing the halogen lamp, make sure the lampbase is unplugged at the power pack! Let the lamp cool down for at least 10 minutes before replacing the halogen lamp!**

The halogen lamp is also a plug-in type. In the interest of a long service life, avoid touching the halogen lamp with bare hands. The halogen lamp replacement procedure is largely identical with the flash tube replacement.

The Litos lamp can be operated with a halogen lamp that matches the local voltage (100–240 V). Additionally, a halogen lamp rated 120 V can be used with any available mains voltage (see section 9.5).

#### 14.5 Cooling fan

The flash tube and the halogen lamp are cooled with a fan in the lamp. It also operates when the modelling light is switched off.

#### 14.6 Thermal protection

The lamps are equipped with a thermal protection feature. If the lamps should overheat (for instance if circulation of cooling air is obstructed), the modelling light will switch off. Flashes can still be triggered.

#### 14.7 Lamp plug

The lamp plugs and sockets are fitted with a mechanical interlock to prevent unintended disconnection. When plugging a lamp in, make sure the interlock fully engages. To detach the cable, press the locking spring beneath the cable guide down and pull the plug out of the socket. The power pack must be switched off when connecting and disconnecting lamp cables.

#### 14.8 Attachment of light shapers (reflectors, area lamps, etc.)

The Litos lamp is equipped with a lockable bayonet mount for the attachment of light shapers and allows 360° rotation of the mounted accessories.

#### 14.9 Fuses

Use only sand-filled fuses of the type indicated on the rating plate. Otherwise, the halogen lamp could “blow”.

#### 14.10 Umbrella holder

The umbrella reflector (Art. No. 33.496.00) is designed to accommodate diffusion and reflection umbrellas. The umbrella rod is plugged into the special holder located beneath the housing on the left side next to the cable holder.

## 15. FLEX 70 X 70 SOFTBOX

### 15.1 Assembly (see illustrations)

1. Slip all four metal rods through the rubber loops inside the reflector. Make sure the protective caps of the rods face outwards
2. Insert all four plastic caps in the cordura pockets on the edge of the reflector
3. Slip metal rods into the adapter ring holes of the right format
4. Assembly is easiest if you first mount the rods on opposite sides
5. Close all four Velcro® fasteners
6. Pull the diffuser over the open reflector

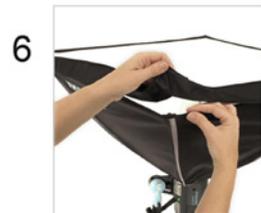


### 15.2 Disassembly

- Follow steps 1 to 6 in reverse order
- Steps 2 and 1 are not mandatory – the softbox Flex 70 x 70 can also be folded with the metal rods in place



**Attention: Do not connect the Flex 70 x 70 softbox to broncolor HMI lamps!**



## 16. ENVIRONMENTAL PROTECTION INFORMATION

When no longer in use, this product may not be deposited in the normal household waste but should be brought to a collection point for the recycling of electrical and electronic appliances.

The materials are recyclable as marked. By re-use, recycling or another form of using old appliances you are making an important contribution towards the protection of the environment. Please ask your local authorities for the appropriate disposal point.



## 17. GUARANTEE

All broncolor power packs, lamps, monolights and accessories have a high quality standard. We offer a 2-year factory guarantee from the date of purchase (for the first owner) on the aforementioned units, except for flash tubes, halogen lamps, protecting glasses, cable, batteries, rechargeable batteries and textiles.

Faults resulting from non-observance of safety instructions, incorrect handling, use of accessories of another manufacturer or unauthorised intervention/modification are excluded from the factory guarantee. We assume no liability for damages resulting from non-observance of the safety instructions, incorrect handling, use of accessories of another manufacturer or unauthorised intervention/modification.

So as not to endanger the entitlement of guarantee for your unit, we recommend that you keep the original packing material. We assume no liability for transport damages arising from improper packaging. If need be, the goods must be insured through a transport insurance company by the sender.

In case of technical problems please contact immediately the nearest authorised broncolor service station.

Article numbers, product descriptions and scope of delivery can vary from one country to another. Detailed information are available from your responsible broncolor distributor. Errors and misprints excepted.

**KONFORMITÄTSERKLÄRUNG**  
**DECLARATION OF CONFORMITY**  
**DECLARATION DE CONFORMITE**

**Wir / We / Nous :**

Bron Elektronik AG, Hagmattstrasse 7, CH-4123 Allschwil, Schweiz

**erklären in alleiniger Verantwortung, dass das Produkt**

declare under our sole responsibility that the product  
*déclarons sous notre seule responsabilité que le produit*

bronzcolor Senso A2, Senso A4

**auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en)  
oder normativen Dokument(en) übereinstimmt:**

to which this declaration relates is in conformity with the following standard(s)  
or other normative document(s):

*auquel se réfère cette déclaration est conforme à la (aux) norme(s)  
ou autre(s) document(s) normatif(s):*

EN 60065/A1      EN 60598-2-17/A1/A2  
EN 60598-1/A1    EN 55014            EN 50371

**gemäss den Bestimmungen den Richtlinien:**

following the provision of the Directives:  
*conformément aux dispositions des Directives:*

2006/95/EC      2004/108/EC      2002/96/EC      2002/95/EC

**Ort und Datum der Ausfertigung:**

Place and date of issue:

*Lieu et date:*

Allschwil, 25.10.2010

**Name und Unterschrift des Befugten:**

Name and signature of authorised person:

*Nom et signature du signataire autorisé:*



Mario Borer  
Technical Manager



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