

SUSS

Constant Intensity Controller

CIC 1200



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Important: This section contains information which the operator must know and understand to minimize the risk of injuries.



Karl Suss equipment is designed to protect the user against all possible hazards.

After review by qualified safety personnel, the user should generate a specific safety procedure with regard to the particular application of the equipment and local codes. The user must make certain the operators are familiar with the procedure. The safety procedure should also be posted in a conspicuous location so that all equipment operators are exposed to the information on a continuing basis.

1.1 Intended Use of the CIC 1200

The CIC 1200 is designed to operate as a smart power supply/ regulator for high pressure UV lamps (see table 2.1) installed in a SUSS lamp house.

Any other use has to be verified in advance cooperating with SUSS technician and/or with the lamp manufacturer. Otherwise the operational safety of the system can't be guaranteed by Karl Suss.

1.2 Electrical Precautions

When the covers or connectors are removed from the power supply, dangerous voltages will be exposed. When all of the covers and connectors are in place, there is no danger from these voltages.

The electrical system should be serviced by qualified personnel only. So it will **never** be necessary for the operator to open the cover of the electrical portion of the machine. If any problems occur with the power supply, turn the machine off and notify your supervisor or maintenance immediately.

WARNING: Never open the housing while the power line is connected.



1.3 High Pressure Lamps

The light source for the concentrated ultraviolet illumination required to expose the wafer is a high pressure lamp. Special precautions must be taken when working with these lamps.

1.3.1 Electrical Hazards



The voltage and current required to run a high pressure lamp constitute a lethal combination.

When performing any maintenance on the exposure lamp power supply, lamp housing, or the lamp itself, make sure that the power line to the power supply is disconnected.

Proper lamp orientation is crucial. If the applied voltage to the lamp does not agree with the lamp manufacturers recommendations, an explosion may occur. Starting ignition voltages are 20 KV and open circuit potentials range up to 380 VDC. Start box lead wires are labeled + (red) and - (blue). Insure these connections are properly oriented for the lamp in use.

1.3.2 Lamp Explosion

Since these exposure lamps operate at extremely high pressure, explosion is certainly a possibility if the lamps are handled or operated wrongly. The lamps may fail because of improper cooling, improper setting of the power supply, usage outside the manufacturer's guidelines, etc. Additionally, some high pressure lamps, even when cold, are still above atmospheric pressure and should be handled with protective face shields and gloves.

CAUTION: Careful handling of the lamp and proper operation of the equipment will substantially reduce the possibility of lamp explosions. Safety instructions of the lamp manufacturer must be followed.



The lamp house is designed to minimize damage to the interior of the equipment and prevent possible injury to the operator should a lamp explosion occur. All assemblies and protective covers must be in place during operation of the machine.

Some of these lamps contain hazardous elements such as mercury. If a lamp should break, avoid touching the fragments and/or breathing the vapor.

1.3.2.1 In Case of Lamp Explosion

If the lamp explodes we recommend the following course of action:

- Turn power to the supply and machine off immediately.
- Do not turn off exhaust system.
- Evacuate the immediate area of the machine to prevent inhalation of the mercury vapor. Wait at least 20 minutes before returning.
- Mercury residue and glass shards deposited inside the lamp house should only be handled when wearing rubber gloves, goggles, and a proper face mask. The best way to remove mercury is by aspiration - the suction of a syringe or vacuum device is very effective (do not use lungs). After noticeable amounts of mercury are removed, gently wipe optics with lint free paper that is slightly dampened by a residue free liquid. Materials used in the cleanup should be treated as hazardous waste and disposed of accordingly.



1.3.3 Exhaust Requirements

High pressure lamps produce heat as well as ozone because of the interaction of the radiation emitted a wavelength of 250 nm with oxygen. Ozone attacks the mucous membranes of the respiratory system, producing symptoms similar to pneumonia. The effects are cumulative.

The smaller wattage lamps, must be operated in a well ventilated area only. Larger wattage lamps must be exhausted using exhaust pipes.

Also the sockets of larger lamps must be cooled by a flow of nitrogen.

The cooling requirements for special lamps are specified in a table which is part of the SUSS machine manual.



1.3.4 Eye and Skin Safety

The ultraviolet light produced by these lamps can cause erythema of skins (similar to sunburn) and conjunctivitis. In addition, the large infrared output can cause retinal burns resulting in blindness.

Every SUSS mask aligner is equipped with light guards, and the high pressure lamp and exposure path are enclosed. The mask aligner may not be operated unless all of these protective covers and devices are in place.

2 Technical Specifications

SUSS CIC 1200

Operating Mode:	Single channel constant power. Independent dual channel constant intensity. Remote control
Output:	LH* 200: 200 W, LH* 350: 750 W, LH* 1000/LH* 1500: 1200 W maximum continuous. 380V DC open circuit.
Output regulation:	+/- 1% over selected mains input range.
Lamp Ignition:	20kV start with automatic shut down following ignition. Active current limit during warm-up. Remote start unit with polarity switch. Single pulse ignition.
Mains Input:	230V +/- 10% 50/60Hz
Optical Sensor:	Dual channel using silicon photodiodes with thinfilm dielectric or selected glass absorbtion filters for 220, 240, 320, 365 and 405nm wavelenghts.
Optical Control:	Digital meter: 0-100mW/cm ² Front panel channel selection. Front panel level set and UV-probe calibration.
Size:	Length: 540 mm (21,25")
without remote start unit	Width: 260 mm (10,25")
	Height: 152 mm (6,0")
Weight:	20 kg (44lbs)
without remote start unit	

Lamp Options

	200 W Hg	350 W Hg	500 W Hg	500 W Hg-Xe	1000 W Hg
LH 200 *	◆				
LH 350 *	◆	◆	◆	◆	
LH 1000 *	◆	◆	◆	◆	◆
LH 1500 *	◆	◆	◆	◆	◆

* LH= Suss Lamp House

Subject to change without prior notice

Table 2.1

3 Program Parameters

of the CIC 1200 for the various types of exposure lamps.

Lamp Type [W]	P_{\min} [W]	P_{nom} [W]	P_{\max} [W]	P_{idle} [W]	Lamp Life [h]	t_{delay} [s]	N_2 time [s]
200 Hg	170	200	230	195	400	300	∞
350 Hg	200	350	400	275	600	600	300
500 HgXe	350	500	750	475	600	900	180
500 Hg	350	500	750	475	600	900	180
1000 Hg	750	1000	1200	900	750	900	180

Table 3.1

Legend

P_{\min} [W] Minimum lamp power to run the exposure lamp.

P_{nom} [W] Rated power of the exposure lamp.

P_{\max} [W] Maximum power to run the exposure lamp.

P_{idle} [W] Idle power to run the exposure lamp while machine in idle mode, no exposures.

Lamp Life [h] Recommended lifetime of the exposure lamp. If this value is reached the LED adjacent to LAMP LIFE in the annunciator group FAILURE flashes.

t_{delay} [s] Time necessary for the lamp to cool after power has been switched off. During this period of time lamp cannot be started.
Left alphanumeric display shows message COOL
right alphanumeric display shows time left before exposure lamp can be restarted.

N_2 time [s] If the N_2 -flow rate for cooling the lamp falls below the admissible value, the lamp will be switched off after this time.

4.1 CIC 1200 Front Panel

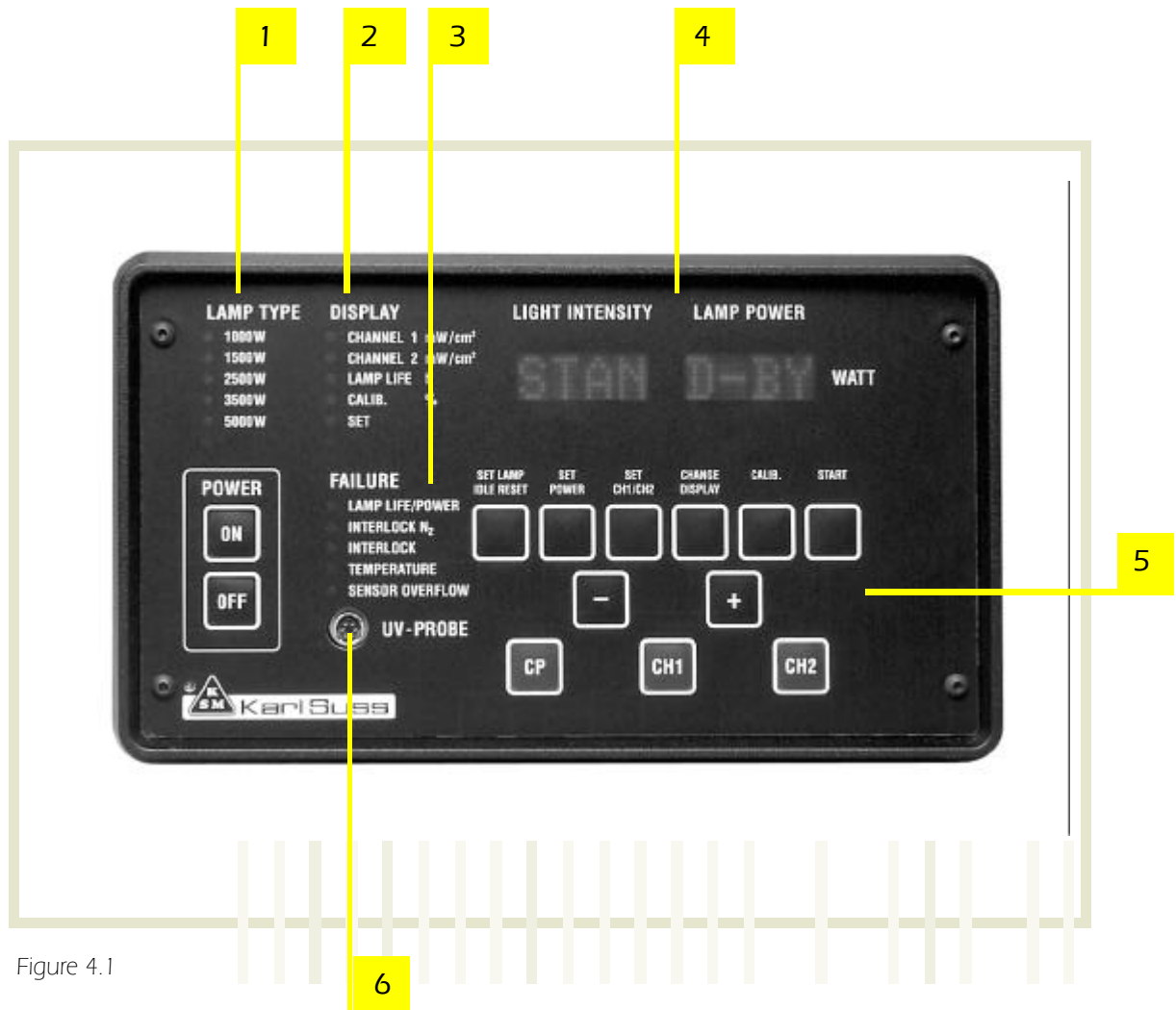


Figure 4.1

Annunciator Groups (1, 2, 3, 4)

1. Annunciator Group LAMP TYPE
2. Annunciator Group DISPLAY
3. Annunciator Group FAILURE
4. Alphanumeric Display for LIGHT INTENSITY and LAMP POWER
5. Key Pad (see section Key Controls of the CIC 1200)
6. Socket for UV Probe (see section Calibration of the CIC)

LAMP LIFE / POWER

- a) The Lamp Life LED will flash indicating that the actual values of voltage, current or power reached the expected programmed limits.
- b) The Lamp Life LED will flash indicating that the lamp has reached its recommended operating life. The lamp should be turned off and replaced to prevent explosion. Refer to the Machine Operators Manual for instructions on lamp replacement.



INTERLOCK N₂

If the N₂ flow rate is too low the Interlock N₂ LED will flash. If left uncorrected the lamp will automatically be turned off to prevent lamp failure. After the lamp has been turned off the alphanumeric display will read

N2 ERR

INTERLOCK

The Interlock LED can indicate multiple interlock failures. The specific cause of failure will be indicated in the alphanumeric display.

TEMPERATURE

If for some reason the temperature within the unit reaches a certain limit the unit is shut off immediately. The corresponding LED of the annunciator is on and the alphanumeric display reads

TEMP ERR

SENSOR OVERFLOW

This LED indicates that there is an error in the light monitoring and control system. Contact your Suss Service representative.
(See Chapter 4.6.4.4.1 and Chapter 4.6.4.4.2)

4.2 CIC 1200 Rear Panel

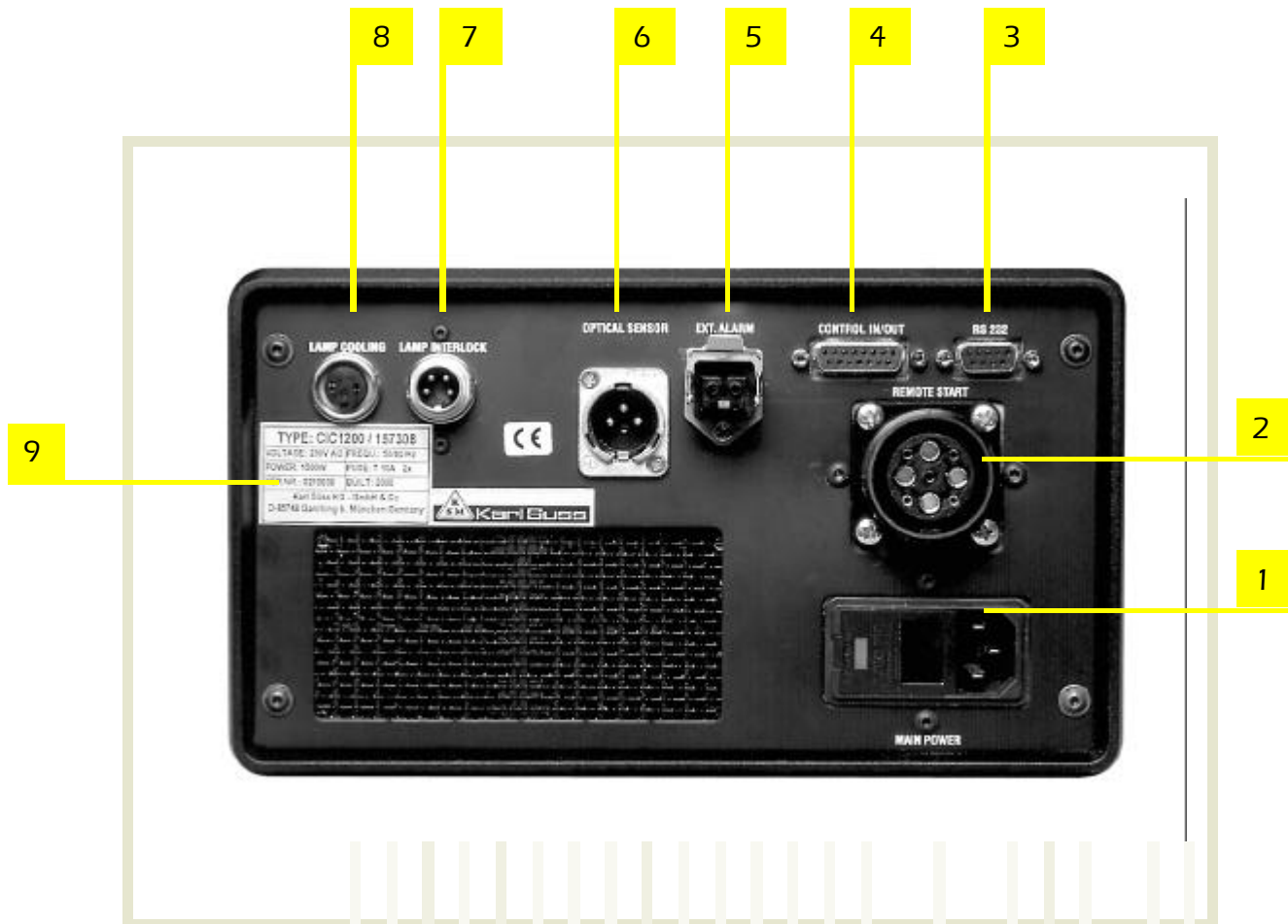


Figure 4.2

- | | |
|--------------------------------------|---------------------------|
| 1. Main Power
with Fuses (T 10 A) | 5. External Alarm |
| 2. Remote Start | 6. Optical Sensor |
| 3. RS232 | 7. Lamp Interlock |
| 4. Control IN/OUT | 8. Lamp Cooling Interlock |
| | 9. Type plate |

Functionality	Operation	Press key	for time in seconds	Additional keys	Left Display LIGHT INTENSITY (mW/cm ²)	Right Display LAMP POWER (W)	Store with key	Remarks
Choose lamp (CIC is off) Display shows STANDBY	SET LAMP	+ or -	T > 1s	+ or - + or -	Lamp type e.g. LAMP STOR LIRE NOS STO	350 ED SET? TOR RED	SET LAMP SET LAMP	After the confirmation of the lamp type the display shows L:RESET? (lamp hours:reset?) To leave the lamp life in memory, confirm with SET LAMP , to erase press + or - and confirm with SET LAMP
Power on	ON				SUS -REA	X.XX DY....		SW-revision
Display lamp hours	CHANGE DISPLAY				X	HRS		
Choose Constant Power-mode	CP				WAIT => > S TART		
Ignite lamp	START				IGNI LAMP XXXX	TION COLD XXXX		Light intensity and power
Adjust power	SET POWER	+ or -	T > 1s	+ or -	XXXX	XXXX (blinks)	SET POWER	
Switch CIC to IDLE-Power	IDLE		T > 1s		IDLE	XXXX		Leave this mode with IDLE or CP
Calibration of Channel1 (UV-PROBE-input)	1x CALIB	+ or START -	T > 1s	+ or START -	XXXX AVER XX.X STO	UMP1 0.....17 (blinks) XXXX % RED	CALIB	
Calibration of Channel 2 (UV-PROBE-input)	1x CALIB	+ or START -	T > 1s	+ or START -	XXXX AVER XX.X STO	UMP2 0.....17 (blinks) XXXX % RED	CALIB	

Table 4.1

Condensed Operating Instructions

Operation	Press key	for time in seconds	Additional keys	Left Display LIGHT INTENSITY (mW/cm ²)	Right Display LAMP POWER (W)	Store with key	Remarks
Calibration of Channel 1 (with manual collected values)	3x CAUB	T > 1s	+ or - START	CAL blinks) XXXX STO	EXT1 XXXX RED	CALB	
Calibration of Channel 2 (with manual collected values)	4x CAUB	T > 1s	+ or - START	CAL blinks) XXXX STO	EXT2 XXXX RED	CALB	
Adjust Intensity: Channel 1 und Channel 2 (QrMode or CH1 or CH2,Mode)	CHANGE DISPLAY SET CH1/CH2	T > 1s	+ or -	blinks) XXXX XXXX	XXXX XXXX	SET CH1/CH2	Switch the green led in annunciator group DISPLAY with CHANGE DISPLAY from Channel 1 to Channel 2
Choose Constant Intensity-mode (QMODE)	CH1 or CH2			XXXX	XXXX		Calibration and adjustment of intensity (set CH1/CH2) has to be done before
Adjustment of light sensor input Channel 1	5x CAUB	T > 1s	START	XX%	S10K S10K	CALB	Adjust max. 95% with max. lamp power
Adjustment of light sensor input Channel 2	6x CAUB	T > 1s	START	XX% STO	S20K S20K RED	CALB	Adjust max. 95% with max. lamp Power
Measurement with the UV-Pro be-Input	7x CAUB	T > 1s	START	XXXX	UVPR UVPR		Exit with CALB Display shows FIN ISH
Erase calibration data for CH1	8x CAUB	T > 1s	START START	CAL 1 CAL 1 DOMIE STO	RES RES? RED	CALB	
Erase calibration data for CH2	9x CAUB	T > 1s		CAL2 CAL2 DOMIE STO	RES RES? RED	CALB	
Leave the calibration menu	10x CAUB	T > 1s	START	EXIT			
Reset Error messages	RESET	T > 1s					

Table 4.1

Insure that the proper power cord has been connected to the main power connector.

The alphanumeric display of the front panel reads

STAND BY

The processor of the CIC 1200 is constantly connected to power so it monitors the crucial program steps of the exposure lamp, e. g.

the internal clock of the CIC safety programs
preventing the premature ignition of the exposure lamp

The control panel of the CIC comprises 3 annunciator groups with their LED's (see adjacent picture of the Control Panel).

1. LAMP TYPE
2. DISPLAY
3. FAILURE

4.4 Selecting the Exposure Lamp

Lamp	Orientation + (Anode)
200W Hg	Down
350W Hg	Down
500W Hg	Down
500W Hg-Xe	Up
1000W Hg	Down

Table 4.4

Be sure, that the orientation of the currently used lamp is correct (as shown in Table 4.4).



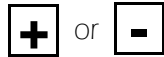
The CIC is connected to the mains but thus far not started (rear panel of CIC: Main Power plug is connected). Select the appropriate exposure lamp **before** starting the CIC with the key ON of the front panel. The alphanumeric display (2X4 characters) of the front panel reads

STAND-BY

Actuate the key **SET LAMP** (press button for 2 sec.) to activate the menu LAMP TYPE of the CIC unit. The alphanumeric display shows the currently loaded exposure lamp, e. g.

LAMP 1000

The corresponding LED of the annunciator group LAMP TYPE is on. Choose the 350 W exposure lamp by actuating the key labeled with



Now the LED adjacent to the 350 W is on. Validate with key **SET LAMP** (press button for 2 sec.) An audible “beep” is heard. The alphanumeric display shows consecutively the message



STORED
then
L: RESET?

4.4.1 Reset Lamp Hours

Now you can choose two ways to go on:

Reset the lamplife of the lamp
or
leave the stored hours of the lamp in the memory

RESET Lamplife

To reset the lamplife press  or  key.
The ? disappears from the display. Confirm with **SET LAMP**
The counter for the total lamp hours is set to zero
The display shows

STORED
and then automatically
STAND BY

Leave the stored hours

To leave the stored hours in memory press **SET LAMP** again.

The display shows
NO STORE
and then automatically
STAND BY

The three operating modes of the CIC are: CP, CH1 and CH2.

4.5.1 Operating mode CP

CP stands for Constant Power. The exposure lamp is run with constant power. One can set the power of the exposure lamp as described in the Section 4.6.2 “Presetting the Power of the Exposure Lamp” of present manual.

Note:

all calibration is being done in CP-Mode !

4.5.2 Operating mode CH1

CH1 stands for Constant Intensity Channel 1. The exposure lamp is run in constant intensity mode controlled by light sensor 1 (spectral range for example 365 nm).

4.5.3 Operating mode CH2

CH2 stands for Constant Intensity Channel 2. The exposure lamp is run in constant intensity mode controlled by light sensor 2 (spectral range e. g. 405 nm).

Choose the appropriate operating mode by activating one of the keys labeled CP, CH1 or CH2. The key in question will be illuminated.

4.6 Ignition of the Exposure Lamp

Commence ignition and activate POWER by pressing the key **ON**. The software version of the unit is shown in the display (e. g. “SUSS 2.00”). Finally the alphanumeric display shows the message

—READY—

The LED’s of the annunciator group

LAMP TYPE 350 W is ON

Actuate the key CP. The alphanumeric display now shows the message

WAIT

then

=>>START

Actuate the key **START**. The display shows

IGNITION

then

LAMP COLD

and in the annunciator group FAILURE the LED of “LAMP LIFE/POWER” is flashing until the lamp reaches operating conditions - depending of the type of the lamp.

Upon completion of the warm-up sequence the alphanumeric display will indicate the real value of LIGHT INTENSITY (if the shutter is open) and POWER of the exposure lamp.

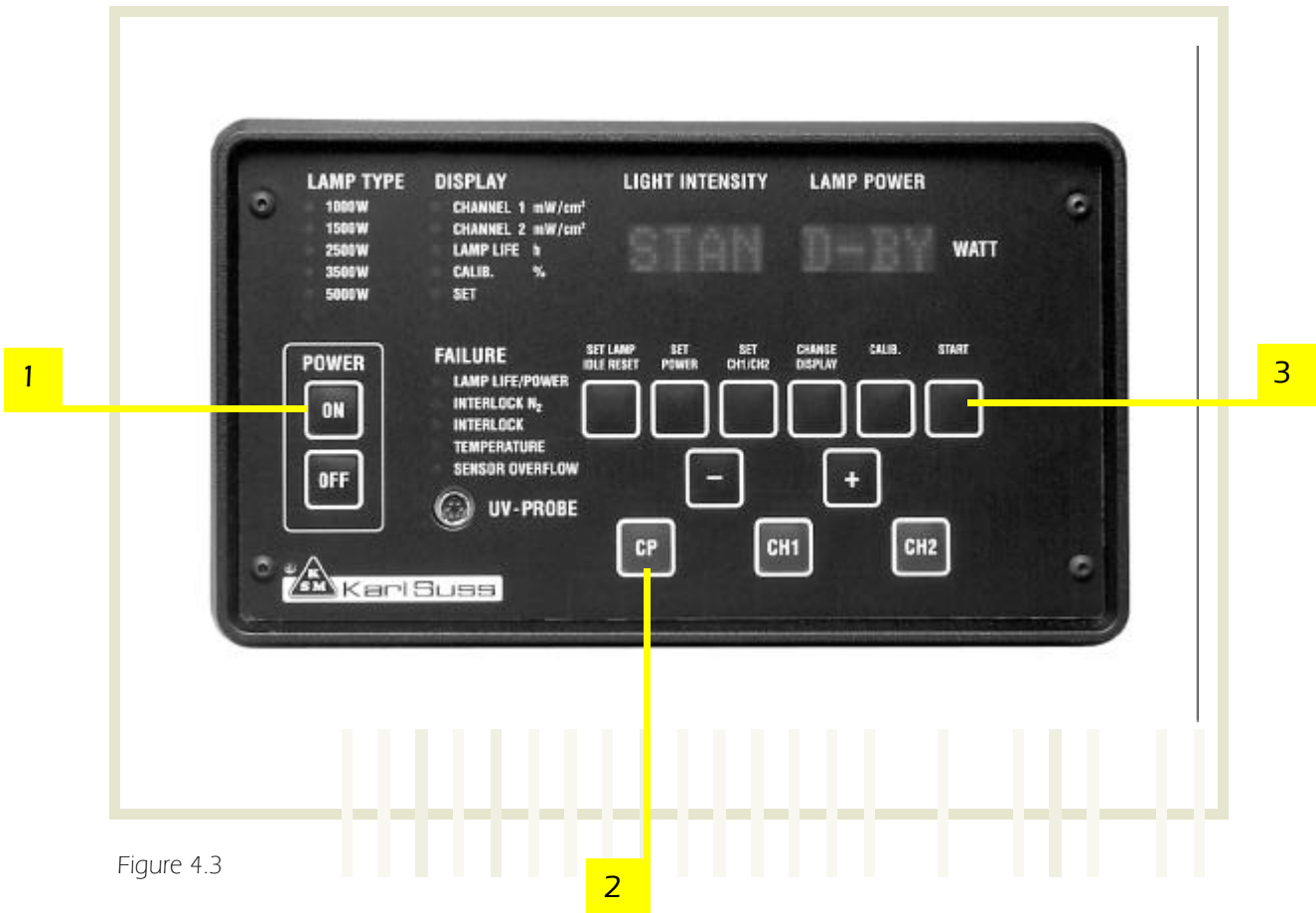


Figure 4.3

Control Panel of the CIC 1200

Key sequence in ignition of the lamp:

1. ON
2. CP
3. START

The exposure lamp has been ignited and after 5 minutes (depending on the lamp type) has become operational. The alphanumeric display labeled LAMP POWER shows the message

XXXX [W]

To run the lamp in "Idle" mode actuate key **IDLE**.
The display shows

IDLE XXX [W]

is shown.

(In IDLE - mode the lamp power is 275 W.)

Quit the Idle mode by actuating the key **IDLE** again or by just actuating the key CP.

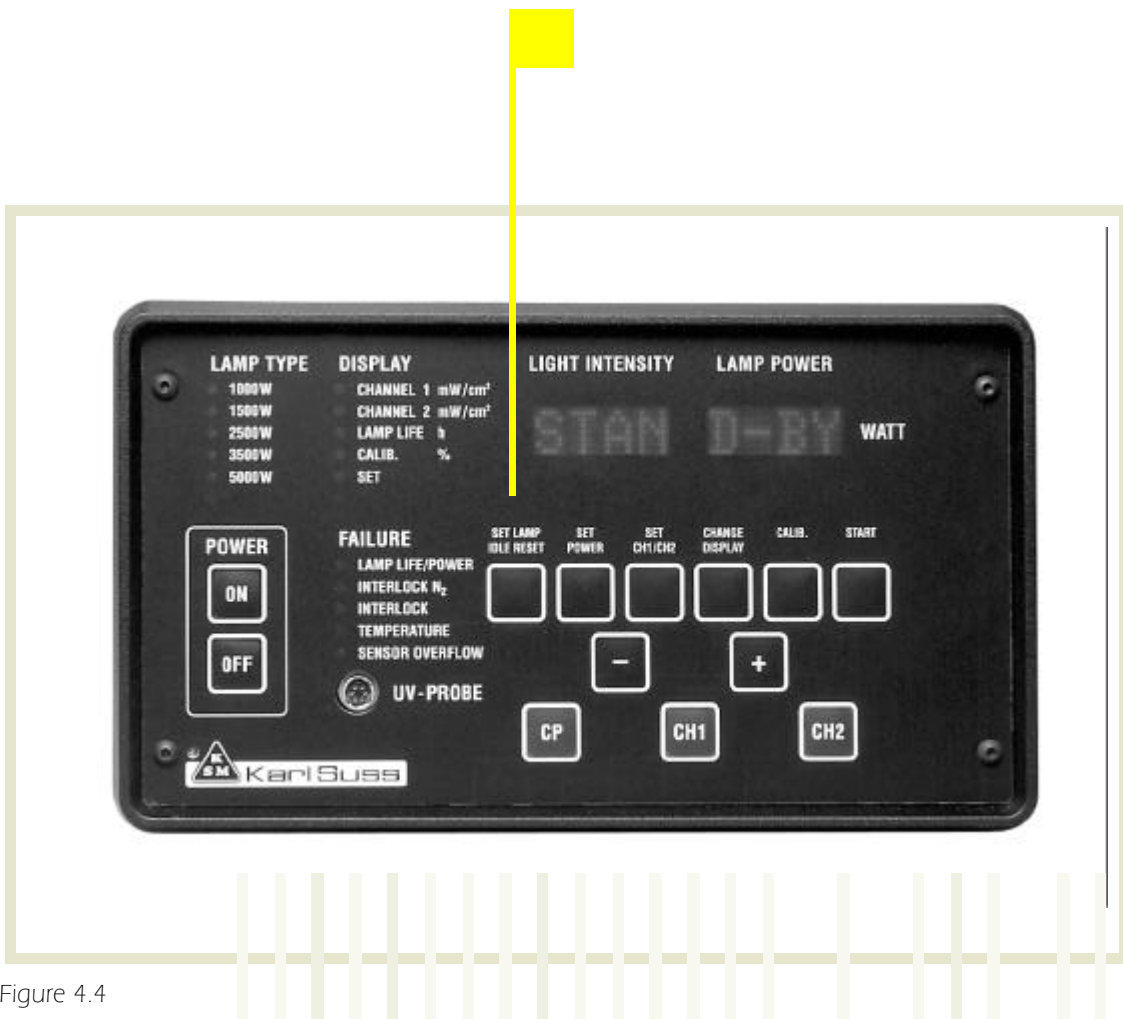


Figure 4.4

4.6.2 Presetting the Power of the Exposure Lamp (CP-Mode)

(adjusting the output power of the lamp)

With the key **SET POWER** one can set within certain limits beforehand the output power of the lamp in the CP-Mode.

1. Press the key **SET POWER** for about 1-2 sec to activate the SET modus. In the annunciator group FAILURE the LED adjacent to LAMP LIFE / POWER is flashing. In the annunciator group DISPLAY the LED (green) "SET" is on. Display LAMP POWER is flashing.
2. With the keys **+** or **-** enter desired numerical value for the power (the alphanumeric display LAMP POWER reads entered value).
3. Validate your entry with key **SET POWER** (push key for 1-2 sec). The display shows the message
STORED

STORED

and a high-pitched "beep" is heard confirming the operator that the new parameter has been stored.

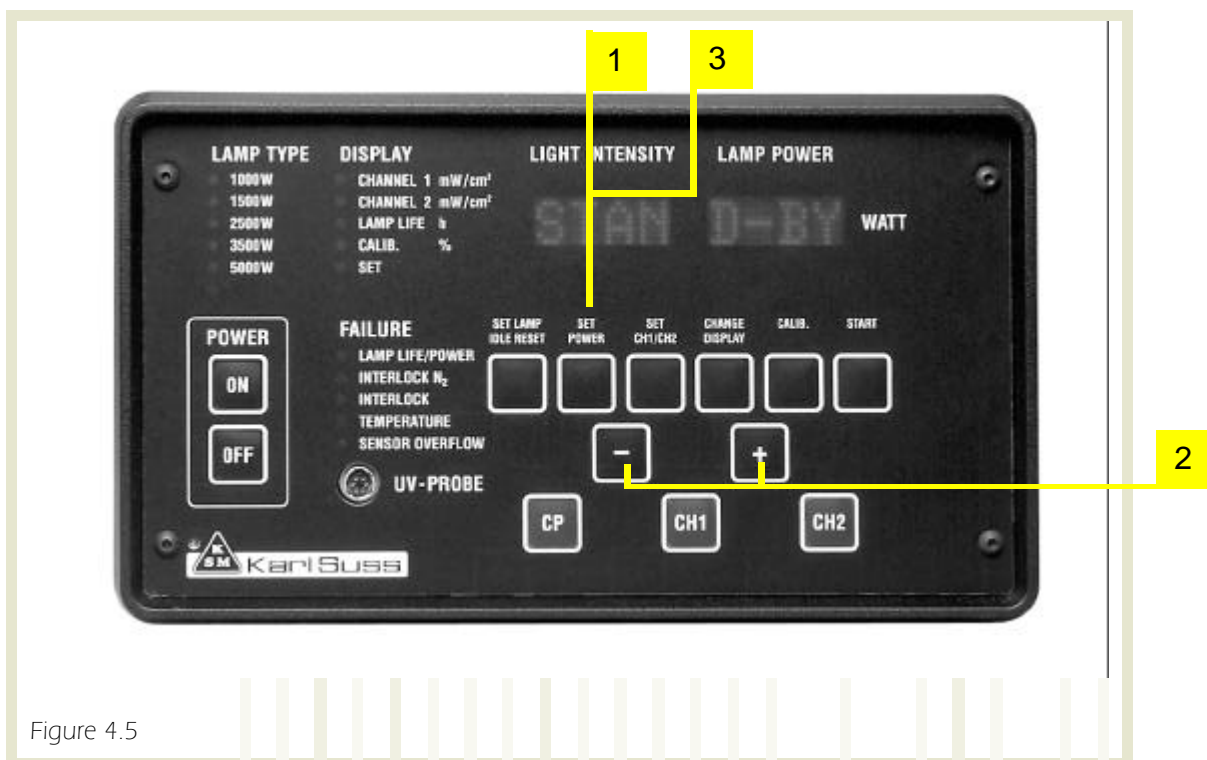


Figure 4.5

Control Panel of the CIC 1200 (Key sequence to set lamp output)

1. Press **SET POWER**
2. Set value with **+** **-**
3. Store with **SET POWER**

Actuating the key **CHANGE DISPLAY** (1) one gets access to the following modes of the annunciator group DISPLAY listed below. The LED of the corresponding mode will be on. To select an item other the one indicated press the key **CHANGE DISPLAY**. Each time one activates the key **CHANGE DISPLAY** the next LED will be activated as shown in the sequence below.

CHANNEL 1 **XXX [mW/cm²]**

The alphanumeric display labeled LIGHT INTENSITY reads the numerical value for channel 1 of the light probe.

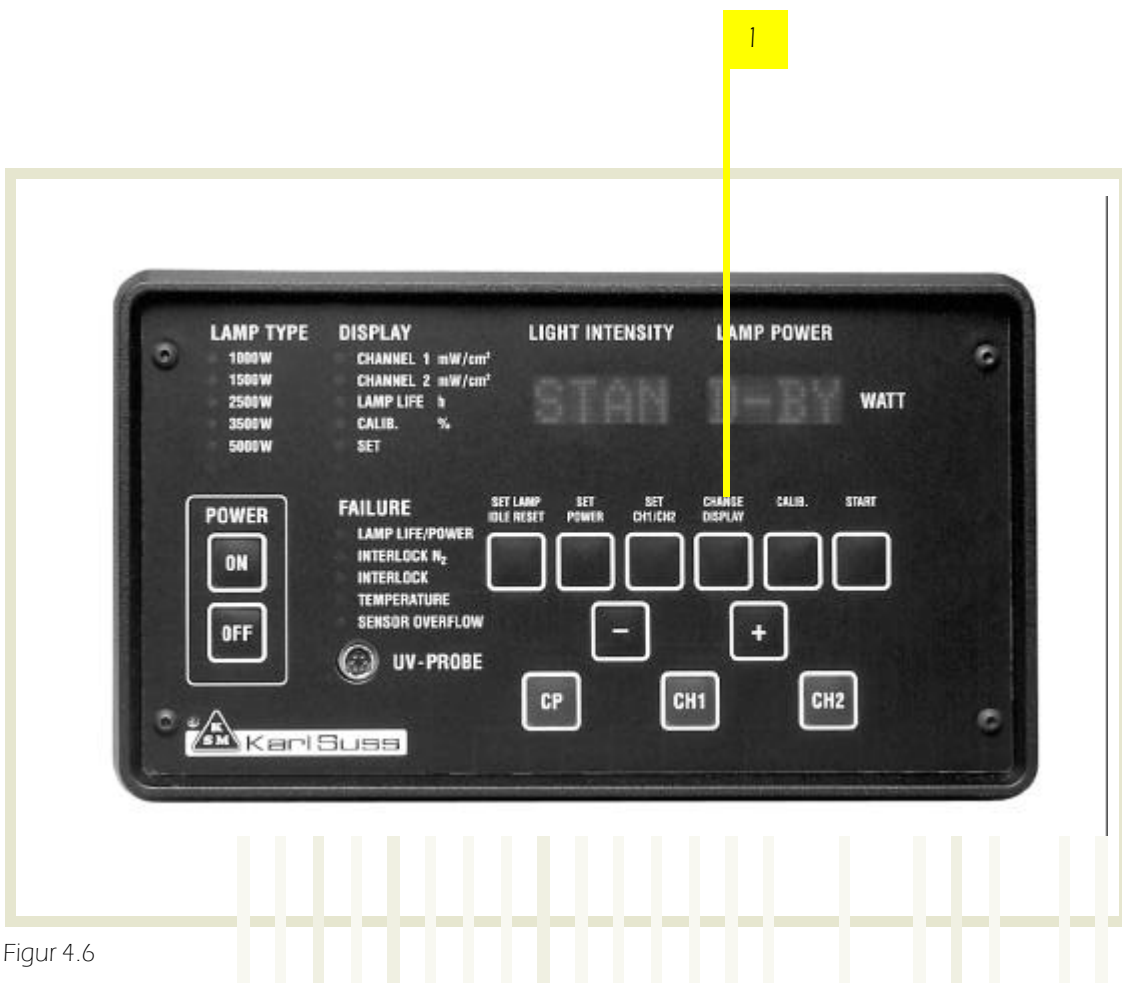
CHANNEL 2 **XXX [mW/cm²]**

The alphanumeric display labeled LIGHT INTENSITY reads the numerical value of the light intensity as seen by the light probe (channel 2).

LAMP LIFE **[h]**

The display shows the life time of the exposure lamp.

XXX HRS



Figur 4.6

4.6.4 Calibration Modes of the Power Supply

4.6.4.1 Basics

The calibration of the power supply is done in CP mode. Commence calibration only after the lamp has become operational.

Press key **CALIB** for 1-2 sec.

The alphanumeric display shows
CAL-UVPI

In the annunciator group DISPLAY the modes
CHANNEL 1 [mW/cm²]
CALIB. %
are active and the corresponding LED's are ON

Press key **CALIB**.

The alphanumeric display shows
CAL-UMP2

In the annunciator group DISPLAY the modes
CHANNEL 2 [mW/cm²]
CALIB. %
are active and the corresponding LED's are ON

Press key **CALIB**.

The alphanumeric display shows
CAL-EXT1

In the annunciator group DISPLAY the modes
CHANNEL 1 [mW/cm²]
CALIB. %
are active and the corresponding LED's are ON

Press key **CALIB**.

The alphanumeric display shows
CAL-EXT2

In the annunciator group DISPLAY the modes
CHANNEL 2 [mW/cm²]
CALIB. %
are active and the corresponding LED's are ON

Press key **CALIB**. (for service purposes only, see Chapter 4.6.4.4)

THERE ARE TWO WAYS TO CALIBRATE the Power Supply

1.

Use the built in intensity meter of the CIC

CAL-UVPI I
CAL-UVPI II

2.

Use an external intensity meter eg. the SUSS UV 1000 Intensity Meter

CAL-EXT 1 for Channel 1
CAL-EXT 2 for Channel 2

of the CIC with UVP1 or UVP2

NOTE:

Always calibrate the control unit in CP mode (constant power mode).
Make sure shutter of the lamp house is open.

The key **CP** of the control panel is illuminated. Plug in the UV probe (e. g. 405 nm probe) to the 6 pin socket of the front control panel labeled UV-PROBE. Press key **CALIB** for 1-2 seconds. Press **CALIB** again to enter the UVP2 mode. Actuate key **START**.

Position your probe on the exposure chuck for the first measurement. The alphanumeric display labeled LIGHT INTENSITY shows the corresponding value the UV - probe is sensing (e. g. 13,0 mW/cm²). Each measurement is labeled with a digit from 1 to 17. The alphanumeric display labeled LAMP POWER shows the current reading in progress.

By actuating the key



the measured value for the light intensity is stored to the control unit. One can perform up to seventeen different measurements while scanning the exposure plane of the chuck with the UV-probe. All readings are stored consecutively to the CIC by actuating the key **+**

By actuating the key



one deletes the last reading stored.

Upon completion of this series of measurements actuate the key **START** and the alphanumeric display shows the average value of the measurements previously performed

AVER XXXX [mW/cm²]

Actuate the key **START** again and the display shows the spread of measurements previously performed.

Formula:
$$\frac{\text{Value}_{\text{max}} - \text{Value}_{\text{min}}}{\text{Value}_{\text{max}} + \text{Value}_{\text{min}}} \times 100 \%$$

Actuate the key **CALIB** and the average value is stored.

A high pitched “beep” will be heard and the alphanumeric display shows

STORED

Thus the average value of the measurements is stored and the CIC returns automatically to the CP mode.

Same procedure applies for the other CHANNEL (UVP1)

4.6.4.3 Calibration Procedure with CAL-ext1 or CAL-ext2

Measure intensity of the lamp with the SUSS UV 1000 or any other intensity meter as described in the Operator’s Manual of your machine. From the data obtained calculate the average intensity of the lamp.

Press key **CALIB** until the annunciator reads

CAL-EXT1

Press the key **START** to enter the calculated value.

Enter calculated average value for light intensity by actuating the keys



respectively.

Upon completion validate with **CALIB**

A high-pitched “beep” is heard, the alphanumeric display shows STORED and the parameter is simultaneously stored. The calibration of the CIC is finished.

Same procedure applies for calibrating Channel 2 i. e. CAL-ext2.



UV Intensity Meter with probe.

Figur 4.7

Press 5x **CALIB**

4.6.4.4.1 S1 OK

Meaning: Input signal light sensor channel 1 OK

Press 6x **CALIB**

4.6.4.4.2 S2 OK

Meaning: Input signal light sensor channel 2 OK

The calibration of the digital/analog converter S1OK, S2OK is done by SUSS Service Engineer only!

Function:

The alphanumeric display shows

Active modes resp. LED's in the annunciator group DISPLAY

■■■■ S1OK

CHANNEL 1
CALIB

Press **START**

Now one can see the input signal of the internal light sensor (channel 1) in %

■ XX% S1OK

CHANNEL 1
CALIB

If necessary one can adjust the level with a potentiometer in the back of the CIC. For this, one has to open the top cover (with 4 screws). One can find the potentiometers for channel 1 and channel 2 in the middle right above the plug for the optical sensor. The left potentiometer belongs to channel 1 and the right potentiometer to channel 2. With the maximum power of the lamp one should set this signal to maximum 95%.

Note: Use only nonconducting tools.

If the light input is too low sometimes the value could not reach 95%. Please adjust the highest possible value.

To store press **CALIB**

Use the same procedure for channel 2 (S2 OK)

■■■■ S2OK

CHANNEL 2
CALIB

■ XX% S2OK

CANNEL 2
CALIB

Attention:

If one adjusts one or both potentiometers, the calibration has to be done once again!

Please note:

If the value is 100% or higher the LED SENSOR OVERFLOW in the annunciator group FAILURE blinks!

Press 7x **CALIB**

4.6.4.4.3 UVPR

Meaning: Input signal of calibrated UV-Probe connected to socket **UV-PROBE** in the front panel will be displayed.

Function:

The alphanumeric display shows

Active modes resp. LED's in the annunciator group DISPLAY

■■■■ **UVPR**

CHANNEL 2
CALIB

Press **START**

XXXX UVPR

CHANNEL 1
CALIB

To leave this menu press **CALIB**.

■ **FINISH** ■

Press 8x **CALIB**

4.6.4.4.4 CAL1 RES

Meaning: **RE**Set **CAL**ibration data channel **1**

Press 8x **CALIB**

4.6.4.4.5 CAL2 RES

Meaning: **RE**Set **CAL**ibration data channel **2**

Function:

CAL1 RES ■

CHANNEL 1
CALIB

Press **START**

CAL1 RES?

CANNEL 1
CALIB

Press **START**

DONE ■■■■

To leave this menu press **CALIB**.

■ STO RED ■

Use the same procedure for channel 2 (CAL2RES)

4.6.4.4.6 Exit calibration menu:

Press 10x **CALIB**

EXIT ■■■■

and press **START**

4.7 Constant Intensity Mode

4.7.1 Set Light Intensity Level (CI Mode)

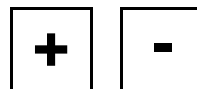
Run the CIC in CP Mode (CP key is illuminated)

Select CH1 or CH2 by actuating the key **CHANGE DISPLAY** and validate. Then actuate the key **SET CH1/CH2** for about 1-2 seconds. The alphanumeric display LIGHT INTENSITY shows

the flashing
value given by the corresponding sensor.

The display LAMP POWER shows the
rated operational power

By actuating the keys



one can choose an appropriate value for the respective channel.

NOTE: The maximum output power of the 350 W lamp is 400 [W]
The minimum output power of the 350 W lamp is 200 [W]
(see Program Parameters of the CIC 1200 for the
various types of exposure lamps, in table 3.1)

**In reaching one of these max/min values an acoustical
signal is activated to warn the operator !**

Actuate the key **SET CH1/CH2** for about 1-2 sec. and store the values displayed. A high pitched "beep" will be heard confirming the operator that the parameters have been stored.

Now one can run the CIC 1200 in Constant Intensity Mode.

Switch subsequently to CHANNEL 1 (CH1) or CHANNEL2 (CH2) respectively (see Section "Change Display"). If the shutter of the lamp house is closed the display of the CIC reads

IDLE XXXX

(the Idle-wattage of the lamp)

With shutter open the corresponding key - CH1 or CH2 - is illuminated indicating the active state and the display shows the value of the light intensity corresponding to your choice as indicated in the annunciator group DISPLAY.

Closing the shutter again, the display reads

IDLE XXXX

The operating conditions of the exposure lamp have been set. The CIC runs the lamp according to the preset parameters. The alphanumeric display shows the corresponding values for

LIGHT INTENSITY and LAMP POWER.

(Power necessary to run the lamp with the desired Intensity)

Calibrate the built-in UV Intensity Meter using the SUSS UV Intensity Meter (UV 1000) and the UV probe 405 [nm] as a reference.

1. Open the shutter of the lamp house.
2. Measure the actual UV intensity with the SUSS UV Intensity Meter equipped with a corresponding probe head by placing it in the center of the chuck. Remember the actual reading of the meter - better: write it down
3. Now connect probe head to the socket of the CIC labeled UV-PROBE. Place it in the same position as before (better: leave it after Step 2). Activate the calibration mode with key **CALIB** (press key for 1-2 sec.). Press **CALIB** until the Display reads UVPR. Press **START**. The alphanumeric display shows **UVP** and the corresponding value of the measured light intensity.
4. Check reading of the alphanumeric display (step 3) and compare it with the value for the light intensity obtained in step 2. If necessary adjust the value for the LIGHT INTENSITY with the trimming potentiometer (see adjacent picture). Calibration is accomplished when the numerical value of the light intensity as given by the reference meter (step 2) is equal to the reading of the alphanumeric display LIGHT INTENSITY of the CIC 1200.



Figure 4.8

Control Panel of the CIC 1200.

The calibration point (potentiometer) for the built-in UV Intensity Meter is indicated by the arrow.

4.9 Additional Functions

4.9.1 Full RESET

Meaning: Reset all Calibration data

Function:

The alphanumeric display shows

STAN D-BY

Press key **[-]** for 3s and max. 1s later **[START]**.

RES ET?

CANNEL 1
CALIB

Press **[START]**

RES ET

STAN D-BY"

5.1 Error messages

Error messages will be shown in display or with Failure-Led 's.
To reset the error messages in display press

SET LAMP IDLE **RESET**

or eliminate troubles resp. interlocks.

Description:

CURR ERR Current error

deviation of desired lamp current more than $\pm 5\%$

VOLT ERR Voltage error

Lamp voltage is higher than U_{\max} (for a few seconds)

MACH ERR Machine -Interlock error

Voltage interlock activ

PWR ERR Power error

Lamp power could not reach P_{\min} or P_{idle} during COLD-phase

N2- ERR Nitrogen (cooling) error

N_2 -Loss is activ for a few seconds

FAILURE LED INTERLOCK N_2 blinks

INT-ERR Contact Interlock error

Contact Interlock activ

FAILURE LED INTERLOCK blinks

TEMP-ERR temperature error

Temperature sensor (on heat sink inside CIC) activ

FAILURE LED TEMPERATURE blinks

CAB-ERR Cable error

Ignition box cable not connected or defect

NET-ERR Voltage control error

Voltage deviation during start up of the lamp is too high
(LAMP COLD-PHASE)

NO START Current error during IGNITION

Current error during the first 10s of IGNITION
(desired current $\pm 5\%$) CIC 1200 shut down

CTRL ERR Power resp. intensity controller error

deviation of desired power resp. intensity is too high for controller in CP- or CI-Mode

CTRL ERR Power resp. intensity controller error

deviation of desired power resp. intensity is too high for controller in CP- or CI-Mode

TOL ERR Tolerance error

The controller could not regulate fast enough during the adjustment with

SET CH1/CH2 resp. **SET POWER**

5.2 Service Information

5.2.1 Technical Assistance

Should difficulties arise with the use or operation of your Constant Intensity Controller, and you are unable to resolve the problem you can receive further assistance at the Karl Suss office which processed your order or is currently handling your account. They can give you specific instructions on whom to contact to get additional help or answer any questions.

Be prepared to furnish the following information (if available):

- a. Your company name, address, telephone number, and the name of the responsible individual whom we may contact if we have technical questions about the problem.
- b. Model, serial number and SW-revision of the equipment.
- c. A list of associated equipment and a description of the electrical connections.
- d. A brief description of the problem.

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