Washlight HP squarcle

Operating Instructions

As of 09/03
DMX Software version HP16T V3.2 and above

Washlight HP squarcle

with:

- ◆ daylight lamp 575 W
- ◆ 16-bit servo card
- ◆ dipless colour mixing
- ◆ dipless daylight to tungsten conversion (CTO)
- ◆ dipless focus (7°- 28°)
- ◆ barn door effect

1 General Information

1.1 Product Description

The Washlight HP is a moving head, Fresnel- or PC-lens spotlight with variable colour mixing based on the colours yellow, magenta, and cyan. In addition there is a dipless conversion from daylight to tungsten. As its light source, a highly effective daylight lamp - surrounded by an elliptical cold-beam dicro-glass reflector - has been employed. The lamp can be switched on/off via DMX with the possibility of hot restrike. A built-in mecanical dimmer allows for dipless fades and shutter functions. In the boost mode the lamp works with 700W. Various beam angles are made possible by a movement of the front lens. The barn door effect enables variable shaping of the cone of light. In order to meet the demands of very dynamic movements, the Washlight HP employs extremely robust and powerful servo motors.
The head of the Washlight HP with daylight lamp is convection-cooled with a special cooling system - there is only one small ventilator in the base.
The Washlight is controlled internally by a 32-bit high-performance controller as well as a 16-bit DSP (digital signal processor), among others.

All functions can be remote-controlled with the DMX 512/1990 serial interface. For safety reasons, this interface is galvanically separated from the entire electronics.

Service and maintenance are greatly facilitated due to easy lamp replacement and plug-in electronic units.

The housing has a black, extremely resistant, powder-coated finished.

1.2 Safety Instructions

The following safety instructions and technical data are necessary for trouble-free functioning of the unit as well as for the prevention of injury / damage to people / objects. For this reason, all safety and technical requirements must be followed without exception. Failure to do so exempts Amptown Lichttechnik GmbH from any and all liability for both the unit's guarantee / warranty and any resulting injuries and / or damages.

These instructions should be seen as an integral part of the Washlight HP, and should be kept with it at all times:

Before opening the unit, it must be removed entirely from the power supply (pull out the plug)!

Protective Class I: Only insert unit's plug into socket with protective plug reception with nonfused earth conductor!
The mains cross-sections must be capable of handling the required power input!

Allow the bulb to cool before replacing it!

Follow installation instructions provided by the bulb's manufacturer!

Protective type IP 20 (NOT rain-, drip-, or splash-proof)! For outdoor use, a suitable dome is available.

Keep away from all flammable materials (see diagrams below for distances to be maintained)!

0,5 m   1,0 m
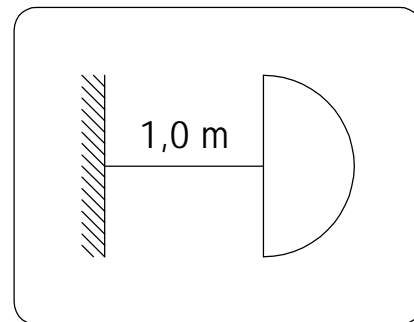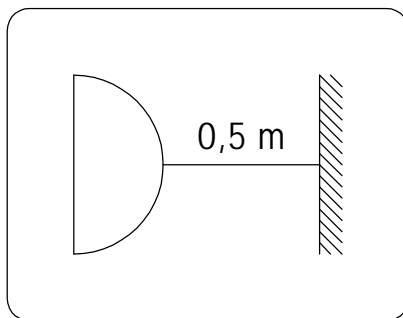
Unit's ventilation slits should never be covered or blocked, and must be cleaned when dirt / dust builds up!

Never insert any bodily parts or other objects through the housing openings into the unit!

In case of malfunction, the unit must be removed immediately and entirely from the power supply, and may not be operated again until personnel described below has undertaken repairs!

The unit may be operated from any position.

It is of utmost importance that there be enough room for the lamp yoke's and head's pan and tilt movements!

Required free space incl. unit: 500x500x750 mm (Width x Depth x Height, standing on ground)

The unit may not be operated within reach of people and / or any accidental contact with the unit must be prevented via appropriate warning signs or barriers!

When operating the unit from a hanging position, the unit must be secured via the mounting brackets designed for this purpose. To do so, two points with a load-carrying capacity of 250 Newtons each are necessary.

Repair service and maintenance on and within the unit are to be carried out by qualified personnel only! These qualified personnel must either have well-founded technical knowledge or have received instructions from the manufacturer.

1.3 Technical Data

Power supply:	180 - 255 V / 50 - 60 Hz
Power consumption:	900 VA max.
Mains Connection:	1 Meter H07RN-F 3G1,5² with plug
Signal (galvanically separated):	DMX 512/1990 - 16 channels
- Input (R_{in} = 800 Ohm):	XLR 5-pol, male
- Output (activ, 60mA):	XLR 5-pol, female

Input and Output must not be exchanged in function!

> **DMX pin configuration:**
>
> pin 1 = GND (shield)
>
> pin 2 = data -
>
> pin 3 = data +

Movement:	pan = 340° tilt = 270°
Dipless colour mixing:	cyan, magenta, yellow (CMY)
Dipless conversion:	6000K … approx. 3400K
Variable focus/beam angle:	approx. 7° - 28° (with Fresnel lens)
Build-in mechanical dimmer:	0 - 100%
Max. ambient temperature:	t_a = 40°C
Max. housing temperature:	t_{max} = 90°C (at head´s end)
Weight:	25 kg
Lamp:	**OSRAM HMP 575 SE**
Lamp power:	400W (power down) 575W (normal operation) 700W (boost)

Design and technical detail subject to change.

1.4 DMX Channel Settings (Software HP16T)

Channel 1 = dimmer, dipless fades

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	brightness 0%
255	100%	FF H	brightness 100%

Channel 2 = shutter

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	shutter closed
15	6%	0F H	strobe 1 - slow
25	10%	19 H	strobe 2
35	14%	23 H	strobe 3
45	18%	2D H	strobe 4
55	22%	37 H	strobe 5 - fast
65	26%	41 H	random strobe 1 (under construction)
75	30%	4B h	random strobe 2 (under construction)
85	33%	55 H	strobe, soft - soft
95	37%	5F H	strobe, soft
105	41%	69 H	strobe, soft
115	45%	73 H	strobe, soft
125	49%	7D H	strobe, soft
135	53%	87 H	strobe, soft
145	57%	91 H	strobe, soft
155	61%	9B H	strobe, soft - fast
165	65%	A5 H	strobe, hard - slow
175	69%	AF H	strobe, hard
185	73%	B9 H	strobe, hard
195	76%	C3 H	strobe, hard
205	80%	CD H	strobe, hard
215	84%	D7 H	strobe, hard
225	88%	E1 H	strobe, hard
235	92%	EB H	strobe, hard - fast
255	100%	FF H	shutter open

Channel 3 = Movement, horizontal, pan - coarse

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	horizontal -170°
127	50%	7F H	horizontal 0° (mid-position)
255	100%	FF H	horizontal +170°

Channel 4 = Movement, horizontal, pan - fine

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	
127	50%	7F H	
255	100%	FF H	

Channel 5 = Movement, vertical, tilt - coarse

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	vertical -135°
127	50%	7F H	vertical 0° (mid-position)
255	100%	FF H	vertical +135°

Channel 6 = Movement, vertical, tilt - fine

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	
127	50%	7F H	
255	100%	FF H	

Channel 7 = Yellow, dipless

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	no yellow (clear)
220	86%	DC H	full yellow

Channel 8 = Magenta, dipless

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	no magenta (clear)
220	86%	DC H	full magenta

Channel 9 = Cyan, dipless

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	no cyan (clear)
220	86%	DC H	full cyan

Channel 10 = colour conversion (CTO), dipless

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	daylight 6000 Kelvin
220	86%	DC H	tungsten approx. 3400 Kelvin

Channel 11 = focus, dipless

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	flood - beam angle 28°
220	86%	DC H	spot – beam angle 7°

Channel 12 = Auxiliary Channel (normal:DIP8 OFF): Reset servo & stepper

Decimal	Percentage	HEX-Code	Function
from 0	0%	00 H	normal operation
to 31	12%	1F H	normal operation
from 32	13%	20 H	lamp off
to 201	79%	C9 H	lamp off
202	…	CA h	RESET - servo
203	…	CB H	RESET - stepper + servo
204	…	CC H	RESET - stepper
from 205	80 %	CD H	boost, 700W
to 255	100%	FF H	boost, 700W

Channel 12 = Auxiliary Channel (Extra: DIP8 ON): Reset servo & stepper

Decimal	Percentage	HEX-Code	Function
from 0	0%	00 H	no change
to 50	19,6%	32 H	no change
from 51	20%	33 H	lamp on, 575W
to 100	39,2%	64 H	lamp on, 575W
from 101	39,6%	65 H	lamp off
to 150	58,8%	96 H	lamp off
from 151	59,2%	97 H	no change
to 201	78,8%	C9 H	no change
202	79,2%	CA H	RESET - Servo
203	79,6%	CB H	RESET – Servo + Stepper
204	80,0%	CC H	RESET - Stepper
from 205	80,4%	CD H	no change
to 239	93,7%	EF H	no change
from 240	94,1%	F0 H	Boost, 700W
to 255	100%	FF H	Boost, 700W

Channel 13 = Barn Door Rotation

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	1st Stop
255	100%	FF H	2nd Stop

Channel 14 = Barn Door 1/2

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	doors open
255	100%	FF H	doors closed

Channel 15 = Barn Door 3

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	door open
255	100%	FF H	door closed

Channel 16 = Barn Door 4

Decimal	Percentage	HEX-Code	Function
0	0%	00 H	door open
255	100%	FF H	door closed

Note:

yellow	+ magenta	=	red
magenta	+ cyan	=	blue
cyan	+ yellow	=	green

1.5 DIP Switch Settings DMX Card

Software version DMX-2: WL-HP16T V 3.2 and above

Switch (S2) in front on the DMX card:

DIP	Function	on	off
1			
2	failure input	**active**	passive
3	DMX start address	blocks of 16 channels	**1 … 512 (individual)**
4	no DMX signal	**maintain current settings**	basic position (default)

Switch (S1) in back on the DMX card (the card must be pulled out):

DIP	Function	on	off
5	DMX channel 12 (aux.)	passive	**active**
6	Lamp after DMX failure	off	**on**
7	Boost function	off (for HMI 575)	**on**
8	Auxiliary channel type	Mode 2 (extra)	**Mode 1 (normal)**

Jumper in back on the DMX card (the card must be pulled out):

DIP	Function	in	open
7	Barn Door channels (13..16)	**on (16 channels)**	off (12 channels)
6			
5			
4			

boldface: adjustment on delivery
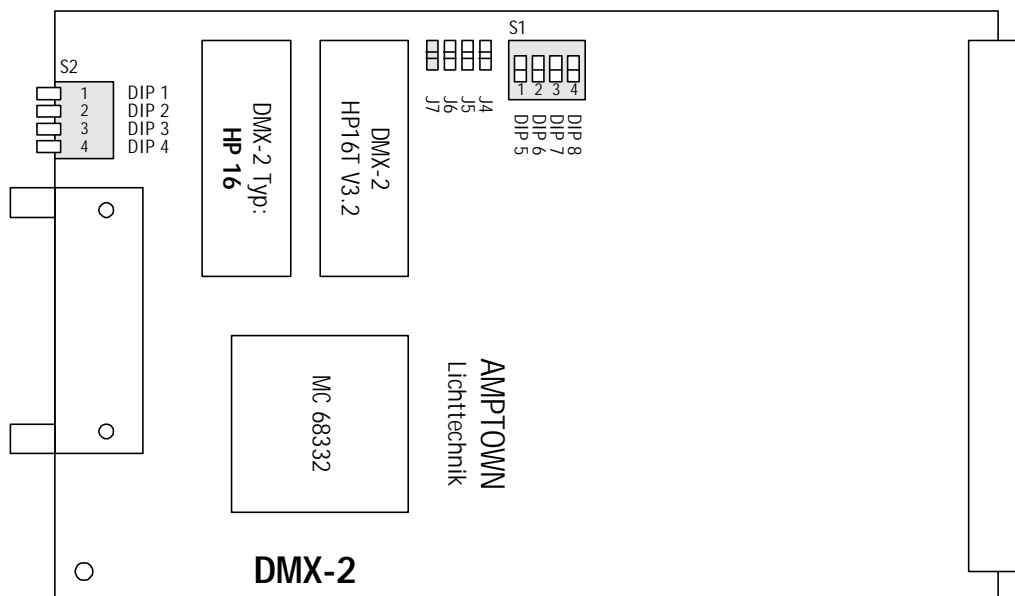
2 Preparing to Operate the Washlight

2.1 Power supply

The Washlight comes with a standard 1-metre power supply cable and shrouded contact plug. The power supply cable must be plugged into a socket with protective plug reception and nonfused earth conductor. The socket's fuse should be not less than 6 amps and not greater than 16 amps.

2.2 Lamp (Bulb)

There is currently only one bulb available: **OSRAM HMP 575 SE**
The manufacturer specifies the lamp has a 1000h average operational lifetime.

Please follow bulb manufacturer's instructions!

2.3 DMX

DMX connection is done via a regular 5-pin XLR connector (e.g., Switchcraft, Neutrik).

Input (DMX in):	male	**Pin:**	**1 = Ground (GND)**
Output (DMX out):	female		**2 = Data -**
			3 = Data +

The DMX LED will light up green when the DMX data are valid; if not, it will be yellow. If there is no DMX signal, the unit's performance is adjusted on the DMX card with DIP switch 4: either maintain current settings or go to basic position (default).

If an invalid DMX address is entered, the DMX LED will blink green/yellow and the moving light will return to its basic position (default). For the addresses 800 and upward, a test mode is implemented; with this mode, it is possible to check the unit's individual functions - including without DMX.

For operational safety and conformity to European CE regulations, only shielded DMX cable may be used. The shield must be on Pin 1 (ground).

For safety reasons, the DMX inputs and outputs are galvanically separated from the entire electronics.

In order to increase operational reliability, each output is "active"; i.e., the DMX signal is boosted by each unit. This means that any number of ControLite moving lights can be connected to one DMX line. A terminating resistance is not necessary.

If a unit is not connected to the power supply, the DMX signal is automatically looped through.

If the DMX signal has to be manually split, a maximum of two Washlights can be directly connected to one output. Should you need to run more than two units parallelly, an active splitbox is required.

The DMX input within the unit has an impedance of 800 Ohm.

☹ **prohibited**

DMX in- and outputs must not be mixed-up.

The Washlight controls require 16 DMX channels per unit.
Please refer to section 1.4 DMX for channel distribution and their corresponding functions.

The start address for the first channel of the unit must be defined using the three-digit code switch located on the yoke.

☺ **TIP**

Setting a new start address may cause the yoke to change position and wiggle around.

To avoid movement while setting a new start address, press the "RESET" button at the same time.

The Washlight does not have to be connected to the power supply in order to enter the unit's start address!

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3 Functions

3.1 Dimmer

The mecanical dimmer is built into the Washlight. You may control this function via the DMX 512 interface on **Channel 1** from 0 = "off" to 255 = "on".

3.2 Shutter

The shutter function is based on the mechanical dimmer, but uses its own DMX channel. Use C**hannel 2** to cause "shutter closed" at 0 to "shutter open" at 255.

3.3 Pan / Tilt

The unit's servo card controls movement of both axes (head and yoke). For both axes, there is a corresponding channel for coarse and fine adjustment.

Channel 3 = yoke / pan   coarse (DMX 0 - 255)
Channel 4 = yoke / pan   fine   (DMX 0 - 255)

Channel 5 = head / tilt   coarse (DMX 0 - 255)
Channel 6 = head / tilt   fine   (DMX 0 - 255)

As soon as the light is connected to the power supply, the servo card executes a set-up movement (servo reset) on its own. During this procedure, all positions are carried out at slow speed. Also, the servo LED blinks during this time.

The card is equipped with overload protection for the gears. If one of these precautionary measures registers a malfunction, the red servo LED will come on immediately and the motors will disengage. If you are unable to solve the problem by pushing "RESET" or by briefly disconnecting from the power supply, there is a malfunction.

3.4 Colour Mixing

For infinitely variable colour mixing, there are three basic colours (yellow, magenta, and cyan) available. Their channel distribution via the DMX interface is as follows:

Channel 7 = yellow
Channel 8 = magenta
Channel 9 = cyan

The following control info applies to all three colours:

DMX 0 / 0% /OOH = none of the corresponding colour
DMX 220 / 86% /DCH = satured (full) colour

DMX values higher than the above-mentioned maximum setting (220 / 86% / DCH) correspond to the saturated colour as well.

☺ **TIP**

yellow + magenta = red
magenta + cyan = blue
cyan + yellow = green

For best colour mixing results, use only two colours at the same time. Using all three colours at once will not result in good colour mixing, but does create a fade-out effect.

For a black-out effect, set all colours on full intensity. Theremaining light will be less than 5%. Fading out the dimmer at the same time creates a nice black out.

3.5 Daylight to Tungsten Conversion (CTO)

There is a separate effect wheel for conversion from daylight (6000K) to tungsten (approx. 3400K), which allows for dipless conversion via **DMX Channel 10.**

DMX 0 / 0% /OOH = daylight (6000K)
DMX 220 / 86% /DCH = tungsten (3400K)

Also, the Washlight comes with an optimal wheel with four fixed colours instead of the CTO wheel.

3.6 Focus

The focus allows you to diplessly change the beam angle from 7° to 28°. Control of this function is via **DMX Channel 11**. Resolution is 8-bit. It takes approx. 2 seconds for the entire procedure (7° --> 28°).

3.7 Auxiliary Channel

The **DMX Channel 12** controls three aux functions :
lamp on/off, lamp boost and reset.

Normal Mode: (DIP8 off)

Values 0 to 31 run the lamp at the standard setting (575W). Values 32 to 202 switch the lamp off (the lamp LED indicates "red"). Remember: Only switch off the lamp for longer periods of time, as any restart of the lamp reduces its lifetime by hours.

Three different resets are controlled by the aux channel:

With DMX setting 202, only a servo reset is carried out.
With DMX setting 203, both a servo and a stepper reset are carried out.
With DMX setting 204, only a stepper reset is carried out.

Values 204 to 255 run the lamp at the 700W boost setting; the lamp LED indicates "yellow". Keep in mind that using the boost setting not only increases the brightness but also reduces the average lifetime by about 50%.
In order to mountain connect data on the bulb's while in boost mode, the built-in counter correspondingly runs at twice its normal speed when using 700W.

Extra Mode: (DIP8 on)

Values 0 to 50 cause no changes. Values 51 to 100 run the lamp at the standard setting (575W); the lamp LED indicates "green". Values 101 to 150 switch the lamp off; the lamp LED indicates "red". Remember: Only switch off the lamp for longer periods of time, as any restart of the lamp reduces its lifetime by hours. Values 151 to 201 cause no changes.

Three different resets are controlled by the aux channel:

With DMX setting 202, only a servo reset is carried out.
With DMX setting 203, both a servo and a stepper reset are carried out.
With DMX setting 204, only a stepper reset is carried out.

Values 205 to 239 cause no changes. Values 240 to 255 run the lamp at the 700W boost setting; the lamp LED indicates "yellow". Keep in mind that using the boost setting not only increases the brightness but also reduces the average lifetime by about 50%.
In order to mountain connect data on the bulb's while in boost mode, the built-in counter correspondingly runs at twice its normal speed when using 700W.

Note: The 700W boost mode is not made for continuos operation.

3.8 Power Down

In order to avoid overheating of the washlight HP when the dimmer is closed (values 0 to 4), the bulb switches into power-down mode after about 30 seconds. You will also find the stepper LED indicating „yellow", then. The stepper LED indicates "yellow". Due to the fact that the bulb runs on 400W in power down, the approximate lifetime of the lamp

will be reduced as much as if running in boost mode (700W). Therefore the built-in counter will run at twice its normal speed as it does in boost mode, to maintain connect data on the bulb's lifetime.

3.9 Barn Door Effect

The barn door effect allows the lighting designer to shape the spot's beam. To do so, there are 4 doors available: **DMX Channel 14** controls doors (1 / 2), **Channel 15** door 3 and **Channel 16** door 4. The doors can be brought into the desired position via **DMX Channel 13** (door rotation).

Once the doors are activated, the washlight revents from boost mode to standard mode.

Please keep in mind that the motors are meant to position the doors, but are NOT made for a constant movement effect!

☹ **prohibited**

Never pull out electrical plugs while the Washlight is in operation. Damage to the electronics could result.

3.10 Test Mode

A test mode has been implemented in the DMX software, version HP16T V3.0 and above; this mode allows you to check the Washlight functions directly (including without DMX). Select the test mode via the BCD code switch (which is normally responsible for selecting the DMX start address).

The individual test functions:

BCD Switch	DMX Channel	Function
800	…	Lamp on only
801	1	Dimmer 100%, pan & tilt 50%
802	2	Shutter - Strobe 5, pan & tilt 50%
803	3	Dimmer 0%, Pan coarse 100%, tilt 0%
804	4	Dimmer 0%, Pan coarse + fine 100%, Tilt 0%
805	5	Dimmer 0%, Pan 0%, Tilt coarse 100%
806	6	Dimmer 0%, Pan 0%, Tilt coarse + fine 100%
807	7	Dimmer 100%, pan & tilt 50%, yellow 100%
808	8	Dimmer 100%, pan & tilt 50%, magenta 100%
809	9	Dimmer 100%, pan & tilt 50%, cyan 100%
810	10	Dimmer 100%, pan & tilt 50%, CTO 100%
811	11	Dimmer 100%, pan & tilt 50%, focus 100%
812	12	Dimmer 100%, pan & tilt 50%, boost - 700W
813	13	Dimmer 100%, pan & tilt 50%, door rotation 100%
814	14	Dimmer 100%, pan & tilt 50%, doors 1/2 100%
815	15	Dimmer 100%, pan & tilt 50%, door 3 100%
816	16	Dimmer 100%, pan & tilt 50%, door 4 100%
900	…	Lamp off only
000	/	default settings, DMX LED blinks yellow/green
496 to 799	/	default settings, DMX LED blinks yellow/green
817 to 899	/	default settings, DMX LED blinks yellow/green
901 to 999	/	default settings, DMX LED blinks yellow/green

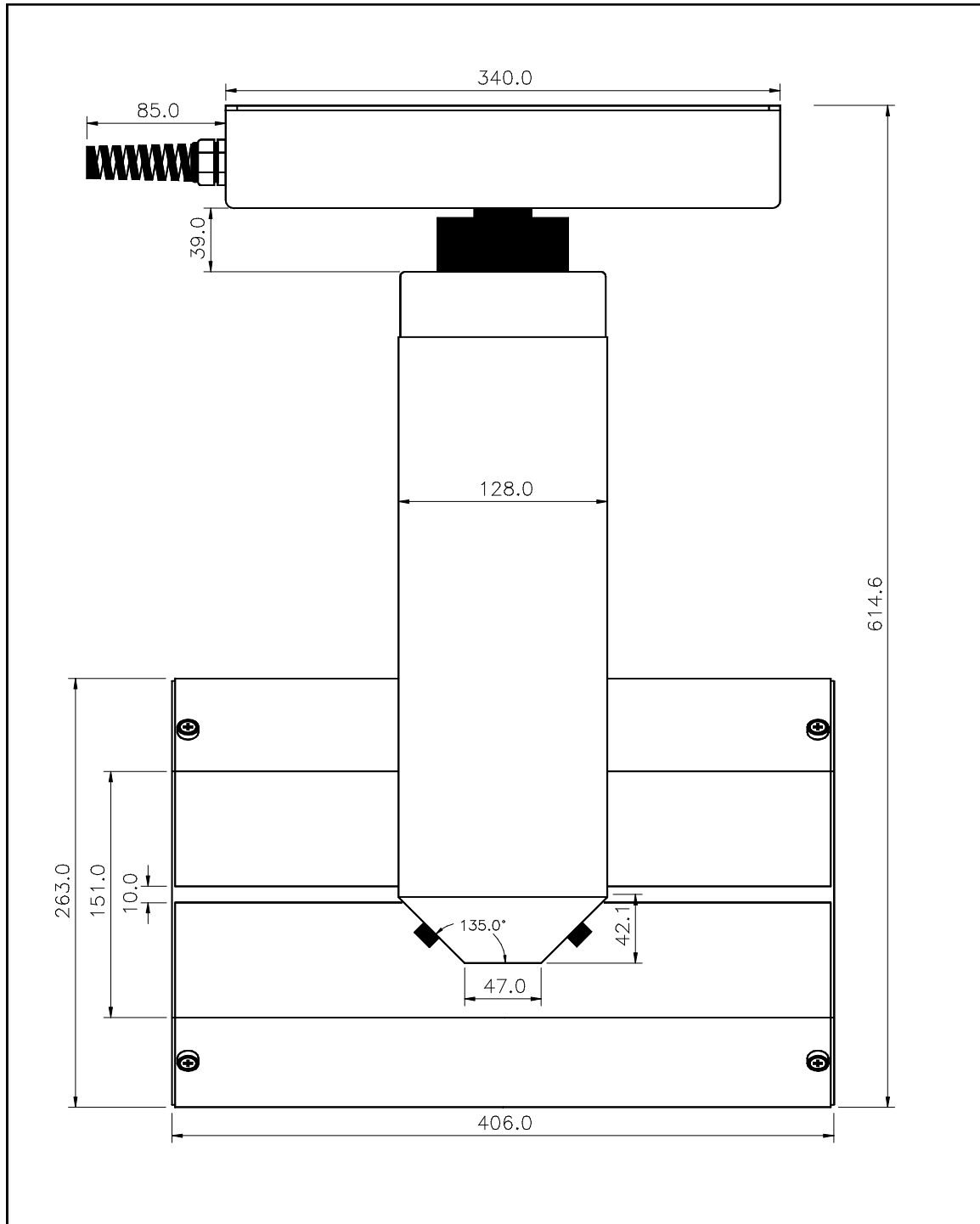The lamp can be switched on and off with the codes 800 and 900.

Codes 801 to 816 correspond to DMX channels 1 to 16, the lamp setting does not change.

With all other invalid DMX start addresses, the Washlight will go to its default position: head horizontal, yoke 50%, focus forward, door rotation 100%, the rest 0%.
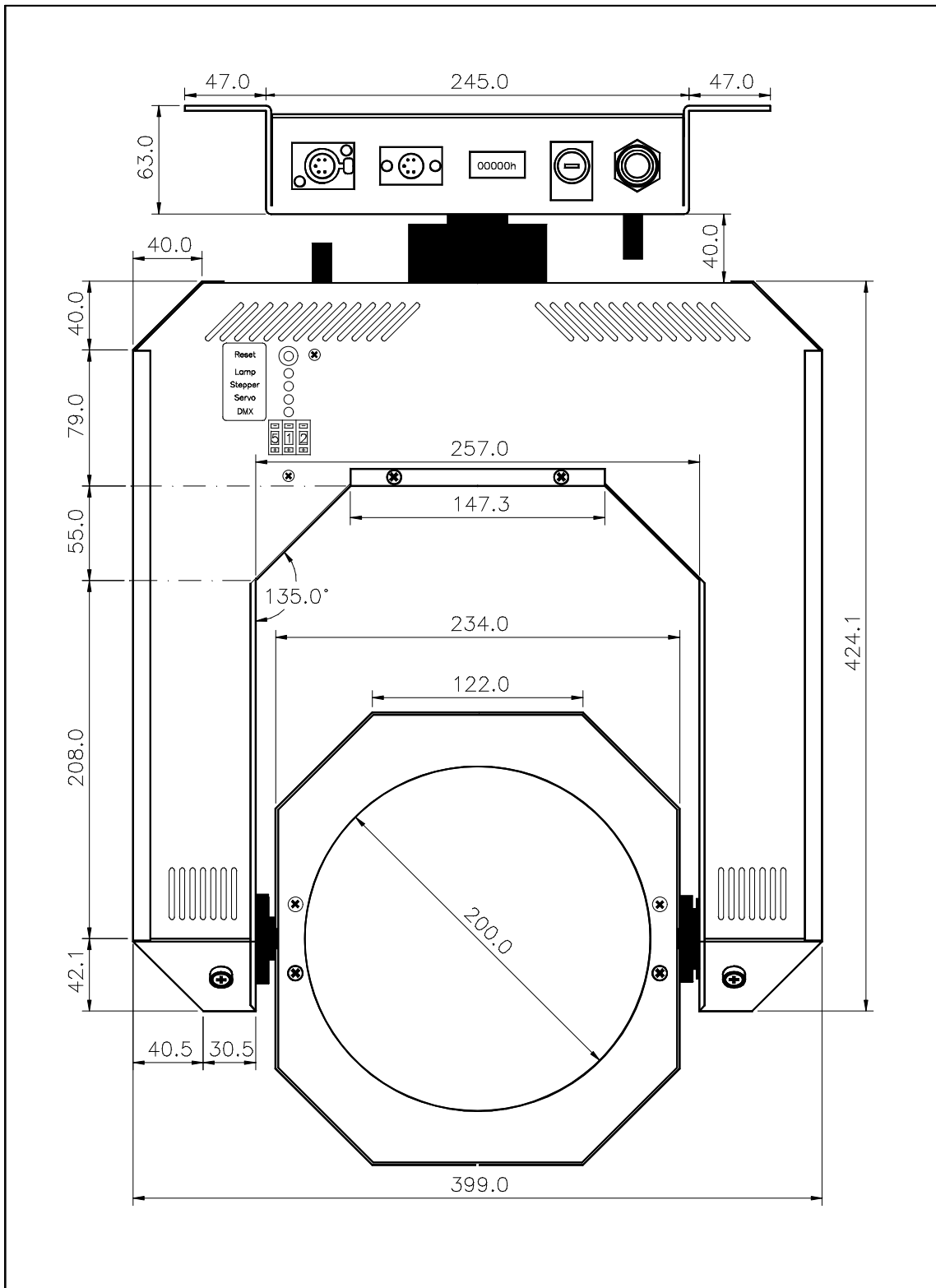
4 Appendix
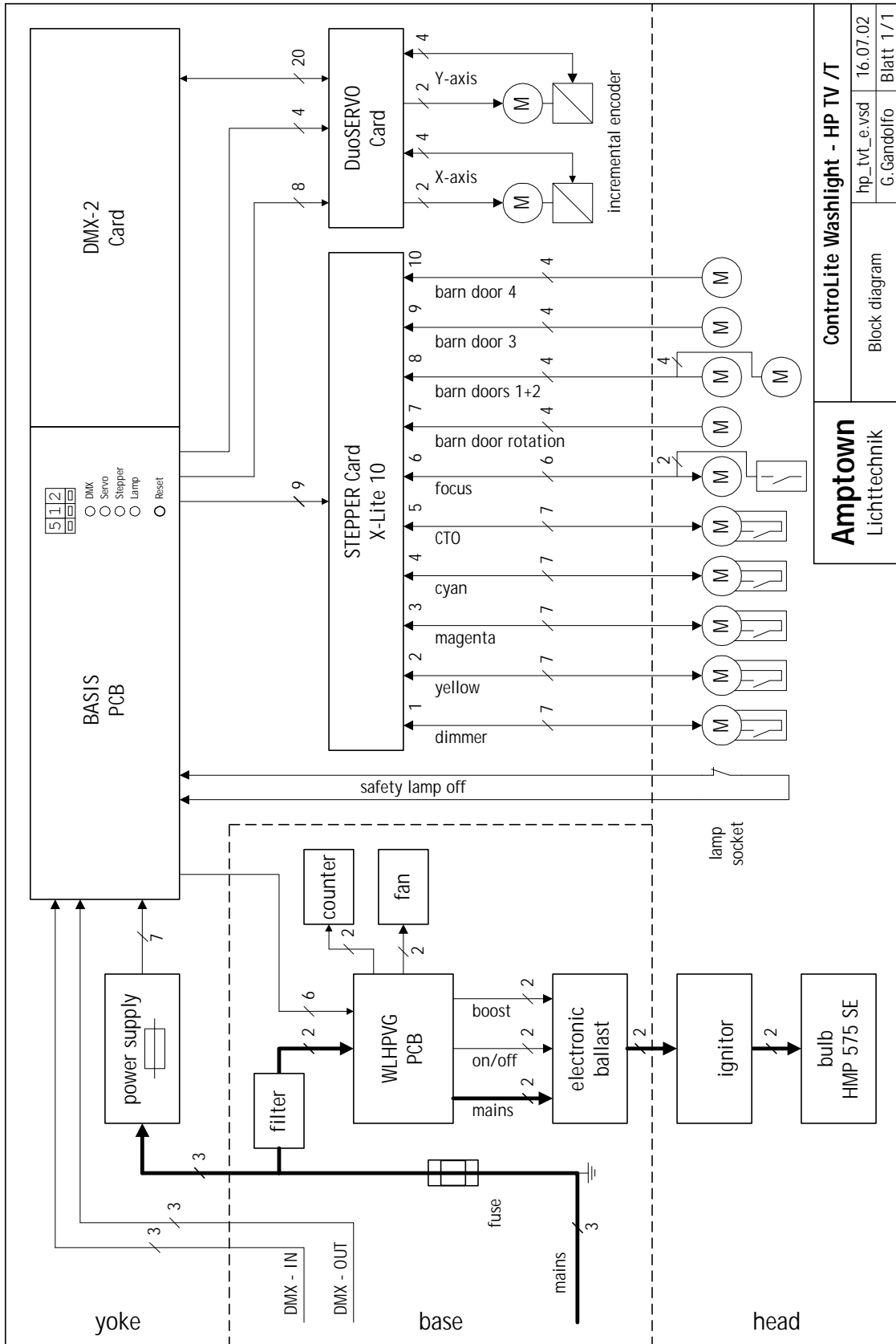
4.1 Dimensioned Drawings (in mm)

Side View

Front View

4.2 Block Diagram

Block diagram

ControLite Washlight - HP TV /T

hp_tvt_e.vsd 16.07.02
G.Gandolfo Blatt 1/1

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4.3 LED Functions

Functions of the LEDs on the BASIS PCB:

LED:	green	yellow	red	flash
DMX	DMX O.K.	no DMX	- - -	DMX address not O.K.
Servo	servo O.K.	- - -	servo failure	servo reference
Stepper	stepper O.K.	400W power down/stepper reference	stepper failure	- - -
Lamp	575W lamp on	700W lamp boost	lamp off	- - -

Reset switch

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ControLite Washlight - HP TV

LED - functions	ledhptve.vsd	05.05.03
	G.Gandolfo	sheet 1/1

4.4 Stepper Card (X-Lite 10)

stepper motors:

1	**dimmer**
2	**yellow**
3	**magenta**
4	**cyan**
5	**CTO**
6	**focus**
7	**barn door rotation**
8	**barn doors 1/2**
9	**barn door 3**
10	**barn door 4**

LED:

not used (on)
RS-485 data
not used (on)
not used (on)
not used (on)

HX / T 1.x

Stepper Card (X-Lite 10)

LED:

not used (off)
watchdog
+ 5 V
+ 24 V

Jumper:
J1 J2 J3 J4

ControLite Washlight HP ../T 05.05.03 Blatt 1/1
x_hpt_e.vsd G. Gandolfo
X-Lite 10

Amptown Lichttechnik

Supply connection:

Pin	Colour	Signal
1	yellow	RS 485 + data
2	green	RS 485 - data
3…5	n.c.	
6	orange	signal stepper
7	brown	GND
8	violet	+ 5V
9,10	black	GND - motor
11,12	red	+ 24V - motor

Stepper connection:

Pin	Colour	Signal
1	black	stepper winding 1
2	brown	stepper winding 1
3	red	stepper winding 2
4	orange	stepper winding 2
5	yellow	GND
6	green	+ 5V - Vcc
7	blue	output: zero signal

Jumper:

No.	Function
1	auto correction off
2	res.
3	res.
4	res.

LED:

Function	Description
RS 485 data	flashes receiving new data
watchdog	flashes with software failure or after reset
+ 5 V	always on
+ 24 V	always on

4.5 Declaration of Conformity

Manufacturer: Amptown Lichttechnik GmbH
Wandsbeker Str. 26
D-22179 Hamburg

Germany

Product Name: ControLite

Type of Product: Washlight HX (Halogen) and Washlight HP (High Power)

We declare that the products listed above meet the electromagnetic compatibility requirements of the European Commission Directive and comply with the requirements of the Directive by meeting the following standards:

Safety: EN 60598-1
EN 60598-2-17
VGB 70

EMC: EN 55103-1
EN 55103-2
EN 50081-1
EN 50082-1

Hamburg, July 10th 1997

_____

Dipl.-Ing. Michael Knappe

4.6 OSRAM HMP - Warnings and Instructions for Use

HMP

Bedienungsanleitung

1. Vor dem Herausnehmen oder Einsetzen einer Lampe Geräte-Netzstecker ziehen.
2. HMP Lampen stehen während des Betriebs unter hohem Druck. Der Lampenkörper erreicht dabei eine sehr hohe Temperatur (bis zu 950°C). Durch innere oder äußere Einflüsse kann unter Umständen der Lampenkörper zerspringen. In einem solchen Fall können sehr heiße Lampenteile in die Umgebung der Lampen geschleudert werden, durch die Personen und/oder Sachen zu Schaden kommen können (Verbrennungen/Feuer).
3. Wegen der Blendungsgefahr durch die hohe Leuchtdichte von HMP Lampen muß durch das Gehäuse zudem ein direktes Betrachten des Lampenbogens unmöglich gemacht werden.
4. Um gesundheitliche Schäden zu vermeiden, dürfen darüber hinaus HMP Lampen nur mit UV absorbierenden Schutzscheiben betrieben werden.
5. Der Quarzglaskolben darf nicht mit bloßen Fingern berührt werden. Wenn dies dennoch geschehen ist, ist der Kolben vor der Benutzung mit einem Spirituslappen zu reinigen und einem sauberen, trockenen Tuch nachzupolieren.
6. Beim Einsetzen ist die Lampe grundsätzlich nur am Sockel festzuhalten, um ein Abbrechen im Übergang Kolben – Sockel zu vermeiden.
7. Das Einsetzen der Lampe und der Anschluß der Stromzuführungen erfordert große Sorgfalt. Die Kontaktflächen der mechanischen Halterung und der elektrischen Anschlüsse müssen für einen guten Wärme- und Stromübergang frei von Verunreinigungen, Korrosion und Schmorstellen sein. Der absolut feste Sitz der Klemmstücke und Kühlbacken ist auch nach jedem Transport der Leuchte zu überprüfen.
8. Durch die Lampenhalterung dürfen auf die Lampe keine mechanischen Spannungen übertragen werden – weder bei ihrem Einbau noch während des Betriebs (Ausdehnung durch Erwärmung!). Die Kontakte dürfen sich im Betrieb nicht verfärben. Anlauffarben zeigen, daß die Kühlung nicht ausreichend ist und die max. zulässige Sockelstifttemperatur von 230°C weit überschritten wurde.
9. Für die Gewährleistung gelten die Liefer- und Zahlungsbedingungen der OSRAM GmbH Berlin, München. Eine Gewähr für die Lampe kann nur bei Verwendung von Vorschalt- und Zündgeräten übernommen werden, die den von OSRAM vorgeschriebenen Leistungsdaten entsprechen.

Warnings and Instructions for Use

1. Disconnect mains plug of unit before inserting or removing the lamp.
2. During use HMP lamps reach a very high pressure. The lamp bulb thereby reaches a very high temperature (up to 950°C). Due to internal or external influences in certain cases the lamp bulb can crack. In such a case very hot lamp particles could be thrown through the lamp surroundings and damage people and/or objects (burns/fire). For this reason HMP lamps must be used only in housings/luminaires especially designed for them which prevent reliably hot lamp particles from leaving them.
3. Because of the danger of glare caused by the high luminance of HMP lamps, the housing must also prevent direct viewing of the lamp arc.
4. In order to avoid serious skin burns and eye injury from short wave ultraviolet radiation, HMP lamps must be used <u>ONLY</u> with UV absorbing protective covers.
5. The quartz bulb must not be touched with bare fingers. If this has happened accidentally, clean the bulb before use with a cloth moistened with alcohol and polish with a dry cloth.
6. When inserting or removing the lamp, hold it always only by its base, in order to avoid breakage between bulb and base.
7. Inserting the lamp and connection with the power supply requires great care. The contact surfaces of the mechanical holder and the electrical connections, for good thermal and electrical conduction, must be free of impurities, corrosion and spots of arcing. The absolutely firm fit of clamps and cooling flanges must also be checked after each transport of the luminaire.
8. The lampholder must not exercise mechanical tensions on the lamp, neither during insertion nor in use (thermal expansion!). Contacts must not discolour in use. Annealing colours show insufficient cooling and that the max. permissible base pin temperature of 230°C was by far exceeded.
9. Warranty is subject to the Conditions of Sale of OSRAM GmbH Berlin, München. A warranty for the lamp can only be given for use with ballasts and ignitors which fulfil the specifications required by OSRAM.

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