DMX REFERENCE

Carbon 450w

AURASTAGE

Manufacturer	AURASTAGE
GDTF file	AURASTAGE_Carbon_450w_169828.gdtf
GDTF revision	20261118 · 2026-11-18
Generated	2026-11-23

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1 About this manual

This document describes the Carbon 450w by AURASTAGE. It was compiled from the GDTF file AURASTAGE_Carbon_450w_169828.gdtf from the GDTF-Share library.

File revision: “20261118”.

The DMX modes, the channel functions and the technical data are given as the GDTF file states them. Installation, operation from the device's control panel, service and safety instructions are described in the manufacturer's original user manual, which takes precedence over this document.

This document was not issued or endorsed by AURASTAGE; product names and trademarks belong to their owners.

Safety notices are marked with signal words according to the severity of the hazard: DANGER – an imminent hazard that will result in death or serious injury; WARNING – a potential hazard that could result in death or serious injury; CAUTION – a potential hazard that could result in minor injury or property damage; NOTE – additional information for correct and safe use.

> **NOTE** This product is designed for stage and effect lighting. It is not suitable for household room illumination.

2 Quick reference

DMX modes

Mode	Channels	Units in one universe	First start addresses
27CH	27	18	1, 28, 55, 82, …

No light? Check these channels

- 27CH: CH 8 Shutter at 104–107, 208–212 or 252–255 “OPEN”; CH 9 Dimmer above 0


Read the manual before use


Do not stare into the light


Indoor use only

3 Safety instructions



Read the manual before use



Do not stare into the light



Indoor use only

⚠ WARNING

- This device is intended for professional use. Installation, connection, setup and maintenance must be carried out only by suitably qualified persons who have read this manual.
- Use the device only for its intended purpose and as described in this manual.
- Do not open the housing and do not modify or tamper with the device. Refer all repairs to an authorized service center.
- Do not use the device if its housing, power or data cable, or a connector is damaged, if the device has been dropped, or if liquid or a foreign object has entered it. In such a case, have it checked by a service center.
- Disconnect the device from the power supply before cleaning, maintenance or any work on the connections.
- After moving the device from a cold to a warm environment, let it reach room temperature before switching it on to prevent condensation inside.
- The device is not a toy; keep it out of the reach of children.

⚠ WARNING

- This device is designed for indoor use only. Protect it from rain, splashing water, moisture and dust, and do not place containers with liquids on it.
- Do not operate the device in high humidity, near water, or where condensation can form on it.

⚠ CAUTION

- This device emits intense light. Do not look directly into the light source or the beam at close range; doing so may damage your eyes.
- Do not aim the beam at the eyes of people or animals at close range, and do not view the light source through optical instruments (binoculars, camera lenses).
- Do not aim the beam at flammable or heat-sensitive materials at close range.

⚠ CAUTION

- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them longer than necessary.

⚠ WARNING

- The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
- Keep yourself and any objects out of the range of movement. While the device is switched on, do not touch the moving parts, move them by hand, or obstruct their movement; this can cause injury (pinching) and damage the drive.
- Do not carry the device by its moving parts. If the device has a transport lock, engage it before transport and release it before switching on.

4 Product description

Range of movement



5 Installation

⚠ WARNING

- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Use suitable mounting hardware (for example truss clamps) and tighten all screw connections properly.
- Always secure the suspended device against falling with a safety cable of adequate load capacity, routed through a fixed point of the device and around the supporting structure.
- During installation and removal, keep people out of the area below the work position.
- Regularly inspect the fixings and the safety cable for damage, corrosion and loosening.

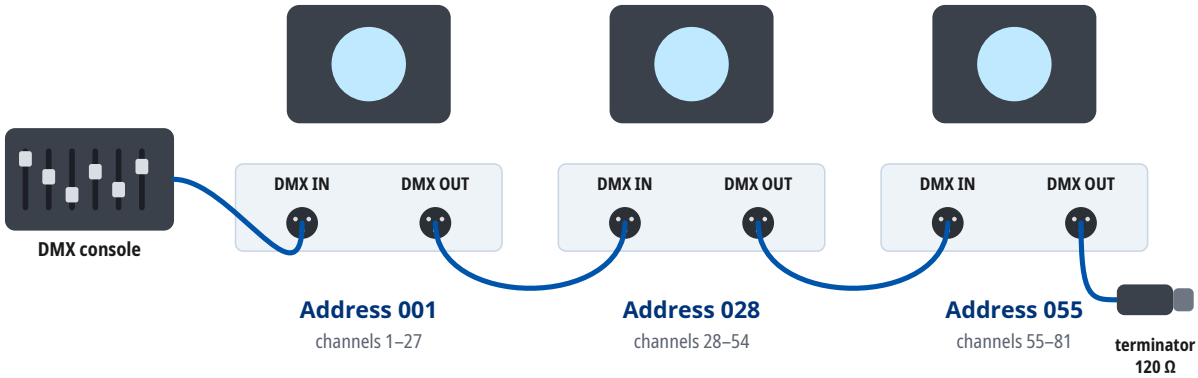
6 Connections

- Use shielded cable designed for DMX512 with an impedance of 110 Ω. Ordinary microphone cable is not suitable for DMX, especially over longer distances.
- Connect the devices in a daisy chain: connect the DMX OUT of one device to the DMX IN of the next.

Do not split the line with Y-cables or wire it in a star; the line may be split only with a DMX splitter.

- Connect the shield to pin 1 only. Do not connect the shield (ground) to the metal shell of the connector; this can cause short circuits or erratic behavior.
- XLR pin assignment: pin 1 – shield (ground), pin 2 – Data- (Data Complement), pin 3 – Data+ (Data True). On 5-pin connectors, pins 4 and 5 are not connected; a 5-pin connector can be connected to a 3-pin one with a cable adapter.
- Terminate the end of the line (for impedance matching): plug an XLR connector with a 120 Ω, ¼ W resistor between pins 2 and 3 into the DMX OUT of the last device. This reduces the risk of erratic behavior.
- Connect no more than 32 devices to one DMX line. For more devices or longer runs, use a DMX splitter or booster.

DMX line



Mode 27CH: every unit occupies 27 channels from its address. At most 32 units on one line; for more units or longer runs use a DMX splitter. A 120 Ω terminator closes the last DMX OUT.

7 Operation

Setting the DMX address

- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “27CH”: 27.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “27CH”, you can use, for example, the start addresses 1, 28, 55, 82.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

8 Functions at a glance

Functions in each DMX mode

	27CH 27 channels
Pan / Tilt	18, 22
Dimmer	9
Shutter / strobe	8
Color mixing	1, 3, 5
Color temperature	15
Color wheel	7
Gobo wheel	11
Prism	12–14
Frost	16
Focus	17

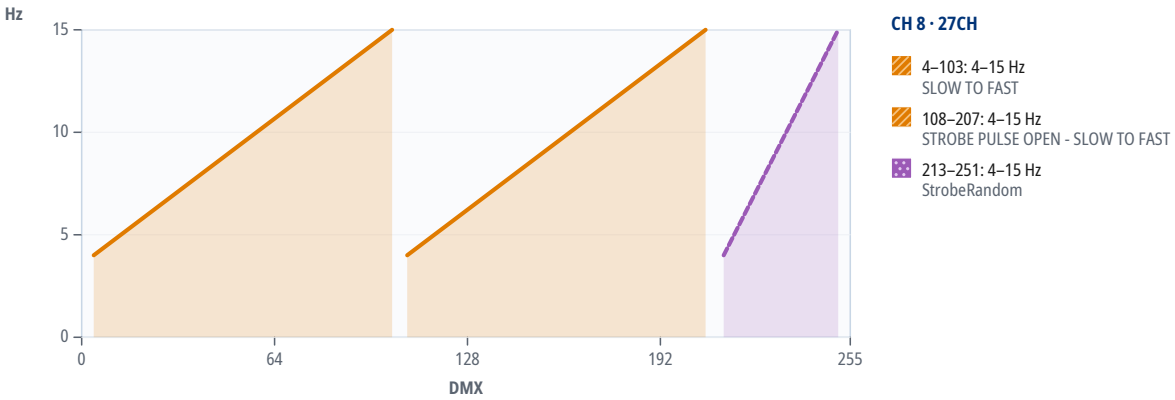
Color wheel



Gobo wheel

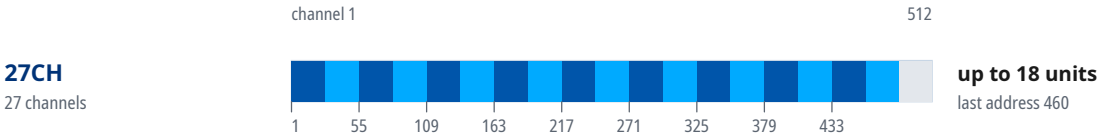
1	Wheel Slot 1	DMX 0–3	7	Gobo 1: Wheel Slot 7	DMX 25–29	13	Gobo 1: Wheel Slot 13	DMX 51–54
2	Gobo 1: Wheel Slot 2	DMX 4–7	8	Gobo 1: Wheel Slot 8	DMX 30–33	14	Gobo 1: Wheel Slot 14	DMX 55–58
3	Gobo 1: Wheel Slot 3	DMX 8–12	9	Gobo 1: Wheel Slot 9	DMX 34–37	15	Gobo 1: Wheel Slot 15	DMX 59–63
4	Gobo 1: Wheel Slot 4	DMX 13–16	10	Gobo 1: Wheel Slot 10	DMX 38–41	16	Gobo 1: Wheel Slot 16	DMX 64–67
5	Gobo 1: Wheel Slot 5	DMX 17–20	11	Gobo 1: Wheel Slot 11	DMX 42–46	17	Wheel Slot 17	DMX 68–72
6	Gobo 1: Wheel Slot 6	DMX 21–24	12	Gobo 1: Wheel Slot 12	DMX 47–50			

Strobe rate



9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “27CH”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	136	11	271	16	406
2	28	7	163	12	298	17	433
3	55	8	190	13	325	18	460
4	82	9	217	14	352	19	U2 · 1
5	109	10	244	15	379	20	U2 · 28

Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode 27CH

16-bit parameters use two channels, coarse and fine: value = 256 × coarse value + fine value.

If the device receives DMX in this mode but gives no light, check these channels: CH 8 Shutter at 104–107, 208–212 or 252–255 “OPEN”; CH 9 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 9 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	C	0–255	Min ... Max
		255	Max
2	C Fine	0–255	Fine adjustment of CH 1
3	M	0–255	Min ... Max
		255	Max
4	M Fine	0–255	Fine adjustment of CH 3
5	Y	0–255	Min ... Max
		255	Max
6	Y Fine	0–255	Fine adjustment of CH 5
7	Colors	0–4	1
		5–8	1-2
		9–12	2
		13–17	2-3

CH	Function	DMX	Description
7	Colors (continued)	18–21	3
		22–25	3-4
		26–29	4
		30–34	4-5
		35–38	5
		39–42	5-6
		43–46	6
		47–51	6-7
		52–55	7
		56–59	7-8
		60–63	8
		64–68	8-9
		69–72	9
		73–76	9-10
		77–81	10
		82–85	10-11
		86–89	11
		90–93	11-12
		94–98	12
		99–102	12-13
		103–106	13
		107–110	13-14
		111–115	14
		116–119	14-15
		120–123	15
		124–127	15-1
		128	Color 1 Wheel Spin: SLOW
		129–254	Color 1 Wheel Spin: SLOW ... FAST
		255	Color 1 Wheel Spin: FAST
8	Shutter	0–3	CLOSED
		4	SLOW TO FAST: SLOW
		5–102	SLOW TO FAST: SLOW ... FAST
		103	SLOW TO FAST: FAST
		104–107	OPEN
		108	STROBE PULSE OPEN - SLOW TO FAST: SLOW
		109–206	STROBE PULSE OPEN - SLOW TO FAST: SLOW ... FAST
		207	STROBE PULSE OPEN - SLOW TO FAST: FAST
		208–212	OPEN
		213	Strobe Random: SLOW
		214–250	Strobe Random: SLOW ... FAST
		251	Strobe Random: FAST
		252–255	OPEN

CH	Function	DMX	Description
9	Dimmer	0–255	
10	Dimmer Fine	0–255	Fine adjustment of CH 9
11	Gobo	0–3	Wheel Slot 1
		4–7	Gobo 1: Wheel Slot 2
		8–12	Gobo 1: Wheel Slot 3
		13–16	Gobo 1: Wheel Slot 4
		17–20	Gobo 1: Wheel Slot 5
		21–24	Gobo 1: Wheel Slot 6
		25–29	Gobo 1: Wheel Slot 7
		30–33	Gobo 1: Wheel Slot 8
		34–37	Gobo 1: Wheel Slot 9
		38–41	Gobo 1: Wheel Slot 10
		42–46	Gobo 1: Wheel Slot 11
		47–50	Gobo 1: Wheel Slot 12
		51–54	Gobo 1: Wheel Slot 13
		55–58	Gobo 1: Wheel Slot 14
		59–63	Gobo 1: Wheel Slot 15
		64–67	Gobo 1: Wheel Slot 16
		68–71	Wheel Slot 17
		72–113	SPIN: >>>FAST TO SLOW (360–20.7 °/s)
		114–117	SPIN: STOP
		118–159	SPIN: <<<SLOW TO FAST (20.7–360 °/s)
		160–166	SHAKE: Wheel Slot 2 (0.059–0.118 Hz)
		167–172	SHAKE: Wheel Slot 3 (0.118–0.176 Hz)
		173–179	SHAKE: Wheel Slot 4 (0.176–0.235 Hz)
		180–185	SHAKE: Wheel Slot 5 (0.235–0.294 Hz)
		186–191	SHAKE: Wheel Slot 6 (0.294–0.353 Hz)
		192–198	SHAKE: Wheel Slot 7 (0.353–0.412 Hz)
		199–204	SHAKE: Wheel Slot 8 (0.412–0.471 Hz)
		205–211	SHAKE: Wheel Slot 9 (0.471–0.529 Hz)
		212–217	SHAKE: Wheel Slot 10 (0.529–0.588 Hz)
		218–223	SHAKE: Wheel Slot 11 (0.588–0.647 Hz)
		224–230	SHAKE: Wheel Slot 12 (0.647–0.706 Hz)
		231–236	SHAKE: Wheel Slot 13 (0.706–0.765 Hz)
		237–243	SHAKE: Wheel Slot 14 (0.765–0.824 Hz)
		244–249	SHAKE: Wheel Slot 15 (0.824–0.882 Hz)
		250–255	SHAKE: Wheel Slot 16 (0.882–0.941 Hz)
12	Prism	0–127	NO
		128–255	IN
13	Prism Rotation	0	0
		1–63	0 ... 180
		64	180

CH	Function	DMX	Description
13	Prism Rotation (continued)	65–126	180 ... 360
		127	360
		128–190	ROTATE: <<<FAST TO SLOW (360–8.5 °/s)
		191–192	ROTATE: STOP
		193–255	ROTATE: >>>SLOW TO FAST (8.5–360 °/s)
14	Prism 2	0–127	2 NO
		128–255	2 IN
15	CTO		LIGHT TO DEEP
		0–255	LIGHT TO DEEP
16	Frost	0	NO
		1–254	NO ... IN
		255	IN
17	Focus	0–255	
18	Pan	0–255	540°
19	Pan Fine	0–255	Fine adjustment of CH 18
20	Undefined	0–255	
21	Undefined	0–255	
22	Tilt	0–255	240°
23	Tilt Fine	0–255	Fine adjustment of CH 22
24	Speed Pan/Tilt	0	MAX
		1	MAX-MIN/TIME 1-25: MAX-/25
		2–254	MAX-/25 ... MIN/ I
		255	MIN/ I
25	Function	0–50	NO
		51–55	PAN INVERT CLOSED
		56–60	PAN INVERT OPEN
		61–65	TILIT INVERT CLOSED
		66–70	TILIT INVERT OPEN
		71–255	NO
26	RESET	0–201	NO
		202–203	SHUTTER
		204–205	CMY
		206–207	NO
		208–209	COLOR WHEEL
		210–213	NO
		214–215	GOBO WHEEL
		216–217	NO
		218–219	PRISM
		220–221	NO
		222–223	FROST
		224–227	NO
		228–229	FOCUS

CH	Function	DMX	Description
26	RESET (continued)	230–231	NO
		232–233	P
		234–235	T
		236–237	P-T
		238–249	NO
		250–251	EFFECT
		252–255	ALL
27	Lamp Control	0–25	NO
		26–100	CLOSED
		101–255	OPEN

10 Technical specifications

Parameter	Value
Pan	540°
Tilt	240°
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Strobe frequency	4–15 Hz
Color wheel rotation	up to 240 °/s (40 rpm)
Gobo wheel rotation	up to 360 °/s (60 rpm)
Prism rotation	up to 360 °/s (60 rpm)

11 Maintenance and cleaning

- Before cleaning and maintenance, switch the device off, disconnect it from the power supply and let it cool down.
- Clean the housing with a soft, dry or slightly damp cloth. Do not use solvents, abrasive cleaners or pressure washers, and make sure no liquid gets into the device.
- Clean optical parts (lenses, front glass), if the device has any, with a soft lint-free cloth and a cleaner intended for optics or glass.
- Regularly inspect the housing, cables, connectors and fixings. Have damaged parts replaced by a service center.
- How often to clean depends on the environment; dust, smoke and fog make the device dirty much faster.

12 Troubleshooting

Problem	Remedy
The device does not switch on	Check the supply voltage, the cables and the fuse, if the device has one.
The device does not respond to DMX	Check the start address, the selected DMX mode and whether it matches the profile in the controller, the cable connection to DMX IN, and the controller output (universe).
The device behaves erratically or flickers	Check the terminator at the end of the line, the condition and wiring of the cables (shield on pin 1 only), the number of devices on the line (32 at most), and that the line is not split without a splitter.
Only some devices on the line respond	Check the cable and connectors between the last working and the first non-working device, and make sure all devices on the line are switched on.
Devices respond to the wrong channels or affect each other	Check that the addresses do not overlap and that the DMX mode on the devices matches the patch in the controller.
The device or the connected load does not light up although it receives DMX	Check the values of the dimmer, shutter and strobe channels against the DMX channel table. For the DMX modes for which the sources state it, the chapter DMX channels gives under the mode's heading which channels must be open.
Movement is reversed	Check whether Pan/Tilt inversion is enabled in the device menu or in the controller.
Moving parts do not reach the correct position after power-on or transport	Switch the device off and on again to reset the position, and make sure the transport lock, if any, is released. If this does not help, contact a service center.
Movement is jerky	Check the value of the Pan/Tilt speed channel, if the device has one, and the stability of the DMX signal.

13 Disposal

The crossed-out wheeled bin symbol on the product, in the manual or on the packaging means that the product must not be disposed of with unsorted household waste at the end of its life.

Take the end-of-life equipment to a collection point, for example a municipal collection site or a retailer. Proper disposal enables materials to be recycled and helps prevent possible negative effects on the environment and human health.

Follow the regulations applicable in your country; in the Czech Republic, take-back is governed by Act No. 542/2020 Coll., on End-of-Life Products.

Recycle the packaging materials according to their type.