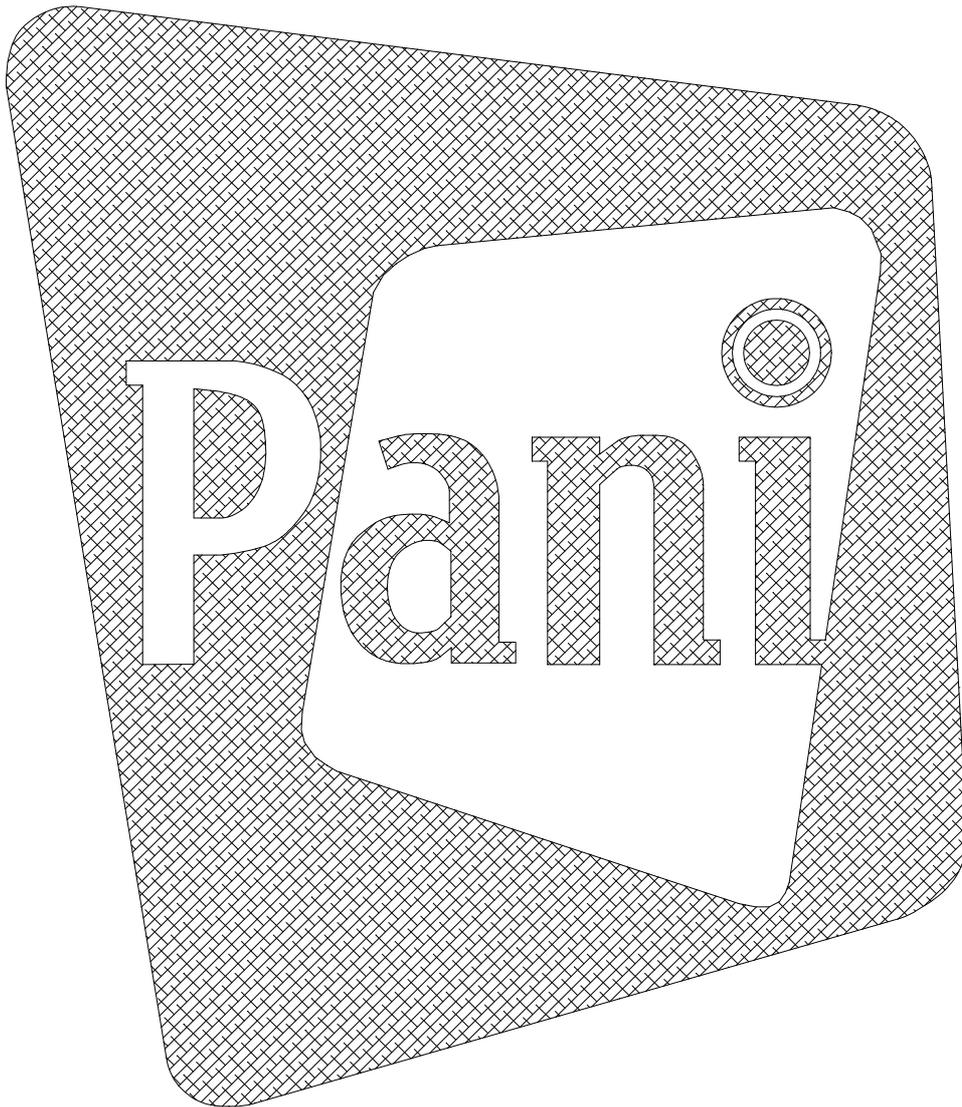


instruction manual

gray scale shutter



G 405 PCS - II - DMX

Order Code:

22703

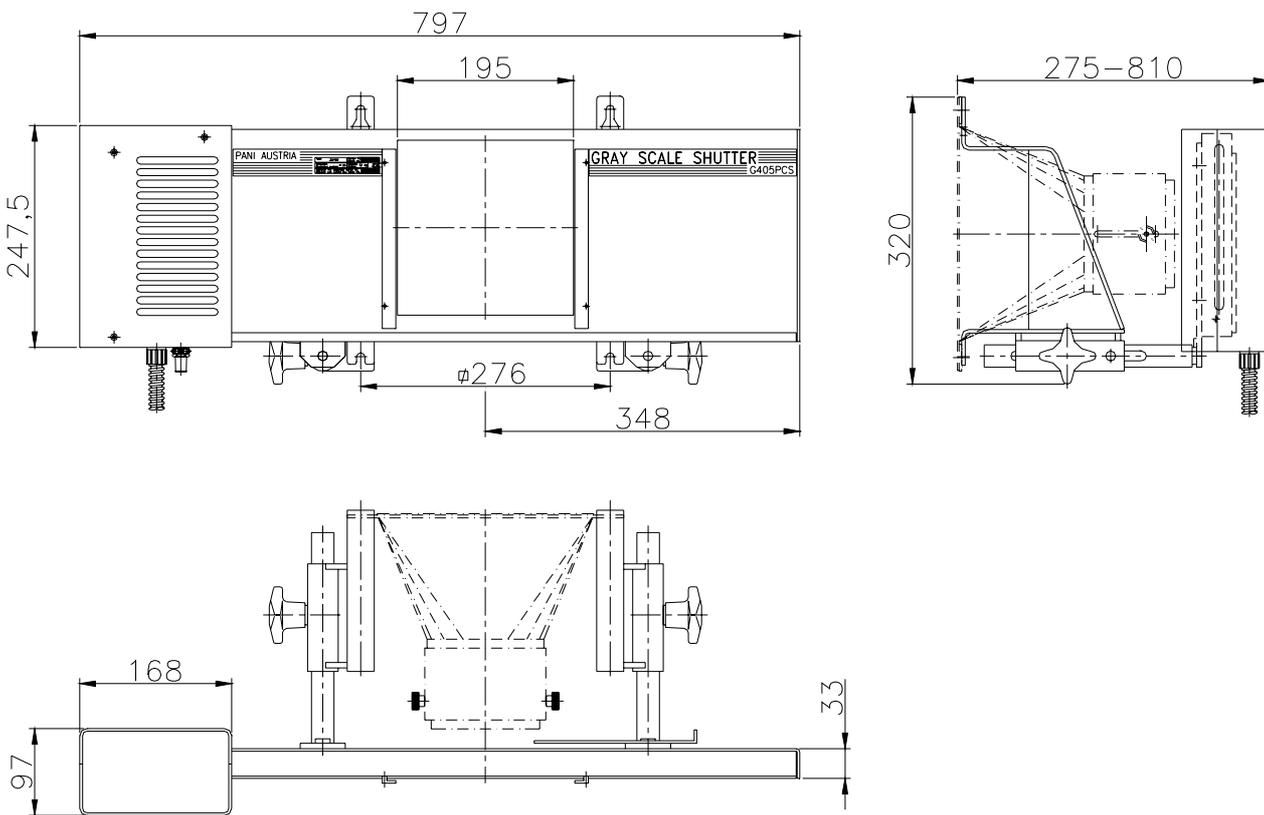
Status November 2002

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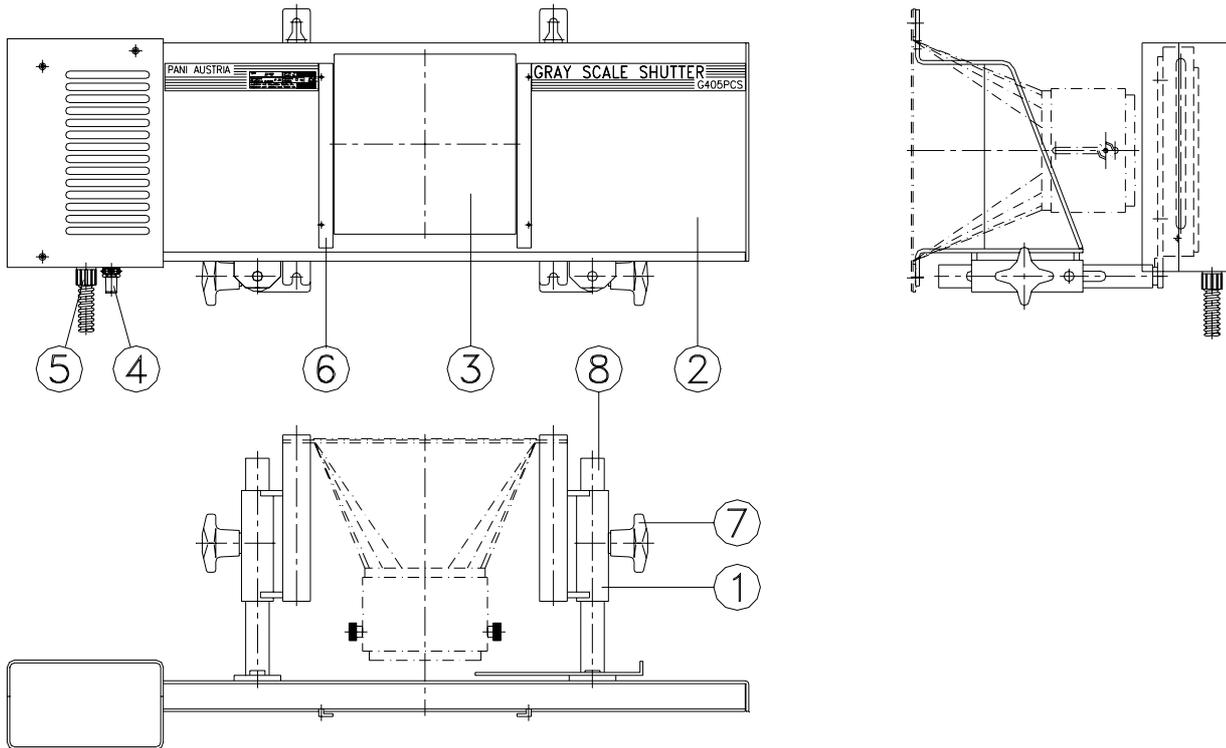
1) Dimension Drawing

1.1) Gray Scale Shutter



2) Position Drawing

2.1) Gray Scale Shutter



LEGEND

- (1) Mounting Brackets
- (2) Shutter Cover
- (3) Gray Scale Wedges
- (4) Ventilator Power Cable
- (5) Sleeve with Control Conductors
- (6) Insert for Protective Cover or Filter Frames
- (7) Grip Clamp for Shutter Extension Adjustment
- (8) Guide Rails

3) Description and Operating Principle

The Gray Scale Shutter has been developed out of the need to control the intensity of the HMI light source in the same manner as dimming a halogen lamp. The Positioning of two gray scale wedges (205 x 220 mm) is accomplished by means of a Micro processor controlled stepper motor.

Adjustment of the non linear gray scale wedge travel to the eye-linearity is achieved with tabulated positioning of the stepper motor. With this positioning table, the control data of the lighting console is adapted to provide a specifically corrected gray scale positioning, which produces visually linear light intensity.

Jerks of the gray scale wedges and associated flickering of the projected image is eliminated by the dynamic microstepping software driving a precision stepper motor.

The vacuum deposition process for the neutral density coating guarantees uniform color temperature, wide dimming range and even image sharpness.

4) Mechanical Assembly

The system consists of a dimming shutter and an associated control box, both in half-shell enclosures. Mounted in the shutter is the stepper motor. This allows the two gray scale wedges to move counter to each another driven by a timing belt. In addition, the shutter housing includes the positioning and reset circuitry as well as a directional fan for cooling the glass.

A protective shield is provided to prevent damage during transport. Mounting is accomplished by means of a pair of guide tubes and mounting brackets on the projector. The control box may be clamped to the projector at the provided position.

5) Electrical Assembly

The connection between the control box and the shutter is provided by a 14 pole cable supplied with a "Schaltbau" – connector. The shutter ventilator is supplied with power from the control box. The control unit itself receives power from the projector via a 4 pin Amphenol connector.

5.1) The Shutter

The gray scale glass is guided by a plastic track and is linked to the motor with an expansion-proof timing belt. The gray scale glass wedges travel counter to each another.

The motor is a precision stepper motor, driven by a dynamic microstepping software, which enables the best stepping resolution for each driving velocity. So the glass movement is free of jerks and precise positioning is possible.

For defining the initialisation position of the gray scale glass wedges, a sensor card is installed to the guide rails and may be adjusted. When activated the shutter moves to the initialisation position immediately following the PowerOn reset procedure.

On the shutter itself there are no control elements. It is connected to the control box with two 1,5mm long cables (a 14 pole cable for the signals and a power cable for the fan).

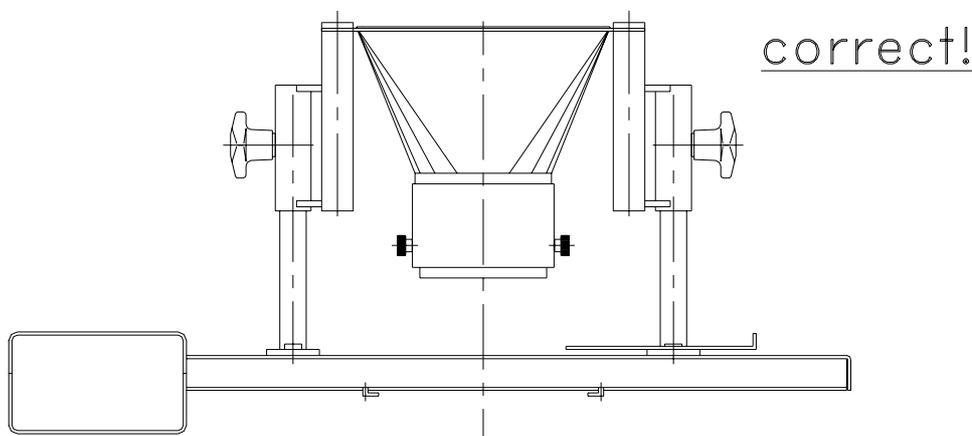
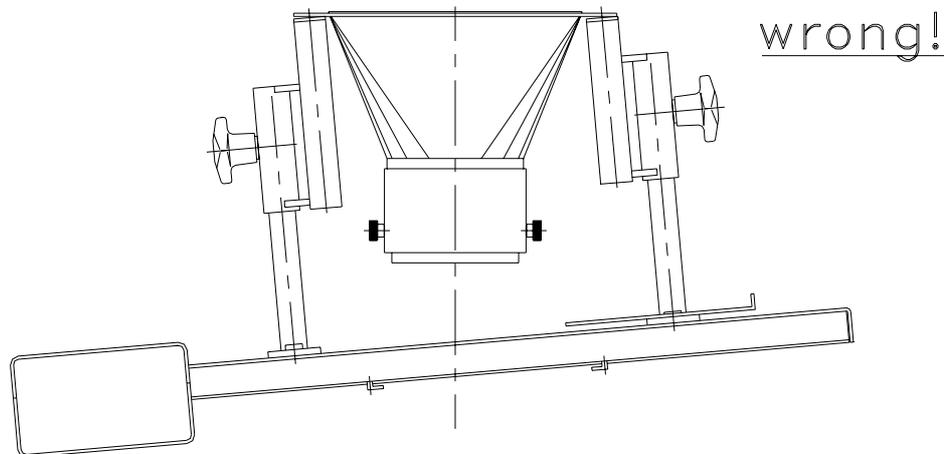
6) Operating Instructions

6.1) Mounting the Unit on the Projector

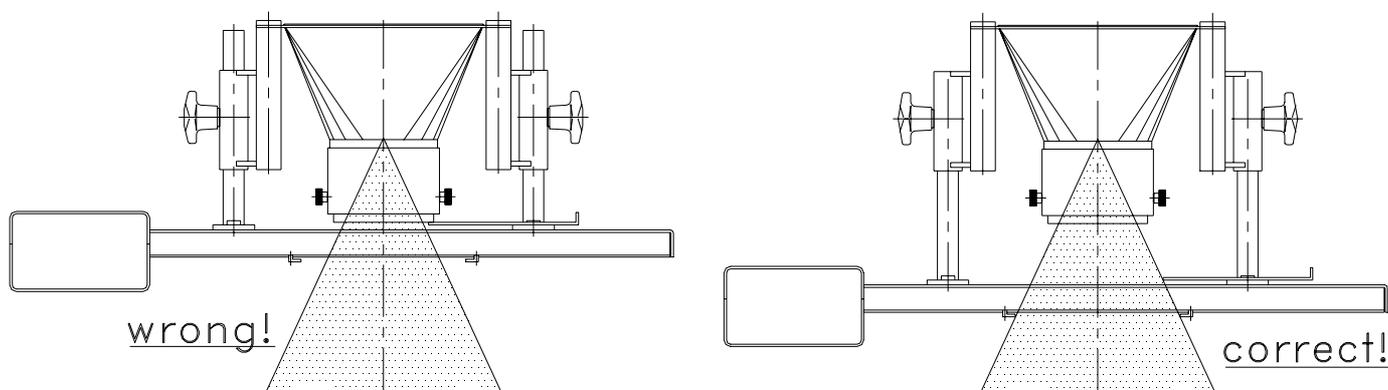
1. Loosen the wing nuts on the front of the projector as much as possible and mount the objective lens.
2. Position the upper wing nuts vertically.
3. Mount the dimming shutter in the same manner as the objective lens corresponding to the guide rails in the support bolts.
4. Tighten the four wing nuts and secure both the shutter and the objective lens to the projector.
5. Secure the control box to the projector by using the provided mounting clamps.

6.1.1) Assembly Instruction

Mount the dimming shutter as close to the front of the lens as possible and take care, that the shutter is placed in the center of the optical axis (shutter parallel to slide level, extension brackets parallel to direction of projection). Otherwise the "Black out " won't be symmetrically on the whole projection surface, but extended from one side to the other (curtain effect):



Adjust the distance between the projection lens and the shutter in that way, that the light field of the beam on the gray scale glass is as big as possible to reduce the temperature stress of the glass relatively.



When using several projectors to create a continuous image, we recommend to mount the dimming shutter vertically.

6.2) Changing the Extension Rails

1. Remove the two front bolts M10 (SW19) and remove the shutter from the rails (8)
2. Remove the two fluted bolts (7) and draw the rails (8) out of the mounting brackets (1).
3. Take the brass glide nuts out of the guide rails and place them into the new rails.
4. Insert the new guide rails into the shutter support and replace the two fluted bolts.
5. With the M10 bolts, mount the shutter on the new guide rails (8).

6.3) Electrical Hook-Up

Located on each projector there are four 4-pole Amphenol connectors to which the control box may be connected. When the ON ("EIN") push-button on the projector or on the ballast is pressed, the control box is supplied with power and the reset is engaged.

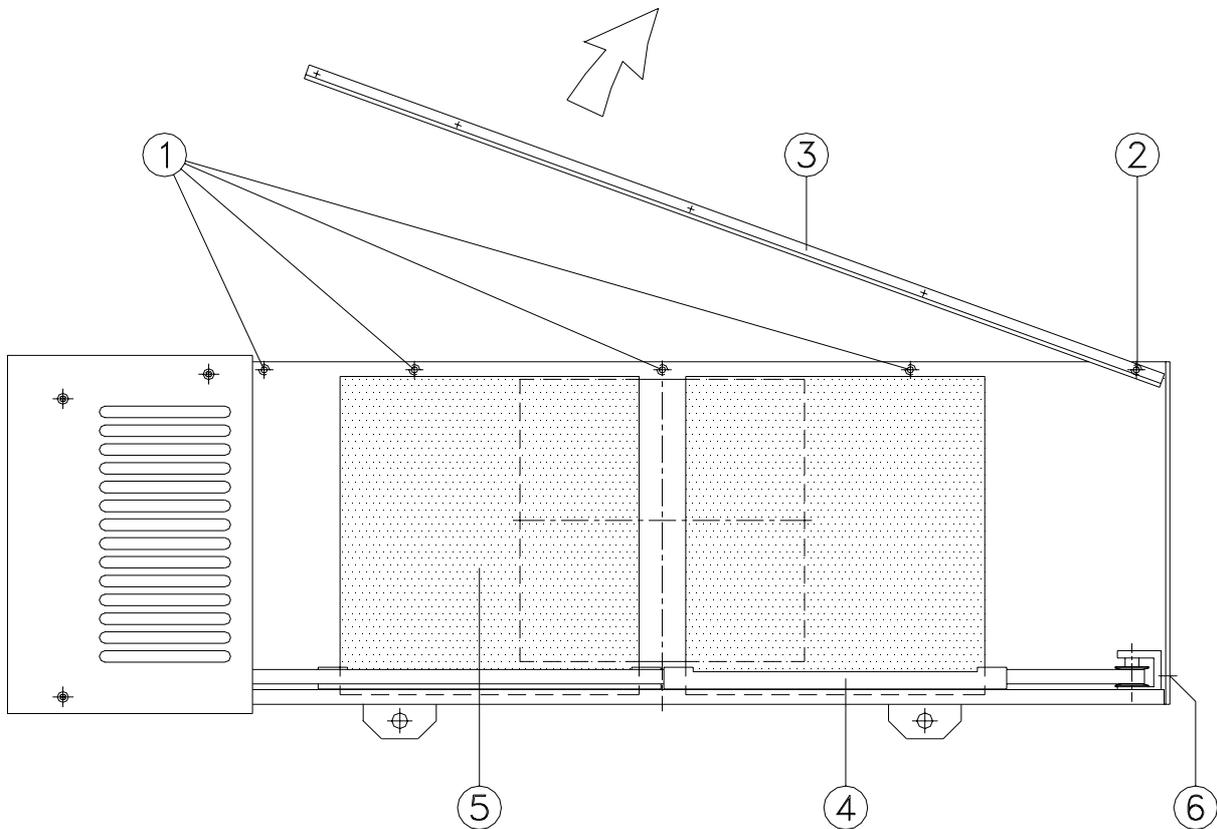
POSITION NUMBERS SEE PAGE 3

6.4) Replacing the Gray Scale Glass

1. Remove the shutter cover. This is accomplished by the removal of two flat head M4x6 screws located on the upper side.
2. Remove the flat head mounting screws (1) M4x6 from the upper guide rails.
3. Lightly loosen the mounting screw (2) and swing the guide rail away in the direction of the projection.
4. Change the glass plates (5). These are inserted in the molded plastic piece (4).

Attention: The treated side of the glass must be facing the projector!

5. Swing the upper guide rail carefully over the glass and remount rail and shutter



cover.

LEGEND

- (1) Mounting Screws
- (2) Mounting Screw
- (3) Guide Rail
- (4) Molded Plastic Piece
- (5) Gray Scale Glass
- (6) Timing Belt Tensioner

7) Adjustment Instructions

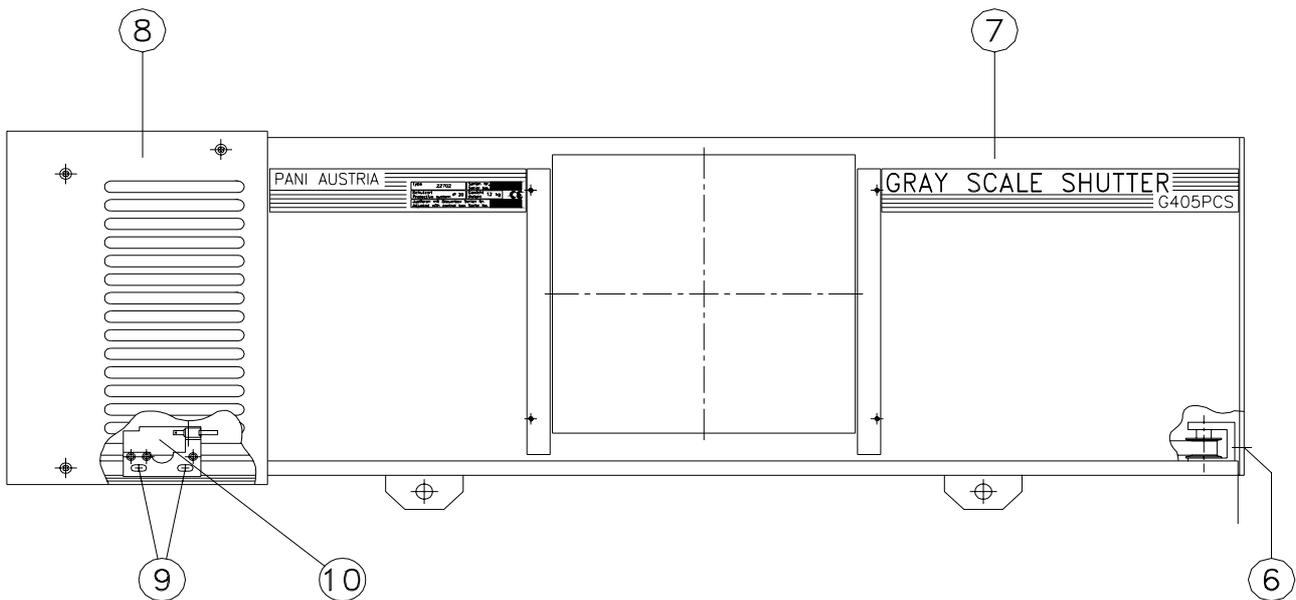
7.1) Shutter

The adjustment of the shutter is purely mechanical and factory set. It should *not* be necessary to make modifications to this basic set-up.

1. Remove the shutter cover (7) and the housing cover (8).
2. BELT TENSION: With the screw (6) located at the side of the shutter, tension of the timing belt may be adjusted.

NOTE: The timing belt is not expandable and will not stretch.

3. HOME ADJUST: The sensor card (10) is mounted on the guide rails with two screws (9). Sliding the card to the left or right will affect the zero point position of the gray scale glass.
The optimum position is factory set and is nearby the center of travel.



LEGEND

- (6) Timing Belt Tensioner
- (7) Shutter Cover
- (8) Motor Housing Cover
- (9) Sensor Card Adjustment Screw
- (10) Sensor Card

8) General Technical Data

Weight Unpacked:

Dimming Shutter: 11 kg
Control Box: 7 kg

Weight Packaged:

Dimming Shutter and Control Box: 23 kg
Carton Dimensions: 88 x 38 x 34 cm
0,12 m³

Power Supply: 100-240VAC/50-60Hz
Fuse: 1AT
Protection Class: IP 20
Operating Temperature: min. 5°C, max. 30°C

9) Components as Delivered

1. Gray Scale Shutter G405 PCS - II – DMX
for gray scale glass wedges 205x 220 mm
2. Transport Cover
3. Outrigger hangers for guide rails G 405/ 27, 235 mm long
(for use with objective lenses f = 11 - 27 cm)
4. Control Box including clamp mount.
5. Operation Manual

9.1) Accessories

Interchangeable extension rails for Objective Lenses	Order Code:
f= 33, 40, 80, 125 cm	G 405/ 40
f= 50 cm	G 405/ 50
f= 60 cm	G 405/ 60
Ventilator Fan for Wide Angle Objective Lenses	G 409/ PCS

10) Wiring Diagram

Sorry, currently not available by this time, please contact our support staff:

Tel + 43 1 521 08 – 0, **Fax** + 43 1 526 42 87, **mail:** info@pani.com

11.) Spare Parts List

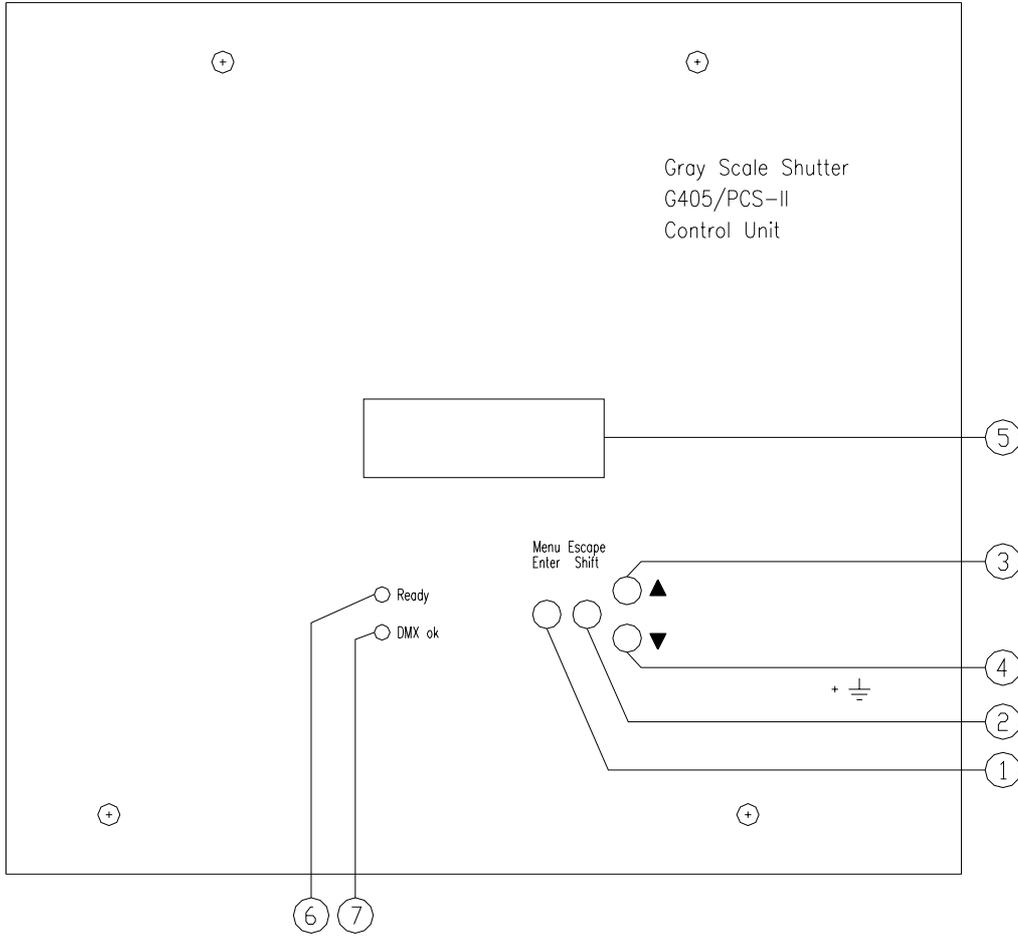
Gray Scale Shutter

Order Code: 68 - 24

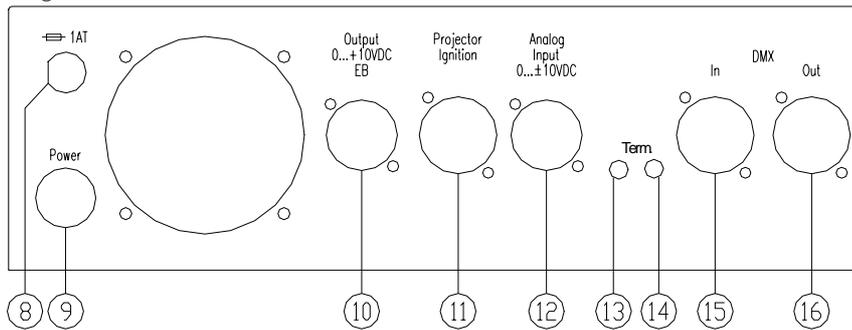
Description	Order Code:	Qty./Unit
Gray Scale Glass Filters (Wedges) 22x20,5	11-0128	2
Plastic Gray Scale Guide	90-0070	1 Garn.
Transport Cover	11-0129	1
Timing Belt XL 037	21-0045	je 1x
Splint Ø3,2x16 galvanized	31-0054	1
Timing Belt Tensioner	11-0178	1
Precision Stepper Motor	22-0051	1
Directional Blower	31-0053	1
Selastic – Vibration Mounts	21-0118	4
Sensor Card	22-0170	1
Clamp	31-0052	1
Connector (Amphenol)	22-0002	1
Housing Grid	11-0127	1
Fluted Knob Screw M10x20	21-0116	2
Hollow Milled Screw M4x15	21-0068	1
Hollow Milled Nut M4	21-0041	1
End Spring Bracket	90-0068	1
Series Resistor for Fan in Alu-Housing	23-0027	1

12.) Quick Reference of Control Box PCS-II-DMX

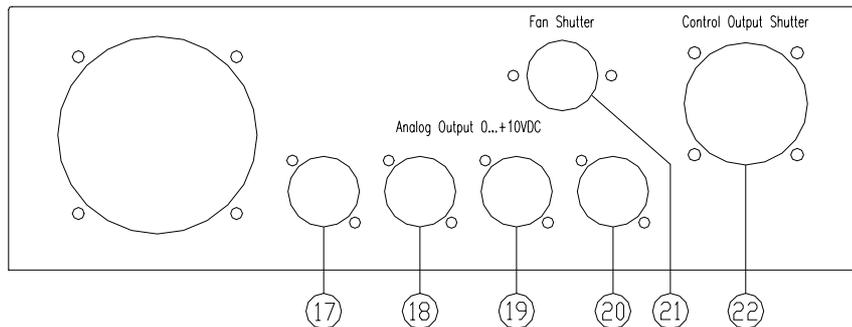
front view



right view



left view



Legend to previous page:

- (1).....Button „Menu Enter“ (red):
Functions: Menu-Entering to Main- and Submenus
Saving of Datas and Settings
- (2).....Button „Escape Shift“ (red):
Functions: leaving the menu; various functions in combination with other
buttons
- (3) (4).....Green Buttons:
Functions: Scrolling through the main-menu ;
Setting various values or functions
- (5).....4-line display, background lightened
- (6).....LED-„Ready“ (grün)
- (7).....LED-„DMX-ok“ (rot)
- (8).....Fuse 1AT
- (9).....Main Supply 100-240VAC/50-60Hz
- (10).....Control output to electronic ballast; 3-pol. XLR-Socket
- (11).....Output for remote controlled ignition; 4-pol. XLR- Socket
- (12).....Analog – control input 0.....+/-10VDC; 3-pol. XLR-Plug
- (13).....LED (rot) DMX-terminating-On
- (14).....Button (sunk) DMX-terminating – On-Off
- (15).....DMX-512 – Control Input; 5-pol. XLR-Plug
- (16).....DMX-512 – Control Output; 5-pol. XLR-Socket
- (17).....Analog-Control Output 0.....+10VDC; 3-pol. XLR-Socket
- (18)..... --- / ---
- (19)..... --- / ---
- (20)..... --- / ---
- (21).....230VAC for Shutter Blower; 4-pol. Amphenol-Socket
- (22).....Plug for Shutter Control

Contents of Main-menu (for navigation use keys 1-4) Comments

- *Operation mode*
 - Manual control* operating the unit using the UP DOWN keys 3 and 4
 - Remote control* r.c. analog 0.....+/-10VDC or DMX-512
- *Diagnostics* for starting an auto-testing process and displaying the errors afterwards
- *Error Codes* all errors causing a restart-process (i.e. during automated driving) are displayed here to facilitate service actions in case of faults
- *Reload defaults*
 - Confirm.....* the following presets will be activated:
Operation mode – Remote control
Acoustic beep – Enabled
Characteristics – Curve A
Shutter type – G405/PCS-II
Shutter Dynamic – Direct
ADC scaling – Range 10V
DMX address – Base 1
- *Acoustic beep*
 - Enabled* indicates the contact by pressing the button
 - Disabled*
- *Manual Fading*
 - Fading .. [s]* the values 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 50 or 60 are selectable
- *Characteristics*
 - Curve A* the dimming process with a linear light output curve
 - Curve B* the dimming process adapted to an empirically detected eye sensitivity curve
 - PCS I compatible* adapted to the curve of PCS I
 - Linear* position of gray scale glass is linearly associated to the value of the control signal
- *Dimmer control*
 - Not available* reserved for later software updates
- *Shutter Dynamic*
 - Direct* shutter operation is immediately released
 - Long Fade* shutter reaction is filtered to achieve very smooth dimming for long fading times
- *Shutter type*
 - G405/PCS-II* choose the right type, PCS-II (default)
 - G405/PCS* for using the new box with an old shutter
- *ADC scaling*
 - Range 6.25V; 7.50V;
8.75V; 10.00V; 11.25V* to customize the system to user local analog – control voltage levels

- *DMX address*

Base 1 – 0x1
.
.
.
Base 505 – 0x1F9

basic address may be selected between 1 and 505. The system automatically assigns:
basic address +1remote ignition
basic address +2 analog control output 1
basic address +3 analog control output 2
basic address +4 analog control output 3
basic address +5 analog control output 4
basic address +6 Electronic Ballast

Special Functions

By simultaneously pressing the ENTER and ESC buttons in status *Operation mode / Manual control* some special functions are available.

Note: start by pressing the first button and then press the second

Following functions are provided:

- (2) + (1) : reset
- (2) + (3) : fast open
- (2) + (4) : fast close
- (3) + (4) : fast open and close