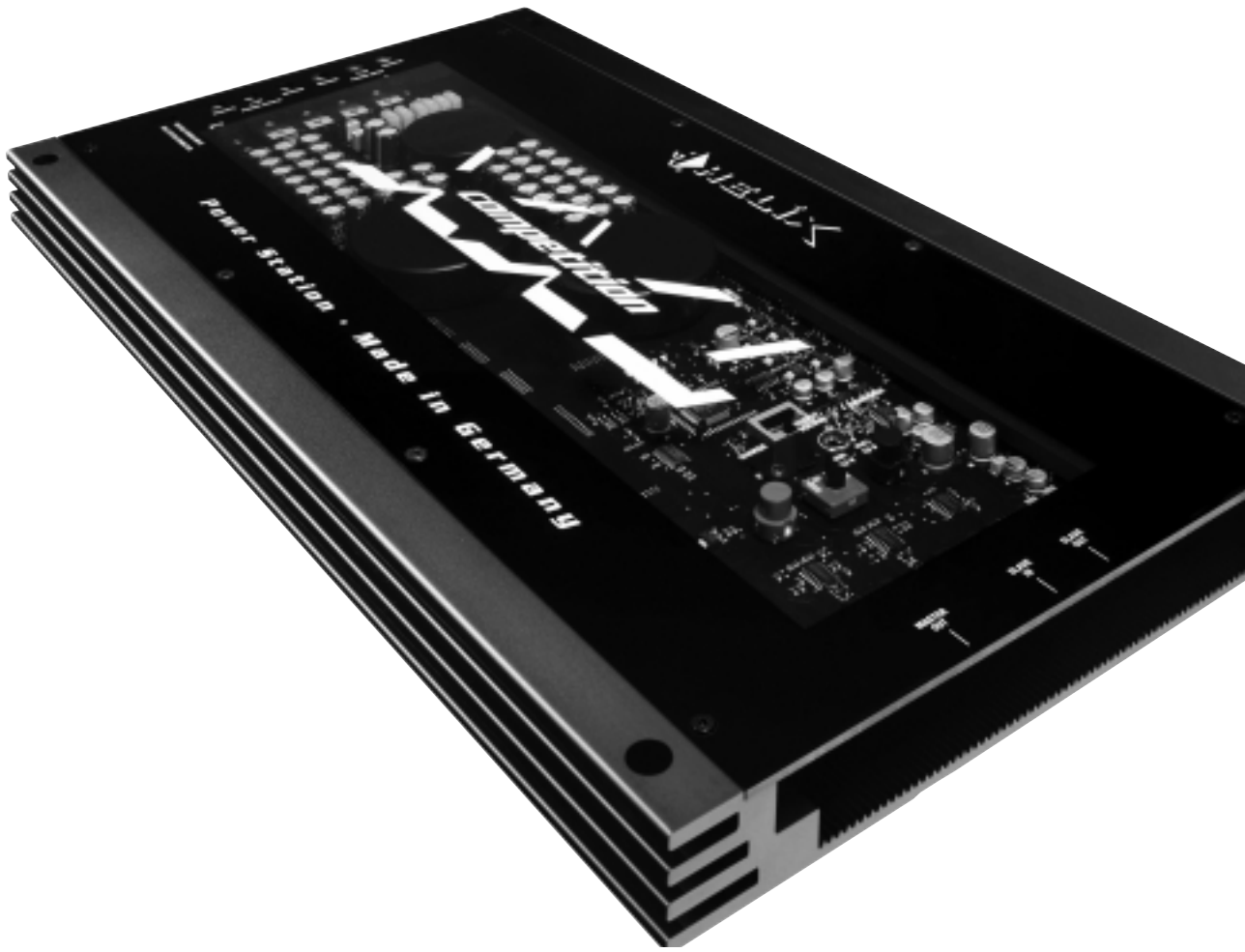
BEDIENUNGSANLEITUNG
INSTRUCTION MANUAL

HELIX®

competition

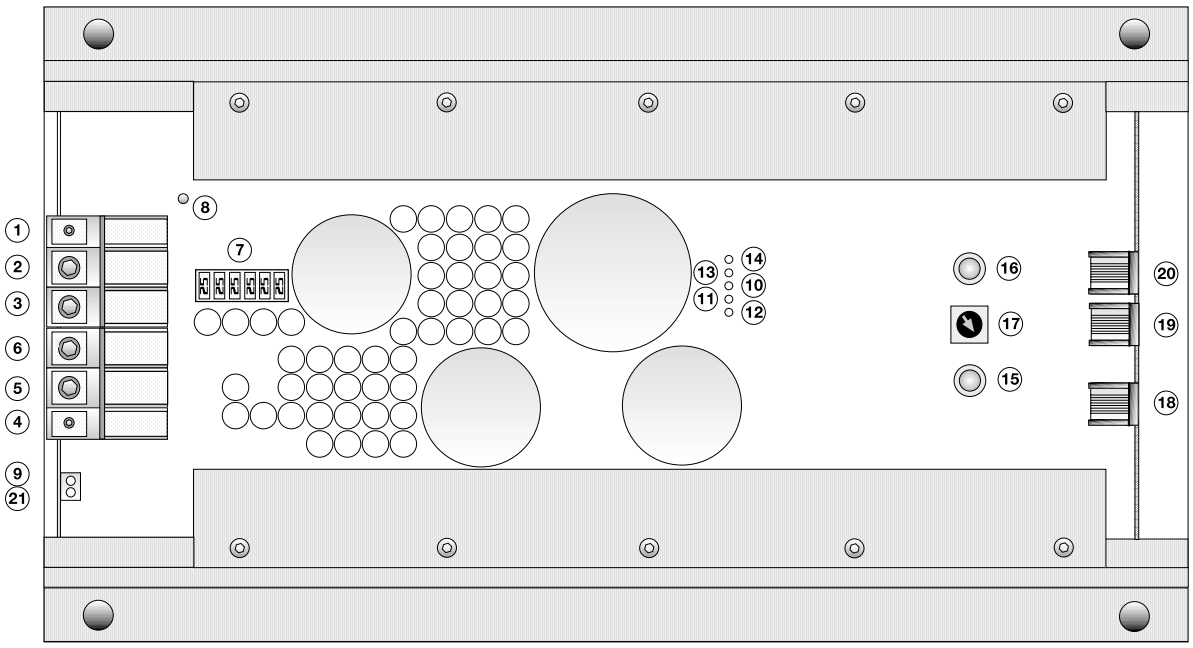


POWER STATION

Dear Customer,
congratulations for your purchase of this high-quality HELIX Power Station made in Germany. This product of the Competition series highlights best quality, excellent manufacturing and state-of-the-art technology for more power and best performance in vehicles.
AUDIOTEC FISCHER wishes you many hours of enjoyment with your new HELIX Power Station.

General installation instructions for the HELIX Power Station
To find out how the HELIX Power Station works best for you, read this manual carefully and follow the instructions for installation. We guarantee that this product has been checked for proper functioning before shipping.
Before you start installation, disconnect the car battery at the minus pole. We would urge you to have the installation work carried out by a specialist as verification of correct installation and connection of the unit is a prerequisite for warranty cover of the HELIX Power Station.
Install your Power Station at a dry location where there is sufficient air circulation to ensure adequate cooling of the equipment. For safety reasons, the Power Station must be secured in a professional manner. This is performed by means of four fixing screws screwed into a mounting surface offering sufficient retention and stability.
Before drilling the holes for the screws, carefully examine the area around the installation position and make sure that there are no electrical cables or components, hydraulic brake lines or any part of the petrol tank located behind the mounting surface - otherwise these could be damaged. You should be aware of the fact that such components may also be concealed in the double-skin trim panels/mouldings.

General instruction for connecting the Power Station
The HELIX Power Station may only be installed in motor vehicles which have a 12-volt minus pole connected to the chassis ground. Any other system could cause damage to the product and the electrical system of the vehicle.
The plus cable from the battery for the complete system should be provided with a main fuse at a distance of max. 30 cm from the battery. The value of the fuse is calculated from the maximum total current input of the car audio system.
Install the cabling in a manner which precludes any danger of the leads being exposed to shear, crushing or rupture forces. If there are sharp edges in the vicinity (e.g. holes in the bodywork) all cables must be cushioned and protected to prevent fraying.
Never lay the power supply cables adjacent to leads and lines connecting other vehicle equipment (fan motors, fire detection modules, gas lines etc.).
In order to ensure safe installation, use only high-quality connections and materials. Ask your dealer for high quality accessories.



1 Connection remote
2 Connection battery cable
3 Connection ground cable
4 Connection amplifier's remote
5 Connection amplifier's battery cable
6 Connection amplifier's ground
7 Fuse 6 x 25 A
8 Fuse indication
9 External output voltage sensor wire
10-14 CIPS-Color Indicated Protection System
green (10) = Power Station is switched on, operational
yellow (11) = **illuminates** in case of technical failure, **flashes** when XXL is discharged
red (12) = overheating
blue (13) = masterfunction; illuminates only when one or more units are connected in parallel in slave mode
white (14) = slave mode; illuminates only when one or more units are connected in parallel and the unit is operating in slave mode
15 Pushbutton to activate the system
16 Pushbutton to deactivate the system
17 Output voltage control
18-20 Connection socket Master/Slave for parallel connection of more units
21 Connection of ATF bus-system

1 Connection remote
The remote lead is connected to the automatic antenna (aerial positive) output of the head unit (radio). This is only activated if the head unit is switched ON. Thus the Power Station is switched on and off with the head unit. This input must be activated before the connected devices are switched on (see points 4-6).

Exception: Head units (radios) which are connected to the output (connection 5 and 6) with a starting current lower than 6 amperes and which activate their remote output within 6 seconds. In this case use the remote lead that activates the head unit (radio) to switch on the Power Station (connector 1) and the remote output (4) of the Power Station to switch on the connected devices.

2 Connection battery cable
Connect the +12 V power cable to the positive terminal of the battery. Recommended cross section: min. 25mm^2. We recommend the installation of a supplementary Power Cap > 0,5 Farad to connector 2 (plus) and 3 (minus).

3 Connection ground cable
The ground cable should be connected to a central ground reference point (this is located where the negative terminal of the battery is grounded at the metal body of the vehicle), or to a bright bare-metal location on the vehicle chassis, i.e. an area which has been cleaned of all paint residues.

4 Connection amplifier's remote
This connection switches on devices connected at terminals 5 and 6. The remote output is activated after the Power Station is switched on (with 0,5 sec. delay) and the adjusted output voltage is reached (see point 17).

5 Connection amplifier's battery cable
This connection provides the adjusted and stabilized output voltage. It should also be buffered by a Power Cap >1 Farad. Connect the power lead to the cap (plus) and from there all other loads. Don't connect batteries or similar devices. The voltage stability of the Caps should be at least 150% of the input voltage.

6 Connection amplifier's ground
Also connect the ground to the Cap (minus) and from there to all other loads. Don't connect batteries or similar devices. The voltage stability of the Caps should be at least 150% of the input voltage.

7 Fuses
The input fuses are connected in parallel and provide protection against an internal equipment fault, i.e. the system must be additionally protected by a further line fuse located in the vicinity of the battery (max. distance from battery: 30 cm). The fuse ratings are 6 x 25 Ampere. As the amplifier protection rating is 150 Ampere (6 x 25 A) and as the fuses also determine the signal all 6 original fuses must be installed.
Missing fuses and the use of fuses others than recommended, may lead to wrong results and early shut-offs.

8 Fuse indication
In case the fuses (7) are destroyed by malfunction it is indicated by the illuminated red LED. In normal operation the LED is off.

9 External output voltage sensor wire
A possible voltage drop between the Power Station output and the input of a connected load (additional fuses, long cables etc.) can be compensated as follows: Connect 9 with a shielded cable (shield must be connected to the load) with the battery input of the load. If the adjusted maximum voltage (15 volts) is reached no further voltage compensation is possible. The Power Station automatically detects when the sensor wire is connected.

10 - 14 CIPS - Color Indicated Protection System
The LEDs show the operation mode of the Power Station.

green (10)	=	in operation
yellow (11)	=	**flashes** when the system is deactivated (discharged); this occurs during initial connection or when shut off due to overvoltage. **iluminates** when Protection is activated due to a technical defect
red (12)	=	shut off due to overheating
blue (13)	=	master function (only illuminates when 2 or more devices are connected in parallel and switched on)
white (14)	=	slave function (only illuminates when 2 or more devices are connected in parallel as slave and switched on)

15 Pushbutton to activate the system
After complete installation of the Power Station (initial connection) and after connection of the battery all devices connected to outputs 4, 5 and 6 must be charged carefully (including Caps without protective electronics). To charge the system the red button (15) must be pushed shortly. The white LED (14) illuminates to indicate that the charging is in progress. During the charging process all connected devices must be switched off.

As soon as charging is completed the white LED (14) and the yellow LED (11) go out. The system is now ready for operation. If problems should occur while charging (e.g. short circuit at the output, plus minus were interchanged on a connected device), the process can be interrupted with the black pushbutton (16). If charging is not completed after 10 minutes the process will be stopped automatically.

16 Pushbutton to deactivate the system
All connected devices (output 4, 5 and 6) can be carefully deactivated with the black button (16). To discharge the system push the black button (16) shortly. To show that discharging is in progress the yellow LED (11) illuminates. After discharging is completed the yellow LED flashes.

Necessary modifications on connected devices can now be carried out. To modify the Power Station itself remove the battery's main fuse.

17 Output voltage control
With this control the output voltage can be adjusted within the range of 12 volts to 15 volts. Please note that a voltage lower than the input voltage is not adjustable. **The optimum value for a stable voltage output output adjustment is ca. 14 V.**

18 Connection socket master
To meet the high current consumption of current of big amplifiers, the master/slave mode allows to connect several Power Stations in parallel. In this mode the master controls all other connected devices (slaves). To use this mode, connect the master as described above and plug in the provided cable (connection socket 18). Make sure that the cable is not severely bent or otherwise damaged.

To find out the necessary number of Power Stations proceed as follows:
Divide the total need of current by 100. The next integer number is the number of Power Stations needed, e.g. maximum need of current = 250 ampere = 250:100 = 2,5 = next higher whole number = 3.

Conclusion: For this amplifier 3 Power Stations are needed of which one is connected as master the other 2 are connected as slaves. When the master Power Station is switched on via the remote lead the blue LED (13) illuminates additionally to indicate that this device is connected as master.

19 Slave input
In case a Power Station is connected as slave the connections 2, 3 and 5, 6 must be used. Starting from the CAP that should be part of the input current supply first connect the input ground cable (3) and after that the input plus cable (2). Then connect the output ground cable (6) with the minus pole of the CAP.
Please consider that the connection point is the same where the ground cable (6) of the master is connected.

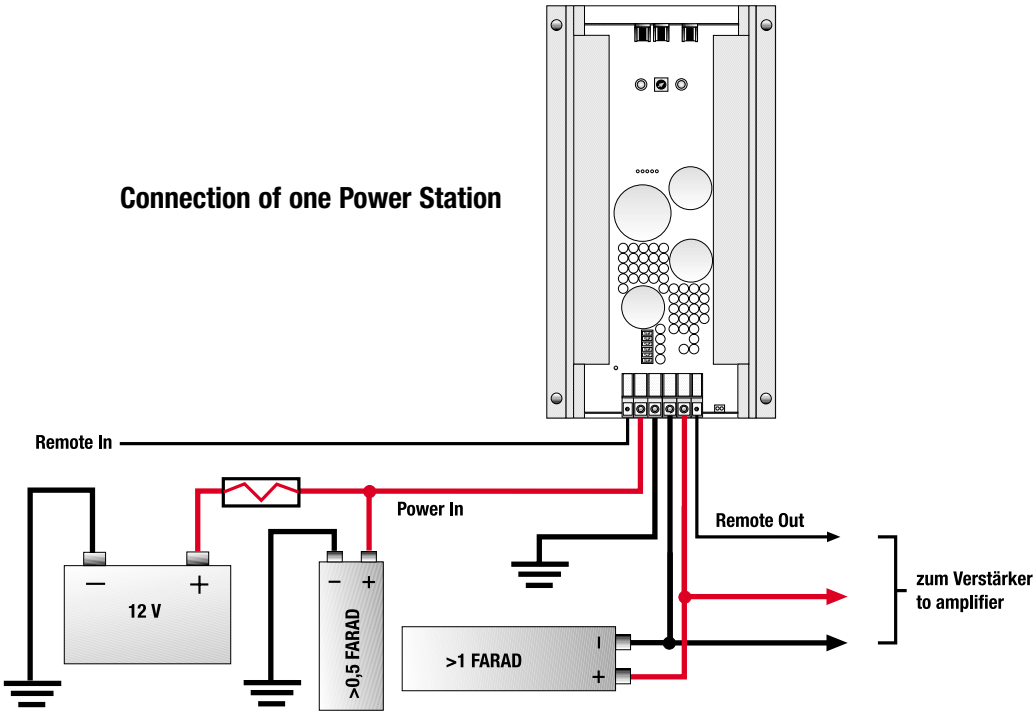
Now connect the plus output cable (5) to the plus pole of the CAP or with the plus input of the device to be connected.
Please consider that the connection point is the same where the plus output cable (5) of the master is connected.
Connections 1 and 4 must not be used!

Plug in the provided cable in the master's „Master out" and the slave's „Slave in" (19). Make sure that the cable is not severely bent or otherwise damaged. When this Power Station (slave) is switched on via the master the white LED (14) illuminates additionally to indicate that this device is connected as slave.

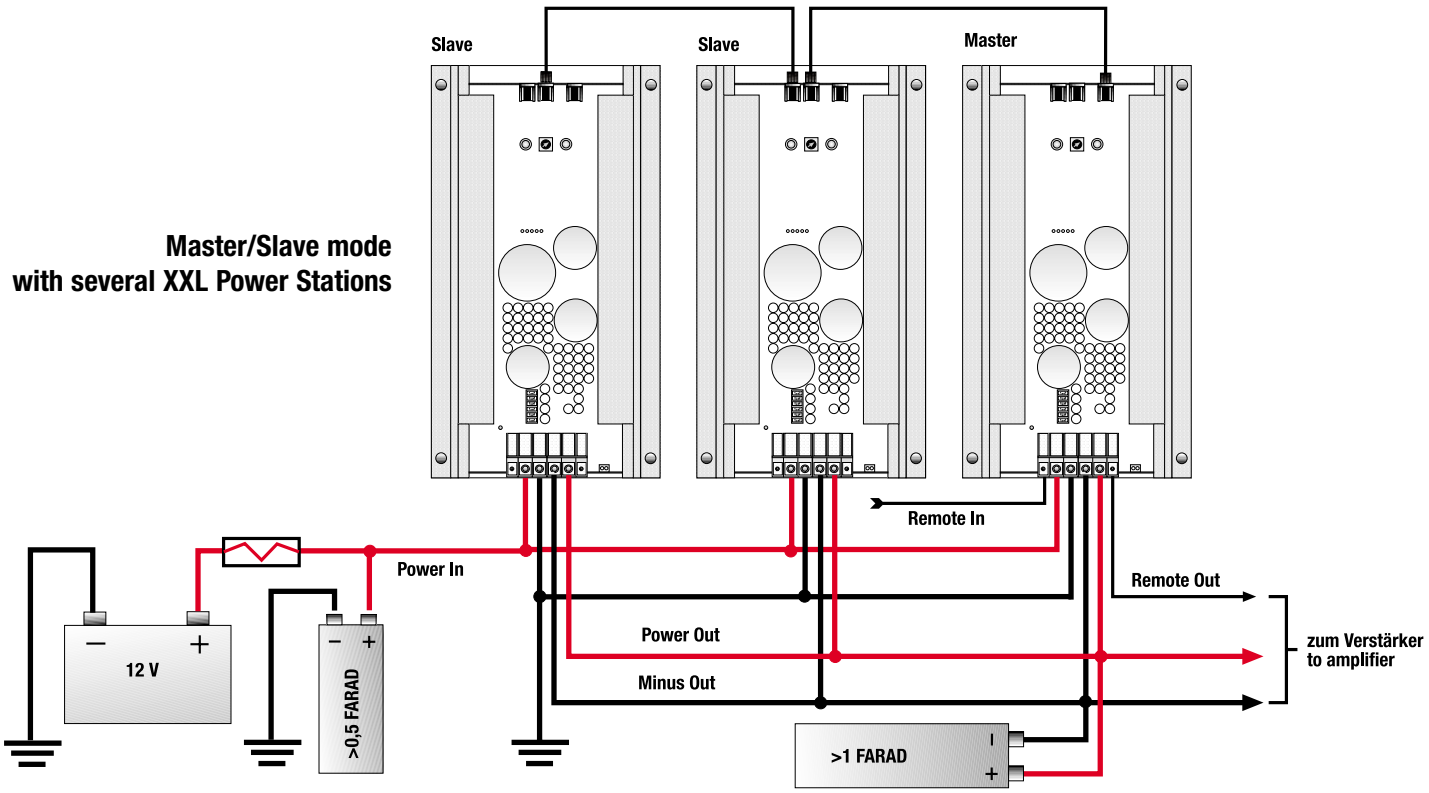
20 Slave output
To connect more than 2 Power Stations in parallel (current supply see pint 19), connection socket „Slave out" (20) is connected with connection socket „Slave in" (19) in the next Power Station with the provided cable.
For example a permanent current of 500 ampere and an impulse current of 1000 Ampere is obtained with 5 Power Stations operated in parralel.

21 Connection of ATF bus system
All future devices can be connected to each other via a one-lead cable and after that adjusted and controlled with this newly developed ATF-bus system.

Connection of one Power Station



Master/Slave mode with several XXL Power Stations



Technische Daten Helix Power Station XXL

Eingangsspannungbereich . . . . . 10 V bis 15 V
Überspannungsschutzabschaltung . . . . . >= 15 V
Eingangsstromschutzabschaltung . . . . . > 240 A
Ausgangsdauerstrom . . . . . 100 A
Ausgangsdauerstrom ohne Lastausregelung . . . . . 150 A
Impulsstrom (max. 30ms) . . . . . 200 A
Ausgangstromschutzabschaltung . . . . . >= 200 A
Temperaturschutzschaltung . . . . . >= 100°C (gemessen an den Halbleitern)

Technische Daten Microprozessor (Angaben/sec.)

120 000 Steuerbefehle Schaltnetzteil
60 000 Steuerbefehle Synchrongleichrichter
23 000 Steuerbefehle Aufwärtswandler (12 V nach 30 V Wandler)
11 200 Messwerterfassungen (analog zu digital Wandlungen)
60 000 Steuerbefehle Master/Slave Schaltnetzteilsteuerung

3 bi-direktionale serielle Kommunikations Schnittstellen
1. ATF Bus, multi Master fähig, halbduplex, 19200 baud
2. Master Slave Kommunikation, voll duplex, 19200 baud
3. Diagnosestecker (z.B. für PC, voll duplex, 19200 baud*)
*nur für Fachhändler

Sonstiges

Intelligente Leistungsverteilung beim Master/Slave Verfahren:
z.B. Gesamtleistung = 1800 Watt,
bei 2 Geräten = 900 Watt pro XXL,
bei 3 Geräten = 600 Watt pro XXL usw.

Technical data Helix Power Station XXL

Power supply . . . . . 10 V to 15 V
Overvoltage protection (shut off) . . . . . >= 15 V
Input current protection (shut off) . . . . . > 240 A
Output permanent current . . . . . 100 A
Output permanent current without load control . . . . . 150 A
Peak current (max. 30ms) . . . . . 200 A
Output current protection (shut off) . . . . . >= 200 A
Temperature protection . . . . . >= 100°C (measured at the semi-conductors)

Techniscal data microprocessor (sec.)

120 000 control commands switched-mode power supply
60 000 control commands synchronous detector
23 000 control commands step-up transformer (12 V after 30 V transformer)
11 200 data logging (analogue to digital conversion)
60 000 cintrol commands master/slave switched-mode power supply control

3 bi-directional serial communication interface
1. ATF Bus, multi-master capable, semiduplex, 19200 baud
2. Master/slave communication, full duplex, 19200 baud
3. Diagnosis connector (e.g. for PC, full duplex, 19200 baud*)
*only for specialists

Others

Advanced balancing of power distribution in master/slave mode:
e.g. total power = 1800 W
with 2 units = 900 W per XXL
with 3 units = 600 W per XXL etc.

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