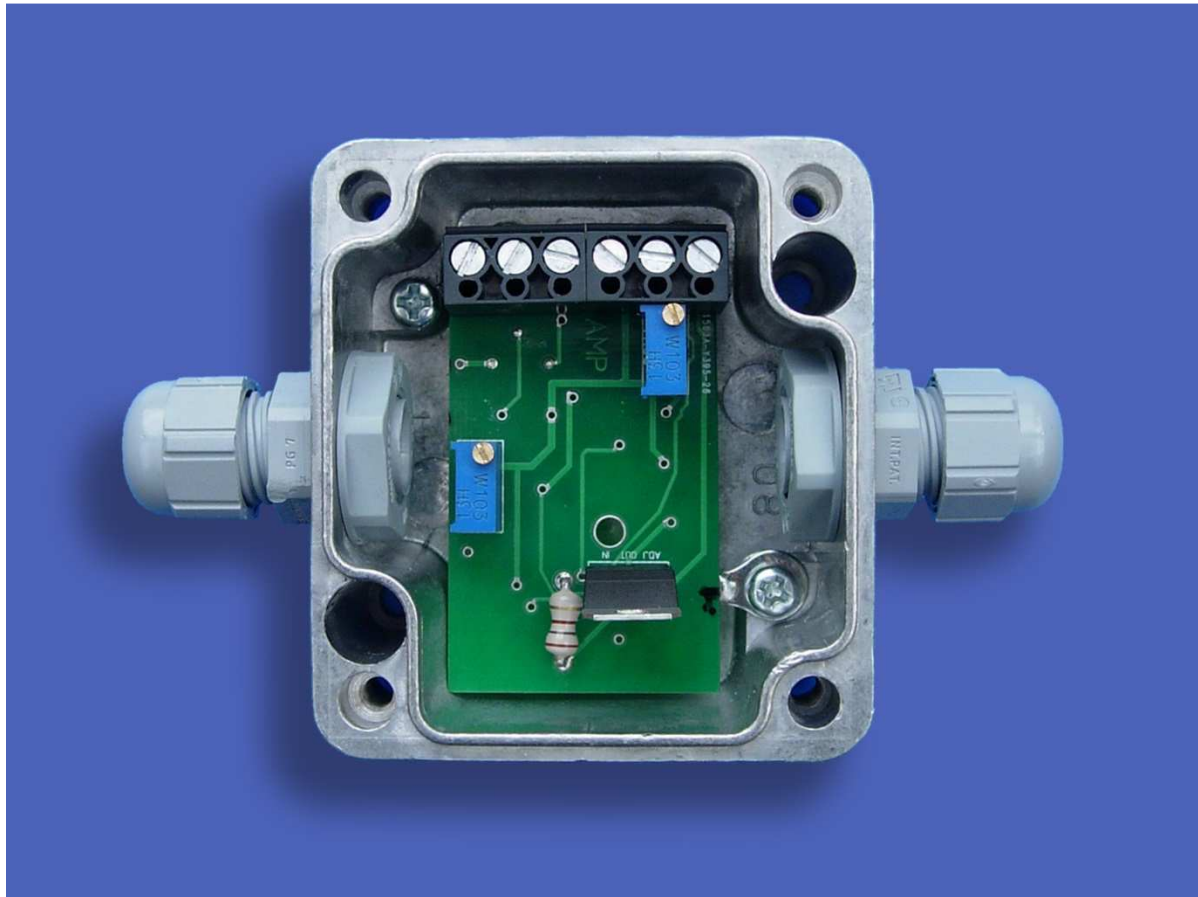


# Installation and Calibration Manual AMP-1



## AMP-1

WSG Amplifier

Installation, Calibration and Maintenance

## Preface

### About this manual

This manual is a part of the equipment or system, supplied by KST. Keep this manual in a safe place and ensure that it is available to all users.

### Liability disclaimer

The content of this manual is subject to change. KST do not provide any guarantee for this material, including the associated guarantee regarding merchantability and suitability for certain intended purposes.

KST accept no liability for errors in the contents of the manual or for direct or indirect damage in connection with the provision and use of the manual.

### Copyright notice

This manual is protected by copyright. All rights reserved. The manual may not be duplicated, reproduced or translated into another language, either wholly or partly, without the prior written permission of KST.

### Trademarks

The usage of common names, trade names, trademarks etc. in this documentation should not be construed to mean that such names, even without special identification, are free in the sense of trademark and trademark protection legislation and hence usable by anyone.

### Use for the intended purpose

This device / system is intended exclusively for the tasks described in this manual. Any other use shall be construed as being inappropriate. The manufacturer accepts no liability for damage caused by inappropriate or impermissible use. This device / system may only be used if it is in perfect technical condition.

### Qualification of the operating personnel

Only appropriately qualified personnel may work with this device / system, i.e. persons:

- who are familiar with the operation or installation and commissioning
- who know the current regulations for the prevention of accidents

### Target groups

This manual addresses:

- System engineers designing machinery and equipment
- Service technicians responsible for installation and maintenance of machinery equipped with electronic control units

### Use of other materials

We hereby make express reference to the fact that any parts or accessories not supplied by us have not been tested or released by us. The installation and/or use of such products may therefore have a negative effect on the design properties of your device and thus impair active and/or passive safety. No liability can be accepted for damage caused by the use of spare parts and accessories manufactured by third parties.

## Marking of notices

Dangers and other important notices are marked as follows in this system manual:



### **WARNING**

A Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury and gives instructions to take precautions to avert danger.



### **CAUTION**

A Caution indicates a dangerous situation; it also warns of damage to property and gives instructions to avert danger.



### **IMPORTANT**

This message indicates a possibly damaging situation for the product and provides instructions to avoid the possibly damaging situation.

### **NOTE**

Usage instructions and information, supplementary comments and recommendations for the user, but no dangerous situation.

## Safety instructions

Follow the instructions in the description. Failure to observe instructions, operation other than for the intended use as described below, wrong installation or incorrect handling can severely impair the safety of people and the equipment.

The system manual is intended for persons who, on account of their training, experience and the instruction they have received as well as their knowledge of relevant standards, regulations, rules for the prevention of accidents and operating conditions, can be regarded as 'experts'.

The controller is to be installed and put into operation by technical personnel (programmer or service technician).

Use only the signals specified in the technical data as input via the system connector and only the approved components from KST to extend the system.

The device can be operated within a wide temperature range according to the technical specifications indicated in this manual. Due to the additional self-heating the housing walls can have noticeable high temperatures when touched in hot environments. In the case of malfunctions or uncertainty about usage and specifications, please contact the manufacturer. Improper handling and misuse can severely impair the safety of people and the equipment, and will lead to the exclusion of liability and loss of warranty.



**Danger of electrical short-circuits.**

**Switch off all systems before commencing with the installation work!**



**Penetration of water and dirt can damage the device.**

**Never clean the device with a high pressure cleaner!**



**Connecting to an unsuitable power supply can cause damage to the device.**

**The device may only be connected to a DC voltage source of 11...28 V!**

**The use of components or extensions not approved by the manufacturer can impair system functions and breach radio transmission regulations.**

**Use components or extensions that are intended and approved by the manufacturer.**

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## General

The WSG Amplifier (system AMP-1) is factory-adjusted on request. Should system adjustment be necessary, this can be done as described in this manual.

## Tools

- Screwdrivers to open lid and take out PCB and to adjust trimmers
- Digital voltmeter
- Shunt resistor 100....330 Ohms



**The supply voltage must be checked first before beginning with adjustment and setting of the AMP-1 WSG Amplifier.**

**System adjustment installation may only be carried out by KST Customer Service or an authorized representative of KST. Improper adjustment can lead to faulty display of measured values and/or to malfunctions. In such cases, any and all warranty claims shall be voided.**

## Introduction

The KST WSG Amplifier is suitable for all applications, where the signal of a Sensor with a WSG Bridge 350..700 Ohms and an output between 1...2 mV/V has to be amplified to a signal of 4...20 mA.

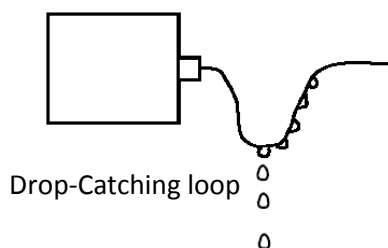
## Mechanical Mounting of the AMP-1 Box



- Make sure that the BOX is stable and well fixed mounted on a solid surface.
- The Box **MUST** always be mounted with the cable glands showing sideways or downwards, **NEVER UPWARDS**. Be aware that any water, which may have come into the box, nearly always went through cables and cable glands that have not well been fixed and sealed. Be aware that water will lead to malfunctions and eventually destroys the electronic parts inside.



- Only ONE cable per cable gland
- The cable gland must well be screwed so that the rubber sealing will be tight around the cable. Bend cables so as to have a drop-catching loop, see drawing below.
- Avoid a close distance to sources of strong magnetic, electric and electromagnetic fields coming from transformers, power relays, radio transmitter, telephones etc. In case of any doubt, please involve your KST representative



## Terminals

Terminal X1/1 GND (electrically connected to casing)

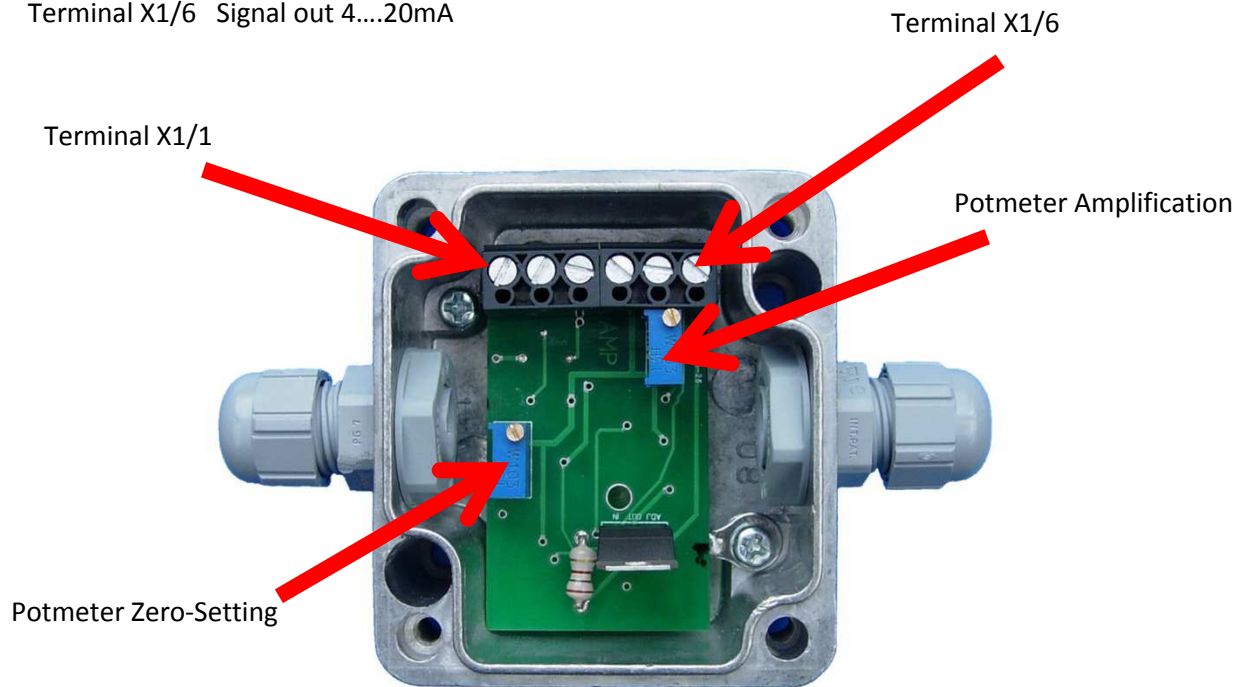
Terminal X1/2 WSG Sig -

Terminal X1/3 WSG Sig +

Terminal X1/4 WSG Supply 5Vdc stab.

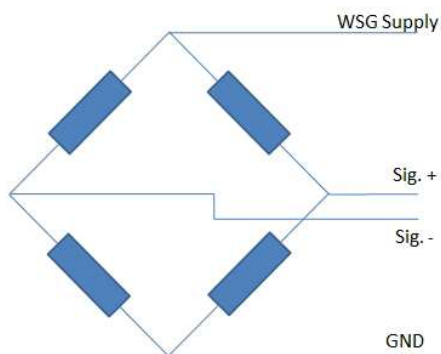
Terminal X1/5 Vsupp + 11.....28V

Terminal X1/6 Signal out 4....20mA



## Preparation

1. Connect the sensor's WSG-Bridge to the amplifier on terminals X1/1..../4



2. Connect the shunt resistor (100 ... 330 Ohms) terminals X1/6 and to GND X1/1 and connect the Voltmeter to read voltages across the shunt resistor.
3. Connect the Supply voltage between 11...28V to Terminals X1/5 (+ Vs) and X1/1 (GND)

## Adjustment

1. Have the sensor unloaded. Adjust the zero-Signal at Output (Terminal X1/6) to 4mA or other wanted value. Use equation  $I = U/R$  where "U" is the voltage on voltmeter and "R" is the value of the shunt resistor. Use potmeter "Zero-Setting"
2. Load the sensor and adjust the signal at output to the wanted value. Use potmeter "Amplification"
3. Check Step 1 and make fine correction if necessary. Check Step 2 as well and fine correct if necessary.
4. Make the final assembly and take care, that:
  - all terminal screws and PCB screws are fixed sufficiently
  - cable glands are fixed around cable tightly
  - the upper lid is well fixed so that the rubber seal works properl
  - the cooling plate of the voltage stabilizer does not have contact to the lid of the casing.

## Preventive Maintenance



The KST WSG Amplifier consists of electronic, electrical and mechanical parts. The system may only be serviced and maintained by Service personnel from **KST**, by personnel authorized by the manufacturers, or by personnel who have been specially trained by **KST**.

Since even minor damage can impair the effectiveness of the system or even put it out of action altogether, the operator must check the condition and completeness of the system before starting his daily work.

## Daily Inspections



**To be carried out by the operator:**

- Condition of AMP box, cables and Sensors on visual damage
- Test of the function of the electronic unit, to where AMP-1 delivers its signal.



### Note:

It is not applicable to test AMP's thermal behavior by blowing hot air into the open casing. To test this, AMP-1 must be put into temperature chamber completely closed as under natural conditions.

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