Detection ranges of the TS High Voltage Detection System (HVDS)

The TS HVDS is a safety device intended to help prevent vehicles and machinery from coming into contact with overhead high voltage power cables. The system works by detecting the field that is generated around overhead AC voltage lines. Generally the higher the voltage on the transmission line the greater the field will extend out from those lines. The HVDS detects the presence of these fields (AC 50/60Hz) above background noise and gives an audio and visual alarm to the operator.

In tests we have found that our HVDS system will detect the presence of overhead power lines at the distances shown below.

All HVDS units are thoroughly tested during manufacture and complete a final test against actual overhead power cables in the field. In most situations these detection ranges can be expected. However certain conditions can affect the detection range of the HVDS such as 3 phase transmission, adverse weather conditions, horizontal or vertical swaying of overhead lines and or their proximity to large structures such as buildings and bridges.

Before using this product it is very important to read and fully understand the operating instructions provided. This Transport Support product is to be used for guidance purposes only and must not be totally relied upon to prevent an accident occurring. Transport Support (A division of GN Systems Ltd.) or its representatives accept no responsibility for direct or indirect damage or injury whilst using this product.

SAFETY IS THE SOLE RESPONSIBILITY OF THE OPERATOR.

**WARNING**: ONLY and must not be relied upon to prevent contact with overhead power cables.

**NOT EXTEND TO THE ELIMINATION OF EXTERNAL GENERATED STATIC OR NOISE, TO THE CORRECTION OF ANY EFFECTS CAUSED BY TRANSMISSION CABLES, OR TO THE REMOVAL OR REINSTALLATION OF THE PRODUCT; OR TO DAMAGE TO ANY IMPEDANCES, POWER SOURCES, OR EQUIPMENT IN THE NETWORK. This warranty extends only to products distributed and/or sold by Transport Support. This warranty covers only normal use of the product. Transport Support shall not be liable under warranty for any damage or defect from (i) misuse, abuse, neglect, improper shipping or installation; (ii) damage such as fire, flood, lightning or improper electric current; or (iii) service or alteration by anyone other than an authorised Transport Support representative; (iii) damages incurred through improper use, including those resulting from viruses or software, overloading, or other non-recommended practices. You must retain your sales invoice or other proof of purchase to receive warranty service. No warranty extension will be granted for any replacement part(s) furnished to the purchaser in fulfillment of this warranty. Transport Support and its Authorized Service Centre accepts no responsibility for any software programs, data or information stored on any media or any parts of any products returned for repair to Transport Support. PLEASE VISIT http://www.transportsupport.co.uk/warranty for full warranty terms.

**KEY FEATURES**

- Digital alarm tone
- High pitched pulsed buzzer
- LEDs show voltage levels
- Visual alarm

**TECHNICAL SPECIFICATIONS**

- **Electrical**
  - Operating Voltage: DC 11-32V
  - Operating Current: <150mA at 24V
  - Fuse Rating: 1A
  - Casing Material: ABS
  - LED Viewing Angle: 30 degrees

- **Environmental**
  - Display: IP65
  - Relative Humidity: Display: 100%
  - Operating Temperature: -10 to +55°C

- **Specifications**
  - High pitched pulsed buzzer
  - Audible warning
  - Power input: 2-91W
  - Weight: 85g
  - Cable Length: 2m

**Packing Check List**

- 1 x HVDS Unit
- 1 x Mounting Bracket
- 1 x Power Cable
- 1 x Antenna Rod
- 1 x Antenna Base
- 1 x Antenna Cable
- 1 x Pressure Switch
- 1 x Management Key
- 15 x Cable Ties
- 2 x ST Screws
- 1 x 1A Fuse/Holder
- 6 x RED POF Crimp
- 2 x Blue Ring Crimp
- 2 x Blue POF Crimp

**Warranty**

This limited warranty extends only to the original purchaser. Please note that any warranty services or questions must be accompanied by the order number from the transaction through which the warranted product was purchased. The order number serves as your warranty number and must be retained. Transport Support will offer no warranty service without this number. Transport Support warrants this product and its parts against defects in materials or workmanship for 1 year unless otherwise stated from the original ship date. During this period, Transport Support will repair or replace defective parts with new or reconditioned parts at Transport Support’s option, without charge to you. All shipping here to Transport Support must be paid by the customer. All returns must be affected via the Procedures for Obtaining Warranty Service described below. All original parts (parts installed by Transport Support at the original system build) replaced by Transport Support or its authorized service centre, become the property of Transport Support. Any after-market additions or modifications will not be warranted. The owner is responsible for the payment, at current rates, for any service or repair outside the scope of this limited warranty. Transport Support makes no other warranty, either express or implied, including but not limited to implied warranties of merchantability, fitness for a particular purpose, or conformity to any representation or description, with respect to this product other than as set forth below. Transport Support makes no warranty or representation, either express or implied, with respect to any other manufacturer’s product or documentation. Its quality, performance, merchantability, fitness for a particular purpose, or conformity to any representation or description. Except as provided below, Transport Support is not liable for any loss, cost, expense, inconvenience or damage that may result from use or inability to use the product. Under no circumstances shall Transport Support be liable for any loss, cost, expense, inconvenience or damage exceeding the purchase price of the product. The warranty and remedies set forth below are exclusive and in lieu of all others, oral or written, expressed or implied. No reseller, agent or employee is authorized to make any modification, extension or addition to this warranty. This WARRANTY DOES NOT EXTEND TO THE ELIMINATION OF EXTERNAL GENERATED STATIC OR NOISE, TO THE CORRECTION OF ANTENNA PROBLEMS, TO COSTS INCURRED FOR THE REMOVAL, OR REINSTALLATION OF THE PRODUCT, OR TO DAMAGE TO ANY IMPEDANCES, POWER SOURCES, OR EQUIPMENT IN THE NETWORK. This warranty extends only to products distributed and/or sold by Transport Support. This warranty covers only normal use of the product. Transport Support shall not be liable under warranty for any damage or defect from (i) misuse, abuse, neglect, improper shipping or installation; (ii) damage such as fire, flood, lightning or improper electric current; or (iii) service or alteration by anyone other than an authorized Transport Support representative; (iii) damages incurred through improper use, including those resulting from viruses or software, overloading, or other non-recommended practices. You must retain your sales invoice or other proof of purchase to receive warranty service. No warranty extension will be granted for any replacement part(s) furnished to the purchaser in fulfillment of this warranty. Transport Support and its Authorized Service Centre accepts no responsibility for any software programs, data or information stored on any media or any parts of any products returned for repair to Transport Support. PLEASE VISIT http://www.transportsupport.co.uk/warranty for full warranty terms.
1. Power On/Power Off

1.1 The TS HVDS is powered by the ignition switch power from the vehicle. A pressure activated switch (supply) can be used in the PT0 line if so that the HVDS is only powered up when the PT0 is activated. DO NOT CONNECT THE HVDS DIRECTLY TO THE VEHICLES PT0 CONTROL SWITCH. See vehicle manufacturer guidelines for correct connection to electrical system.

2. Operation

2.1 When the vehicle PT0 is engaged the TS HVDS should power up (IF THE PT0 PRESSURE SWITCH HAS BEEN INSTALLED).

2.2 On power up the HVDS will briefly light all LED indicators and sound the alarm buzzer to prove that all indicators are functioning correctly. The current alarm set point will then be briefly displayed.

2.3 The bottom LED on the signal strength meter is a POWER ON indicator and will remain lit when the HVDS is powered.

2.4 If an overhead high voltage cable is detected at a signal strength at or above the alarm set point, the unit will give an audible 'beep' tone and the alarm indicator LED will flash continuously. In alarm, the signal strength being detected will still be displayed.

2.5 When the HVDS is in alarm mode, i.e. when overhead high voltage cables are detected, the audible alarm can be muted. However, the HVDS will emit a 'beep' tone every 5 seconds to remind the operator of potential danger. When the alarm is muted the red alarm indicator will continue to flash and the received signal strength will still be displayed.

2.6 Mute is automatically cancelled every time the unit is switch off or when the detected signal drops below the alarm threshold.

2.7 Mute is activated by pressing the mute button once whilst the HVDS is alarming. Mute can be manually cancelled by pressing the mute button again.

3. Detection Sensitivity Adjustment

The HVDS alarm limit can be adjusted using a management key.

Note: THIS HVDS IS FACTORY SET FOR OPTIMAL SENSITIVITY i.e. good detection range with minimal false alarms. If however greater or lesser 'sensitivity' is required, please carry out the following procedure.

3.1 On powering up the HVDS, hold the management key over the sensor area until a 'beep' tone is heard.

3.2 The desired alarm setting is reached, touch the management key against the sensor area until a ‘beep’ tone is heard.

3.3 Once the desired alarm setting is reached, touch the management key against the sensor area until a ‘beep’ tone is heard.

3.4 The setting will be stored and the HVDS will go back into normal detection mode.

4. Installation of the HVDS

4.1 The system can be powered from 12v to 24v DC (11-32v DC input range)

4.2 The power for the HVDS should be picked up from the vehicles (see vehicle manufacturers guidelines) ignition switch power source. A pressure switch can be used in the PT0 line if the HVDS only powers up when the PT0 is activated.

Note: If the alarm limit is set at the bottom of the scale the HVDS will alarm only when the voltage is very close to the power lines as it will need a large signal to trigger the alarm.

IMPORTANT:
The above procedure does not actually adjust the sensitivity of the HVDS detection circuitry. It is only adjusting the point at which the alarm will be triggered.

4.3 The detection antenna should be mounted to the roof of the vehicle or as high up as possible. IMPORTANT! IF MOUNTED TO A METAL ROOF OR OTHER METAL SURFACE THAT IS CONNECTED TO THE VEHICLES GROUND, USE THE INSULATING M12 NYLON WASHER TO INSULATE THE TEETH ON THE ANTENNA BASE CONNECTOR FROM THE THE MOUNTING SURFACE. THE TEETH ON THE ANTENNA BASE SHOULD NOT BE CONNECTED TO GROUND.

4.4 The detection antenna is connected to the HVDS display unit by a twist locking BNC connector plug.

6.4 The HVDS features an auxiliary switching output that gives an output at supply voltage when the system is alarming. Connections for the auxiliary output are not supplied with the HVDS kit. Cable and connector terminals are available from Transport Support. The AUX output can switch up to 500mA @ 24v DC.

GUIDANCE FOR WORKING SAFELY NEAR OVERHEAD POWER LINES

When using a vehicle fitted with a TS HVDS the following working procedure should always be carried out.

- BE PARTICULARLY CAUTIOUS WHEN PASSING THROUGH AREAS WHERE THE HVDS HAS PREVIOUSLY DETECTED POWER LINES.
- ALWAYS VISUALLY INSPECT YOUR WORK AREA AND FAMILIARISE YOURSELF WITH THE POSITION OF THE OVERHEAD CABLES.
- FIND OUT THE ROUTES OF ALL OVERHEAD LINES ON YOUR LAND AND NEAR TO YOUR BOUNDARIES. MARK THEM ON A MAP. THE ELECTRICITY COMPANY SHOULD BE ABLE TO GIVE YOU THIS INFORMATION.
- MAKE SURE YOU HAVE INFORMATION ABOUT ALL THE LINES ON YOUR LAND. IF NOT, CONTACT THE OWNER OF THOSE LINES.
- MAKE SURE YOU HAVE DETAILS OF THE MAXIMUM WORKING HEIGHTS PERMITTED UNDER EACH SPIN OF OVERHEAD LINES ON YOUR LAND AND ADJACENT TO EACH STRUCTURE. MARK THESE ON A MAP FOR REFERENCE.

In operation, the HVDS detects the signals emitted from overhead AC power lines. As a general rule, the higher the voltage, the greater the distance the emitted field will extend from the overhead lines. Therefore the higher the voltage the further away the HVDS will detect.

WHAT TO DO IN AN EMERGENCY

NEVER TOUCH AN OVERHEAD LINE EVEN IF IT HAS BEEN BROUGHT DOWN BY MACHINERY OR HAS FALLEN. NEVER ASSUME LINES ARE ‘DEAD’.

WHEN A MACHINE OR VEHICLE IS IN CONTACT WITH AN OVERHEAD POWER LINE, ELECTRICATION IS POSSIBLE IF ANYONE TOUCHES BOTH THE MACHINE/VEHICLE AND THE GROUND. STAY INSIDE THE MACHINE/VEHICLE AND LOWER ANY PARTS THAT ARE IN CONTACT WITH THE LINES OR DRIVE AWAY FROM THE LINES IF IT IS POSSIBLE TO DO SO.

HIGH VOLTAGE ELECTRICITY CAN ARC A considereBLE DISTANCE - KNOW THE MINIMUM SAFE CLEARANCE BETWEEN YOU AND HIGH VOLTAGE LINES.

IF YOU NEED TO SUMMON HELP OR BECAUSE OF FIRE, JUMP OUT OF THE VEHICLE AS FAR AS YOU CAN WITHOUT TOUCHING ANY CABLES OR THE VEHICLE. KEEP UPRIGHT AND GET AWAY FROM THE AREA.

CONTACT THE EMERGENCY SERVICES AND THE ELECTRICITY COMPANY TO DISCONNECT THE SUPPLY. IF THE LINES APPEAR DEAD, DO NOT TOUCH THEM - AUTOMATIC SWITCHING MAY RECONNECT THE POWER.

CONTACT THE EMERGENCY SERVICES AND REPORT THE INCIDENT