

Siemens Technical Bulletin STAB13-0081

MIDAS-IP RS485 Comms Failure when Installed in Close Proximity to Overhead HV Train Lines

30th August 2013

Product: MIDAS-IP**Modifications Req:** Yes**Retrospective Action Req:** No**Priority of Change:** Action only if problem arises

- ✓ Introduction
- ✓ Scope
- ✓ Background
- ✓ Identifying if Modification is Necessary
- ✓ Details of Modification

Introduction

It has come to our attention that in a very small number of cases where a MIDAS-IP unit is installed adjacent to high voltage power lines, the RS485 comms to the MIDAS unit can be degraded.

Scope

The scope of this bulletin is all MIDAS-IP units that are running in RS485 comms mode and installed in close proximity to high-speed electric rail-lines or national grid power lines.

Background

MIDAS-IP has voltage protection devices fitted on its RS485 port to prevent damage to it if inappropriate voltages are applied to the signal pins. It has been found at one specific site the common mode induced voltages from the rail line can be as high as 33V. This causes the MIDAS protection devices to clamp and interrupts communications. This failure is reversible and recovers when the induced voltage is removed. As it is expensive and inconvenient to shield cables post installation, this problem can be rectified by disconnecting the voltage protection devices from ground on the processor board. This RS485 circuits will still be protected by the external Lightning Protection Circuit Board.

This modification should only be applied where there is a known problem and on a site-by-site basis. It is expected that this issue affects an extremely low number of MIDAS units.

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Identifying if Modification is Necessary



Figure1: A MIDAS-IP unit installed next to a high speed rail line on the M1

1. Is the MIDAS-IP unit or its associated cabling installed within 10 metres of a high speed electric rail line or national grid power lines? (see *Figure1*)
2. If so measure the common mode voltage between the RS485 A line (pin 1, PL2) and earth and the RS485 B line (pin 2, PL2) and earth with an insulated set of probes and a digital multimeter. The earth point should be the earth stud on the rear of the MIDAS-IP unit. Both these two measured voltages should be less than 5 V. If they are higher than this the modification should be considered or measures taken to check the earthing and shielding of the RS485 comms cable and cabinet.

Details of Modification

Using a soldering iron remove the chip resistors R17 and R18 highlighted in red in *Figure2*. They are located at the rear of PL2 (*Figure3* & *Figure4* show how they are connected in circuit). This procedure is best undertaken in a workshop where suitable anti-static precautions are in place. When the modification has been undertaken mark the front of the MIDAS CPU module with an indelible indication that the modification has been taken place (eg RS485 port voltage clamp removed 31/8/2013).

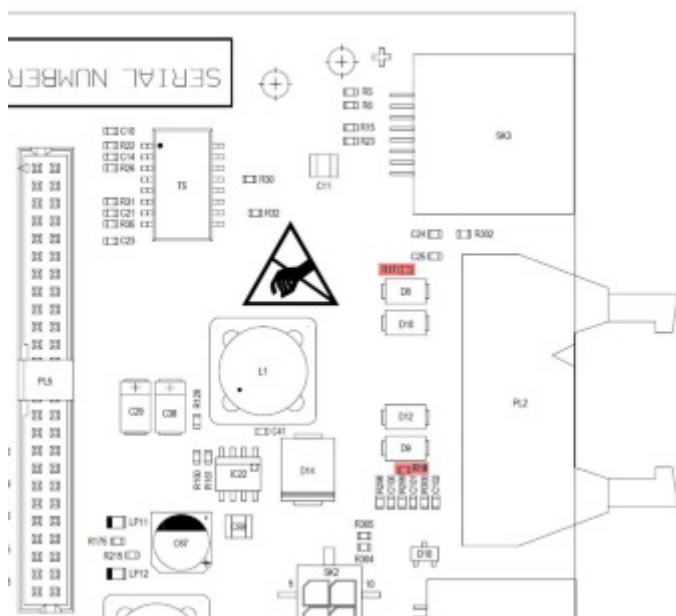


Figure2: Layout drawing of MIDAS-IP carrier card showing positions of R17 & R18

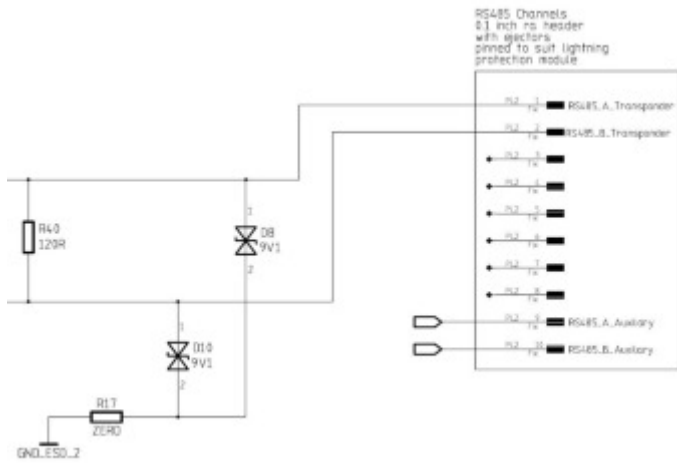


Figure 3: Schematic showing position R17

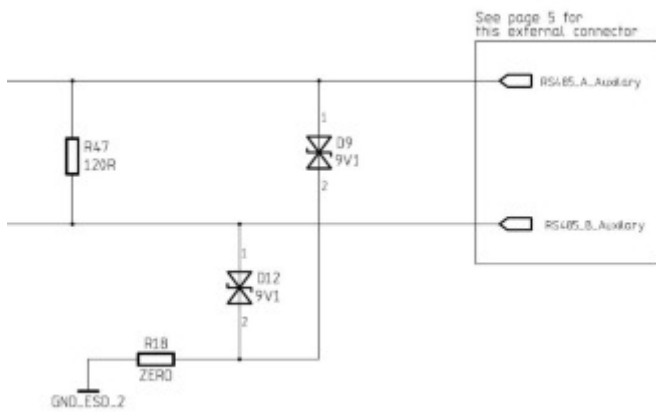


Figure 4: Schematic showing position R18

Approved by: Keith Manston