Grounding of RS485 communication cable in Vamp relays

User qualification
Electrical equipment should be installed, operated, serviced, and maintained only by trained and qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Insulation and dielectric strength testing
Insulation testing may leave capacitors charged up to a hazardous voltage. At the end of each part of the test, the voltage should be gradually reduced to zero, to discharge capacitors, before the test leads are disconnected.

1 Introduction

Communication ports in protection relays have usually isolation barrier against circulating currents between devices connected to the same communication bus. These circulating currents can be caused by potential differences between devices because of the long cables or poor grounding of the device. For this reason RS485 communication port in Vamp relays is also isolated.

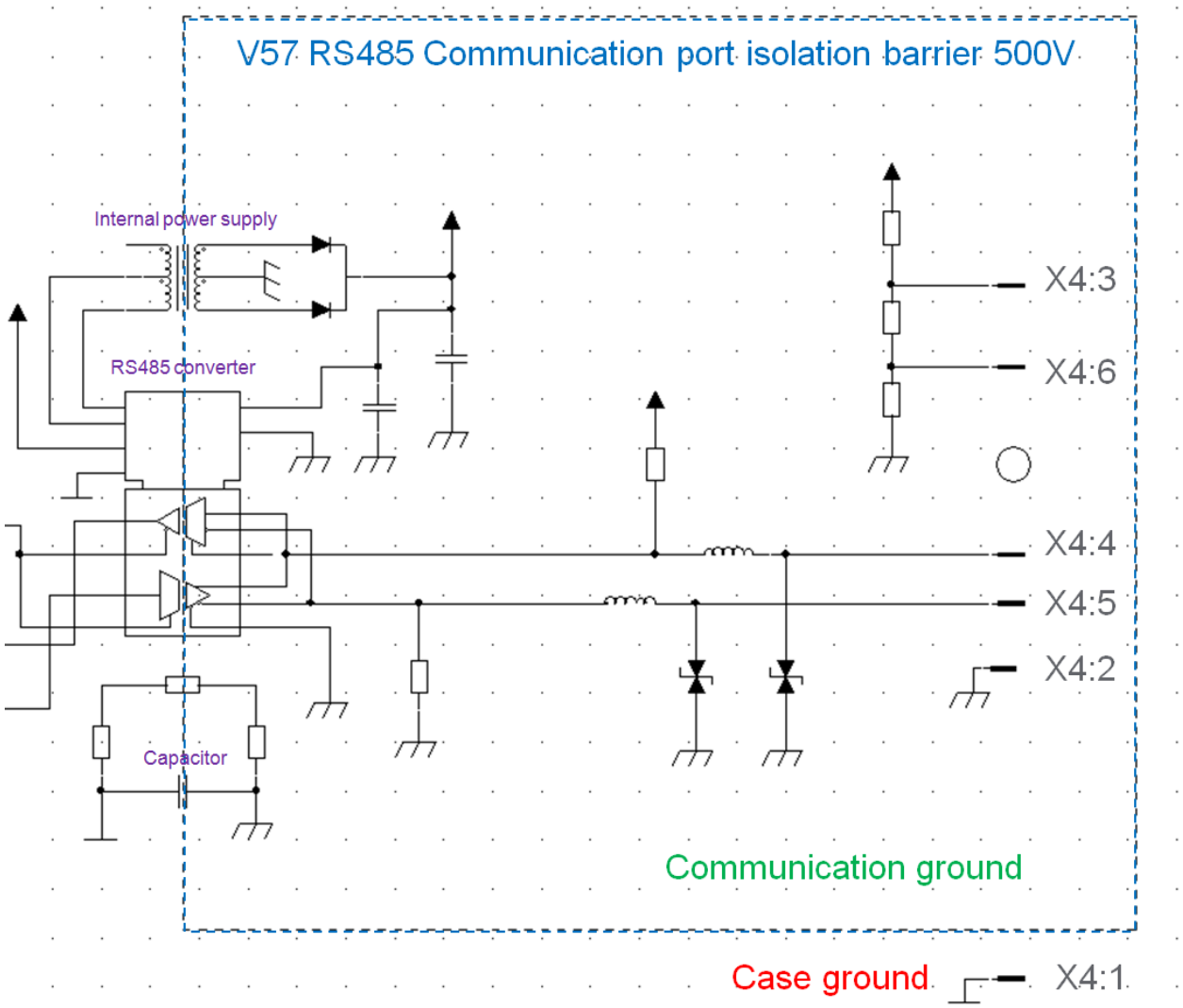

Figure 1. Internal schema from V57 relay RS485 communication

Because of this isolation barrier it is critical that communication ground and cable shield ground are connected to their correct separate places. Communication cable shield is designed to prevent disturbances entering the communication line and the inducted voltages to cable shield can be rather high. For this reason communication cable shield must not be connected to communication ground.

Failure to follow this guide may cause high voltage entering communication ground which may damage the isolation barrier and RS485 converter leading communication failure to SCADA.

2 Connection examples

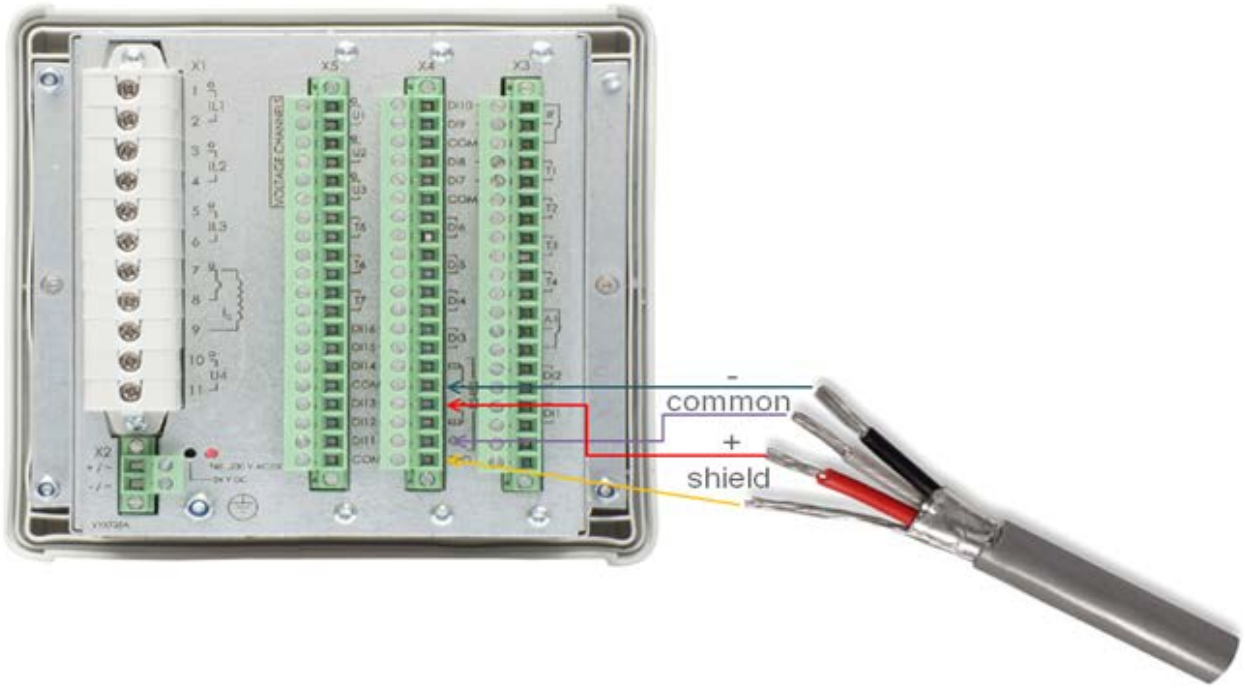

Figure 2. Connection of VAMP 57 relay

6*	RS-485 tem	RS-485 interface termination resistor for “-“ connection
5*	RS-485 -	RS-485 interface “-“ connection
4*	RS-485 +	RS-485 interface “+“ connection
3*	RS-485 tem	RS-485 interface termination resistor for “+” connection
2	RS-485 G	RS-485 interface ground terminal
1	RS-485 SHD	RS-485 interface cable shield connection

NOTE! *Interconnect 3 & 4 and 5 & 6 when termination is needed.

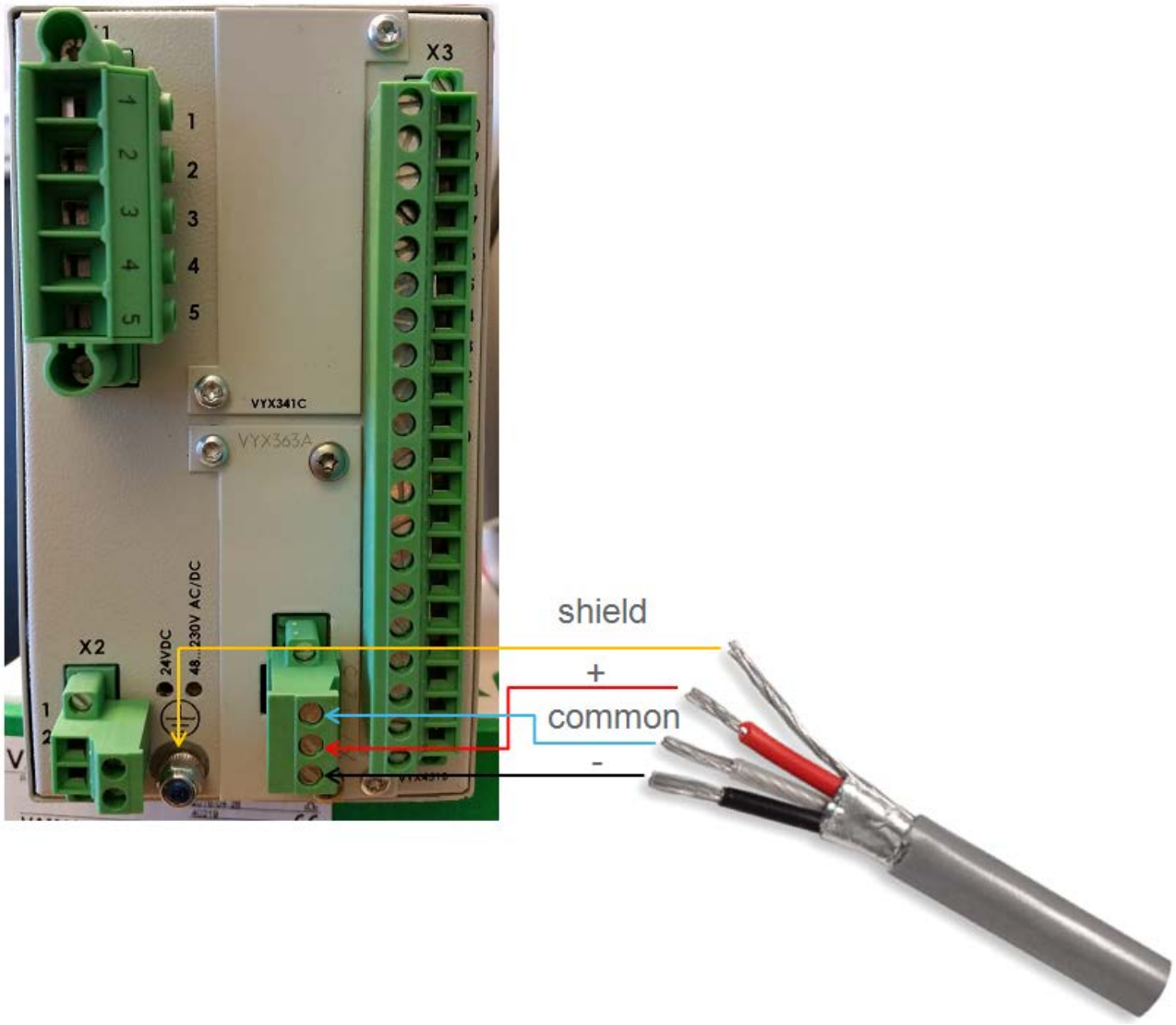

Figure 3. Connection of VAMP 50 relay

RS-485 (2-wire)	3-pole screw connector	1 = - 2 = + 3 = GND

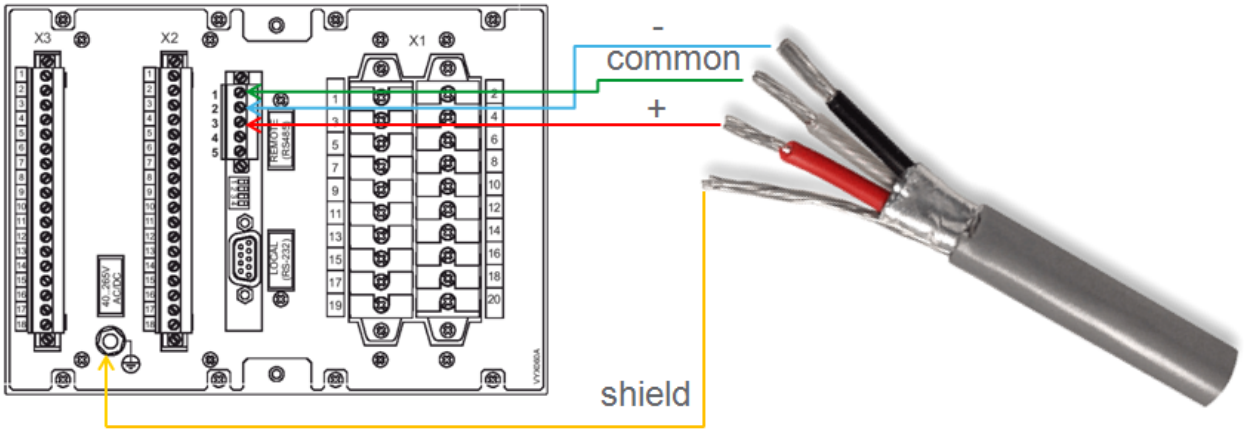

Figure 4. Connection of VAMP 200 series relay

RS-485 connector

1: Signal ground	GND
2: Receiver -	R -
3: Receiver +	R +
4: Transmitter -	T -
5: Transmitter +	T +

DIP switches

2/4 wire selection

Termination

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