Operation of Sensors in the US and Canada (CSA / UL)

TR Electronic is a manufacturer of devices that may be operated in SELV-circuits (Safety Extra Low Voltage Circuits, gemäß IEC 60950, Ziffern 1.2.8.5, 2.3).

These devices are addressed as „Class 2 circuits“ in the US and Canada. Therefore, they are sorted in product groups, which are supplied with up to 30 V DC.

According to the regulations, Class 2 power supplies (UL 1310) or Class 2 transformers (UL 1585, CSA C22.2 No. 66) have to be used to supply those devices.

The protection of Class 2 circuits is realized by the use of Class 2 power supplies or Class 2 transformers designed according to the table below. On operation up to 30 V (AC,DC), maximum currents under the terms of IEC 60950, NEC/CEC (Class 2 circuits) are valid as limits to meet UL and CSA standards.

Therefore, the power supplies and transformers constitute an essential safety mechanism for the wiring of installations and are subject to strict design rules.

In return, the demands on devices operated at Class 2 power supplies or Class 2 transformers are much lower. The safety of the installation is provided by the power supply and not by the wiring or the end devices. The ability of an end device to be operated by a Class 2 power supply or a Class 2 transformer ensures safe operation in combination with the inherent capabilities of the power supply.

Due to the internal design, the operation of TR-devices at Class 2 power supplies is possible. This means that at voltages of 20-30 V DC, the power consumption is limited to less than 100 VA for each device. The majority of TR-devices are designed in a way that allows multiple devices on a single power supply.

In conclusion, provided you are using a Class 2 power supply with most TR Electronic devices, the complete system will be Class 2 compliant.

		NEC Class 2 Power Supplies according to type plate	
output voltage	current limitation	current	max. power
U_{max}	I_{max}	I_{max}	VA
0 V … 20 V (DC,AC)	8 A	5 A	5 A * U_{max}
20 V … 30 V (DC,AC)	8 A	100 / U_{max}	100 VA
30 V … 60 V (DC)	150 / U_{max}	100 / U_{max}	100 VA
Only class 2 power Supplies:			
60 V … 150 V (DC)	5 mA	5 mA	5 mA * U_{max}
30 V … 150 V (AC)	5 mA	5 mA	5 mA * U_{max}

Thresholds for power supplies with power limitation according to IEC 60905
(U<= 30 V AC, 60 V DC) and Class 2 Power Supplies (U<=150 V AC, 150 V DC)