Presence of Y-capacitors required for SIM100 Family

Y-capacitance in un-earthed DC systems

The Y-capacitances in an IT DC system are the total capacitances that exist between the high voltage conductors (+/-) and the chassis (or protected earth) of that system. The values in a given system are the total of the parasitic capacitances associated with the particular system design, including loads, conductor routing, etc, as well as the physical Y-capacitor components designed into such systems for EMI and converter noise suppression.

Presence of Y-capacitors

The SIM100 relies on the presence of the ubiquitous Y-capacitors in the application system to perform its safety function, namely, to diagnose its proper connections to the HV system. Absence of Y-capacitors with a minimum value of 100 nF will flag a connection error and lead the SIM100 into the SAFE state.

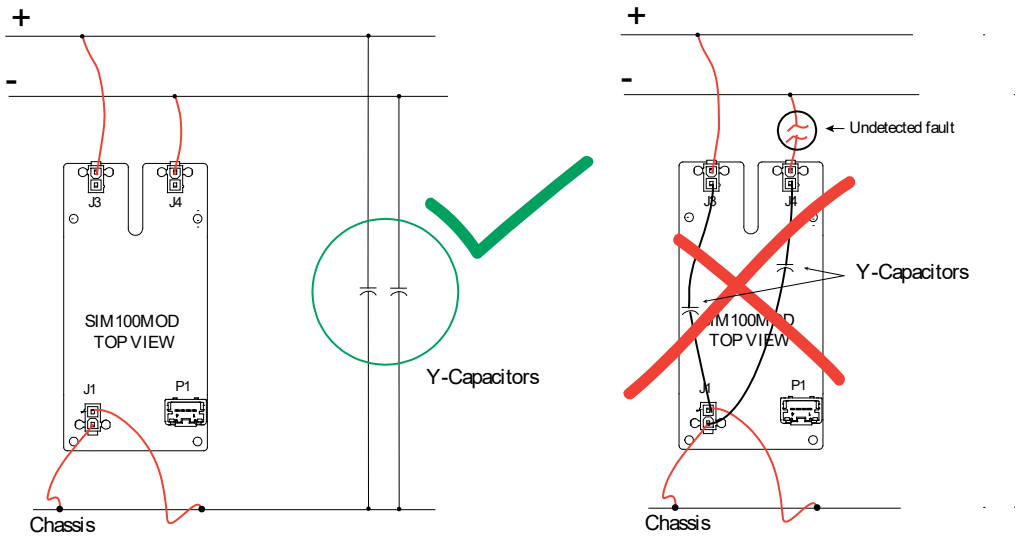

Figure 1: Presence of Y-capacitors is a requirement for proper function of the SIM100. The capacitors should be connected directly to the power lines. Connecting them on the SIM100 board instead would impair the ability of the monitor to detect disconnection from the monitored IT power lines.