Solution sheet Module Level Shutdown (MLSD)

Wels, Feb. 26. 2025

Introduction

This solution sheet illustrates the use of Tigo TS4-F and TS4-2F with the following Fronius inverters.

- Symo Gen24
- Symo Gen24 Plus
- Verto
- Verto Plus
- Tauro
- Tauro ECO

The use of the Tigo TS4-F and TS4-2F with Fronius inverters makes it possible to fulfill a "Rapid Shutdown" requirement for a PV system.

Required components and assembly instructions

As before, an inverter and the PV modules are required to set up the system and, depending on the MLSD device (F or 2F), a corresponding number of MLSD devices.

Tigo offers 2 versions of the device. Only one module can be connected to a TS4-F, while 2 modules can be connected to the TS4-2F. The different versions can be mixed as required in the PV system.

Please refer to the MLSD manufacturer's website for any additional components required and the latest installation instructions for the MLSD devices.

Functionality

An MLSD device is a power electronic circuit in its own housing that can switch off the individual modules in the string if required. The devices are installed under the PV modules and connected to the respective modules.

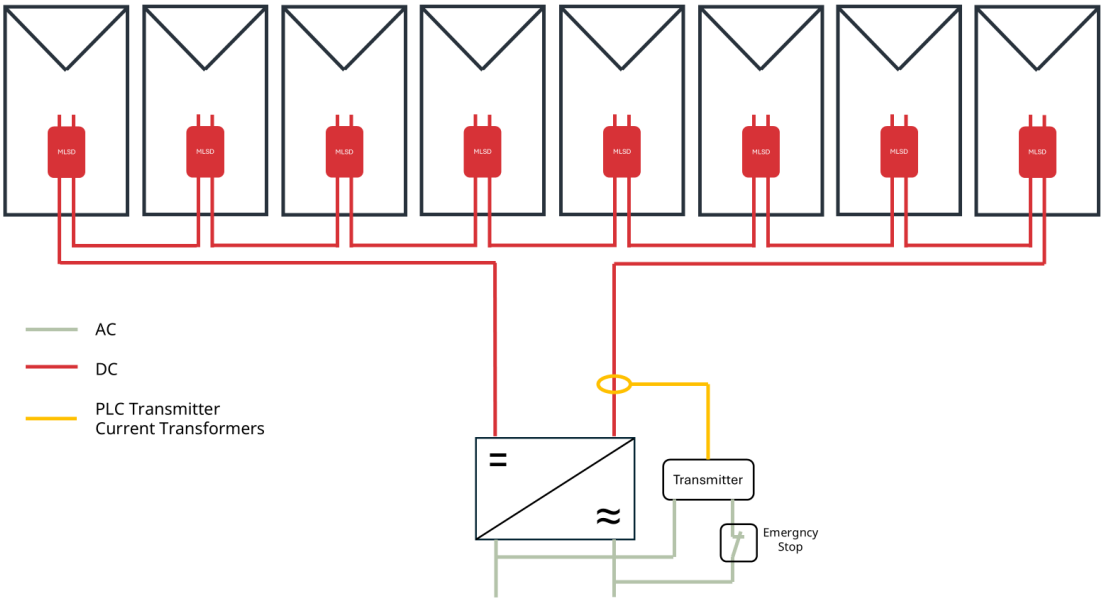
The devices are supplied with voltage by the PV modules and are controlled by means of a regular cyclical signal (keep alive signal). If the keep alive signal, which is provided by an

additional transmitter in the system, fails to materialize, the MLSD devices disconnect the modules from the string. The trigger for disconnection is either a lack of AC supply of the Transmitter or an external "emergency stop" switch.

Communication between the transmitter and MLSDs takes place via Power Line Communication (PLC) on the DC cables of the PV system.

Exemplary structure

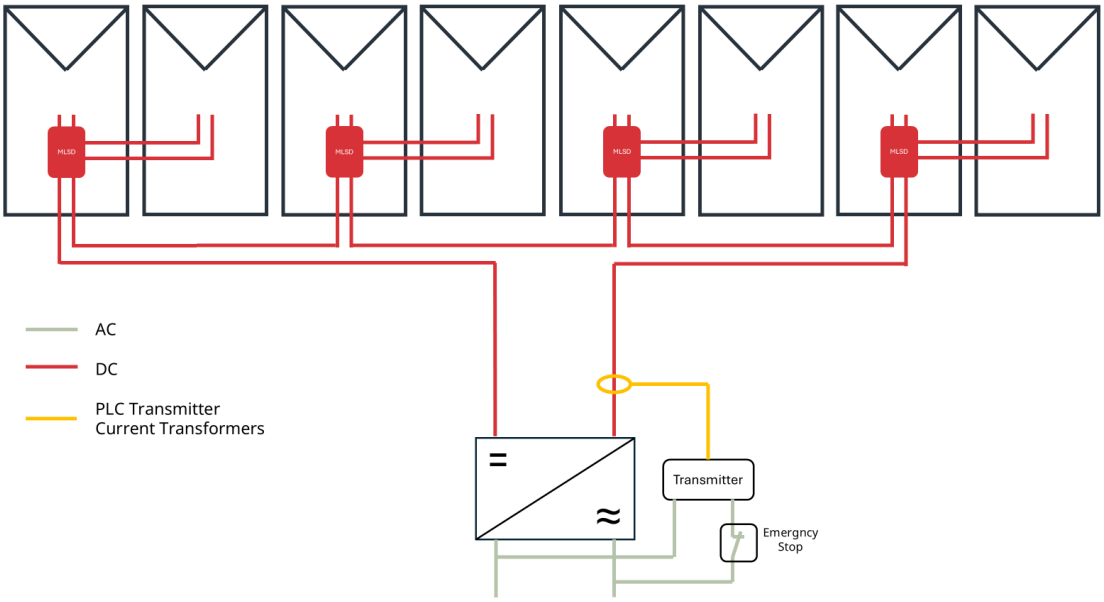
Setup with single MLSD devices



In a setup with only single MLSD devices (TS4-F), one PV module per device is connected to the input side and the cables of the PV string are connected to the output.

The PLC transmitter applies the PLC signal to the DC lines via the current transformer rings. Depending on the required switch-off method, an emergency stop switch must also be installed to disconnect at least the PLC transmitter from the AC mains.

Setup with Duo MLSD devices



In a setup with only Duo MLSD devices (TS4-2F), two PV modules are connected to the input side of each device and the cables of the PV string are connected to the output.

The PLC transmitter applies the PLC signal to the DC lines via the current transformer rings. Depending on the required switch-off method, an emergency stop switch must also be installed to disconnect at least the PLC transmitter from the AC mains.

Inverter setting recommendations

MPP Tracker	Car
DPM	On (MLSD)

To ensure stable operation of the MLSD, the DPM must be set to “on (MLSD)”.

Influence on AFCI

The use of Tigo MLSD devices in combination with activated Fronius Arc Guard (AFCI function of the Fronius inverter) is not permitted, as the active power electronics of the MLSD devices interfere with the Fronius Arc Guard and therefore a greatly increased number of false alarms is to be expected.

Support

Fronius will provide technical support as usual via Solar.sos and the hotline. However, if specific support such as consulting services or design recommendations for the MLSD devices are required, please contact the manufacturer.

The use of Tigo MLSD devices in accordance with the declaration of compatibility does not limit the warranty claims of the Fronius system. The warranty conditions of the MLSD devices can be found on the respective manufacturer's website.

Fronius rejects any liability for reduced yield the incorrectly functioning rapid shutdown functionality, as this is the exclusive responsibility of the MLSD device manufacturer.

Declaration of compatibility

This document remains valid as long as this declaration of compatibility, available on the Fronius website, is available and valid or the document is replaced by another one. Reference is also made to the Fronius website.

If you have any further questions, please get in touch with your contact person at Fronius.

Kind regards,

Your Fronius Team