Lukas Muth

Connect, protect, control –LED light engines

Introduction

Industrial electro technology for many industries

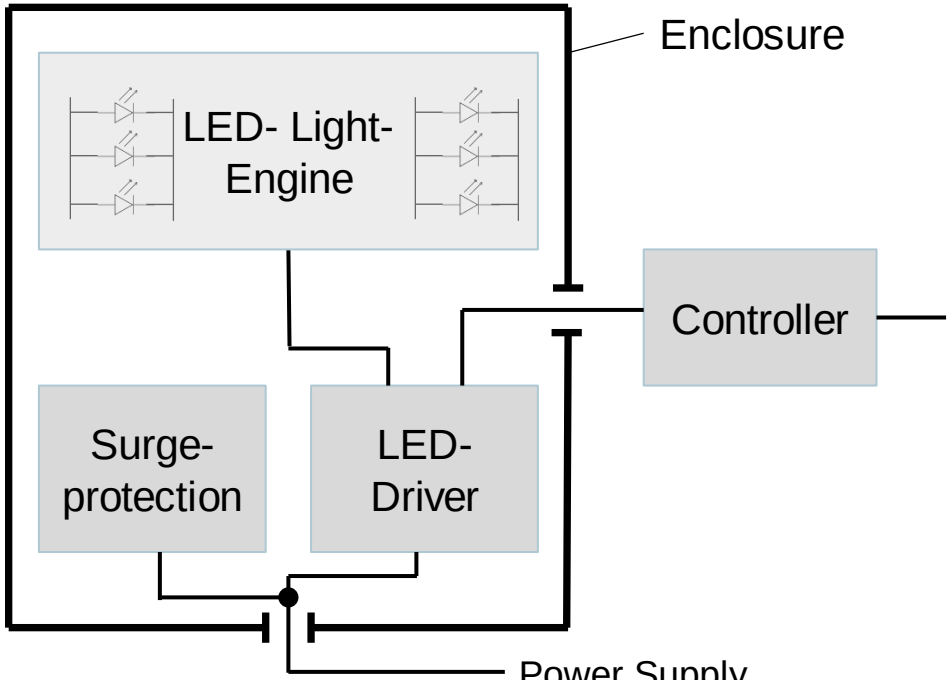







Introduction

Example of a generic LED Light-System



industrial technology can speed up the
-design
-assembling
-wiring
-commissioning

of Lighting applications

Outdoor energy wiring

Bringing Energy inside a housing

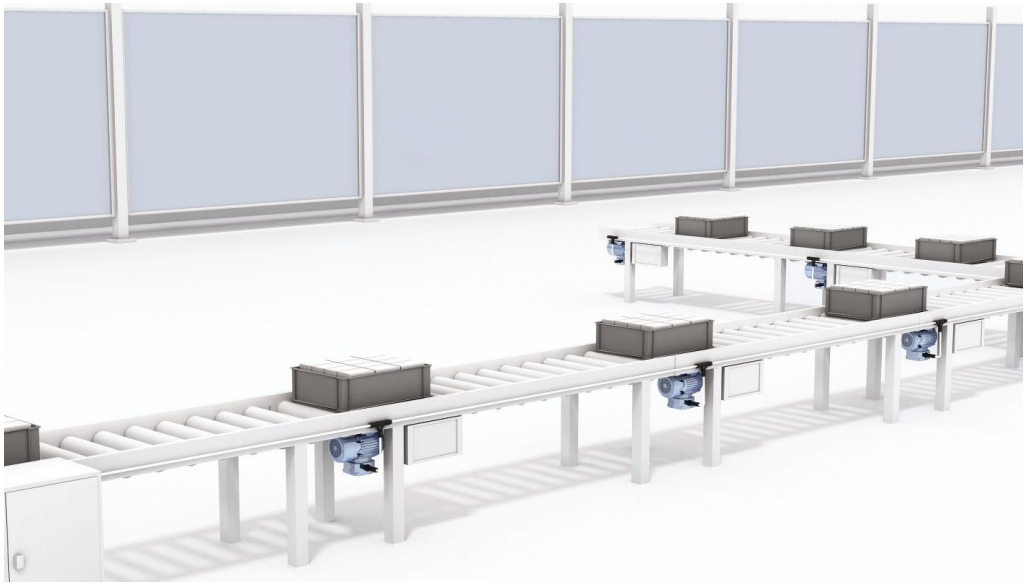
Any electric motor needs a wiring connection

the connection needs to be

- fast
- reliable
- IP rated
- pluggable for service

Outdoor energy wiring

Distribute the energy with installation systems

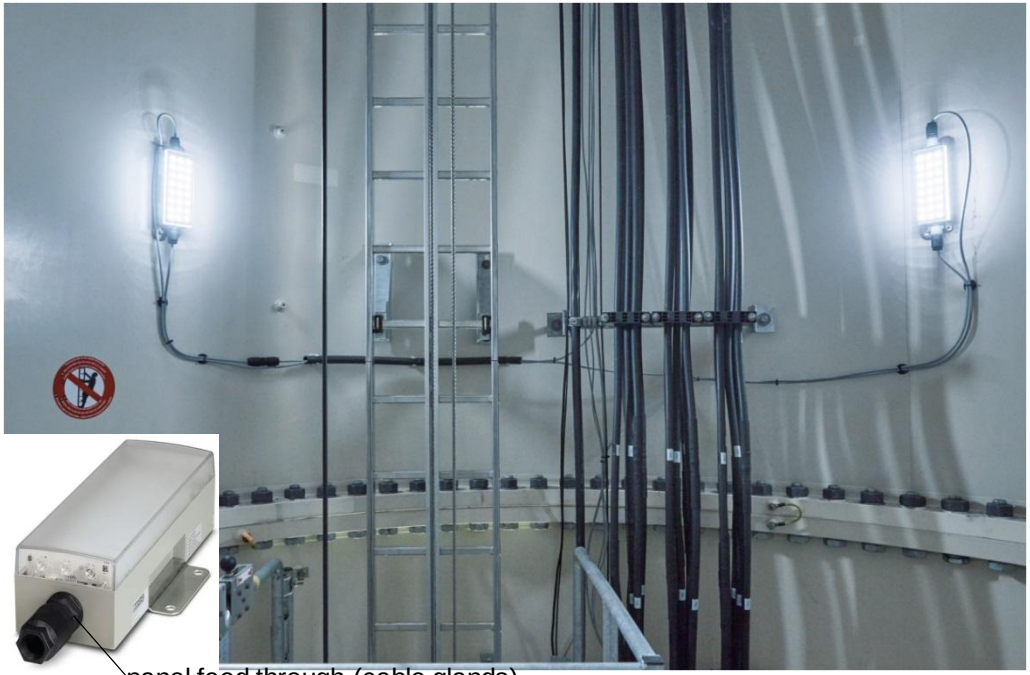


In many cases a complete system needs to be wired.

Todays industrial installation systems help to speed up the wiring process dramatically.

Outdoor energy wiring

Energy distribution in a lighting application



panel feed through (cable glands)

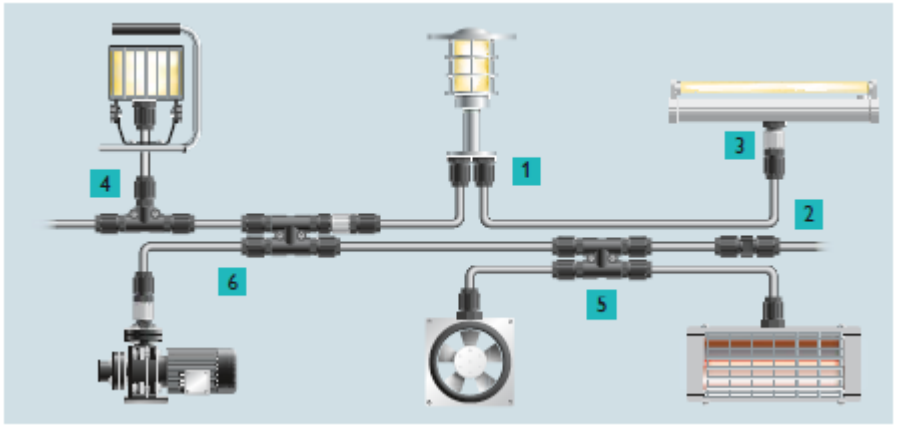
e.g. wiring a tower of a wind turbine with an installation system!

Panel feed throughs are already fitted to the lighting points.

For the wiring we just need cable and cable cutter

Outdoor energy wiring

Simple operations and many options



1. Preparing the cable

2. Centering the cable

3. Gas-tight contacting

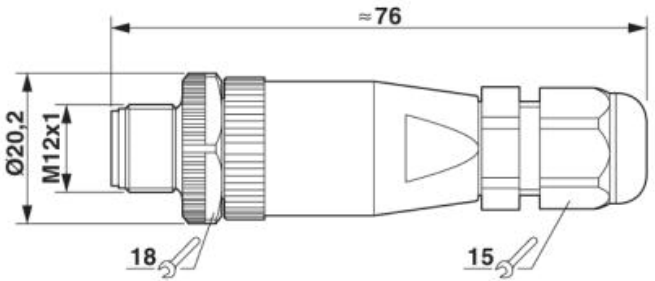
In the field we use mostly

- Cable connector
- H-distributor
- T-Distributor
- Professional repair kit

Wiring of signals

In factory automation-great demand for wiring

- Traditionally the **M12** connectors are used for sensor actor wiring



Wiring of signals

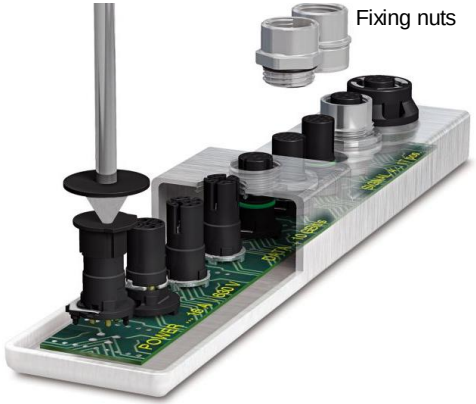
Because of its history the M12 is very versatile

- Many housing/panel feed throughs
- either with cable or single wires
- Robust connection
- Suitable for outdoor
- Still an innovative connection system
  e.g mounting the M12 directely onto the PCB.

Wiring of signals

Bring the M12 contact holder into the SMT-process

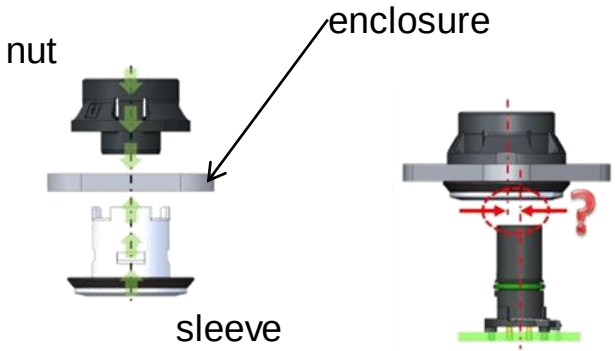
holder in tape on reel packaging



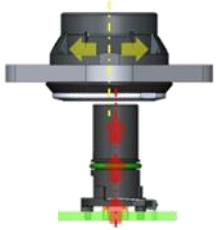
Challange:
Matching the enclosure to the contact holder

Wiring of signals with the vario port

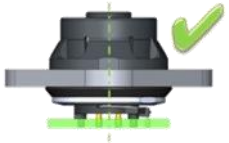
Mounting a vario port into enclosure



Tol. 1mm!



TCS:
Tolerance Compensation System
(or vario port)



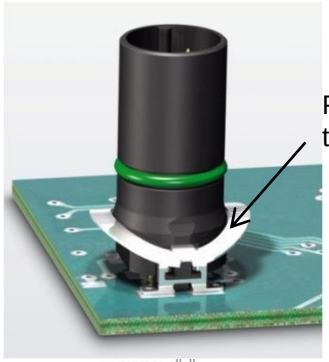
IP 67

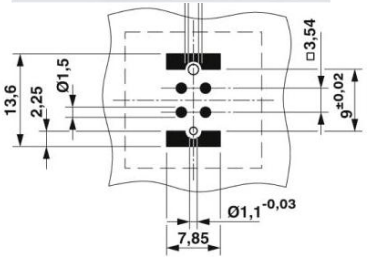
IP 67 and fixed !

Wiring of signals

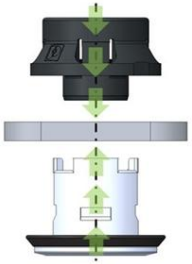
Two parts of the vario port M12-system

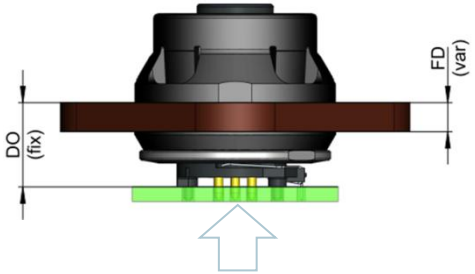
contact holder as SMT-part





vario port in the enclosure





both parts assembled

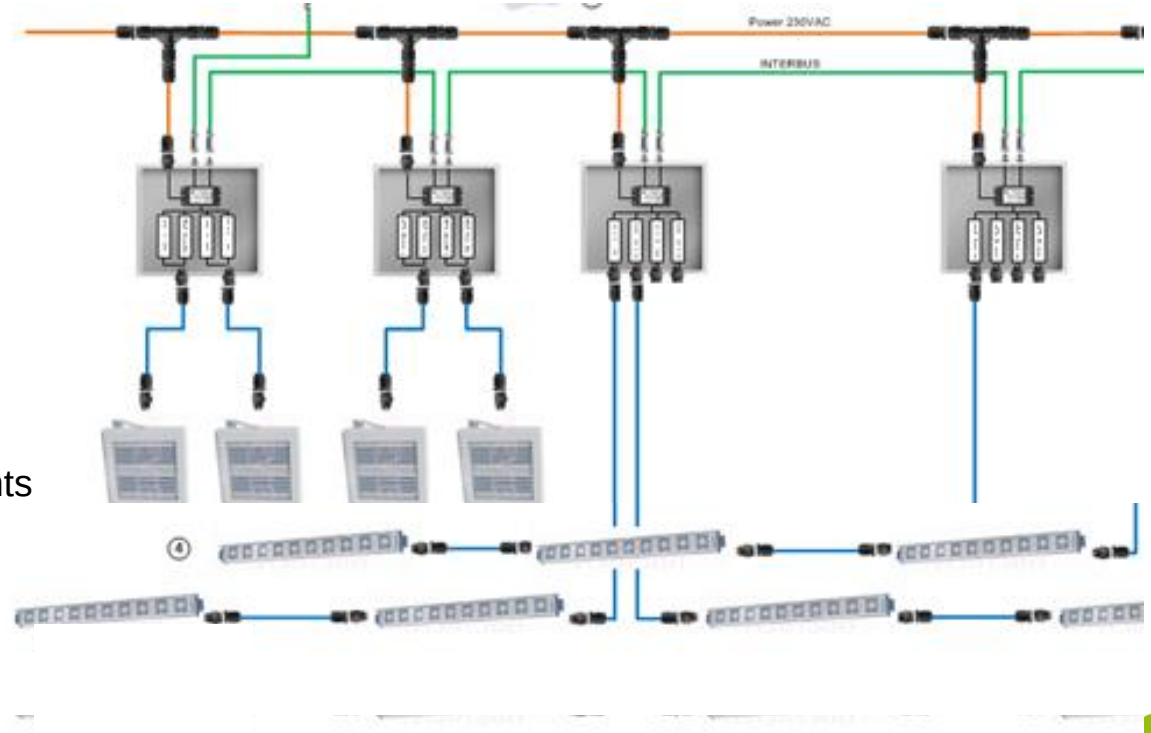
easy colour coding with the fixing nuts

Wiring of signals and power

Typical build up of an outdoor lighting application

Driver

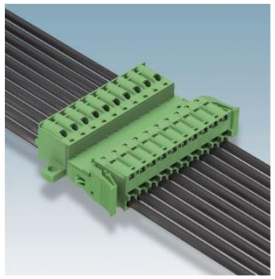
LED-Lights



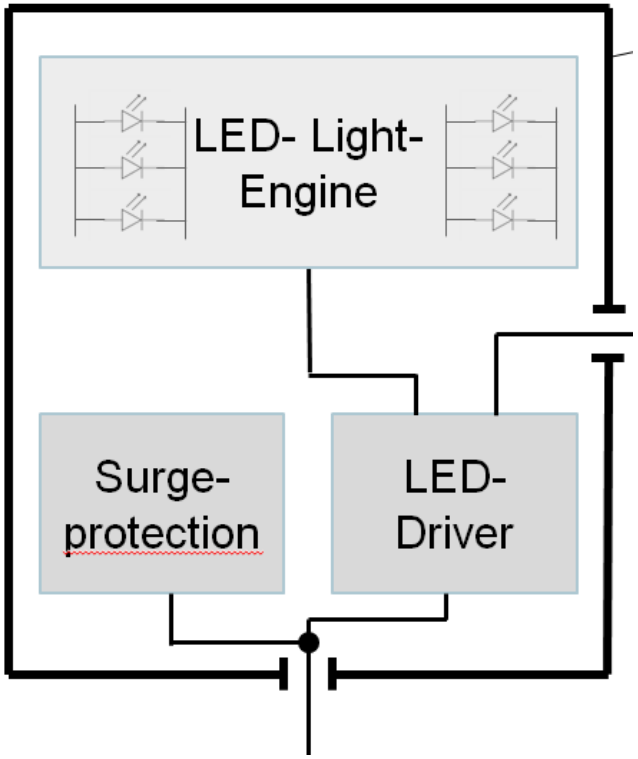
e.g
-Installation System for energy
-M12 for Signals

Wiring inside the enclosure

Different types of industrial connectors



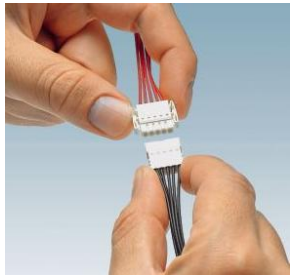
wire to wire

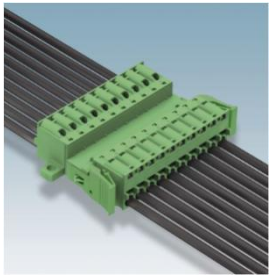


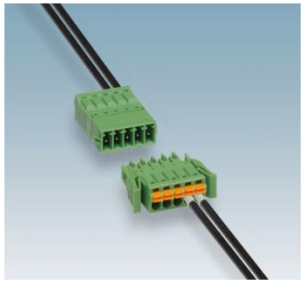
wire to board

Wiring inside the enclosure

Wire to wire connectors with push in technology





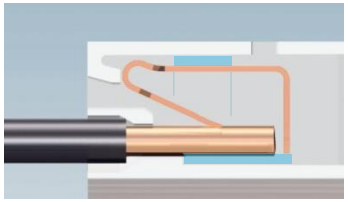


-fast connection

pushing the wire/ferrule
against the spring

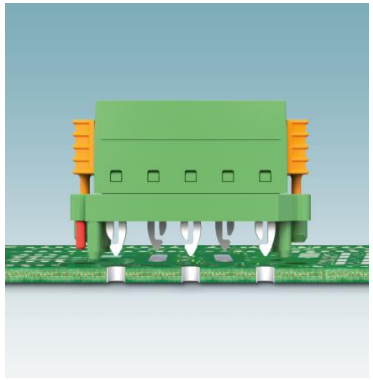
-reliable connection

spring keeps wire in position



Wiring inside the enclosure

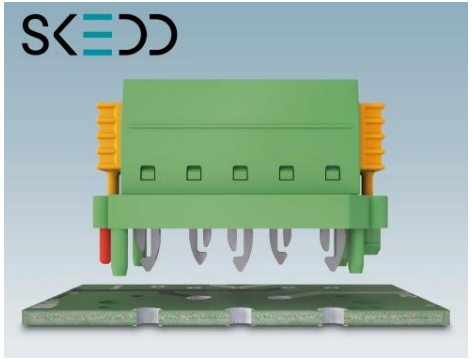
Wire to board connectors with push in technoloy

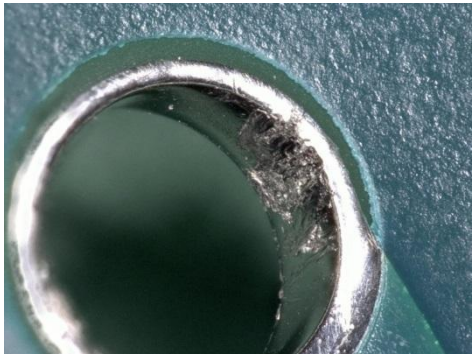


	Terminal block	Plug Header system	Plug / PCB system
Wire	Push in	Push in	Push in
Board	SMD or THT	SMD or THT	SKEDD *(new technology !)*

Wiring inside the enclosure

SKEDD is a new technology for pcb boards



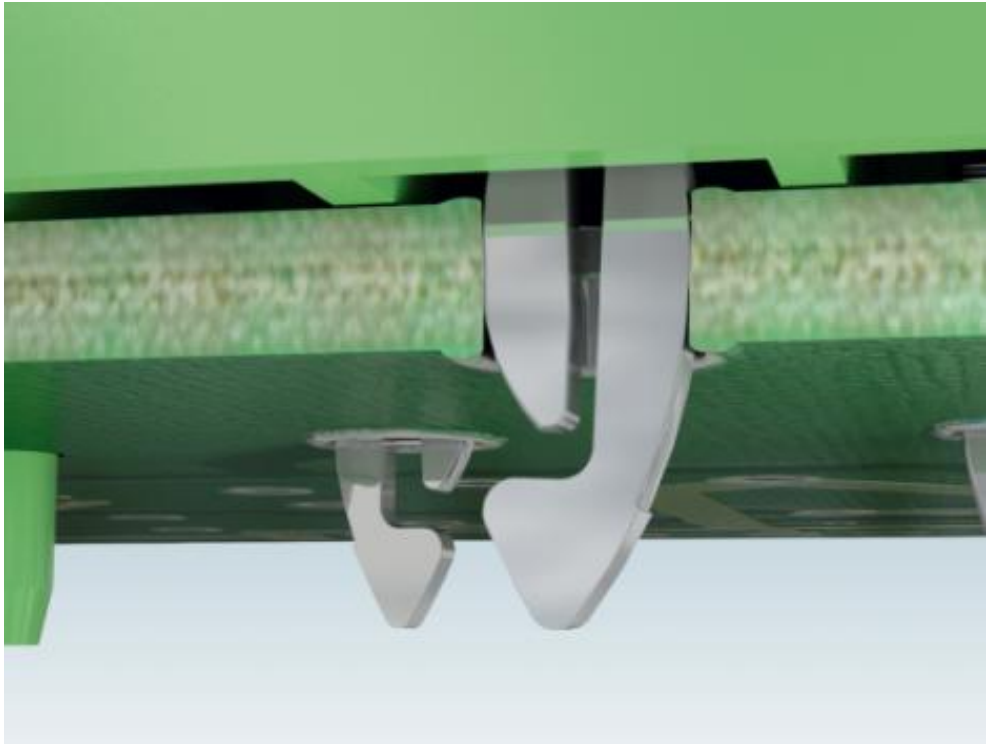


SKEDD explained:

- Only holes in the pcb
- No soldering/no header
- SKEDD pins make contact to the contact holes
- Guidance and locking pins to the left and to the right

Wiring inside the enclosure

Close up SKEDD technology



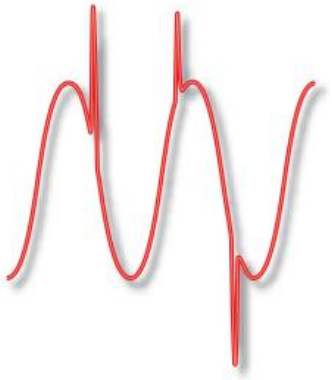
Protection

Surge Voltages can harm electric systems

Every day there are more than four million lightning discharges worldwide.*

Of these, ten percent are considered as ground lightning strikes with surge currents of up to 200,000 A. In addition to these daily 400,000 discharges caused by storms, surge voltages also occur within local power grids. Here, it is switching operations, faults or switched-mode power supply units, for example, that are responsible.

Regardless of the cause, surge voltages repeatedly lead to unexpected faults in devices or system failures. TRABTECH surge protection prevents such effects comprehensively and effectively.

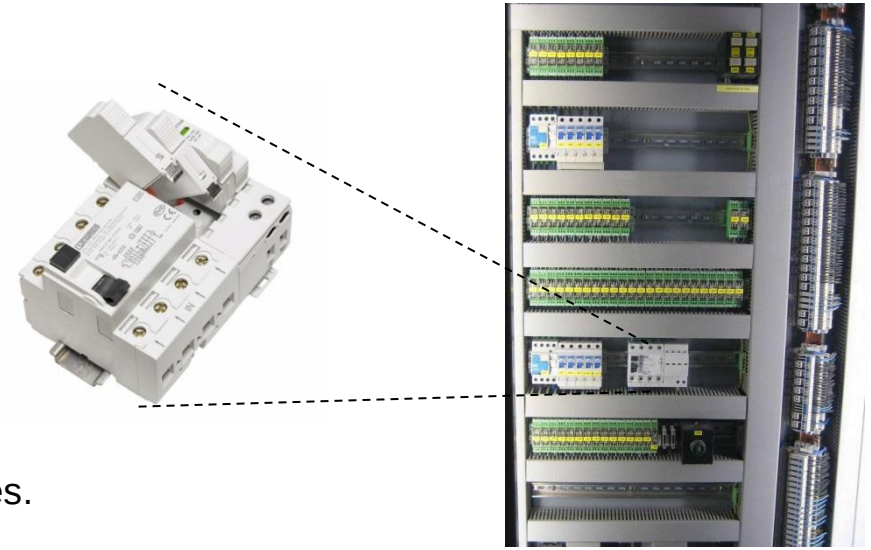


Surge voltages are not only caused by storms!
Switching operations can generate surge voltages as well!

Protection

Example for switching operations

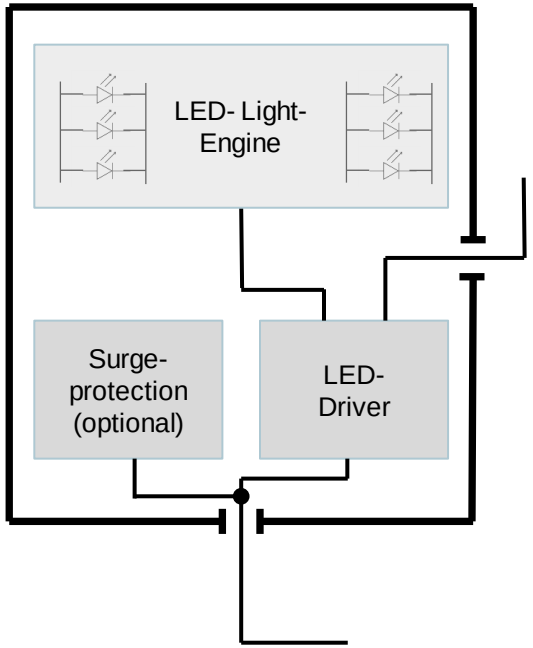
Large switch-on currents can damage electronic devices.
Therefore porfessional SPDs are widely established.

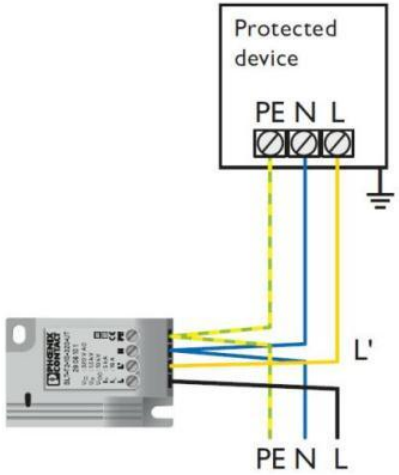


e.g. SPD`s for three phase power supply Networks (SPD Surge Prototecion Device)

Protection

Lighting systems are affected as well





SPD‘s
for many lighting applications

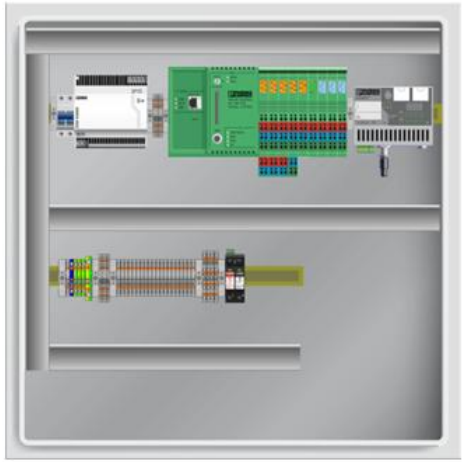
Control

Advanced controller systems in many industries

Several layers of even redundant controlling systems used !

Control

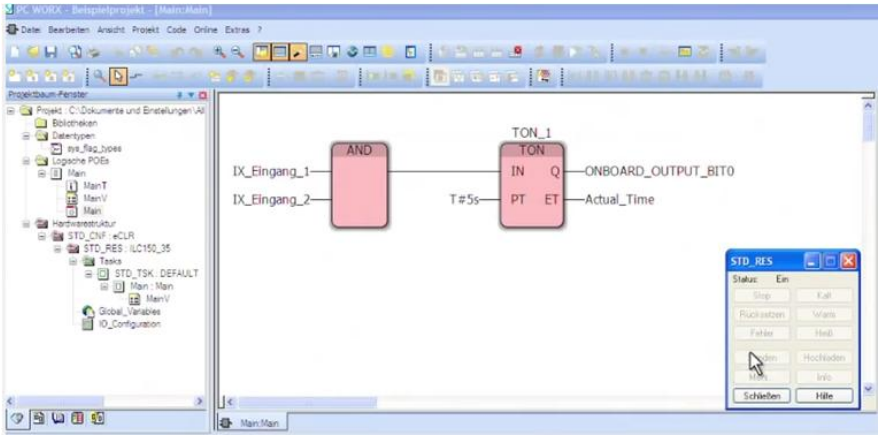
Tailor basic ind. controller for lighting applications



But simple to use controllers are available in industry as well

Control

Easy to use software packages available



User-friendly due to scalable control technologies and graphic programming

Summary

Simplify LED-lighting with industrial components