
Inhaltsverzeichnis

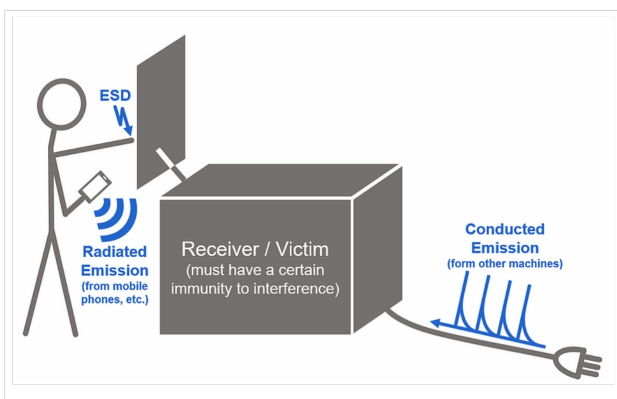
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Kategorie:EMV

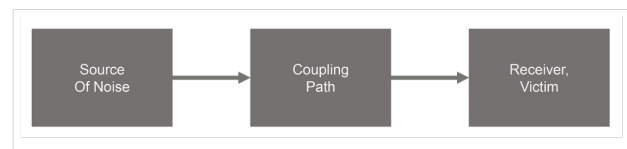
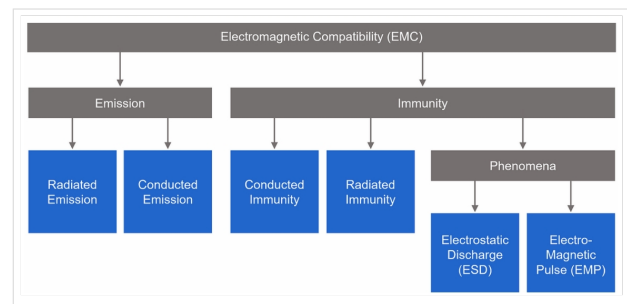
EMV (Elektromagnetische Verträglichkeit)

Grundsatzbetrachtungen

In dieser Kategorie sind Informationen zu Elektromagnetische Verträglichkeit (EMV) zu finden. Darunter versteht man die Fähigkeit eines technischen Gerätes, andere Geräte nicht durch (ungewollte) elektrische oder elektromagnetische Effekte zu beeinflussen. Oder auch selbst durch andere Geräte gestört zu werden. Grundlegend für die Verträglichkeit ist dabei die Elektromagnetische Interferenz (EMI).



Dabei sollte eben die EMI dank EMV keine Störeffekte hervorrufen.



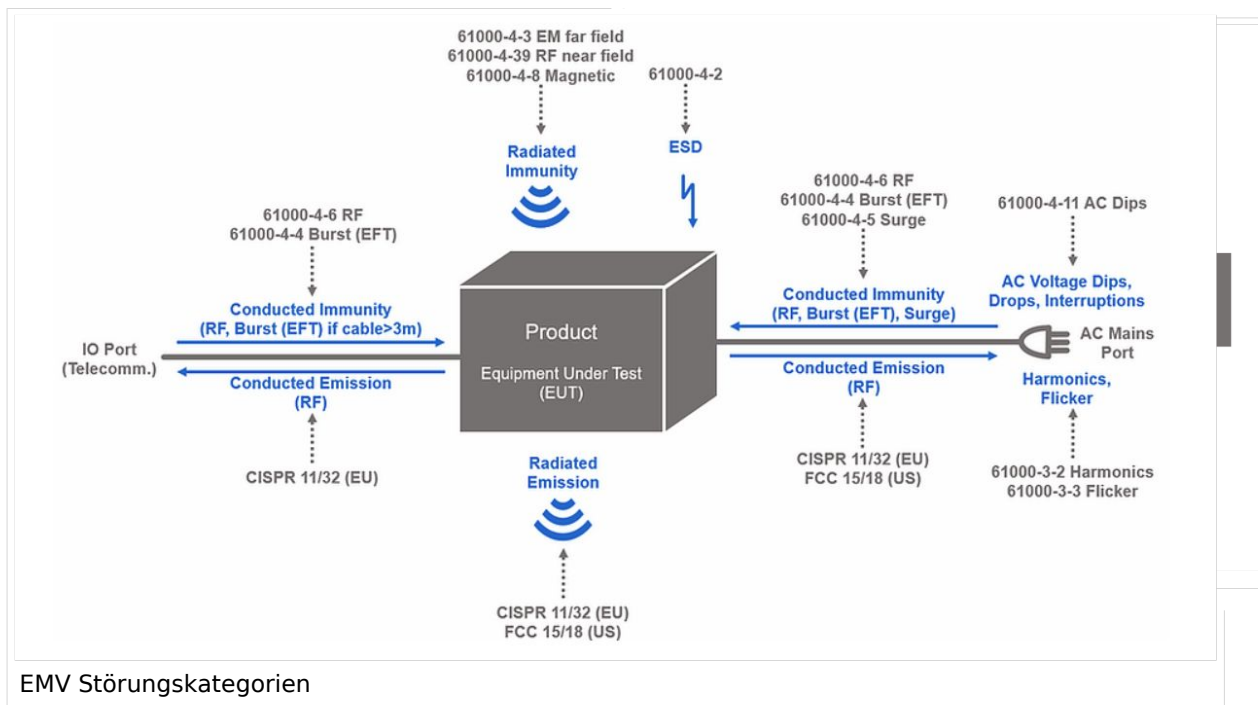
Übersicht der Störungskategorien

Wie die untenstehende Infografik zeigt, kann ein Produkt (in diesem Zusammenhang eine Testobjekt, Equipment Under Test, EUT) (hauptsächlich) durch

- Leitungsgeführte Störungen (**Conducted Emissions**) oder durch
- Störstrahlungen (**Radiated Emissions**)

beeinträchtigt werden.

In der Infografik werden dabei auch die relevanten Normen aufgeführt. Siehe auch [CISPR Guide 2019](#).

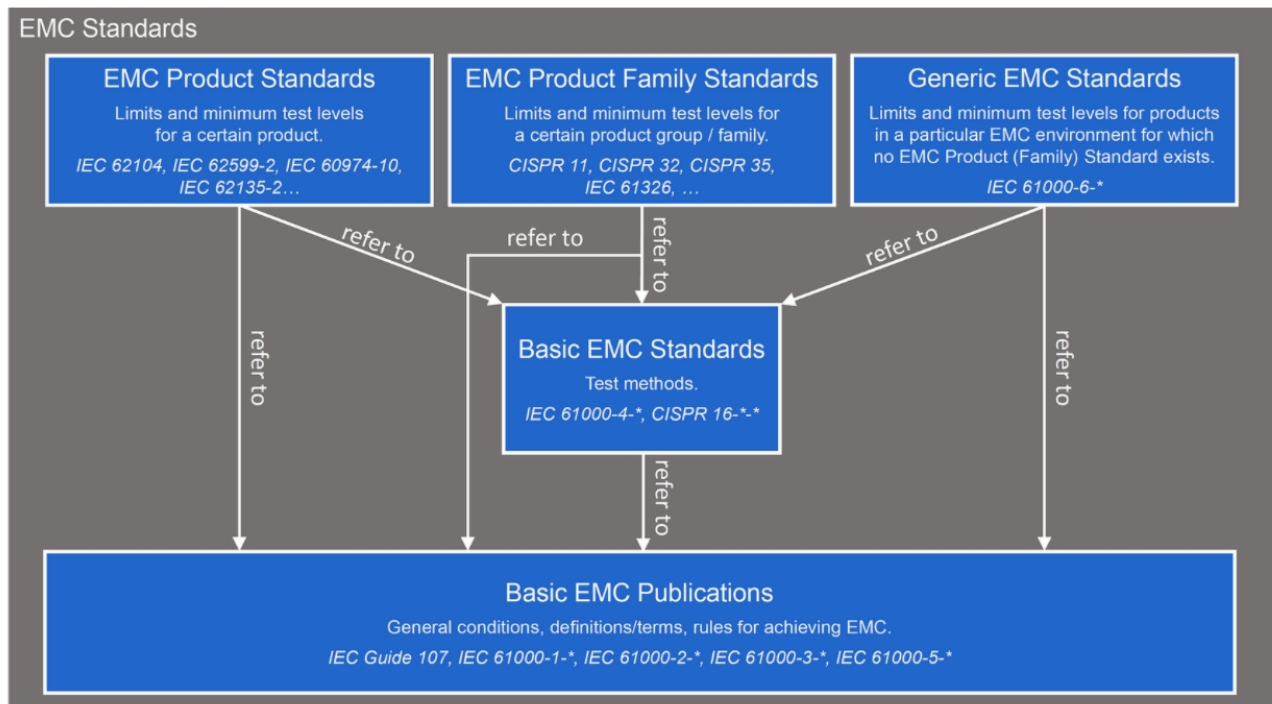


EMV-Normen

Bedingt durch die hochkomplexe Sachlage (es existiert eine grosse Anzahl komplexer Geräte, die zum Teil in kleiner Entfernung von einander betrieben werden) gibt es eine Reihe von internationalen Normen, die sich jedoch je nach Weltregion (EU; USA; Asien,...) weiter unterscheiden.

Siehe auch <https://www.academyofemc.com/emc-standards>.

Einteilung der EMV Normen



Basisnormen

Diese Gruppe ist ihrerseits unterteilt

- Generelle Standards
- Umwelt
- Emission
- Immunität
- Installation/Abhilfemassnahmen

Produktstandards

Standards für Produktfamilien

Generische Standards

Bilder, wenn nicht anders angegeben, mit freundlicher Genehmigung von: <https://www.academyofemc.com/emc-standardsde>

Weiterführende Informationen

Internationales Elektrotechnisches Vokabular: <http://www.electropedia.org/>

Detaillierte Einführung in EMV: <https://www.academyofemc.com/>

EMV-Glossar: <https://www.academyofemc.com/emc-vocabulary>

Unterkategorien

Diese Kategorie enthält nur die folgende Unterkategorie:

E

- ► [EMV/Normenarbeit \(IARU\)](#) (leer)

Seiten in der Kategorie „EMV“

Folgende 10 Seiten sind in dieser Kategorie, von 10 insgesamt.

C

- [CISPR Guide 2019](#)

E

- [Elektromagnetische Umweltverträglichkeit](#)
- [ENAMS](#)
- [ENAMS Auswertungen Heatmaps](#)
- [ENAMS Auswertungen Noise Floor](#)
- [ENAMS Auswertungen Spektren](#)

F

- [Fallstudie TV Box: Declaration of Conformity](#)

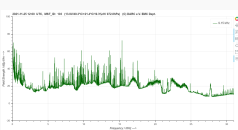
S

- [Smart Meter](#)
- [Störungen durch PLC \(Powerline Communications\)](#)

W

- [WPT-EV](#)

Folgende 12 Dateien sind in dieser Kategorie, von 12 insgesamt.



Notation	Value	Note
f_{start}	35,937.5 kHz	Lowest frequency of CENELEC-A bandplan (subcarrier number 27)
f_{end}	93,625 kHz	Highest frequency of CENELEC-A bandplan (subcarrier number 58)
Previously excluded subcarrier indices	0 to 22, 99 to 127	Clause A.4.2.1 of [ITU-T G.9902]

The diagram illustrates the various coupling paths between a 'Source of Noise' and a 'Receiver/Victim'. A central vertical grey bar is labeled 'Coupling Paths' at the top. Inside this bar, from top to bottom, are: 'Conductive Coupling' (with a symbol for a wire and a ground connection), 'Capacitive Coupling' (with a symbol for two parallel plates), 'Inductive Coupling' (with a symbol for two overlapping loops), and 'Radiated Coupling' (with a symbol for two antennas emitting/receiving waves). Arrows point from the 'Source of Noise' box on the left to the coupling paths, and from the coupling paths to the 'Receiver/Victim' box on the right.

```

graph TD
    DMC[Diatomic Compatibility DMC] --> Emission[Emission]
    DMC --> Intensity[Intensity]
    Emission --> RE[Reflected Emission]
    Emission --> CE[Conducted Emission]
    Intensity --> CI[Conducted Intensity]
    Intensity --> RI[Reflected Intensity]
    RI --> Phenomena[Phenomena]
    Phenomena --> EMI[Electromagnetic Interference EMI]
    Phenomena --> EMP[Electromagnetic Pulse EMP]
  
```

The diagram illustrates the architecture of the proposed system. It is organized into several functional blocks and layers. At the top, a horizontal flow shows 'Mains' (AC) connected to a 'PLC Unit', which then connects to 'Communication' and 'Web' components. The 'Web' component is linked to an 'Information systems' block. This block contains five sub-modules: 'Monitoring and administration DS', 'Control DS', 'Accounting and Billing DS', 'Scheduler DS', and 'Operation DS'. These modules are connected to 'Outputs DS' (Outputs DS). Below the 'Information systems' block, there is a 'Data storage' block. At the bottom, the 'End user' section is divided into four categories: 'Low voltage network' (represented by a house icon), 'MV/HV network' (represented by a power line icon), 'Communication network' (represented by a server rack icon), and 'Scheduling system' (represented by a calendar icon). The 'Low voltage network' is connected to the 'PLC Unit'. The 'MV/HV network' is connected to the 'Communication' block. The 'Communication network' is connected to the 'Web' block. The 'Scheduling system' is connected to the 'Information systems' block.

Comparison of PLC G3 and PRIME

Markus B. Smith

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As the PLC market continues to grow, manufacturers are looking for a PLC that can handle the demands of today's applications. The Rockwell Automation PLC G3 and PRIME are two of the most popular PLCs in the market. This article compares the two PLCs and discusses the advantages of each.

The Rockwell Automation PLC G3 is a 16-bit, single-channel PLC. It is designed for use in a wide range of applications, from simple on/off control to complex process control. The PRIME is a 16-bit, multi-channel PLC. It is designed for use in applications that require a high degree of flexibility and scalability.

Both PLCs are available in a variety of configurations, including rack-mounted and DIN-rail mounted. They also offer a wide range of I/O modules, including digital, analog, and serial. The PRIME offers a more extensive range of modules than the G3.

One of the key advantages of the PRIME is its ability to handle a large number of I/O points. It can support up to 1,024 digital I/O points and 32 analog I/O points. The G3, on the other hand, is limited to 256 digital I/O points and 8 analog I/O points.

Another advantage of the PRIME is its ability to handle complex control logic. It features a more powerful processor than the G3, which allows it to execute more complex programs. The PRIME also offers a more extensive range of communication options, including Ethernet, Modbus, and Profibus.

Despite its higher cost, the PRIME is often the preferred choice for manufacturers looking for a PLC that can handle the demands of today's applications. Its ability to handle a large number of I/O points and its ability to handle complex control logic make it a more versatile and scalable solution than the G3.

For more information on the Rockwell Automation PLC G3 and PRIME, please contact your local Rockwell Automation representative or visit our website at www.rockwellautomation.com.



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SERIES OF ITU-T RECOMMENDATIONS	
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Series C	Study of systems, equipment, applications, services and associated features
Series D	Study of standards
Series E	Transmission systems and data, digital systems and networks
Series F	Audiovisual and multimedia systems
Series G	Telecommunications digital networks
Series H	Cable systems and transmission of television, sound programmes and other multimedia
Series I	Post-telecommunications systems
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Series O	Telecommunications management systems
Series P	Telephone transmission systems, equipment, standards, local law forecasts
Series Q	Networking and signalling, and associated maintenance systems
Series R	Signalling systems
Series S	Telegraph systems limited application
Series T	Terminology for telecommunication systems
Series U	Study of the requirements for the telephone network
Series V	Data networks, open systems communication and security
Series W	Global telecommunications, international aspects, were generated networks, international aspects and other
Series X	Language and general software aspects for telecommunications systems

```

graph LR
    PC11[PC11] --> Scrambler[Scrambler]
    Data[Data] --> Scrambler
    Scrambler --> RootSpace[Root-Space encoder]
    RootSpace --> Constellation[Constellation encoder]
    Constellation --> Interleaver
    subgraph Interleaver
        Bit[Bit]
        Robust[Robust (RC4)]
        SRobust[S-Robust (RC3)]
    end
    Interleaver --> OFDMModulator
    subgraph OFDMModulator
        Mapping[Mapping (DPSK, QPSK, DPSK)]
        Precoding[Pre-coding]
        FFT[FFT]
        AddCP[Add CP]
        Windowing[Windowing]
    end
    OFDMModulator --> AD[ADC]
    AD --> PowerLine[Power Line]
  
```

The diagram illustrates the concept of a Receiver/Victim in a security context. It shows a stick figure on the left, labeled 'ESD' and 'Radiated Emission (from mobile phones, etc.)', representing a source of interference. A large grey box in the center is labeled 'Receiver / Victim (must have a certain immunity to interference)'. A stick figure on the right is labeled 'Conducted Emission (from other machines)', representing another source of interference. The diagram highlights the need for a Receiver/Victim to have a certain immunity to interference.

```

graph LR
    A[Source Of Noise] --> B[Coupling Path]
    B --> C[Receiver, Victim]
  
```

```

graph TD
    ENX[ENX Standards] --> ENX1[ENX Product Standards  
ENX 1000 and ENX 1000-2  
ENX 1000-1 and ENX 1000-3]
    ENX --> ENX2[ENX Product Family Standards  
ENX 1000-1 and ENX 1000-3  
ENX 1000-4 and ENX 1000-5]
    ENX --> ENX3[Generic ENX Standards  
ENX 1000-4 and ENX 1000-5  
ENX 1000-6 and ENX 1000-7]
    ENX1 --> ENX4[Basic ENX Standards  
ENX 1000-6 and ENX 1000-7]
    ENX2 --> ENX4
    ENX3 --> ENX4
    ENX4 --> ENX5[Basic ENX Publications  
ENX 1000-8 and ENX 1000-9  
ENX 1000-10 and ENX 1000-11]
  
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