

Manufacturer's Declaration

23. September 2020

<b>IEC 60204-1</b>	<b>Safety of machinery - Electrical equipment of machines - Part 1: General requirements</b>
<b>Scope in brief</b>	The IEC 60204-1 standard is intended to be used on machines <ul style="list-style-type: none"><li>• including electric, electronic or programmable equipment (EEE) with nominal supply voltage not exceeding 1000 Vac and 1500 Vdc.</li><li>• Not portable by hand while working.</li></ul>

**Requirements according to IEC 60204-1, 6<sup>th</sup> Edition.**

*Power Drive Systems* consist of a *Complete Drives Module*, also known as *Drive or Inverter*, and *Motor*. To prevent from electrical, thermal and energy hazard technical product requirements are given by the related product standards and YASKAWA products do comply with those relevant norms.

YASKAWA *Drives* are designed for a wide variety of industrial applications. Safety functions embedded in the drive make it easier for the user to comply with the normative and regulatory safety requirements applicable to his application or machine.

In 2016 the IEC technical committee published Edition 6 of IEC 60204-1. The IEC 60204-1 standard is applicable to machines that including *electric, electronic or programmable equipment (EEE)* with nominal supply voltage not exceeding 1000 Vac and 1500 Vdc and are not portable by hand while working.

The new edition contains numerous significant technical changes, some of which are discussed in this document with focus on applications using *Power Drive Systems (PDS)* and protection against electrical shock.

1. Touch Current Protection (6.3.3)
2. Over Current Protection (7.2)
3. Over temperature Protection (7.3.2)
4. Short-Circuit protective devices

**1. Touch Current Protection**

Electric shock is one of the major risks that needs to be prevented and mainly been done by applying basic and fault protection against direct or indirect contact with conductive parts.

As a part of Fault Protection Clause 6.3.3. of edition 6 provides information about protection through automatic disconnection of supply. This clause also speaks of circuits powered by *PDS* and requires that such circuits be protected against occurrence of unacceptable high touch voltage. Such protection can either be built directly into the *PDS* or implemented as an external solution for which the required information must then be provided by the *PDS* manufacturer as part of the instructions.

- ⇒ YASKAWA *Drives* are equipped with an embedded ground fault, overcurrent and short circuit protection function.

Please refer to the technical manual for more details.

## 2. Over Current Protection

As per in clause 7.2 overcurrent protection shall be provided where the current in any circuit can exceed either the rating of any component or the current carrying capacity of the conductor, whichever is the lower value. As usual, YASKAWA drives are accompanied with instructions providing requirements for power supply and motor cable.

- ⇒ YASKAWA *Drives* are equipped with an embedded overload protection function.

Please refer to the technical manual for more details.

## 3. Overtemperature protection

Clause 7.3.3 recommends the provision of motors with over-temperature protection in accordance with IEC 60034-11 in situations where the cooling can be impaired.

- ⇒ YASKAWA *Drives* are equipped with an embedded overtemperature protection function.

Thanks to a comfortable Auto Tuning program the setup is quick and easy. Details are provided by the technical manual.

## 4. Short Circuit Protection Devices

Short Circuit protection devices are required on the line side of the *Drives*. For more details please refer to the instructions accompanied with the product.

## Summary

YASKAWA *Drives* meet the requirements of IEC 60204-1: 2016 (Ed. 6), provided the product is installed according to its installation instructions and used in accordance with its intended use.

## YASKAWA Europe GmbH



Gunther Krei  
Head of Quality and Global Standardisation



Tobias Unger  
General Manager  
European Technology Center  
Drives & Motion Division