

Product Announcement

# SINAMICS DCM Functional Safety

New functions for safely stopping DC drives

February 2019

[usa.siemens.com/drives](http://usa.siemens.com/drives)

## Overview

Effective January 25th, 2019, SINAMICS DCM DC Converters and Control Modules (SINAMICS DCM Devices) with Functional Safety (production state  $\geq 04$ ) are released for delivery from the factory.

SINAMICS DCM Devices with Functional Safety were exhibited for the first time in November 2018 at the SPS/IPC/Drives trade fair in Nuremberg, Germany. This new functionality is certified by TÜV (German Technical Inspectorate) for Safe Torque Off (STO) and Safe Stop 1 (SS1).

For decades now, DC drives have proven themselves in day-to-day use as a result of their dynamic response, ruggedness and cost effectiveness. The ready to connect SINAMICS DCM Devices have now been expanded to include the new "Functional Safety" functionality. As a consequence, only one main contactor or circuit breaker is required over the complete power range to achieve safety integrity level, SIL 3 and performance level, PL e. This guarantees optimum protection for man, machine and the

environment. Up until now for DC drive systems, two main contactors or circuit breakers were required in order to address such high safety requirements. A higher safety level is achieved with the new functionality. Now additional costs associated with one of the two formerly required switching elements are eliminated and significantly less space is required for the complete drive configuration. As a result of the reduced number of components, the DC drive system is now not only more rugged, but also more reliable and therefore requires less service.

## Features and Benefits

- With the new Functional Safety functionality of SINAMICS DCM Devices, a high level of safety can now be achieved with just one (instead of two up until now) main contactor or circuit breaker over the entire power range. As a consequence, capital investment costs are reduced along with the amount of space required as one of the switching elements is eliminated.

- Higher safety level: Safety functions STO and SS1 in SIL 3 (according to IEC 61508) and PL e (according to EN ISO 13849-1)
- Simplified drive system with reduced number of components
- Lower engineering costs, increased reliability and reduced service costs
- Extended SINAMICS DCM application possibilities

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## Design

This functionality is provided as standard in each SINAMICS DCM Device from production state 04 and higher. To activate the function, a jumper must be removed from a terminal in the device and the DC Converter or Control Module must be integrated into the safety circuits of the system. Details regarding possible interconnections can be taken from the operating instructions manuals for SINAMICS DCM Devices.

## Technical specifications

### Maximum achievable safety level:

IEC 13849 PL	IEC 61508 SIL
PL e	SIL 3
PL d	SIL 2
PL c	SIL 1
PL b	
PL a	

## Price

For SINAMICS DCM DC Converters and Control Modules, from production state 04 and higher, the new Functional Safety functionality is embedded without any additional price.

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## Promotional Literature

- New SINAMICS DCM brochure highlighting Functional Safety available at:  
[http://www.industry.usa.siemens.com/drives/us/en/electric-drives/dc-drives/Documents/SINAMICS\\_DCM-Brochure.pdf](http://www.industry.usa.siemens.com/drives/us/en/electric-drives/dc-drives/Documents/SINAMICS_DCM-Brochure.pdf)

## Catalog Add-On

- Catalog Add-On D23.1 AO (ZIP file) available at SIOS entry ID# 109745909, dated 2/11/2019:  
<https://support.industry.siemens.com/cs/document/109745909/catalog-d-23-1-with-add-on-d-23-1-ao-sinamics-dcm-dc-converter-control-module?dti=0&pnid=13298&lc=en-WW>

## Technical Documentation

- SINAMICS DCM DC Converter, operating instructions manual, firmware v1.5, edition 12/2018 available at SIOS entry ID# 109763558, dated 1/25/2019:  
<https://support.industry.siemens.com/cs/document/109763558/sinamics-dcm-dc-converters-operating-instructions-firmware-version-v1-5?dti=0&lc=en-WW>
- SINAMICS DCM Control Module, operating instructions manual, firmware v1.5, edition 12/2018, available at SIOS entry ID# 109763559, dated 1/25/2019:  
<https://support.industry.siemens.com/cs/document/109763559/sinamics-dcm-control-module-operating-instructions-firmware-version-v1-5?dti=0&pnid=13300&lc=en-WW>
- SINAMICS DCM List manual, firmware v1.5 (based on v5.1 SP1), edition 12/2018, available at SIOS Entry ID# 109763564, dated 1/25/2019:  
[https://support.industry.siemens.com/cs/document/109763564/sinamics-dcm-list-manual-firmware-version-1-5-\(based-on-5-1-sp1\)?dti=0&pnid=13299&lc=en-WW](https://support.industry.siemens.com/cs/document/109763564/sinamics-dcm-list-manual-firmware-version-1-5-(based-on-5-1-sp1)?dti=0&pnid=13299&lc=en-WW)

## TÜV Certificate

- Functional Safety/Safety of Machinery, TUEV, TÜV (technischer Überwachungsverein) Certificate, available at SIOS entry ID# 109762418, dated 11/22/2018:  
[https://support.industry.siemens.com/cs/document/109762418/functional-safety-safety-of-machinery-tuev-t%c3%bcv-\(technischer-%c3%bcberwachungsverein\)?lc=en-ww](https://support.industry.siemens.com/cs/document/109762418/functional-safety-safety-of-machinery-tuev-t%c3%bcv-(technischer-%c3%bcberwachungsverein)?lc=en-ww)

## Clarifications

- Siemens' stock of SINAMICS DCM DC Converters without Functional Safety (production state  $\leq 03$ ) in the Southaven, MS warehouse will be depleted from stock first and then replaced over time with DC Converters having Functional Safety embedded (production state  $\geq 04$ ).
- Retrofitting / upgrading SINAMICS DCM Devices without Functional Safety (production state  $\leq 03$ ) is not supported nor planned.

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.