



| Sinamics G115D

Siemens Drives Days 2021, Dolní Morava



SINAMICS G115D

Distributed drive system

[siemens.com/sinamics-g115d](https://www.siemens.com/sinamics-g115d)

I Kdo prezentuje

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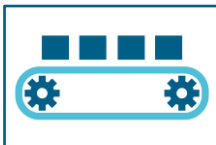
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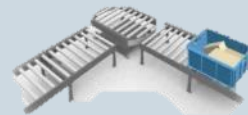
SINAMICS G115D addresses conveyor apps. for Intra-logistics, Airports and partly Automotive and F&B markets



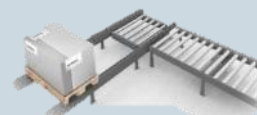
Conveyor technology and sortation systems applications



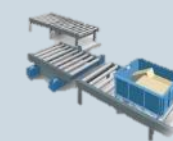
Conveyor



Turntable/
corner turntable



Corner
turntable Lift



Travelling
trolley



Intra-logistics



- Roller, Belt and Chain Conveyors (with fixed or variable speed)
- Corner turntable
- Turntable
- Travelling Trolley
- ...



Airports



- Baggage handling systems
- Tray-based conveyor lines / systems for baggage
- Cargo handling systems
- Sortation systems
- ...



Automotive



- Roll conveyor
- Turntable
- Travelling Trolley
- ...



F&B

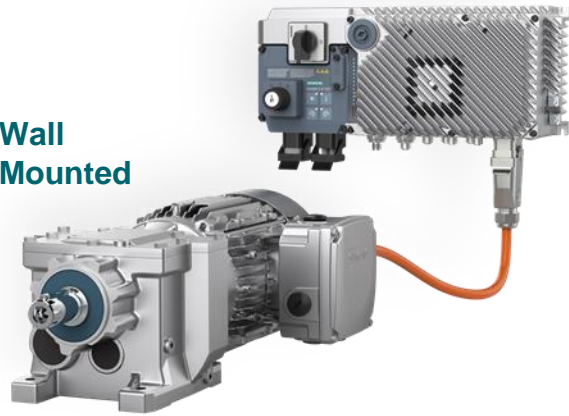


- Belt conveyors
- Roller conveyors
- Apron conveyors
- ...

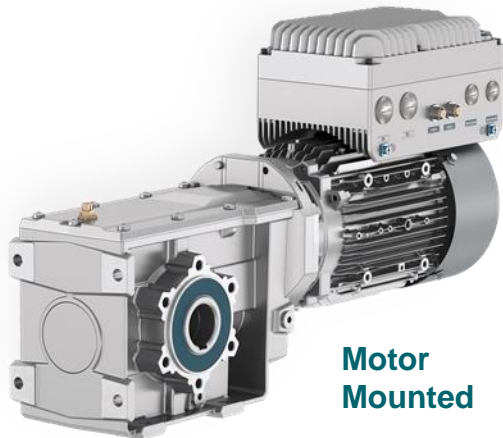
All covered by the new SINAMICS G115D distributed drive system!

The new SINAMICS G115D distributed drive system is not only a drive... It's the solution...

Wall Mounted



Motor Mounted



- The SINAMICS G115D distributed drive system comprises **drive, motor** and **gear** in both Motor and Wall Mounted versions **0.37 to 4 kW (MM)** and **0.37 to 7.5 kW (WM)**



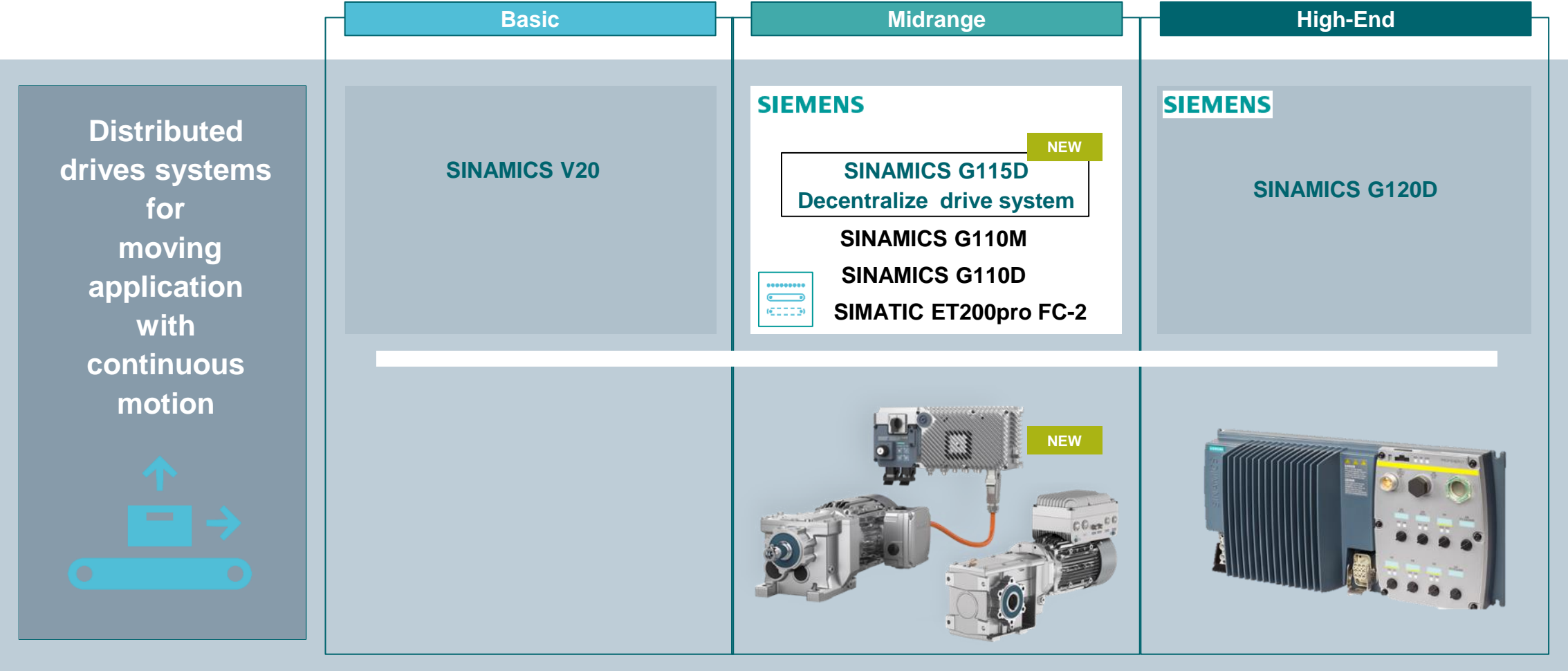
- User friendly, modular solution with a **new construction design** for easy wiring, commissioning and servicing incl. **dedicated features for conveyors**



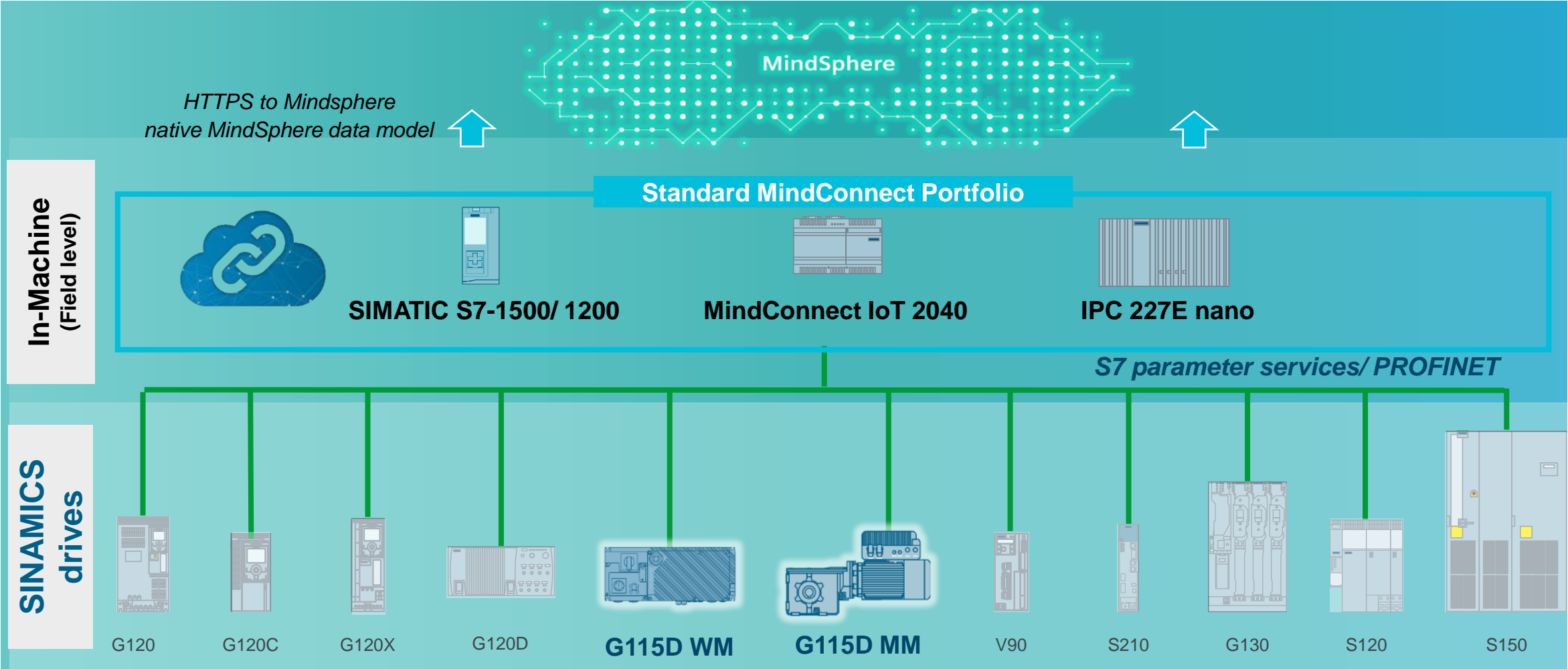
- **Out-of-the-box** concept for easy handling, **fast set up time** and **extremely simple to operate** design for applications in the mid range segment

WM: Wall Mounted
MM: Motor Mounted

SINAMICS G115D distributed drive system – Position within Siemens portfolio



All parameters of the SINAMICS G115D system can be pushed natively to MindSphere via PROFINET



SINAMICS G115D distributed drive system – Top highlights



Feature / Function

Out-of-the-box approach / easy to order and use

New modular construction concept: electronic module + wiring module

Full integration into **TIA Portal (Startdrive)** and optimized **Webserver (SAM)** via **Smart-Access-Module**

Optimized design: **3C2 coating** + **extended operating temperatures -30 to 40 ...55°C** (with derating)

Safety STO SIL 2 / PROFIsafe

Compatible with **MindConnect portfolio**

Plug-in **connector system or gland cable** connection from **three¹ sides**

Benefits

- ▶ **Reduced cost and efforts** for: ordering (1 article number), factory pre-commissioned
- ▶ **Easy to install and exchange** – same electronic module for all drives
- ▶ **Faster and easier commissioning process** with improved user friendly wizards
- ▶ Ability to work in **harsh environments** (incl. deep freeze applications)
- ▶ **Standard compliant** and **easy certification process**
- ▶ Fit for digitalization and for cloud based analytics
- ▶ **Flexible connecting variants for installation, service and maintenance**

¹ for Motor Mounted or from below for Wall Mounted

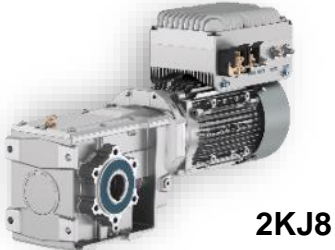
SINAMICS G115D distributed drive system includes 2 system offerings – based on 1 seamless platform

System

G115D - Motor Mounted

G115D - Wall Mounted

Structure



2KJ8



6SL35

Cable

2KJ8
(2KJ3 or 3rd p.)

Power range / size

FSA

0.37 kW	1.1 kW
0.55 kW	1.5 kW
0.75 kW	

FSB

2.2 kW
3 kW
4 kW

FSA

0.37 kW	1.1 kW
0.55 kW	1.5 kW
0.75 kW	

FSB

2.2 kW
3 kW
4 kW

FSC

5.5 kW
7.5 kW

Communication

PROFINET / EtherNet/IP

AS-i

IO control

Motor

Asynchronous 1LE1

Synchronous Reluctance 1FP

Gear Box

Helical

Parallel Shaft

Bevel

Helical Worm

Monorail

SINAMICS G115D distributed drive system – Converter components

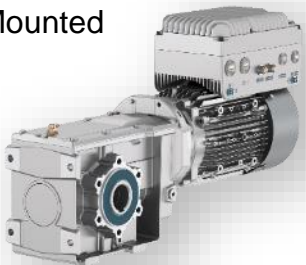
Electronic module

Modular concept +

- **New** Same electronic module for both versions



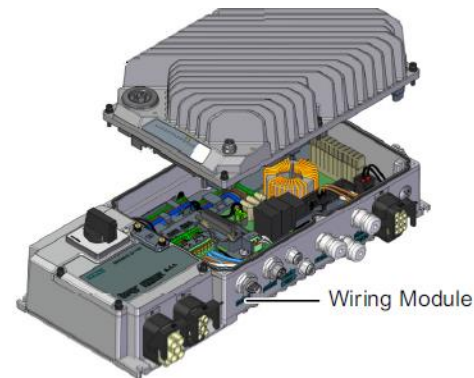
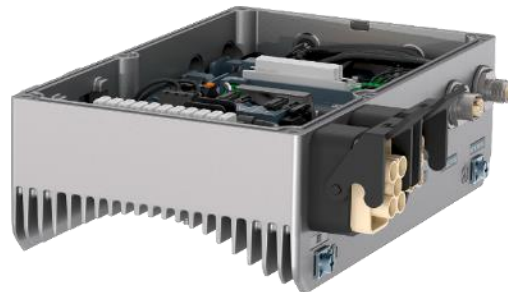
Motor Mounted



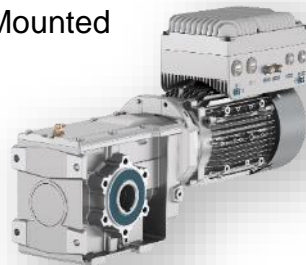
Wall Mounted



Wiring module



Motor Mounted



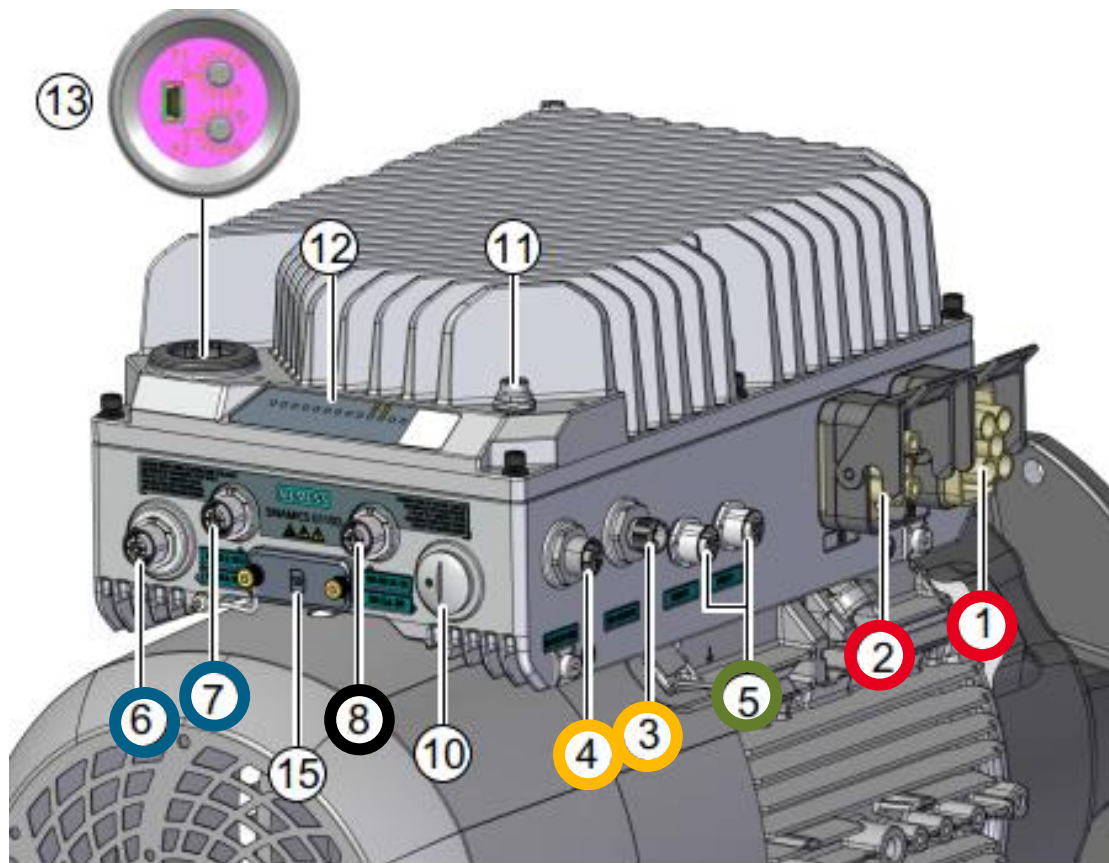
Wall Mounted



SINAMICS G115D = Electronic module + Wiring module

G115D Motor Mounted – Connections overview

Hardware description



Motor Mounted – Connection's overview

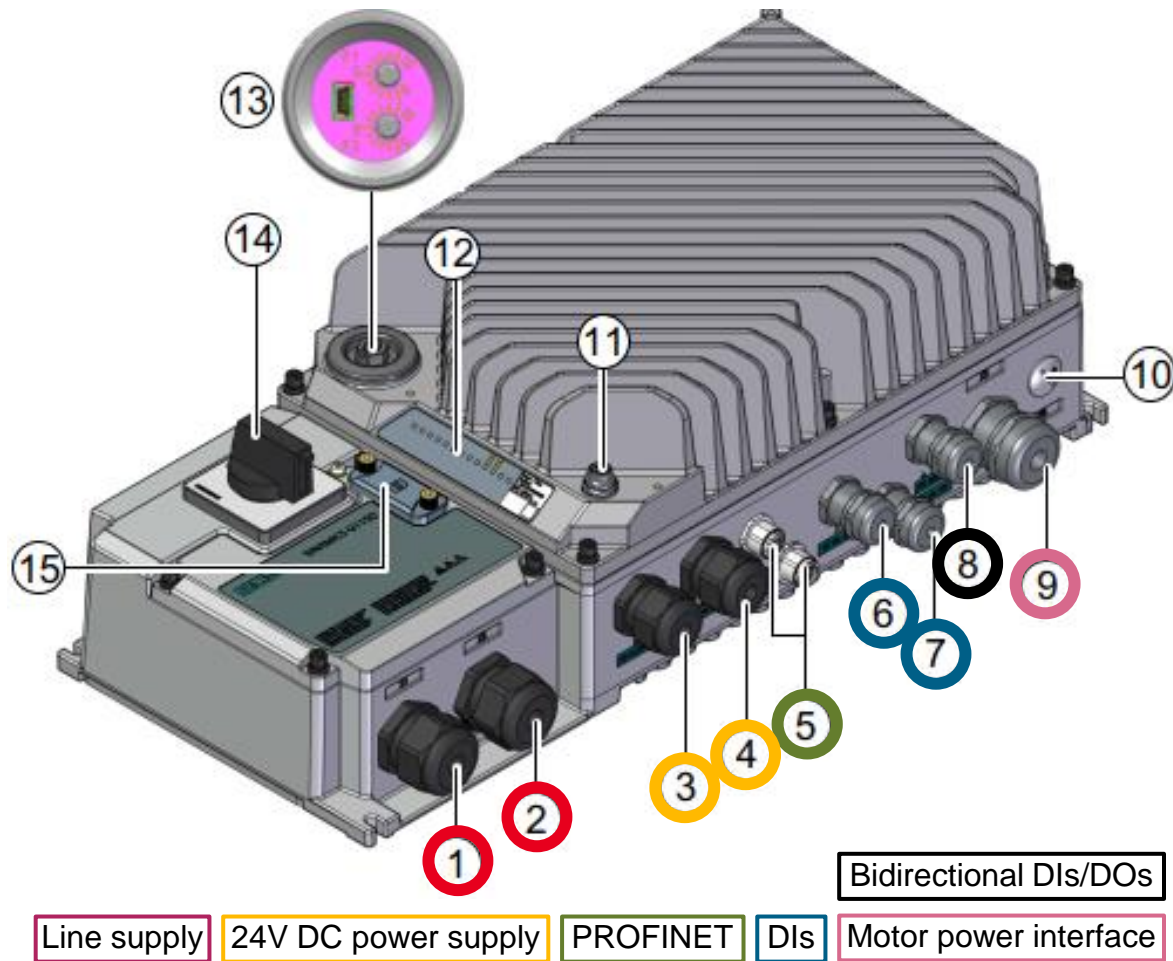


- 1 = Line supply interface (IN)
- 2 = Line supply interface (OUT)
- 3 = 24 V DC power supply interface (IN)
- 4 = 24 V DC power supply interface (OUT)
- 5 = PROFINET interfaces
- 6 = Digital inputs DI 0 and DI 1
- 7 = Digital inputs DI 2 and DI 3
- 8 = Bidirectional digital inputs/outputs DIO24 and DIO25
- 10 = External braking resistor interface
- 11 = Fan unit connector
- 12 = Status LED
- 13 = Commissioning interface (mini USB interface and two potentiometers)
- 15 = Memory card interface

Line supply 24V DC power supply PROFINET DIs Bidirectional DIs/DOs

G115D Wall Mounted – Connections overview

Hardware description



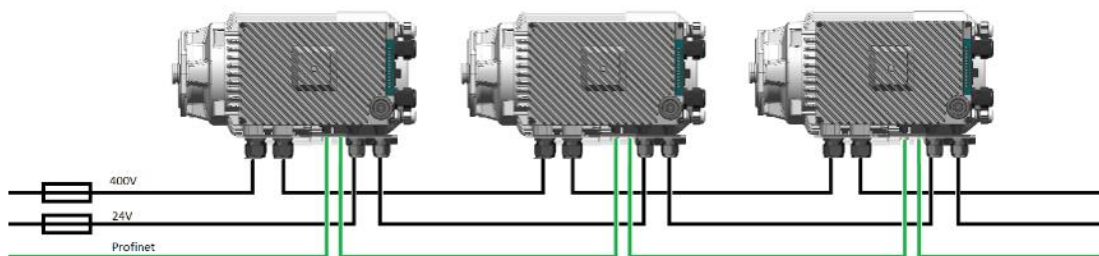
Wall Mounted – Connection's overview



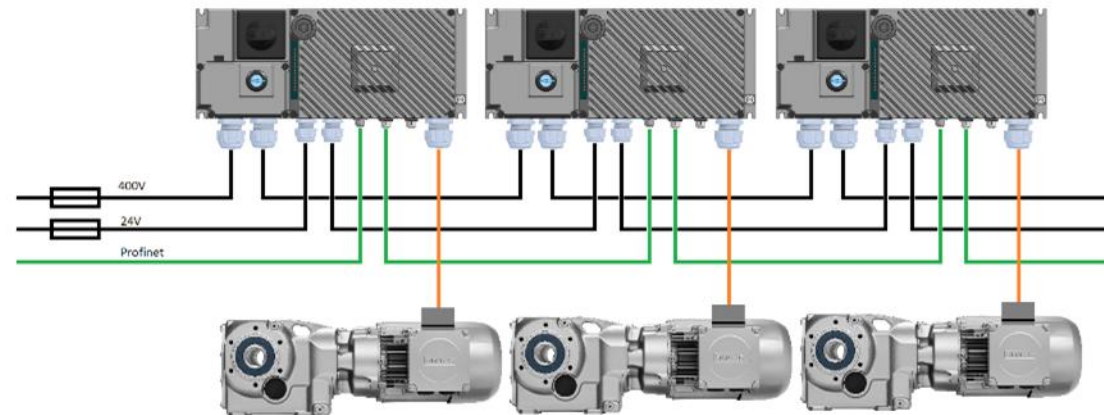
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- 5 = PROFINET interfaces
- 6 = Digital inputs DI 0 and DI 1
- 7 = Digital inputs DI 2 and DI 3
- 8 = Bidirectional digital inputs/outputs DIO
- 9 = Motor power interface motor
- 10 = External braking resistor interface
- 11 = Fan unit connector
- 12 = Status LED
- 13 = Commissioning interface (mini USB interface and two potentiometers)
- 14 = Repair switch
- 15 = Memory card interface

G115D motor and Wall Mounted – Wiring module Installation via gland

G115D - Motor Mounted



G115D - Wall Mounted

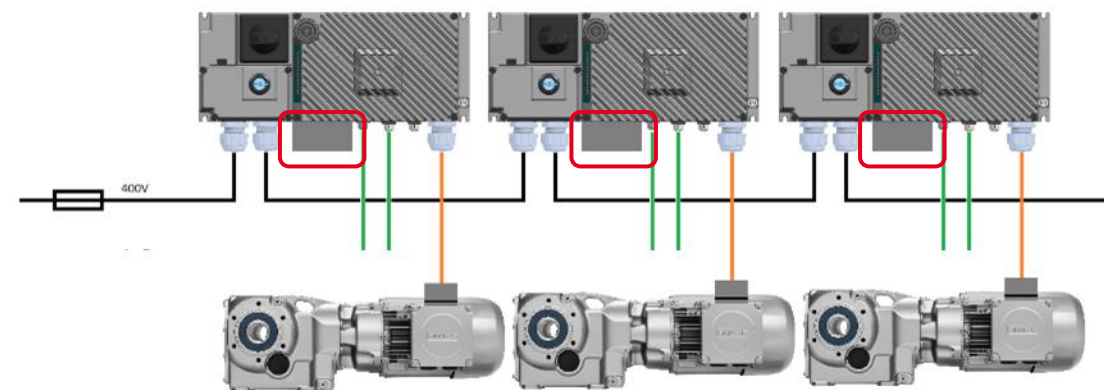


Cost effective



- **400V and 24V:** Gland
- **Communication:** M12 connectors
- **I/Os:** Gland, optional M12 connectors
- **Motor (only Wall Mounted):** At the converter gland, to the motor connector
- **Optional integrated 24V power supply**

With optional integrated 24V DC¹:

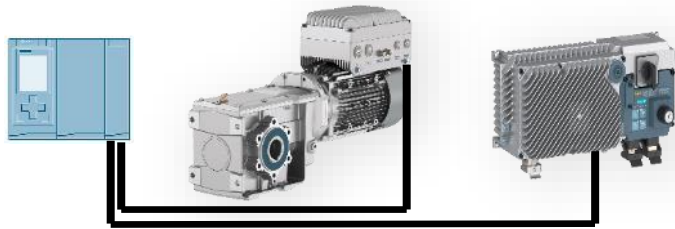


¹Also valid for the G115D Motor Mounted version

SINAMICS G115D distributed drive system

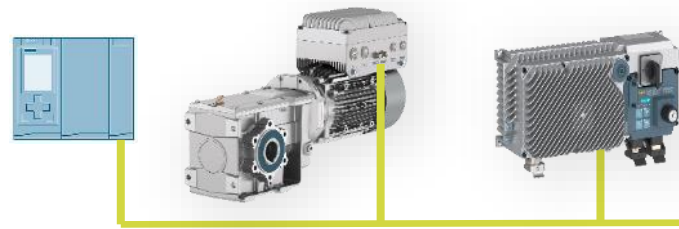
Integrated communication

I/O control



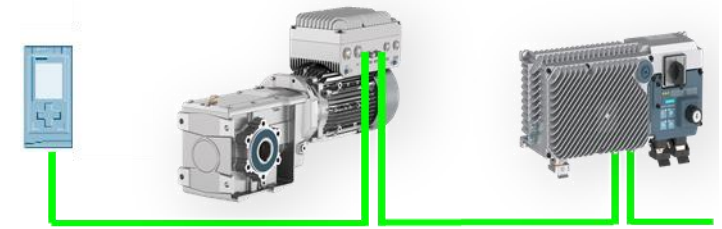
- Basic variant **with I/O control** instead of fieldbus communication
- Control of the G115D via digital inputs
- Status feedback via digital outputs

AS-i



- **Integrated AS-i** communication
- Single and dual slave functionality integrated
- The DI and DO of the G115D can be used as decentralized periphery of the PLC

PROFINET / Ethernet IP



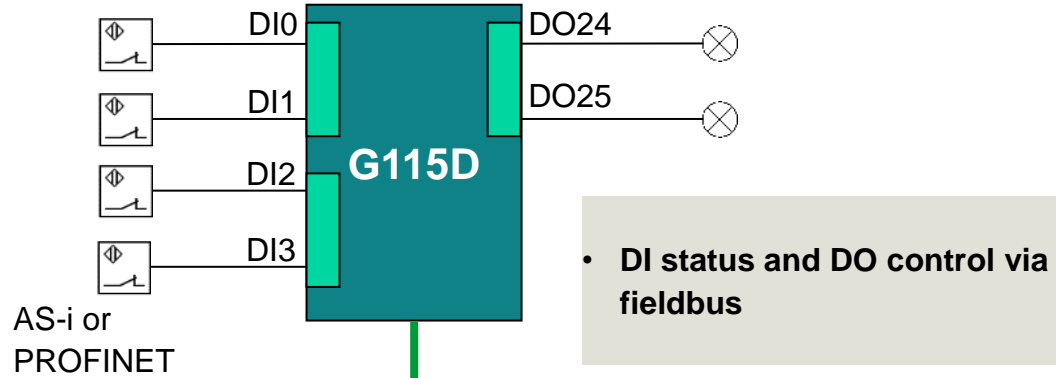
- **Integrated PROFINET** incl. **PROFIsafe** and **PROFenergy**
- Alternative **EtherNet/IP** COM
- The DI and DO of the G115D can be used as decentralized periphery of the PLC

Different integrated communication options to fit your application's need!

SINAMICS G115D System – Integrated I/Os can be combined in different use cases

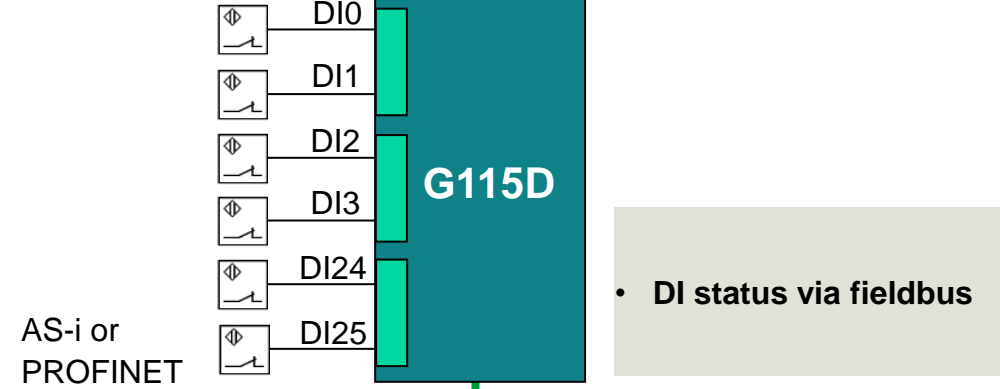
1

4 DI and 2 DO



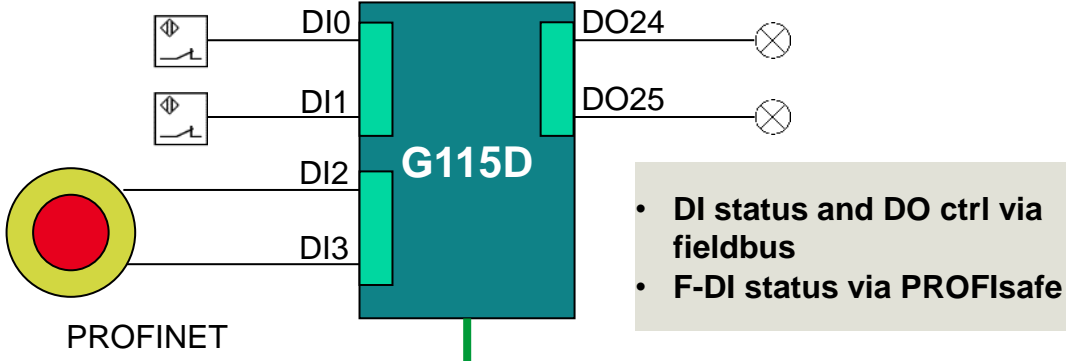
3

6 DI (DO as DI)



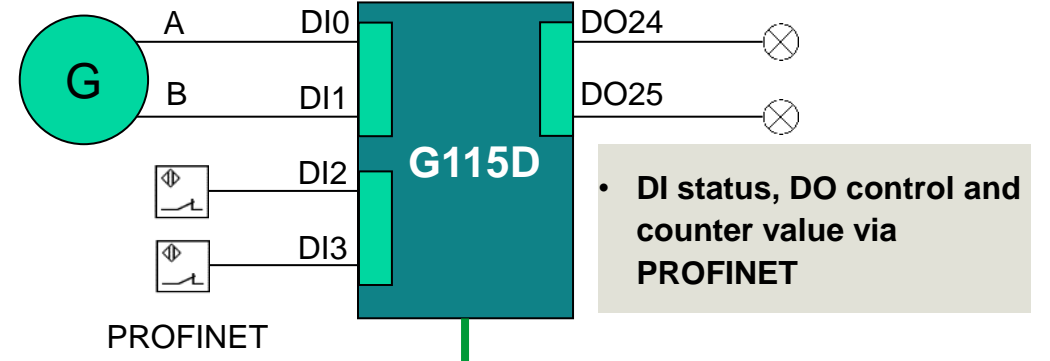
2

2 DI as F-DI



4

2 DI as HTL-Encoder interface



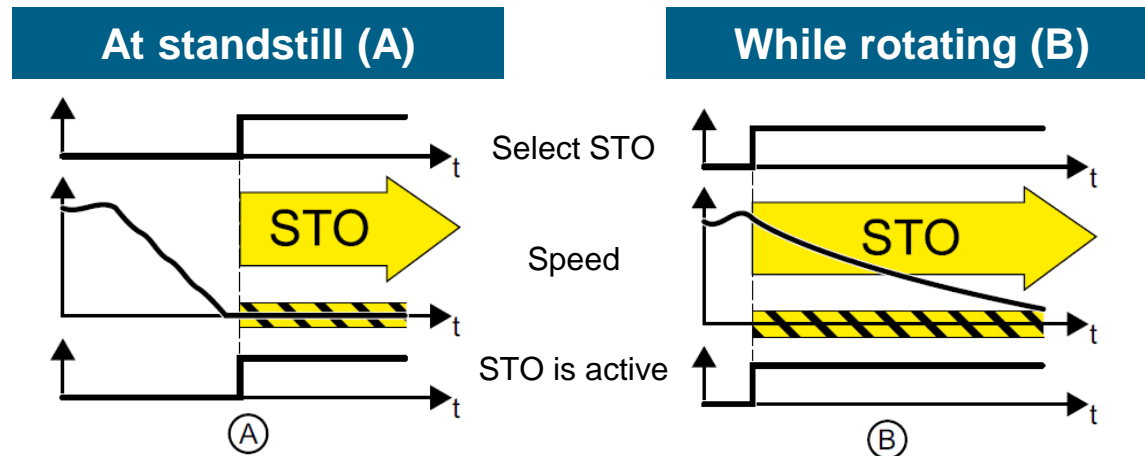
Safe Torque Off (STO) – Safety integrated functionality

Safe Torque Off functionality

A converter with active STO function **prevents energy supply** to the motor, so it can **no** longer generate **torque** at the motor shaft.

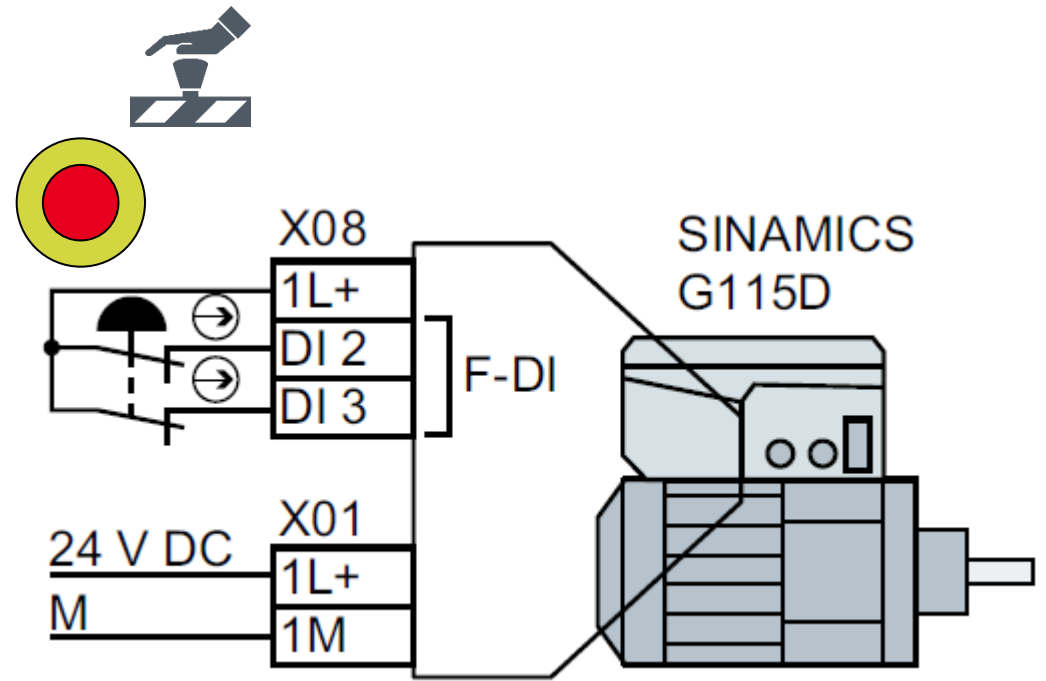
Principle of operation

1. Converter **recognizes** the selection of STO via F-DI or via PROFIsafe communication
2. **Interrupts** the energy supply to the motor
3. **Signals** that “STO is active” via PROFIsafe



Wiring example according to EN13849-1/IEC 61508

Using fail-safe digital input corresponding to **PL d** and **SIL 2**



An integrated 180V DC brake control is included in the SINAMICS G115D systems as standard (holding brake)

Integrated as standard: 180V DC Brake control

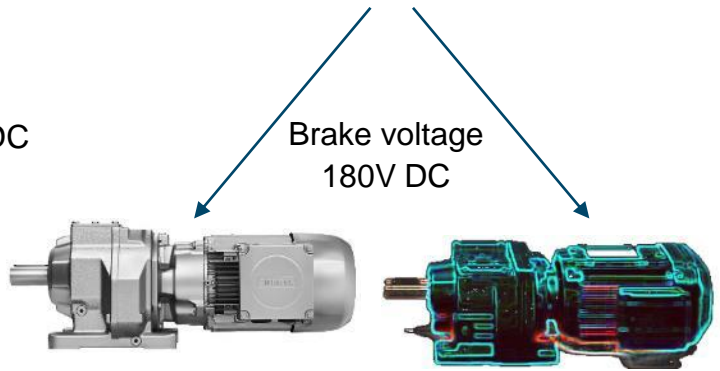
In general 180V DC brake voltage independent of the main voltage

Motor Mounted



SIMOGEAR
Standard brake coil 180V DC

Wall Mounted



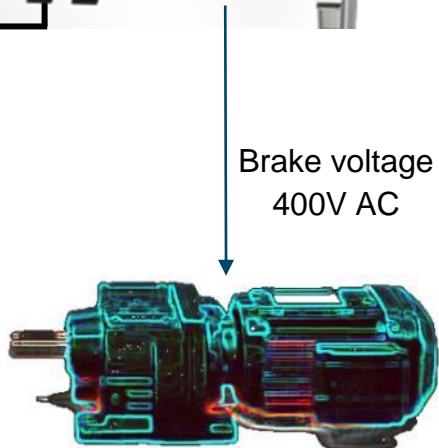
SIMOGEAR
Standard brake coil 180V DC

3rd Party Geared motor
with 180V DC brake coil

Optional: "400V AC" brake control

Brake voltage dependent on the main voltage

Wall Mounted



3rd Party Geared motor
with 380-480V AC brake coil

SINAMICS G115D distributed drive system – Diagnostic's overview

Fast and on-site

- Available diagnosis LEDs showing general status, communication and **NEW** Status of the I/Os

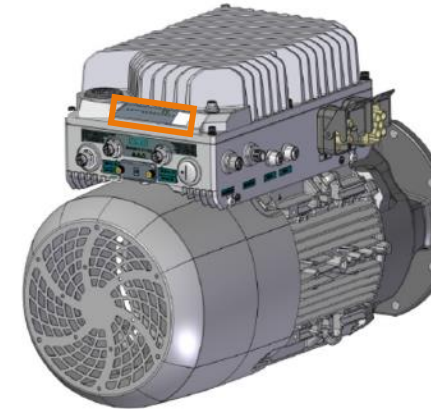
Fieldbus diagnosis

- Extensive diagnostics via AS-i and PROFINET
- Alarms & faults can be read and acknowledge

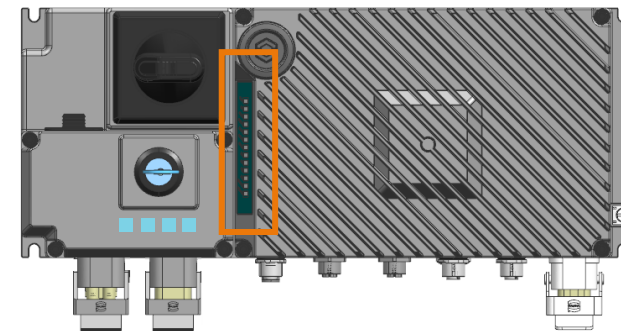
G115D's LEDs

General fault	RDY	■
	BF	■
Safety Integrated	SAFE	■
	ACTP1	■
Communication	LINKP1	■
	ACTP2	■
	LINKP2	■
	DIO	■
Digital inputs and outputs	D11	■
	D12	■ ■ ■ ■
	D13	■ ■ ■ ■
	DIO24	■
	DIO25	■

G115D – Motor Mounted



G115D – Wall Mounted



SINAMICS G115D distributed drive system – Options overview

Flexible options

- Many options via “integrated” components

Compact design

- Less external components

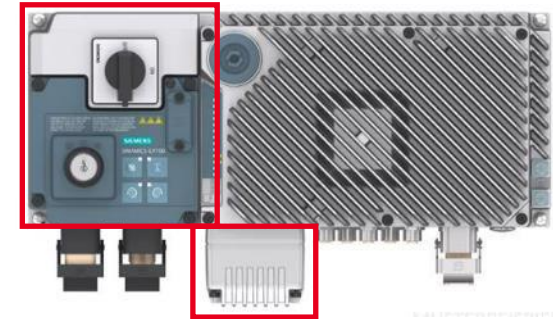
Options

- New** Optional integrated repair switch with feedback signal
- Optional integrated local / remote control
- New** Optional integrated 24V DC power supply
- New** Optional AC 400V holding brake control
- New** Optional Wi-Fi webserver via Smart Access Module (SAM)

G115D - Motor Mounted



G115D - Wall Mounted



– ¹

Yes

– ¹

Yes

Yes

Yes

–

Yes

Yes

Yes

¹ External - planned

Optional: Smart Access Module Webserver via Wi-Fi

SINAMICS Smart Access Module (SAM)

Convenient access

- To the drive even if installed in difficult-to-access areas
- No cable necessary due to wireless one-to-one connection to mobile device or PC

Set up in less than one minute

- No apps/downloads required
- Operates with any of the common browsers and with any end device

All-in-one solution

- All functions are provided by the integrated web server
- One module support most of the G120 series
- 6 languages support/ Upgradable language packages
- IP55 protection level

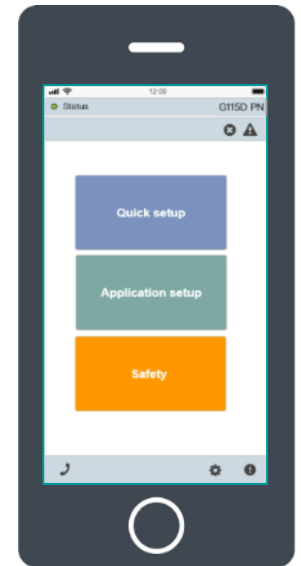
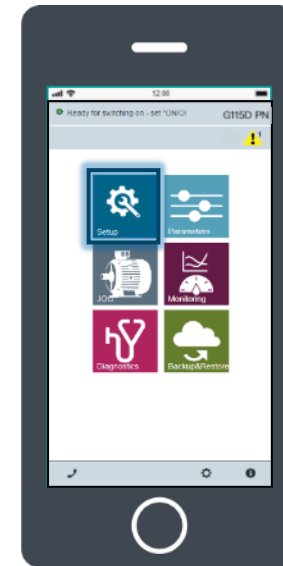
Simple operation

- Due to intuitive/guided user interface
- Look & feel of an app
- Higher functionality than BOP

Mobile device view (Smartphones, tablets or PC)



Wi-Fi
Up to 50m

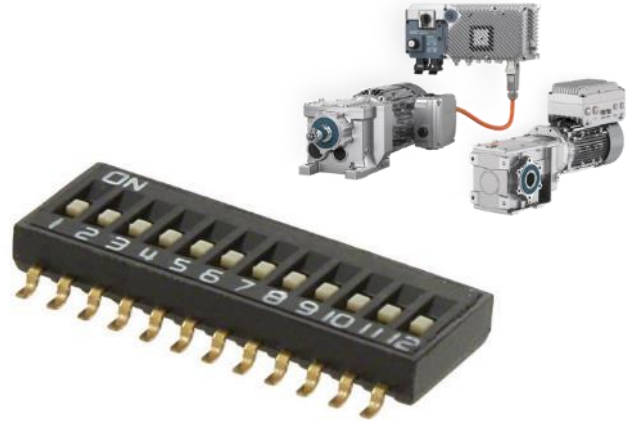


Information security

- Point to point connection/ No internet need
- WAP-2 encryption
- Support HTTPS/HTTP communication protocol

Flexible setup options and fast commissioning thanks to full integration into SAM webserver and TIA tool landscape

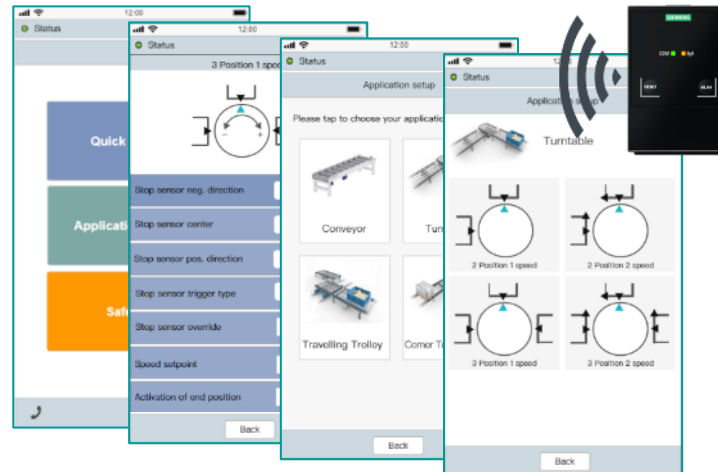
Commissioning via DIP switches



- Allows **basic commissioning** (motor type, Δ/Y , brake, Temp. sensors) of the system
- Preferable for G115D IO-Control

Basic commissioning without communication

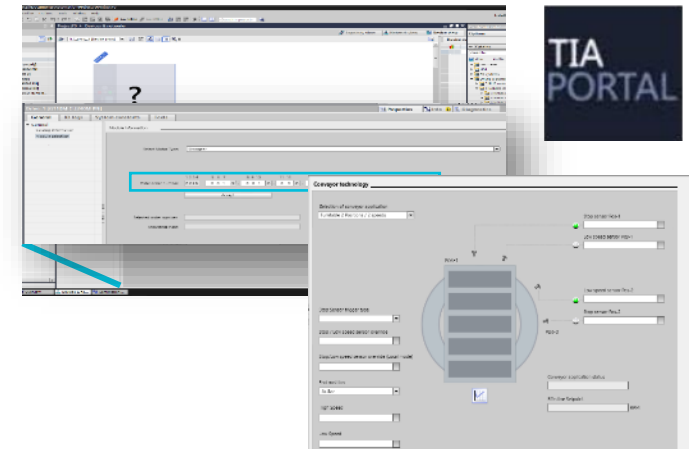
Commissioning via SAM



- **Dedicated user interface** including **conveyor** applications via optimized SAM (webserver)

Quick and easy commissioning via full integration within Startdrive and the Smart Access Module!

Commissioning via Startdrive

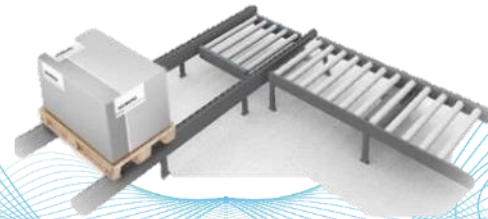


- **Full integration** of the system
- **Graphical parameterization** of conveyor applications

SINAMICS G115D distributed drive system – Integrated functions for conveyor technology



Conveyor with fast- / slow speed and Quick-Stop (1 or 2 directions)



Corner turntable lift with fast- / slow speed, Quick-Stop and limit switch



Turntable with fast- / slow speed, Quick-Stop and limit switch (2 or 3 positions)



Travelling trolley with fast- / slow speed, Quick-Stop and limit switch

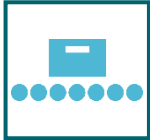
Easy to use functions +

- Standard integrated conveyor functions (in PN and AS-i Variants)
- **New** Wizard for Startdrive and Smart Access Module

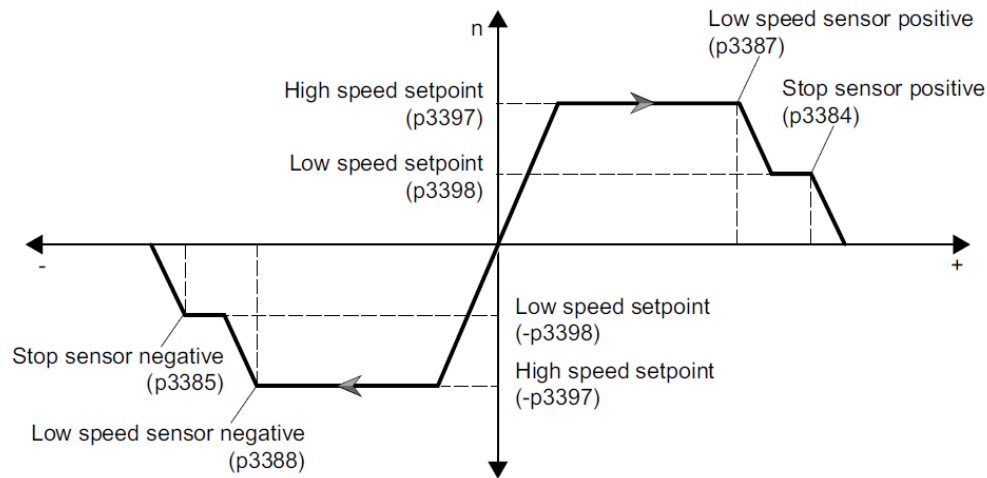
Benefits +

- Reproducible stop reaction
- Reduced load of the PLC

Conveyor control: Two directions and two speeds



2 directions and 2 speeds (p3393 = 4)



The converter enables the load on a conveyor belt to move in either (+) or (-) direction with variable speeds

Feature/ Function

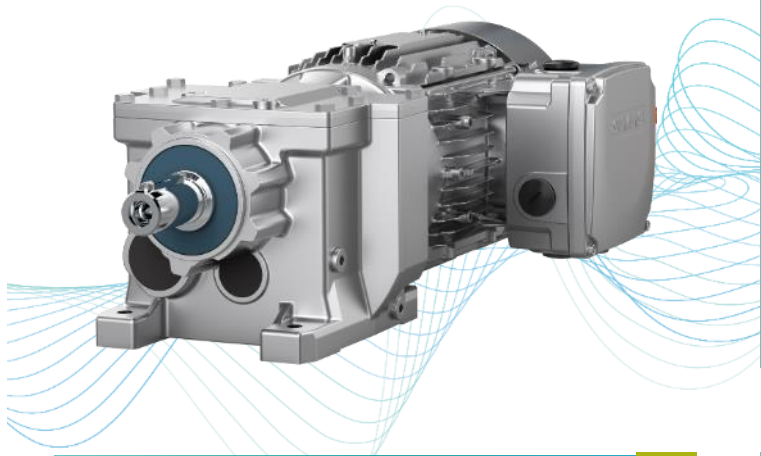
With the ON command, the motor accelerates to the high speed setpoint (p3397). The load can move in either (+) or (-) direction, depending on:

- p1113 = 0: positive direction; p1113 = 1: negative direction

With the movement in positive direction:

- **The motor decelerates with OFF1 ramp** to the low speed setpoint (p3398) when the low speed sensor positive direction (p3387) is triggered (level/edge triggered depending on p3395).
- **The motor stops with OFF1 ramp** when the stop sensor positive direction (p3384) is triggered (level/edge triggered depending on p3394).
- **No motor reaction is triggered** by the stop sensor negative direction (p3385) and low speed sensor negative direction (p3388) signals.

SINAMICS G115D system includes higher motor efficiency and increased performance on the motor side



Increased performance w. RESM +

- Low inertia allows high dynamics, sensorless vector control
- Precise speed even without encoder, no need for encoder in many applications
- High permanent overload possible in high speed range

Integrated brake concept +

- **New** holding brake integrated as standard - voltage supply (180V) independent of power grid voltage
- Other optional brake voltage supplies for the wall mount version are planned

High Motor efficiency +

- Future proof efficiency concept for inverter duty according IEC60034-30-2
- IE3 as standard
- IE4 with reluctance motor
- Environmentally friendly with no magnets (rare earths) inside

Motor availability +

- Worldwide improved standard delivery time: ~15 Working days
- Extra quick delivering possible on request

Certifications +

- Worldwide, multi certifications for EU / US / CN / Korea / Russia / India



MG1-12



CC032 A



Energy Verified



RESM: Reluctance synchronous motors







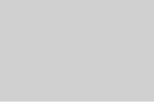

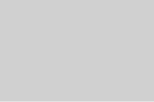

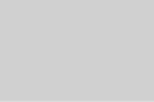

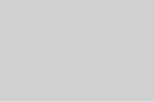

Overview of main features from SIMOGEAR 2KJ3 vs 2KJ8

SIMOGEAR overview

Gears

Portfolio available in

■ SIMOGEAR [2KJ3 & 2KJ4] ■ G115D [2KJ8]

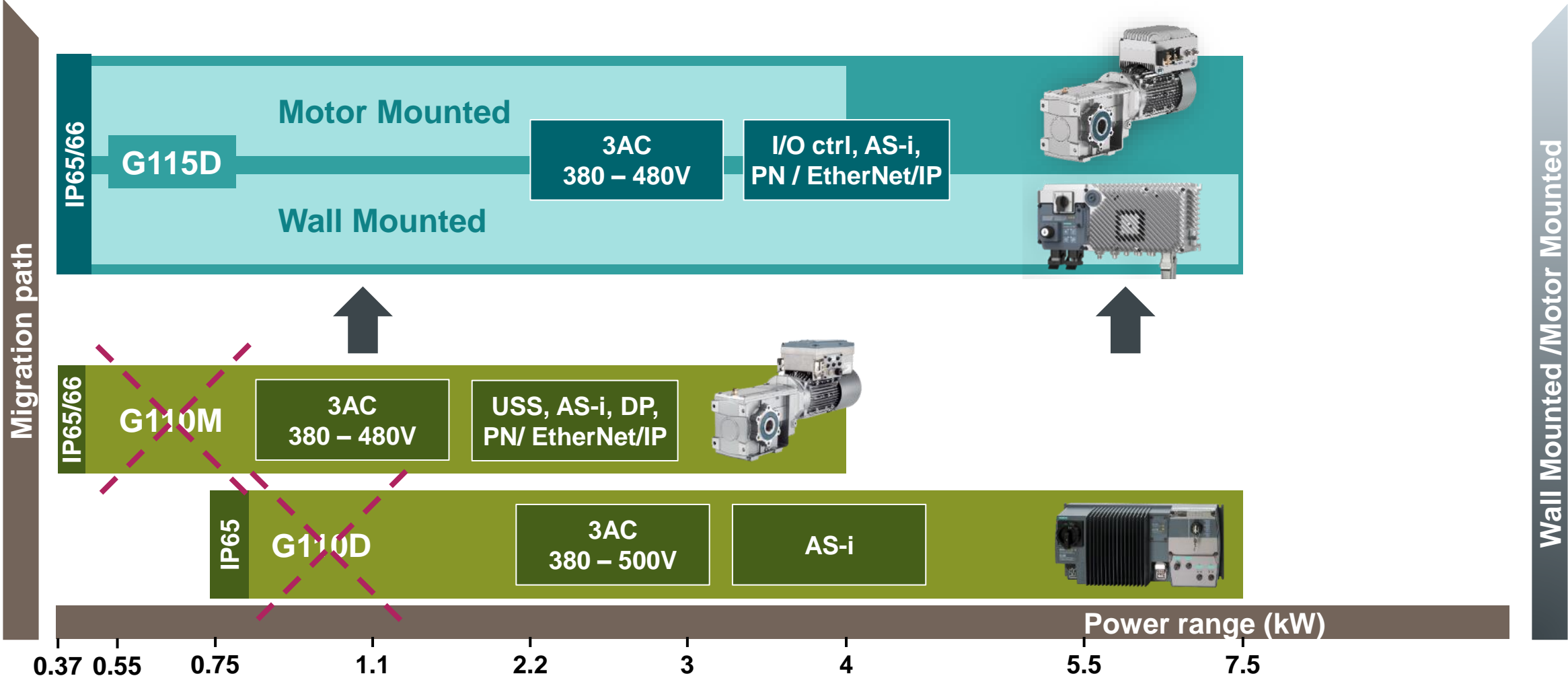
Gearbox types	Helical		Parallel shaft		Bevel		Helical worm		Monorail		Worm		Tandem	
														
Gearbox sizes [FS]	19	29	39	49	59	69	79	89	109	129	149	169	189	


Motor types

Motor types Efficiency	Asynchronous for all gearbox FS 19-89				Reluctance for all gearbox FS 19-89				Asynchronous			VSD10	
	IE2 (AH71)		IE3/NPE (> AH80)		IE4				IE1	IE2	IE3		
Motor types [FS]	< 0.25 kW	0.37 – 7.5 kW							9.2 – 55 kW				
	63	71	80	90	100	112	132	160	180	200	225	250	
Motor poles						4		2		6		8	

NPE: NEMA Premium Efficient

The new G115D system (0.37 to 7.5kW) is the successor of existing portfolio – in FY22 G110M/D will be migrated



 Will be replaced

The article number structure makes SINAMICS G115D easier to order with an Out-of-the-Box approach

Wall Mounted version – New ordering method

Article Number																				
6	S	L	3	5	2	X	-	X	X	X	X	X	-	X	A	X	0			
1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16			
Digit	Description							Options												
7	EM brake options							0: DC 180V; 1: AC 400V												
8	User interface							0: Blank; 1: Repair switch (RS); 2: Local remote control (LRC); 3: Both (RS + LRC)												
10	Interconnection type							Gland version; Connector version (incl. daisy chain option); mixed version												
11																				
12	Power range 0.37 – 7.5 kW / 0.5 – 10 HP							0-3: 0.37 kW			1-5: 1.5 kW			4-0: 4kW						
13								0-5: 0.55 kW			2-2: 2.2 kW			5-5: 5.5 kW						
								0-7: 0.75 kW			3-0: 3 kW			7-5: 7.5 kW						
								1-1: 1.1 kW												
15	Communication Interface							A: AS-Interface; B: I/O control; F: PN/ EtherNet/IP												

Out-of-the-Box

Customer

SINAMICS G115D is ready out of the box.

The article number structure makes SINAMICS G115D easier to order with an Out-of-the-Box approach

Motor Mounted version – New ordering method

Article Number																	
2	K	J	8	X	X	X	-	X	X	X	X	X	-	X	X	X	X
1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16
Digit	Description						Options										
5	Gearbox type, stage (1-3)						Helical; Parallel shaft; Bevel; Helical worm, Monorail										
6	Gearbox size						19 - 89										
7																	
8	Motor type						ASM High efficiency IE3; RESM Premium efficiency IE4										
9	Motor frame size (height)						71; 80; 90; 100; 112										
10	Power range						3 types of power range (shorter stator; longer stator)										
11	Temperature sensor						With temperature sensor Pt1000; without										
12	Brake						With DC 180V; without										
13	G115D power range						0.37 kW ... 4 kW / 0.5 ... 5 HP										
14	G115D comm. Interface						AS-Interface; I/O control; PROFINET/ EtherNet/IP										
15	Transmission ratio						Ratio depending on gearbox type										
16																	

Out-of-the-Box

Customer

SINAMICS G115D is ready out of the box.

ASM: Asynchronous motors
 RESM: Reluctance synchronous motors

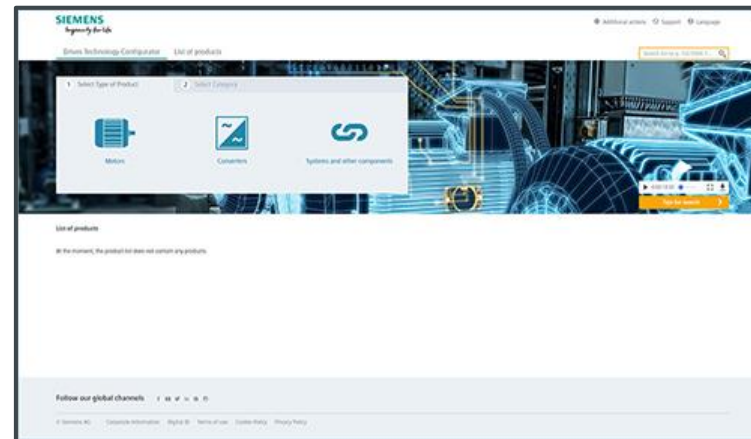
Fast sizing, selection and ordering process via broad range of tools

Selection via Catalog D 31.2



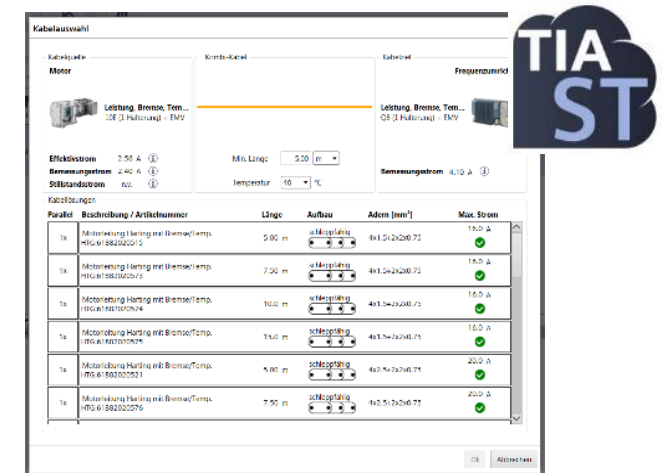
- **Easy selection** of the entire system incl. options and supplementary products

Selection via DT- Configurator



- Allows **efficient selection and configuration** of the system (drive + gear + motor)

Sizing and configuration via TST

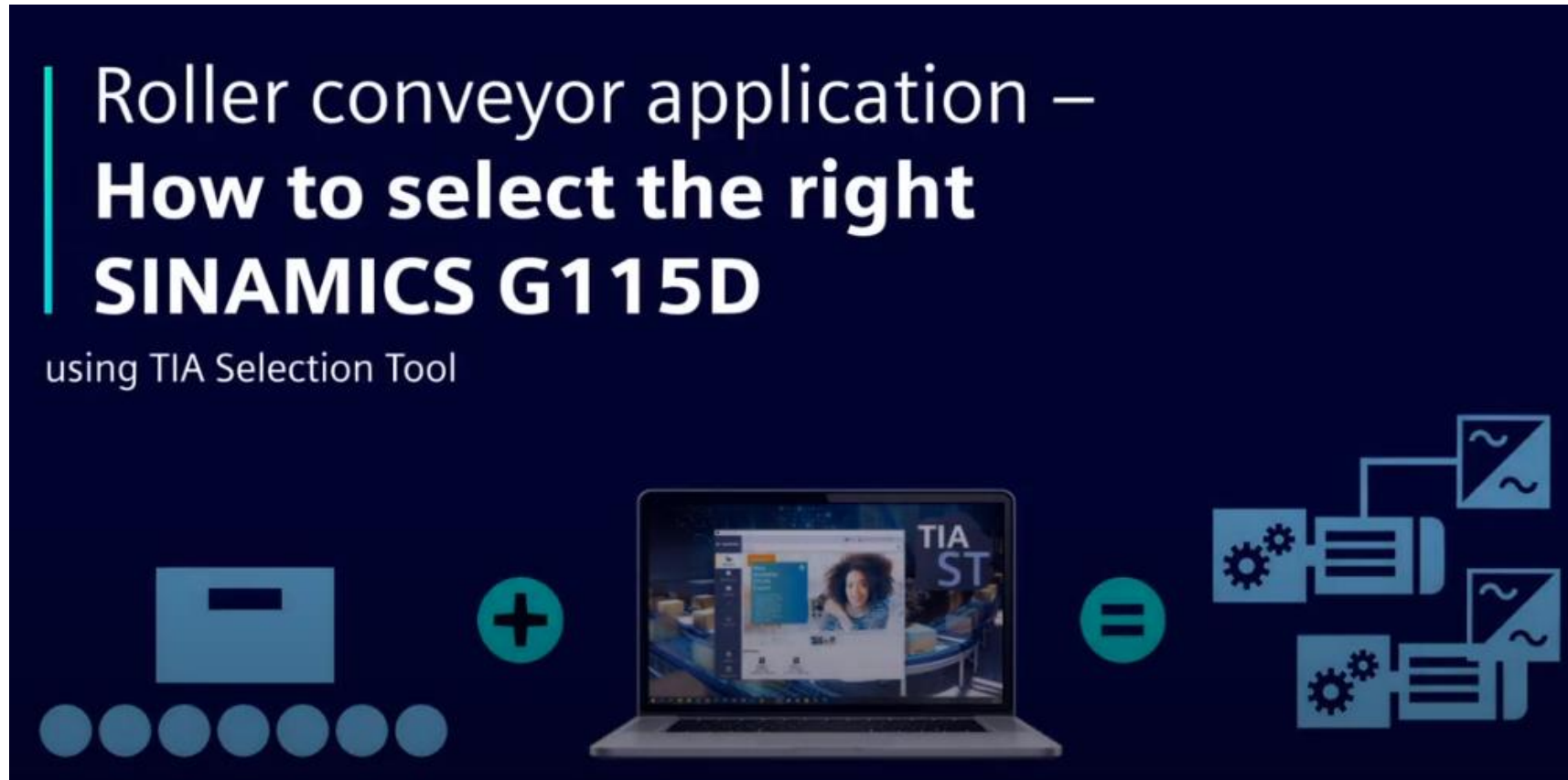


- Quick and easy **guided system configuration and ordering process**
- **Integration of supplementary products** (from Harting, Knorrtec)

Convenient, smart and simple sizing of entire system according to your application!

How to select the right G115D using TST – roller conveyor

Roller conveyor application –
**How to select the right
SINAMICS G115D**
using TIA Selection Tool



The diagram illustrates the selection process for the SINAMICS G115D motor. It shows a roller conveyor application (represented by a blue box and circles) plus the TIA Selection Tool (represented by a laptop displaying the tool interface) equals the selected SINAMICS G115D motor (represented by a blue motor icon with gears and question marks).

<https://youtu.be/t5rgWJvuqAs>

The G115D system includes up to 4 years warranty with Service Protect

Customer's drivers and goals

Ensure availability



Reduce costs



Optimize Asset Management



Siemens Service-Offering

With Service Protect you will receive a product exchange or repair in a service case within the contract period.



Register your drive and receive an initial 6 months free of charge Extended Coverage via <https://myregistration.siemens.com/>

Customer benefits

- **Safeguard your investment** for an extended period
 - **Ongoing support** by Siemens service experts throughout the **entire product lifecycle**
 - **Opportunity** to cover SINAMICS G115D for **up to 4 years** via the product registration

I Díky za pozornost

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SINAMICS G115D

Encoderless positioning with SINAMICS G115D

[siemens.com/sinamics-g115d](https://www.siemens.com/sinamics-g115d)