

## Manufacturer's Declaration

Nr. / No. SINUMERIK\_828D\_668.DCOA1018.40.032

Manufacturer: SIEMENS Aktiengesellschaft

Address: SIEMENS Aktiengesellschaft, DF MC  
Frauenauracher Straße 80  
D-91056 Erlangen  
Germany

Product Description: **SINUMERIK 828D**  
(for included hardware and software releases see annex)

The functional safety functions "Basic Functions" (STO, SBC, SS1) and "Extended Functions" (STO, SBC, SS1, SS2, SLS, SOS, SSM, SDI, SLP) of the above mentioned product fulfil the requirements of SIL2 according to [1] and [4], PLd according to [2] and category 3 according to [2]. The functions STO, SS1 and SS2 correspond to stop category 0, stop category 1 and stop category 2 according to [3], respectively.

The safe break test (SBT) is suitable as diagnostic function according to [2] for a safely controlled brake (e.g. via SBC). By using a single break in a category 2 application or two brakes in a category 3 application with an appropriate test rate, it is possible to reach a performance level up to PLd.

### Reference number

[1] IEC 61508, part 1 to 3 (2010)  
[2] ISO13849 part 1 (2015)  
[3] IEC 60204 (2009)  
[4] IEC 61800-5-2 (2016)

Erlangen, 18-10-30

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i.V. D. Vielsäcker  
Head of Technology, Test, Infrastructure & P...  
Signiert von: Vielsaecker Dirk

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i.V. T. Heinzelmänn  
Head of Quality Management  
Signiert von: Heinzelmänn Thomas

**Index**

- 1 Software .....3
- 1.1 Basic Functions .....3
- 1.1.1 SINUMERIK PPUs (Panel Units) .....3
- 1.2 Extended Functions .....5
- 1.2.1 SINUMERIK PPUs (Panel Units) .....5
  
- 2 Hardware .....8
- 2.1 SINUMERIK PPUs (Panel Units) .....8
  
- 3 Restrictions .....9
  
- 4 Boundary Conditions .....10

# 1 Software

## 1.1 Basic Functions

### 1.1.1 SINUMERIK PPUs (Panel Units)

PPU260.1 6FC5370-5AA00-0AA0 PPU261.1 6FC5370-6AA00-0AA0 PPU280.1 6FC5370-7AA00-0AA0 PPU281.1 6FC5370-8AA00-0AA0				Safety-Firmware- Version (Basic)
		V 2.6 HF3 V 2.6 HF4 V2.6 HF5 V 2.7 SP1 V 2.7 SP2 V 2.7 SP2 HF1 V 2.7 SP3 V 2.7 SP3 HF1 V 2.7 SP3 HF2 V 2.7 SP3 HF3 V 2.7 SP4 V 2.7 SP4 HF1 V 2.7 SP4 HF2		02.60.40.00

PPU240.2 6FC5370-4AA20-0FA0 6FC5370-4AM20-0AA0 6FC5370-4AT20-0AA0 PPU241.2 6FC5370-3AA20-0FA0 6FC5370-3AM20-0AA0 6FC5370-3AT20-0AA0 PPU260.2 6FC5370-6AA20-0AA0 PPU261.2 6FC5370-5AA20-0AA0 PPU280.2 6FC5370-8AA20-0AA0 PPU281.2 6FC5370-7AA20-0AA0	PPU240.3 6FC5370-4AA30-0AA0 6FC5370-4AA30-0AA1 6FC5370-4AM30-0AA0 6FC5370-4AT30-0AA0 PPU241.3 6FC5370-3AA30-0AA0 6FC5370-3AA30-0AA1 6FC5370-3AM30-0AA0 6FC5370-3AT30-0AA0 PPU260.3 6FC5370-6AA30-0AA0 6FC5370-6AA30-0AA1 6FC5370-6AA30-0WAA0 PPU270.4 6FC5370-6AA40-0AA0 PPU261.3 6FC5370-5AA30-0AA0 6FC5370-5AA30-0AA1 6FC5370-5AA30-0WAA0 PPU271.4 6FC5370-5AA40-0AA0 PPU280.3 6FC5370-8AA30-0AA0 6FC5370-8AA30-0AA1 6FC5370-8AA30-0WAA0 PPU281.3 6FC5370-7AA30-0AA0 6FC5370-7AA30-0AA1	PPU290.3 6FC5370-8AA30-0BA0 PPU290.4 6FC5370-8AA40-0BA0	PPU270.4 6FC5370-6AA40-0AA0 6FC5370-6AA40-0WAA0 PPU271.4 6FC5370-5AA40-0AA0 6FC5370-5AA40-0WAA0	Safety-Firmware- Version (Basic)
V 4.3 HF2 V 4.3 HF3 V 4.4 SP1	---	---	---	04.40.22.00

PPU240.2 6FC5370-4AA20-0FA0 6FC5370-4AM20-0AA0 6FC5370-4AT20-0AA0 <b>PPU241.2</b> 6FC5370-3AA20-0FA0 6FC5370-3AM20-0AA0 6FC5370-3AT20-0AA0 <b>PPU260.2</b> 6FC5370-6AA20-0AA0 <b>PPU261.2</b> 6FC5370-5AA20-0AA0 <b>PPU280.2</b> 6FC5370-8AA20-0AA0 <b>PPU281.2</b> 6FC5370-7AA20-0AA0	<b>PPU240.3</b> 6FC5370-4AA30-0AA0 6FC5370-4AA30-0AA1 6FC5370-4AM30-0AA0 6FC5370-4AT30-0AA0 <b>PPU241.3</b> 6FC5370-3AA30-0AA0 6FC5370-3AA30-0AA1 6FC5370-3AM30-0AA0 6FC5370-3AT30-0AA0 <b>PPU260.3</b> 6FC5370-6AA30-0AA0 6FC5370-6AA30-0AA1 6FC5370-6AA30-0WA0 <b>PPU270.4</b> 6FC5370-6AA40-0AA0 <b>PPU261.3</b> 6FC5370-5AA30-0AA0 6FC5370-5AA30-0AA1 6FC5370-5AA30-0WA0 <b>PPU271.4</b> 6FC5370-5AA40-0AA0 <b>PPU280.3</b> 6FC5370-8AA30-0AA0 6FC5370-8AA30-0AA1 6FC5370-8AA30-0WA0 <b>PPU281.3</b> 6FC5370-7AA30-0AA0 6FC5370-7AA30-0AA1	<b>PPU290.3</b> 6FC5370-8AA30-0BA0 <b>PPU290.4</b> 6FC5370-8AA40-0BA0	<b>PPU270.4</b> 6FC5370-6AA40-0AA0 6FC5370-6AA40-0WA0 <b>PPU271.4</b> 6FC5370-5AA40-0AA0 6FC5370-5AA40-0WA0	Safety-Firmware- Version (Basic)
V 4.4 SP2 V 4.4 SP2 HF1 V 4.4 SP3 V 4.4 SP3 HF1 V 4.4 SP3 HF2 V 4.4 SP3 HF3 V 4.4 SP3 HF4 V 4.4 SP4 V 4.4 SP4 HF1 V 4.4 SP4 HF2				
V 4.5	---	---	---	04.50.30.00
V 4.5 SP1 V 4.5 SP2 V 4.5 SP2 HF1 V 4.5 SP2 HF2	---	---	---	04.50.30.05
V 4.5 SP3	V 4.5 SP3	---	---	04.50.30.29
V 4.5 SP4 V 4.5 SP5 V 4.5 SP5 HF1 V 4.5 SP5 HF2	V 4.5 SP4 V 4.5 SP5 V 4.5 SP5 HF1 V 4.5 SP5 HF2	---	---	04.50.30.34
V 4.5 SP6 V 4.5 SP6 HF1 V 4.5 SP6 HF2 V 4.5 SP6 HF3	V 4.5 SP6 V 4.5 SP6 HF1 V 4.5 SP6 HF2 V 4.5 SP6 HF3	---	---	04.50.30.46
V 4.7 V 4.7 HF1 V 4.7 HF2	V 4.7 V 4.7 HF1 V 4.7 HF2	---	---	04.70.35.07
V 4.7 SP1	V 4.7 SP1	---	---	04.70.35.18

<b>PPU240.2</b> 6FC5370-4AA20-0FA0 6FC5370-4AM20-0AA0 6FC5370-4AT20-0AA0 <b>PPU241.2</b> 6FC5370-3AA20-0FA0 6FC5370-3AM20-0AA0 6FC5370-3AT20-0AA0 <b>PPU260.2</b> 6FC5370-6AA20-0AA0 <b>PPU261.2</b> 6FC5370-5AA20-0AA0 <b>PPU280.2</b> 6FC5370-8AA20-0AA0 <b>PPU281.2</b> 6FC5370-7AA20-0AA0	<b>PPU240.3</b> 6FC5370-4AA30-0AA0 6FC5370-4AA30-0AA1 6FC5370-4AM30-0AA0 6FC5370-4AT30-0AA0 <b>PPU241.3</b> 6FC5370-3AA30-0AA0 6FC5370-3AA30-0AA1 6FC5370-3AM30-0AA0 6FC5370-3AT30-0AA0 <b>PPU260.3</b> 6FC5370-6AA30-0AA0 6FC5370-6AA30-0AA1 6FC5370-6AA30-0WA0 <b>PPU270.4</b> 6FC5370-6AA40-0AA0 <b>PPU261.3</b> 6FC5370-5AA30-0AA0 6FC5370-5AA30-0AA1 6FC5370-5AA30-0WA0 <b>PPU271.4</b> 6FC5370-5AA40-0AA0 <b>PPU280.3</b> 6FC5370-8AA30-0AA0 6FC5370-8AA30-0AA1 6FC5370-8AA30-0WA0 <b>PPU281.3</b> 6FC5370-7AA30-0AA0 6FC5370-7AA30-0AA1	<b>PPU290.3</b> 6FC5370-8AA30-0BA0 <b>PPU290.4</b> 6FC5370-8AA40-0BA0	<b>PPU270.4</b> 6FC5370-6AA40-0AA0 6FC5370-6AA40-0WA0 <b>PPU271.4</b> 6FC5370-5AA40-0AA0 6FC5370-5AA40-0WA0	<b>Safety-Firmware-Version (Basic)</b>
V 4.7 SP2	V 4.7 SP2	---	---	04.70.35.35
V 4.7 SP2 HF1 V 4.7 SP2 HF2	V 4.7 SP2 HF1 V 4.7 SP2 HF2	---	---	04.70.35.42
V 4.7 SP3 V 4.7 SP3 HF1	V 4.7 SP3 V 4.7 SP3 HF1	V 4.7 SP3 V 4.7 SP3 HF1	---	04.70.35.51
V 4.7 SP4 V 4.7 SP4 HF1	V 4.7 SP4 V 4.7 SP4 HF1	V 4.7 SP4 V 4.7 SP4 HF1	---	04.74.35.02
V 4.7 SP5 V 4.7 SP6 V 4.7 SP6 HF1	V 4.7 SP5 V 4.7 SP6 V 4.7 SP6 HF1	V 4.7 SP5 V 4.7 SP6 V 4.7 SP6 HF1	---	04.74.35.02
V 4.8 SP1	V 4.8 SP1	V 4.8 SP1	---	04.90.23.00
---	---	---	V 4.8 SP4	05.10.34.00

## 1.2 Extended Functions

### 1.2.1 SINUMERIK PPUs (Panel Units)

<b>PPU260.1</b> 6FC5370-5AA00-0AA0 <b>PPU261.1</b> 6FC5370-6AA00-0AA0 <b>PPU280.1</b> 6FC5370-7AA00-0AA0 <b>PPU281.1</b> 6FC5370-8AA00-0AA0	<b>Safety-Firmware-Version (Extended)</b>
V 2.6 HF3 V 2.6 HF4	02.60.45.03
V 2.6 HF5	02.60.45.13

PPU260.1 6FC5370-5AA00-0AA0 PPU261.1 6FC5370-6AA00-0AA0 PPU280.1 6FC5370-7AA00-0AA0 PPU281.1 6FC5370-8AA00-0AA0	Safety-Firmware-Version (Extended)
V 2.7 SP1 V 2.7 SP2 V 2.7 SP2 HF1	02.60.51.00
V 2.7 SP3 V 2.7 SP3 HF1 V 2.7 SP3 HF2	02.60.57.00
V 2.7 SP3 HF3 V 2.7 SP4 V 2.7 SP4 HF1 V 2.7 SP4 HF2	02.60.58.00

PPU240.2 6FC5370-4AA20-0FA0 6FC5370-4AM20-0AA0 6FC5370-4AT20-0AA0 PPU241.2 6FC5370-3AA20-0FA0 6FC5370-3AM20-0AA0 6FC5370-3AT20-0AA0 PPU260.2 6FC5370-6AA20-0AA0 PPU261.2 6FC5370-5AA20-0AA0 PPU280.2 6FC5370-8AA20-0AA0 PPU281.2 6FC5370-7AA20-0AA0	PPU240.3 6FC5370-4AA30-0AA0 6FC5370-4AA30-0AA1 6FC5370-4AM30-0AA0 6FC5370-4AT30-0AA0 PPU241.3 6FC5370-3AA30-0AA0 6FC5370-3AA30-0AA1 6FC5370-3AM30-0AA0 6FC5370-3AT30-0AA0 PPU260.3 6FC5370-6AA30-0AA0 6FC5370-6AA30-0AA1 6FC5370-6AA30-0WA0 PPU261.3 6FC5370-5AA30-0AA0 6FC5370-5AA30-0AA1 6FC5370-5AA30-0WA0 PPU280.3 6FC5370-8AA30-0AA0 6FC5370-8AA30-0AA1 6FC5370-8AA30-0WA0 PPU281.3 6FC5370-7AA30-0AA0 6FC5370-7AA30-0AA1	PPU290.3 6FC5370-8AA30-0BA0 PPU290.4 6FC5370-8AA40-0BA0	PPU270.4 6FC5370-6AA40-0AA0 6FC5370-6AA40-0WA0 PPU271.4 6FC5370-5AA40-0AA0 6FC5370-5AA40-0WA0	Safety-Firmware-Version (Extended)
V 4.3 HF2 V 4.3 HF3 V 4.4 SP1 V 4.4 SP2 V 4.4 SP2 HF1 V 4.4 SP3 V 4.4 SP3 HF1 V 4.4 SP3 HF2	---	---	---	04.40.23.04
V 4.4 SP3 HF3 V 4.4 SP3 HF4 V 4.4 SP4 V 4.4 SP4 HF1 V 4.4 SP4 HF2	---	---	---	04.40.23.35
V 4.5	---	---	---	04.50.24.00
V 4.5 SP1	---	---	---	04.50.30.05
V 4.5 SP2	---	---	---	04.50.30.14

<b>PPU240.2</b> 6FC5370-4AA20-0FA0 6FC5370-4AM20-0AA0 6FC5370-4AT20-0AA0 <b>PPU241.2</b> 6FC5370-3AA20-0FA0 6FC5370-3AM20-0AA0 6FC5370-3AT20-0AA0 <b>PPU260.2</b> 6FC5370-6AA20-0AA0 <b>PPU261.2</b> 6FC5370-5AA20-0AA0 <b>PPU280.2</b> 6FC5370-8AA20-0AA0 <b>PPU281.2</b> 6FC5370-7AA20-0AA0	<b>PPU240.3</b> 6FC5370-4AA30-0AA0 6FC5370-4AA30-0AA1 6FC5370-4AM30-0AA0 6FC5370-4AT30-0AA0 <b>PPU241.3</b> 6FC5370-3AA30-0AA0 6FC5370-3AA30-0AA1 6FC5370-3AM30-0AA0 6FC5370-3AT30-0AA0 <b>PPU260.3</b> 6FC5370-6AA30-0AA0 6FC5370-6AA30-0AA1 6FC5370-6AA30-0WA0 <b>PPU261.3</b> 6FC5370-5AA30-0AA0 6FC5370-5AA30-0AA1 6FC5370-5AA30-0WA0 <b>PPU280.3</b> 6FC5370-8AA30-0AA0 6FC5370-8AA30-0AA1 6FC5370-8AA30-0WA0 <b>PPU281.3</b> 6FC5370-7AA30-0AA0 6FC5370-7AA30-0AA1	<b>PPU290.3</b> 6FC5370-8AA30-0BA0 <b>PPU290.4</b> 6FC5370-8AA40-0BA0	<b>PPU270.4</b> 6FC5370-6AA40-0AA0 6FC5370-6AA40-0WA0 <b>PPU271.4</b> 6FC5370-5AA40-0AA0 6FC5370-5AA40-0WA0	<b>Safety-Firmware- Version (Extended)</b>
V 4.5 SP2 HF1 V 4.5 SP2 HF2	---	---	---	04.50.30.24
V 4.5 SP3	V 4.5 SP3	---	---	04.50.30.30
V 4.5 SP4	V 4.5 SP4	---	---	04.50.30.34
V 4.5 SP5 V 4.5 SP5 HF1 V 4.5 SP5 HF2 V 4.5 SP6 V 4.5 SP6 HF1 V 4.5 SP6 HF2 V 4.5 SP6 HF3	V 4.5 SP5 V 4.5 SP5 HF1 V 4.5 SP5 HF2 V 4.5 SP6 V 4.5 SP6 HF1 V 4.5 SP6 HF2 V 4.5 SP6 HF3	---	---	04.50.30.41
V 4.7 V 4.7 HF1 V 4.7 HF2	V 4.7 V 4.7 HF1 V 4.7 HF2	---	---	04.70.29.00
V 4.7 SP1	V 4.7 SP1	---	---	04.70.35.21
V 4.7 SP2	V 4.7 SP2	---	---	04.70.35.37
V 4.7 SP2 HF1 V 4.7 SP2 HF2 V 4.7 SP3	V 4.7 SP2 HF1 V 4.7 SP2 HF2 V 4.7 SP3	V 4.7 SP3	---	04.70.35.44
V 4.7 SP3 HF1	V 4.7 SP3 HF1	V 4.7 SP3 HF1	---	04.70.35.62
V 4.7 SP4 V 4.7 SP4 HF1	V 4.7 SP4 V 4.7 SP4 HF1	V 4.7 SP4 V 4.7 SP4 HF1	---	04.74.35.02
V 4.7 SP5	V 4.7 SP5	V 4.7 SP5	---	04.74.35.13
V 4.7 SP6 V 4.7 SP6 HF1	V 4.7 SP6 V 4.7 SP6 HF1	V 4.7 SP6 V 4.7 SP6 HF1	---	04.74.35.15
V 4.8 SP1	V 4.8 SP1	V 4.8 SP1	---	04.90.24.00
---	---	---	V 4.8 SP4	05.10.39.00

## 2 Hardware

### 2.1 SINUMERIK PPUs (Panel Units)

Description	Order Purchase No. (MLFB)
PPU 240.2 (Tiger Light, vertical, 8.4")	6FC5370-4AA20-0FA0
PPU 240.2 BASIC M (Tiger Light, vertical, 8.4")	6FC5370-4AM20-0AA0
PPU 240.2 BASIC T (Tiger Light, vertical, 8.4")	6FC5370-4AT20-0AA0
PPU 240.3 (Tiger Light, vertical, 8.4")	6FC5370-4AA30-0AA0
PPU 240.3 (Tiger Light, vertical, 8.4")	6FC5370-4AA30-0AA1
PPU 240.3 BASIC M (Tiger Light, vertical, 8.4")	6FC5370-4AM30-0AA0
PPU 240.3 BASIC T (Tiger Light, vertical, 8.4")	6FC5370-4AT30-0AA0
PPU 241.2 (Tiger Light, horizontal, 8.4")	6FC5370-3AA20-0FA0
PPU 241.2 BASIC M (Tiger Light, horizontal, 8.4")	6FC5370-3AM20-0AA0
PPU 241.2 BASIC T (Tiger Light, horizontal, 8.4")	6FC5370-3AT20-0AA0
PPU 241.3 (Tiger Light, horizontal, 8.4")	6FC5370-3AA30-0AA0
PPU 241.3 (Tiger Light, horizontal, 8.4")	6FC5370-3AA30-0AA1
PPU 241.3 BASIC M (Tiger Light, horizontal, 8.4")	6FC5370-3AM30-0AA0
PPU 241.3 BASIC T (Tiger Light, horizontal, 8.4")	6FC5370-3AT30-0AA0
PPU 260.2 (vertical, 10.4")	6FC5370-6AA20-0AA0
PPU 260.3 (vertical, 10.4")	6FC5370-6AA30-0AA0
PPU 260.3 (vertical, 10.4")	6FC5370-6AA30-0AA1
PPU 260.3 (vertical, OEM, 10.4")	6FC5370-6AA30-0WA0
PPU 270.4 (vertical, 10.4")	6FC5370-6AA40-0AA0
PPU 270.4 (vertical, OEM, 10.4")	6FC5370-6AA40-0WA0
PPU 261.2 (horizontal, 10.4")	6FC5370-5AA20-0AA0
PPU 261.3 (horizontal, 10.4")	6FC5370-5AA30-0AA0
PPU 261.3 (horizontal, 10.4")	6FC5370-5AA30-0AA1
PPU 261.3 (horizontal, OEM, 10.4")	6FC5370-5AA30-0WA0
PPU 271.4 (horizontal, 10.4")	6FC5370-5AA40-0AA0
PPU 271.4 (horizontal, OEM, 10.4")	6FC5370-5AA40-0WA0
PPU 280.2 (vertical, 10.4")	6FC5370-8AA20-0AA0
PPU 280.3 (vertical, 10.4")	6FC5370-8AA30-0AA0
PPU 280.3 (vertical, 10.4")	6FC5370-8AA30-0AA1
PPU 280.3 (vertical, OEM, 10.4")	6FC5370-8AA30-0WA0
PPU 281.2 (horizontal, 10.4")	6FC5370-7AA20-0AA0
PPU 281.3 (horizontal, 10.4")	6FC5370-7AA30-0AA0
PPU 281.3 (horizontal, 10.4")	6FC5370-7AA30-0AA1
PPU 290.3 (vertical, 15.6")	6FC5370-8AA30-0BA0
PPU 290.3 (vertical, 15.6")	6FC5370-8AA40-0BA0
PPU 281.3 iTROL (horizontal, 10.4")	6FC5370-7AA30-0WA1
PPU 280.3 iTROL (vertikal, 10.4")	6FC5370-8AA30-0WA1

### 3 Restrictions

The following safety functions and features of the drive based safety functionality (dbSI) are explicitly excluded from this manufacturer declaration SINUMERIK 828D (18-10-30) at hand:

Sensor-less                      Motion monitoring functions without speed sensor (e.g. encoder)

## 4 Boundary Conditions

The SINUMERIK 828D modules named in this manufacturer's declaration SINUMERIK 828D (18-10-30) at hand shall be used in combination with the dedicated modules listed in the table below. The associated manufacturer's declarations are also listed.

Module Type	PPU2xy.1	PPU2xy.2 PPU2xy.3 PPU2xy.4	Manufacturer Declaration
Motor Modules (booksize)	X		SINAMICS S120 (booksize)
Motor Modules (booksize) – 2. generation	X	X	SINAMICS S120 (booksize)
Motor Modules (chassis/cabinet)	X		SINAMICS S120 (booksize)
Motor Modules (chassis/cabinet) – 2. generation	X	X	SINAMICS S120 (booksize)
Motor Modules (COMBI)	X	X	SINAMICS S120 (booksize)
SMx (Sensor Modules)	X	X	SINAMICS S120 (booksize)
SMx (Sensor Modules) – 2. generation	X	X	SINAMICS S120 (booksize)
TM54F (Terminal Module)	X	X	SINAMICS S120 (booksize)
NX1x.0 (Control Extension)	X		SINUMERIK 840D solution line
NX1x.3 (Control Extension)		X	SINUMERIK 840D solution line