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Annex 1

of the

Report to the Certificate

Z10 084596 0002

M6A 084596 0003

Drive System

PLATINIUM LINE

Manufacturer:

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60 Amal St. P.O. Box 3078
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Israel

Report No.: EP95466C-A1
Revision 1.4 of the annex, dated 2024-10-08

Testing Body:

TÜV SÜD Rail GmbH
Generic Safety Systems
Barthstr. 16
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Certification Body:

TÜV SÜD Product Service GmbH
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Revision Log

Revision	Name	Date	Changes/History
1.0	K. Leupold	2020-08-07	Initial
1.1	K. Leupold	2021-11-16	2 nd step Platinum EP97595T
1.2	K. Leupold	2022-06-24	New Triple TWI family EP98829T
1.3	K. Leupold	2023-11-22	New FW, new module 35/200 for PTWI, new module P-String EP101910T
1.4	K. Leupold	2024-10-08	New FW, new module P-Bassoon

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Safety-Certified Hardware and Software Components

The following PLATINIUM LINE system components are covered by Certificate no. Z10 084596 002, M6A 084596 003 and the report to the certificate, report no. EP95466C.

The following system components are certified 'safety-related'. This allows the components to be used to process safety critical signals and functions.

There are different safety functions available, which are listed in the following table:

Abbreviation	Description of Safety Function
STO	Safe Torque Off
SS1	Safe Stop 1
SS2	Safe Stop 2
SBC	Safe Brake Control
SOS	Safe Operating Stop
SLS	Safe Limited Speed
SLP	Safe Limited Position
SLT	Safe Limited Torque
SBT	Safe Brake Test
SLI	Safe Limited Increment
SDI	Safe direction
SSM	Safe speed monitor
SCA	Safe cam
SMS	Safe Maximum Speed
SXT	Safe Maximum Torque
SSR	Safe speed range
SAT	Safe Absolute Torque



1 Platinum Drive Single Axis

1.1 Software

item	Safety-Firmware-Version
Safety version	02.00.02.00 B00 02.00.02.02 B03 02.00.03.00 B00 02.00.03.02 B01
STO software version	01.00.00.00 B21 01.00.01.02 B00
Primary CPLD Version	X19.2, x22.01 X23.03
Secondary CPLD Version	X19.2, x22.01 X23.03
Voltage Monitor Version	01.00.01.00 B02 01.00.01.01 B05



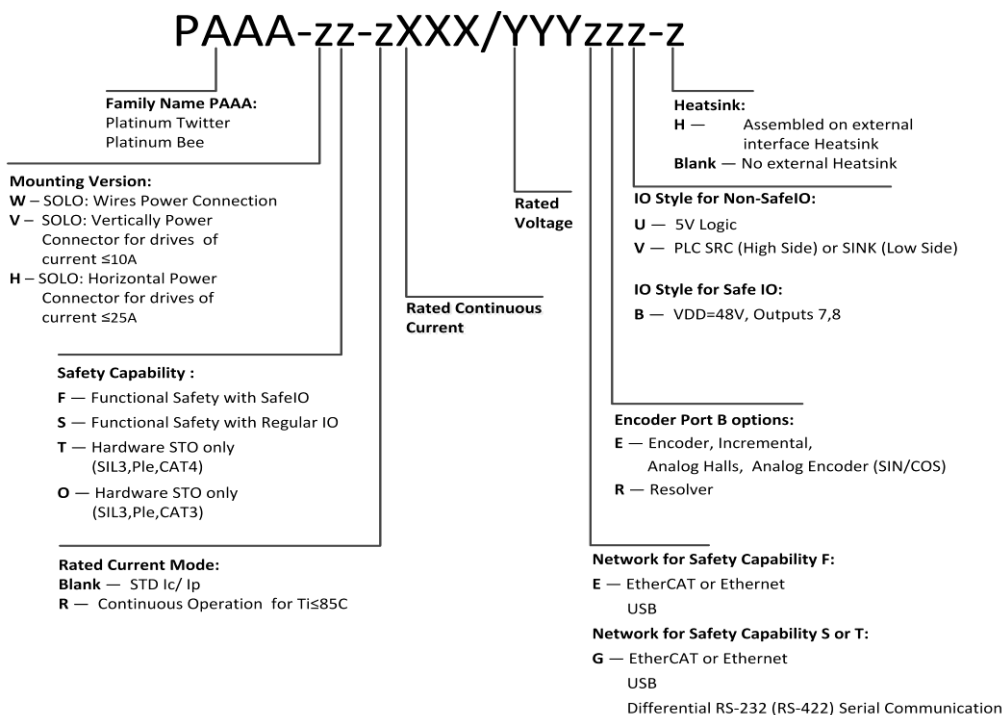
1.2 Hardware

1.2.1 Products up to 200V

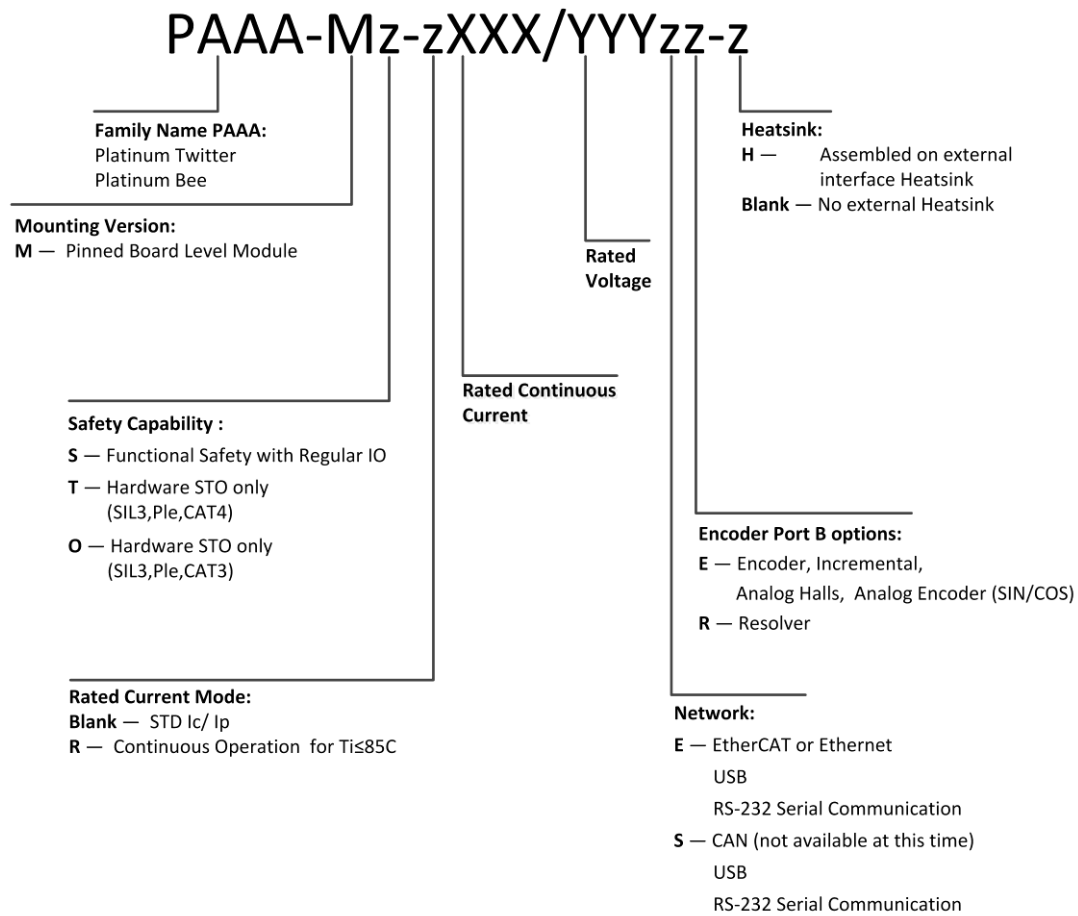
1.2.1.1 Platinum TWI Family

Hardware	PCB,BOM	Version
CON-PTWI	PCD-DELM084	C,D,E
LGC-PTWI	PCD-DELM088	D-X1,E
DRV_PTWI	PCD-PELM072	B
SIB-PTWI-SAFEIO	PCD-PELM097	C

1.2.1.1.1 Platinum Solo TWI/BEE Generic Part Number



1.2.1.1.2 Platinum Module TWI/BEE Generic Part Number



1.2.1.1.3 Current/Voltage Modules

XXX/YYY	30/60	1/100	3/100	6/100	10/100	15/100	25/100
	3/200	6/200	10/200	50/100	R50/60	R80/80	R50/100
	R70/100	R45/150	R15/200	R35/150	R35/200		



Model Name	Model Part Number
Platinum Twitter	PTWI-MO-zXX/YYYYzzz PTWI-MT-zXX/YYYYzzz PTWI-MS-zXX/YYYYzzz The integration board must be designed and approved according to the safety standards IEC61800-5-2
Platinum Bee	PBEE-MO-zXX/YYYYzzz PBEE-MT-zXX/YYYYzzz PBEE-MS-zXX/YYYYzzz The integration board must be designed and approved according to the safety standards IEC61800-5-2
Platinum SOL Twitter	PTWI-%O-zXX/YYYYzzz PTWI-%T-zXX/YYYYzzz PTWI-%S-zXX/YYYYzzz PTWI-%F-zXX/YYYYzzz %= V, W or H
Platinum SOL Bee	PBEE-%O-zXX/YYYYzzz PBEE-%T-zXX/YYYYzzz PBEE-%S-zXX/YYYYzzz PBEE-%F-zXX/YYYYzzz %= V, W or H



1.2.1.2 Platinum WHI/Bell Family

Hardware	PCB,BOM	Version
PCON-PWHI	PCD-DELM059 PHA-SAFETY-CON-PWHI01	H,I,J A
CFB-PWHI	PCD-DELM006	C
CFB-PBEL	PCD-DELM016	C
SAFEIO-PWHI	PCD-DELM500	D

1.2.1.2.1 Platinum Module WHI/BELL/HOR Generic Part Number

PAAA-Mz-zXXX/YYYzzz

Family Name PAAA:

Platinum Bell (BEL)
Platinum Whistle (WHI)
Platinum Hornet (HOR)

Mounting Version:

M— Module

Safety Capability :

F — Functional Safety with SafeIO
S — Functional Safety with Regular IO
T — Hardware STO only
(SIL3,Ple,CAT4)
O — Hardware STO only
(SIL3,Ple,CAT3)

**Rated
Voltage**

**Rated Continuous
Current**

Rated Current Mode:
Blank — Standard
R — No peak current

IO Style for Module:

Blank

IO Style for Non-SafeIO:

U — 5V Logic
V — PLC SRC(High Side) or SINK (Low Side)

IO Style for SafeIO:

K — VDD=24V, All Outputs
L — VDD=24V, Outputs 1,2,3,4
VDD=48V, Outputs 7,8
N — VDD=48V, Outputs 7,8

Encoder Port B options:

E — Encoder, Incremental,
Analog Halls, Analog Encoder (SIN/COS)
R — Resolver

Network:

E — EtherCAT or Ethernet
USB
RS-232 Serial Communication
S — CAN (not available at this time)
USB
RS-232 Serial Communication



1.2.1.2.2 Platinum Solo WHI/BELL/HOR Generic Part Number

PAAA-Sz-zXXX/YYYzzz

Family Name PAAA:

Platinum Bell (BEL)
Platinum Whistle (WHI)
Platinum Hornet (HOR)

Mounting Version:

S — SOLO

Safety Capability :

F — Functional Safety with SafeIO
S — Functional Safety with Regular IO
T — Hardware STO only
(SIL3,Plc,CAT4)
O — Hardware STO only
(SIL3,Plc,CAT3)

**Rated
Voltage**

**Rated Continuous
Current**

Rated Current Mode:

Blank — Standard
R — No peak current

IO Style for Module:

Blank

IO Style for Non-SafeIO:

U — 5V Logic
V — PLC SRC(High Side) or SINK (Low Side)

IO Style for SafeIO:

K — VDD=24V, All Outputs
L — VDD=24V, Outputs 1,2,3,4
VDD=48V, Outputs 7,8
N — VDD=48V, Outputs 7,8

Encoder Options For Safety Capability F, S, T and O:

E — Port A: Standard

Incremental, Endat2.2 BISS, SSI, Safe Endat2.2, Safe BISS

Port B: Standard

Incremental, SINCOs

Port C: Standard (4-Wire)

Incremental, all regular ABS Encoder, Safe Endat2.2, Safe BISS

R — Standard Port A & C

Port B: Incremental, Resolver

Encoder Options for Safety Capability F Only:

H — Standard Port A & B

Port C: 2-Wire Safe Endat3

1 — Standard Port A & B

Port C: 4-Wire Acuro

2 — Standard Port A & B

Port C: 4-Wire SCS

3 — Standard Port A & B

Port C: 2-Wire SCS

4 — Standard Port A & B

Port C: 2-Wire DSL

Network for Safety Capability F, or S:

F — EtherCAT with Switches or Ethernet
USB

Network for Safety Capability T or O:

F — EtherCAT with Switches or Ethernet
USB

S — CAN (available within the near future)
USB

RS-232

T — CAN + RS-422 Serial Communication (Differential RS-232)
(available within the near future)
USB

RS-422 Serial Communication (Differential RS-232)



1.2.1.2.3 Current/Voltage Modules

XXX/YYY	1/100	2.5/100	5/100	10/100	15/100	20/100	25/100
	3/200	6/200	9/200	10/200			

Model Name	Model Part Number
Platinum Whistle	PWHI-MO-zXX/YYYzzz PWHI-MT-zXX/YYYzzz PWHI-MS-zXX/YYYzzz PWHI-MF-zXX/YYYzzz The integration board must be designed and approved according to the safety standards IEC61800-5-2
Platinum Hornet	PHOR-MO-zXX/YYYzzz PHOR-MT-zXX/YYYzzz PHOR-MS-zXX/YYYzzz PHOR-MF-zXX/YYYzzz The integration board must be designed and approved according to the safety standards IEC61800-5-2
Platinum Bell	PBEL-MO-zXX/YYYzzz PBEL-MT-zXX/YYYzzz PBEL-MS-zXX/YYYzzz PBEL-MF-zXX/YYYzzz The integration board must be designed and approved according to the safety standards IEC61800-5-2
Platinum SOL Whistle	PWHI-SO-zXX/YYYzzz PWHI-ST-zXX/YYYzzz PWHI-SS-zXX/YYYzzz PWHI-SF-zXX/YYYzzz
Platinum SOL BELL	PBEL-SO-zXX/YYYzzz PBEL-ST-zXX/YYYzzz PBEL-SS-zXX/YYYzzz PBEL-SF-zXX/YYYzzz



1.2.1.3 Platinum Harmonica Family

PHAR-Bz-zXXX/YYYzzz Motor type supported Stepper (2Ph) and BLDC (3Ph)

Hardware		PCB,BOM	
P-BEL	PCON-PWHI	PCD-DELM059 PHA-SAFETY-CON-PWHI01	H,I,E A
	CFB-PBEL	PCD-DELM016	C
INT-PHAR		PCD-MELM003	E

PHAR-Tz-zXXX/YYYzzz Motor type supported BLDC (3Ph)

Hardware		Version	
P-TWI	CON-PTWI	PCD-DELM084	C,D,E
	LGC-PTWI	PCD-DELM088	D-X1,E
	DRV_PTWI	PCD-PELM072	B
INT-PHAR		PCD-MELM004	C



1.2.1.3.1 Platinum Harmonica Generic Part Number

PHAR-zz-zXXX/YYYzzz

Family Name:

Platinum HARMonica

Motor Type Supported:

B — Stepper (2Ph) & BLDC (3Ph)
T — BLDC (3Ph),
 High Current (HC)

**Rated
Voltage**

IO Style for Regular IO:

U — 5V Logic
V — PLC SRC (High Side) or SINK (Low Side)

IO Style for SafeIO:

K — VDD=24V, All Outputs
L — VDD=24V, Outputs 1,2,3,4
 VDD=48V, Outputs 7,8
N — VDD=48V, Outputs 7,8

Safety Capability :

F — Functional Safety with SafeIO
S — Functional Safety with Regular IO
O — Hardware STO only
 (SIL3, Ple, CAT3)

**Rated Continuous
Current**

Rated Current Mode:

Blank — STD Ic/ Ip
R — Continuous Operation
 for $T_i \leq 85^\circ \text{C}$

Encoder Options For Safety Capability F, S, and O:

E — Port A: Standard

Incremental, Endat2.2 BISS, SSI, Safe Endat2.2, Safe BISS

Port B: Standard

Incremental, SIN COS

Port C: Standard (4-Wire)

Incremental, all regular ABS Encoder, Safe Endat2.2, Safe BISS

R — Standard Port A & C

Port B: Incremental, Resolver

Encoder Options for Safety Capability F Only:

H — Standard Port A & B

Port C: 2-Wire Safe Endat3

1 — Standard Port A & B

Port C: 4-Wire Acuro

2 — Standard Port A & B

Port C: 4-Wire SCS

3 — Standard Port A & B

Port C: 2-Wire SCS

4 — Standard Port A & B

Port C: 2-Wire DSL

Network for Safety Capability F, or S:

F — EtherCAT with Switches or Ethernet
 USB

Network for Safety Capability O:

F — EtherCAT with Switches or Ethernet
 USB

S — CAN (available within the near future)
 USB
 RS-232



1.2.1.3.2 Current/Voltage Modules for Motor Type B

XXX/YYY	1/100	2.5/100	5/100	10/100	15/100	20/100	25/100
	3/200	6/200	9/200	10/200			

1.2.1.3.3 Current/Voltage Modules for Motor Type T

XXX/YYY	30/60	1/100	3/100	6/100	10/100	15/100
	25/100	35/100	50/100	R50/60	R50/100	R45/150
	R15/200	R35/200	3/200	6/200	10/200	

Model Name	Model Part Number
Platinum Harmonica	PHAR-%F-zXX/YYYzzz PHAR-%S-zXX/YYYzzz PHAR-%O-zXX/YYYzzz %= B or T

1.2.1.4 Platinum Triple TWI Family

Hardware	PCB,BOM	Version
CON-PTWI	PCD-DELM084	C,D,E
LGC-PTWI	PCD-DELM088	C,D-X1,E
DRV_PTTWI	PCD-PELM113	A,B
SIB-PTTWI-SAFEIO	PCD-PELM138	A,B



1.2.1.4.1 Platinum Solo Triple TWI/BEE Generic Part Number

PAAA-Sz-RXXX/YYYzzz

Family Name PAAA:
Platinum Triple Twitter - **TWT**
Platinum Triple Bee - **BET**

Mounting Version:
S – SOLO

Safety Capability :
F – Functional Safety with SafeIO
S – Functional Safety with Regular IO
O – Hardware STO only (SIL3,Plc,CAT3)

**Maximum
DC Operating
Voltage**

**Rated Continuous
Current**

Rated Current Mode:
R – Continuous Operation
for $T_i \leq 85^\circ\text{C}$

IO Style for Regular IO:

U – 5V Logic
V – PLC SRC (High Side) or SINK (Low Side)

IO Style for Safe IO:

B – VDD=48V, Outputs 7,8

Encoder Options For Safety Capability F, S, and O:

E – Port A: Standard

Incremental, Endat2.2 BISS, SSI, Safe Endat2.2, Safe BISS

Port B: Standard

Incremental, SINCOS

Port C: Standard (4Wire)

Incremental, all regular ABS Encoder, Safe Endat2.2, Safe BISS

R – Standard Port A & C

Port B: Incremental, Resolver

Encoder Options for Safety Capability F Only:

H – Standard Port A & B

Port C: 2Wire Safe Endat3

1 – Standard Port A & B

Port C: 4Wire Acuro

2 – Standard Port A & B

Port C: 4Wire SCS

3 – Standard Port A & B

Port C: 2Wire SCS

4 – Standard Port A & B

Port C: 2Wire DSL

Network for Safety Capability F:

E – EtherCAT or Ethernet

USB

Network for Safety Capability S, or O:

E – EtherCAT or Ethernet

USB

RS-232 Serial Communication

G – EtherCAT + Differential RS-232 (RS-422)

EtherCAT or Ethernet

USB

Differential RS-232 (RS-422) Serial Communication



1.2.1.4.2 Current/Voltage Modules

XXX/YYY	R270/60	R240/80	R210/100	R100/200
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Model Name	Model Part Number
Platinum SOL Triple Twitter	PTWT-SO-RXX/YYYzzz PTWT-SS-RXX/YYYzzz PTWT-SF-RXX/YYYzzz
Platinum SOL Triple Bee	PBET-SO-RXX/YYYzzz PBET-SS-RXX/YYYzzz PBET-SF-RXX/YYYzzz

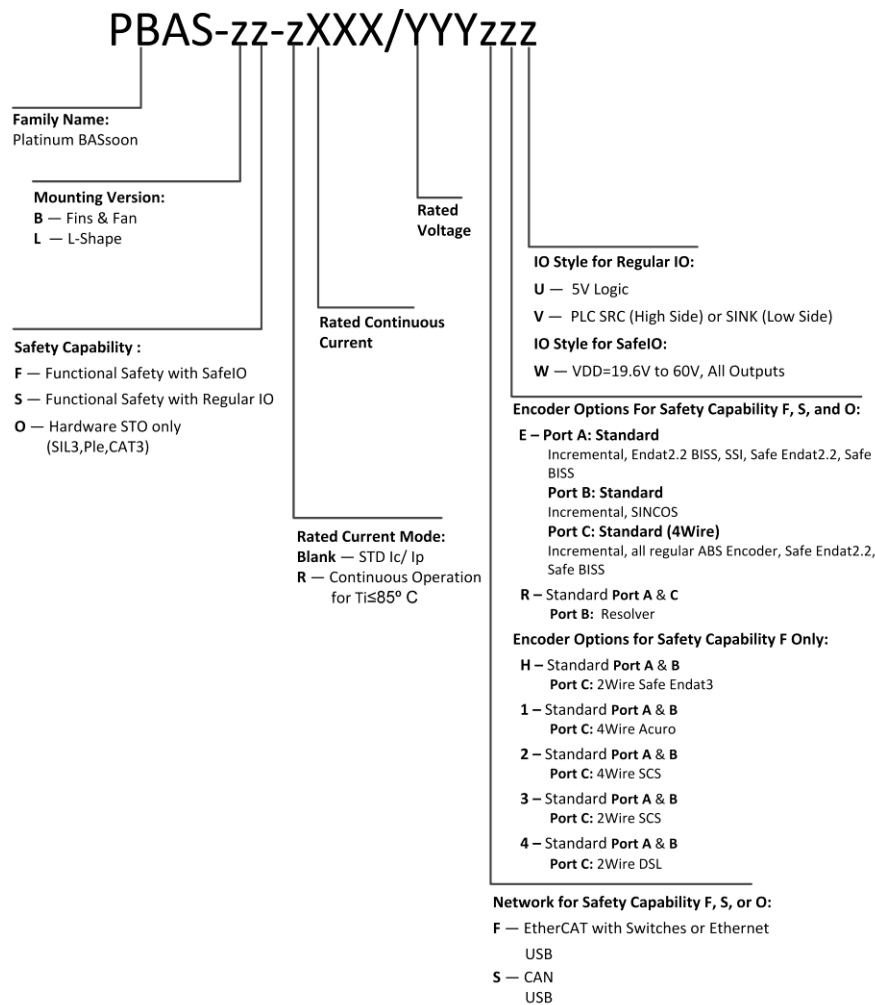


1.2.2 High Voltage Products

1.2.2.1 Platinum Bassoon (400V)

Hardware	PCB, BOM	Version
PCON-PWHI	PCD-DELM059	j
	PHA-SAFETY-CON-PWHI01	A
INT_BAS	PCD-MELM007B	B
	PHA-SAFETY-INT-PBAS01	A
	PHA-SAFETY-INT-PBAS02	A
	PHA-SAFETY-INT-PBAS03	A
	PHA-SAFETY-INT-PBAS04	A
CFB-BAS	PCD-MELM009B	B
	PCD-MELM009C	C
	PHA-SAFETY-CFB-PBAS01	A
	PHA-SAFETY-CFB-PBAS02	A

1.2.2.1.1 Platinum Bassoon Part Number



1.2.2.1.2 Current/Voltage Modules

XXX/YYY	3/230	6/230	10/230
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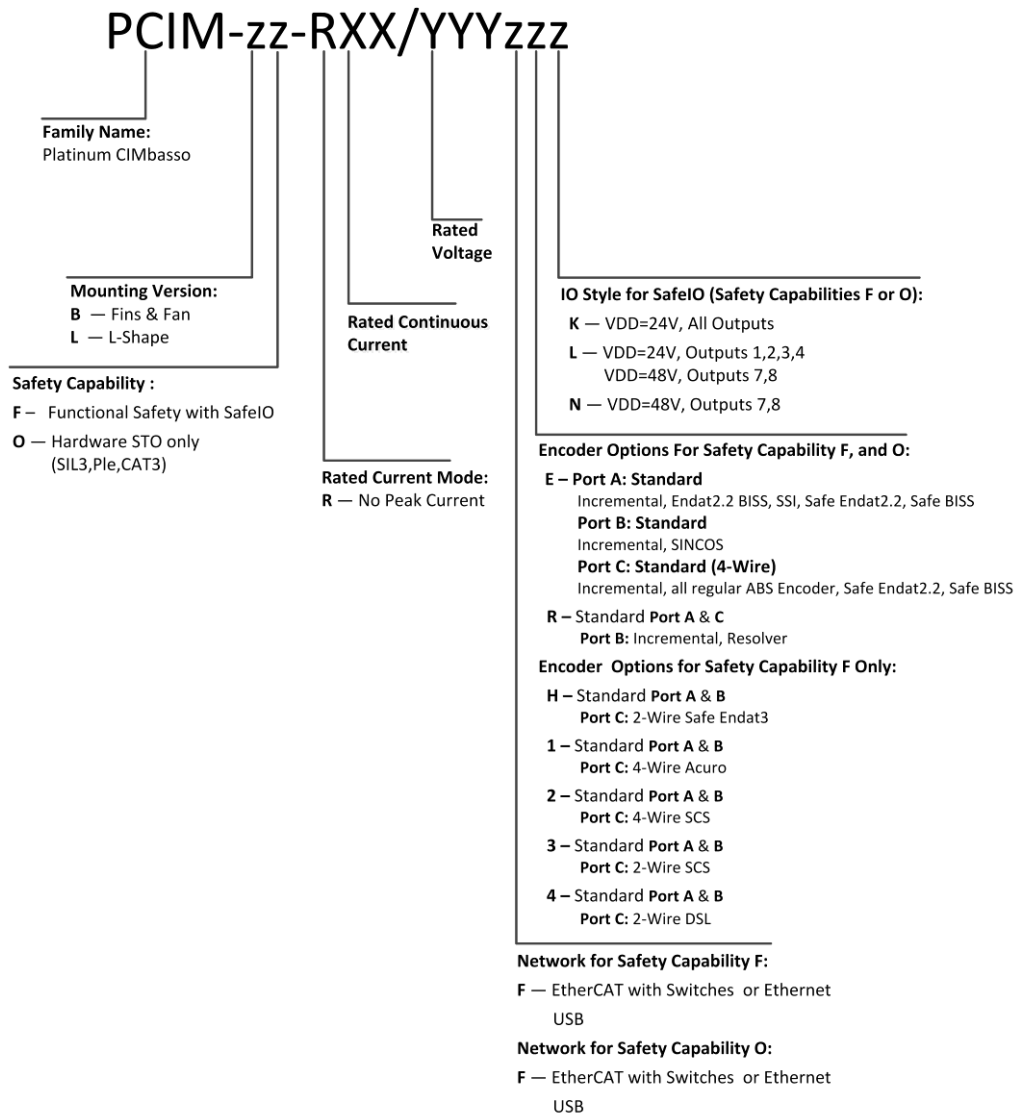
Model Name	Model Part Number
Platinum Bassoon	PBAS-zF-zXX/YYYzzz PBAS-zS-zXX/YYYzzz PBAS-zO-zXX/YYYzzz



1.2.2.2 Platinum Cimbasso (800V)

Hardware	Version	Version
PCON-PWHI	PCD-DELM059	I,J
	PHA-SAFETY-CON-PWHI01	A
INT_PCIM	PCD-PELM115c	C

1.2.2.2.1 Platinum Cimbasso Generic Part Number





1.2.2.2.2 Current/Voltage Modules

XXX/YYY	R8/800	R16/800	R25/800	R50/800
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Model Name	Model Part Number
Platinum Cimbasso	PCIM-zO-zXX/YYYzzz PCIM-zF-zXX/YYYzzz



2 Platinum Quartet Family Four Axes – STO Only

2.1 Software

item	Safety-Firmware-Version
STO software version	01.00.01.01 B00 01.00.01.02 B00
Primary CPLD Version	x2.1
Secondary CPLD Version	x10.1
Voltage Monitor	01.00.00.02 B04

2.2 Hardware

2.2.1 Products up to 200V

2.2.1.1 Platinum Quad (200V)

Hardware	Version
CON-PQUA	PCD- DELM096c PCD-DELM096f PCD-DELM096g
SIB- PQUA	PCD-DELM501E-R1 PCD-DELM0501f PCD-DELM0501g

Model Name	Model Part Number
Platinum Quad	PQUA-M
Platinum Bee Quad	PBEQ-M
Platinum SOLO Quad	PQUA-S
Platinum SOLO Bee Quad	PBEQ-S



2.2.2 Products High Voltage

2.2.2.1 Platinum Sring (400V)

Hardware	Version
CON-PQUA	PCD-DELM096g

Model Name	Model Part Number
Platinum String	PSTR-

Munich, 2024-10-08

TÜV SÜD Rail GmbH
Rail Automation

Technical Certifier