

ENG

TPD32-EV

DC ARMATURE CONVERTERS



COD. 82181E

GEFRAN
BEYOND TECHNOLOGY

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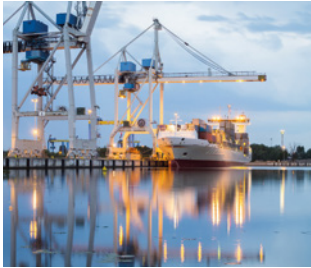
Over fifty years of experience, an organisation highly focused on the customer's needs and constant technological innovation make Gefran a benchmark in the design and production of sensors and components for industrial process automation and control.

Expertise, flexibility and process quality are the factors that distinguish Gefran in the production of integrated tools and systems for specific applications in various industrial fields, with consolidated know-how in the plastics, mobile hydraulics, heating and lift sectors.

Technology, innovation and versatility represent the catalogue's added value in addition to the ability to create specific application solutions in association with the world's leading machine manufacturers.



APPLICATIONS



INDUSTRIAL HOISTING



METAL PROCESSING



TEST BENCHES



PLASTIC AND RUBBER
PROCESSING



LIFTS FOR MINES



AMUSEMENT PARKS

In addition to foreseeing the market's application needs, Gefran forms partnerships with its customers to find **the best way to optimise and boost the performance of various applications.**

Gefran products communicate with one another to provide integrated solutions, and can dialogue with devices by other companies thanks to compatibility with numerous fieldbuses.

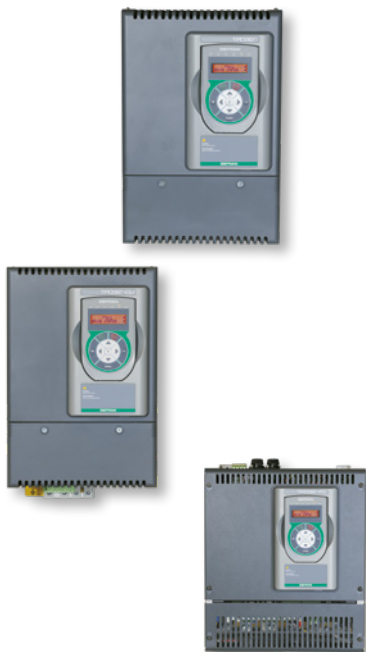
CANopen

DeviceNet

Modbus

PROFI
BUS

DESCRIPTION



Series TPD32 EV -...-2B/4B

TPD32-EV DC drive series is a product of the ever growing technological demands of modern industrial systems, and draws on Gefran's years of experience in the field of DC motor speed control. This is available in a wide range of motor power ratings and power supply types and it offers solutions for both 2 quadrant and 4 quadrant operation and system solution as 12 pulses parallel and series configuration.

Designed to minimize user system requirements, this range offers a range of functions and dedicated application packages to cover the most complex requirements of modern industrial automation systems.

Series TPD32 EV-CU

Regulation control units are ideal for controlling the full range of external power bridges available on the market.

The regulation control unit implements all the control systems required of an armature converter, including snubber filters, field regulator, regulation card, for simple, immediate power structure customisation.

Series TPD32 EV-FC

Series of converters designed to supply highly inductive loads such as electromagnets, chokes, synchronous motor excitation circuits, galvanic applications, etc..

POWER RATINGS

	TPD32 EV-500/...	TPD32 EV-575/...	TPD32 EV-690/...
2 quadrant	(..-2B): from 20A up to 3300A	(..-2B): from 280A up to 2300A	(..-2B): from 560A up to 3300A
4 quadrant	(..-4B): from 20A up to 3300A	(..-4B): from 280A up to 2300A	(..-4B): from 560A up to 3300A

THREE-PHASE POWER CIRCUIT (U/V/W)

TPD32 EV-500/...

- 230 VAC ±10%, 50/60Hz ±5%
- 400 VAC ±10%, 50/60Hz ±5%
- 440 VAC ±10%, 50/60Hz ±5%
- 460 VAC ±10%, 50/60Hz ±5%
- 480 VAC ±10%, 50/60Hz ±5%
- 500 VAC ±10%, 50/60Hz ±5%
- 2 quadrant (...-2B): from 20A up to 3300A
- 4 quadrant (...-4B): from 20A up to 3300A

TPD32 EV-575/...

- 230 VAC ±10%, 50/60Hz ±5%
- 400 VAC ±10%, 50/60Hz ±5%
- 440 VAC ±10%, 50/60Hz ±5%
- 460 VAC ±10%, 50/60Hz ±5%
- 480 VAC ±10%, 50/60Hz ±5%
- 500 VAC ±10%, 50/60Hz ±5%
- 575 VAC ±10%, 50/60Hz ±5%
- 2 quadrant (...-2B): from 280A up to 2300A
- 4 quadrant (...-4B): from 280A up to 2300A

TPD32 EV-690/...

- 230 VAC ±10%, 50/60Hz ±5%
- 400 VAC ±10%, 50/60Hz ±5%
- 440 VAC ±10%, 50/60Hz ±5%
- 460 VAC ±10%, 50/60Hz ±5%
- 480 VAC ±10%, 50/60Hz ±5%
- 500 VAC ±10%, 50/60Hz ±5%
- 575 VAC ±10%, 50/60Hz ±5%
- 690 VAC ±10%, 50/60Hz ±5%
- 2 quadrant (...-2B): from 560A up to 3300A
- 4 quadrant (...-4B): from 560A up to 3300A

TPD32 EV-CU-230/500-...:

230 VAC ... 500 VAC ±10%, 50/60Hz ±5%

TPD32 EV-CU-575/690-...:

575 VAC ... 690 VAC ±10%, 50/60Hz ±5%

TPD32 EV-FC-200/...:

60 VAC ... 200 VAC ±10%, 50/60Hz ±5%

TPD32 EV-FC-500/...:

230 VAC ... 500 VAC ±10%, 50/60Hz ±5%

SINGLE-PHASE FIELD CIRCUIT (U1/V1)

- 230 VAC ±10%, 50/60Hz ±5%
- 400 VAC ±10%, 50/60Hz ±5%
- 460 VAC ±10%, 50/60Hz ±5%

SINGLE-PHASE REGULATION CIRCUIT (U2/V2)

- 115 VAC ±15%, 50/60Hz ±5%
- 230 VAC ±15%, 50/60Hz ±5%

SOFTWARE

The screenshot displays the GEFAN GF-express Drives software interface. At the top, it shows the GEFAN logo and 'GF-express Drives'. Below this, there are four tabs: 'DC Converter', 'Inverter', 'Lift', and 'Servodrive'. Each tab contains an image of the corresponding drive hardware. To the right, there are several technical diagrams and parameter lists:

- Output Voltage / Torque vs Speed graph:** Shows a 'Constant Torque' region followed by a 'Constant Power' region. Parameters include P173 (Max out voltage), P426 (Flux max speed), P45 (Speed base value), and P42 (Flux max speed).
- Field regulator management:** A list of parameters for field control, including P469 (Flux reg mode), P474 (Flux reg curr), P468 (Flux control min), P467 (Flux control max), and P403 (Flux reg ref).
- Electrical circuit diagram:** Shows a motor (M) connected to a power source (A1) through various components like resistors (P423, P424), inductors (P196), and a capacitor (C1). Parameters include P423 (Arm resistance), P424 (Arm inductance), P196 (Stator current), P280 (Mean rpm flux), and P351 (Flux current).
- Control logic diagram:** A detailed block diagram showing the flow of digital commands (from a 'DRIVE KEYPAD') through various enable/disable signals (P244, P214, P240, P242) to a 'JOG' block. It also includes 'STOP & speed 0' and 'Fault stop & spd 0' blocks, and a 'JOG REFERENCE SELECTION' block. Parameters like P337 (Speed ramp time), P427 (Spd C trip delay), P328 (Trip point delay), and P266 (Jog reference) are shown.

GF-express PROGRAMMING SOFTWARE

All drives and automation devices manufactured by the GEFAN group (PLC, HMI, instrumentation, etc.) can be programmed via PC using the GF-express configurator.

This PC tool enables complete **programming and control of the product**, based on a powerful, user-friendly and intuitive software platform:

- Programming with parameter list or block diagrams
- Integrated oscilloscope
- Multi-drop network management with up to 32 drives.



GENERAL CHARACTERISTICS



WIDE RANGE OF POWER SUPPLIES

A single product for all power supply types, from 230Vac to 690Vac.

SERIAL COMMUNICATION

For programming with PC, the RS485 serial line with Modbus RTU protocol is standard on the TPD32-EV.

FIELD BUS CARDS (OPTIONAL)

Interfacing with the most commonly-used fieldbus systems:

- > ProfibusDP (SBI-PDP-32),
- > CANopen (SBI-COP)
- > DeviceNet (SBI-DN).

PROGRAMMING KEYPAD

The optional KB-TPD32-EV programming keypad featuring full display of parameters and variables makes the converter extremely intuitive and easy to use.

FIELD REGULATOR

Integrated field regulator on all the range, I_{ph} supply: 230Vac...460Vac, 50/60Hz, rated currents from 10 to 70A.

TBO-32 - I/O EXPANSION CARD

Converter standard input / output expansion card:

- > 4 digital inputs (+15Vdc ... +30Vdc: 3 ... 6mA)
- > 4 digital outputs (+15Vdc ... +30Vdc, max 50mA)
- > 2 analog outputs (±10V, max 5mA).

OVERLOAD

Programmable up to 200% with dedicated firmware function.



TPD32-EV DC ARMATURE CONVERTERS

Standard supply configuration	<ul style="list-style-type: none"> · Speed feedback via tachogenerator and/or digital or sinusoidal (*) encoder <ul style="list-style-type: none"> - 2 encoder inputs: sinusoidal (power supply at 5 V) and digital (power supply at 5V or 24 V); - 1 Tachogenerator input; · Digital I/O logic control in PNP configuration; · Analog inputs: 3 Differential, 12 Bits, programmable, selectable for ±10 VDC, 0 - 20 mA, 0 - 10 VDC, 4 - 20 mA; · 2 Analog outputs ±10Vdc; · 8 Digital inputs (4 fixed + programmable); · 4 programmable digital outputs; · Relay outputs: 1 Drive OK normally closed contact, 1 programmable normally closed contact; · 1 Motor thermistor input; · RS485 Serial line (Modbus RTU protocol); · Programmable overload up to 200%; · Interfacing with fieldbus protocol as: Profibus DP[®], CANopen[®] and DeviceNet; · LED diagnostics module. 																		
Precision	<table border="0" style="width: 100%;"> <tr> <td style="width: 40%;">Speed control</td> <td style="width: 20%;"></td> <td style="width: 40%;">with sinusoidal encoder: typically 0.01%</td> </tr> <tr> <td></td> <td></td> <td>with digital encoder: typically 0.02%</td> </tr> <tr> <td></td> <td></td> <td>with tachogenerator: typically 0.1%</td> </tr> <tr> <td>Torque regulation</td> <td></td> <td>typical 0,2%</td> </tr> <tr> <td>Analog Inputs / Ouputs</td> <td></td> <td>11 bit + sign</td> </tr> <tr> <td>Digital references</td> <td></td> <td>15 bit + sign</td> </tr> </table>	Speed control		with sinusoidal encoder: typically 0.01%			with digital encoder: typically 0.02%			with tachogenerator: typically 0.1%	Torque regulation		typical 0,2%	Analog Inputs / Ouputs		11 bit + sign	Digital references		15 bit + sign
Speed control		with sinusoidal encoder: typically 0.01%																	
		with digital encoder: typically 0.02%																	
		with tachogenerator: typically 0.1%																	
Torque regulation		typical 0,2%																	
Analog Inputs / Ouputs		11 bit + sign																	
Digital references		15 bit + sign																	
Integrated System Technology	<ul style="list-style-type: none"> · Quick start up; Autotuning of the speed and current (*) regulators; 5 Independent programmable Multi-ramps; Programmable Linear and "S" shaped ramps; Seven Programmable Multispeeds; Independent regulation of the Min/Max speed for each direction sense of rotation; · Current limitation in accordance with the speed; Adaptive gains of the speed regulator; Independent management of the integral gain at zero speed; Programmable overload control; Jog function; Motorpotentiometer function; I2t motor protection; · PID function block; Servodiameter control function; "Speed Draw" function; "Autocapture" function (Flying restart); "Droop" function, SCR test function. 																		
Options	<ul style="list-style-type: none"> · Programming keypad KB; · I/O expansion card TBO-32; · Profibus interface SBI-PDP-32; · DeviceNet interface SBI-DN; · CANopen interface SBI-COP; · Programmable APC300 application card with Master CAN I/O controller and integrated Fast Link Drive to Drive communication; · Supplementary encoders management DEll. 																		
Accessories	<ul style="list-style-type: none"> · Dedicated EMC filters (in accordance with EN61800-3); · Input choke (standardised for the whole line); · Programming remote keypad kit with 2 meters of cable included; · RS485 serial line kit for direct PC communication. 																		
Environmental conditions	<ul style="list-style-type: none"> · Protection degree: IP20 up to 1000A (...-2B) and 1050A (...-4B), IP20/IP00 for bigger powers. · Operating temperature: from 0°C to 40°C, from + 40°C to +50°C with derating. · Storage temperature: -25°C...+55°C (Class 1K4 - EN50178). · Humidity: from 5% to 85%, relative humidity (without condensation) or ice formation (Class 3K3 under EN50178). · Altitude: max 2000 metres above sea level; above 1000 metres the current must be reduced by 1.2% per 100 metre increase. 																		
Standards and Marks	<p>CE: complies with the EC directive concerning low voltage equipment (Directives LVD 2014/35/EU, EMC 2014/30/EU, RoHS 2011/65/EU)</p> <p>UL, cUL: complies with directives for the American and Canadian market (TPD32 EV ...-NA* and TPD32 EV-FC series). <i>TPD32 EV ...-E-NA series not included.</i></p> <p>EMC: complies with the EC directive - EN 61800-3 concerning electromagnetic compatibility with the use of optional filters.</p>																		

(*) Except the TPD32-EV -FC-... series

CONVERTER SELECTION – INPUT AND OUTPUT DATA

TPD32 EV-...

TPD32 EV Standard sizes	TPD32 EV-...-NA American sizes	2 quadrant: 2B	4 quadrant: 4B	Frame	ULN AC Input Voltage			Input Frequency	IDN Rated Output Current Standard sizes	IDN Rated Output Current American sizes (I)	IOLVD Output Current Overload	UDN DC Output Voltage														
					TPD32 EV-500 230 ... 500Vac ± 10%, 3ph [VAC]	TPD32 EV-575 230 ... 575Vac ± 10%, 3ph [VAC]	TPD32 EV-690 230 ... 690Vac ± 10%, 3ph [VAC]					TPD32 EV-500		TPD32 EV-575		TPD32 EV-690		AC Input Voltage for Field Circuit	UFN DC Field Voltage * (0.85 U _{LN})	IFN Field Current @ 40°C	AC Input Voltage of regulation part					
20	17	.	.	A1	.			50/60 Hz ±5%	20	17	IDN Programmable up to 200%	600 Vdc		520 Vdc		680 Vdc		600 Vdc		810 Vdc		720 Vdc		230 VAC ± 15% or 400 VAC ± 15% or 460 VAC ± 10%, single-phase, 50/60Hz ±5% Fixed or adjustable: 200 Vdc (for 230 VAC) or 310 Vdc (for 400 VAC) or 360 Vdc (for 460 VAC)	10	115 VAC ± 15% or 230 VAC ± 15%, single-phase, 50/60Hz ±5%
40	35	.	.	A1	.			40	35	10																
70	56	.	.	A2	.			70	56	10																
110	88	.	.	A3	.			110	88	14																
140	112	.	.	A3	.			140	112	14																
185	148	.	.	A3	.			185	148	14																
280	224	.	.	B1	.	.		280	224	20																
350	280	.	.	B1	.	.		350	280	20																
420	336	.	.	B1	.	.		420	336	20																
500	400	.	.	B1	.	.		500	400	20																
560	360	.	.	C		.		560	360	25																
650	450	.	.	B2	.	.		650	450	20																
700	490	.	.	C		.		700	490	25																
770	560	.	.	C	.			770	560	25																
900	650	.	.	C		.		900	650	25																
1000	750	.	.	C		.		1000	750	25																
1050	750	.	.	C		.		1050	750	25																
1000	800	.	.	C	.			1000	800	25																
1050	850	.	.	C	.			1050	850	25																
1300	920	.	.	D		.		1300	920	40																
1300	980	.	.	D		.		1300	980	40																
1300	980	.	.	D		.		1300	980	40																
1400	1000	.	.	D	.			1400	1000	40																
1600	1200	.	.	D	.	.		1600	1200	40																
1900	1450	.	.	D		.		1900	1450	40																
2000	1500	.	.	D	.	.		2000	1500	40																
2100	1650	.	.	D		.		2100	1650	70																
2300	1800	.	.	D		.		2300	1800	70																
2400	1850	.	.	D	.			2400	1850	70																

TPD32-EV DC ARMATURE CONVERTERS

TPD32 EV-.../...-...-..EXTERNAL BRIDGE

TPD32 EV Standard sizes	TPD32 EV-...-NA American sizes	2 quadrant : 2B	4 quadrant : 4B	Frame	ULN AC Input Voltage		Input Frequency	IDN Rated Output Current Standard sizes	IDN Rated Output Current American sizes (1)	IoVLD Output Current Overload	UDN DC Output Voltage				AC Input Voltage for Field Circuit	UfN DC Field Voltage * (0.85 ULN)	IfN Field Current@ 40°C	AC Input Voltage of regulation part
					TPD32 EV-500 [VAC]	TPD32 EV-690 [VAC]					[Hz]	[A]	[A]	[A]				
1200	1000	·		E	230 VAC ... 500 VAC ± 10%, 3-phase		50/60 Hz ± 5%	1200	1000	IoVLD Programmable up to 200%	600 Vdc	520 Vdc	230 VAC ± 15% o 400 VAC ± 10%, single-phase, 50/60Hz ± 5%	Fixed or adjustable: 200 Vdc (for 230 VAC) or 310 Vdc (for 400 VAC) or 360 Vdc (for 460 VAC)	40	115 VAC ± 15% or 230 VAC ± 15%, single-phase, 50/60Hz ± 5%		
1500	1300	·	·	E				1500	1300								40	
1700	1350		·	E				1700	1350								40	
1800	1400	·		E				1800	1400								40	
2000	1500	·	·	E				2000	1500								40	
2400	1800	·	·	E				2400	1800								70	
2700	2000	·	·	E				2700	2000								70	
2900	2200	·		E				2900	2200								70	
3300	2350	·	·	E				3300	2350								70	
1010	900	·	·	E				230 VAC ... 690 VAC ± 10%, 3-phase									1010	900
1400	1150	·	·	E	1400	1150	40											
1700	1350	·	·	E	1700	1350	40											
2000	1500	·	·	E	2000	1500	40											
2400	1800	·	·	E	2400	1800	70											
2700	2000	·	·	E	2700	2000	70											
3300	2350	·	·	E	3300	2350	70											

(1): 150% Overload factory settings.

Note:

A 12-impulse version of the converter is also available. This has two 6-impulse bridges with two different configurations: parallel (TPD32-EV -...-12P) or serial (TPD32-EV -...- 12S).

12 Pulses PARALLEL Configuration

The motor gets the sum of the DC current of two converters. Thus the current is doubled.
The Power range of the drive is extended by doubling dc drive output current value.
Contact Gefran Sales office for interbridge reactor calculation.

12 Pulses SERIES Configuration

The motor gets the sum of the DC voltage of two converters. Thus the voltage is doubled. (For the version powered at 690VAC, the supply voltage must not exceed 350VAC). Possibility of emergency operation with one converter in case of a breakdown in the other converter for series configuration (with full torque and with 50 % of the former maximum armature voltage).

DC voltage range is extended by doubling dc drive output voltage value.

In order to divide symmetrically the total armature voltage in the range of the small armature current or armature current = 0, symmetry resistances must be utilized and connected in parallel to the individual current converters connected in series.

The symmetry resistances (Rsym) should be dimensioned in such a way that a cross current of at least 100 mA flows at maximum armature voltage.

CONVERTER SELECTION – INPUT AND OUTPUT DATA

TPD32 EV-FC - SPECIAL CONVERTER FOR INDUCTIVE LOADS

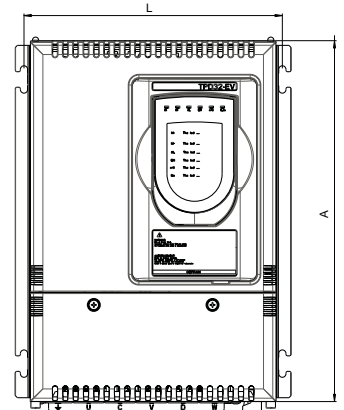
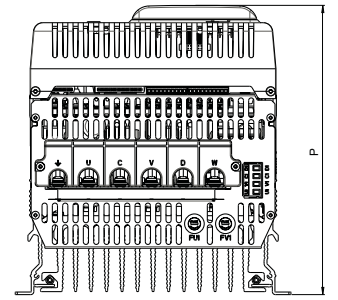
TPD32 EV-FC Sizes	2 quadrant: 2B		4 quadrant: 4B		Frame	ULN AC Input Voltage		Input Frequency	IDN Rated Output Current Standard sizes	IOLVD Output Current Overload	UDN DC OUTPUT VOLTAGE		AC Input Voltage of regulation part
	[VAC]		[VAC]			[VAC]					[A]		
20	•	•	A1	TPD32-EV-FC-200: 60 Vac ... 200 Vac ± 10%, 3-phase TPD32-EV-FC-500/...: 230 Vac ... 500 Vac ± 10%, 3-phase	50/60 Hz ± 5%	20	IDN Programmable up to 200%	600 Vdc	TPD32-EV-FC-200/...: 210 Vdc TPD32-EV-FC-500/...: 520 Vdc	115 Vac ± 15% or 230 Vac ± 15%, single-phase, 50/60Hz ± 5%			
40	•	•	A1			40							
70	•	•	A2			70							
110	•	•	A3			110							
140	•	•	A3			140							
185	•	•	A3			185							
280	•	•	B1			280							
350	•	•	B1			350							
420	•	•	B1			420							
500	•	•	B1			500							
650	•	•	B2	650									

TPD32 EV -CU - EXTERNAL BRIDGE CONTROL UNIT

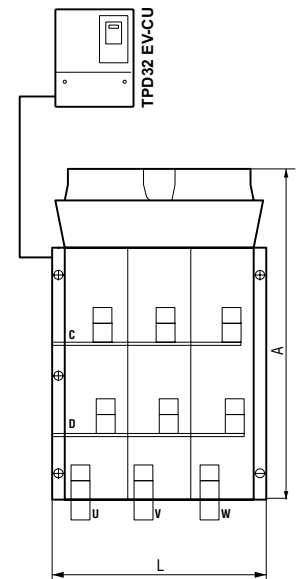
TPD32-EV-CU Sizes	2 quadrant / 4 quadrant	Frame	ULN AC Input Voltage		Input Frequency	IDN Rated Output Current (selectable)	IOLVD Output Current Overload	UDN DC Output Voltage	AC Input Voltage for Field Circuit	UDN DC Field Voltage (0.85 * ULN)	IDN Field Current @ 40°C	AC Input Voltage of regulation part
			[VAC]									
TPD32-EV-CU-230/500-THY1-40	•	A1	230 ... 500 Vac ± 10%, 3-phase	50/60 Hz ± 5%	4 ... 20000 A	Programmable IDN up to 200%	520/600 Vdc	230 Vac ± 15% or 400 Vac ± 15% or 460 Vac ± 10%, single-phase, 50/60Hz ± 5%	Fixed or adjustable: 200 Vdc (for 230 Vac) or 310 Vdc (for 400 Vac) or 360 Vdc (for 460 Vac)	40	115 Vac ± 15% or 230 Vac ± 15%, single-phase, 50/60Hz ± 5%	
TPD32-EV-CU-230/500-THY2-40	•	A1								40		
TPD32-EV-CU-230/500-THY1-70	•	A1								70		
TPD32-EV-CU-230/500-THY2-70	•	A1								70		
TPD32-EV-CU-575/690-THY1-40	•	A1								40		
TPD32-EV-CU-575/690-THY2-40	•	A1								40		
TPD32-EV-CU-575/690-THY1-70	•	A1								70		
TPD32-EV-CU-575/690-THY2-70	•	A1								70		

DIMENSIONS AND WEIGHTS

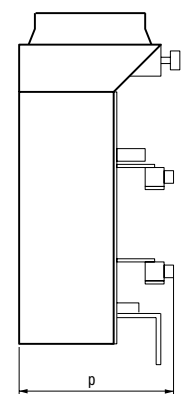
TPD32 EV Standard sizes	TPD32 EV-...-NA Standard sizes	Frame	Dimensions: W x H x d (mm)	Weight kg	
TPD32-EV-.../...-20-...-A	TPD32-EV-.../...-17-...-A-NA	A1	267 x 349 x 280	11	
TPD32-EV-.../...-40-...-A	TPD32-EV-.../...-35-...-A-NA	A2		11.5	
TPD32-EV-.../...-70-...-A	TPD32-EV-.../...-56-...-A-NA	A3		267 x 349 x 280	12
TPD32-EV-.../...-110-...-A	TPD32-EV-.../...-88-...-A-NA				
TPD32-EV-.../...-140-...-A	TPD32-EV-.../...-112-...-A-NA	B1	311 x 388 x 280	26	
TPD32-EV-.../...-185-...-A	TPD32-EV-.../...-148-...-A-NA				
TPD32-EV-.../...-280-...-B	TPD32-EV-.../...-224-...-B-NA				
TPD32-EV-.../...-350-...-B	TPD32-EV-.../...-280-...-B-NA				
TPD32-EV-.../...-420-...-B	TPD32-EV-.../...-336-...-B-NA	B2	311 x 388 x 373.6	32	
TPD32-EV-.../...-500-...-B	TPD32-EV-.../...-400-...-B-NA				
TPD32-EV-.../...-650-...-B	TPD32-EV-.../...-450-...-B-NA	C	521 x 512 x 410	61	
TPD32-EV-.../...-560-...-C	TPD32-EV-.../...-360-...-C-NA				
TPD32-EV-.../...-700-...-C	TPD32-EV-.../...-490-...-C-NA				
TPD32-EV-.../...-770-...-C	TPD32-EV-.../...-560-...-C-NA				
TPD32-EV-.../...-900-...-C	TPD32-EV-.../...-650-...-C-NA	D	704 x 1435 x 536	65	
TPD32-EV-.../...-1000-...-C	TPD32-EV-575/...-750-...-C-NA				
TPD32-EV-.../...-1050-...-C	TPD32-EV-500/...-800-...-C-NA				
	TPD32-EV-500/...-850-...-C-NA				
TPD32-EV-...-D/...-1300-...-D	TPD32-EV-.../...-920-...-D-NA		704 x 1435 x 536	152 (2B)	
TPD32-EV-...-D/...-1300-...-D	TPD32-EV-575/...-980-...-D-NA			203 (4B)	
TPD32-EV-...-D/...-1400-...-D	TPD32-EV-.../...-1000-...-D-NA			165 (2B)	
TPD32-EV-...-D/...-1600-...-D	TPD32-EV-.../...-1200-...-D-NA			215 (4B)	
TPD32-EV-...-D/...-1900-...-D	TPD32-EV-.../...-1450-...-D-NA				
TPD32-EV-...-D/...-2000-...-D	TPD32-EV-.../...-1500-...-D-NA				
TPD32-EV-...-D/...-2100-...-D	TPD32-EV-.../...-1650-...-D-NA				
TPD32-EV-...-D/...-2300-...-D	TPD32-EV-.../...-1800-...-D-NA				
TPD32-EV-...-D/...-2400-...-D	TPD32-EV-.../...-1850-...-D-NA				
				191 (2B)	
				241 (4B)	

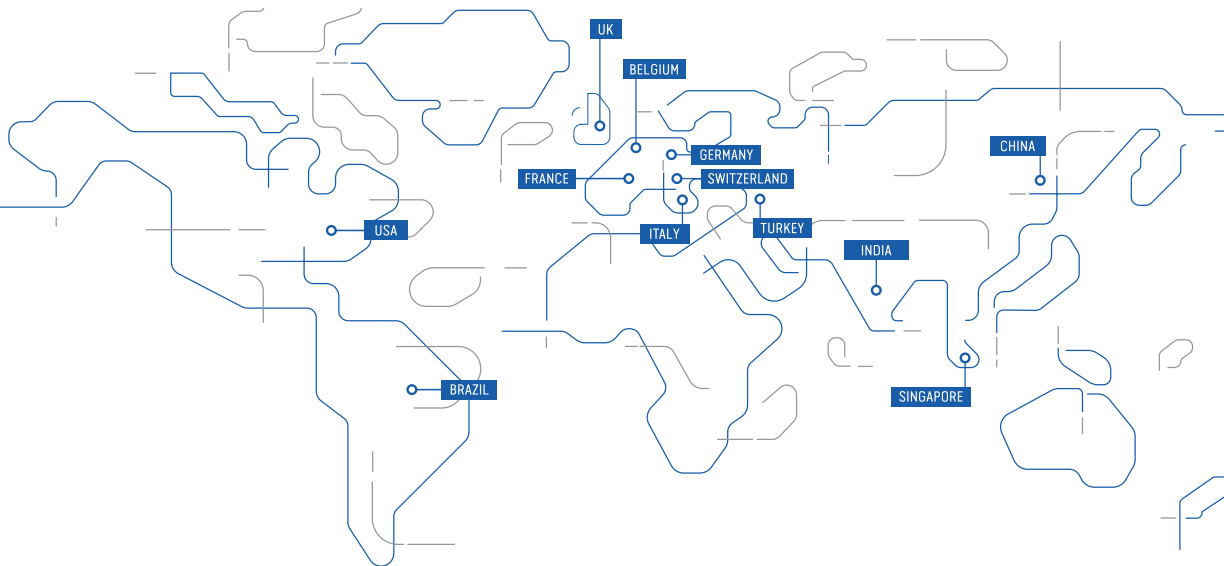


TPD32 EV-CU	Frame	Dimensions: WxHxd - mm	Weight (kg)
TPD32-EV-CU-.../...-THY1-40	A1	267 x 349 x 280	11
TPD32-EV-CU-.../...-THY2-40			
TPD32-EV-CU-.../...-THY1-70			
TPD32-EV-CU-.../...-THY2-70			



TPD32-EV External bridge	Frame	Dimensions: WxHxd - mm	Weight (kg)
TPD32 EV-690/840-1010-2B-E	E	500 x 760 x 275	70
TPD32 EV-500/600-1200-2B-E		500 x 570 x 275	65
TPD32 EV-690/840-1400-2B-E		500 x 760 x 275	70
TPD32 EV-500/600-1500-2B-E		500 x 760 x 275	70
TPD32 EV-690/840-1700-2B-E		620 x 764 x 360	100
TPD32 EV-500/600-1800-2B-E		500 x 760 x 275	70
TPD32 EV-500/600-2000-2B-E		500 x 760 x 275	70
TPD32 EV-690/840-2000-2B-E		620 x 764 x 360	100
TPD32 EV-500/600-2400-2B-E		620 x 764 x 360	100
TPD32 EV-690/840-2400-2B-E		712 x 775 x 395	140
TPD32 EV-500/600-2700-2B-E		712 x 785 x 395	140
TPD32 EV-690/840-2700-2B-E		712 x 775 x 395	140
TPD32 EV-500/600-2900-2B-E		712 x 775 x 395	140
TPD32 EV-500/600-3300-2B-E		780 x 1180 x 420	260
TPD32 EV-690/840-3300-2B-E		780 x 1180 x 420	260
TPD32 EV-690/720-1010-4B-E		500 x 1310 x 375	130
TPD32 EV-690/720-1400-4B-E		500 x 1310 x 375	130
TPD32 EV-500/520-1500-4B-E		500 x 1310 x 375	130
TPD32 EV-500/520-1700-4B-E		500 x 1310 x 375	130
TPD32 EV-690/720-1700-4B-E		620 x 1314 x 475	170
TPD32 EV-500/520-2000-4B-E		500 x 1310 x 375	130
TPD32 EV-690/720-2000-4B-E		620 x 1314 x 475	170
TPD32 EV-500/520-2400-4B-E		620 x 1314 x 495	170
TPD32 EV-690/720-2400-4B-E		712 x 1335 x 475	240
TPD32 EV-500/520-2700-4B-E	712 x 1335 x 490	240	
TPD32 EV-690/720-2700-4B-E	712 x 1335 x 475	240	
TPD32 EV-.../...-3300-4B-E	780 x 1890 x 470	435	





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