Industrial motors

Commercial and appliance motors

Automation

Digital and systems

Energy

Transmission and distribution

Coatings

TPD500 AC/DC CONVERTERS

Versatility, high precision and **high technology** for **integrated systems**

Driving efficiency and sustainability

SUMMARY

Description

The TPD500 series of digital converters is designed to meet modern automation requirements, offering advanced technological solutions ideal for both new system architectures and the modernization of existing installations. (*)

TPD500-...-2B/4B
Armature Converters

Available in a wide range of supply voltages and output currents, the series supports both 2 and 4 quadrant configurations.

TPD500-CU
Control Unit

The control unit is designed to manage any commercially available external thyristor power bridge.
The TPD500-CU integrates all the necessary hardware for controlling a thyristor power bridge, including snubber filters, the control board, ignition transformer firing and a single-phase converter for motor excitation control. This allows for complete customization of the power structure.

Power ratings
Three-phase power circuit

TPD500-500-...-2B/4B

- 230 ... 500 Vac ±10%
- 50/60 Hz ±5%

- 2 quadrants: from 20 A up to 3300 A
- 4 quadrants: from 20 A up to 3300 A
- Bigger sizes on request

TPD500-690-...-2B/4B

- 350 ... 690 Vac ±10%
- 50/60 Hz ±5%

- 2 quadrants: from 560 A up to 3300 A
- 4 quadrants: from 560 A up to 3300 A
- Bigger sizes on request

(*) Regarding -FC (Field Controller) solutions and 12-pulse configurations (series and parallel), please contact **WEG Automation Europe**.
Phone: +39 02 967601 | **E-mail:** info.motion@weg.net

Applications

The TPD500 series
includes a variety of standard and user-customizable functions tailored to the needs of various industries such as hoisting, mining, metal, rubber and plastic, pulp and paper.

Pulp and paper

Metal processing

Test benches

Plastic and rubber processing

Industrial hoisting

Hoisting for mining

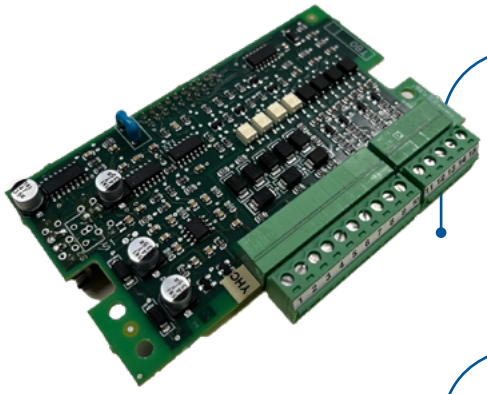
Amusement parks

Cableway

General characteristics

STANDARD I/O

- 4 control inputs
  0/15 ... 30 Vdc opto-isolated
  (Enable, Start, Fast Stop, External Fault)
- 4 programmable digital inputs
  0/15 ... 30 Vdc opto-isolated
- 4 programmable digital outputs
  0/15 ... 30 Vdc opto-isolated
- 2 relay outputs 230 Vac
  (Drive OK and the second one programmable)
- 3 differential analogue inputs
  (±10 Vdc, 0 ... 20 mA, 4 ... 20 mA)
- 2 analogue outputs (±10 Vdc)



I/O EXPANSION (optional)

- 4 programmable digital inputs
  0/15 ... 30 Vdc opto-isolated
- 4 programmable digital outputs
  0/15 ... 30 Vdc opto-isolated
- 2 analogue outputs (±10 Vdc)

PROGRAMMING KEYPAD

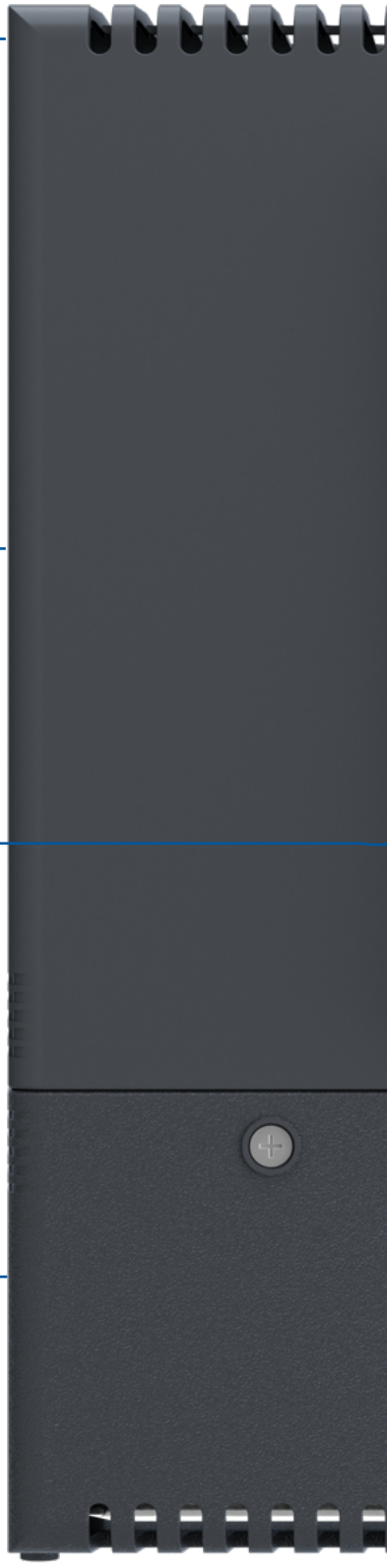
The integrated programming keypad, equipped with an LCD display and clear text descriptions, offers comprehensive information on parameters and variables, enhancing the TPD500's intuitiveness and versatility.
Thanks to its practical mounting system, the keypad can be conveniently installed either directly on the drive (as default) or remotely on the cabinet door (with optional kit)

CONNECTIVITY (optional)

Interface cards to the main communication protocols are available:

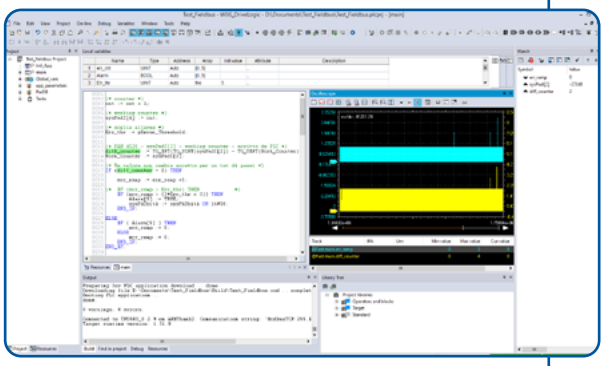
- PROFIBUS: EXP-PDP-500 card
- PROFINET: EXP-ETH-PN-500 card
- EtherNet/IP: EXP-ETH-IP-500 card

HMS Connecting Devices™



WEG_DriveLogic DEVELOPMENT ENVIRONMENT

The TPD500 features the WEG_DriveLogic programming environment, built on the IEC 61131-1 standard, allowing users to develop customized applications for machine control. User-created menus and parameters are accessible both via the keypad and through the WEG_DriveLabs configuration software



Wi-Fi DRIVELINK (optional)

Access point module for local Wi-Fi connection with the converter.

USB PORT

- Upload and download drive parameters
- FW download
- Data logger

ETHERNET PORT

RJ-45 port for configuration via PC with Modbus TCP protocol

Modbus TCP

FIELD REGULATOR

Integrated for the entire range, single-phase power supply:

- 230 ... 500 Vac ±10%, 50/60 ±5% Hz
- Rated current from 6.25 A up to 70 A

General characteristics

Rated current	From 20 A up to 3300 A. Bigger sizes on request.
Nominal AC input voltage	▪ 3 x 230 ... 500 Vac ±10%, 50/60 Hz ±5% ▪ 3 x 350 ... 690 Vac ±10%, 50/60 Hz ±5% ▪ Special version on request
Operating quadrants	▪ 2B model = biquadrant ▪ 4B model = tetraquadrant
Bridge configuration	6 pulses [1]
Field circuit power supply (U1/V1) - 1ph	2 x 230 ... 500 Vac ±10%, 50/60 Hz ±5%
Regulation power supply (U2/V2) - 1ph	115 Vac ±10%, 50/60 Hz ±5% 230 Vac ±10%, 50/60 Hz ±5%
Analog inputs	No. 3 differentials (12 bit, programmable, selectable for ±10 Vdc, 0 ... 20 mA, 4 ... 20 mA)
Analog outputs	No. 2 (±10 Vdc)
Control inputs	No. 4: enable, start, fast stop, external fault (0-24 Vdc PNP/NPN, opto-isolated)
Digital inputs	No. 4 programmable (0-24 Vdc PNP/NPN, opto-isolated)
Digital outputs	No. 4 programmable (0-24 Vdc PNP/NPN, opto-isolated)
Relay outputs	▪ No. 1: drive OK (0.5 A @230 Vac - 1 A @115 Vac) ▪ No. 1: programmable (0.5 A @230 Vac - 1 A @115 Vac)
Encoder input	▪ No. 2 digital incremental TTL 5 Vdc /HTL 15 ... 24 Vdc, channels A-B-Z, opto-isolated ▪ Encoder power supply 5.2 ... 6.5 Vdc (TTL) - 24 Vdc (HTL)
Tachogenerator input	▪ No. 1 (± 22.7 Vdc to 302.9 Vdc)
Motor thermistor input	▪ No. 1 (PTC according to DIN 44081 o 44082)
Overload	Programmable I^2t algorithm
EMI Filter and input inductance	Optional external
On-board drive options	▪ I/O expansion ▪ Communication interface ▪ Wi-Fi module
Functions	▪ Self-calibration of current loop ("predictive") ▪ No. 5 independent and programmable ramps ▪ Programmable linear and "S" ramps ▪ No. 7 programmable multi-speed ▪ Min/max speed limits with independent settings for each speed direction ▪ Armature current limitation as a function of speed ▪ Adaptive speed controller gains ▪ Programmable overload control ▪ Jog function ▪ Motor potentiometer function ▪ SCR test ▪ I^2t drive and motor protection ▪ WEG_DriveLogic: dedicated workspace for the development environment ▪ Applications available as default: PID control and torque winder ▪ "Speed draw" function ▪ "Autocapture" function (hang-up on the fly) ▪ "Droop" function ▪ External brake control ▪ Test generator ▪ Recipes configurator ▪ Programmable alarm management
Communication protocols	▪ No. 1 Ethernet port (Modbus TCP) ▪ No. 1 RS485 port (Modbus RTU) ▪ Optional: PROFINET, PROFIBUS, EtherNet/IP
Protection degree	▪ IP20 frames A-B-C and CU ▪ IP00 frame E
Operating temperature	▪ Up to 40°C without derating ▪ Up to 55°C with derating
Altitude	▪ North America (cULus) - max 2000 m, up to 1000 m without derating ▪ All other regions - max 4000 m, up to 1000 m without derating
Standards	▪ General standards: EN 61800-1, EN 60146-1-1 ▪ Electrical safety: EN 61800-5-1, UL 61800-5-1 ▪ EMC compatibility: EN 61800-3 ▪ Degree of protection: EN 60529
Marks	CE cULus EAC UKCA [2]

NOTES

[1] 12-pulses configuration available soon.

[2] EAC in progress; for more details please refer to the product manual.

Connectivity

Integrated communication

The **TPD500 series** converters are compatible with the most commonly used industrial communication protocols.

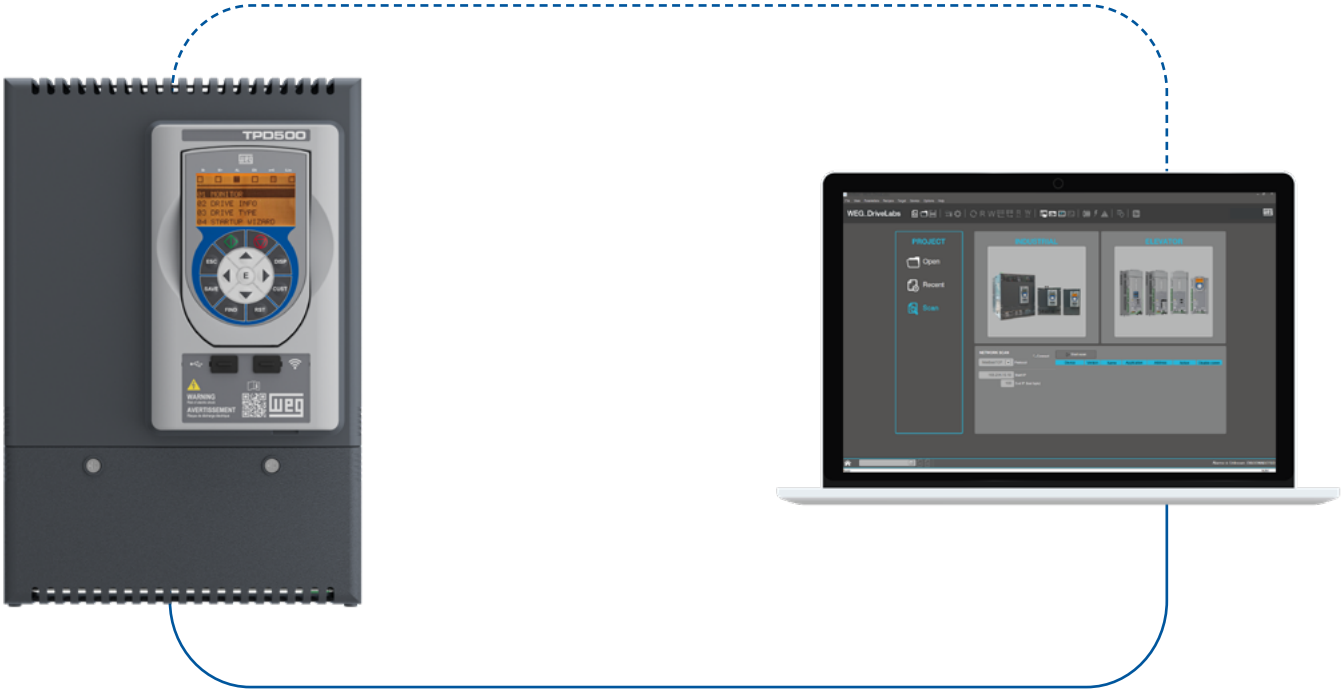
PROFINET® Modbus TCP PROFIBUS® EtherNet/IP

WEG_DriveLabs configurator connection

WDL

Wi-Fi Connection

- Through Wi-Fi Drive Link optional module



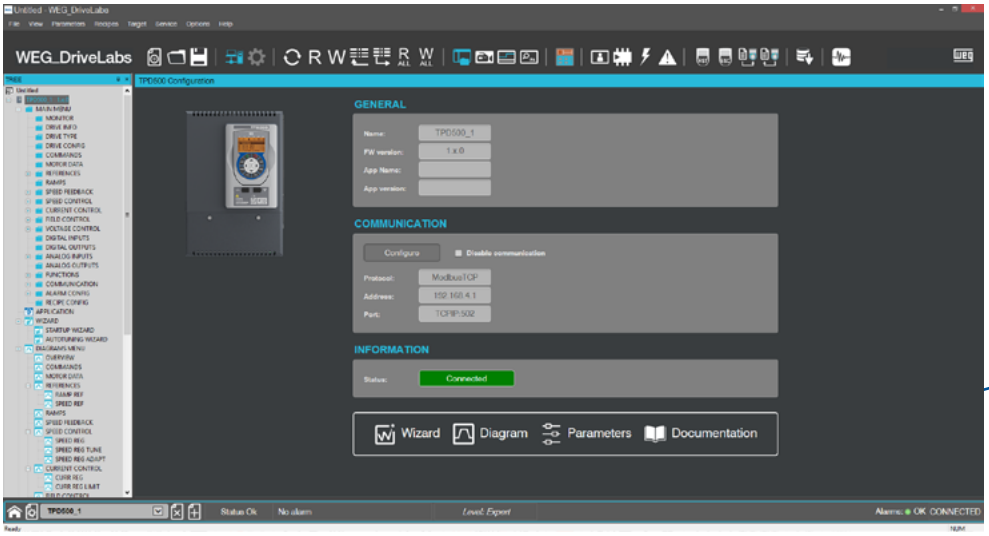
Wired Connection

- Direct Ethernet connection or through LAN using the Modbus TCP protocol

Software

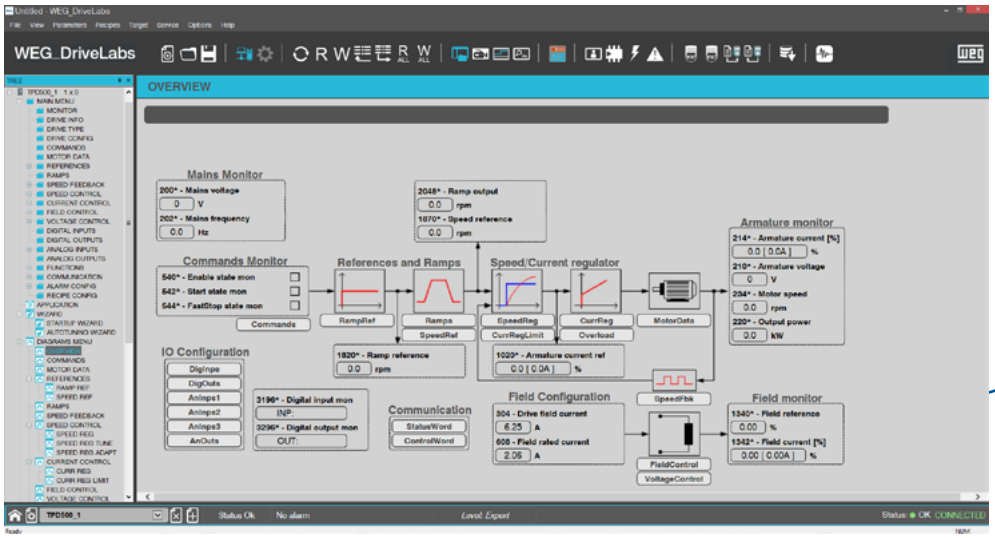
WEG_DriveLabs configurator tool

WEG_DriveLabs is a PC-based configurator tool designed to connect to one or more drives, allowing status monitoring, information retrieval, and parameters reading and writing.



Structured parameters view

- Compare of file parameters.
- Recipes management (user defined subset of parameters).

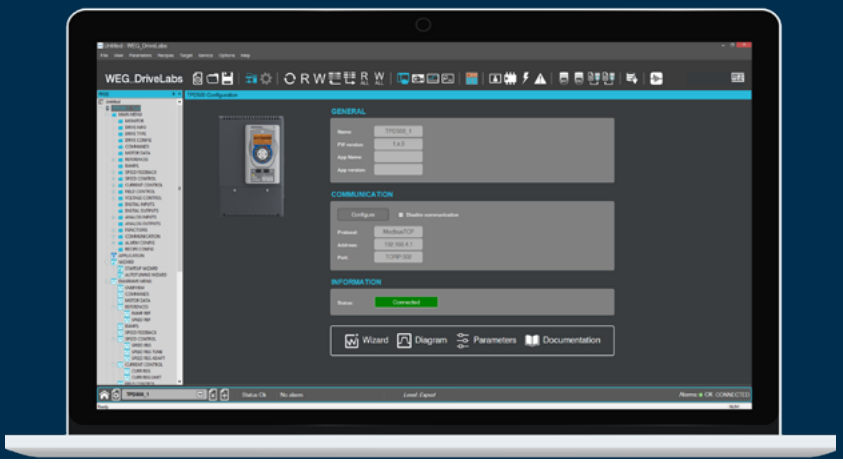


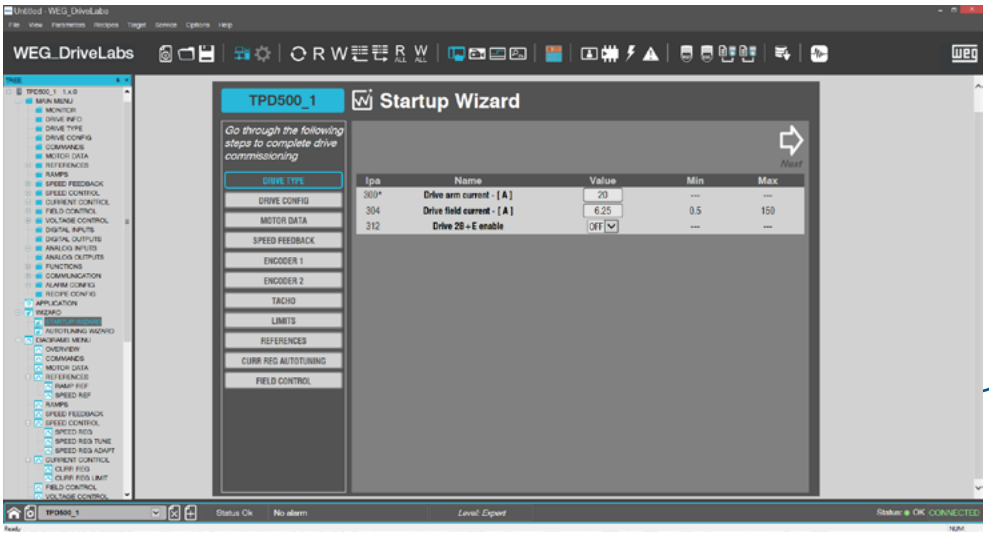
Graphical and monitoring windows

They provide both data visualization (monitoring) and a graphical interface for interacting with the system.

Home page

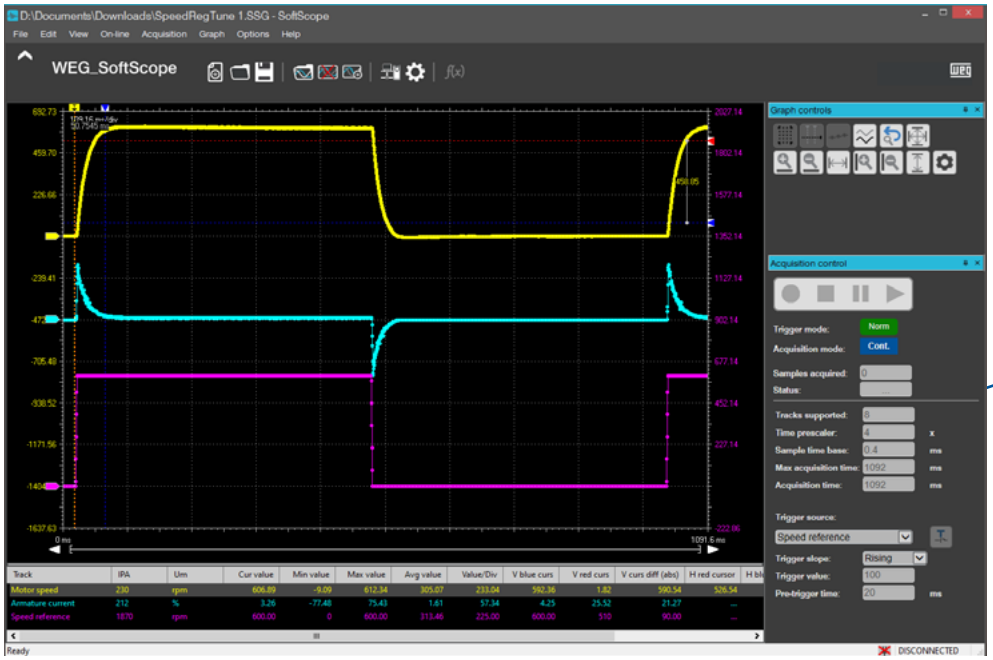
- Multiple drives configuration session.
- Easy acces to all drives menu and parameters.





Wizard tools

- Startup Wizard.
- Autotuning Wizard.



Real time softscope

Synchronous oscilloscope with 1ms sampling period, integrated in the WEG_DriveLabs PC configurator.

Converter selection - Input and output data

TPD500-... COMPACT VERSION

TPD500 Compact version	Quadrants		Frame	Armature circuit								Field circuit		Regulation card
				AC Supply voltage		Rated DC output voltage [Vdc]				Rated DC output current [A]	DC output current overload	AC supply voltage	Reted DC output current @40°C [A]	AC supply voltage
	2B	4B		TPD500-500	TPD500-690	TPD500-500		TPD500-690						
				230 … 500 Vac ±10% 3ph, 50/60 Hz ±5%	350 … 690 Vac ±10% 3ph, 50/60 Hz ±5%	2B	4B	2B	4B					
00020	•	•	A1	•		580	525			20	Programmable up to 150%	230 ... 500 Vac ±10% 1-phase, 50/60 Hz ±5%	6.25	115 Vac ±10% or 230 Vac ±10%, 1-phase, 50/60 Hz ±5%
00040	•	•	A1	•						40			8.33	
00070	•	•	A2	•						70			8.33	
00110	•	•	A3	•						110			12.5	
00140	•	•	A3	•						140			12.5	
00185	•	•	A3	•						184			12.5	
00280	•	•	B1	•						280			20	
00350	•	•	B1	•						350			20	
00420	•	•	B1	•						420			20	
00500	•	•	B1	•						500			20	
00650	•	•	B2	•						650			20	
00770	•	•	C	•						770			25	
01000	•		C	•						1000			25	
01050		•	C	•						1050			25	
00560	•	•	C		•			800	725	560			25	
00700	•	•	C		•					700			25	
00900	•	•	C		•					900			25	

TPD500-... EXTERNAL BRIDGE

TPD500 External bridge	Quadrants		Frame	Armature circuit								Field circuit		Regulation card
				AC Supply voltage		Rated DC output voltage [Vdc]				Rated DC output current [A]	DC output current overload	AC supply voltage	Reted DC output current @40°C [A]	AC supply voltage
	2B	4B		TPD500-500	TPD500-690	TPD500-500		TPD500-690						
				230 … 500 Vac ±10% 3ph, 50/60 Hz ±5%	350 … 690 Vac ±10% 3ph, 50/60 Hz ±5%	2B	4B	2B	4B					
01200	•		E	•		580	525			1200	Programmable up to 150%	230 ... 500 Vac ±10% 1-phase, 50/60 Hz ±5%	40	115 Vac ±10% or 230 Vac ±10%, 1-phase, 50/60 Hz ±5%
01500	•	•	E	•						1500			40	
01700		•	E	•						1700			40	
01800	•		E	•						1800			40	
02000	•	•	E	•						2000			40	
02400	•	•	E	•						2400			70	
02700	•	•	E	•						2700			70	
02900	•		E	•						2900			70	
03300	•	•	E	•						3300			70	
01010	•	•	E		•			800	725	1010			40	
01400	•	•	E		•					1400			40	
01700	•	•	E		•					1700			40	
02000	•	•	E		•					2000			40	
02400	•	•	E		•					2400			70	
02700	•	•	E		•					2700			70	
03300	•	•	E		•					3300			70	

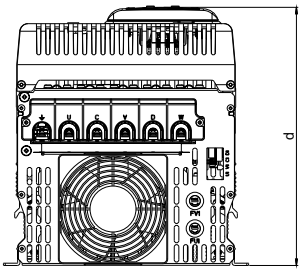
TPD500-CU CONTROL UNIT

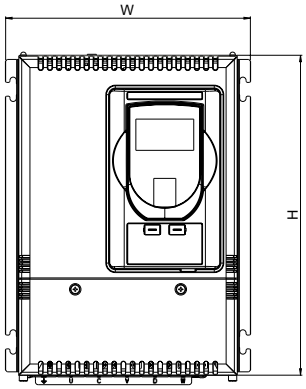
TPD500-CU Control unit	Quadrants 2B/4B	Frame	Armature circuit			SCR Driving (*)		Field circuit		Regulation card
			AC Supply voltage		Rated DC output current (selectable) [A]	THY1	THY2	AC supply voltage	Reted DC output current @40°C [A]	AC Supply voltage
			TPD500-500	TPD500-690						
			230 … 500 Vac ±10% 3ph, 50/60 Hz ±5%	350 … 690 Vac ±10% 3ph, 50/60 Hz ±5%						
500-THY1-FC40	•	**A1**	•		4 ... 20000	•		230 Vac ... 500 Vac ±10% 1-phase, 50/60 Hz ±5%	**40**	115 Vac ±10% or 230 Vac ±10%, 1-phase, 50/60 Hz ±5%
500-THY2-FC40	•	A1	•				•		**40**	
500-THY1-FC70	•	A1	•			•			**70**	
500-THY2-FC70	•	A1	•				•		**70**	
690-THY1-FC40	•	A1		•		•			**40**	
690-THY2-FC40	•	A1		•			•		**40**	
690-THY1-FC70	•	A1		•		•			**70**	
690-THY2-FC70	•	A1		•			•		**70**	

(*) **THY1**: single-secondary pulse transformer, suitable for driving a single SCR per branch.
THY2: dual-secondary pulse transformer, suitable for driving two SCR in parallel per branch.

Dimensions and weights

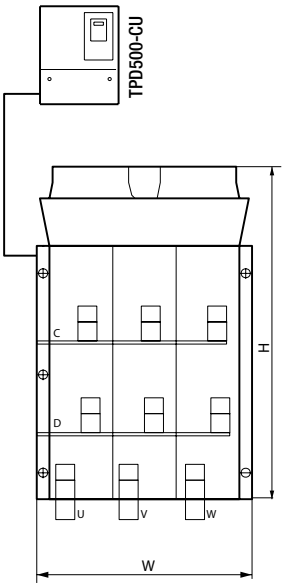
TPD500 Compact version	Frame	Dimensions W x H x d [mm]	Weight [kg]
TPD500-...-00020-...-A	A1	267 x 366 x 282	11
TPD500-...-00040-...-A			
TPD500-...-00070-...-A	A2		11.5
TPD500-...-00110-...-A	A3		12
TPD500-...-00140-...-A			
TPD500-...-00185-...-A			
TPD500-...-00280-...-B	B1	312 x 395 x 347	26
TPD500-...-00350-...-B			
TPD500-...-00420-...-B			
TPD500-...-00500-...-B			
TPD500-...-00650-...-B	B2	312 x 395 x 377	32
TPD500-...-00560-...-C	C	521 x 512 x 410	61
TPD500-...-00700-...-C			
TPD500-...-00770-...-C			
TPD500-...-00900-...-C			65
TPD500-...-01000-...-C			72
TPD500-...-01050-...-C			

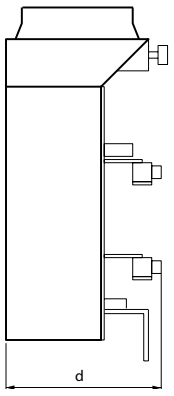




TPD500-CU	Frame	Dimensions W x H x d [mm]	Weight [kg]
TPD500-CU-...-...-...	A1	267 x 366 x 282	11

TPD500 External bridge	Frame	Dimensions W x H x d [mm]	Weight [kg]
TPD500-690-01010-2B-E	E	500 x 855 x 275	75
TPD500-500-01200-2B-E		500 x 665 x 275	65
TPD500-690-01400-2B-E		500 x 855 x 275	75
TPD500-500-01500-2B-E		500 x 855 x 275	75
TPD500-690-01700-2B-E		620 x 859 x 360	115
TPD500-500-01800-2B-E		500 x 855 x 275	75
TPD500-500-02000-2B-E		500 x 855 x 275	75
TPD500-690-02000-2B-E		620 x 859 x 360	115
TPD500-500-02400-2B-E		620 x 859 x 360	115
TPD500-690-02400-2B-E		712 x 875 x 395	140
TPD500-500-02700-2B-E		712 x 975 x 395	155
TPD500-690-02700-2B-E		712 x 875 x 395	140
TPD500-500-02900-2B-E		712 x 875 x 395	140
TPD500-500-03300-2B-E		784 x 960 x 415	197
TPD500-690-03300-2B-E		784 x 960 x 415	197
TPD500-690-01010-4B-E		500 x 1405 x 375	130
TPD500-690-01400-4B-E		500 x 1405 x 375	130
TPD500-500-01500-4B-E		500 x 1405 x 375	130
TPD500-500-01700-4B-E		500 x 1405 x 375	130
TPD500-690-01700-4B-E		620 x 1410 x 443	220
TPD500-500-02000-4B-E		500 x 1405 x 375	130
TPD500-690-02000-4B-E		620 x 1410 x 443	220
TPD500-500-02400-4B-E		620 x 1410 x 443	220
TPD500-690-02400-4B-E		712 x 1435 x 475	280
TPD500-500-02700-4B-E		712 x 1635 x 495	280
TPD500-690-02700-4B-E		712 x 1435 x 475	280
TPD500-500-03300-4B-E		784 x 1640 x 460	322
TPD500-690-03300-4B-E		784 x 1640 x 460	322





Notes

The WEG Group solutions
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