iE Convert CU8

4921270008-B

Control unit for 8 power stacks

Data sheet

Improve
Tomorrow

1. CU8 Control unit

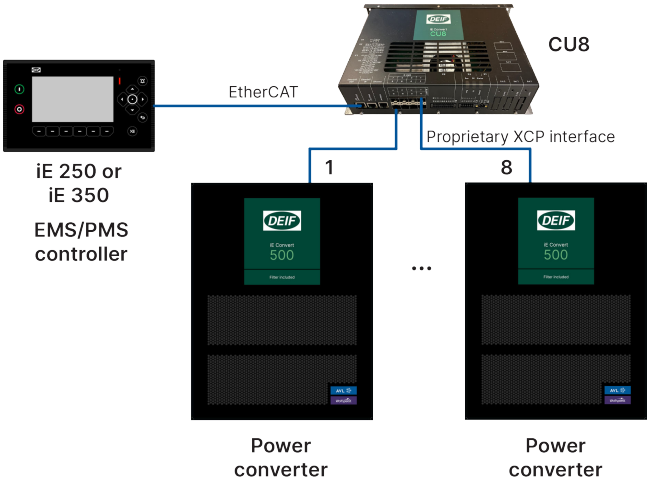
1.1 About the CU8

The CU8 is a discrete control unit to control iE Convert power converters. One CU8 controller controls up to eight power converter building blocks.

The eight power converter building blocks can arranged in two groups with different applications. The CU8 controller allows the power converters in the same group to run in parallel, for higher power capacity.

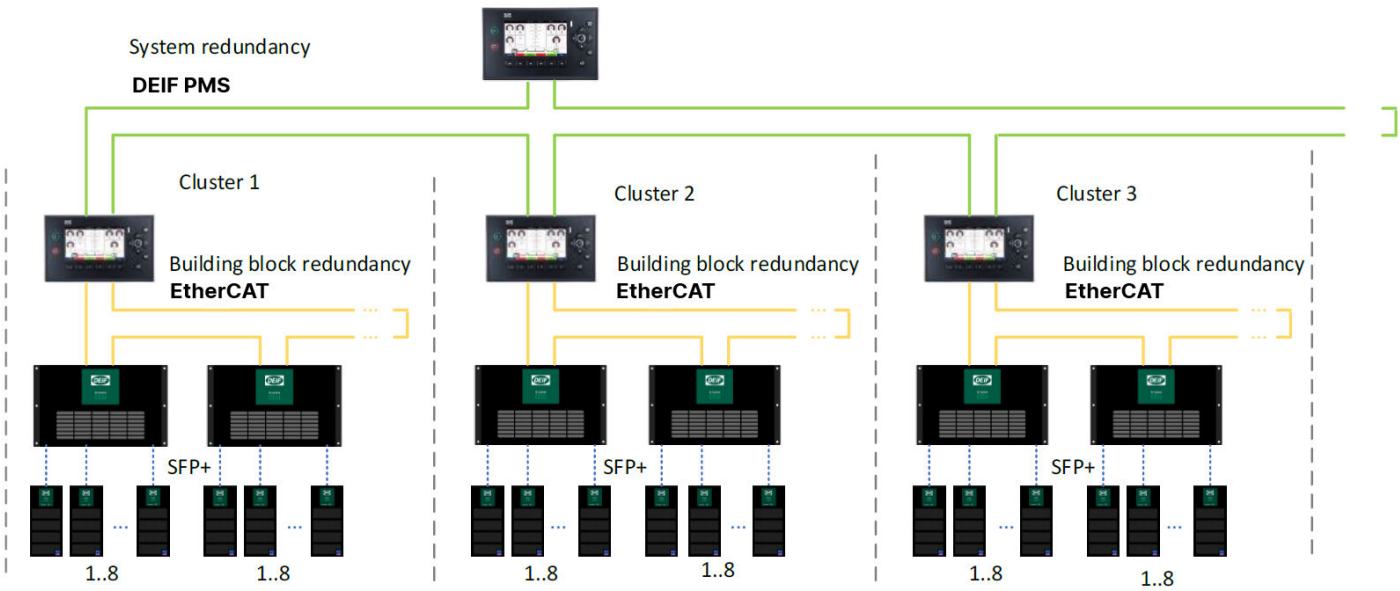
Controllers for CU8

The CU8 standard EtherCAT interface allows easy connectivity between the CU8 and other DEIF controllers and PLCs, such as the iE 250, iE 350, or iE 650. This enables scalability and easy integration of a variety of power sources, loads, and storage.



Complex solutions with redundancy

The controllers/PLCs, CU8s, and power converter building blocks can be combined to form energy systems. This includes flexible and complex solutions. The controllers/PLCs provide advanced cybersecurity capabilities, system redundancy*, and efficient energy and power management (EMS/PMS).

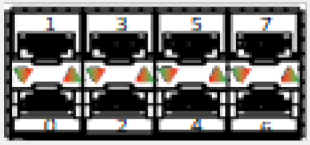
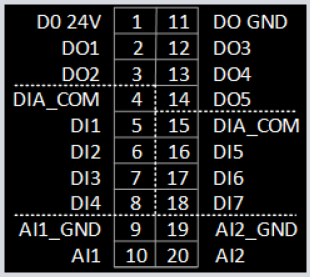


NOTE * If redundancy is required, use iE 350.

2. Technical specifications

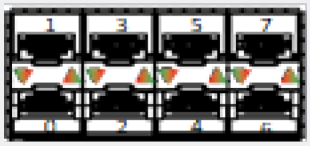
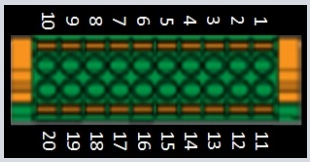
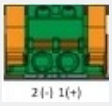
2.1 Communication architecture

Communication

Connection	Diagram	Details
EtherCAT		**1 RJ45** 10/100Mb, Port 0 – IN, Master Functionally isolated **1 RJ45** 10/100Mb, Port 1 – OUT, Follower Functionally isolated
Ethernet		**1 RJ45** 10/100Mb The Ethernet port is for future use. Functionally isolated, isolation voltage: 550 V
iE stack		**8 SFP+** 3.75 GHz, the interface to the power building blocks Only use transceivers from DEIF.
X3		**5 Digital outputs** Digital outputs (terminals 2,3,12,13,14, GND on 11) Supply voltage: 24 V DC nominal Continuous output current (per channel): 0.5 A Short circuit protection >0.7 A High: 13 to 30 V Low: -30 to +5 V (with reference to common) Load: Typically 6 mA (V_{in} > 7 V) Isolation: Optically isolated from other potentials, 500 V AC **7 Digital bipolar inputs** Digital bipolar inputs (terminals 5,6,7,8 (COM on 4); 16,17,18 (COM on 15) Sourcing (24 V on common), or Sinking (GND on common) ON: -36 to -8 V DC, and 8 to 36 V DC Minimum pulse length: 50 ms Impedance: 4.7 kΩ Voltage withstand: ±36 V DC Functionally isolated in 2 groups, isolation voltage: 550 V **2 Analogue inputs** Analogue inputs (terminals 10 (GND on 9); 20 (GND on 19)), configurable Voltage inputs: -10 V DC/0 to 10 V DC Current inputs: 0 to 20 mA, or 4 to 20 mA Impedance:

Connection	Diagram	Details
		• Current mode: Maximum 50 Ω • Voltage mode: Minimum 10 kΩ Functionally isolated in 1 group, isolation voltage: 550 V
X1		**Power in** Nominal voltage: 24 V DC (operating range: 18 to 36 V DC) Power: 23 W Protected by a 4 A fuse
Ext [1 to 3]	Extension slots	**3 extension slots** The extension slots allow interfaces using a secure serial connection (for future use).

Connections

Connection	Diagram	Controller side	Connector side
EtherCAT		RJ45 with mag	-
Ethernet		RJ45 with mag	-
iE stack		2 x 4 SFP+ cage, from Amphenol®	-
X3		10 pos DMC PCB-base 3,50 Phoenix Contact	DFMC 1,5/10-ST-3,5-LR Phoenix Contact
X1		CC2,5/2-GF-5,08-LR P26THR Phoenix Contact	FKC 2,5/2-ST-5,08-LR Phoenix Contact
Ext [1 to 3]	-	-	-

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2.2 Human-machine interface (HMI)

Name	Function
Controller front	
Status (Status LED)	Green: Status OK
Run (EtherCAT status)	OFF: Initialisation Green blinking: Pre-operational Green single blink: Safe operational Green: Operational Green flickering: Boot loader
Communication (LINK/ACT) connections	
EtherCAT connection (RJ45)	Green: Connection OK
Ethernet connection (RJ45)	Green: Connection OK

Name	Function
	Yellow: Activity
iE Stack SFP+ connection (Enhanced small form-factor pluggable) (Link to a power converter)	Green: Link to power converter. Orange: Bad connection to the power converter. Red: Transceiver mounted.

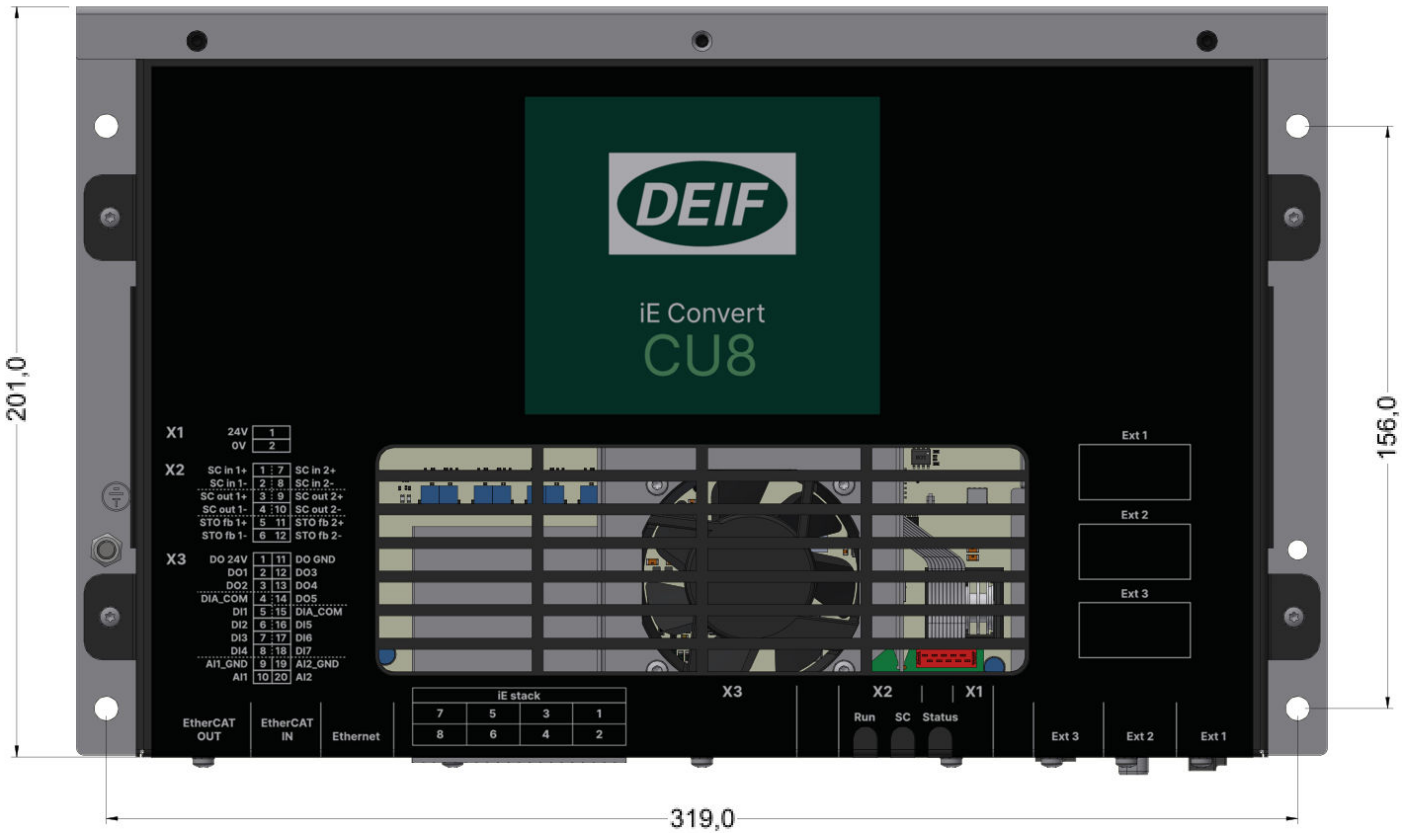
Display with cybersecurity

If you connect iE 250, iE 350 or iE 650 to the CU8, you can use the iE 7 (the display for iE 250, iE 350, or iE 650) to view the operation of the power converter(s). This configuration can fulfil cybersecurity requirements.

Display without cybersecurity

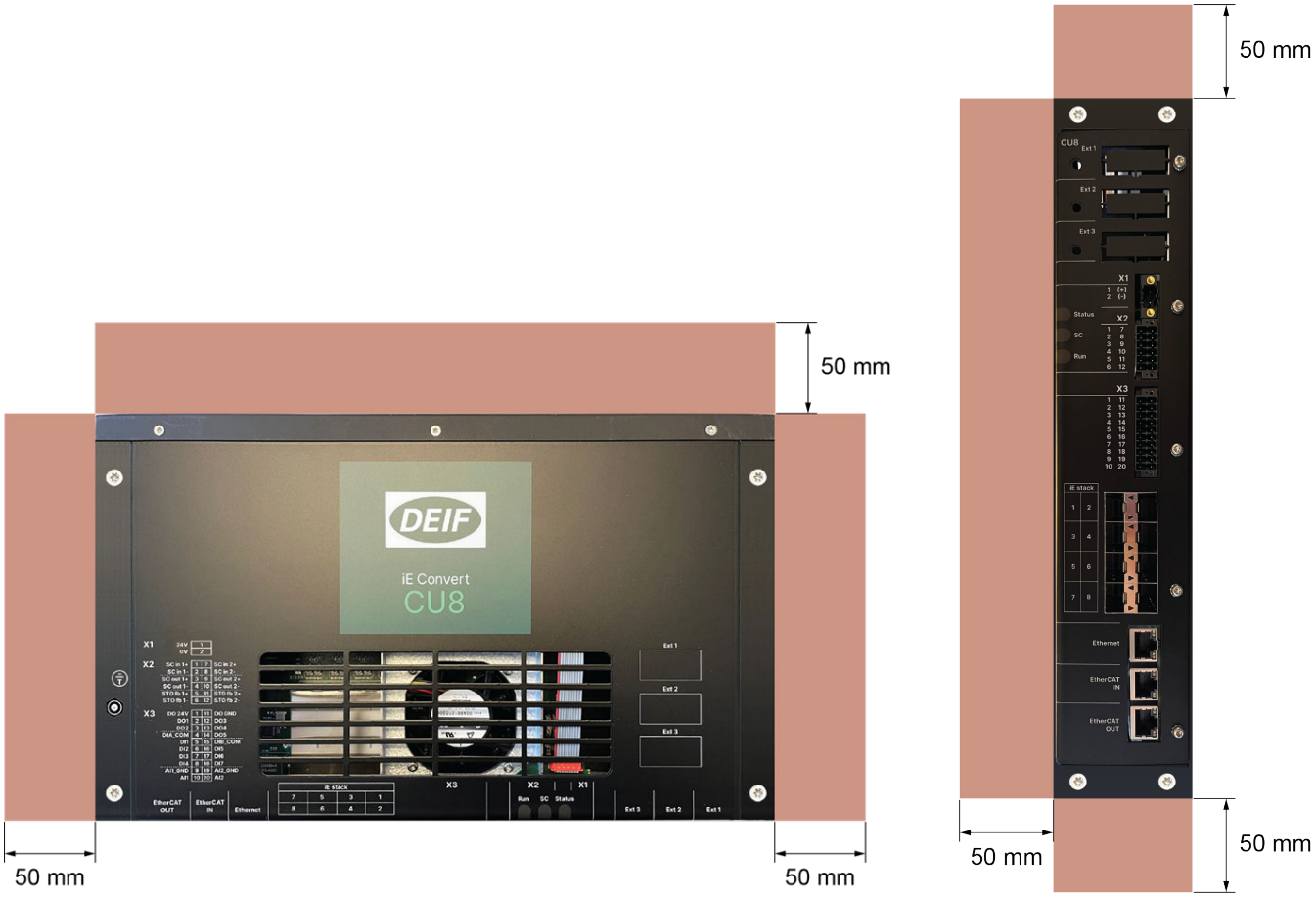
You can connect a display directly to the CU8, but this does not fulfil cybersecurity requirements.

2.3 Dimensions and weight



Dimensions and weight	
CU8 (W x H x D)	335 mm x 66 mm x 201 mm
Weight	~2 kg
Mounting holes	4 x 6.5 mm ⌀ on the base (base mounting or DIN rail mounting) 4 x 6.5 mm ⌀ on the back plate (vertical mounting)

2.4 Mounting



Horizontal **Vertical**

The space required for ventilation is shown in red.

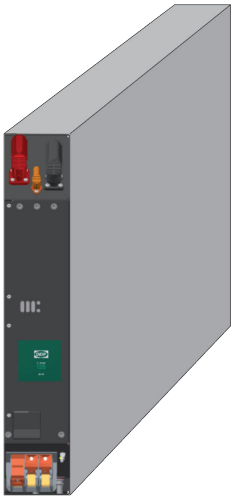
- **Horizontal**
  - The connections are at the bottom.
  - Ventilation: There must also be at least 50 mm of free space in front of the CU8.
- **Vertical**
  - The connections are at the front.

3. Compatible products

3.1 iE Convert power converters

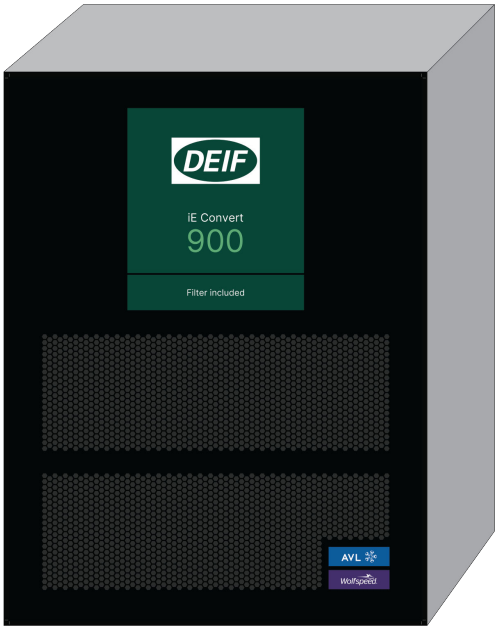
iE Convert power converters are available for a range of specifications and applications.

Modules



iE 125

iE 500



iE 900

Applications

AC/DC
AFE

DC//DC
Galvanically isolated

AC/DC
Drive

DC/DC
Buck/boost

Voltage ratings

Maximum 850 V DC		Maximum 1500 V DC	
350 to 850 V DC	208 to 520 V AC	850 to 1500 V DC	400 to 690 V AC

3.2 Compatible equipment

Controllers with grid codes, power management and cybersecurity

- iE 250 www.deif.com/products/ie-250

Controllers with power management and cybersecurity

- iE 350 www.deif.com/products/ie-350
- iE 250 Marine www.deif.com/products/ie-250-marine
- iE 350 Marine www.deif.com/products/ie-350-marine

Controllers with grid codes and power management

- AGC-4 Mk II www.deif.com/products/agc-4-mk-ii

Controllers with power management

- iE 150 www.deif.com/products/ie-150
- iE 150 Marine www.deif.com/products/ie-150-marine
- AGC 150 www.deif.com/products/agc-150-generator

PLCs with cybersecurity

- iE 250 PLC www.deif.com/products/ie-250-plc/
- iE 350 PLC www.deif.com/products/ie-350-plc/
- iE 650 PLC www.deif.com/products/ie-650-plc/

Isolation monitoring

- DC networks, ADL-111Q96 www.deif.com/products/adl-111q96
- AC networks, AAL-2 www.deif.com/products/aal-2

DC voltage measurement

iE Measure

Protection relays

Medium voltage relays, MVR-200 series www.deif.com/products/mvr-200-series/

Other equipment

DEIF has a wide variety of other equipment that is compatible. Here are some examples:

- **Synchroscopes**
  - **CSQ-3** (www.deif.com/products/csq-3)
- **Battery chargers/power supplies**
  - **DBC-1** (www.deif.com/products/dbc-1)
- **Current transformers**
  - **ASK** (www.deif.com/products/ask-asr)
  - **KBU** (www.deif.com/products/kbu)
- **Transducers**
  - **MTR-4** (www.deif.com/products/mtr-4)

4. Legal information

4.1 Disclaimer and copyright

Preliminary information

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