IMP - Controller

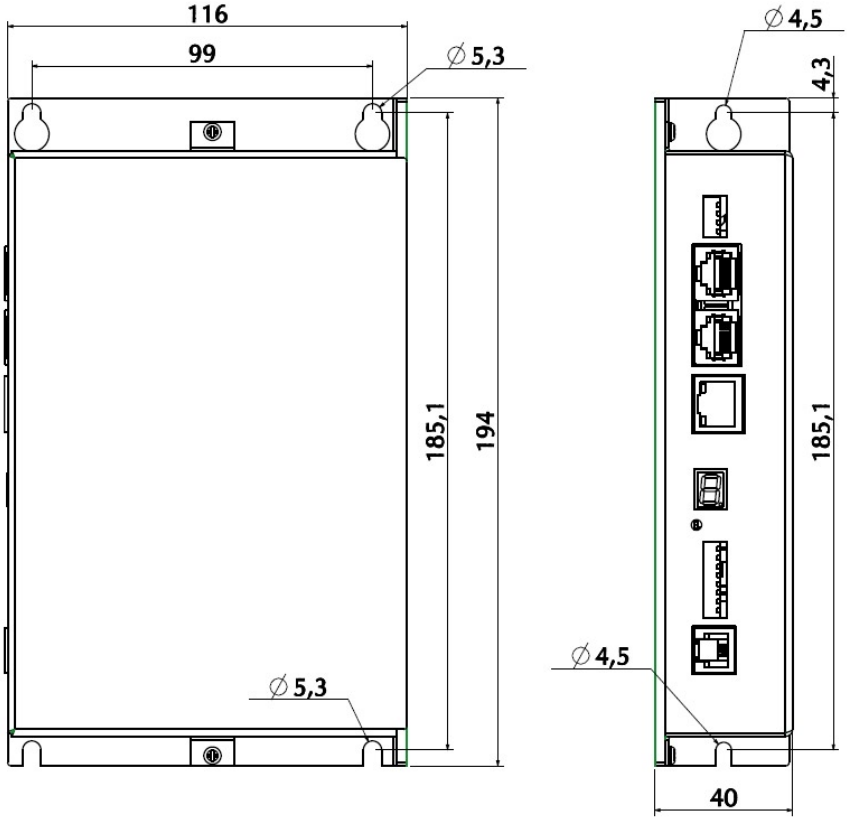
Installation instructions

Refer to installation use and maintenance manual for more information.
Available user manual at link http://www.everelettronica.it/manhw.html

IMPW - Motion Controller Gateway

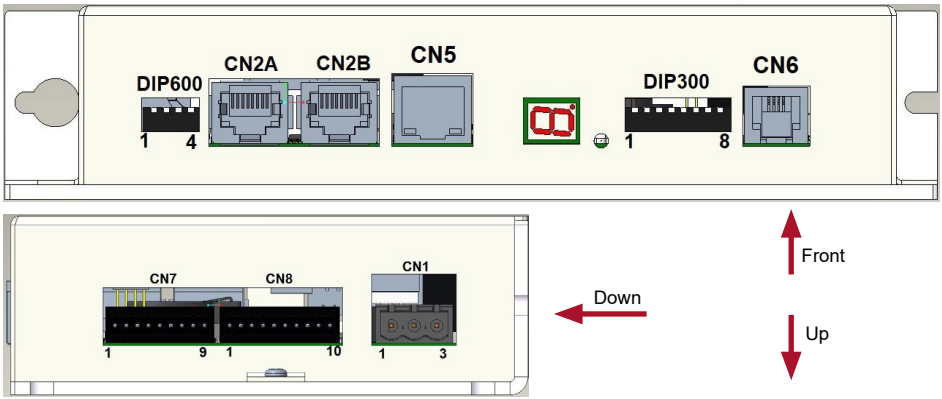
- *DC supply: 24 Vdc – 500mA max (Nominal range 19-30Vdc)*
- *Arm® Cortex®-M7 32-bit MCU with 1024K FLASH and 512K SRAM*
- *up to two Canbus isolated interfaces (see system versions)*
- *Modbus isolated interface*
- *Ethernet interface*
- *EtherCAT or Profinet interface (see system versions)*
- *Service SCI interface for programming and real time debugging*
- *8 digital inputs*
- *8 digital outputs (supplied from 24Vdc supply)*
- *Dimensions: 194 x 116 x 40 mm (without connectors)*
- *Protection degree: IP20*
- *Working temperature 5°C ÷ 40°C; Storage temperature -25°C ÷ 55°C; Humidity 5% ÷ 85% not condensing*

Mechanical data

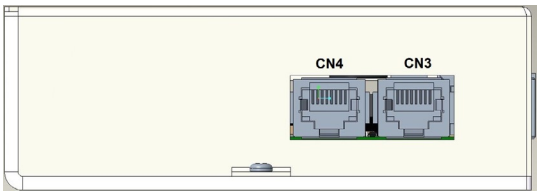


System versions	Canbus	EtherCAT	Profinet
IMPW1100	2	NO	NO
IMPW21H0	1	YES	NO
IMPW11T0	2	NO	YES

Connectors location



IMPW1100



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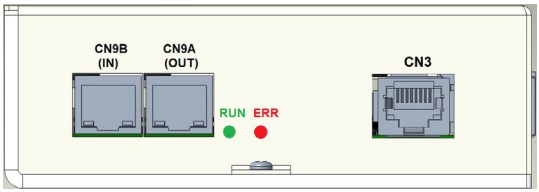

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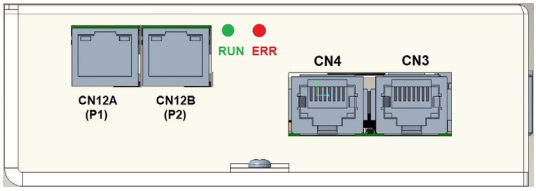
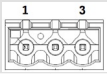


System connection and jumpers functions

CN1: DC Input Supply

3 positions, pitch 5.08mm, PCB header connector

CN1.1	V+	PWR_IN	Positive DC supply input 24Vdc
CN1.2	VSS	PWR_IN	Negative DC supply input
CN1.3	EARTH	PE	Protective Earth



CN3: CANbus #1 interface

RJ45, 8 positions shielded, PCB header connector

CN3.1	CAN1_H	Digital I/O	Bus Line Dominant HIGH
CN3.2	CAN1_L	Digital I/O	Bus Line Dominant LOW
CN3.3	CAN1_GND	PWR_OUT	Signal Ground
CN3.4	N.C.		Not connected
CN3.5	N.C.		Not connected
CN3.6	N.C.		Not connected
CN3.7	N.C.		Not connected
CN3.8	N.C.		Not connected

CN4: CANbus #2 interface

RJ45, 8 positions shielded, PCB header connector

CN4.1	CAN2_H	Digital I/O	Bus Line Dominant HIGH
CN4.2	CAN2_L	Digital I/O	Bus Line Dominant LOW
CN4.3	CAN2_GND	PWR_OUT	Signal Ground
CN4.4	N.C.		Not connected
CN4.5	N.C.		Not connected
CN4.6	N.C.		Not connected
CN4.7	N.C.		Not connected
CN4.8	N.C.		Not connected

CN5: Ethernet Interface

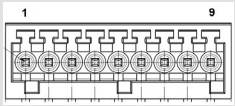
RJ45 connector

100BASE-TX (100Mb/sec) port
Accept standard Ethernet cable (CAT5 or higher)

CN7: Digital Inputs

9 position, pitch 2.5mm, PCB header connector

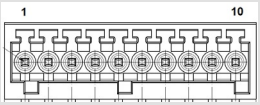
CN7.1	B0_IN0	DIG_IN	Digital input B0_IN0
CN7.2	B0_IN1	DIG_IN	Digital input B0_IN1
CN7.3	B0_IN2	DIG_IN	Digital input B0_IN2
CN7.4	B0_IN3	DIG_IN	Digital input B0_IN3
CN7.5	B0_IN4	DIG_IN	Digital input B0_IN4
CN7.6	B0_IN5	DIG_IN	Digital input B0_IN5
CN7.7	B0_IN6	DIG_IN	Digital input B0_IN6
CN7.8	B0_IN7	DIG_IN	Digital input B0_IN7
CN7.9	VSS	PWR_OUT	Common reference for inputs



CN8: Digital Outputs

10 positions, pitch 2.5mm, PCB header connector

CN8.1	B0_OUT0	DIG_OUT	Digital output B0_OUT0
CN8.2	B0_OUT1	DIG_OUT	Digital output B0_OUT1
CN8.3	B0_OUT2	DIG_OUT	Digital output B0_OUT2
CN8.4	B0_OUT3	DIG_OUT	Digital output B0_OUT3
CN8.5	B0_OUT4	DIG_OUT	Digital output B0_OUT4
CN8.6	B0_OUT5	DIG_OUT	Digital output B0_OUT5
CN8.7	B0_OUT6	DIG_OUT	Digital output B0_OUT6
CN8.8	B0_OUT7	DIG_OUT	Digital output B0_OUT7
CN8.9	V-OUT	PWR-OUT	24Vdc Output for Auxiliaries
CN8.10	VSS	PWR_OUT	Common reference for outputs



CN6: Service SCI Interface

RJ11, 6P4C, PCB header connector

CN6.1	TX / RX	Transmit / Receive Line
CN6.2	DE / RE	Drive Enable Negated / Receive Enable
CN6.3	+5V	+5V power out
CN6.4	GND	GND power out

This connection is <u>only</u> possible with hardware and software provided by Ever Elettronica.

CN2A/B: Modbus interface (IN-OUT)

RJ45, 8 positions shielded, PCB header connector

CN2.1	Data +	Digital I/O	Positive RS485 signal
CN2.2	Data -	Digital I/O	Negative RS485 signal
CN2.3	N.C.		Not connected
CN2.4	N.C.		Not connected
CN2.5	0V_A	PWR_OUT	Signal Ground
CN2.6	N.C.		Not connected
CN2.7	N.C.		Not connected
CN2.8	N.C.		Not connected

CN9A/B: EtherCAT Interface

Dual RJ45 connectors (IN-OUT)

100BASE-TX (100Mb/sec) ports
Accept standard Ethernet cable (CAT5 or higher)

CN9B (IN) CN9A (OUT)

CN12A/B: Profinet Interface

Dual RJ45 connectors (IN-OUT)

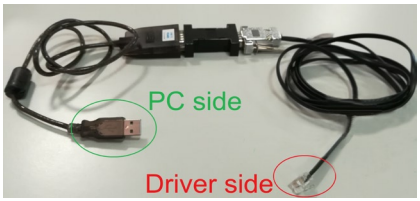
100BASE-TX (100Mb/sec) port
Accept standard Ethernet cable (CAT5 or higher)

CN12A (P1) CN12B (P2)

Service SCI connection

This connection is only possible with hardware and software provided by Ever Elettronica.
Kit code: IMP_SERV10-TRP

PC — Service SCI connection KIT — **IMPW**

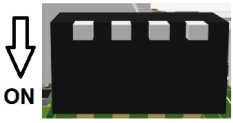


Dip-Switches settings

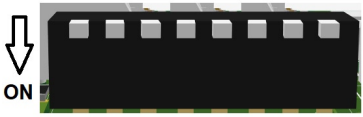
DIP600		
	ON	**OFF (default)**
DIP1	CANbus#2 - 120 ohm INSERTED	CANbus#2 - 120 ohm NOT inserted
DIP2	CANbus#1 - 120 ohm INSERTED	CANbus#1 - 120 ohm NOT inserted
DIP3	Not connected	
DIP4	Modbus - 120 ohm INSERTED	Modbus - 120 ohm NOT inserted

DIP300	
DIP1	R0
DIP2	R1
DIP3	ID5
DIP4	ID4
DIP5	ID3
DIP6	ID2
DIP7	ID1
DIP8	ID0

DIP600



DIP300



The functions of the DIPs are defined by the software. Refer to the software manual for more detailed information.

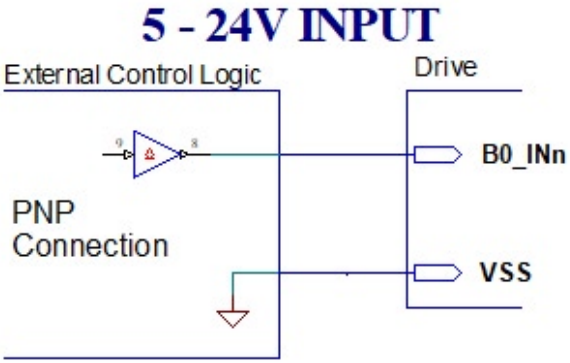
Operational statuses 7 segments display

The 7 segments display is used to signal the various system statuses. Hereunder follows the explanation of the significance of the symbols on the display :

Display simbol	Description
'b'	Boot program status, it is visible at the IMP switch for one second to indicate the boot presence.
'I'	Initialization status, it is visible during the system initialization (for 3 seconds from start time of the firmware).
'S'	The execution status of the TRIPOS application. It is set when the execution of the TRIPOS program starts and it remains unchanged until the user program will not be interrupted by a protection or an error.
'H'	The TRIPOS application is interrupted but there are no active errors or protections. It is the consequence of a BREAK command or an updating program phase.
'L'	The operating system (Firmware) is not present. It will be set from the boot program when there isn't found a valid firmware. In this case it is necessary to download a new firmware.
'U'	Updating process of the operating system (Firmware) in progress. It will be visualized during the firmware download.
'E'	User class error (UE).
'P'	Protection class error (PE).
'F'	Error status of the internal software class (ISE).

Digital inputs connections

Single-ended 5-24 V PNP type

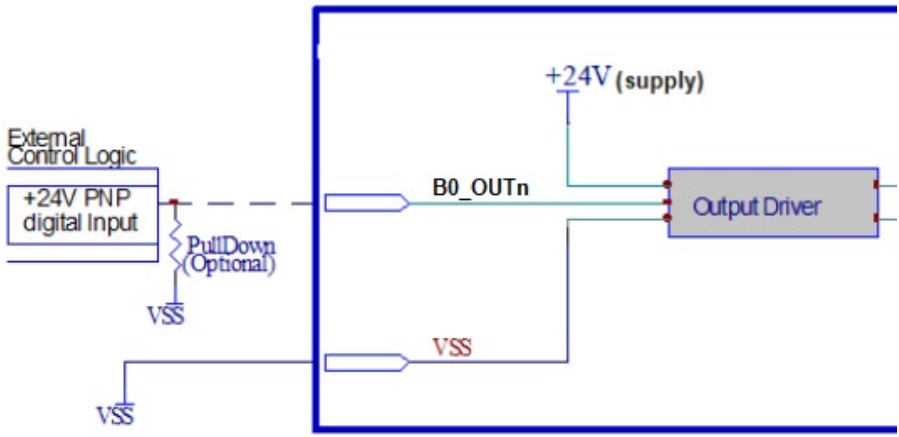


Characteristics	MIN.	MAX.	Unit
Supply voltage	5	24	Vdc
Inputs frequency	--	200	Khz
Threshold switching voltage	2,5	--	Vdc
Current at 5 Vdc	--	2	mA
Current at 24 Vdc	--	12	mA

Digital outputs connections

PNP with Voutmax = 24 Vdc, IOUTmax = 500 mA, Fmax = 1 Khz

Digital outputs are supplied from 24 Vdc supply of the system.



CN8.9 and CN8.10 report a 24 Vdc supply output for auxiliaries.

Mating connectors

Connector	Description
CN1	Phoenix 1759509
CN2A / CN2B	RJ45, 8 positions
CN3	RJ45, 8 positions
CN4	RJ45, 8 positions
CN5	Ethernet standard cables
CN7	Phoenix 1701061
CN8	Phoenix 1700841
CN9A/B	Ethernet standard cables (CAT5 or higher)
CN12A/B	Ethernet standard cables (CAT5 or higher)

Cables selection

Function	Cable	
	Minimum	Maximum
Power supply and PE	0.20 mm² (AWG24)	2.50 mm² (AWG12)
Digital inputs	0.14 mm² (AWG26)	0.50 mm² (AWG20)
Digital outputs	0.14 mm² (AWG26)	0.50 mm² (AWG20)
CANbus / Modbus interfaces	0.25 mm² (AWG23) CANbus CIA-CANOpen	
Ethernet interface	0.25 mm² (AWG23) Ethernet standard cables (CAT5 or higher)	

Verify the installation

– Check that the controller is of the desired version
– Verify that all settings are those necessary for the application.
– Verify the wiring and the assembly of the controller to make sure that the installation and integrity of the unit are correct.

System's fault analysis

When one of the following situations occur, the system doesn't function correctly and it is reported an error.

DEFECT	CAUSE	ACTION
When switching on the controller nothing happens.	Wrong connection of the power supply. Voltage of the power supply out of functioning range.	Check the wiring of the power supply and the fuses, if ok, verify that the value of the power supply voltage on the power connector is within the power supply range of the equipment, using a multimeter.
Missing execution of the program.	Wrong connection of the power supply. Wrong connection of the communication interfaces.	Check the wiring and the power supply. Consult the Software manual.
Missing communication on the interfacing lines.	Wrong connection of the communication interfaces.	Check the wiring and the power supply. Consult the software manual.
Missing management of the digital outputs.	Missing connection of the outputs. Missing connection of the power supply outputs.	Check the wiring and the power supply of the outputs. Consult the software manual. Check the wiring.
Inputs are not read.	Missing connection of the inputs.	Verify the common connection (Vss) of the inputs. Consult the software manual.

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