

Technical specification

WallBOX GWL-WB11



PRODUCT WEBPAGE





WARNING

Read this document before using the Wallbox. Failure to follow any of the instructions or warnings described in this document may result in fire, electric shock, serious injury, or death.

The Wallbox is designed for charging electric vehicles supporting IEC 62196-1 and IEC 61851-1 standards only.

The wall box is designed only for vehicles that do not require ventilation during charging.

Do not use the Wallbox if it is defective, visibly cracked, corroded, or otherwise seriously damaged, or if the LED indicates a serious internal fault.

Do not attempt to disassemble, repair or modify the Wallbox. The user is not authorized to make repairs if a malfunction occurs.

Protect the charging cable end from moisture and water.

Do not touch the terminals with sharp metal objects such as wires, nails, etc.

Do not damage the Wallbox with sharp objects or insert foreign objects into any part of it.

Make sure that the Wallbox does not obstruct the movement of pedestrians, other vehicles, or other objects.

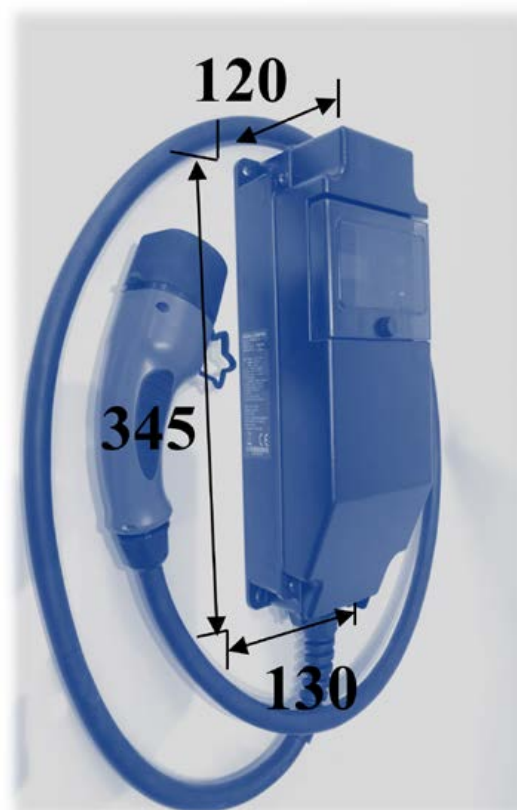
Do not leave small children or incapacitated persons near the Wallbox.

Only persons with a valid certificate by Decree 50/1978 Coll. as amended are authorized to install the equipment.

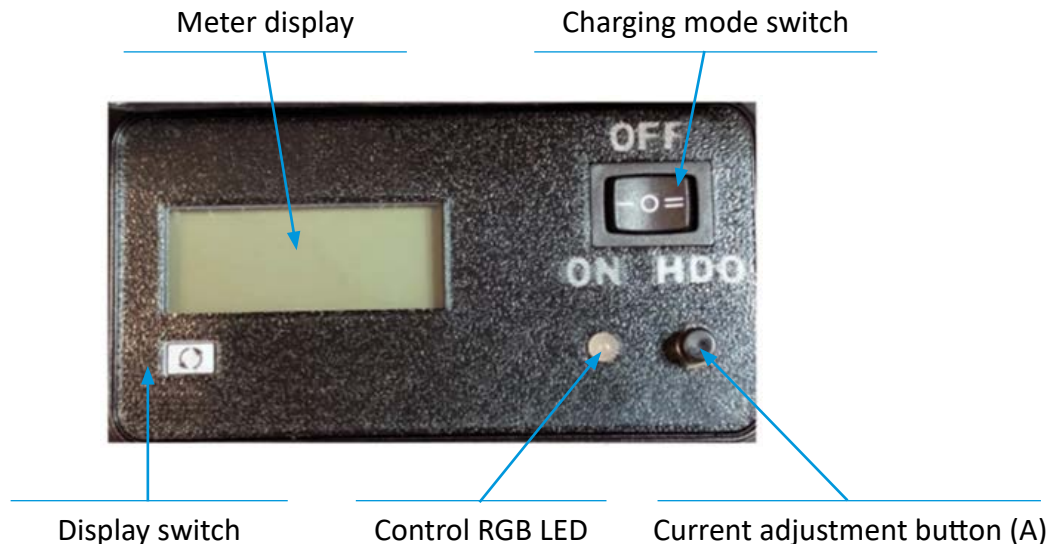
Specification, version, and dimensions

Type	Connector	Performance	Cable	Cable leads
3x16 A	T2 - L1,L2,L3,N,PE + CP,PP	11 kW	12 mm	5 x 2.5 mm

Specifikace	
Self-consumption in standby mode:	Less than 0,5 W
Permissible ambient temperature:	from -40°C to +50°C
Degree of protection:	Body IP65, plugged in or covered connector IP44
Overcurrent protection:	A-EV (AC 30 mA, DC 6 mA)
Compatible electrical network:	TN-S, IT (example. Norway)
Produced according to:	IEC 62196, IEC 61851-1, EMC, RoHS
Compatible electrical network:	TN-S, IT (eg Norway)
Box dimensions:	350 x 130 x 110 mm



Description and purpose of use:



This WB is designed for charging electric vehicles using a conductive connection (cable). Can be used indoors and outdoors. If used outdoors, care must be taken to ensure that the window is properly secured, whereas if used indoors, this part can be easily removed to simplify access to the controls. It is designed for fixed installation and connection to the mains without the use of a conventional socket. The sockets are the weak link in EV charging and when regularly subjected to high current for several hours, their condition often deteriorates with subsequent failure (even meltdown). WB ensures maximum safety during charging. In addition to monitoring various fault conditions, it ensures that the charging cable is not energized until the vehicle is connected and the vehicle signals readiness to start charging.

Installation

It is not recommended to install in a place where direct sunlight hits, it may cause limiting or stopping of charging due to heating of the temperature sensor.

To connect the WB to use maximum current, a lead is required, see variant specification, protected by an appropriate circuit breaker. It is also possible to connect to a weaker lead with appropriate fusing and set a lower charging current after installation on the WB to avoid tripping the circuit breaker.

If additional functions are used, additional (control) wires are required. If the WB is installed outdoors, the installation must be done in a way that ensures the degree of protection is maintained, for example, the use of watertight grommets, etc.

Do not connect the WB to the circuit downstream of the surge protector, the WB has its electronic protector which is capable of resetting itself. It is often the case with electric vehicles that after the initial connection, the current protector is fitted due to the charging of the input filter capacitors. Another reason is the possibility of using the HDO function, where the HDO works with the ground before the protector, so each time the current protector would be equipped.

Description of connection terminals:

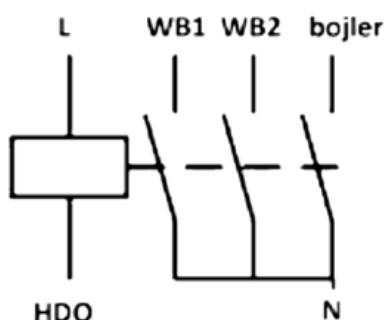
Popis		
Brown	L1	– first phase
Black	L2	– second phase (3F version only)
Gray	L3	– third phase (3F version only)
Blue	N	– working null
Green	PE	– grounding
Purple		input for external current control with 0-10V DC voltage from the wattmeter
Light blue		input from the HDO receiver - CAUTION, energized through the relay coil with the power supply connected!

Description of HDO control

The bulk remote control is the way how the distributor in our electricity network regulates the consumption of appliances. This is done by a signal modulated directly to the power grid, which is decoded by the HDO receiver. This switches between low and high tariffs (NT and VT) after recognizing the instruction that is valid for the tariff in question. This both switches the tariff on the meter and switches on and off the appliances connected to this control (direct heaters, boilers, heat pumps, and EV charging).

The HDO receiver must therefore be connected to the controlled device. The HDO has an output that is grounded when NT is valid and unconnected when VT is valid. Connect this output with a conductor with a minimum cross-section of 0.5 mm for 230 V to the input terminal in WB. Thus, if this input terminal in WB is connected to the ground, charging will be activated if the switch is in the HDO position. When installing multiple WBs in one building, or installing them to another appliance controlled by a zero from HDO, consider possible undesired interactions.

For example, when supplying multiple relays from different phases, permanent tripping may occur by creating a series of connections between phases. In this case, additional relays with 2 or more switching contacts, where the coil pins of this relay are fed on one side from the phase and the other side are connected to the HDO. Its contacts are used to ground the individual relay for each appliance.

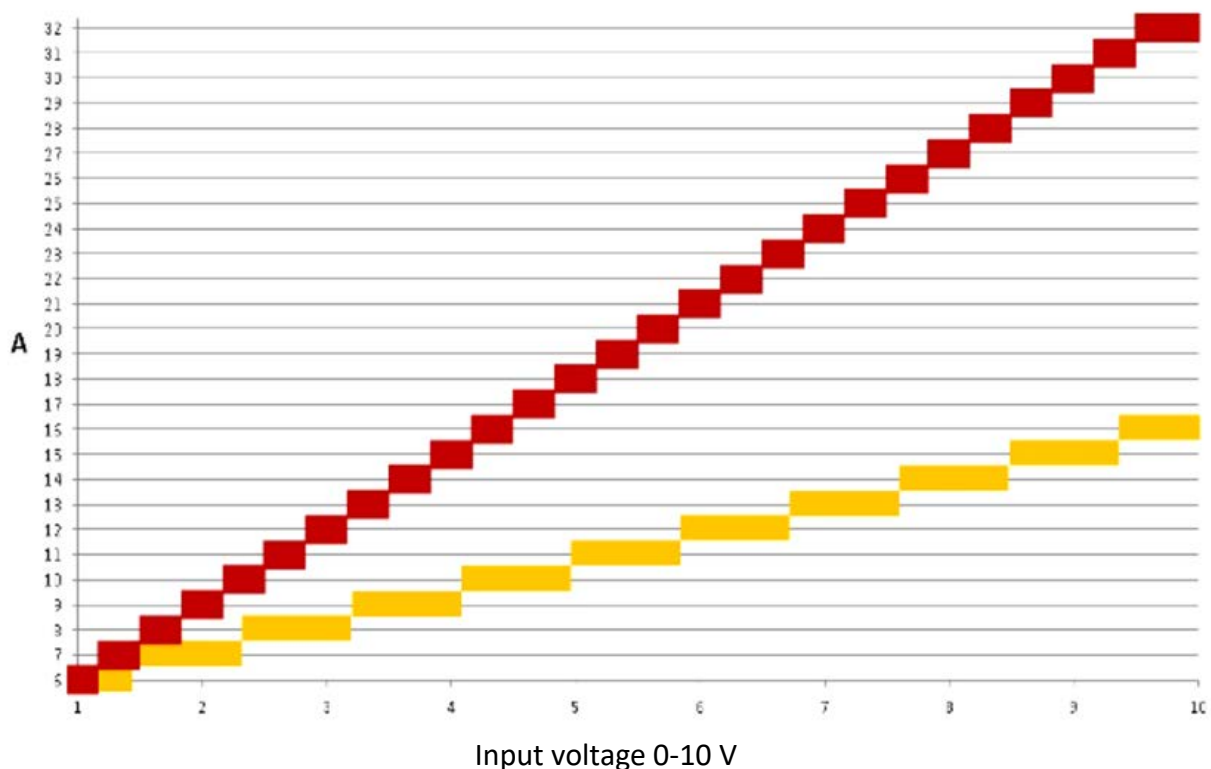


External 0-10 V control function (REG terminal)

If the charging is not switched on with the switch in the ON position or the HDO position during the NT validity period, charging can also be started externally by applying the control voltage of 0-10 V to the purple terminal. This functionality has been added to charge with free power from the PV plant, where charging is controlled by a higher-level PLC (e.g. watt router)

With the switch in the HDO position, we charge during the day with free power from the PV, and at night when the NT is switched on, the rest of the charging is completed with the so-called night current.

At approximately 1V, charging is started with a current of 6A. The maximum charging current (16 A or 32 A according to the WB version) is reached at approx. 9.5 V.



Approximate 0-10 for 16 A and 32 A versions.

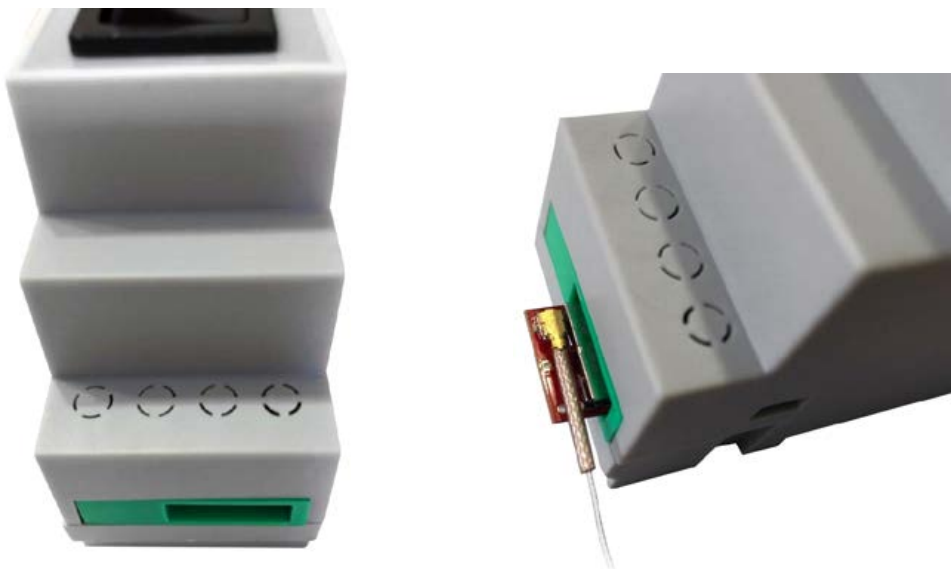


CAUTION:

Do not exceed 12V, the input may be damaged!

Charging current limiting based on consumption measurement (optional accessories)

The WB can be equipped with dynamic control functionality when purchased or retrofitted to ensure maximum use of the existing circuit breaker in the building. Metering transformers are installed at the entrance to the building to measure the instantaneous consumption in all phases. If an overshoot is detected on any of the phases, the EV charging current is reduced by the required value to avoid preventing the circuit breaker from tripping. When the capacity is released, the current for the EV is increased again. The measured data is transmitted wirelessly in the 868MHz band. The WB is equipped with a slot for a wireless card that receives the signal from the measuring unit. This slot is located on the top of the control module and is highlighted in color.



Connect the small antenna or pigtail before inserting it into the slot. Due to the limited space, this is much more complicated afterward.

The range of wireless communication depends on local conditions, especially the number, thickness, and material of obstacles such as walls. Instead of a small antenna, a pigtail can be connected to which an external antenna is connected with higher gain. When the vehicle is charging (LED is yellow) you can test the signal reception. Hold down the button to adjust the current, after a few seconds the yellow LED will turn off and flash purple when the measurement data is being received. If the LED does not flash, no data is being transferred to the wall box.

Installation of measuring transformers (optional accessories)



Install metering transformers in a location where the total consumption in the building can be measured. For example, at the supply to the house switchboard.



Place the transmitter preferably in a free position on the din rail. Only induction from the wires is sufficient for the actual power supply. The recovery occurs at approx. 3x5 A or 1x13 A. If the transmitting antenna is shielded, e.g. by a metal cabinet or metal door, it is necessary to lead the antenna out of this shielding. A 50 ohm coaxial extension cable can be used, or a larger 886 MHz antenna with a longer feed cable.



Reviving the installation (turn on the circuit breaker)

When power is applied, the status LED should be red to indicate that initialization is in progress. The PE connection test is also in progress at this time. If the LED does not change color after about ten seconds, there is some problem with the network (probably the PE wire has not been detected correctly) - check the correct connection. If the PE wire is correctly detected and initialization is successful, then the white LED flashes to indicate the current charging setting:

Charging current setting

1x – 6 A	
2x – 10 A	
3x – 13 A	
4x – 16 A	
5x – 20 A	(only 32A version)
6x – 25 A	(only 32A version)
7x – 32 A	(only 32A version)

Furthermore, the set value of the main circuit breaker for dynamic limiting is indicated in purple. The number of purple flashes indicates the set value of the main circuit breaker. Then, if everything is OK, the LED lights up permanently in green/blue.

The current limiting (if required) can now be set by the appropriate number of button presses. If the button is pressed more than once, the maximum value is set. The limit cannot be set if the vehicle is already connected. Each press of the button is confirmed by the illumination of a red LED. When the pressing is finished, the number of presses will be confirmed once more for checking by the corresponding number of flashes of the white LED.

Setting the value of the monitored circuit breaker

(if the WB is equipped with the dynamic control function)

With the vehicle is disconnected, press and hold the current adjustment button. The LED will be on for 15 sec., then will go out and flash. The number of flashes determines the set value. Release the button when the desired value is reached. The value is permanently stored until a new setting is made. If the wireless receiver slot is not equipped, set the value to 1A.

The current measurement is indirect, so allow for a deviation that can be compensated by adjusting the setting. For example, if you set the breaker value to 20A and the car is charging at, let's say, 19A even though you are sure no other appliances are running, you can set the main breaker value to 21A.

Deactivation / activation of complete charging stop

(if the WB is equipped with the dynamic control function)

If the available free power in the object for charging is lower than 6A, charging will be terminated or charging will not start. In some cases, it may be desirable that this does not happen. For example, if more than one WB is installed in a building and it is desirable to start charging even if the second charge is restricted. This can also address the fact that some vehicles may evaluate multiple interruptions of charging as an error and no longer start charging (e.g. until the cable is disconnected and connected). Procedure: with the cable inserted in the vehicle, press the button. At first, it will appear that nothing is happening, but after exceeding approx. 20 presses, the next 5 presses will be indicated by the LED flashing white and the next 5 presses by red. If you stop pressing the button after you see white, stop charging will be active, if you stop pressing after red, this function will be deactivated. If the function is inactive, it will charge with a current of at least 6A at all times. Consider whether you want to change this setting, in your case, in some situations, it might cause the main breaker to trip. This setting does not affect stopping charging when controlled by the 0-10 V input at the purple terminal.

Connecting a vehicle

Check the control switch, and adjust it to the desired position if necessary:

Setting	
ON	on, regardless of input from HDO
Middle position	off, charging only by external 0-10 V control
HDO	charging enabled during the validity of the NT-low tariff (grounded blue terminal), in VT by external 0-10 V control

You can now plug the connector into the vehicle, charging will start when the vehicle signals readiness. In the socket variant, the connector is locked in the socket during charging. The WB with socket has an instantly unlock function in the event of a power failure.

If charging slows down or stops, check the on-board system in the vehicle to see if it indicates a fault condition, and check the signal LED on the WB.

Disconnecting a vehicle

If charging is still in progress, it is the best way to stop charging on the vehicle side. The charging connector on some vehicles is blocked from being pulled out when charging.

Switching the meter display

Three different values can be displayed on the display using a switch:

- total number of kWh
- partial kWh counter - reset by holding the display switch
- actual charging power in Watts (1 kW = 1000 W)

IT network operations (example: Norway)

The wall box can be switched to the IT standard mode of use in the electricity network. This is necessary for the correct functioning of diagnostics and protection on this type of network.

In the TN-S (CR) mode, the LED is red when the power is switched on. In IT (NOR) mode, the LED is blue when the power is turned on.

Switching from one mode to the other is done as follows. The LED will flash rapidly and change color after a moment. This procedure can be repeated when the power is switched on, thus changing the setting back to the TN-S network.

Frequently asked questions, solutions to common problems

IN THE WB ECHOES THE BANGS

When starting and stopping charging, this is a common manifestation of switching elements - contactors.

WB SANDS

After the contactors are switched on, not as much current is needed to maintain the contactor armature, the current is reduced by fast interrupting (PVM), which can be heard as follows.

CHARGERS 6A ONLY (cca 1380 resp. 4140W at 3F version)

Occasionally, the user accidentally taps the button to set the lowest charging limit. Check the charging current setting.

DYNAMIC CONTROL BY SUBSCRIPTION DOES NOT WORK (DLM)

If you use the dynamic control function, the WB may not receive the measured data. Check that the WB is receiving data and that the transmitter is working (see the indicator light on the front). You may need to use external antenna(s) or adjust the location.

Control RGB LEDs - statuses and error codes

BLUE

Charging does not start immediately when the car is connected. Either the HDO switch is in the middle position = permanently OFF, or in position II and waiting for the HDO to switch on.

GREEN = READY TO CHARGE

2x – undervoltage or missing phase

5x – stopped by external control, not enough free power, free power below 6A

YELLOW = CHARGING

2x – undervoltage or missing phase

3x – possible problem with the connection to the network

4x – high temperature, limited charging current

RED = STOP CHARGING

2x – overcurrent protection equipment (current protector) This error condition is automatically reset after approx. 30s. The control unit tries to recover max. 3 times.

3x – problem with PE or N (ground continuity check)

4x – overvoltage

5x – very high temperature, charging stopped. Charging resumes after the temperature sensor on the control board have cooled down.

6x – the car requires an unsupported feature. For example, older vehicles with acid batteries may signal a requirement for external room ventilation. Since the WB is unable to provide this requirement, it must terminate the charge.

If a very high temperature is detected, charging stops until the control electronics have cooled down. Contact your dealer if this should occur regularly.



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