



tiko CATA-01.1103-P1 Plus Socket Plus Tap D-Box User Manual

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tiko CATA

tiko CATA-01.1103-P1 Plus Socket Plus Tap D-Box



Safety Warnings and Working Instructions

Hazard Risk

- Read the user manual before installing and operating this product!
- Installation by person with electrical expertise and trained on this product only!
- Disconnect all power sources before carrying out any manipulation!
- Always use appropriate protection equipment!
- Danger! High voltage!
- Never touch disconnected wires! Life hazard!
- Only use for current/voltage as indicated on the device label! Doing otherwise can cause device damage and may pose an electrical shock or fire hazard!
- Not properly tightened screws can cause a high contact resistance, lead to overheating, and cause a fire hazard!

Warnings

- Read the installation instructions before you connect the system to its power source.
- To prevent the system from overheating, do not operate it in an area that exceeds the maximum admitted ambient temperature of 55 °C.
- This product relies on the building's installation for short-circuit (over current) protection. Ensure that a fuse or circuit breaker no larger than 230 VAC, 16 A is used on all current-carrying conductors.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This device must be installed only in electrical installations compliant to the most recent valid national regulations.
- Device is intended for indoor use only.
- Ultimate disposal of this product should be handled according to all national laws and regulations.
- Any usage of this device in a manner that does not conform to this manual specification can impair the provided safety protection.

Safety Instructions

Read these safety instructions carefully.

- Follow common household electrical safety practices.
- Read all cautions and warnings on the equipment.
- Disconnect this equipment from the socket before cleaning it. Do not use liquid or sprayed detergent for cleaning. Use moisture sheet or cloth for cleaning.
- The openings on the enclosure are for air convection and protect the equipment from overheating. Do not cover the openings.
- Do not pour any liquid into opening. This could cause fire or electrical shock.
- Do not open the enclosure of this product and/or alter this product in any way.
- Have the equipment checked by a service professional if one of the following situations arises:
 - The line is damaged.

- Liquid has entered the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work properly, or you cannot get it to work according to user's manual.
- The equipment has been dropped or damaged.
- The equipment has obvious signs of breakage.
- Keep this equipment away from excessive or condensing humidity.
- Do not leave this equipment in an unconditioned environment. Temperatures above 55 °C will damage the equipment.
- Keep this guide for later reference.

Feedback

You can submit comments via email to info@tiko.energy You can also submit your comments via regular mail by writing to the following address: tiko Energy Solutions AG Pflanzschulstrasse 7 CH-8004 Zürich We appreciate your comments.

Overview

Intended Use

The D-Box is a decentralized energy meter and switch to control electrical heaters. All D-Boxes together require an M-Box (Gateway) to communicate to the back-end private cloud. Each D-Box requires an external temperature sensor (REF CASTH-01.1004-01) to know about the room it shall control. D-Boxes and the accessories from the D-Box kit are to be only used in tiko Energy Solutions AG authorized setups. They cannot be used standalone. Any installation or usage which does not conform to tiko Energy Solutions AG setup is strictly forbidden. tiko Energy Solutions AG is not responsible for any improper installation/usage of this device

Features

The D-Box features:

- Relay: 230 V – 16 A
- FilPilot IN and OUT
- Status LEDs showing data link and device errors.
- A push button to perform different tests.

Package Content

Open the package and check that you have all the following items:

For Kit K01-CDK-01.1016-01-P1:

- Instruction manual (REF IM-0007-0013)
- D-Box (IMAGE 1 and IMAGE 2)
- Metal holder with screw holes and adhesive tape (IMAGE 6)
- Prewired socket (REF CDS-01-P1), see IMAGE 5

If any of the parts are incorrect, missing, or damaged, please contact the retailer where you made your purchase. Keep the carton box, including the original packing materials, in case you need to return the unit for repair.

Package Content (Legacy Products)

In case your unit does not come with the metal holder, it belongs to the group of legacy kits that are not produced anymore. Your package content will be different. In this case use the following table to check:

	K01- CDK - 01.1 014- 01-P 1	K02- CDK - 01.1 014- 01-P 1	K03- CDK - 01.1 014- 01-P 1	K01- CDK -01.1 016- 01-P 1	K02- CDK 3-01. 1016 -01- P1
D-Box (IMAGE 1 and IMAGE 2)	ü	ü	ü	ü	ü
Instruction manual (REF IM-0007-0013)	ü	ü	ü	ü	ü
A sealed bag of Velcro patches and/or double tape to mount the D-Box to the wall	ü	ü	ü	ü	ü
Socket (REF CDS-01-P1), see IMAGE 3	ü	ü			ü
Pre-wired socket (REF CDS-01-P1), see IMAGE 5			ü	ü	
Tap (REF CATA-01.1103-P1), see IMAGE 4		ü	ü		ü

If any of the parts are incorrect, missing, or damaged, please contact the retailer where you made your purchase. Keep the carton box, including the original packing materials, in case you need to return the unit for repair.

Device: D-Box

IMAGE 1 and IMAGE 2 show a D-Box from the plug side and from the button side. Your D-Box may look differently, as for some electricity providers the D-Box comes in a custom design. (A) marks the location of the LED. It is hidden and only visible when on. (B) marks the button.

On the bottom side, two labels are indicating:

- The manufacturer
- The device model number (REF) and current rating
- The hardware (HW) and firmware (FW) version
- The unique serial/MAC address as text and as Aztec 2D code (SN/MAC)

Device: Socket

IMAGE 3 shows the socket. It is connected to the electrical wiring of the heater and offers a socket to plug the D-Box. It features 5 screw terminals for the contacts and a strain relief (IMAGE 7).

On the top cover is indicated

- The manufacturer
- The device model number (REF) and current rating

Device: Continuity Bridge (Tap)

IMAGE 4 shows the continuity bridge. If a customer decides not to take part in the tiko cloud, the D-Box can be removed from the socket and the continuity bridge is engaged to restore the original contacts for manual operation of the electric heater.

Accessory: Holder

IMAGE 6 shows the D-Box holder. It is mounted on the wall and holds the D-Box plugged into the socket. This facilitates the handling of the D-Box, for example on disconnect or replace: The device can first be brought out from behind the heater and then operated in a more comfortable position.

Installation

- Installation by person with electrical expertise and trained on this product only!
- Do not install the device unless you have removed the main power supply (main breaker or fuses)!
- IMAGE 17 shows possible D-Box locations around the heater. The best position is bottom left, right or center.
Under no circumstances install the D-Box above the heater. This will result in thermal issues and may damage the device!

Installing the D-Box

Step 1	Remove power from the electrical panel.
Step 2	Unhook the heater from its holder and put it to the side. Plan the location of the D-Box in advance. It should be in 2 – 3 cm of the heater (IMAGE 10) and a permitted position (IMAGE 17). Use, for example, a pencil to carefully mark the planned location.
Step 3	Disconnect the radiator from the wall. If you own the Kit K03-CDK-01.1014-01-P1 or K01-CDK-01.1016-01-P1, the D-Box socket is already equipped with a piece of cable on one side. The legacy kits that are not yet equipped with pre-wired socket need an additional small piece of suitable cable. Ensure the cable is compliant. Prepare the wires where necessary by crimping bootlace ferrules.
Step 4	Remove the cover from the socket. If you hold the socket like displayed in IMAGE 18 , clamp the phase coming from the wall/source into the top terminal, and the phase going to the heater into the bottom terminal.
Step 5	Clamp the neutral wire coming from the wall/source and going to the heater into the middle terminal. There is space on both sides of the screw for two wires.
Step 6	If your heater supports Fil Pilote : hold the socket as displayed in IMAGE 18 , clamp the Fil Pilote coming from the wall/source into upper middle terminal and the Fil Pilote going to the heater into the lower middle terminal. A proper wiring is displayed in IMAGE 8 .

Step 7	Firmly tighten any unused terminal.
Step 8	Fasten the strain relief to prevent the wires in the terminal from being pulled out.
	<i>Tighten again all clamp screws with enough torque. Insufficient clamping force can result in high contact resistance that leads to device heating and can result in a fire hazard.</i>
Step 9	Put back the cover of the socket.
Step 10	Engage the D-Box and the socket as displayed in IMAGE 9 . Push the two levers of the socket in order to open the safety shutter and plug in the D-Box.
	<i>Pay attention to the orientation of the socket and D-Box when plugging. The printed text on the socket and the top side of the D-Box must be on the same side (see IMAGE 9).</i>
Step 11	IMAGE 17 shows the permitted and prohibited positions for mounting the D-Box.
	<i>It is forbidden to place the D-Box above the heater for thermal reasons. The device could overheat. Preferred position is below the heater or laterally below (IMAGE 17).</i>
	<i>Ensure a distance of 2 cm – 3 cm between the heater and the D-Box (IMAGE 10).</i>
	<p>Depending on the mounting solution supplied with your unit, you will need to proceed to either Step 11a or Step 11b.</p> <p>If your device is equipped with the metal holder (IMAGE 6), please proceed with Step 11a.</p> <p>If your device is equipped with an air-sealed bag containing 3 patches of Velcro and/or double tape, please proceed with Step 11b.</p>
Step 11a	<p>The D-Box holder can be mounted with screws (preferred if the condition of the wall allows it) or with an adhesive tape. It can be installed in all directions, including upside down (IMAGE 15 and IMAGE 16).</p> <p><u>By means of screws:</u></p> <p>Use two screws size 4×20 with countersunk head. Examples: Wood/chipboard screw, screw with dowel.</p>

	<i>The type of screw must be appropriate for the corresponding wall.</i>
	<i>When using dowels, make sure that (i) the dowel size fits the screw size and (ii) the type of dowel is appropriate for the wall.</i>
	<p>Fasten the holder in the desired location (IMAGE 12). Refer to IMAGE 17 for permitted and prohibited locations of the D-Box.</p> <p><u>By means of adhesive tape:</u></p> <p>The adhesive tape supplied with the holder is a Nano Suction Tape. Its adhesive force is generated by nano-sized suction cups. It is adhesive-free and does not dry out.</p> <p>Peel off the protective film as shown in IMAGE 13. The permitted and prohibited positions of the D-Box are shown in IMAGE 17. Press the holder firmly into the desired position.</p>
	<i>The wall must be free of dust. Otherwise, the dust will clog the nano-sized suction cups and the holder will fall off shortly after.</i>
	<i>When pressing against the wall, ensure that you apply an evenly distributed force of at least 15 kg. Unlike adhesive-based tapes, the adhesion force of the Nano Tape depends on the contact pressure.</i>
	After successfully mounting the holder, slide the D-Box (plugged into the socket, see Step 10) into the holder (IMAGE 14).
	<i>tiko is not liable for damage caused by improper mounting or due to defective condition of the building substance.</i>
Step 11b	<p>Open the sealed bag and place the patches onto the D-Box and socket at the positions indicated in IMAGE 11.</p> <p>Remove the protection foils and push the D-Box onto the wall at the desired location. Refer to IMAGE 17 for permitted locations. Hold it for several seconds.</p> <p>The D-Box should now stay in place. If it seems loose, the glue on the patches has been dried out due to bad storage conditions. Contact your reseller to obtain fresh patches.</p>

	<i>The glue of the patches needs to dry for at least for 24 hours before reaching full strength. Do not unplug or move the D-Box during this time.</i>
Step 12	Lift the heater back to its hooks.
Step 13	Power on the system by enabling power in the electrical panel. Configure the heater to the hottest possible level/temperature.
Step 14	To finalize the installation , all tiko devices must be configured using the installation app . Remember that to each room with one or multiple D-Boxes belongs a temperature sensor (REF: CAS TH-01.1004-01).

Operation

Device Operation

There are two functions assigned to the button:

- Short press (min. 1 sec., less than 5 sec.) – test communication quality to the Gateway. For the description of the LED, see section LED Explanation.
- Long press (more than 5 sec.) – Heater test. For details, please refer to the section Heater Test.

The D-Box is subject to the control of the full system and operated by the Data Center through the Gateway (M-Box). No user interaction is required.

LED Explanation

The D-Box features one LED in the middle of the device. It is only visible when lit.

In normal operation:

LED	Status	Notes
Off	Operational	
Blinking yellow, 2x per second	No PLC connectivity	
Blinking yellow, 1x per second	No connection to cloud/back-end	
Red	Power-on self-test failure.	For example, when wrongly wired
Blinking red	Emergency mode	Device is damaged or has hardware malfunction. The relay is closed so that the heater can be operated manually.

In firmware upgrade mode:

LED	Status	Notes
Blinks yellow/green 2x per second	Device running firmware upgrade	

If the button is pressed for one second, the LED displays the quality of the communication to the Gateway:

LED	Status	Notes
Steady Red	No connectivity	Since the last start of the device, it did not receive any data.
Blinking yellow, 4x per second	No communication for 2 minutes	At least one data packet was received, but for 2 minutes the device did not receive any signal.
Steady Green	The communication is in the optimal state	

In Heater Test mode: see section Heater Test.

Heater Test

A long press of the button (more than 5 seconds) triggers a test of the electrical heater. With this, the D-Box can check if the wiring is correct. The test is executed locally on the D-Box and does not need any connectivity to the Gateway or the back-end.

The test is available for both Fil Pilote and Relay mode. To choose the correct mode, the D-Box must have been properly configured in the install app.

The test consists of the following steps:

1. Switch the heater ON.
2. Wait for it to consume a certain amount of energy during a certain time.
3. Switch the heater OFF.
4. Ensure if the heater stops consuming.
5. Repetition of steps 1 to 4.
6. Display of the result:

LED	Status
Off	Test not running or stopped.
Blinking Green	Test in progress.
Steady Green	Test completed successfully.
Steady Red	The test failed during a switch.
Blinking Red	The test failed while trying to keep the heater on or off.

7. Now the button must be pressed again to exit from the test.
 - If step 7 – exit the test by pressing again the button – is forgotten, the LED will continue to display the result status. In case this step was for-gotten during the installation process, just press the button again.
 - The test relies on a proper configuration of the Relay vs. Fil Pilote mode of the D-Box. For example, if the Heater features Fil Pilote, but the D-Box is set to Relay Mode, the test will complete successfully (but maybe the heater will beep or switch on and off). The other way around the test will fail.

Uninstalling

The D-Box can be uninstalled in 3 different ways:

Decommissioning

In the backend, the D-Box can be disabled. In this case, a relay inside the D-Box is closed in such way that the wires are bridged. The D-Box remains in place, but the heater can be operated manually.

Continuity Bridge

The D-Box is removed from the socket. The socket is bridged using the Continuity Bridge CATA-01.1103-P1) displayed on IMAGE 4.

Complete Uninstallation

Step 1	Remove power from the electrical panel.
Step 2	Unhook the heater from its holders and put it to the side.
Step 3	Unplug the D-Box, open the socket and unscrew all wires.
Step 4	Reconnect the wires from the heater to the wall/source again.
Step 5	<p>If your unit is equipped with a metal holder, remove it.</p> <p>If the holder is mounted by means of screw, unscrew the holder, and fill the holes with putty.</p> <p>If the holder is mounted with the Nano Tape, carefully and slowly rotate the holder, until it starts to come off. Further twist and tilt the holder until it comes off completely. Ensure the wall and/or paint is not damaged. You might need to rub off remaining Nano Tape with your finger.</p>
Step 6	Lift the heater back onto its holders and power on the system by enabling power in the electrical panel.
Step 7	If the device remains property of <i>tiko Energy Solutions AG</i> or its authorized reseller, it must be returned. Otherwise, the ultimate disposal of a device shall be handled according to national laws and regulations.

Specifications

Device Characteristics	
Product Number	CD-01.1014-01-P1 (D-Box) CD-01.1016-01-P1 (D-Box) CDS-01-P1 (Socket) CATA-01.1103-P1 (Continuity Bridge)
Input / Output Voltage	230 VAC \pm 10%
Input / Output Relay Current	max. 16 A (not fused)
Input / Output Fil Pilote Current	max. 100 mA (fused)
Wire Specification for Load	1.5 mm ² (AWG 16)
Wire Specification for Fil Pilote	1.5 mm ² (AWG 16)
Frequency	50 Hz
Overvoltage Category	OVC II
Voltage of Breaker before D-Box	max. 240 V
Current of Breaker before D-Box	max. 16 A
Connectivity	PLC HomePlug GreenPHY
User Interface	1 push button, 1 LED
Dimensions	136 x 134 x 39 mm (REF CD-01.1014) 160 x 125 x 42 mm (REF CD-01.1016)
Weight	235 g (REF CD-01.1014) 251 g (REF CD-01.1016)
Max. Power Consumption	3 W

Metrology Characteristics	
Power Meter	Active Energy: Class C (\pm 0.5%) Reactive Energy: Class B (\pm 1%)
Min. Measurable Current	\pm 0.05 A

	Operating Conditions	Storage Conditions
Temperature (min.)	-10 °C	-20 °C
Temperature (max.)	+55 °C	+70 °C
Relative Humidity	10% – 85% no condensation	5% – 95% no condensation
Maximum Altitude	2000 m	–

Obtaining the Declaration of Conformity

Intended Use

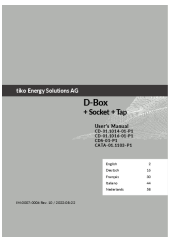
The D-Box is a custom single-phase energy meter and remotely controlled switch to be only used in tiko Energy Solutions AG authorized setups.

Safety Information



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The products CD-01.1014-01-P1, CD-01.1016-01-P1, CDS-01-P1 and – if part of the kit – CATA-01.1103-P1 in the form as delivered conform to the provisions of the following European directives: 2011/65/EU on hazardous substances, 2014/35/EU on low voltage devices, 2014/30/EU on electromagnetic compatibility. A copy of the declaration of conformity can be requested by writing to the postal address or is available on <http://um.tiko.energy/1014> or <http://um.tiko.energy/1016> respectively.

Documents / Resources

	<p>tiko CATA-01.1103-P1 Plus Socket Plus Tap D-Box [pdf] User Manual</p> <p>CD-01.1014-01-P1, CD-01.1016-01-P1, CDS-01-P1, CATA-01.1103-P1, Plus Socket Plus Tap D-Box, CATA-01.1103-P1 Plus Socket Plus Tap D-Box, Plus Tap D-Box, D-Box</p>
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References

-  um.tiko.energy/1014
-  um.tiko.energy/1016