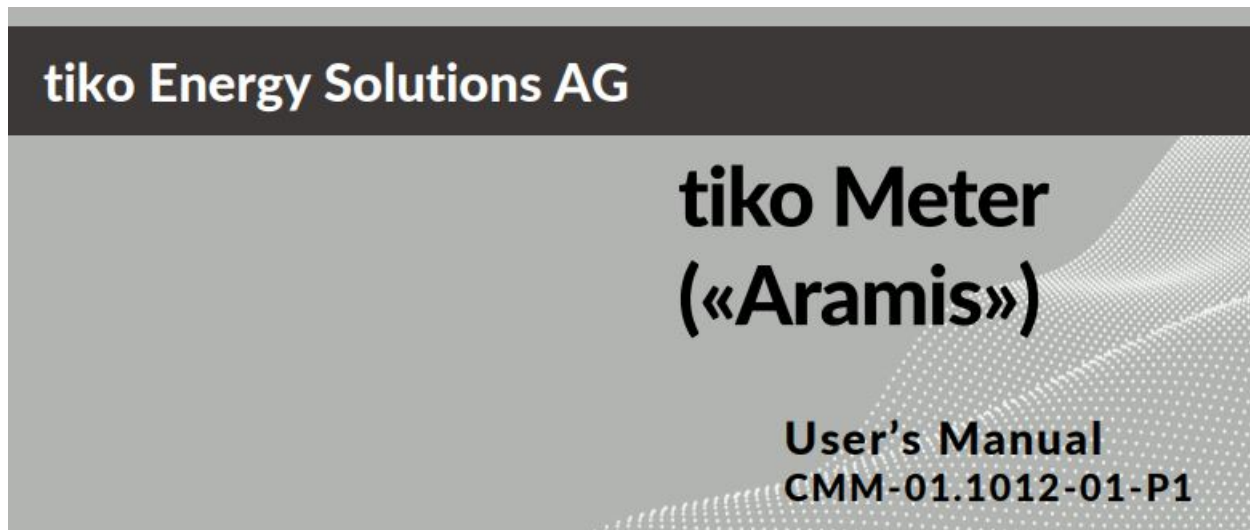




tiko Class C Active Power Meter User Manual

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*tiko Class C Active Power Meter
User Manual*



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Safety Warnings and Working Instructions

Hazard Risk



Read the user manual before installing and operating this product!



Installation by person with electronical 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, 65 A is used on all current-carrying conductors.
- The circuit breaker shall be in front, close to the device, easily reachable by the operator, and it shall be marked as the disconnecting breaker for the device.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- 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.
- SBUS cables shall not be close to power cables. Minimum clearance is 10 mm.

- Do not put power to the electrical panel before putting back the cover of the home distribution box. No live contact shall be accessible.
- Disconnect this equipment from the distribution box 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 Alte Tiefenastrasse 6 CH-4600 Bern

We appreciate your comments.

Overview

Intended Use

The Meter is a custom energy meter to be only used in tiko Energy Solutions AG authorized setups. It requires a Bridge-Box (REF CMB-01.1011) to be powered and to operated. It cannot be used standalone.

The Meter presents on both sides an SBUS connector (IMAGE 1) to be daisy-chained with other devices of the same family.

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

Meter features:

- meters instantaneous energy consumption
- status LEDs showing data connection and device errors

Package Content

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

- Instructions manual
- Meter

- 20 cm SBUS interconnection cable or SBUS inter-connector (IMAGE 2)
- Clip A and Covers B and C (IMAGE 3)

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

IMAGE 4 shows the device from various sides. It indicates the LEDs and the clamping terminals for Line In , Line Out and the Neutral Reference . On the left side is a label indicating

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

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)!

Installing the Meter

Step 1	Remove power from the electrical panel.
Step 2	Remove the cover panel so you can access the wires.
Step 3	Ensure that there is a short-circuit protection (breaker or fuse) before the Meter no larger than 230 VAC 65 A .
Step 4	<p>Put the Meter on the DIN rail of the home distribution box and ensure the hook is locked properly (IMAGE 5).</p> <p>Connect the SBUS to any other device that is part of the installation. The left SBUS of the Meter must be connected to the Bridge-Box (REF CMB-01.1011) or other devices connected to the Bridge-Box. The right SBUS can be connected to other devices of the family. An SBUS is connected in one of the 2 ways:</p> <ul style="list-style-type: none"> • Using the SBUS interconnector: Plug the SBUS connector in one of the devices and slide the Meter along the DIN rail towards it (IMAGE 6). Use the Clip A to prevent the SBUS from being disconnected (IMAGE 7). • Using the SBUS cable: Connect the Meter to the other device using the provided SBUS cable. Warning: SBUS cables shall not be close to power cables. Minimum clearance is 10 mm. <p>If this Meter is at the end of the chain of tiko devices, close the remaining openings using Cover B and Cover C (IMAGE 7).</p>
Step 5	<p>Prepare the cables. Refer to Specifications on page 8 for supported ratings and cable diameters.</p> <p>Remove the insulation at the end of the cable and apply an insulated or uninsulated bootlace ferrule (IMAGE 8):</p>

- Example products are Vogt 440912.47 (16 mm²), Vogt 441015.47 (25 mm²), TE Connectivity 2-966067-6 (16 mm²), TE Connectivity 2-966067-8 (25 mm²).
- crimp the bootlaces only using a suitable crimping tool (**IMAGE 9**). Example products are: WAGO 206-1216 (up to 16 mm²) or WAGO 206-1225 (up to 25 mm²).

Refer to **IMAGE 10** for an example of a properly crimped wire.

Step 6	<p>Connect the wires to the Meter (IMAGE 11):</p> <ul style="list-style-type: none"> • Connect the phase power source to the L_{in} clamp ❶. • Connect the phase load to the L_{out} clamp ❷. • Connect the neutral as reference to the N_{Ref} clamp ❸. <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p><i>Tighten all clamp screws with appropriate torque. Insufficient clamping force can result in high contact resistance that leads to device heating and can result in a fire hazard.</i></p> </div> </div>
Step 7	Put back the cover panel of the home distribution box to cover the electrical contacts. Be sure that no electrical contact can be touched.
Step 8	Power on the system by enabling power in the electrical panel. Remind that the power supply of the Meter is provided by the Bridge Box (REF CMB-01.1011)
Step 9	To finalize the installation , all tiko devices must be configured using the installation app .

Operation

Device Operation

The operation of the Meter 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.



To prevent the system from overheating, do not operate it in an area that exceeds the maximum admitted ambient temperature of 55 °C!

LED Explanation

The Meter features two LEDs: a red LED at the top, and a green LED at the bottom.


- In normal operation:

#	Color	Status	Notes
Top LED	Steady Green	Operational	
Bottom LED	Steady Red	Device POST failure	<i>Device Power-On Self-Test has failed. Device requires service.</i>

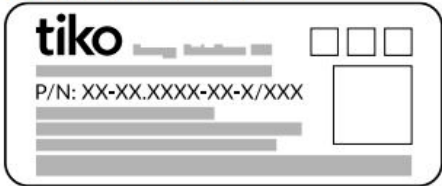
- In firmware upgrade mode:

#	Color	Status	Notes
Top LED	Steady Green	Device is running a firmware upgrade	
Bottom LED	Blinks Red @ 0.5 Hz		<i>One blink each 2 seconds.</i>

Uninstalling

Step 1	Remove power from the electrical panel.	
Step 2	Remove the cover panel. Unwire and remove the device. If another device of the installation is remaining, use the covers B and C to close the openings (IMAGE 7).	
Step 3	Put the cover panel back. Ensure that no electrical contact can be touched.	
Step 4	Power on the system.	
Step 5	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 	CMM-01.1012-01-P1
Input / Output Voltage	230 VAC
Input / Output Current	max. 65 A
Wire specification for load	16 – 25 mm ² @ 65 A (AWG 4 ~ 7) Stranded-wire structure
Wire specification for reference voltage	1.5 – 16 mm ² (AWG 7 ~ 20)
Frequency	50 Hz
Overvoltage Category	OVC III
Voltage of the breaker before the Meter	Max. 230 V
Current of the breaker before the Meter	Max. 65 A
User Interface	2 LEDs (red and green)
Size	94 x 66 x 18 mm
Weight	70 g
Max. power consumption	0.5 W

Metering Characteristics	
Min. Measurable Current	±0.05 A
Max. Measurable Current	-65 A to +65 A
Measurement Tolerance <i>Active, Reactive and Apparent Power</i>	±0.5% @ 0.38 A – 65 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 meters	-

Obtaining the Declaration of Conformity

Intended Use

The tiko Meter is a custom single-phase energy meter to be only used in tiko Energy Solutions AG authorized setups.

Safety Information

tiko Energy Solutions AG Pflanzschulstrasse 7 CH-8004 Zürich info@tiko.energy

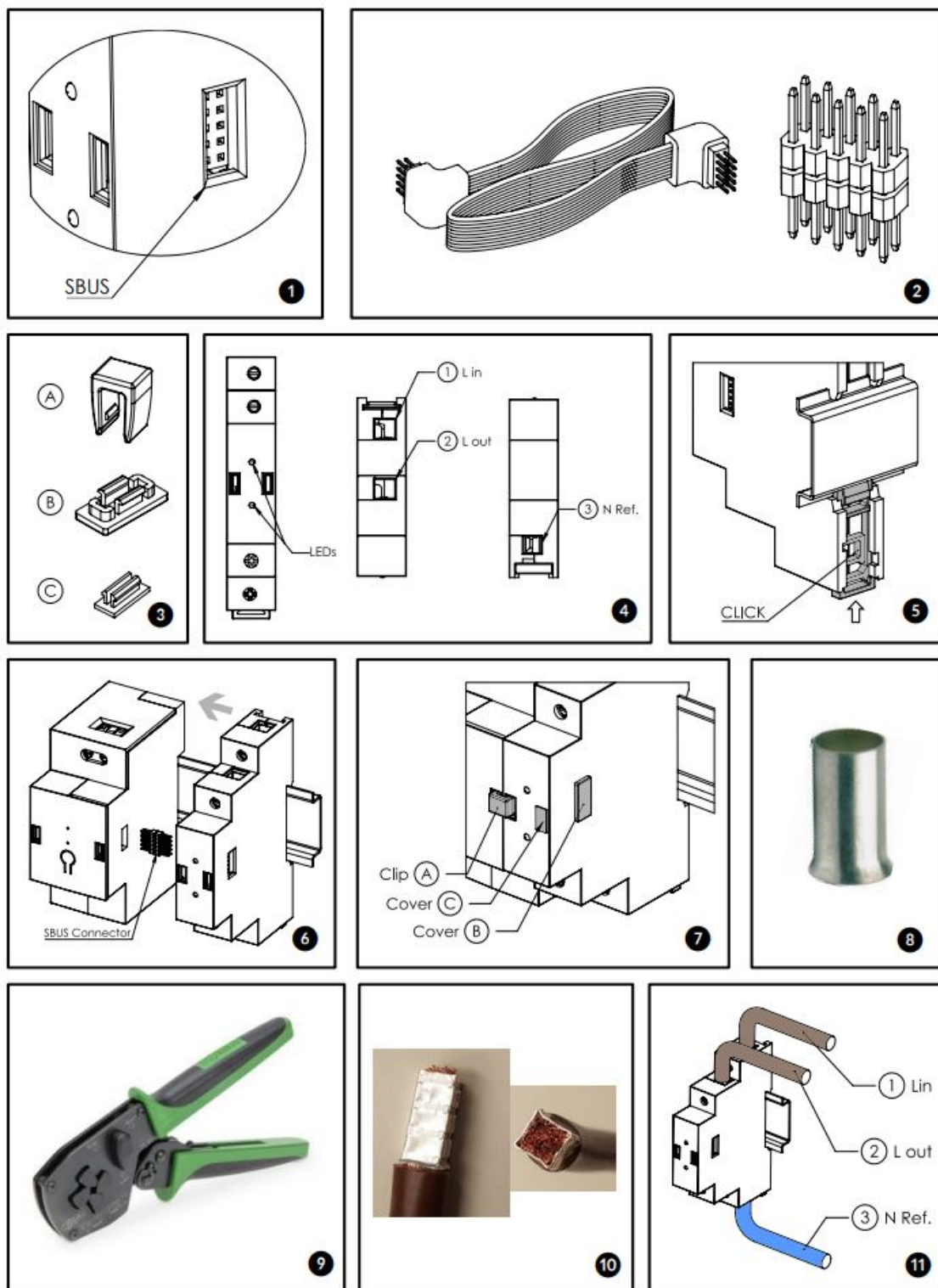


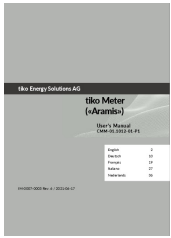
The product CMM-01.1012-01-P1 in the form as delivered conforms to the provisions of the following European directives: 2011/65/EU on hazardous substances, 2014/35/EU on low voltage devices, 2014/30/EU on

electromagnetic compatibility, partially 2004/22/EU on measuring instruments.

Furthermore, the product CMM-01.1012-01-P1 in the form as delivered conforms to the provisions of the following Australian/New Zealand acts as required by the ACMA: Radiocommunications Act 1992, Telecommunications Act 1997.

A copy of the declaration of conformity can be requested by writing to the postal address or is available on <http://um.tiko.energy/1012>





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Class C, Active Power Meter, Class C Active Power Meter, CMM-01.1012-01-P1

References

- um.tiko.energy/1012

Manuals+.