Wireless Multi Instrument Synchronization Module

User manual

TiePie engineering

Revision 1.3, January, 2026

Declaration of conformity

TiePie engineering
Koperslagersstraat 37
8601 WL Sneek
The Netherlands

EC Declaration of conformity

We declare, on our own responsibility, that the product

Wireless Multi Instrument Synchronization Module WCMI-(4/8/9)

for which this declaration is valid, is in compliance with

EC directive 2011/65/EU (the RoHS directive) including up to amendment 2021/1980,

EC regulation 1907/2006 (REACH) including up to amendment 2021/2045,

EC regulation 2014/53/EU (Radio Equipment Directive)

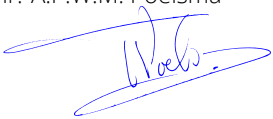
and with

EN 55011:2016/A1:2017	IEC 61000-6-1:2019 EN
EN 55022:2011/C1:2011	IEC 61000-6-3:2007/A1:2011/C11:2012 EN

according the conditions of the EMC standard 2004/108/EC

This declaration loses its validity in the event of a change to the device not agreed with us.

Sneek, 27-01-2026
ir. A.P.W.M. Poelsma



微功率短距离无线电发射设备符合性声明

制造商信息

制造商名称:	TiePie engineering
地址:	Koperslagersstraat 37, 8601 WL Sneek, The Netherlands

设备信息

产品名称:	无线多仪器同步模块 / Wireless Multi Instrument Synchronization Module (WCMI)
型号:	WCMI-4
工作频率:	433.05 MHz – 434.79 MHz
发射功率:	≤10 mW (e.r.p.)
占用带宽:	≤400 kHz

符合性声明

本设备属于中国工业和信息化部（MIIT）公告 2019 年第 52 号《关于微功率短距离无线电发射设备管理相关事项的公告》中所列的“微功率设备”范畴。

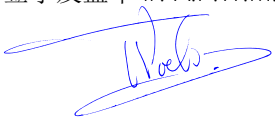
我司特此声明:

1. 本设备符合上述公告中关于 433 MHz 频段的技术指标要求。
2. 本设备不会对其他合法的无线电台（站）产生有害干扰。
3. 本设备具备防止擅自改变发射参数的技术手段。
4. 产品说明书已包含国家规定的必要安全警示和使用限制。

负责人签字

日期: 27-01-2026 地点: Sneek

签字及盖章 ir. A.P.W.M. Poelsma



Declaration of Conformity for Micro-power Short-range Radio Equipment

Manufacturer Information

Manufacturer Name :	TiePie engineering
Address :	Koperslagersstraat 37, 8601 WL Sneek, The Netherlands

Equipment Information

Product Name :	Wireless Multi Instrument Synchronization Module (WCMI)
Model Number :	WCMI-4
Operating Frequency :	433.05−434.79 MHz
Transmit Power :	≤10 mW (e.r.p.)
Occupied Bandwidth :	≤400 kHz

Declaration of Compliance

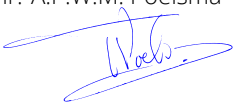
This equipment falls under the category of "low-power equipment" as listed in Announcement No. 52 of 2019 issued by the Ministry of Industry and Information Technology of China (MIIT), "Announcement on Relevant Matters Concerning the Management of Low-Power Short-Range Radio Transmitting Equipment".

We hereby declare:

1. This equipment meets the technical specifications for the 433 MHz band as stated in the aforementioned announcement.
2. This equipment will not cause harmful interference to other legitimate radio stations.
3. This equipment has technical means to prevent unauthorized alteration of transmission parameters.
4. The product manual includes the necessary safety warnings and usage restrictions stipulated by national regulations.

Authorized Signature

Date: 27-01-2026 Place: Sneek
ir. A.P.W.M. Poelsma



Environmental considerations

This section provides information about the environmental impact of the Wireless Multi Instrument Synchronization Module.

End-of-life handling

Production of the Wireless Multi Instrument Synchronization Module required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the Wireless Multi Instrument Synchronization Module's end of life.

In order to avoid release of such substances into the environment and to reduce the use of natural resources, recycle the Wireless Multi Instrument Synchronization Module in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.

The shown symbol indicates that the Wireless Multi Instrument Synchronization Module complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

WCMI

The Wireless Multi Instrument Synchronization Module (WCMI) is a module that allows to synchronize and combine two or more Handyscopes / WiFiScopes via an RF connection. The scopes can be up to 400 m apart from each other.

The WCMI is compatible with:

WiFiScope WS6 DIFF	Handyscope HS6 DIFF
WiFiScope WS6	Handyscope HS6
WiFiScope WS5	Handyscope HS5

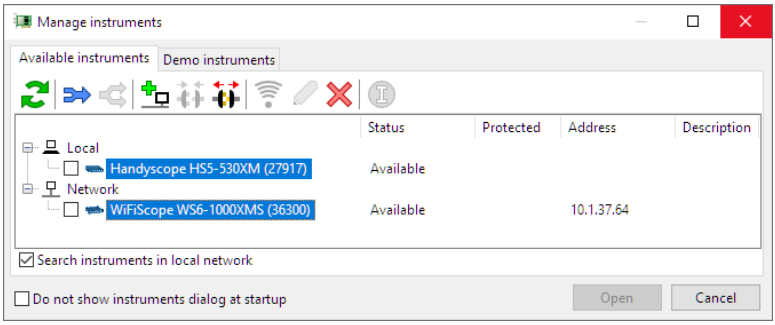
When WCMIs are placed on the extension connectors of the instruments, the instruments are synchronized via an RF connection between the modules. In the Multi Channel oscilloscope software the instruments can be combined to a large combined instrument. The accurate wireless RF connection between the modules will share the trigger signals, in order to start the combined scopes at exactly the same moment. The WCMI module has an internal automatic time synchronization system that takes care that all sample clocks of the oscilloscopes are synchronized.

This allows to measure many signals simultaneously, using scopes that can be up to 400 m apart from each other. No long cabling is required between the scopes and the computer, which makes the setup very easy and hassle free.

Per scope in the combined instrument, a WCMI is required.

Combining oscillocopes

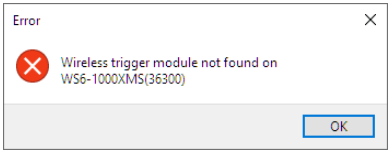
Place the WCMI modules on the extension connectors of the WiFi-Scopes or Handyscopes. Then in the Multi Channel oscilloscope software, open the **Manage instruments** dialog and select the scopes to combine, by using Ctrl-click on each instrument.



The **Combine instruments** button gets then enabled, which can be clicked to combine and synchronize the instruments. Then place a check in front of the combined instrument and open it. You can now use the combined and synchronized instruments as if it was one large instrument.

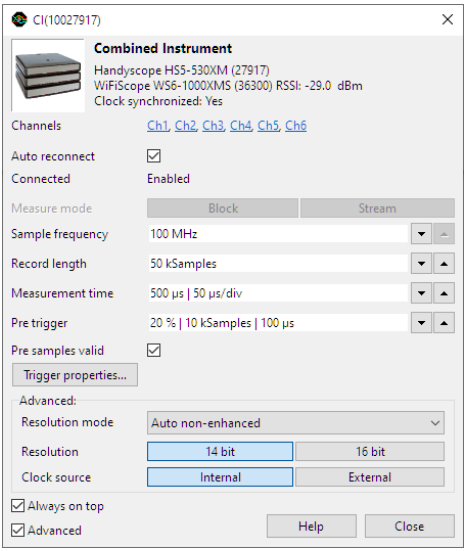
Each of the channels of the combined instrument can be selected as trigger source. Triggering on a combination of sources is only possible when all sources are located on one instrument in the combined instrument. It is not possible to trigger on a combination of sources from different instruments.

When an instrument without WCMI module connected is selected, or the module is not properly connected, combining will fail and an error is shown:



Clock synchronization and signal strengths

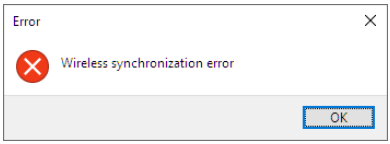
The WCMI module has an internal automatic time synchronization system that takes care that all sample clocks of the oscilloscopes are synchronized. After starting the Multi Channel oscilloscope software and starting continuous measurements, the modules will be synchronized in approximately 10 seconds. When the modules are synchronized, this is indicated in the **Instrument settings window** as **Clocks synchronized: Yes**, see image below.



The WCMI module on the instrument that contains the trigger source will be transmitting trigger pulses. The module(s) on the other instrument(s) will be receiving the trigger pulses.

A Receiving Signal Strength Indication (RSSI) can be found in the Instrument settings window, showing the signal strength in dB_m. In the image above, the Handyscope HS5 functions as trigger source, the WiFiScope WS6 receives the trigger signal, with a signal strength of -29 dB_m.

When the signal strength falls below -90 dB_m, the connection can get lost, resulting in a notification message in the software and measurements to stop.



Reposition the instruments and/or remove blocking objects between the modules to improve the signal strength. It is also possible to disconnect the antenna from the module and connect an (external) antenna via a cable to optimize the antenna position and improve signal strength.

Models

The WCMI module is available in three models, with different frequencies, for different regions.

Model	Frequency	Region
WCMI-4	433 MHz	to be used in China
WCMI-8	868 MHz	to be used in Europe
WCMI-9	920 MHz	to be used in the USA

中国使用条件

使用微功率短距离无线电发射设备应当符合国家无线电管理有关规定。

参数

- 使用频率: 433.05 MHz - 434.79 MHz
- 发射功率: ≤ 10 mW (e.r.p)
- 占用带宽: ≤ 400 kHz

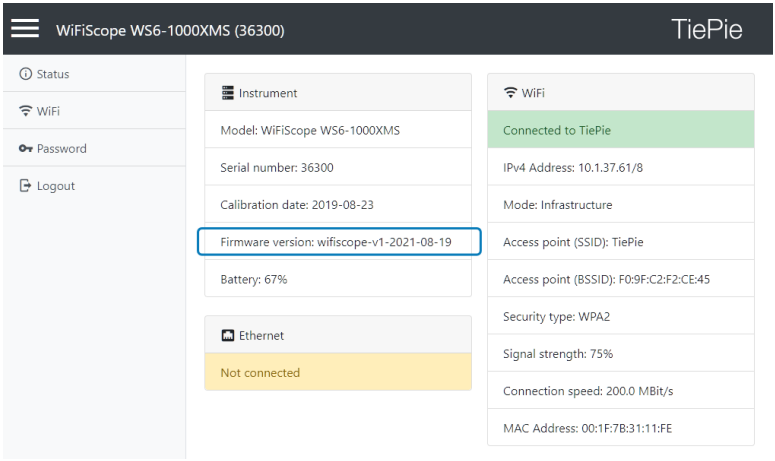
操作条件

- 不得擅自改变使用场景、扩大发射频率范围、加大发射功率（包括额外加装射频功率放大器），不得擅自外接天线或改用其它发射天线。
- 不得对其他合法的无线电台（站）产生有害干扰，也不得提出免受有害干扰保护。
- 一旦产生有害干扰，应立即停止使用，并采取措施消除干扰后方可继续使用。
- 使用微功率设备必须承受其他合法的无线电业务造成的干扰或工业、科学及医疗（ISM）应用设备的辐射干扰。

WCMI-4 是一种常见的微功耗器件。它具有强制性的工作占空比，即可以工作 5 秒钟，然后必须至少闲置 60 分钟。

WiFiScope firmware update

WiFiScopes that were produced and sold before the Wireless Multi Instrument Synchronization Module was introduced will require a firmware update, in order to support the WCMI modules. A firmware dated 2023-06-01 or later is required. The firmware version of the WiFiScope can be obtained on its status page in the web interface. Refer to the latest WiFiScope instrument manual to enter the web interface.



The required firmware image file can be downloaded from www.tiepie.com/download

The firmware update instructions are included in the instrument manual of the WiFiScope, which can be downloaded from the same page.

Handyscopes do not require a firmware update.

Hardware specifications

Model	**WCMI-4**	**WCMI-8**	**WCMI-9**
Frequency	433.05 MHz - 434.79 MHz	868 MHz	920 MHz
Region	China	Europe	USA

Transmission power	10 dBm
Range	400 m

Connections	**Instrument**	**Antenna**
	9 pin male D-sub	SMA female

Dimensions	**Module**	**Antenna**
Length	73 mm	37 mm
Width	34 mm	12 mm
Height	20 mm	175 mm
Weight	33 g	21 g

Power consumption	30 mA, from instrument extension connector		
Compatible instruments	WiFiScope WS6 DIFF Handyscope HS6 DIFF	WiFiScope WS6 Handyscope HS6	WiFiScope WS5 Handyscope HS5
Clock synchronicity	$\leq$ 1 ppm typical $\leq$ 0.2 ppm		
Maximum sampling rate combined instrument	100 MSa/s at 14 bit	6.25 MSa/s at 16 bit	

Trigger jitter *	**Sample rate $\leq$ 1 MSa/s**		**Sample rate $>$ 1 MSa/s**	
	WCMI-4	**WCMI-8 / 9**	**WCMI-4**	**WCMI-8 / 9**
2 x "5"	$\leq \pm 2$ samples	$\leq \pm 2$ samples	$\leq \pm 8\ \mu s$	$\leq \pm 2\ \mu s$
"5" and "6"				
Trigger source = "5"	$\leq \pm 2$ samples	$\leq \pm 2$ samples	$\leq \pm 8\ \mu s$	$\leq \pm 2\ \mu s$
Trigger source = "6"	$\leq \pm 8$ samples	$\leq \pm 8$ samples	$\leq \pm 14\ \mu s$	$\leq \pm 2\ \mu s$
2 x "6"	$\leq \pm 8$ samples	$\leq \pm 8$ samples	$\leq \pm 14\ \mu s$	$\leq \pm 2\ \mu s$

Environmental conditions	**Operating**	**Storage**
Ambient temperature	-10 °C to 40 °C	-25 °C to 70 °C
Relative humidity	0 % to 95 %, non condensing	5 % to 95 %, non condensing
Compliances	RoHS	CE
	Yes	Yes

The WCMI is a RED Directive assessed radio module that is CE marked and that has been manufactured and tested with the intention of being integrated into a final product.

* "5" = WiFiScope WS5 or Handyscope HS5
"6" = WiFiScope WS6 (DIFF) or Handyscope HS6 (DIFF)

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