

# INSTRUCTION MANUAL

## Wireless Time Distribution Radio Receiver Interface WTD 868-RU



## **Manufacturer's Certificate**

### STANDARDS

The WTD 868-RU Receiver Interface was developed and produced in accordance with the EU guidelines.

73 / 23 / EWG

89 / 336 / EWG

1999 / 5 / EWG



### **Notes to the Instruction Manual**

1. The information contained in this instruction manual can be changed at any time without prior notice. The current version is available for downloading under [www.mobatime.com](http://www.mobatime.com).
2. This instruction manual was compiled with the utmost care to provide all the details regarding the use of this product. However, should you have any queries, or find any errors in the instructions, please contact us.
3. We will not accept any liability for any damages resulting, directly or indirectly, from the use of this instruction manual.
4. Please read these instructions carefully and only use the product when all the instructions on installing and operating have been correctly understood.
5. Installation may only be carried out by qualified personnel.
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# 1 Introduction

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## 1.1 Description

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The WTD 868-RU is a wireless receiver interface for wireless serial synchronisation of BU 192 movements. The IF 482 standard telegram is used for synchronisation.

The interface is compatible with Norm NF S87-500 of the Association Française de Normalisation (AFNOR). Included in the norm is the time code format for wireless time distribution. The WTD 868-T (Art. no. 202606) wireless time signal transmitter is suitable for wireless synchronisation.



**Note:** For all instructions related to other wireless time distribution devices in our product range, please refer to the relevant Instruction Manual ([www.mobatime.com](http://www.mobatime.com)).

## 1.2 Product Overview

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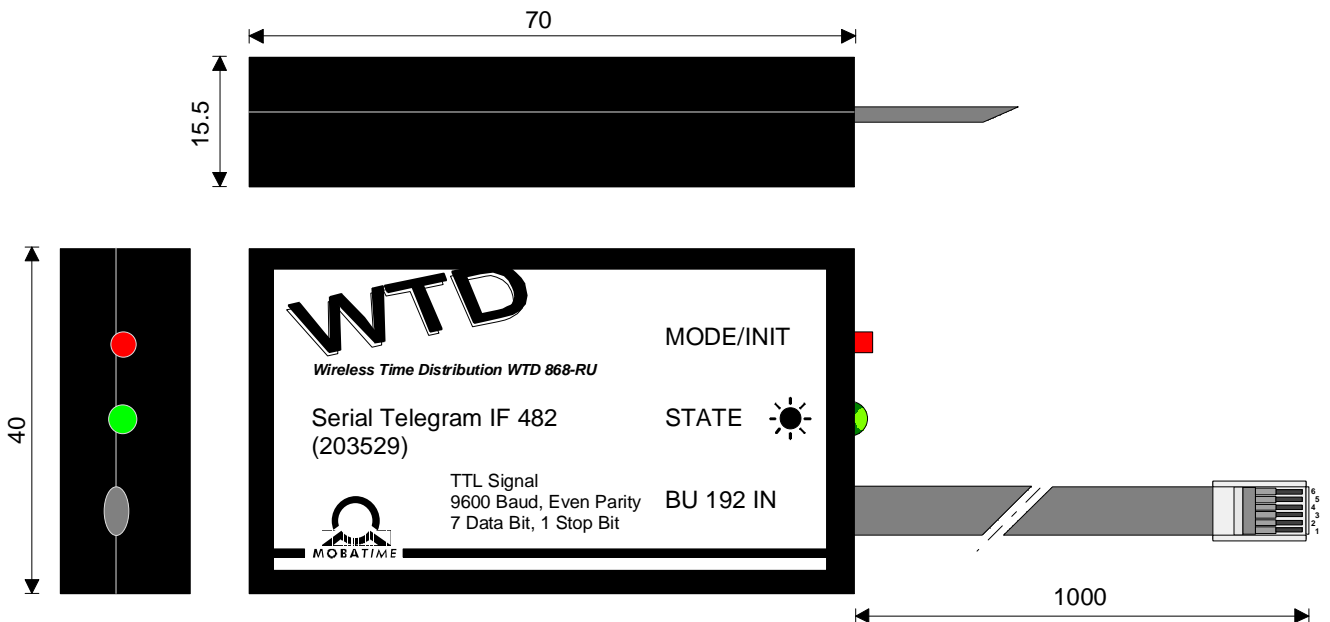
Wireless time distribution product range:

Art. No.	Description	Description
203529	WTD 868-RU	Wireless receiver interface IF 482
203051	WTD 868-RS	Monitor wireless receiver interface
202841	WTD 868-RM	MOBALine wireless receiver interface
202842	WTD 868-RD	DCF wireless receiver interface
202606	WTD 868-T	Wireless time signal transmitter
701182	WTD Repeater	Wireless time signal repeater
701143	WTD 868-T MPS	Mains power unit for WTD 868-T
701263	SEW 00	Movement for hour, minute & second display, battery powered (2xAA/LR6)
701272	SAW 00	Movement for hour & minute display, battery powered (2xAA/LR6)
200203	BU 192	Short axis movement for hour & minute display, battery powered (2xD / LR20). To be used in combination with WTD 868-RU.
200204	BU 192 t	Long axis movement for hour & minute display, battery powered (2xD / LR20). To be used in combination with WTD 868-RU.
250394	Li-Battery	Lithium battery for BU 192(t). 3.6 V / 35 Ah
701264	SEW 00 MPS	Movement for hour, minute & second display, mains powered (100..240 V 50/60 Hz), IMPS 12 included
701372	IMPS 12	Mains power unit for SEW 00 MPS movement (In: 110..240 V 50/60 Hz Out: 12VDC)
701373	IMPS 24	Mains power unit for WTD 868-Rx (In: 110..240 V 50/60 Hz Out: 24VDC)

## 2 Function Description

### 2.1 Dimensions

The WTD 868-RU is installed in black plastic casing measuring 70 x 40 x 15.5 mm. The type label states the type of time code output.



### 2.2 Installation

The interface can be installed directly on to the device to be synchronised using double-sided Velcro (included in delivery), or up to a distance of 1 m from the device.

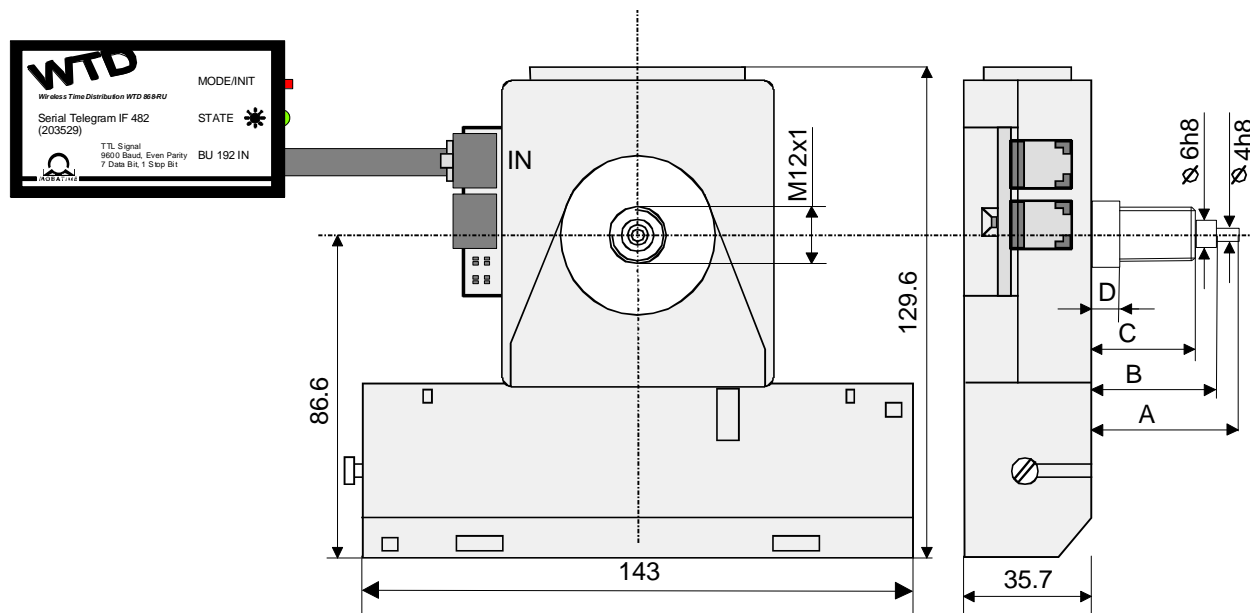
When installing the clock outdoors, please ensure that the receiver interface is placed in a weather-protected position. Where possible use plastic casing and install the interface inside.

When installing, ensure best possible wireless reception. The following factors may be decisive:

- Alignment of the wireless receiver interface (check horizontal / vertical positioning).
- Shielding / interference from the device to be synchronised (ensure adequate distance).
- Excessive damping due to clock casing, walls or metal objects (reposition the device to be synchronised, install the receiver interface outside the casing, increase the transmitter power or use a signal repeater).
- Too great a distance between the wireless transmitter and the wireless receiver interface (increase transmitter power or use a signal repeater).
- Receiver frequency interference by other electric devices and/or equipment that transmit on the same frequency (operate possible sources of interference outside the receiver range. Select a different frequency channel for wireless systems if possible, or switch off the equipment).

## 2.3 Connections

The WTD 868-RU is connected to its power source via a 6-wire cable with an RJ12 plug (6P6C) to the IN socket of the BU 192 movement.



## 2.4 Power Supply

The wireless receiver interface is supplied by the battery operation of the BU 192 movement. The following batteries can be used:

2 x alkaline batteries 1.5 V, type D / LR20

Service life: 2-3 years (only suitable for operation indoors)

1 x lithium battery (recommended) 3.6 V, type SL-790, DD

Service life: 3-5 years

## 2.5 Control and Display Elements

The wireless receiver interface has a button for adjusting and a status LED for displaying the operating mode.



**Note:** In order to reduce power consumption, the BU 192 movement switches on the power of the wireless receiver interface in normal operation only once an hour for around 48 seconds (from second 20 of minute 56). Operation and status display is only possible during this time or during start-up (see Chapter 2.6).

The status display is active for a maximum duration of 1 minute (start-up). The status LED is then switched off. Press the button briefly, if the operating mode is to be displayed for a further minute.

Ascertaining the operating mode using the button:

Button:	Effect:
Press < 5 seconds	Current operating mode is displayed for a maximum of 1 minute on the status LED.
Press > 5 seconds	The wireless receiver interface is changed into the initialisation mode.

Operating modes / Status LED displays

LED:	Cause / Meaning:
Lights permanently	Button is depressed.
Does not light up	LED is switched off automatically after 1 minute. If the LED does not light up when the button is pressed, check the power supply of the wireless receiver interface.
Rapid regular blinking	The wireless receiver interface is waiting to be synchronised by a wireless transmitter.
One blink a second	Time code output is active (transmission of the standard telegram IF 482)



**Note:** The BU 192 movement also has an operating button. This button should not be confused with the operating button of the wireless receiver interface and is usually not required. Please refer to the Instruction Manual of the BU 192 for further information with regard to its use.

## 2.6 Start-up

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When first used the wireless receiver interface opens automatically in the initialisation mode. In this operating mode the interface is only synchronised using a wireless time signal transmitter which is similarly in the initialisation mode. The WTD 868-RU saves the address of the wireless transmitter in the time signal permanently and thereafter synchronises only using signals from the corresponding transmitter address. The interface is, therefore, linked to a specific transmitter address.



**Note:** In order to obtain reliable synchronisation, a transmitter address must be selected from the areas 0 to 9. The address set on the transmitter determines the frequency of the time signal transmission (See Manual WTD 868-T).

Procedure for allocating a new wireless receiver interface to a specific transmitter

- Install the WTD 868-RU (see chapters 2.2 and 2.3)
- Configure the wireless time signal transmitter required for synchronisation and put into operation in the initialisation mode.



**Caution:** In an installation with more than one wireless transmitter within the reception range of the interface, ensure that no other transmitter is in initialisation mode. Otherwise, it cannot be predicted which transmitter the interface will use for synchronisation.

- Insert the battery into the BU 192 movement.

During start-up the movement switches the wireless receiver interface on for as long as it takes to enable synchronisation. During this time, the status display is active and the button can be operated (see chapter 2.5).

In each case the movement runs first to the 12:00 position. If synchronisation was already possible during this time, the movement continues running directly to the time received and carrying out the next point is not necessary.

Otherwise, the clock remains at the 12:00 position and initialisation of the wireless receiver interface is to be carried out according to the following point. Should synchronisation still not occur, under certain circumstances, no reception is possible. (See measures in chapter 2.2).

- The point below is only to be carried out, if the status LED of the WTD 868-RU is still blinking rapidly after briefly pressing the button.

Hold the button of the wireless receiver interface pressed for longer than 5 seconds (the LED goes out shortly after the 5 seconds have expired)

- Wait until synchronisation has been completed (movement switches WTD 868-RU off and runs on the time received).
- After completing the start-up of all WTD 868-RU devices as required, switch off the initialisation mode of the wireless transmitter.



**Note:** Synchronization interval: the movement BU 192 only activates itself once per hour, at minute 56, in order to resynchronize to the sender.



## 2.7 Initialisation

If a wireless receiver interface is to be allocated to a different wireless transmitter at a later point in time, set to the initialisation mode again with the aid of the button. Procedure:

- Switch off all WTD 868-T wireless transmitters or set them to the standby mode.
- In the case of BU 192, interrupt the power supply (remove batteries and then re-insert).
- Keep the button of the wireless receiver interface pressed for longer than 5 seconds (the LED goes out shortly after the 5 seconds have expired).
- Procedure according to chapter 2.6.

## 2.8 Telegram definition

Communication parameters: 9600 baud, 7 data bit, 1 stop bit, even parity  
 Synchronisation: Telegram ending at the beginning of the second designated in the telegram  
 Periodicity: 1 second

Format standard telegram IF 482:

Byte:	Designation:	Sign:	HEX Code:
1	Start sign	O	4F
2	Status A: System synchronised M: System not synchronised / time loss > 12 hr	A / M	41 / 4D
3	Season U: UTC W: Winter time S: Summer time L: Local time (not season related)	U / W / S / L	55 / 57 / 53 / 4C
4	Year tens	0..9	30..39
5	Year units	0..9	30..39
6	Month tens	0 / 1	30 / 31
7	Month units	0..9	30..39
8	Day tens	0..3	30..33
9	Day units	0..9	30..39
10	Weekday (Mon..Sun)	1..7	31..37
11	Hours tens	0..2	30..32
12	Hours units	0..9	30..39
13	Minutes tens	0..5	30..35
14	Minutes units	0..9	30..39
15	Seconds tens	0..5	30..35
16	Seconds units	0..9	30..39
17	End sign	<CR>	0x0D

## 3 Technical data

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### 3.1 Overview

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Wireless receiver module:	Average frequency: 869.525 MHz Bandwidth: 100 kHz Modulation: FSK, +/-25 kHz
Micro controller:	8-bit Single Chip RISC Controller
Time code output:	Standard telegram IF 482 TTL level 9600 baud, 7 data bits, 1 stop bit, even parity
Operating elements:	Initialisation button: Press button <5 sec: Operation mode display (status LED) Press button >5 sec: Interface in initialisation mode
Display elements:	Green status LED: Automatic display of the operating mode for 1 minute after connecting power Permanent illumination: Initialisation button depressed Blinking (5 Hz)      Waiting for synchronisation Blinking (1 Hz)      Time code output active
Power:	3.6 V, <20 mA, from battery BU 192
Antenna:	Integrated antenna $\lambda/4$ : 8.6 cm
Time reception:	Reception active for 48 seconds. Switch on time via BU 192: hourly at minute 56, second 20.
Daylight saving time:	Winter to summer: 02:56:20 Summer to winter: 03:56:20
Accuracy:	Time code output deviation (synchronised) <+/-50 ms
Environmental influences:	0..50 °C, 10-90% relative humidity, non-condensating
Casing:	Back plastic, 70 x 40 x 15.5 mm (l x w x h)
Connections:	RJ12 (6P6C) plug: Pin 1: TXD Pin 2: GND Pin 3: VCC Pin 4: n.c. Pin 5: Power ON (0-aktiv) Pin 6: n.c.





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