

# INSTRUCTION MANUAL

## Wireless Time Distribution Receiver-Interface WTD 868-R



## **Manufacturer's Certificate**

### STANDARDS

The WTD 868-R 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.
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4. Please read these instructions carefully and only use the product when all the instructions on installing and operating have been correctly understood.
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# 1 Introduction

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## 1.1 Description

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The WTD 868-R is a wireless receiver interface for wireless synchronisation of analogue and digital slave clocks.

The following models are available.

**WTD 868-RM** Interface with MOBALine time code output (Art. no. 202841)

**WTD 868-RD:** Interface with DCF time code output (Art. no. 202842)

The interface is wholly compatible with Norm NF S87-500 of the Association française de Normalisation (AFNOR). This norm specifies the time code format for wireless time dissemination among other things. The WTD 868-T (Art. no. 202606) wireless time signal transmitter is suitable for wireless synchronisation.

Designations and names:

WTD (Wireless Time Distribution), 868 (Frequency band [MHz]), R (Receiver), M (MOBALine time code output), D (DCF time code output).

**Note.** Please consult the relevant Operating Instructions where reference is made to other wireless time distribution devices in our product range.

## 1.2 Product Overview

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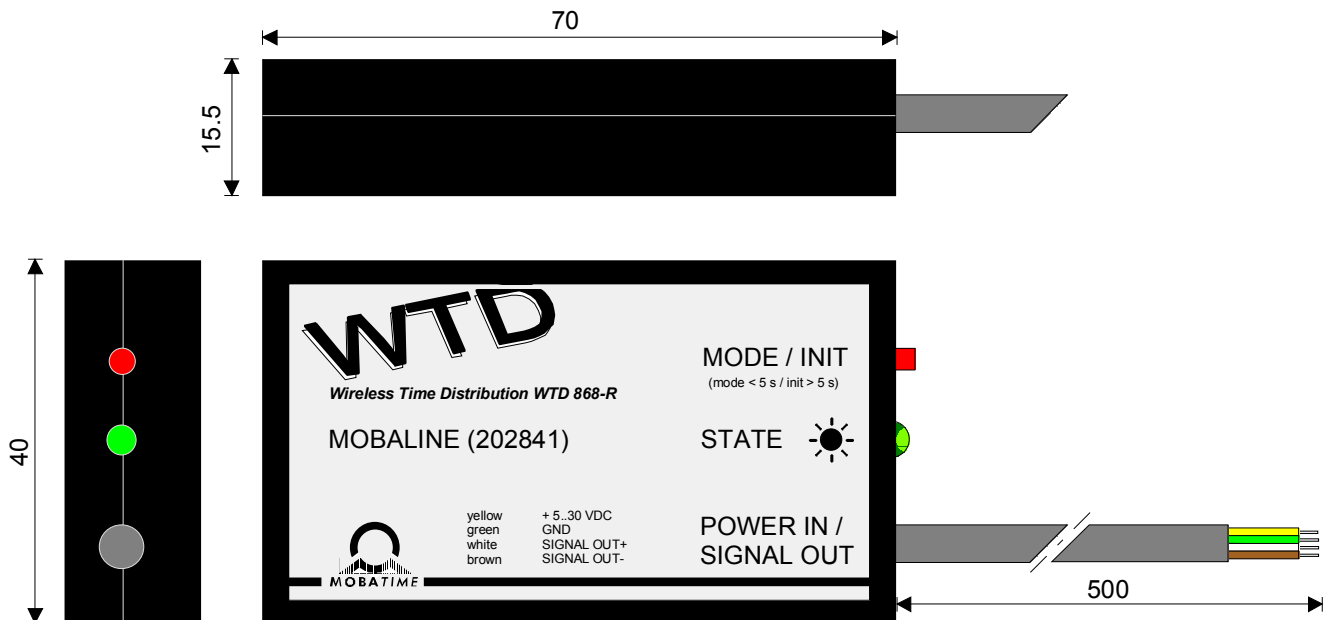
Wire less time distribution product range.

Art. No.	Designation	Description
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	Time signal radio transmitter
701182	WTD Repeater	Time signal radio 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)
701272	SAW 00	Movement for hour & minute display, battery powered (2xAA)
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 (110..240 V 50/60 Hz → 12VDC)
701373	IMPS 24	Mains power unit for WTD 868-RM / -RD (110..240 V 50/60 Hz → 24VDC)

## 2 Function Description

### 2.1 Dimensions / Installation

The WTD 868-R is installed in a black plastic housing 70x40x15.5 mm. The type label states the type of time code output (MOBALine / DCF).



The interface can be installed directly on the device to be synchronised or up to 0.5 m displaced from said device using double-sided Velcro. The cable can be shortened or lengthened (cable 4 x 0.25 mm<sup>2</sup>).

Ensure best possible wireless reception at the installation site. The following factors may be decisive here.

- Alignment of the wireless receiver interface (check horizontal / vertical positioning).
- Shielding / interference from the device to be synchronised (ensure adequate spacing).
- Excessive damping due to walls / metal object (reposition the device to be synchronised, increase transmitter power or use a signal repeater).
- Too great a distance between wireless transmitter and wireless receiver interface (increase transmitter power or use a signal repeater).
- Receiver frequency interference by other electric devices and/or equipment that might interfere (operate same out of receiver range. Use a different frequency channel or switch the equipment t off if using a wireless system).

## 2.2 Connections / Power Supply

The WTD 868-R is connected to its power source via a 4-wire cable (black PVC sheathing, length 0.5 m, wires 4 x 0.25 mm<sup>2</sup>). Terminal assignment is given on the type label of the wireless receiver interface as well (the MOBALine signal output isn't polarity-dependent).

Colour	Connection WTD 868-RM	Connection WTD 868-RD
Yellow	Power +	Power +
Green	Power -	Power -
White	MOBALine output A	DCF Out +
Brown	MOBALine output B	DCF Out -

The wireless receiver interface is to be supplied with power from a DC source (use the DC output of the device to be synchronised if extant).

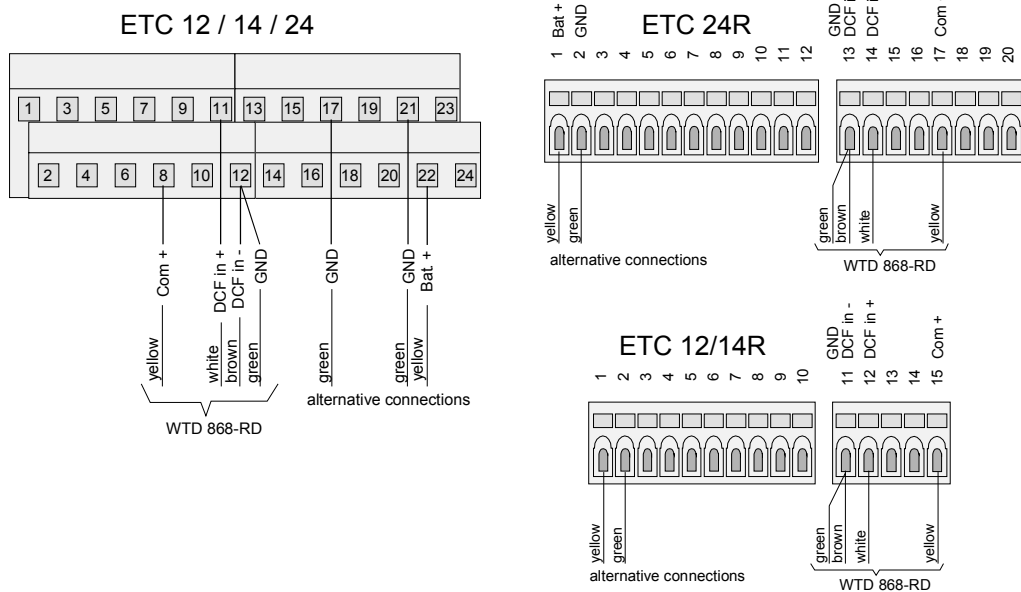
Voltage range +5..30 VDC

Power consumption max. 25 mA

The power supply is galvanically isolated from the time signal output.

### Examples of connection:

#### ETC with WTD 868-RD:

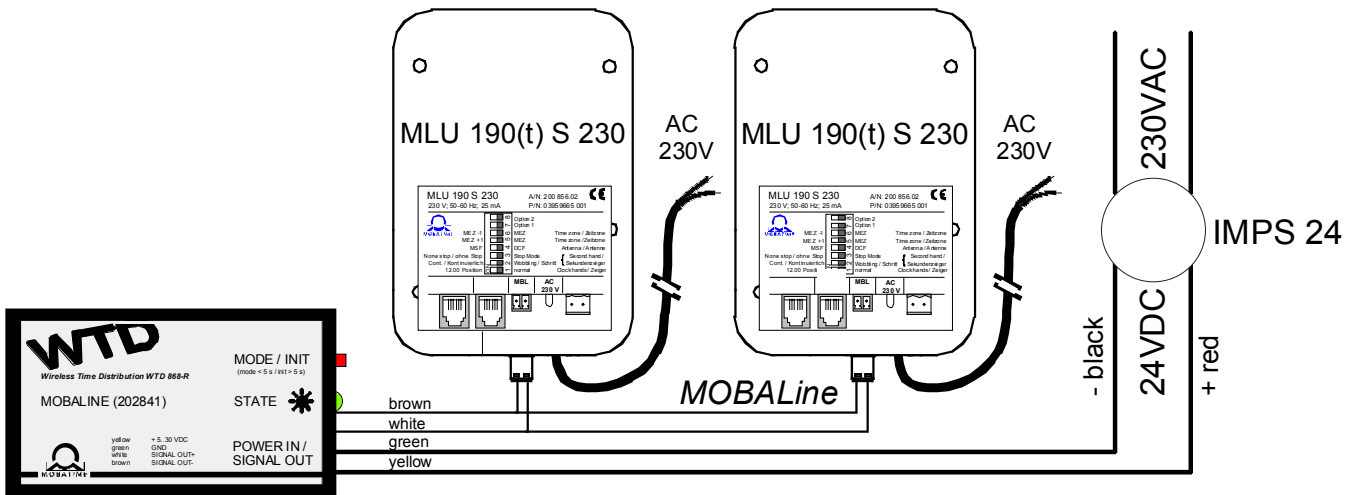


#### DC 57 / 100 / 180, DK 57 Digital clocks with WTD 868-RM:

100-240V~			LINE IN		DC OUT (8-19V)	
⏏	N	L	-(B)	+(A)	-(GND)	+
			brown	white	green	yellow

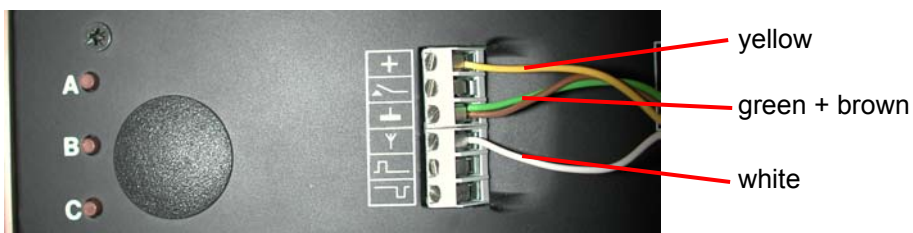
### Clocks with MLU 190(t) (S) (230) movements and WTD 868-RM:

In this situation the WTD 868-RM interface has to be powered with external mains power supply IMPS 24. Only seconds movements with 230 VAC mains power supply (MLU 190(t) S 230) can be synchronized with the WTD 868-RM interface.



### Digital clock series 400A with WTD 868-RD:

- Configure your Digital Clock as desired (for setting up the clock for DCF synchronisation please refer to the additional manual).
- Connect the cable of the radio receiver interface WTD 868-RD to the screw terminals of your Digital Clock as shown below:



Yellow: Power +  
 Green & Brown: Ground  
 White: Antenna Input

- It is important to place the radio receiver interface **WTD 868-RD** on one of the side panels of the digital clock. Do not mount the interface on the rear panel. The metal parts of the clock housing could avoid proper signal reception. For mounting the WTD 868-RD at the desired position use the double sided adhesive tape which is part of the delivery.

## 2.3 Control and Display Elements

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

The status LED shows the operating mode of the wireless receiver interface for 10 minutes after connection the power source. It then goes out so as not to optically intrude. (Should the operating mode be displayed for additional 10 minutes then press the button briefly).

Ascertaining the operating mode using the button.

Button	Effect
Depress < 5 seconds	Current operating mode is displayed by the LED for 10 minutes.
Depress > 5 seconds	The wireless receiver interface toggles to its initialisation mode.

Operating modes / Status LED displays

LED	Cause / Remedy
Lights permanently	Button is depressed. WTD 868-RD - Faulty end device wiring (constant current in the current loop).
Doesn't light up	Normal operation after 10 minutes. Check the power supply if the LED doesn't illuminate when the button's pressed If the operating mode isn't shown after briefly depressing the button: WTD 868-RM - No power - Malfunction / Defect (check wiring) WTD 868-RD - No power - Only blinks if the device to be synchronised is correctly connected (the Current Loop must be live) - Minute change (commencement of the DCF signal output) - Malfunction / Defect (check wiring)
Rapid regular blinking	The wireless receiver interface awaits synchronisation by a wireless transmitter.
WTD 868-RM: Two blinks a second	Time code output active, power supply correct. A MOBALine monitor (IF 484, Art. no. 36452) can be used to check signal output.
WTD 868-RD: One blink a second	Time code output active, power supply and end device wiring correct.



## 2.4 Initialisation / Synchronisation

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When first used the wireless receiver interface automatically opens in initialisation mode. In this mode it synchronises using a random wireless time signal transmitter that is also in initialisation mode. The WTD 868-R saves the address in the time signal permanently and thereafter synchronises using only signals from a transmitter address that tallies with that stored. It can thus be obliged to use a specific transmitter address.

Procedure for allocating a new wireless receiver interface a specific transmitter

- Install the WTD 868-R (see chapters 2.1 and 2.2)
- Set the wireless time signal transmitter into initialisation mode.

**Caution.** Where there is more than one wireless transmitter within reception range of the interface make sure no other transmitter is in initialisation mode. Which transmitter will be used cannot otherwise be predicted.

- Wait for the wireless receiver interface to synchronise (see notes, chapters 2.1 and 2.3).
- Once all WTD 868-R have been commissioned as desired the wireless transmitter must be set to normal operation mode.

If a wireless receiver interface is then later to be assigned a different wireless transmitter this can be done using the button (see chapter 2.3).

### 3 Technical data

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#### 3.1 Overview

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Wireless receiver module:	Average frequency 869.525 MHz Band 100 kHz Modulation: FSK, +/-25 kHz
Micro controller:	8-Bit Single Chip RISC Controller
Time code output:	WTD 868-RM: MOBALine, local time 5 V..30 V / 50 Hz, 20 mA max.  WTD 868-RD: DCF77, local time Passive Current Loop, Optocoupler RPM, max=30 V Ion=10..15 mA, Ioff<2 mA @ 20 V
Control:	Initialisation button  Depress button <5 s: Displays operating mode (status LED) Depress button >5 s: Interface in initialisation mode
Display:	Green status LED  Automatic display of the operating mode for 10 minutes after power comes on  Permanent illumination: Initialisation button depressed Blinking (5 Hz) Awaiting synchronisation Blinking (1 Hz) Time code output active WTD 868-RM double blinking, WTD 868-RD single blinking,
Power:	5 V..30 V, 25 mA, galvanically isolated from the time code output
Antenna:	Integrated antenna $\lambda/4$ : 8.6 cm
Time memory:	Time code output for 1 h without synchronisation
Accuracy:	Time code output deviation (synchronised) <+/-50 ms
Environmental influences:	0..50 °C, 10-90% relative humidity, non-condensating
Housing:	Black plastic, 70 x 40 x 15.5 mm (l x w x h)
Connections:	Black connecting cable, 0.5 m, 4 x 0.25 mm <sup>2</sup> :  Yellow: Power input + Green: Power input - White: Time code output + Brown: Time code output -





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