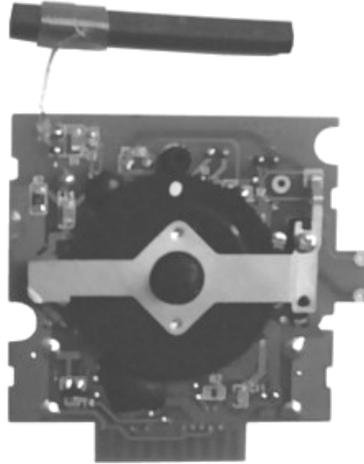| P R O D U C T S P E C I F I C A T I O N 582 731	Dwg.No. **583 372**
	Issue date: 11.02.05

Product

60 kHz
MSF RC-Alarm Movement

Created by:
M. Schneider
Chen Gong

Department:
R&D

Checked:

Department:

U.T.S. *Präzisionstechnik GmbH*

Address:

U.T.S. Präzisionstechnik GmbH
Gewerbestrasse 31
78739 Hardt

Customer:

Standard Product

Checked by customer:

Department:

Description:
Fully automatic RC-movement, which receives and adjusts to the United Kingdom's MSF time code transmitter.
Automatic functions are: Initial setup with receiving and adjusting of hands, checking of internal time during normal run (every 2 hours) and adjust hands position to correct time. Checking of absolute hands position (every day).
Alarm function with mechanical setting of alarm time including Snooze function and light.

List of Changing

Change (short form)		Page	Date	Changed Pages
Description	**Name**			
Initial Version	**Chen Gong**		**11.03.05**	

Contents

1. Introduction

The described movement is a two motors, 4 hands analog RC-movement, designed for use with the United Kingdom's time code transmitter **MSF60** on **60.000** kHz.
Initial setting function and error correction are automatic. The movement
starts automatically after put in the battery, without pressing any knob.
A mechanical alarm function with snooze / light is as well available as a hands setting help function for easy assembly.
If no reception is possible, the movement can also be used like a quartz movement.

Customer: **NN**

Supplier: **U.T.S. Präzisionstechnik GmbH**
                     Abt. Entwicklung
                     Gewerbestrasse. 31
                     78739 Hardt

2. Functions

2.1. Initialisation

After putting in a battery, the hands are driven to one of the positions 4:00, 8:00 or 12:00. Depend on which is the closest to the actual hands position.
After the hands have reached this position the motors will be stopped and the receiver is switched on.
The hands will not move until receiving has success. After the receiving process has finished the hands are driven to show the correct time and the movement starts normal run.
During normal run the movement tries to connect the transmitter every two hours and checks internal time with this information. For increasing the battery life receiving time is limited to 10 minutes.
A correction is done if necessary (when a difference between received time and displayed Time occurs). The correct position of the hands is checked two times per day.

2.2. Hands setting help function

The movement has a hands setting help function. This can be started by shortcutting the two special pins (see drawing) on the backside of the movement. Then gear will be driven straight to the 12 o'clock position. This can be done at any time.
After the motors stopped, set all hands on their shafts exactly adjusted to 12 o'clock.
Then restart the movement (see 2.1).

2.3. Assembly instruction

For delivery the movement is adjusted to the 12.00 o'clock position and locked with a Lock-Pin from the backside of the movement.
Assemble the movement into your clock, with the battery box looking downwards (to 6 o'clock).

- **hands assembly**:
  alarm hand adjust exactly to 12.00 o'
  hour hand adjust exactly to 12.00 o'clock pos.
  min. hand adjust exactly to 12.00 o'clock pos.
  sec. hand adjust exactly to 12.00 o'clock pos.
  Be careful: don't turn the hands after they are pressed on their shafts!!
- Remove the **Lock-pin** on the backside of the movement
- Put in the **battery** (position of battery always horizontally !)
- Use only LR6, **ALKALINE** batteries (size AA). **Check correct polarity!**
  Don't use rercharchable batteries!
- The hands will run to 4.00 o'clock position and stop.
- **Now the movement tries to receive**
  If reception is possible and not disturbed, the movement will show the correct time after about 4 minutes.

2.4. Adjusting of Hands

If the adjusting of the hands was changed after the assembly or the lock pin was already removed before Pt. 2.3 was done, make a shortage (see Pt. 2.2 and Dwg. No. 583 369) to the two pins on the backside of the movement. Then it will run from any position to 12 o'clock. Then go on with Pt. 2.3 for hands assembly.
TIP: This function can also be used for checking the correct position of the hands.

2.5. Checking of hands position in normal run (automatically)

The movement automatically checks it's hands position daily between 15:00 and 16:00. If hands position if not equal with internal time, the hands are first driven (quick run) to one of the initial positions (4:00, 8:00, 12:00) and then adjusted again to correct time.

2.6. Summer-/ winter time change

This is done fully automatic, no assistance of the user necessary

2.7. Alarmfunctions

2.7.1. Alarm On/Off

This function is controlled by the **alarm on**/**off** switch.

2.7.2. Setting of alarm time

This setting is manually by alarm knob from the backside and displayed on the dial by the alarm hand

2.7.3. Alarm

Alarm is active, when the hour hand has reached the position of the alarm hand. In this case also the light is switched on for 5 sec. The alarm has a three step crescendo and is on (if not interrupted) for about 2 minutes.

2.7.4. Snooze

If the Snooze switch is pressed during alarm is on, the sound will stop immediately. Light is on for about 5 seconds. After about 5 minutes the alarm will return automatically and so on, until it's stopped.

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3. Conditions

3.1. General

The movement is built only for indoor usage together with a single 1,5V AA-type alkaline battery.

Working temperature range is –5 to + 55 ℃ with a max. humidity of 95%.

3.2. Technical Data

Technical Data for RC movements MSF 60 kHz	
Receiving frequency	60,000 kHz
Size	see Dig 583 369 (attachment)
Min. space (∅) req. for assembly	80 mm
Weight	56g (without battery)
Battery type	AA / LR6 (Alkaline)
Voltage	1,25 - 1,7 V
Current consumption (average)	180 µA
Battery life	1 year
Working temperature	-5℃ - +55℃
Storage temperature (without function)	-20℃ - +70℃
Receiving time (first receive)	3 min. - ∞
Receiving time (autom. receive)	3 - 10 min
Adjusting time (excl. receive)	Max. 3min 10 sec.
Autom. summer- winter time change	Max. 2min 55 sec.
Noise (normal run, DIN 8325)	32 db(A)
Antenna	internal ferrite bar
Automatic receive	12x / day
max. current	9 mA
Sensitivity (77.5kHz)	<100 µV/m **
Alarm sound volume (2048 Hz)	> 80 dB(A) ***
Snooze time	approx. 5 min
max. time error (quartz, DIN 8325)	± 0,5 s/d
Data- / Clock Output I_{max} for U_H = 0,8 U_{batt}	- 1,2 mA
I_{max} for U_L = 0,2 U_{batt}	2,5 mA

All dates for t = 25℃ and Ubatt = 1.35 V (if not other specified)
** the final sensitivity of the clock depends on the clock case construction, it can only be measured together with the final clock.
*** The max. alarm volume is reached in 3 steps (Crescendo)

3.3. Mechanical Data

Detail		Normal		
max. pressure for setting the hands		25N (h/min) , 10N (sec)		
Max. contact pressure of alarm spring		50 –100 Nm		
Torques:				
Sekond	Ub = 1,35V	50 µNm		
Minute	Ub = 1,35V	300 µNm		
	Dial ∅	Up to 250mm		
		sec	min	hr
Specification of hands acc. to dwg. Nr. **582 418**)	length (max) **[mm]**	90	120	90
	weight (max) **[g]**	1	1	1,5
	excenter (max) **[Ncm]**	0,005	0,03	0,03

3.4. Connection Diagram

BUZZER BELL SNOOZE LAMP ALARM ON/OFF H-TRIGGER FORCED RECEIVE
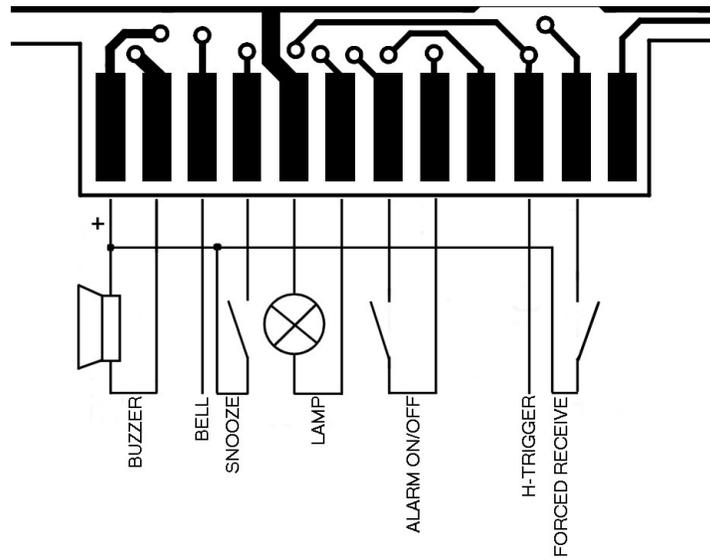
4. Documentation

The documentation for electronic-unit and drawings is setup by *U.T.S.* and contains:

- This product specification

- Drawing *U.T.S.* Dwg.No. 583 369

5. Using periode
No time fixed

6. Marking
No marking fixed

MSF Alarm_movement+Specification.doc

7. Service

7.1. Frequently asked questions and their answers

No	Question / Problem	Answer / Help
1	This movement cannot receive, but other movements have reception inside same room	- check battery (voltage, + -) - is there any influence (distance >1m) of TV-sets, monitors, telephone-sets a. so.? Stop this or enlarge the distance and restart the movement. - check all connections (acc. diagram) - clock housing must not be full metal and closed! Hint: The more metal the worse the reception!
2	Movement runs permanently, do not stop (more than 4min)	- check battery (voltage, + -) - use hands setting function (see 2.2) , the movement should now run to 12:00 position. If not, please send it back to your dealer.
3	Movement stops on 4:00, 8:00 or 12:00 for ever (> 10min)	- see No. 1 - movement was accidentally set to quartz mode, please restart. - hands setting help function is still active, remove the bridge and restart (see 2.2)
4	Movement receives, but shows wrong time	- short cut the hands setting pins, check the12:00 – position, adjust hands if necessary. Warning!! Don't turn hands on their axles, remove and set them new. - if time difference is exactly 4h, check the battery
5	Battery was removed and put in again, but the movement does not restart.	- after remove the battery please wait about 1min. or short cut the battery connector. Then put in the battery again. - check the lock-pin, is it really removed?
6	How to set the hands exact after remove.	- see Pt. „2.3 Assembly instruction" in this document
7	No or incorrect Summer-Wintertime change	- see Pt.1 of this page. - check reception (forced receive)
8	Battery-type	the use of **Alkaline** batteries is recommended for proper function

8. Attachments

- Attachment 1   Drawing *U.T.S.* Dwg.No. 583 369