

# *Multifunction Analyzer*

## **Tutorial for DSO**

## Contents

- 01. Introduction
- 02. Equipments
- 03. Starting Up
- 04. Connections
- 05. Start the Setup Dialog
- 06. Starting the Waveform Observation
- 07. Setting the Trigger Level
- 08. Setting the Vertical Range
- 09. Setting the Horizontal Range
- 10. Adjusting the DSO Probe
- 11. Setting the Post Trigger
- 12. Starting the Setup Dialog
- 13. Setting the Trigger Mode
- 14. Setting the Trigger Source
- 15. Setting the Trigger Edge
- 16. Stopping the Waveform Observation



## 01. Introduction

This document describes the flow of how to operate the **Digital Storage Oscilloscope function** [the abbreviated title is **DSO**] that is implemented in the **Multifunction Analyzer** [the abbreviated title is **MFA**].

If you have any words you don't know, such as name, please refer to the **Hardware Users Manual** for the **MFA** and the **Help** for the **MFA application**.



### Functions

Oscilloscope

Logic analyzer

Pattern generator

Function generator

Digital multi meter

Simple DC supply

JTAG checker

## 02. Equipments

Please prepare the following equipments.

- **MFA** [Qty:1]
- **USB cable of type mini B** [Qty:1] [Sold separately]
- **AC adapter and AC cable** [Qty:1]
- **DSO probe** [Qty:1]  
[Sold separately: CS2891 [HP-9250 Maker: Misumi]
- **PC** [with the **MFA application**] [Qty:1]

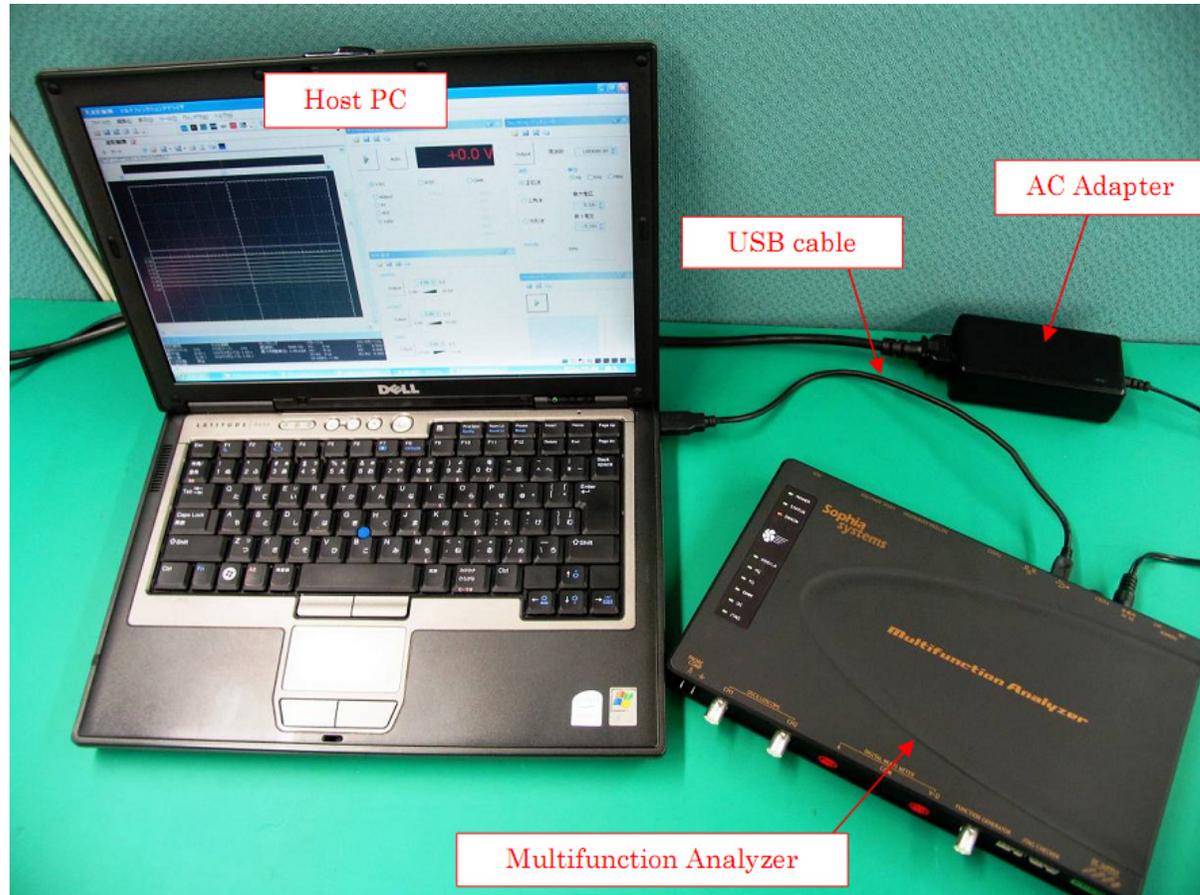
\*Please refer to the **Installation Manual** for how to install of the **MFA application**.



## 03. Starting Up

Connect the **Host PC** and the **MFA's equipments**.

Then, turn on power to the **MFA** and start the **MFA application**.



\* For details about how to connect the **Host PC**, the **MFA's equipments** and about how to start the **MFA**, please refer to the **Hardware Users Manual**.

\* For details about how to start the **MFA application**, please refer to the **Help**.

## 04. Connections

In this section, describes connections for performing **DSO measurement**.

1. Set the **DSO probe** to **x10** .



2. Connect the **DSO probe** to the **DSO CH1** connector.
3. Connect the **DSO probe GND** to the **MFA PROBE GND** connector.
4. Connect the **DSO probe Signal** to the **MFA PROBE COMP** connector.





## 06. Starting the Waveform Observation

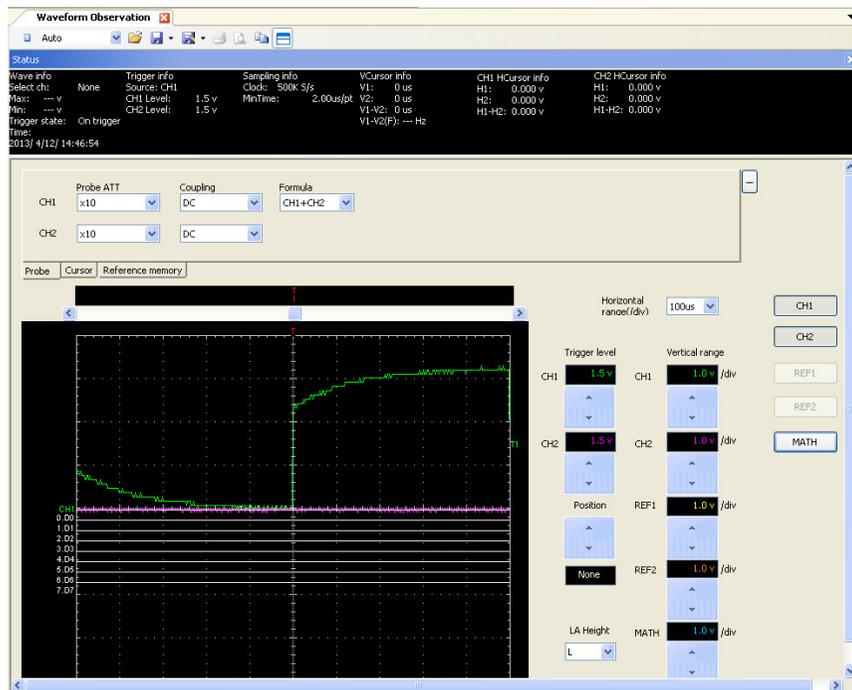
In this section, using the **DSO CH1**, make the **observation** of the **output waveform** from the **Probe Comp** .

1. Click the **Waveform Observation Start Button** [It is also possible by pressing the **PLAY** button of **MFA**].



Click the **Waveform Observation Start Button**

2. The waveform will be observable in the **DSO CH1**.



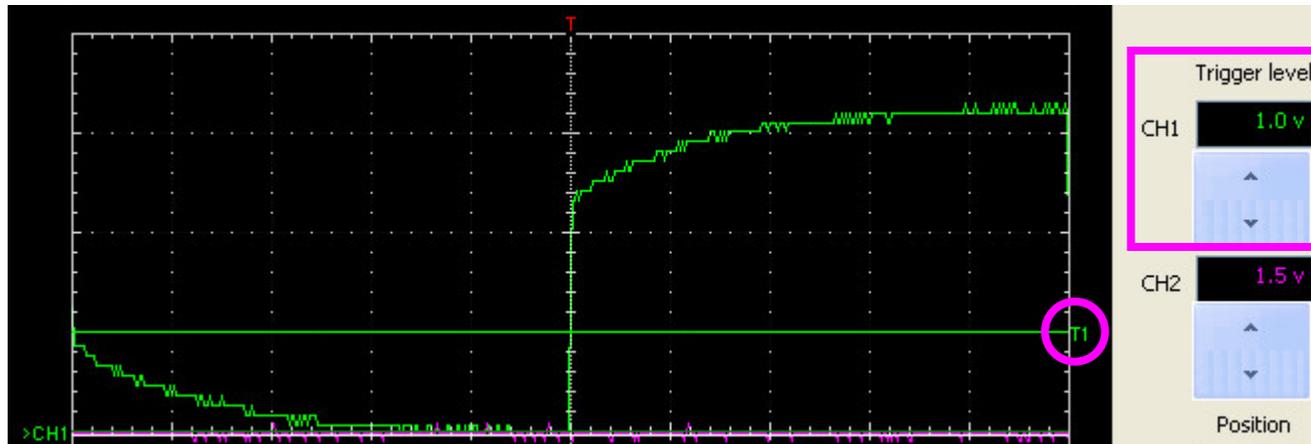
\*When it seems the **waveform** is distorted, refer to the section of “**Adjusting DSO Probe**”, and adjust the **DSO probe**.

## 07. Setting the Trigger Level

In this section, describes how to set the **trigger level**.

1. Set **1.0v** in the **up/down button** of the **trigger level CH1**.
2. Move to the position of **1.0V** shown in the figure below by **Drag and Drop** or the **up/down button**.

Moving the Trigger Level [T1 mark] Position

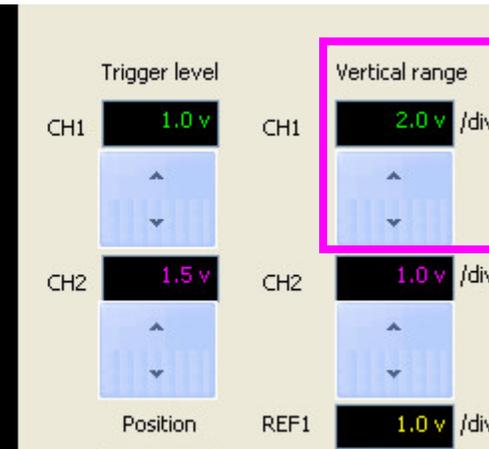
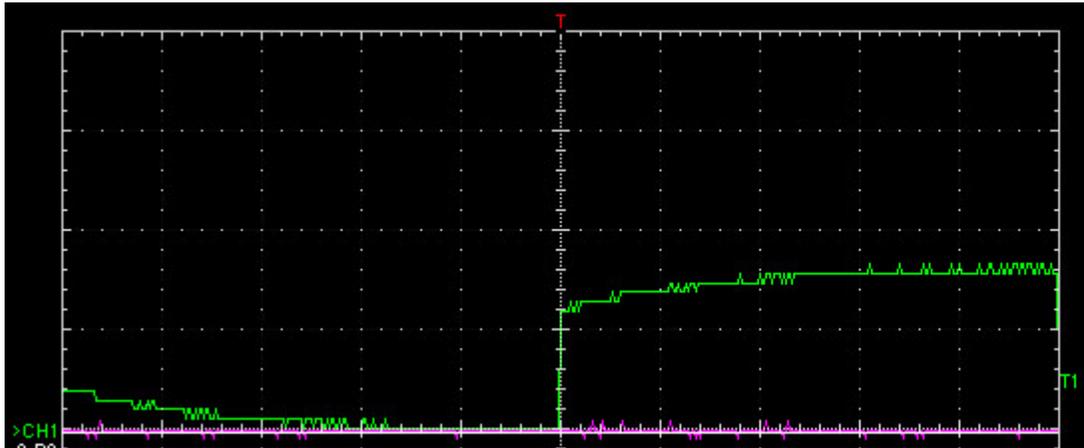


## 08. Setting the Vertical Range

In this section, describes how to set the **vertical range**.

1. Set **2.0v** in the **up/down button** of the **vertical range CH1**.
2. Then, Set **1.0v**.

Setting the Vertical Range [2.0V/div]

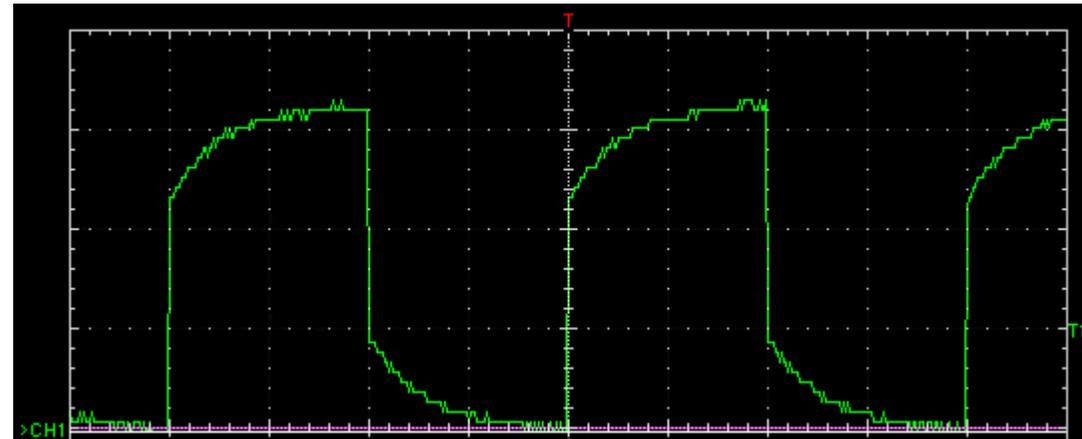
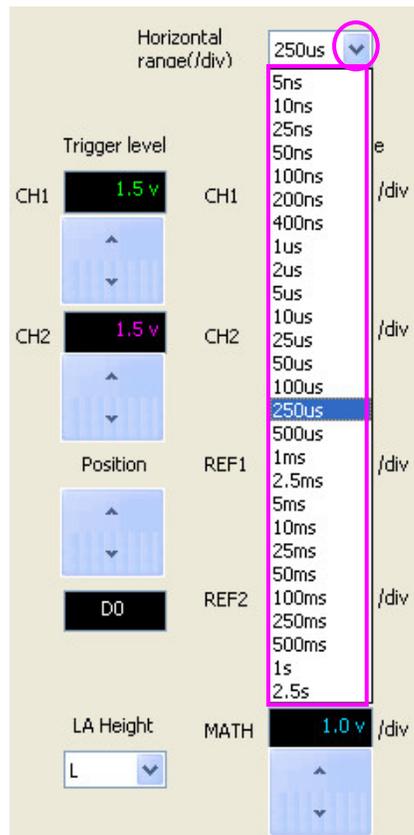


## 09. Setting the Horizontal Range

In this section, describes how to set the **horizontal range**.

1. Select **250us** in the **drop down list** of the **horizontal range**.
2. The **Waveform of 1kHz** will be observable in the **DSO CH1**.

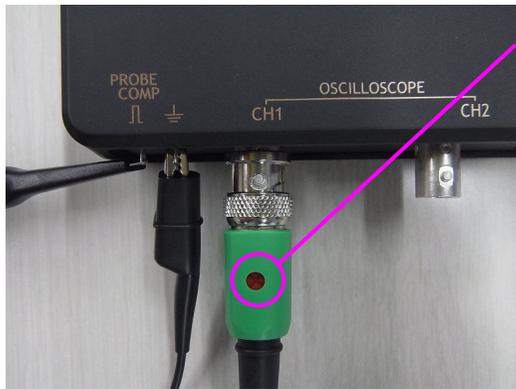
Select the Horizontal Range [250us/div]    Waveform [1kHz]



## 10. Adjusting the DSO Probe

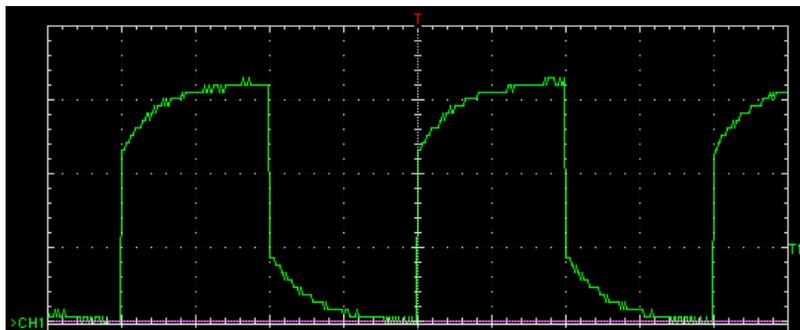
In this section, describes how to adjust the **DSO probe**. When seems that **waveform** is distorted, do it.

1. Adjust the **trimmer capacitor** of the **DSO probe**, to be changed to the **square wave**.

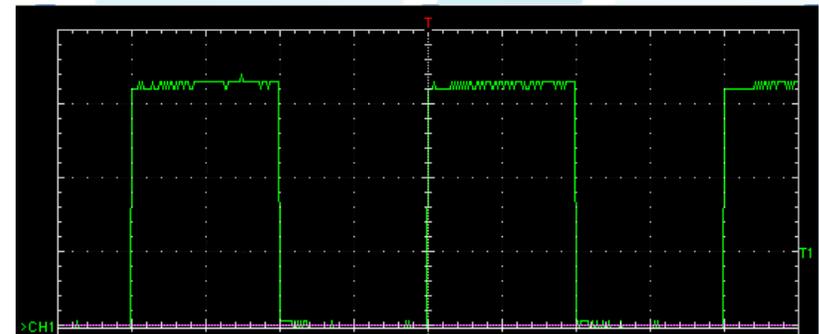


The adjustment screw of the trimmer capacitor

2. By performing the adjustment, change to a **square wave**.



Waveform before adjustment



Waveform after adjustment

## 11. Setting the Post Trigger

In this section, describes how to set the **post trigger**.

Move to the **position** shown in the figure below by **Drag and Drop**.

In this case, it is possible to get more **data** after the **trigger** is hit.

Moving Post Trigger Position [T mark]

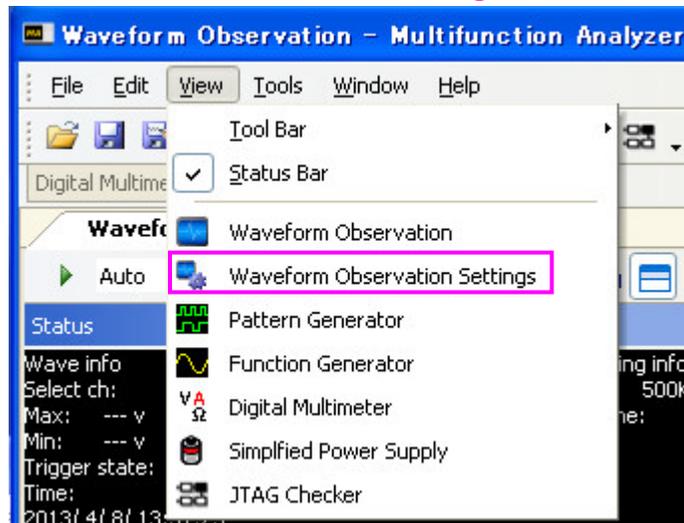


## 12. Start the Setup Dialog

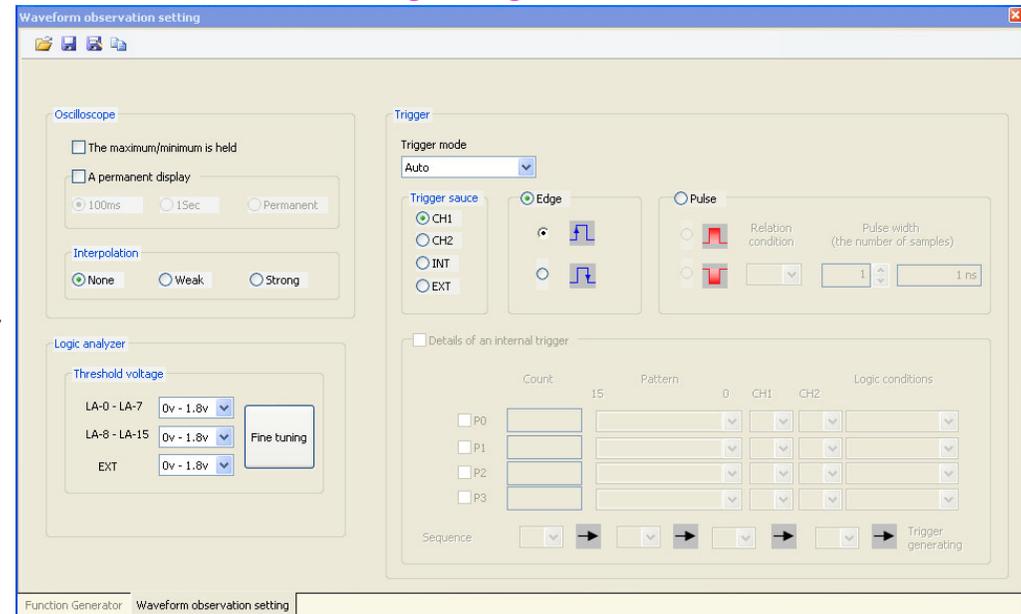
In this section, describes how to start the **Waveform Observation Settings dialog** of the **MFA application**.

Click **Waveform Observation Settings**.

Click **Waveform Observation Settings**



**Waveform Observation Settings dialog**



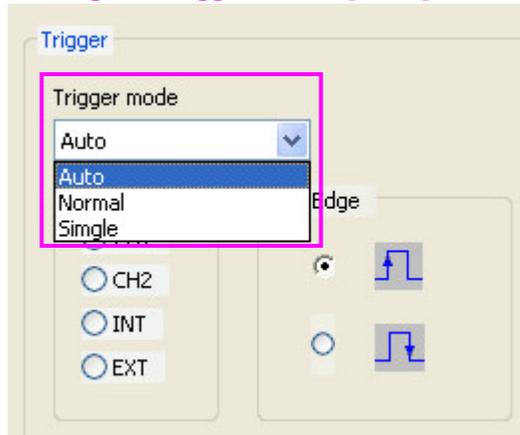
## 13. Setting the Trigger Mode

In this section, describes how to set the **Trigger Mode**.

The **Trigger Mode** can be selected from three types of the **Auto**, **Normal**, and **Single**.

Select the **Auto** in drop down list of the **Trigger Mode**.

Setting the Trigger Mode [Auto]



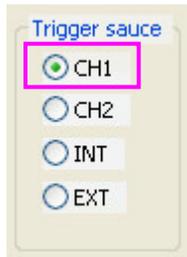
## 14. Setting the Trigger Source

In this section, describes how to set the **Trigger source**.

The **Trigger source** can be selected from four types of **CH1**, **CH2**, **INT**, and **EXT**.

Select the **CH1** in the **Trigger source**.

### Setting the Trigger Source [CH1]



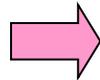
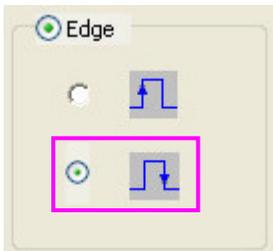
## 15. Setting the Trigger Edge

In this section, describes how to set the **trigger edge**. Then, check the **waveform**.

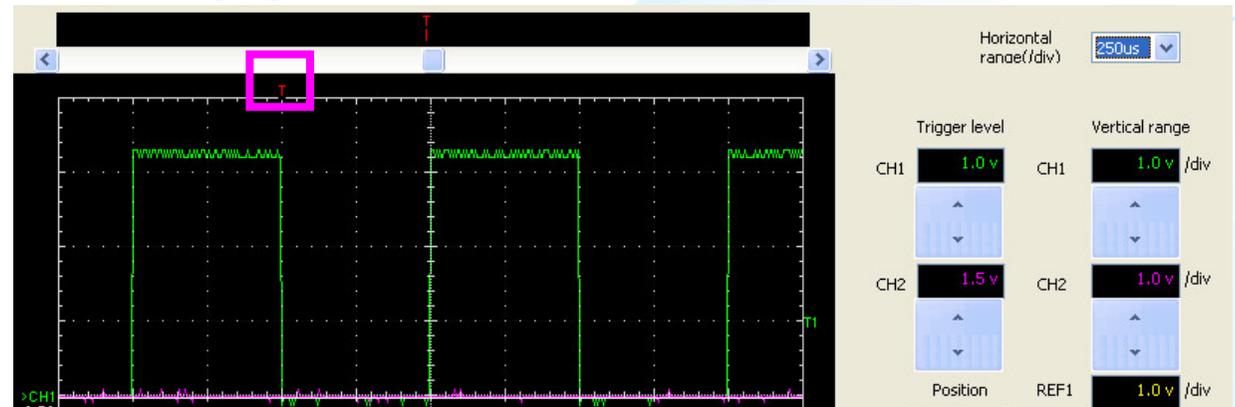
The **trigger edge** can be selected from the **rise or fall**.

1. Select the **fall edge**.
2. Check that there is the falling edge of waveform in the same position as the trigger mark.

Setting the edge [fall]



Check the falling edge of the waveform



## 16. Stopping the Waveform Observation

Finally, stop the **Waveform Observation** [the use, for example, to check the waveform].

Click the **Waveform Observation Stop Button** [It is also possible by pressing **the PLAY button** of **MFA**].



Click the **Waveform Observation Stop Button**



This tutorial is completed.