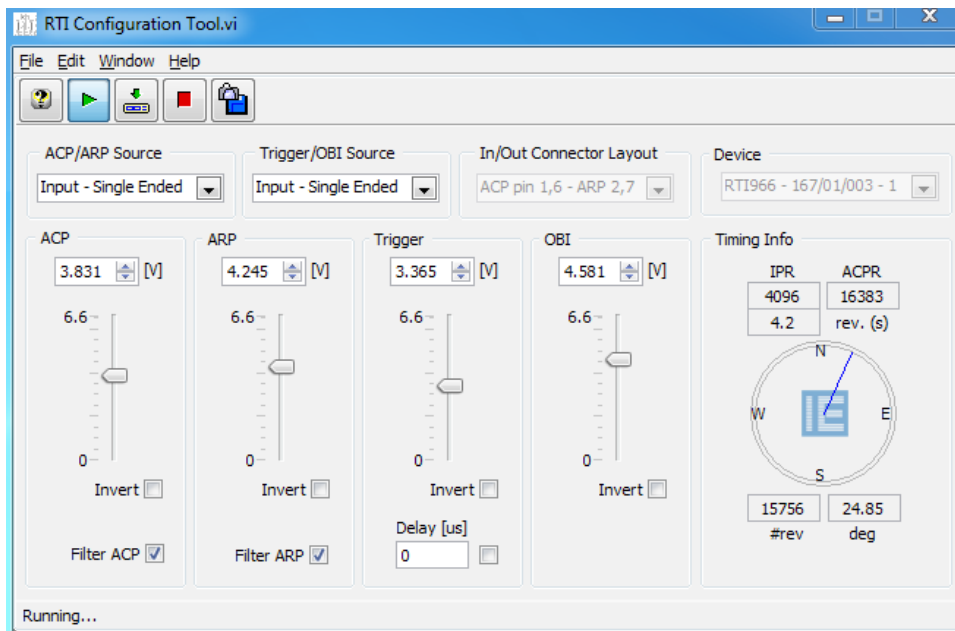


RTI966 Configuration Tool Manual

Use of RTI966 for Interfacing radar signals



Edition: 005
Date: 08-Dec-14
Status: Released Issue

DOCUMENT CHARACTERISTICS

General	
RTI966 Configuration Tool Manual Use of RTI966 for Interfacing radar signals	
Edition:	005
Edition Date:	08-December-2014
Status:	Released Issue
Keywords:	User manual, RTI966, Timing signals
Abstract:	This user manual describes the use of the RTI966 Configuration Tool to setup the RTI966 for interfacing radar signals to RASS-M equipment for various measurements.

Contact Information	
Author:	Elke Vanuytven
Editor:	Elke Vanuytven
Contact Person:	Niels Van Hoef
Tel:	+32 14 23 18 11
E-mail Address:	support@intersoft-electronics.com

Document Control Information	
Document Name:	IE-UM-00667-005 RTI966 Configuration Tool Manual.odt
Path:	C:\Documents and Settings\elke\Desktop\RASS-M\UserManuals\RTI966\
Host System:	Windows 7 Service Pack1
Software:	OpenOffice.org 3.4.1
Size:	6.63 MB



DOCUMENT CHANGE RECORD

Revision	Date	Reasons for change	Pages Affected	Approved by
001	11/03/14	New RTI966 manual for RTI966 Configuration Tool	All	PL
002	10/04/14	Changes after revision	All	EV
003	12/05/14	Changes after 2 nd revision	5,8	EV
004	20/08/14	Adding LED indicators	5	EV
005	08/12/14	Changes after revision	All	EV



TABLE OF CONTENTS

1. INTRODUCTION.....	5
2. RADAR TIMING INTERFACE RTI966.....	5
2.1. Theory.....	5
2.2. Using the RTI Configuration Tool.....	6

TABLE OF FIGURES

<i>Figure 1: RTI Front panel, LED indicators.....</i>	<i>5</i>
<i>Figure 2: RTI Configuration Tool on startup.....</i>	<i>6</i>
<i>Figure 3: RTI Configuration Tool when started.....</i>	<i>7</i>
<i>Figure 4: RTI Configuration Tool when In/Out-Differential is selected.....</i>	<i>8</i>
<i>Figure 5: RTI Configuration Tool when Timing signals are connected.....</i>	<i>9</i>
<i>Figure 6: Signal parameters.....</i>	<i>9</i>
<i>Figure 7: Timing Info.....</i>	<i>10</i>



1. INTRODUCTION

The Radar Timing Interface RTI966 enables the user to connect the RASS-M equipment to the encoder and timing signals of most SSR and PSR systems. It provides both single ended and differential I/O capabilities.

2. RADAR TIMING INTERFACE RTI966

2.1. Theory

The RTI966 provides the interface between the RASS measurement equipment and the radar under test.

Typically the radar timing signals are connected to one of the connectors on the front panel of the RTI966, while the RASS-M equipment is connected to the **RASS Bus** connector on the back panel.

The LEDs on the frontpanel are indicators for the following signals: Trigger, ACP, ARP and Power.

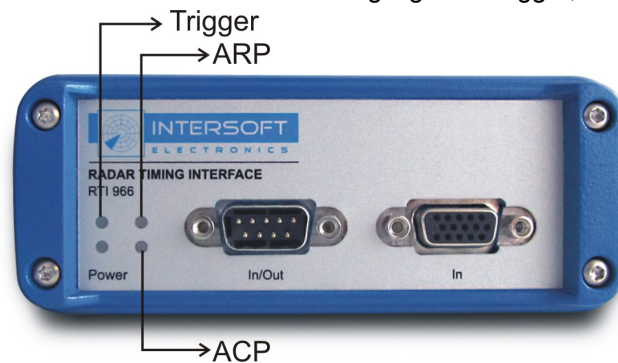


Figure 1: RTI Front panel, LED indicators

The RTI966 front panel provides a 15-pin high density connector labeled **In**, intended to be used with a standard VGA cable as is used throughout the RASS-M equipment for the connection of single-ended timing signals.

The signals connected through this connector are software controlled, the voltage is settable within a range of 0V ... 6.6V.

The front panel also provides a DB9 connector labeled **In/Out** that can be used to connect the digital input signals using RS422 differential inputs.

The connector to be used as input source is software selectable.

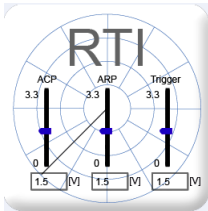
The device configuration can be stored in non-volatile memory to retain the device settings after power loss. This way it is not necessary to configure the RTI966 each time it is powered down.

Don't connect any timing signals to the RTI966 at this moment. Depending on the RTI966 configuration the differential connector and the RB Back Panel connectors can be outputs or inputs. Therefore it is important to know how the device is configured before connecting the timing signals. For now only the RB power supply should be connected to the RTI966 and the RTI966 should be connected to the workstation using the USB cable.



2.2. Using the RTI Configuration Tool

The *RTI Configuration Tool* software can be started from the RASS-M Toolbox or the Windows Start menu.



RTI Configuration Tool button

Step 1: Select the device

When the *RTI Configuration Tool* is launched it will check for RTI966 devices connected and update the **Device** selector with a list (by serial number) of the RTI966s available for configuration. The status bar will indicate that an RTI966 is detected or not.

At this moment all controls that can be used to change the RTI966 configuration are disabled.

Use the **Device** control to select the RTI you want to configure.

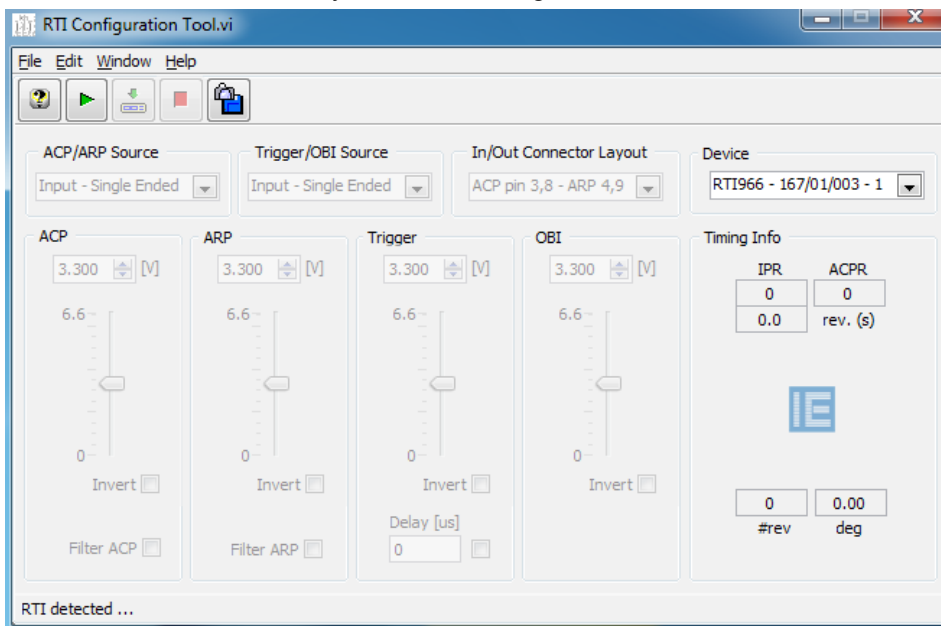


Figure 2: *RTI Configuration Tool* on startup

Step 2: Enable the selected device



Click **Run** to start using the selected RTI966. The tool will now read the configuration of the selected RTI966 and update the controls accordingly. All controls are now enabled to allow you to change the configuration as required.



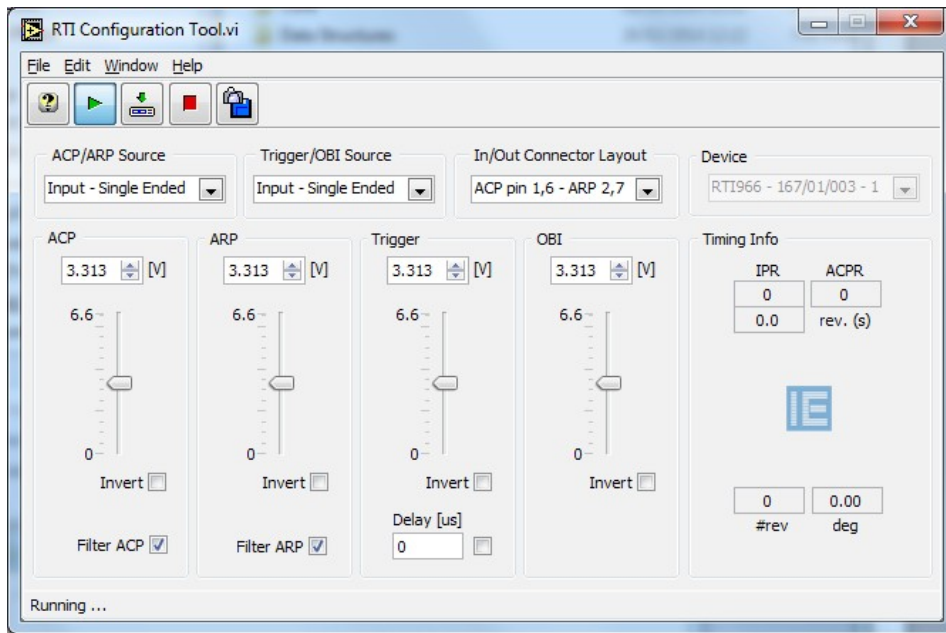


Figure 3: RTI Configuration Tool when started

Step 3: Select the input connector



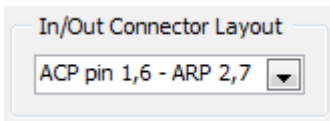
Use the **ACP/ARP Source** button and the **Trigger/OBI Source** button to select the input connector to be used to connect to the radar timing signals.

There are three possibilities:

- **Input – Single-ended**
Use this to connect a single-ended signal to the RTI966 using a standard VGA cable. The input threshold level can be set from 0V up to 6.6V.
- **In/out – Differential**
Select this in case you have differential signals available. The differential input **In/Out** provides RS422 inputs. The DB9 allows you to connect up to 4 differential pairs. ACP/ARP and Trigger/OBI can be switched independently.
- **RB (Back panel) – TTL**
The RASS Bus connectors are normally output. Only in specific RASS-S setups it will be used as input. In that case the corresponding differential signals will be switched to output.



Step 4: Set the Differential Parameters



In case **In/Out - Differential** is selected it is possible to choose between two cable layouts. The selector indicates the input pins used for the signals available. When the **In/Out - Differential** is selected, the ACP and ARP sliders will be dimmed.

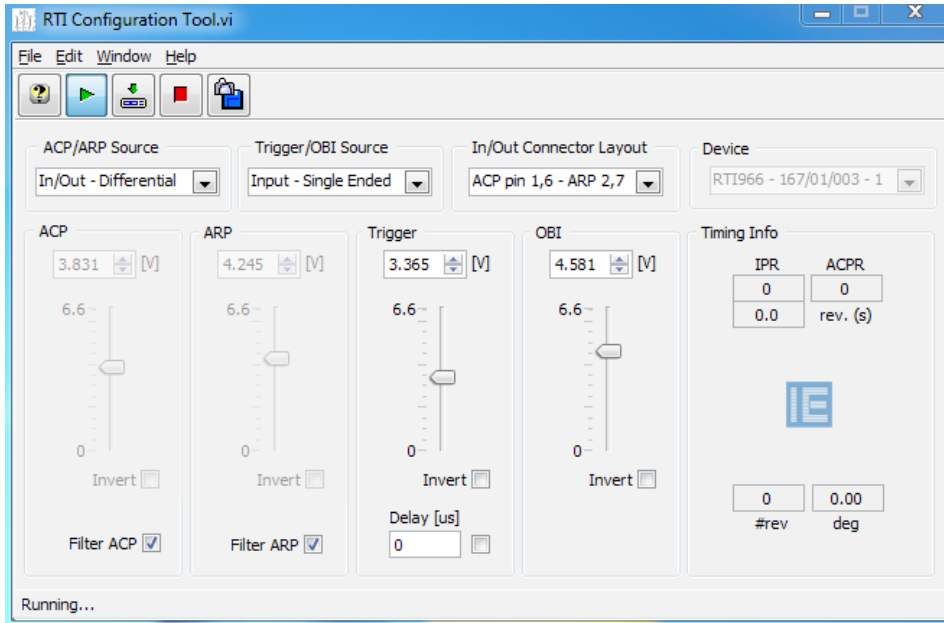


Figure 4: RTI Configuration Tool when In/Out-Differential is selected

Step 5: Connect the radar signals to the RTI966

Once the input connectors and the differential layout is chosen you can connect the radar timing signals to the RTI966 with the appropriate cables.



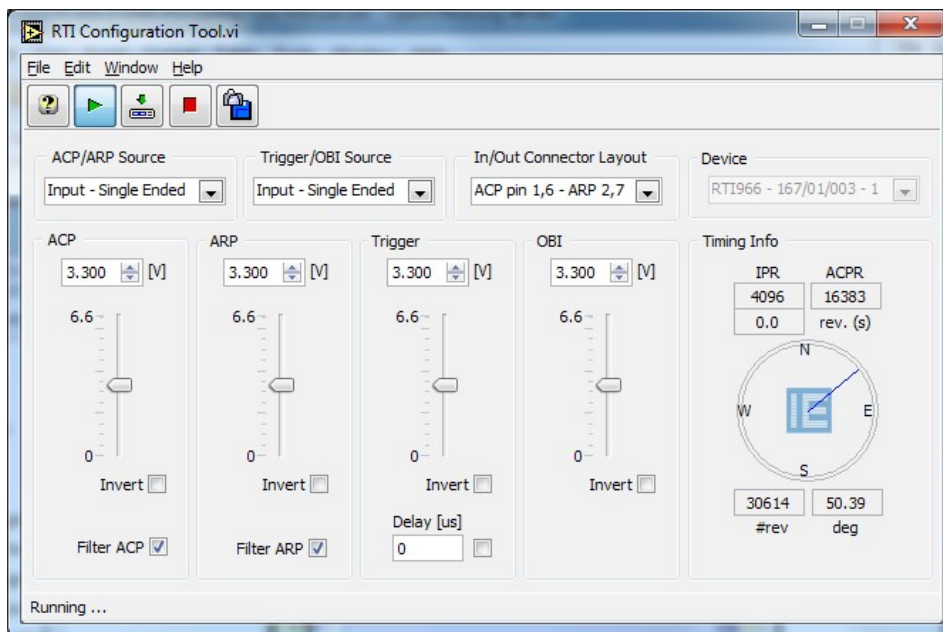


Figure 5: RTI Configuration Tool when Timing signals are connected

Step 6: Set the signal parameters

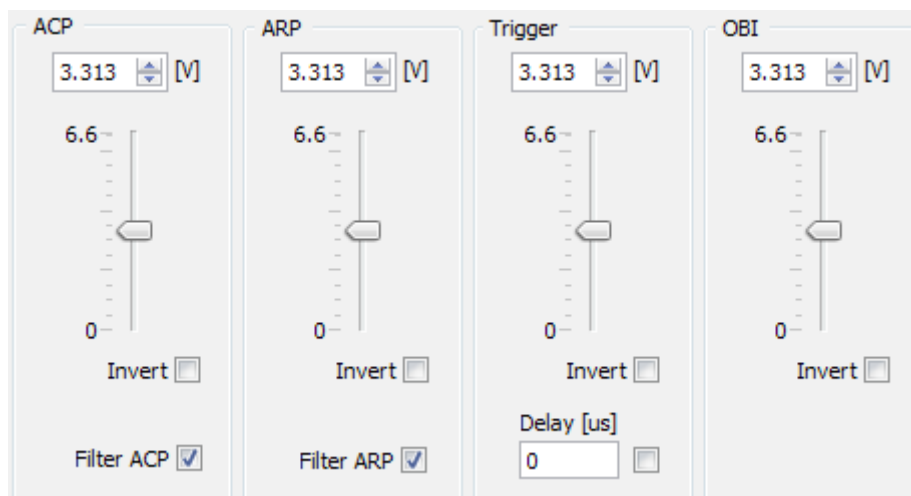


Figure 6: Signal parameters

For each of the signals the threshold level can be set (in case In/Out-Differential is selected, the threshold level for ACP and ARP cannot be set, the sliders will be dimmed as shown in Figure 4). In case of an inverted input signal it is possible to invert the logical level to use the signal for timing.

- **Threshold**
Sets the threshold for the single-ended input signals.
- **Invert**
Inverts the logical level of the input signal. Please note this is also applied to the differential inputs.
- **Filter ACP**
This filters the ACP pulses and introduces a delay of 8 μ s.



- **Filter ARP**
This filters the ARP pulses and introduces a delay of 8 μ s.
- **Trigger Delay**
In case only a pre-trigger is available an extra delay of up to 512 μ s can be inserted. You can switch it on or off using the check box.

Now verify normal operation of the RTI966 by checking the **Timing Info** and change the settings if necessary:

- **ACPR** should correspond to the number of ACPs per revolution according to the resolution of the encoder.
- **IPR** indicates the number of interrogations per revolution.

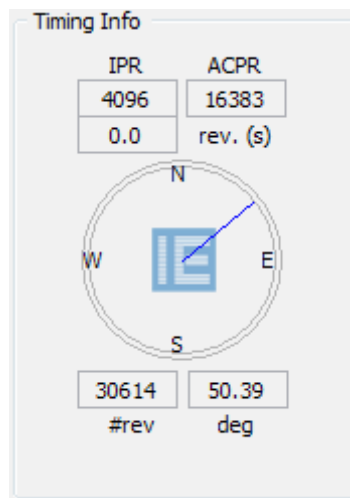


Figure 7: Timing Info

Step 7: Save the configuration



Click the **Download** button to store the configuration into the device's non-volatile memory. This will allow you to disconnect and power off the device while the settings are retained. This has the advantage that it is not necessary to connect the RTI966 to a computer each time you want to use it.

Step 8: Disconnect the RTI966



When the device is configured as required, you can click the **Stop** button to disconnect the **RTI Configuration Tool** from the device.

All configuration controls are now disabled and it is again possible to select another RTI966 using the **Device** control.



Please note that it is in all cases possible to use the **Save to JPG** button to save the front panel contents to a JPEG file. This can be handy to remember the last settings used.

