



1PPS Pulse Width for GSC3-based products

**Notes about the 1PPS pulse width
and a method to enlarge it**

Application Note

Version 1.2

Revision History

Rev.	Date	Description
1.0	01-24-08	Initial draft
1.1	09-18-08	New style; moved to Vincotech
1.2	07-09-09	General GSC3 document
	mm-dd-yy	

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Table of Contents

1 Introduction	5
2 The electrical characteristics of the 1PPS pulse.....	5
3 Extending the Pulse Width.....	5
4 References.....	6
5 Related Information	7
5.1 Contact.....	7
5.2 Related Documents.....	7

1 Introduction

This document briefly describes the electrical characteristics of the 1PPS output signal of Vincotech's GSC3-based products and a simple way to extend the pulse width.

2 The electrical characteristics of the 1PPS pulse

Compared to other GPS modules (e.g. based on SiRFstar II or STM chipsets) the 1PPS output signal of the SiRFstar III (GSC3)-based receivers feature a very short pulse width. Figure 2-1 shows typical 1PPS pulse measured with a digital oscilloscope (Agilent 54615B).

The rising edge of the pulse indicates the start of a new UTC second. The high level of the output is approximately 2.5 volt and the pulse width is in the range of $1\mu\text{s}$.

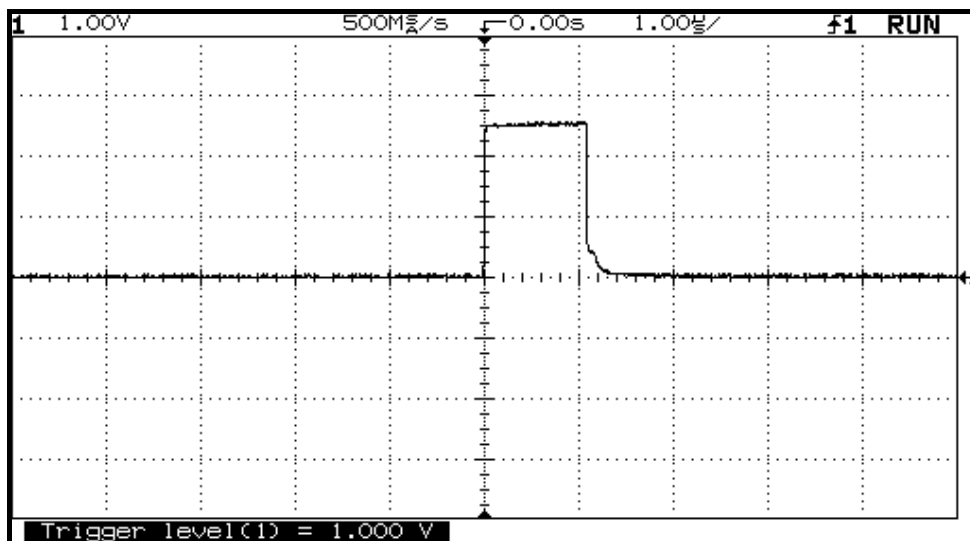


Fig. 1: 1PPS Pulse

3 Extending the Pulse Width

For some applications the original pulse width of $1\mu\text{s}$ might be too short to be used properly. In such cases a small extension according to figure 2 can be used to prolong the on-time of the pulse.

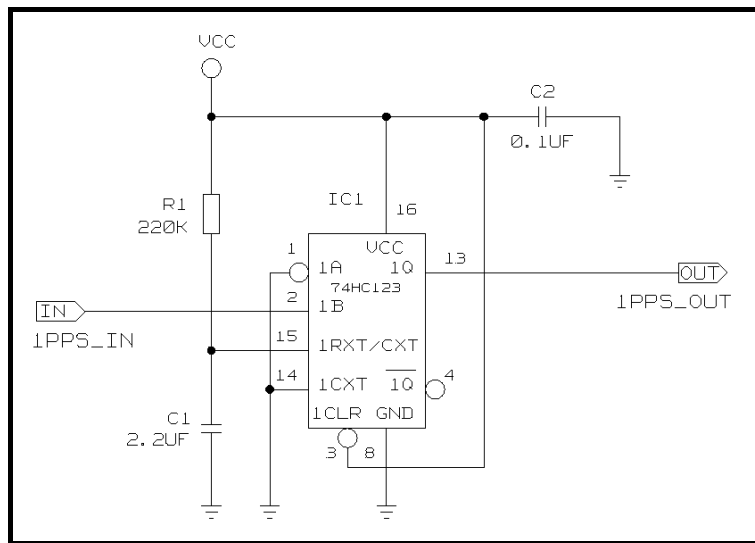


Fig. 2: Extending the pulse width

The circuit is based on a retriggerable monostable multivibrator IC and some passive components to set the timing constant. In the proposed example a 74HC123 is used. This device is available in different package options from various suppliers (e.g. [2], [3], [4], [5]). The actual pulse width is determined mainly by R1 and C1. With the component values specified in figure 2 an on-time of approximately 250 ms is achieved. Please consult the datasheet of the actual IC chosen for a more precise calculation of the timing. Furthermore make sure to terminate all dangling open inputs of the IC properly if the device contains more than the one multivibrator section needed.

4 References

- [1] Vincotech: GPS Receivers A1080, A1035-D, A1084, A1035-H, A1088
- [2] NXP Semiconductor (<http://www.nxp.com/>): 74HC123 Datasheet
- [3] Fairchild Semiconductor (<http://www.fairchildsemi.com/>): MM74HC123A Datasheet
- [4] Texas Instruments (<http://www.ti.com/>): CD74HC123 Datasheet
- [5] ST Microelectronics (<http://www.st.com/>): M74HC123 Datasheet

5 Related Information

5.1 Contact

This manual was created with due diligence. We hope that it will be helpful to the user to get the most out of the GPS module.

Any inputs regarding possible errors or mistakable verbalizations, and comments or proposals for further improvements to this document, made to Vincotech, Germany, are highly appreciated.

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5.2 Related Documents

- GPS Receiver A1080 (Vincotech)
- GPS Receiver A1035-D (Vincotech)
- GPS Receiver A1084 (Vincotech)
- GPS Receiver A1035-H (Vincotech)
- GPS Receiver A1088-A (Vincotech)