

# Application Note

---

## HSI Trim

---

### Introduction

This application note provides a frequency adjustment method for HSI, which is convenient for users to adjust the HSI frequency according to their specific requirements during regular operation.

This document is only applicable to Nsing MCU products. Currently, the supported product series include N32G4FR series, N32G45x series, N32WB452 series.

# Contents

<b>CONTENTS .....</b>	<b>2</b>
<b>1 OVERVIEW .....</b>	<b>3</b>
<b>2 OPERATION METHOD.....</b>	<b>4</b>
2.1 FUNCTION DESCRIPTION.....	4
2.2 APPLICATION EXAMPLE .....	4
<b>3 VERSION HISTORY.....</b>	<b>5</b>
<b>4 DISCLAIMER.....</b>	<b>6</b>

## 1 Overview

User can adjust HSI frequency through an API, with a fine trimming step of about 23KHz.

## 2 Operation Method

### 2.1 Function Description

Function prototype: uint8\_t HSI\_GetCurTrim (void)

HSI\_GetCurTrim() function returns the current trim value of HSI.

Parameter description:

Return: trim value

Function prototype: uint8\_t HSI\_ConfigTrim(uint8\_t trim\_type,uint8\_t value)

HSI\_ConfigTrim() function adjusts the frequency of HSI.

Parameter description:

trim\_type: 0 for frequency increment; 1 for frequency decrement.

value: increase or decrease HSI trim value. (It is recommended to increase or decrease HSI trim value based on the current trim value. If the trim value exceeds the correction range, HSI trim will fail.)

Return: 0 for HSI trim success; 1 for incorrect trim\_type; 2 for HSI trim value exceeds correction range.

*Note: The default trim value for HSI is 0x0, with a range from 0x0 to 0xF.*

### 2.2 Application Example

Please refer to the application note example RCC\_HSIClockTrim, which demonstrates how to adjust the HSI frequency by using N32G45x series MCU. You can visualize the frequency changes on oscilloscope while the HSI frequency is being measured.

### 3 Version History

Version	Date	Changes
V1.0.0	2022.03.09	Initial version

## 4 Disclaimer

This document is the exclusive property of NSING TECHNOLOGIES PTE. LTD.(Hereinafter referred to as NSING). This document, and the product of NSING described herein (Hereinafter referred to as the Product) are owned by NSING under the laws and treaties of Republic of Singapore and other applicable jurisdictions worldwide. The intellectual properties of the product belong to Nations Technologies Inc. and Nations Technologies Inc. does not grant any third party any license under its patents, copyrights, trademarks, or other intellectual property rights. Names and brands of third party may be mentioned or referred thereto (if any) for identification purposes only. NSING reserves the right to make changes, corrections, enhancements, modifications, and improvements to this document at any time without notice. Please contact NSING and obtain the latest version of this document before placing orders. Although NATIONS has attempted to provide accurate and reliable information, NATIONS assumes no responsibility for the accuracy and reliability of this document. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. In no event shall NATIONS be liable for any direct, indirect, incidental, special, exemplary, or consequential damages arising in any way out of the use of this document or the Product.

NATIONS Products are neither intended nor warranted for usage in systems or equipment, any malfunction or failure of which may cause loss of human life, bodily injury or severe property damage. Such applications are deemed, 'Insecure Usage'. Insecure usage includes, but is not limited to: equipment for surgical implementation, atomic energy control instruments, airplane or spaceship instruments, all types of safety devices, and other applications intended to supporter sustain life. All Insecure Usage shall be made at user's risk. User shall indemnify NATIONS and hold NATIONS harmless from and against all claims, costs, damages, and other liabilities, arising from or related to any customer's Insecure Usage Any express or implied warranty with regard to this document or the Product, including, but not limited to. The warranties of merchantability, fitness for a particular purpose and non-infringement are disclaimed to the fullest extent permitted by law. Unless otherwise explicitly permitted by NATIONS, anyone may not use, duplicate, modify, transcribe or otherwise distribute this document for any purposes, in whole or in part.