

MANUAL No. 99MAL216A10 P/N 02ARB124

# U-WAVEPAK

# **User's Manual**

Read this User's Manual thoroughly before operating the instrument. After reading, retain it close at hand for future reference.



10 <sup>th</sup> edition : Jury, 2020	Version 1.022A、Version 1.022B
9 <sup>th</sup> edition : April, 2016	Version 1.022
8 <sup>th</sup> edition : October, 2013	Version 1.021
7 <sup>th</sup> edition : January, 2013	Version 1.020
6 <sup>th</sup> edition : June, 2011	Version 1.010
5 <sup>th</sup> edition : January, 2010	Version 1.005
4 <sup>th</sup> edition : March, 2009	Version 1.004
3 <sup>rd</sup> edition : January, 2009	Version 1.003
2 <sup>nd</sup> edition : June, 2008	Version 1.002
1 <sup>st</sup> edition : February, 2008	Version 1.000

The information contained in this document is subject to change without prior notice.

(C) Copyright Mitutoyo Corporation 2009-2020

The tradename, the company name which is mentioned to this document are the registered trademark or the trademark of each company.

# **Mitutoyo Software End User License Agreement**

IMPORTANT – PLEASE READ THIS MITUTOYO SOFTWARE END USER LICENSE AGREEMENT ("EULA") CAREFULLY BEFORE USING THE MITUTOYO SOFTWARE PRODUCTS. THIS EULA SHALL CONSTITUTE A LEGAL AGREEMENT BETWEEN YOU/CUSTOMER AND MITUTOYO CORPORATION ("MITUTOYO") FOR THE MITUTOYO SOFTWARE PRODUCT DISTRIBUTED WITH THIS EULA, WHICH SOFTWARE PRODUCT INCLUDES, WITHOUT LIMITATION, COMPUTER PROGRAM AND MAY ALSO INCLUDE ASSOCIATED MEDIA, PROGRAM DISK(S), DONGLES, MANUALS, OTHER PRINTED MATERIALS, AND/OR OTHER "ONLINE" OR ELECTRONIC DOCUMENTATION (COLLECTIVELY, "SOFTWARE PRODUCT"). BY CLICKING ON THE "ACCEPT" BUTTON, OPENING THE PACKAGE, DOWNLOADING THE SOFTWARE PRODUCT. INSTALLING THE SOFTWARE PRODUCT ON AND/OR USING A PRODUCT OR PROGRAM CONTAINED IN THE SOFTWARE PRODUCT. YOU ARE DEEMED TO HAVE CONSENTED TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO ALL OF THE TERMS AND CONDITIONS OF THIS EULA, DO NOT CLICK ON THE "ACCEPT" BUTTON AND DO NOT OPEN, DOWNLOAD, INSTALL OR USE THE SOFTWARE PRODUCT. THIS SOFTWARE PRODUCT IS LICENSED, NOT SOLD, SUBJECT TO THE TERMS AND CONDITIONS SET FORTH IN THIS EULA. THE GRANT OF LICENSE SET FORTH BELOW WILL BE EFFECTIVE ONLY WHEN YOU AGREE TO ALL TERMS AND CONDITIONS SET FORTH IN THIS EULA.

#### 1 License

Mitutoyo grants to you/customer ("Customer") a non-transferable and non-exclusive and limited license to install and use on copy of the Software Product (in object code form only) on a single computer system, under the terms and conditions of this EULA. In the event that Customer wishes to use the Software Product on another computer, Customer must obtain another license therefor.

Customer acknowledges and agrees that (a) Mitutoyo, its affiliated and related companies and/or its suppliers are and shall remain the owner of the exclusive right, title and interest in and to the Software Product and (b) Customer has no right, title or interest of any nature whatsoever in and to the Software Product, except the right to use the Software Product in accordance with and subject to the terms and conditions of this EULA. All rights not expressly granted herein by Mitutoyo are reserved by Mitutoyo for the exclusive benefit and use of Mitutoyo and its affiliated and related companies as Mitutoyo deems appropriate.

#### 2 Restrictions

EXCEPT AS EXPRESSLY AUTHORIZED HEREIN, CUSTOMER SHALL NOT PRINT OR COPY, IN WHOLE OR IN PART, THE SOFTWARE PRODUCT; MODIFY THE SOFTWARE PRODUCT; REVERSE COMPILE OR REVERSE ASSEMBLE/ENGINEER ALL OR ANY PORTION OF THE SOFTWARE PRODUCT; OR RENT, LEASE, SUBLICENSE, DISTRIBUTE, SELL, OR CREATE DERIVATIVE WORKS OF THE SOFTWARE PRODUCT. Customer may permanently transfer all of its rights under this EULA and the Software Product, on the conditions that (a) Customer notifies Mitutoyo of its intention of transfer prior to such transfer; (b) Customer retains no copies thereof, (c) Customer transfers all of the Software Product (including all component parts, the media and printed materials, any upgrades, this EULA, and, if applicable, the Certificate of Authenticity) to the transferee and (d) the transferee agrees to abide by all of the terms of this EULA. If the Software Product is an upgrade, any transfer must include all prior versions of the Software Product and all of Customer's rights therein, if any.

#### 3 Copyright

Copyright in and to the Software Product shall remain exclusively with Mitutoyo, its affiliated and related companies and/or its suppliers. Customer may not remove, modify or alter any copyright, trademark or any other intellectual property legend/notice from any part of the Software Product.

#### 4 Limited warranty

If Customer discovers a physical defect in the media on which the Software Product is distributed, or in a documentation of the Software Product within one year from the date of original purchase by Customer, Mitutoyo will replace the media or documentation free of charge. Except for the foregoing, the Software Product is provided "AS IS"; provided however, that if a malfunction which Mitutoyo judges as fatal defect affecting an intended material performance or functions of the Software Product within one year from the date of original purchase by Customer, Mitutoyo will at its option repair such defect or provide replacement software. The remedy by this limited warranty extends only to Customer as the original licensee and does not extend to the transferee. Customer's exclusive remedy and the entire liability of Mitutoyo, its affiliated and related companies and its suppliers under this limited warranty will be limited, at Mitutoyo's sole and exclusive option, only to the repair or replacement as aforesaid.

In no event does Mitutoyo warrant that the Software Product is error free or that Customer will be able to operate the Software Product without problems or interruptions or that the Software Product will work in combination with any hardware or application software products provided by third parties.

This warranty does not apply if the Software Product or any component or element thereof (or the equipment upon which such Software Product is intended to operate) (a) has been altered or modified, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Mitutoyo, (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident, or (d) is used in ultra-hazardous activities.

Any warranty provided by Mitutoyo or its affiliated companies relative to the equipment/hardware upon which the Software Product is installed shall not expand, extend or otherwise modify the limited warranty set forth herein or provide any rights to Customer which are not otherwise expressly set forth herein.

EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES OF ANY NATURE WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW.

Customer assumes all responsibility for all results arising out of its selection of the Software Product to achieve its intended results.

#### 5 Disclaimer

IN NO EVENT WILL MITUTOYO, ITS AFFILIATED AND RELATED COMPANIES AND SUPPLIERS BE LIABLE FOR ANY LOST REVENUE, PROFIT, OR DATA, OR FOR SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY ARISING OUT OF THE USE OF OR INABILITY TO USE OF THE SOFTWARE PRODUCT EVEN IF MITUTOYO, ITS AFFILIATED AND RELATED COMPANIES AND/OR SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

If, notwithstanding the other provisions of this EULA, Mitutoyo, its affiliated and related companies and/or its suppliers are found to be liable to Customer for any damage or loss which arises out of or is in any way connected with use of the Software Product by Customer, in no event shall Mitutoyo's and/or its affiliated and related companies' and suppliers' liability to Customer, whether in contract, tort (including negligence), or otherwise, exceed the price paid by Customer for the Software Product only.

The foregoing limitations shall apply even if the above-stated warranty fails of its essential purpose.

BECAUSE SOME COUNTRIES, STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR THE LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, IN SUCH COUNTRIES, STATES OR JURISDICTIONS, MITUTOYO'S, ITS AFFILIATED AND RELATED COMPANIES' AND SUPPLIERS' LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY LAW.

#### 6 Termination

The license of Customer under this EULA is effective until terminated. Customer may terminate this EULA at any time by destroying all copies of the Software Product including all media and documentation. This EULA will terminate immediately without notice from Mitutoyo if Customer fails to comply with any provision of this EULA. Upon termination, Customer must destroy all copies of Software Product including all media and documentation.

#### 7 Export control

The Software Product is subject to Japanese export control laws as well as any other applicable export or import control laws and regulations in other countries. Customer agrees to comply strictly with all such applicable regulations and acknowledges that it has the responsibility to obtain licenses to export, re-export, or import the Software Product.

#### 8 Miscellaneous

This EULA shall be governed by and construed in accordance with the laws of Japan, without giving effect to the principles of conflict of law. Customer agrees to submit to the exclusive jurisdiction of the district courts in Tokyo, Japan with respect to any dispute, controversy or claim arising out of or relating to this EULA and the parties respective rights and obligations hereunder. This EULA shall not be governed by the United Nations Convention on Contracts for the International Sale of Goods, the application which is expressly excluded.

If any portion hereof is found to be void or unenforceable, the remaining provisions of this EULA shall remain in full force and effect.

This EULA constitutes the entire agreement between Customer and Mitutoyo with respect to the subject matter hereof.

Customer shall indemnify, defend and hold harmless Mitutoyo, its affiliated and related companies and its suppliers from and against any and all claims and liability of any nature whatsoever arising out of or in connection with Customer's breach of this EULA.

# CONVENTIONS USED IN THIS MANUAL

# **Types of Notes**

The following types of **notes** are used in this manual to help the operator obtain reliable measurement data through correct instrument operation.

- **IMPORTANT** An *important note* provides information essential to the completion of a task. You cannot disregard this note to complete the task.
  - An *important note* is a type of precaution, which if neglected could result in a loss of data, decreased accuracy or instrument malfunction/failure.
  - **NOTE** A *note* emphasizes or supplements important points of the main text. It also supplies information about specific situations (e.g., memory limitations, equipment configurations, or details that apply to specific versions of a program).
    - **TIP** A *tip* is a type of note that helps the user apply the techniques and procedures described in the text to his or her specific needs.

It also provides reference information associated with the topic being discussed.

- Mitutoyo assumes no liability to any party for any loss or damage, direct or indirect, caused by use of this instrument not conforming to this manual. However, except as expressly specified in the Mitutoyo Software License Agreement, in no event shall Mitutoyo be liable to any party for any loss or damage caused by use of this instrument conforming or not conforming to this manual.
- Information in this manual is subject to change without notice.

Copyright © 2009-2016 Mitutoyo Corporation. All rights reserved.

# **Conventions for Describing Software Operation**

This software is used on Windows operation system.

This manual is written on the assumption that the operation of the software of Windows base is learned.

When the operation of Windows is not known well, please refer to the operation manual of Windows, such as "Microsoft Windows first step guide".

Although this manual explains the screen display and operation on Windows XP, the function and the operation method of this software are the same on every Windows.

Microsoft, Windows, Windows Vista and Excel are registered trademarks and/or trademarks of Microsoft Corporation in the United States and/or other countries.

### Warranty

In the event that the Mitutoyo product, except software product, should prove defective in workmanship or material, within one year from the date of original purchase for use, it will be repaired or replaced, at our option, free of charge upon its prepaid return to us.

If the product fails or is damaged for any of the following reasons, it will be subject to a repair charge, even if it is still under warranty.

- 1 Failure or damage owing to inappropriate handling or unauthorized modification.
- 2 Failure or damage owing to transport, dropping, or relocation of the instrument after purchase.
- 3 Failure or damage owing to fire, salt, gas, abnormal voltage, or natural disaster.

This warranty is effective only where the instrument is properly installed and operated in conformance with the instructions in this manual.

# **Export Control Compliance**

This Product falls into the Catch-All-Controlled Goods and/or Catch-All-Controlled Technologies (including Programs) under Category 16 of Appended Table 1 of Export Trade Control Order or under Category 16 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Law of Japan.

If you intend re-exporting the product from a country other than Japan, re-selling the product in a country other than Japan, or re-providing the technology (including program), you shall observe the regulations of your country.

# Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)



This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. To reduce the environmental impact of WEEE (Waste Electrical and Electronic Equipment) and minimize the volume of WEEE entering landfills, please reuse and recycle.

For further information, please contact your local dealer or distributors.

# Contents

Mitu	utoyo	o Softv	ware License Agreement	i
CO	NVE	NTION	S USED IN THIS MANUAL	v
Cor	vent	tions f	or Describing Software Operation	vi
Wai	rant	y		vi
Exp	ort C	Contro	I Compliance	vii
Die	0063		d Electrical & Electronic Equipment (Applicable in the European Union and other	
Eur	opea	an cou	ntries with separate collection systems)	vii
1	Bas	sic Kn	owledge	1-1
. 1	1	Over	view	1_1
1	. I 2	Svete	am configuration	1-1
1	. <u>ר</u> ז	Requi	ired computer specification	1-2
1	<u>د</u>	Snec	ification of II-WAVE-R	1-3
1	5	Spec	ification of U-WAVE-T	1-5
1	.6	Spec	ification of wireless communication	
1	.7	Tech	nical term	
-	1.7.	1 (	Group ID	
	1.7.	2 (	Channel	1-6
	1.7.	3 E	Band ID	1-7
	1.7.	4 M	Neasurement mode	1-8
	1.7.	5 C	Device ID	1-9
	1.7.	6	All band ID scan	1-9
	1.7.	7 [	Data lack check level	1-9
	1.7.	8 l	J-WAVE-R scan	1-10
2	Inst	tallatio	on	2-1
2	.1	Insta	llation of program and device driver	2-1
	2.1.	1 I	nstallation of program	2-1
	2.1.	2 I	nstallation of device driver	2-5
2	.2	Starti	ing of program	2-18
	2.2.	1 8	Starting of U-WAVEPAK	2-18
2	.3	Un-in	stallation of program	2-19
2	.4	Un-in	stallation of device driver	2-20
2	.5	How	to display the Control Panel in Windows 8 / 8.1 / 10	2-22
3	Me	nu		3-1
3	.1	Menu	I	3-1
	3.1.	1 8	Start of menu dialog	3-1
	3.1.	2 (	Dperation to start 'U-WAVEPAK Setup' directly	3-5
	3.1.	3 (	Dperation to start 'U-WAVEPAK Data I/F' directly	3-5

4	Setup	p	4-1	
	4.1 Setup for U-WAVE of factory default state 4-1			
	4.1.1	New registration of U-WAVE-R	4-1	
	4.1.2	Addition of U-WAVE-T	4-4	
	4.2 F	Functions	4-7	
	4.2.1	Functions for U-WAVE-R information	4-7	
	4.2.2	Functions for U-WAVE-T information	4-9	
	4.2.3	Common functions	4-12	
	4.3 E	Edit of U-WAVE-R information	4-13	
	4.3.1	Edit	4-14	
	4.3.2	All Band ID scan	4-17	
	4.3.3	Initialize	4-19	
	4.4 E	Edit of U-WAVE-T information	4-21	
	4.4.1	Add	4-21	
	4.4.2	Edit	4-22	
	4.4.	.2.1 Change of measurement mode	4-22	
	4.4.	.2.2 Change of channel	4-24	
	4.4.	.2.3 Change of group ID or band ID	4-26	
	4.4.	.2.4 Initialize	4-28	
	4.4.3	Reversal of selection	4-30	
	4.4.4	Mode change(Multi-processing)	4-31	
	4.4.5	Group ID change(Multi-processing)	4-32	
	4.4.6	Band ID change(Multi-processing)	4-33	
	4.4.7	Initialize(Multi-processing)	4-34	
	4.4.8	Clear(Multi-processing)	4-35	
	4.4.9	Backup	4-36	
	4.4.10	0 Restore	4-37	
	4.5 C	Common operations	4-38	
	4.5.1	Send the setting	4-38	
	4.5.2	Receive information	4-39	
	4.5.3	List view	4-40	
	4.5.4	Select language	4-41	
	4.5.5	Environment	4-42	
	4.5.6	Exit setup	4-43	
	4.6 C	Concrete operation example	4-44	
	4.6.1	To change group ID or band ID	4-44	
	4.6.2	To move the U-WAVE-T between U-WAVE-R	4-50	
5	Data	I/F	5-1	
	5.1 P	Basic operations of Data I/F	5-1	
	5.2 F	Functions	5-3	
	5.3 F	Environment		

6 Appen	ndix	6-1
6.1 Sp	pecification of communication packet	6-1
6.1.1	Common specifications	6-1
6.1.2	Packets from U-WAVE-R to PC	6-2
6.1.2	2.1 Measurement data packet	6-2
6.1.2	2.2 Status packet	6-3
6.1	1.2.2.1 Status code	6-4
6.1.2	2.3 U-WAVE-R information packet	6-5
6.1.2	2.4 U-WAVE-T information packet	6-7
6.1	1.2.4.1 Status of U-WAVE-T	6-7
6.1.3	Packets from PC to U-WAVE-R	6-8
6.1.3	8.1 Request of information packet	6-8
6.1	1.3.1.1 About the content of the Status packet	6-8
6.1.3	8.2 Request of measurement data packet	6-9
6.1	1.3.2.1 About the content of the Status packet	6-10
6.2 Init	itialization of U-WAVE	
6.2.1	Initialization of U-WAVE-R	
6.2.1	.1 Method of using hardware	6-11
6.2.1	.2 Method of using software	6-11
6.2.2	Initialization of U-WAVE-T	
6.2.2	2.1 Method of using hardware	6-11
6.2.2	2.2 Method of using software	
6.3 Re	estriction for use	6-12
6.3.1	Warning to detection of same group ID and band ID	6-12
6.3.2	Device that continuously outputs data of two or more measuring to	ols6-13
6.3.3	Standby or hibernate of Windows	6-13
6.3.4	Functions of [DATA] switch	6-14

Service Network

#### MEMO

# Basic Knowledge

## 1.1 Overview

U-WAVE is a wireless communication system.

U-WAVEPAK is the software which supports collection of measurement data from the measuring tool connected to the U-WAVE-T to a computer.

This software has the following purposes.

1) Setup of U-WAVE-R and U-WAVE-T

This software sets up the some information for the wireless communication between U-WAVE-R and U-WAVE-T. That information is controlled by this software.

2) Data I/F with the application software on computer

This software notifies measurement data and the status which were sent from the U-WAVE-T as keyboard emulation data to the application software (Microsoft Excel, etc.) on computer.

# 1.2 System configuration



# **1.3** Required computer specification

The specifications of the hardware and software required for this program are as follows.

<Hardware Requirements>

- Monitor's resolution is 800 x 600 (or above), color is 256 (or above)
- The free disk space on the hard disk drive above 5Mbytes

(The minimum capacity for installation)

- CD-ROM Drive

(It is necessary to install this program.)

- USB Ports

(It is necessary to connect U-WAVE-R.)

**NOTE** ·As for the other hardware specification, it is based on the specification requirement of Operating System.

<Software Requirements>

- Operating System :

Microsoft Windows 2000 Professional (SP4 or above)

- Microsoft Windows XP Home Edition (SP2 or above)
- Microsoft Windows XP Professional (SP2 or above)
- Microsoft Windows Vista
- Microsoft Windows 7

Microsoft Windows 8

Microsoft Windows 8.1

Microsoft Windows 10

**IMPORTANT** • The language of this program and the language of the Operating System must be same setting. Don't use this program on the different language OS.

# 1.4 Specification of U-WAVE-R

Items	Specifications	
Nomenclature (Top)	LED	
Nomenclature (Back)	INIT. Switch USB Connector	
LED	Green (POWER) / Red (ERROR)	
Switch	INIT. Switch	
I/F with PC	USB Connector (Series-B, Female) USB 2.0 (Full-Speed)	
Power supply	Bus-power by USB (It is supplied from PC via USB cable.)	

The specifications of the U-WAVE-R are as follows.

- **IMPORTANT** ·Use the 'Self-powered USB hub' when you connect the U-WAVE-R with PC via the USB hub.
  - Even if the power of the U-WAVE-R is turned off, information memorized in the U-WAVE-R is preserved.

TIP · Refer to '7.2.1 Initialization of U-WAVE-R' for Initialization of U-WAVE-R.

·Refer to 'U-WAVE-R User's Manual' for detail specification of U-WAVE-R.

Status of LED	Status of U-WAVE-R
Green LED - ON Red LED - OFF	The power of the U-WAVE-R is turned on. The U-WAVE-R is working.
Green LED - Blinks	(1) The U-WAVE-R is a factory default state.
Red LED - Blinks	(2) Another U-WAVE-R to which same 'Group ID' and 'Band ID' are registered is detected.
Green LED - Blinks	The U-WAVE-R is processing 'All Band ID scan'.
Red LED - OFF	(The time required of 'All band ID scan' is about 10 seconds.)
Green LED - ON	Warning! The U-WAVE-R cannot be used.
Red LED - Blinks	(The power voltage value supplied by PC has reduced.)
Green LED - OFF	The power of the U-WAVE-R is turned off.
Red LED - OFF	

#### The status of the U-WAVE-R and the status of LED are as follows.

**IMPORTANT** · LED doesn't light when the device driver is not installed.

**TIP** · Refer to '2.1.2 Installation of device driver' for Installation of device driver.

# 1.5 Specification of U-WAVE-T



The specifications of the U-WAVE-T are as follows.

**IMPORTANT** • Even if the battery in the U-WAVE-T empties, information memorized in the U-WAVE-T is preserved.

TIP · Refer to '7.2.2 Initialization of U-WAVE-T' for Initialization of U-WAVE-T.

·Refer to 'U-WAVE-T User's Manual' for detail specification of U-WAVE-T.

# **1.6** Specification of wireless communication

**TIP** · Refer to 'U-WAVE-R User's Manual' and 'U-WAVE-T User's Manual' for detail specification of wireless communication.

# 1.7 Technical term

#### 1.7.1 Group ID

It is ID to group the U-WAVE-R and U-WAVE-T.

The U-WAVE-R and U-WAVE-T which have the same group ID can communicate.

When two or more U-WAVE-R are used in a wireless area, the value of group ID of each U-WAVE-R should be different.

The values that can be selected are from 00 to 99.



#### 1.7.2 Channel

It is a channel that the user specifies for U-WAVE-T.

When two or more U-WAVE-T are connected with the same U-WAVE-R, the value of the channel of each U-WAVE-T should be different.

The values that can be selected are from 00 to 99.



#### 1.7.3 Band ID

It is ID of the band that allocates it in the wireless communication between the U-WAVE-R and U-WAVE-T.

The U-WAVE-R and U-WAVE-T which have the same band ID can communicate.

The values that can be selected are from 11 to 25.

The frequencies allocated in band ID are as follows.

Band ID	Center frequency	(Band width)
11	2405 MHz	(2 MHz)
12	2410 MHz	(2 MHz)
13	2415 MHz	(2 MHz)
14	2420 MHz	(2 MHz)
15	2425 MHz	(2 MHz)
16	2430 MHz	(2 MHz)
17	2435 MHz	(2 MHz)
18	2440 MHz	(2 MHz)
19	2445 MHz	(2 MHz)
20	2450 MHz	(2 MHz)
21	2455 MHz	(2 MHz)
22	2460 MHz	(2 MHz)
23	2465 MHz	(2 MHz)
24	2470 MHz	(2 MHz)
25	2475 MHz	(2 MHz)

**NOTE** •When two or more U-WAVE-R are using same band ID, a wireless communication may interfere with each other. Therefore, specify different band ID as much as possible.

#### 1.7.4 Measurement mode

U-WAVE has two measurement modes in the following table.

#### You can specify the measurement mode for each U-WAVE-T by U-WAVEPAK.

Quitout	Measurement mode	
Output	Button driven	Event driven
Data output from U-WAVE-T to U-WAVE-R	Push the [DATA] switch from 0 to less than 2 seconds on the U-WAVE-T or on the measuring tool, data is output. After that, LED blinks. Normal: Green LED blinking Error: Red LED blinking	U-WAVE-T is always monitoring the change of observation of the measuring tool. When the data change, the U-WAVE-T sends it to the U-WAVE-R. Error: Red LED blinking
Data output from U-WAVE-R to PC	When receiving data from U-WAVE-T, the U-WAVE-R outputs it to PC directly.	When receiving data from U-WAVE-T, the U-WAVE-R saves the data into its memory. When the U-WAVE-R receives request of data output from PC, the U-WAVE-R outputs the saved data.
Cancel from U-WAVE-T	Push the [DATA] switch from 2 to less than 5 seconds on the U-WAVE-T. 'Cancel command' is output. Orange LED fast blinks (every 0.1 seconds) while pushing the [DATA] switch.	
Cancel from U-WAVE-R to PC	When receiving 'Cancel command' from U-WAVE-T, the U-WAVE-R outputs it to PC directly.	
U-WAVE-R scan from U-WAVE-T	Push the [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T. 'U-WAVE-R scan' is executed. Orange LED slow blinks (every 0.3 seconds) while pushing the [DATA] switch.	Push the [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T. 'U-WAVE-R scan' is executed. Orange LED slow blinks (every 0.3 seconds) while pushing the [DATA] switch.
Error notification from U-WAVE-R to PC	The U-WAVE-R outputs status to PC.	The U-WAVE-R outputs status to PC.

**NOTE** •When the U-WAVE-T is a factory default state, 'U-WAVE-R scan' is executed by pushing the [DATA] switch on the U-WAVE-T. And, orange LED slow blinks (every 0.3 seconds) while pushing the [DATA] switch.

#### 1.7.5 Device ID

ID number assigned each U-WAVE-R or U-WAVE-T.

It is factory configuration. It's read-only data for users.

The value of device ID is printed on each U-WAVE-R and U-WAVE-T.

Ranges of this value are from 000000000 to 1999999999.

#### 1.7.6 All band ID scan

When 'All band ID scan' is executed, the noise level to all band ID (11-25) are investigated in the place where the U-WAVE-R is used.

The values of noise level from 0 to 255.

If the value of noise level is 255, the noise level is an indetermination.

The wireless communication condition of band ID with small noise level is good.

The wireless communication condition of band ID with large noise level is no good.

Therefore, use band ID with small noise level.

**NOTE** • The time required of 'All band ID scan' is about 10 seconds.

•When the U-WAVE-R is initialized, 'All band ID scan' is executed. And, band ID with most small noise level is adopted as a default value.

•When wireless LAN is used near the U-WAVE-R, the noise level might be large.

#### 1.7.7 Data lack check level

There is a sequence number in the Measurement data between U-WAVE-T and U-WAVE-R.

Every time the U-WAVE-T send a measurement data, it increments sequence number.

The U-WAVE-R always checks the sequence number.

When the next formula is met, the U-WAVE-R outputs the status to notice the warning.

The number of measurement data omission > (9 - L)

Where L = the value of 'Data lack check level'

The values that can be selected are from 0 to 9.

#### 1.7.8 U-WAVE-R scan

'U-WAVE-R scan' is executed by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

The U-WAVE-T searches for the U-WAVE-R that registers own device ID by using 'U-WAVE-R scan'.

If the U-WAVE-R that registers device ID of the U-WAVE-T is found, the U-WAVE-T and the U-WAVE-R are automatically connected.

**IMPORTANT** ·'U-WAVE-R scan' consumes the battery on the U-WAVE-T. Therefore, execute it only when it is necessary.



# 2.1 Installation of program and device driver

#### 2.1.1 Installation of program

**IMPORTANT** · Log in to Windows by 'Administrator'.

· Do not connect the U-WAVE-R with PC until the operation of 10) is completed.

- 1) Insert the program CD of U-WAVEPAK in CD drive of PC.
- Run 'Setup.exe' in 'Setup' folder on CD by Windows Explorer etc.
  Select [Allow] when the following dialog is displayed while using Windows Vista.



Select [Yes] when the following dialog is displayed while using Windows 7/8/8.1/10.



3) Select language and click the [OK] button.



4) Click [Next] button, when the following dialog is displayed.

🗟 Setup - U-WAVEPAK	
	Welcome to the U-WAVEPAK Setup Wizard This will install U-WAVEPAK Ver1.0 on your computer. It is recommended that you close all other applications before continuing. Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

5) When the following dialog is displayed, select [I accept the agreement] and click [Next] button.



 Click [Next] button, when the following dialog is displayed. The folder is different depending on the kind of Windows.



7) Click [Next] button, when the following dialog is displayed.

18 Setup - U-WAVEPAK
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder. To continue, click Next. If you would like to select a different folder, click Browse.
UWAVEFAX
< <u>Back</u> <u>N</u> ext> Cancel

8) Click [Next] button, when the following dialog is displayed.

15	Setup - U-WAVEPAK 📃 🗖 🔀
	Select Additional Tasks Which additional tasks should be performed?
	Select the additional tasks you would like Setup to perform while installing U-WAVEPAK, then click Next. Additional icons:
	< <u>₿</u> ack <mark>N</mark> ext > Cancel

9) Click [Install] button, when the following dialog is displayed.

i 🖥 Se	etup - U-WAVEPAK	
R	eady to Install Setup is now ready to begin installing U-WAVEPAK on your computer.	
	Click Install to continue with the installation, or click Back if you want to review or change any settings.	
	Destination location: C:\Program Files\Mitutoyo\UWAVEPAK	
	Start Menu folder: U-WAVEPAK	
	٢	
	< Back Install	Cancel

10) When the following dialog is displayed, click the [Finish] button to exit installation.

🕞 Setup - U-WAVEPAK	
	Completing the U-WAVEPAK Setup Wizard Setup has finished installing U-WAVEPAK on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup.
	<u> </u>

#### 2.1.2 Installation of device driver

#### [In case of Windows XP]

**IMPORTANT** · Log in to Windows by 'Administrator'.

- 1) Connect a U-WAVE-R to the USB port of PC.
- 2) If Windows detects a U-WAVE-R, the following dialog is displayed automatically.

Select the following radio button and click [Next] button.



3) Select the following radio button and click [Next] button.



4) Select the following radio button and check box. And, click [Browse] button.

Please ch	pose your search and installation options.
	<b>1</b>
⊙ <u>S</u> ear	ch for the best driver in these locations.
Use   path:	the check boxes below to limit or expand the default search, which includes local s and removable media. The best driver found will be installed.
	Search removable media (floppy, CD-ROM)
	Include this location in the search:
7	C:\Program Files\Mitutoyo\UWAVEPAK\Drivers\CD 🔽 📴 🛛 🛛 😽
' O <u>D</u> on'	t search. I will choose the driver to install.
Choo the d	ise this option to select the device driver from a list. Windows does not guarantee the river you choose will be the best match for your hardware.
	Z Back Nevt Cancel

5) In the following dialog, specify the driver to install.

Browse For Folder	? 🔀
Select the folder that contains drivers for y	our hardware.
🖃 🧰 Mitutoyo	~
🖃 🧰 UWAVEPAK	
🚞 BAK	
🖃 🧰 Drivers	
CDM U-W	/AVE
🗉 🧰 Movie Maker	
🚞 MSN	
🗷 🚞 MSN Gaming Zone	
🚞 NetMeeting	
🛅 Online Services	
Cutlook Express	×
To view any subfolders, click a plus sign ab	ove.
ОК	Cancel

Specify [\Drivers\CDM\_U-WAVE\] folder in CD or an installation folder.

Click the [OK] button after specifying the driver. And click the [Next] button in the dialog of 4).

#### **IMPORTANT** • Two kinds of following drivers are automatically installed.

(1) Driver for VCP (Virtual COM port)

(2) Driver for direct USB

When starting, U-WAVEPAK can select either driver.

• Please use the driver supported by the application software if you connect the U-WAVE-R with the application software other than U-WAVEPAK.

It is necessary to include special DLL (FTD2XX.lib) into the application software to use the driver for direct USB.

It is necessary to specify the RS-232C communication parameters in the application software as follows to use the driver for VCP.

- (1) Baud rate = 57600bps
- (2) Parity = None
- (3) Data bits = 8bits
- (4) Stop bits = 1bit
- (5) Flow control = RTS/CTS
- 6) Click [Continue Anyway] button in the following dialog.

Hardwa	are Installation
⚠	The software you are installing for this hardware: Mitutoyo U-WAVE
	has not passed Windows Logo testing to verify its compatibility with Windows XP. ( <u>Tell me why this testing is important.</u> )
	Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

7) Click [Finish] button in the following dialog.

Found New Hardware Wiz	ard
	Completing the Found New Hardware Wizard
	I he wizard has trisched installing the software tor:
	Click Finish to close the wizard.

The dialog of 2) is displayed again. Therefore, re-operate from 2) to 7).

**IMPORTANT** · When two or more U-WAVE-R are connected with PC, it is necessary to install the driver for connected all U-WAVE-R.

#### [In case of Windows Vista or Windows 7 / 8 / 8.1 / 10]

**IMPORTANT** · Log in to Windows by 'Administrator'.

- 1) Connect a U-WAVE-R to the USB port of PC.
- 2) Select [Cancel] when the following dialog is displayed while using Windows Vista.



3) Open [Control panel]-[Hardware and Sound] of Windows.

<Windows Vista>

<Windows 7>







4) Open [Hardware and Sound]-[Device Manager] of Windows.



#### <Windows 8 / 8.1 / 10 >



5) Click [Other devices].

Point the cursor to [Mitutoyo U-WAVE].

Right-click in the mouse and select [Update Driver Software].



If [Mitutoyo U-WAVE] or [USB Serial Port] is not displayed in [Other devices], the device driver has already been installed. Therefore, close [Device Manager] and end the installation of the device driver.

6) Select the following item.



7) Click [Browse] button.

are in this location: PAK\Drivers\CDM_U-WAVE		Browse
PAK\Drivers\CDM_U-WAVE		Browse
from a list of device driv w installed driver software com ame category as the device.	vers on my compu patible with the device,	iter and all driver
1	from a list of device driv w installed driver software com same category as the device.	from a list of device drivers on my compu w installed driver software compatible with the device, same category as the device.

8) In the following dialog, specify the driver to install.

۵	📕 Mitutoyo	
	UWAVEPAK	
	BAK	
	🛛 🍌 Drivers	i i i
	CDM_U-WAVE	_
	FORM	
	📕 Master	-
	CDM LI-WAVE	
aldar.	Master  CDM LI-WAVE	

Specify [\Drivers\CDM\_U-WAVE\] folder in CD or an installation folder.

Click the [OK] button after specifying the driver. And click the [Next] button in the dialog of 7).

**IMPORTANT** • Two kinds of following drivers are automatically installed.

(1) Driver for VCP (Virtual COM port)

(2) Driver for direct USB

When starting, U-WAVEPAK can select either driver.

• Please use the driver supported by the application software if you connect the U-WAVE-R with the application software other than U-WAVEPAK.

It is necessary to include special DLL (FTD2XX.lib) into the application software to use the driver for direct USB.

It is necessary to specify the RS-232C communication parameters in the application software as follows to use the driver for VCP.

- (1) Baud rate = 57600bps
- (2) Parity = None
- (3) Data bits = 8bits
- (4) Stop bits = 1 bit
- (5) Flow control = RTS/CTS

9) Click [Install] button in the following dialog.



10) Click [Close] button in the following dialog.

G	Update Driver Software - Mitutoyo U-WAVE	
	Windows has successfully updated your driver software	
	Windows has finished installing the driver software for this device:	
	Mitutoyo U-WAVE	
		Close

- 11) The dialog of 5) is displayed again.Click [Other devices]. Point the cursor to [USB Serial Port].Right-click in the mouse and select [Update Driver Software].Therefore, re-operate from 6) to 10).
- **IMPORTANT** When two or more U-WAVE-R are connected with PC, it is necessary to install the driver for connected all U-WAVE-R.
#### [In case of Windows 2000]

**IMPORTANT** · Log in to Windows by 'Administrator'.

- 1) Connect a U-WAVE-R to the USB port of PC.
- 2) If Windows detects a U-WAVE-R, the following dialog is displayed automatically.

Click [Next] button.

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.
	< Back Cancel

3) Select the following radio button and click [Next] button.



4) Select the following check box. And, click [Next] button.



5) In the following dialog, specify the driver to install.

Click [Browse] button.

Found Net	w Hardware Wizard	×
	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	©opy manufacturer's files from:  C:\Program Files\Mitutoyo\UWAVEPAK\Drivers\CI.▼	Browse

6) Specify the driver to install by [Look in] in the following dialog.

Specify [\Drivers\CDM\_U-WAVE\] folder in CD or an installation folder.

Locate File						<u>?</u> ×
Look jn:		WE -	] +	🗈 💣 🛙	<b>.</b>	
History	FTDIBUS	1				
My Documents						
My Computer	File <u>n</u> ame:	FTDIBUS.INF		•		<u>]</u> pen
My Network P	Files of <u>type</u> :	Setup Information (*.inf)		~		ancel

Click the [Open] button after specifying the driver. And click the [OK] button in the dialog of 5).

#### **IMPORTANT** • Two kinds of following drivers are automatically installed.

(1) Driver for VCP (Virtual COM port)

(2) Driver for direct USB

When starting, U-WAVEPAK can select either driver.

• Please use the driver supported by the application software if you connect the U-WAVE-R with the application software other than U-WAVEPAK.

It is necessary to include special DLL (FTD2XX.lib) into the application software to use the driver for direct USB.

It is necessary to specify the RS-232C communication parameters in the application software as follows to use the driver for VCP.

- (1) Baud rate = 57600bps
- (2) Parity = None
- (3) Data bits = 8bits
- (4) Stop bits = 1 bit
- (5) Flow control = RTS/CTS
- 7) Click [Next] button in the following dialog.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Mitutoyo U-WAVE
Windows found a driver for this device. To install the driver Windows found, click Next,
c:\program files\mitutoyo\uwavepak\drivers\cdm_u-wave\ftdibus inf
< Back Next > Cancel



8) Click [Finish] button in the following dialog.

PC might have to be restarted.

The dialog of 2) is displayed again. Therefore, re-operate from 2) to 8).

**IMPORTANT** • When two or more U-WAVE-R are connected with PC, it is necessary to install the driver for connected all U-WAVE-R.

# 2.2 Starting of program

#### 2.2.1 Starting of U-WAVEPAK

1) Click [U-WAVEPAK] with the program menu of Windows.



2) If a shortcut icon is created on the desktop, U-WAVEPAK can be started up by double-clicking this icon.

**IMPORTANT** · Log in to Windows by 'Power users' or above.

· Start this program after connecting U-WAVE-R to the USB port on PC.

# 2.3 Un-installation of program

Click [Uninstall U-WAVEPAK] with the program menu of Windows.
 U-WAVEPAK
 U-WAVEPAK
 U-WAVEPAK
 U-WAVEPAK
 In case of Windows 8 / 8.1, click [Uninstall] button in the following display.



**IMPORTANT** . Log in to Windows by 'Administrator'.

2) Select [Allow] when the following dialog is displayed while using Windows Vista.



Select [Yes] when the following dialog is displayed while using Windows 7.

	Do you want unknown pul	to allow the following program from an blisher to make changes to this computer
	Program name:	unins000.exe
	Publisher:	Unknown
	File origin:	Removable media on this computer
<u>ی</u>	Show <u>d</u> etails	Yes <u>N</u> o
9.	now <u>a</u> ctains	

# 2.4 Un-installation of device driver

**IMPORTANT** · Log in to Windows by 'Administrator'.

·Two kinds of following drivers are un-installed by this operation.

(1) Driver for VCP (Virtual COM port)

(2) Driver for direct USB

- 1) Connect a U-WAVE-R to the USB port of PC.
- 2) Open [Control panel]-[Device Manager] of Windows.
- 3) Click [Ports (COM & LPT)].

Point the cursor to [Mitutoyo U-WAVE(COM?)].

( '?' means an arbitrary number. For example, '3'.)

Right-click in the mouse and select [Uninstall].

🚔 Device Manager		
File Action View Help		
	17 10	
Keyboards     Mice and other pointing device     Mice and other pointing device	es	•
Network adapters     Other devices		
<ul> <li>☐ Ports (COM &amp; LPT)</li> <li>☐ Communications Port (CO</li> <li>☐ Communications Port (CO</li> <li>☐ Communications Port (CO</li> <li>☐ ECP Printer Port (LPT1)</li> <li>☐ Mitutoyo U-WAVE (COM3)</li> </ul>	M1) M2)	
Processors     Storage controllers	Update Driver Software Disable	
System devices     Universal Serial Bus controll	Uninstall	
Uninstalls the driver for the selected dev	Scan for hardware changes	-

4) Check [Delete the driver software for this device] and click [OK] button in the following dialog.

Confirm	Device Uninsta	all		×
	Mitutoyo <mark>U</mark> -W	AVE (COM3)	6	
Wamin	g: You are about	to uninstall t	nis device fr	om your system.
V Dele	te the driver soft	ware for this	device.	
		_		

5) Next, click [Universal Serial Bus controllers]. Point the cursor to [Mitutoyo U-WAVE].



6) Check [Delete the driver software for this device] and click [OK] button in the following dialog.



The un-installation of device driver was completed.
 Pull out U-WAVE-R from the USB port of PC.

# 2.5 How to display the Control Panel in Windows 8 / 8.1 / 10

1) In case of Windows 8 / 8.1 / 10, press the [X] key while holding down the [Windows logo] key.



2) Select the [Control Panel] from the menu that appears.

<windo< th=""><th>ws 8&gt;</th><th><windows 10="" 8.1=""></windows></th></windo<>	ws 8>	<windows 10="" 8.1=""></windows>
Programs and <u>F</u> Power <u>Options</u> Event <u>V</u> iewer System Device <u>M</u> anage Dis <u>k</u> Managem Computer Man <u>C</u> ommand Prop	eatures r ent agement mpt mpt ( <u>A</u> dmin)	Programs and Features         Power Options         Event Viewer         System         Device Manager         Network Connections         Disk Management         Computer Management         Command Prompt         Command Prompt (Admin)
<u>T</u> ask Manager Control <u>P</u> anel File <u>E</u> xplorer <u>S</u> earch <u>R</u> un <u>D</u> esktop	-	Image         Image         Control Panel         File Explorer         Search         Run         Shut down or sign out         Desktop

# 3 Menu

## 3.1 Menu

#### 3.1.1 Start of menu dialog

**IMPORTANT** · Start this program after connecting U-WAVE-R to the USB port on PC.

 $\cdot \operatorname{Do}$  not pull out the USB cable during program execution.

U-WAVEPAK can switch between [Setup] function and [Data I/F] function via the menu dialog.



1) Click [U-WAVEPAK] with the program menu of Windows.



2) To specify the driver, the following dialog is displayed.

Driver for Virtual COM port	
Use the driver for Virtual COM port	
₩ When starting, this dialog is displayed	
Cancel	

If the [Use the driver for Virtual COM port] check box is turning off, the driver for direct USB is used.

If the [Use the driver for Virtual COM port] check box is turning on, the driver for VCP is used.

If you do not want to display this dialog at the next start, turn off the [When starting, this dialog displayed] check box.

Click the [OK] button to decide the state of the check box on this dialog.

These settings are memorized to the system.

 When the driver for VCP is used, the following dialog is displayed. When the driver for direct USB is used, this dialog is not displayed.

Virtual COM port setting		Virtual COM por	t setting		×
Registered Virtual COM ports		Registered Virti	ual COM ports	OK	(3)
Cancel		COM3,57600,0,8,1	,1	Cancel	
	(2)				
COM 3 Update		СОМ	3 💌	Update	
Edit of parameters Add	$ \rangle$	🔲 Edit of paramet	ers	Add	
Baud rate 570 🔽 Delete		Baud rate	57600 💌	Delete	
Parity 0(None)	V	Parity	0(None) 💌		
Data bits 🛛 🖉 💆		Data bits	8 🔻		
Stop bits		Stop bits	1 👻		
Flow control		Flow control	1(RTS/CT 💌	Default	
Existing COM ports Communications Port (CC M1) Communications Port (CC M2) Mitutoyo U-WAVE (COM3)		Existing COM po Communications P Communications P Mitutoyo U-WAVE	orts ort (CDM1) ort (CDM2) (CDM3)		

Execute the following operations if nothing is displayed in the [Registered Virtual COM ports] list.

(1) Select the [COM] list box at the center of the dialog referring to the number of 'Mitutoyo U-WAVE (COM?)' in the [Existing COM ports] list. (For example, '3')

The number of '?' is automatically decided by the USB port where the U-WAVE-R is connected. ('3' might not be actually displayed.)

- (2) Click the [Add] button after selecting the COM port number. Virtual COM port for U-WAVE-R is added to the [Registered Virtual COM ports] list.
- (3) Click the [OK] button. When start next time, the operations of (1) and (2) are unnecessary because the contents of [Registered Virtual COM ports] are registered.

Repeat the operation of (1) and (2) when two or more U-WAVE-R are connected.

If the number of the same Virtual COM port has already been registered, the operations of (1) and (2) are unnecessary.

Click the [Update] button after correcting the number of the [COM] list box if the COM port number displayed in the [Registered Virtual COM ports] list is different from the COM port number in the [Existing COM ports] list.

The content of the [Registered Virtual COM ports] can be deleted by clicking the [Delete] button.

4) The following menu dialog is displayed.

M U-WAVEPAK		X
Mitutoyo	Mitutoyo In th m	eisen Conputer Aded Technology e standard in world etrology software ReasurLink
	N-N	/AVEPAK
Exit	Data I/F start	Select language

Click the [Setup start] button in this dialog when you setup the U-WAVE-R and U-WAVE-T.

Click the [Data I/F start] button in this dialog when you collect the data from the measuring tool connected with U-WAVE-T.

Click the [Select language] button of this dialog when you select the language of U-WAVEPAK.

Click the [Exit] button in this dialog when you exit U-WAVEPAK.

Click the [About] button of this dialog when you confirm version information for U-WAVEPAK.

Click the [Driver] button of this dialog when you display the dialog for the driver.

**NOTE** · Click the [Setup start] button to setup the U-WAVE-R and U-WAVE-T when the U-WAVE-R and U-WAVE-T are the factory default state. When start next time, the U-WAVE-R and U-WAVE-T need not be setup again because the setting contents are registered in the U-WAVE-R and U-WAVE-T.

Click the [Setup start] button when you change the contents of the setting for registered U-WAVE-R and U-WAVE-T.

**IMPORTANT** • When the U-WAVE-R and U-WAVE-T are the factory default state, data cannot be collected from the measuring tool.

#### 3.1.2 Operation to start 'U-WAVEPAK Setup' directly

Execute the following operation if you want to start 'U-WAVEPAK Setup' directly.

- 1) Start the Windows Explorer.
- 2) Double-click 'UWAVESET.EXE' in the folder that installs U-WAVEPAK in Windows Explorer.

#### 3.1.3 Operation to start 'U-WAVEPAK Data I/F' directly

Execute the following operation if you want to start 'U-WAVEPAK Data I/F' directly.

- 1) Start the Windows Explorer.
- 2) Double-click 'UWAVEMES.EXE' in the folder that installs U-WAVEPAK in Windows Explorer.

#### MEMO



# 4.1 Setup for U-WAVE of factory default state

#### 4.1.1 New registration of U-WAVE-R

1) Click [Setup start] button in the menu dialog. If the connected U-WAVE-R is a factory default state, the following dialog is displayed.

U-WAVE	PAK 🛛 🕅
2	[Confirm processing.] [COM3] : Device ID = 1999999905
	U-WAVE-R of factory-default state was found. Is this U-WAVE-R set up immediately?
	<u>Yes</u> <u>N</u> o

2) Display the following dialog by clicking [Yes] button.

On processing
COM3]On communicating. Wait for a moment
Break!



- **IMPORTANT** ·[On processing] dialog doesn't close indefinitely when the trouble of the communication occurs. In that case, discontinue communicating clicking [Break] button.
  - $\cdot \mbox{The following matters are considered as a cause of the communication trouble.}$ 
    - (1) Disconnection of USB cable
    - (2) Illegal setting of Virtual COM port
    - (3) Breakdown of U-WAVE-R

3) When the communication is completed, the following dialog is displayed.

U-WAVE-R setting info	rmation	- New 🛛 🔀
Device ID 1999999905 Group ID 00	•	Cancel
Band ID 15 🗨	Noise L	evel
Data lack check level	•	

- 4) Select appropriate [Group ID] and [Band ID]. And, click [OK] button.
- **IMPORTANT** Specify a different value for [Group ID] of each U-WAVE-R when you use two or more U-WAVE-R in wireless area.
  - •Some troubles occur in a wireless communication when two or more U-WAVE-R with same 'Group ID' exist in wireless area.
  - 5) Click [Yes] button when the following dialog is displayed.

U-WAVE	PAK 🛛 🛛
?	[Confirm processing.] Is this information sent immediately?
(	Yes <u>N</u> o

6) The following dialog is displayed while communicating information.

On proc	essing
3	[CDM3]On communicating. Wait for a moment
	Break!

This dialog will be displayed for about 15 seconds.

**NOTE** If two or more U-WAVE-R are connected, the operation from 1) to 6) is repeated.

No.	Port	E Group ID	Device	ID Band	ID Data la	ck check level	Edit
1 -	COM:	3 00	1999999	905 15		9	
	,						
J-WAVE-T (	Total = 0	170)					
No. F	S	Channel	Group ID	Device ID	Band ID	Mode 🛛	Add
1 .	-	00					
2 -	-	01					Edit
3.	-	02					
4 -	-	03					Beversal of selection
5.	-	04					neversal of selection
6.	-	05					- Multi-processing
7.	-	06					main processing
8.		07					Mode change
9.	-	08					
10 -	-	09					Group ID change
11 -	-	10					
12 -	-	11					
13 -	•	12					Band ID change
14 -	-	13					
15 -		14			-		Initialize
16 -	-	15					
17 -	-	16					Class
18 -	-	17					Liear
19 -	-	18					L
20 -	•	19					Backup
21 -	-	20					Баскир
22 -	-	21			-		
23 -	-	22				····· •	Hestore
Cond th	e setting			List	view	Select language	Exit setup

7) When the communication is completed, the following dialog is displayed.

#### 4.1.2 Addition of U-WAVE-T

1) Click [Add] button on the following dialog to add U-WAVE-T. After that, [U-WAVE-T setting information - Add] dialog is displayed.

VI U-WAVEPAK Setup		
U-WAVE-R (Opened communication port n	um = 1)	
No. Port F Group ID	Device ID Band ID Data lack check level	Edit
1 COM3 00	1999999905 15 9	
U-WAVE-T (Total = 0 / 0)	U-WAVE-T setting information - Add 🛛 🔀	
No. F S Channel G	Device ID OK	Add
		Edit
3 02		
	Channel	Reversal of selection
6 05	00 🔽	Multi-processing
8 07	Group ID	Mode change
9 08	00 🔽	
11 - 10	Band ID	Group ID change
12 11 13 12	15	
14 - 13		
16 - 15	Button driven	P
17 - 16	C. Event driven	
19 - 18	Dev	ce ID No. 0999999057
20 19 21 20		
		Bestore
Send the setting	List view Select la	anguage Exit setup
Receive information	Enviro	nment About

Specify the following values on [U-WAVE-T setting information - Add] dialog.

- Input the value of device ID printed on U-WAVE-T to [Device ID]. Device ID is an identification value of each U-WAVE-T.
- (2) Select [Channel] registered to the U-WAVE-T. The range of the selection is 00-99.
- (3) Select the same value as the U-WAVE-R about the value of [Group ID] and [Band ID].
- (4) Select [Measurement mode] by radio button.

When [OK] button is clicked, the following screen is displayed. And, click [Yes] button.

U-WAVEP	PAK 🛛
2	[Confirm processing.]
~	Is this information sent immediately?
	Yes No

The setting of U-WAVE-T is sent to the U-WAVE-R at once.

 When information for U-WAVE-T is registered to U-WAVE-R, the following dialog is displayed.

M U-WAVEPAR	K Setup										
11-WAVE-B (Ωr	nened com	munication po	rt num = 1)								
No	Port	E Group ID	Device	ID (	Band ID	Data lac	vk.check.level		Edit		
	COM3	00	1999999	905	15		9				
	00110	00	1000000	000	10		5				
U-WAVE-T (To	otal = 1 / 1	)									
No. F	S	Channel	Group ID	Devic	eID	Band ID	Mode	^	Add		
1	r	00	00	099999	99108	15	Button driven				
2 .	<b>(</b>	01							Edit		
3 .	-	02									
4 ·	-	03	-						Reversal of selection		
a		04									
7.		06							Multi-processing		
8		07							Mode change		
9 -		08									
10 -		09							Group ID change		
11 .	•	10									
	•	12							Rand ID obanga		
		13							Banu to change		
15		14									
16 -		15							Initialize		
17		16									
'r' = U-\	'r' = U-WAVE-T information is registered. However, disconnect.										
22 .	•	21							I		
23 .	•	22						×	Hestore		
Some disconnec	Some disconnected or editing U-WAVE-T exists.(S='r,e,s,d') Please connect.										
Send the	setting				List vie	w	Select langu	age	Exit setup		
Receive info	ormation						Environme	nt	About		

In this state, the communication by the wireless between the U-WAVE-R and the U-WAVE-T is not connected. Therefore, push an orange [DATA] switch on the U-WAVE-T once (about 1 sec) to connect a wireless communication.

**NOTE** •Push the [DATA] switch on the U-WAVE-T after connecting the U-WAVE-T with the measuring tool and turning on the power of the measuring tool .

· If you cannot connect a wireless communication, try 'U-WAVE-R scan' by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

M	U-WAV	EPA	K Setup	)						
Г	U-WAVE-	R (C	)pened co	ommunication po	t num = 1)					
	No.		Port	F Group ID	Device	e ID	Band ID	Data la	ck check level	Edit
	1	-	COM3	00	1999999	9905	15		9	
	U-WAVE-	T (T	otal = 1 /	1)						
	No.	F	S	Channel	Group ID	De	vice ID	Band ID	Mode	Add
	1		с	00	00	0999	9999108	15	Button driven	
	2			01						Edit
	3	•	-	02						<b></b>
	4	•		03						Beversal of selection
	5			04						

'S' row in this dialog changes from 'r' to 'c' when a wireless communication succeeds. ('c' = Wireless communication is connected.)

U-WAVE-R (Opened commu	unication port num = 1)		Data laek el	haak lawal	Edia
1 COM3	00 199999	3905 15	Data lack cl 9	neck level	E OK
No.         F         S         Ch           1         c         -         -           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           9         -         -         -           11         -         -         -           12         -         -         -           13         -         -         -           13         -         -         -           15         -         -         -           16         -         -         -           17         -         -         -           18         -         -         -           20         -         -         -           21         -         -         -           22         -         -         -           23         -         -         -	annel         Group ID           00         00           01            02         U-WAVE-T set           04         Device ID           05         Device ID           06         Oevice ID           07         999393123           08         Organization           09         Channel           11         O1           12         Group ID           14         O0           16         Band ID           18         15           20         Measurement           21         © Button drive	Device ID 099999108  ting information 	Band ID 15 E - Add X Cancel	Mode	Add Edit Reversal of selection Multi-processing Mode change Group ID change Band ID change Initialize Clear Backup Restore
Send the setting				Select language	Exit setup

3) Repeat operation 1) and 2) if you want to add information for other U-WAVE-T.

- **NOTE** •The [Channel] that other U-WAVE-T are using on the same U-WAVE-R cannot be specified.
  - 4) Click [Exit setup] button to return to the menu dialog when information for the U-WAVE-T is registered.
- **IMPORTANT** · Registered Information for U-WAVE-T is memorized in the memory of the U-WAVE-R.
  - Even when the power of the U-WAVE-R is turned off, registered information is preserved.

### 4.2 Functions

Click the [Setup start] button in the menu dialog.

When information has already been registered in the connected U-WAVE-R, the following dialog is displayed after information is automatically received.

U-WAVEP	AK Setu	P						
U-WAVE-R	(Opened c	ommunication po	rt num = 1)					
No.	Port	F Group ID	Device	ID Band ID	Data la	ck check level		Edit
1 🔽	COM3	00	1999999	905 15		9		
U-WAVE-T	(Total = 1 /	/ 1)						
No.	FS	Channel	Group ID	Device ID	Band ID	Mode	^	Add
1	с	00	00	0999999108	15	Button driven		
2		01						Edit
3	· ·	02						
4	· ·	03						Reversal of selection
5	• •	04						
5	• •	05						Multi-processing
6		05						
q		02						Mode change
10		09						
11		10						Group ID change
12		11						
13		12						Band ID change
14		13						
15		14						Initialize
16	· ·	15						
17		16						Chara
18	· ·	17						Liear
19	• •	18						
20		20						Backup
22		20						
23		22					~	Bestore
		~~						
Send t	he setting			List v	iew	Select langua	age	Exit setup
Beceive	information					Environmer	nt	About

#### 4.2.1 Functions for U-WAVE-R information

U-WAVE-B (Opened communication port num = 1)

0.WATCHIE	www.enr.(opened.communication.portnam.e.r.)										
No.	Port	F Group ID	Device ID	Band ID	Data lack check level	Edit					
1 🔻	СОМЗ	00	1999999905	15	9						
(1)	ļ	(2)									

(1) 'No.' list box

Select 'No.' in this list box if two or more U-WAVE-R are connected. And, switch U-WAVE-R information in the dialog.

No.	
1	-
1	
2	

(2) 'U-WAVE-R information' list

U-WAVE-R information registered in the U-WAVE-R is displayed.

(3) 'Port' row

Port where the U-WAVE-R is connected is displayed. When the driver for VCP is used, 'COM?' is displayed. When the driver for direct USB is used, 'USB' is displayed. (4) 'F' row

Flag for U-WAVE-R information is displayed.

The meaning of the flag is as follows.

When the header of 'F' row is clicked, following information is displayed on the screen.

Flag	Meaning
	Information on U-WAVEPAK is the same as information on the U-WAVE-R.
Έ'	U-WAVE-R information is edited.
'l'	U-WAVE-R information will be initialized.
'S'	'All Band ID scan' will be executed.

- (5) 'Group ID' row'Group ID' specified for U-WAVE-R information is displayed.
- (6) 'Device ID' row'Device ID' of U-WAVE-R is displayed.
- (7) 'Band ID' row'Band ID' specified for U-WAVE-R information is displayed.
- (8) 'Data lack check level' row'Data lack check level' specified for U-WAVE-R information is displayed.
- (9) [Edit(New)] button

To edit U-WAVE-R information, [U-WAVE-R setting information - edit] dialog is displayed.

If the U-WAVE-R is a factory default state, the name of this button is [New].

#### 4.2.2 Functions for U-WAVE-T information

U-WAVE-T (Total = 1 / 1)-

		`								
N	0.	F	S	Channel	Group ID	Device ID	Band ID	Mode	^	Add
	1		с	00	00	0999999108	15	Button driven		
	2			01						Edit
	3	-		02						
	4	-		03						Reversal of selection
	5	-		04						rieversal of selection
	6	-		05						- Multi-processing
	7	-	-	06						india processing
	8	-	-	07						Mode change
	9	-		08						
	10	-	-	09						Group ID change
	11	-	-	10						
	12	-	-	11						
	13	-		12						Band ID change
	14		-	13						
	15	-	-	14						Initialize
	16	-		15						
	17			16						~
	18	-	-	17						Llear
	19	-	-	18						
	20	-		19						Dealure
	21	-		20						Баскир
	22	-	-	21						-
	23	-		22					~	Restore

(1) 'U-WAVE-T information' list

U-WAVE-T information registered in the U-WAVE-R is displayed. The list of 100 U-WAVE-T information can be displayed.

 $\cdot$  Click and select the line. The selected line is highlighted.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode	~
1	-		00					
2	-		01					
3	-		02					
4	-	-	03					
5			04					
6			05					
7	-		06					
8	-		07					
9	-	-	08					
10	-	-	09					
11	-		10					
12	-		11					
13	-		12					
14	-	-	13					
15		-	14					

 $\cdot$  Two or more lines can be selected by Shift key + clicking.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode	^
1	-		00					
2	-		01					
3	-	÷	02					
4	-		03					
5			04					
6			05					
7			06					
8								
9			08					
10	-	-	09					
11			10					
12			11					
13	-	÷	12					
14	-	•	13					
15	-		14					

• The selection line can be added by Ctrl key + clicking.

N N	lo.	F	S	Channel	Group ID	Device ID	Band ID	Mode	^
	1			00					
	2			01					
	3			02					
	-4			03					
	5		-	04					
	6			05					
	7	-	-	06					
	8			07					
	9			08					
	10	-	-	09					
	11			10					
	12	-	-	11					
	13		•	12					
	14		•	13					
	15	-	-	14					

(2) 'F' row

Flag for U-WAVE-T information is displayed.

The meaning of the flag is as follows.

When the header of 'F' row is clicked, following information is displayed on the screen.

Flag	Meaning
	U-WAVE-T information is registered in the U-WAVE-R.
'E'	U-WAVE-T information is edited.
Т	U-WAVE-T information will be initialized.
'A'	U-WAVE-T information will be initialized and released.

#### (3) 'S' row

Status for U-WAVE-T information is displayed.

The meaning of the status is as follows.

When the header of 'S' row is clicked, following information is displayed on the screen.

Status	Meaning
'n'	U-WAVE-T is not registered to the U-WAVE-R.
'r'	U-WAVE-T is registered to the U-WAVE-R. However, disconnect.
'e'	U-WAVE-T information is editing.
's'	U-WAVE-T information is editing. (Source channel)
'd'	U-WAVE-T information is editing. (Destination channel)
'c'	U-WAVE-T is connected to the U-WAVE-R.

#### (4) 'Channel' row

'Channel' for the U-WAVE-T is displayed.

(5) 'Group ID' row

'Group ID' specified for U-WAVE-T information is displayed.

- (6) 'Device ID' row'Device ID' of U-WAVE-T is displayed.
- (7) 'Band ID' row'Band ID' specified for U-WAVE-T information is displayed.
- (8) 'Mode' row'Measurement mode' specified for U-WAVE-T information is displayed.

(9) [Add] button

To add new U-WAVE-T information, [U-WAVE-T setting information - add] dialog is displayed.

(10) [Edit] button

To edit U-WAVE-T information, [U-WAVE-T setting information - edit] dialog is displayed.

- (11) [Reversal of selection] button Selection items in the U-WAVE-T information list are reversed.
- (12) [Mode change] button

'Measurement mode' in the U-WAVE-T information list is changed by multi-processing. This function is executed only to U-WAVE-T information on 'S=n/c'.

(13) [Group ID change] button

'Group ID' in the U-WAVE-T information list is changed by multi-processing. This function is executed only to U-WAVE-T information on 'S=n/c'.

(14) [Band ID change] button

'Band ID' in the U-WAVE-T information list is changed by multi-processing. This function is executed only to U-WAVE-T information on 'S=n/c'.

(15) [Initialize] button

U-WAVE-T information is initialized by multi-processing. This function is executed only to U-WAVE-T information on 'S=r/e/s/d/c'.

(16) [Clear] button

U-WAVE-T information is cleared by multi-processing. This function is executed only to U-WAVE-T information on 'S=n'.

(17) [Backup] button

U-WAVE-T information is saved to the CSV file.

(18) [Restore] button

U-WAVE-T information saved to the CSV file is load.

#### 4.2.3 Common functions

(1)			
Send the setting	List view	Select language	Exit setup
Receive information		Environment	About

- (1) Receive data & status & guidance display area
  Packet communicated with the U-WAVE-R is displayed.
  And, guidance for the operation is displayed.
  Blue characters = Packet received from U-WAVE-R
  Green characters = Packet sent to U-WAVE-R
  Red characters = Guidance for operation
- (2) [Send the setting] button
   Information in U-WAVEPAK is sent to the U-WAVE-R.
   [Sending condition setting] dialog is displayed, and sending information can be specified.
- (3) [Receive information] button

Information registered in the U-WAVE-R is received. The kind of information that can be received is as follows. •U-WAVE-R information •U-WAVE-T information •U-WAVE-R and U-WAVE-T information

- (4) [List view] button
  [Setting information list] dialog is displayed.
  The kind of information that can be displayed is as follows.
  Information of all U-WAVE-R
  U-WAVE-T information of all U-WAVE-R
  U-WAVE-T information of current U-WAVE-R
- (5) [Select language] button[Select language] dialog is displayed.
- (6) [Environment] button[Environment] dialog is displayed.
- (7) [Exit setup] button [U-WAVEPAK Setup] is exit.
- (8) [About] button[Version information] dialog is displayed.

# 4.3 Edit of U-WAVE-R information

Click the [Setup start] button in the menu dialog.

When information has already been registered in the connected U-WAVE-R, the following dialog is displayed after information is automatically received.

J-WAVE-R	(Opened c	ommunication po	rt num = 1)					
No.	Port	F Group ID	Device	D Band II	) Data la	ck check level		Edit
1 🔻	COM3	00	1999999	905 15	-	9		
	 	143						
J-WAVE-I (	otal = 1 /	(1) <u> </u>			(			
No.	FISI	Channel	Group ID	Device ID	Band ID	Mode	_^	Add
1	с	00	00	0999999108	15	Button driven		
2		01						Edit
3		02						
4		03						Reversal of selection
5		04						
5		00					1	Multi-processing
6		05						
å		02						Mode change
10		00						
11		10						Group ID change
12		11						
13		12						Band ID change
14		13						
15		14						La Mar Real
16		15						Initialize
17		16						
18		17						Clear
19		18						
20		19						
21		20						Backup
22		21						
23		22					~	Restore
Send th	ne setting	1		List	view	Select langua	ige	Exit setup
Beceive	information					Environmer	nt	About

#### 4.3.1 Edit

1) Click [Edit] button on the following dialog to edit U-WAVE-R. After that, [U-WAVE-R setting information - Edit] dialog is displayed.

M U-WAVEPAK Setup		
□ U-WAVE-B (Opened communication port pure	m = 1)	
No. Port F Group ID COM3 00	Device ID Band ID Data lack check lev 1999999905 15 9	rel Edit
U-WAVE-T (Total = 1 / 1)		
No. F S Channel Gro	oup ID Device ID Band ID Mode	a 📕 Add
1 c 00 2 · · 01 3 · · 02	00 0999999108 15 Button d	Edit
4 03	O-WAVE-K setting mormation - Eur	Reversal of selection
5 · · · 05 7 · · 06 8 · · 07	Device ID         OK           199999905         Cancel	Multi-processing Mode change
9 · · 08 10 · · 09 11 · · 10 12 · · 11	Group ID	Group ID change
13 · · 12		Band ID change
14 13 15 - 14 16 - 15 17	Band ID  Noise Level    16  008	Initialize
18 - 17	All Band ID scan	Clear
19 · · 18 20 · · 19 21 · · 20 22 · · 21	Data lack check level	Backup
23 - 22		Restore
	Initialize	
<u></u>	-	
Send the setting	List View Sele	crianguage Exit setup
Receive information	En	vironment About

The value at [Group ID], [Band ID] and [Data lack check level] can be edited on this dialog.

- **IMPORTANT** · Specify a different value for [Group ID] of each U-WAVE-R when you use two or more U-WAVE-R in wireless area.
  - ·Some troubles occur in a wireless communication when two or more U-WAVE-R with same 'Group ID' exist.
  - · Specify a different value for [Band ID] of each U-WAVE-R when you use two or more U-WAVE-R in wireless area.

2) Click [OK] button to complete the edit of U-WAVE-R information.

'F' row in 'U-WAVE-R information' list changes to 'E' if the value of [Group ID], [Band ID] or [Data lack check level] is changed.

ſ	-U-WA	VE-R (	Opened c	ommu	inication por	t num = 1)			
	No.		Port	F	Group ID	Device ID	Band ID	Data lack check level	Edit
	1	-	COM3	Е	01	1999999905	16	8	

 Click [Send the setting] button to send edited U-WAVE-R information to the U-WAVE-R. And, click [OK] button after checking on [Send U-WAVE-R information] check box in [Sending condition setting] dialog.

M U-WAVEPAK Setup		🔳 🗆 🗙
U-WAVE-R (Opened communication No. Port F Group COM3 E 01	Sending condition setting	Edit
U-WAVE-T (Total = 1 / 1) No. F S Channel 1 c 00 2 · · 01 3 · · 02 4 · · 03 5 · · 04 6 · · 05 7 · · 06	Sending of U-WAVE-T information       The target flag for sending       F = 'E'       F = 'LA'       Select         F     S     Channel       Device ID	Add Edit Reversal of selection Multi-processing
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		Mode change Group ID change Band ID change Initialize Clear
20         -         -         19           21         -         -         20           22         -         21         23           23         -         22         -           The edited U-W/VE-R or U-WAVE-T         Send the setting         -	OK Cancel	Backup Restore Exit setup
Receive information	Environment	About

4) Click [Yes] button when the following dialog is displayed.

U-WAVE	U-WAVEPAK					
?	[Confirm pro Send the set Executes, O	cessing.] ting </th				
<u>Y</u> e:	;	No				

5) If [Group ID] or [Band ID] of the U-WAVE-R is edited when one or more U-WAVE-T information exists, the following dialog is displayed.

U-WAV	epak 🛛 🛛 🔀
1	[Confirm processing.] Registered U-WAVE-T information is initialized by change of U-WAVE-R information. Do you save registered U-WAVE-T information to CSV file?
	Yes         No         Cancel

- (1) [Yes] = U-WAVE-T information is saved in the CSV file, and U-WAVE-R information is sent to the U-WAVE-R.
- (2) [No] = U-WAVE-R information is sent to the U-WAVE-R without saving U-WAVE-T information in the CSV file.
- (3) [Cancel] = U-WAVE-R information is not sent to the U-WAVE-R.
- 6) The following dialog is displayed while communicating information.

On pro	cessing
٣	[CDM3]On communicating. Wait for a moment
	Break!

When the communication is completed, 'F' row in 'U-WAVE-R information' list changes to blank.

U-WAVE-R (Opened communication port num = 1)										
	No.		Port	F	Group ID	Device ID	Band ID	Data lack check level		Edit
	1 -	] [	COM3		01	1999999905	16	8		

#### 4.3.2 All Band ID scan

Execute 'All Band ID scan' beforehand when you change band ID of U-WAVE-R information. And, specify band ID with small noise level.

1) Click [Edit] button on the following dialog to edit U-WAVE-R. After that, [U-WAVE-R setting information - Edit] dialog is displayed.

M U-WAVEPAK Setup								
□ U-WAVE-R (Opened communication port num = 1	]							
No. Port F Group ID De	vice ID Band ID Data lack check	level	Edit					
1 COM3 00 1999	9999905 15 9							
- U-WAVE-T (Total = 1 / 1)		/						
No E S Channel Group I	D Device ID Band ID Mr	ode	bbA					
1 c 00 00	0999999108 15 Buttor	n driven						
2 · · 01	IL-WAVE-R setting information - Edi		Edit					
4 03 -	o-waveax setting information - Edi		Devended valuesion					
5 04	Device ID	ок 📃 –	neversal or selection					
7	1999999905	Cancel	fulti-processing					
8 · · 07 -		Sancer	Mode change					
9 08	Group ID							
11 10	00 👻	_	Group ID change					
			Band ID change					
14 13	Band ID Noise Level							
	15 💌 000 ×	<b>T</b>	Initialize					
17 16								
	) Ali Banu ibiscan	_	Llear					
20 19 -	Data lack check level		<b>B</b> 1					
21 - 20 -	9 👻	_	Васкир					
23 · · 22 ··		×	Restore					
Send the setting	List view Se	elect language	Exit setup					
Receive information		Environment	About					

Check [All Band ID scan] check box on this dialog. And, click [OK] button.

2) 'F' row in 'U-WAVE-R information' list changes to 'S'.

Г	-U-WA\	/E-R (I									
	No.		Port	F	Group ID	Device ID	Band ID	Data lack check level		Edit	
	1	•	COM3	S	00	1999999905	15	9			

3) Click [Yes] button when the following dialog is displayed.

U-WAVE	AK 🛛 🛛
?	[Confirm processing.]
7	Is this information sent immediately?
Ĺ	Yes <u>N</u> o

4) The following dialog is displayed while communicating information.

On pro	ocessing
٣	[CDM3]On communicating. Wait for a moment
	Break!

This dialog will be displayed for about 15 seconds.

5) When the communication (All Band ID scan) is completed, 'F' row in 'U-WAVE-R information' list changes to blank.

-U-WAV	U-WAVE-R (Opened communication port num = 1)							
No.		Port	F Group ID	Device ID	Band ID	Data lack check level		Edit
1	•	СОМЗ	00	1999999905	15	9		

6) The noise level to each band ID can be confirmed in [U-WAVE-R setting information - Edit] dialog.

U-WAVE-R setting info	rmation	- Edit 🛛 🔀
Device ID 1999999905 Group ID 00		OK Cancel
Band ID 15 All Band ID scan	Noise Le	evel
Data lack check level	000 * 032 000 * 009	
, Initialize	005 005 042 003 000 *	

The asterisk is marked at the smallest noise level.

NOTE ·When the power supply of the U-WAVE-R is turned off, the value at the noise level of each band ID is lost. (The value at all the noise levels returns to '255'.) If you want to know a present noise level, execute 'All Band ID scan' again.

#### 4.3.3 Initialize

Execute this operation if you want to initialize all information registered in the U-WAVE-R.

**IMPORTANT** • All information registered in the U-WAVE-R returns to the factory default state when the U-WAVE-R is initialized. (Registered information is cleared.)

1) Click [Edit] button on the following dialog to initialize U-WAVE-R. After that, [U-WAVE-R setting information - Edit] dialog is displayed.

M U-WAVEPAK Setup		
U-WAVE-R (Opened communication port num = 1) No. 1 COM3 00 1999	rice ID Band ID Data lack check level 999905 15 9	Edit
U-WAVE-T (Total = 1 / 1)		
No. F S Channel Group I	) Device ID Band ID Mode	Add
1 c 00 00 2 · · 01 ·· 3 · · 02 ·· 4 · · 03 ··	0999999108 15 Button driven U-WAVE-R setting information - Edit	Edit
5 · · 04 · · 6 · · 05 · · 7 · 06 · · 8 · 07 · · 9 · · 08 · ·	Device ID OK 1999999905 Cancel	Multi-processing Mode change
10 · · 09 · · 11 · · 10 · · 12 · · 11 · · 13 · · 12 · ·	Group ID	Group ID change
14 · · 13 ·· 15 · · 14 ·· 16 · · 15 ·· 17 · · 16 ··	Band ID Noise Level	Initialize
18 · · 17 ·· 19 · · 18 ·· 20 · · 19 ·· 21 · · 20 ··	All Band ID scan Data lack check level	Backup
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Restore
Send the setting	List view Select language	e Exit setup
Receive information	Environment	About

Check [Initialize] check box on this dialog. And, click [OK] button.

2) 'F' row in 'U-WAVE-R information' list changes to 'I'.

U-WAVE-R (Opened communication port num = 1)										
No	).	Port	F	Group ID	Device ID	Band ID	Data lack check level		Edit	
1	-	COM3		00	1999999905	15	9			
Ĺ										

 Click [Send the setting] button to send command of initialize to the U-WAVE-R. And, click [OK] button after checking on [Send U-WAVE-R information] check box in [Sending condition setting] dialog. 4) Click [Yes] button when the following dialog is displayed.



5) When one or more U-WAVE-T information exists, the following dialog is displayed.

U-WAVE	РАК 🛛 🛛 🔀
1	[Confirm processing.] Registered U-WAVE-T information is initialized by change of U-WAVE-R information. Do you save registered U-WAVE-T information to CSV file?

- (1) [Yes] = U-WAVE-T information is saved in the CSV file, and U-WAVE-R information is sent to the U-WAVE-R.
- (2) [No] = U-WAVE-R information is sent to the U-WAVE-R without saving U-WAVE-T information in the CSV file.
- (3) [Cancel] = U-WAVE-R information is not sent to the U-WAVE-R.
- 6) The following dialog is displayed while communicating information.

On pro	ocessing
$\overline{(2)}$	[CDM3]On communicating. Wait for a moment
	Break!

This dialog will be displayed for about 15 seconds.

7) When the communication (Initialize) is completed, 'F' row in 'U-WAVE-R information' list changes to blank. And, the [Edit] button changes to [New] button.

- U-WAVE-R (Opened communication port num = 1)										
No.		Port	F Group ID		Device ID	Band ID	Data lack check level		New	
1	-	COM3			1999999905	11	9			

Click [New] button if you register new U-WAVE-R information.

# 4.4 Edit of U-WAVE-T information

Click the [Setup start] button in the menu dialog.

When information has already been registered in the connected U-WAVE-R, the following dialog is displayed after information is automatically received.

	K Setup	munication po	t num = 1)						
No.	Port COM3	F Group ID 00	Device 1999999	ID   905	Band ID 15	Data lac	ck check level 9	_	Edit
U-WAVE-T (To	otal = 1 / 1	)							
No. F	S	Channel	Group ID	Dev	vice ID	Band ID	Mode	~	Add
1 2 - 3 -	с	00 01 02	00	0999	999108 	15  	Button driven 		Edit
4 · 5 ·		03 04							Reversal of selection
6 .	•	05							Multi-processing
8 -	7 06 8 07 9 08 10 09								Mode change
10 -						-			Group ID change
12 -		10 11 12				-			Band ID change
14 · 15 ·	:	13 14							Initialize
16 · 17 ·	:	15 16							111101126
18 · 19 ·	:	17 18				-			Clear
20 · 21 ·		19 20							Backup
22 · 23 ·		21 22				-		~	Restore
Send the	Send the setting				List view		Select language		Exit setup
Receive inf	Receive information						Environmer	nt	About

#### 4.4.1 Add

TIP · Refer to '4.1.2 Addition of U-WAVE-T'.
## 4.4.2 Edit

### 4.4.2.1 Change of measurement mode

- 1) Select the U-WAVE-T that you want to edit on the 'U-WAVE-T information' list.
- 2) Click [Edit] button on the following dialog. After that, [U-WAVE-T setting information Edit] dialog is displayed.

M U-WAVEPAK Setup					
- U-WAVE-B (Opened communic	ation port num = 1)				
No. Port F G	roup ID Device ID	Band ID	Data lac	k check level	Edit
1 COM3	00 1999999905	15		9	
U-WAVE-1 (10tal = 171)					1
No. F S Chann	nel Group ID	Device ID	Band ID	Mode 🔼 🔼	Add
1 c 00	00 0	999999108	15	Button driven	
2 · · 01	-				Edit
4 02					1
5 04	U-WAVE-T setting i	nformation	- Edit	×	Reversal of selection
6 · · 05			OK	1	Multi-processing
8 07	Device ID		UK	J	Mode change
9 · · 08	999999108	-	Cancel	· ····	
	, Channel	_		J	Group ID change
12 - 11	Channel				
13 · · 12	00	•			Band ID change
14 13	Group ID				
16 15	00				Initialize
17 16	100	<b>_</b>			
18 · · 17	Band ID				Clear
19 - 18	15				
20	lio	<b>_</b>			Backup
22 21	- Measurement mode-				
23 · · 22	Button driven			🗸	Restore
	C Event driven				
1					
Send the setting	Not initialize	•		Select language	Exit setup
Receive information				Environment	About

Edit measurement mode on this dialog. And, click [OK] button.

3) 'F' row in 'U-WAVE-T information' list changes to 'E'.



4) Click [Yes] button when the following dialog is displayed.

U-WAVE	PAK	$\mathbf{X}$
2	[Confirm processing.] Is this information sent imme	diately?
	Yes <u>N</u> o	

5) 'S' row in 'U-WAVE-T information' list changes to 'e'.

No.	F S	Channel	Group ID	Device ID	Band ID	Mode
1	е	00	00	0999999108	15	Event driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurem	ent mode	Operations
On U-WAVE-T On U-WAVEPAK		
Button driven	Event driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Button driven	Change the data of the measuring tool.

6) 'S' row changes from 'e' to 'c' when a wireless communication succeeds.

**NOTE** ·If you cannot connect a wireless communication, try 'U-WAVE-R scan' by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

### 4.4.2.2 Change of channel

- 1) Select the U-WAVE-T that you want to edit on the 'U-WAVE-T information' list.
- 2) Click [Edit] button on the following dialog. After that, [U-WAVE-T setting information Edit] dialog is displayed.

M U-WAVEPAK Setup					
- U-WAVE-R (Opened commu	unication port num = 1)-				
No. Port F	Group ID Device	e ID Band ID	Data laci	k check level	Edit
1 <b>•</b> COM3	00 199999	9905 15		9	
No. FS Ch	annel Group ID	Device ID	BandID	Mode A	Add
	00 00	0999999108	15	Button driven	- E-8
3	02				Euk
4 · ·	IL WAVE TO MAN	to former from the			Beversal of selection
5 · ·	U-WAVE-1 setting	Information - E	an 🔼		
7		Г	04		Multi-processing
8	Device ID				Mode change
9	999999108	<b>T</b>	Cancel		
10 • •	Channel				Group ID change
12	Channel				
13 • •	30	•			Band ID change
14	05	<u>~</u>			
15	05	_			Initialize
17	08				
18 · ·	09				Clear
19 • •	11				
20	12				Backup
22 · ·	13				
23 · ·	15 pattor anven	×		🗸	Restore
	0.5.1.1				
	C Event driven				
Send the setting	Not initialize	-		Select language	Exit setup
Receive information				Environment	About

Select other channels on this dialog. And, click [OK] button.

- 3) The content of 'U-WAVE-T information' list changes.
  - (1) 'S' row of the source channel changes to 'e'.
  - (2) U-WAVE-T information is displayed in the destination channel. 'E' is set in 'F' row. And, 'n' is set in 'S' row.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1		е	00	00	0999999108	15	Button driven
2	-	-	01				
3		-	02				
4	-	-	03				
5			04				
6	Е	n	05	00	0999999108	15	Button driven

4) Click [Yes] button when the following dialog is displayed.

U-WAVE	PAK 🛛 🛛	]
2	[Confirm processing.]	
~	Is this information sent immediately?	
[	Yes <u>N</u> o	

- 5) The content of 'U-WAVE-T information' list changes.
  - (1) 'S' row of the source channel changes to 's'.
  - (2) 'S' row of the destination channel changes to 'd'.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1		s	00	00	0999999108	15	Button driven
2		-	01				
3		-	02				
4		-	03				
5		-	04				
6		d	05	00	0999999108	15	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

6) 'S' row of destination channel changes from 'd' to 'c' when a wireless communication succeeds.

And, U-WAVE-T information on the source channel removes from the list.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1	-		00				
2	-		01				
3	-	-	02				
4	-	-	03				
5	-	-	04				
6		с	05	00	0999999108	15	Button driven

**NOTE** ·If you cannot connect a wireless communication, try 'U-WAVE-R scan' by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

## 4.4.2.3 Change of group ID or band ID

- 1) Select the U-WAVE-T that you want to edit on the 'U-WAVE-T information' list.
- 2) Click [Edit] button on the following dialog. After that, [U-WAVE-T setting information Edit] dialog is displayed.

M U-WAVEPAK Setup							
- U-WAVE-B (Opened com	munication port nu	m = 1)					
No. Port F	F Group ID	Device ID	Band ID	Data lac	k check level		Edit
1 <b>COM3</b>	00	1999999905 15 9					
U-WAVE-T (Total = 1 / 1)							
No. F S (	Channel Gr	roup ID Dev	ice ID	Band ID	Mode		Add
1 c	00	00 0999	999108	15	Button driven		
2 3	02						Edit
4 5	03 04 U-WAVE	-T setting info	rmation -	Edit	×		Reversal of selection
6 · · 7 · ·	05	15		OK	1		Multi-processing
8	07 Device	eID		OK	J		Mode change
9	08 99999	39108	Ψ.	Cancel			
11	10 Chapr	nel					Group ID change
12	11 00		-				Band ID change
14	13	15	_				
15	14 Group	U					Initialize
17	16 00		-				
18	17 Bandi	ID					Clear
20	19 15		•				
21	20		<u> </u>				Backup
22	21 Measu 22 Con	rement mode				~	Restore
	(• Bu	tton driven					
	C Ev	ent driven					
Send the setting	Not in	nitialize	•		Select lang	uage	Exit setup
Receive information					Environm	ent	About

Select other group ID or other band ID on this dialog. And, click [OK] button.

3) 'F' row in 'U-WAVE-T information' list changes to 'E'.



4) Click [Yes] button when the following dialog is displayed.

U-WAVE	PAK 🛛
2	[Confirm processing.]
~	Is this information sent immediately?
C	Yes No

5) 'S' row in 'U-WAVE-T information' list changes to 'e'.

No.	FS	Channel	Group ID	Device ID	Band ID	Mode
1	е	00	99	0999999108	20	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

- 6) U-WAVE-T information is removed from the list when a wireless communication succeeds.
- **NOTE** ·If you cannot connect a wireless communication, try 'U-WAVE-R scan' by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

#### 4.4.2.4 Initialize

- 1) Select the U-WAVE-T that you want to edit on the 'U-WAVE-T information' list.
- 2) Click [Edit] button on the following dialog. After that, [U-WAVE-T setting information Edit] dialog is displayed.

Μ	U-WAVI	PAP	( Setup	,								
_	U-WAVE-	R (0:	pened co	ommuni	cation po	rt num = 1) —						
	No.	Ē	Port	F	Group ID	Device	eID Ba	and ID	Data la	ck check level		Edit
	1 🔻	] [	COM3		00	199999	9905	15		9		
	U-WAVE-	T (To	ital = 1 /	1)—								
	No.	F	S	Char	nnel	Group ID	Device	ID	Band ID	Mode		Add
	1		с	00	)	00	0999999	108	15	Button driven		
	2	•	:	01	,							Edit
	4			02	-			-				Devenuel of coloration 1
	5	•	•		U-WAVE	I-T setting	informatio	on - Eo	lit 🚺	· ····		neversal or selection
	57	:	:						04			Multi-processing
	8				Devic	e ID			UK			
	9	•	•		9999	99108	Ψ.	]	Cancel			
	10	:	:		Cham	1						Group ID change
	12				Unani	nei		T				
	13	•	•		00		•	]				Band ID change
	14	:	:		Group	D						
	16							1				Initialize
	17	•	•		100		•	1				Cl
	18	÷	:		Band	ID						
	20				15		-	1				
	21	•	•		1			1				Backup
	22	÷	:		Measu	irement mode						Pestere
					© Bi	itton driven					<u> </u>	Trestore
Γ												
Ē	Send	l the	setting		Not i	nitialize	•	1		Select lar	nguage	Exit setup
-				-	Not i	nitialize						
	Receiv	/e infi	ormation		Initia	ize				Enviror	nment	About
					Linitia	ize and releas	se					

Select following items on this dialog. And, click [OK] button.

- (1) [Not initialize] : U-WAVE-T information is not initialized.
   'E' is displayed in 'F' row of the U-WAVE-T information list by this selection.
- (2) [Initialize]: U-WAVE-T information on the U-WAVE-R is initialized.
  However, information on the U-WAVE-T is not initialized.
  'I' is displayed in 'F' row of the U-WAVE-T information list by this selection.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode	
1	1	с	00	00	0999999108	15	Button driven	

(3) [Initialize and release] : U-WAVE-T information on the U-WAVE-R is initialized and the U-WAVE-T returns to the factory default state.

'A' is displayed in 'F' row of the U-WAVE-T information list by this selection.

 No.
 F
 S
 Channel
 Group ID
 Device ID
 Band ID
 Mode

 1
 A
 c
 00
 00999999108
 15
 Button driven

 Click [Send the setting] button to send edited U-WAVE-T information to the U-WAVE-R. And, click [OK] button after checking on [F = 'I,A'] check box in [Sending condition setting] dialog.

Sending co	ndition setting		×
🔲 Send U	-WAVE-R information		
_ Sending of	U-WAVE-T information	n	
The targe	t flag for sending		
🖵 F = 'E	1		
<b>▼</b> F = 'l,	A!		
🔽 🗍 Selec	t		
	1	(	
	Li Channel		
	; 00	0333333106	
L			a
			Lancel

4) Click [Yes] button when the following dialog is displayed.



5) U-WAVE-T information is removed from the list when 'F' row is 'I'.

S' row changes to 'e' when 'F' row is 'A'.
 In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

- 7) U-WAVE-T information is removed from the list when a wireless communication succeeds.
- **NOTE** · If you cannot connect a wireless communication, try 'U-WAVE-R scan' by pushing [DATA] switch from 5 to less than 10 seconds on the U-WAVE-T.

### 4.4.3 Reversal of selection

1) Click [Reversal of selection] button if you want to reverse the selection in the U-WAVE-T information list.

	1 1	1					
No.	FS	Channel	Group ID	Device ID	Band ID	Mode	^
1		00					
2		01					
3		02					
4		03					
5		04					
6		05					
7		06					
8		07					
9		08					
10		09					
11		10					
12		11					
13		12					
14		13					
15		14					
NI		Channel			Devid ID	Mada	
No.	FS	Channel	Group ID	Device ID	Band ID	Mode	
No.	F S	Channel 00	Group ID 	Device ID	Band ID	Mode	_^
No. 1 2	F S	Channel 00 01	Group ID  	Device ID	Band ID  	Mode	^
No. 1 2 3	F S	Channel 00 01 02	Group ID   	Device ID	Band ID   	Mode	
No. 1 2 3 4	F S	Channel 00 01 02 03 04	Group ID   	Device ID	Band ID   	Mode	
No. 1 2 3 4 5	F S	Channel 00 01 02 03 04 05	Group ID    	Device ID	Band ID     	Mode	
No. 1 2 3 4 5 6 7	F S	Channel 00 01 02 03 04 05 05	Group ID     	Device ID	Band ID      	Mode	
No. 1 2 3 4 5 6 7	F S	Channel 00 01 02 03 04 05 06 05	Group ID       	Device ID	Band ID      	Mode	
No. 1 2 3 4 5 6 7 8 8	F S	Channel 00 01 02 03 04 05 06 06 07 09	Group ID         		Band ID      	Mode	
No. 1 2 3 4 5 6 7 8 9	F S	Channel 00 01 03 04 05 06 07 08 09	Group ID         	Device ID	Band ID       	Mode	
No. 1 2 3 4 5 6 7 8 9 0 11	F S	Channel 00 01 02 03 04 05 06 07 07 08 09 10	Group ID             	Device ID	Band ID             	Mode	
No. 1 2 3 4 5 6 7 8 9 10 10 11	F S  	Channel 00 01 02 03 04 05 06 07 08 09 10 11	Group ID            		Band ID	Mode	
No. 1 2 3 4 5 6 7 8 9 10 11 11 12 13	F S   	Channel 00 01 03 04 05 06 07 08 09 10 11 12	Group ID             	Device ID	Band ID	Mode	
No. 1 2 3 4 5 6 7 8 9 10 11 11 12 13	F S         	Channel 00 01 02 03 04 05 06 07 08 09 09 10 11 12 13	Group ID 		Band ID	Mode	

### 4.4.4 Mode change(Multi-processing)

- TIP · Refer to '4.5.5 Environment' for the target of the multi processing.
  - Click [Mode change] button if you want to change the measurement mode to two or more U-WAVE-T information.

The following dialog is displayed.

)
1

- (1) If [Reversal] is selected, the measurement mode reverses.
- Click [OK] button to change the measurement mode. This function is executed only to U-WAVE-T information on 'S=n/c'.
- **IMPORTANT** When U-WAVE-T information is sent to the U-WAVE-R with [Send the setting] button, actual change processing is executed.

## 4.4.5 Group ID change(Multi-processing)

- **TIP** Refer to '4.5.5 Environment' for the target of the multi processing.
  - Click [Group ID change] button if you want to change the Group ID to two or more U-WAVE-T information.

The following dialog is displayed.



- Click [OK] button to change the Group ID. This function is executed only to U-WAVE-T information on 'S=n/c'.
- **IMPORTANT** ·When U-WAVE-T information is sent to the U-WAVE-R with [Send the setting] button, actual change processing is executed.

### 4.4.6 Band ID change(Multi-processing)

- TIP · Refer to '4.5.5 Environment' for the target of the multi processing.
  - Click [Band ID change] button if you want to change the Band ID to two or more U-WAVE-T information.

The following dialog is displayed.

Band ID change	
15 💌	Cancel

 Click [OK] button to change the Band ID. This function is executed only to U-WAVE-T information on 'S=n/c'.

**IMPORTANT** • When U-WAVE-T information is sent to the U-WAVE-R with [Send the setting] button, actual change processing is executed.

### 4.4.7 Initialize(Multi-processing)

- TIP · Refer to '4.5.5 Environment' for the target of the multi processing.
  - Click [Initialize] button if you want to initialize two or more U-WAVE-T information. The following dialog is displayed.

Select		
Not initialize		•
	OK	Cancel

- (1) [Not initialize] : U-WAVE-T information is not initialized.
   'E' is displayed in 'F' row of the U-WAVE-T information list by this selection.
- (2) [Initialize]: U-WAVE-T information on the U-WAVE-R is initialized.
  However, information on the U-WAVE-T is not initialized.
  'I' is displayed in 'F' row of the U-WAVE-T information list by this selection.
- (3) [Initialize and release] : U-WAVE-T information on the U-WAVE-R is initialized and the U-WAVE-T returns to the factory default state.
   'A' is displayed in 'F' row of the U-WAVE-T information list by this selection.
- Click [OK] button to decide the initialization method.
   This function is executed only to U-WAVE-T information on 'S=r/e/s/d/c'.
- 3) In addition, the following dialog is displayed because of the confirmation.



**IMPORTANT** ·When U-WAVE-T information is sent to the U-WAVE-R with [Send the setting] button, actual initialization processing is executed.

4) When [Initialize and release] is specified, the initialization of the U-WAVE-T is executed by the following operation.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

## 4.4.8 Clear(Multi-processing)

- **TIP** Refer to '4.5.5 Environment' for the target of the multi processing.
  - 1) Click [Clear] button if you want to clear two or more U-WAVE-T information. The following dialog is displayed.

U-WAVE	PAK 🛛
2	[Confirm processing.] Executes, OK?
<u>Y</u> e:	5 <u>N</u> o

 Click [Yes] button to clear. This function is executed only to U-WAVE-T information on 'S=n'.

## 4.4.9 Backup

1) Click [Backup] button if you want to save the contents in the U-WAVE-T information list to the CSV file.

The following dialog is displayed.



2) Input the CSV file name. And, click [Save] button.

**IMPORTANT** • Do not edit contents of the CSV file.

## 4.4.10 Restore

 Click [Restore] button if you want to load U-WAVE-T information saved in the CSV file. The following dialog is displayed.

Open			? 🗙
Look jn: 隘	CSV		
File <u>n</u> ame:	*.csv	<u>0</u> pe	n
Files of <u>type</u> :	CSV file (*.csv)	✓ Cano	el

- 2) Select the existed CSV file for U-WAVE-T information. And, click [Open] button.
- **TIP** Refer to '4.5.5 Environment' for the Condition of restore.

# 4.5 Common operations

#### 4.5.1 Send the setting

 Click [Send the setting] button if you want to send U-WAVE-R information and U-WAVE-T information in U-WAVEPAK to the U-WAVE-R. The following dialog is displayed.

F         S         Channel         Device ID           I         c         00         0939393108           E         n         04         0939393129           A         c         08         0939393130           E         n         14         0393939139           E         n         17         0939393189	Sending Sendin Sendin The I F F Sendin	condit nd U-W/A g of U-W arget fla '= 'E' '= 'I A' ielect	ion setting VE-R information (AVE-T informati g for sending	n on	
		S c n c n	Channel 00 04 08 14 17	Device ID 0999999108 0999999129 0999999130 0999999139 0999999139	

- (1) If [Send U-WAVE-R information] check box is checked, U-WAVE-R information is sent.
- (2) If [F = 'E'] check box is checked, U-WAVE-T information with the flag of 'E' is sent.
- (3) If [F = 'I,A'] check box is checked, U-WAVE-T information with the flag of 'I or A' is sent.
- (4) If you want to send specified U-WAVE-T information only, check [Select] check box. And, specify U-WAVE-T information on the list.

🔽 Se	✓ Select										
F	S	Channel	Device ID								
	с	00	0999999108								
Ε	n	04	0999999129								
	с	08	0999999130								
<b>D</b> E	n	14	0999999139								
🗹 E	n	17	0999999189								

- 2) Click [OK] button to send specified information to the U-WAVE-R.
- 3) When [Yes] button is clicked in [Confirm processing] dialog, processing is executed.

### 4.5.2 Receive information

1) Click [Receive information] button if you want to receive information registered in the U-WAVE-R to U-WAVEPAK.

The following dialog is displayed.

Select	X
U-WAVE-R information	•
	Cancel

- (1) If [U-WAVE-R information] is selected, U-WAVE-R information in the U-WAVE-R is received.
- (2) If [U-WAVE-T information] is selected, U-WAVE-T information in the U-WAVE-R is received.
- (3) If [U-WAVE-R and U-WAVE-T information] is selected, U-WAVE-R information and U-WAVE-T information in the U-WAVE-R is received.
- 2) Click [OK] button to receive selected information from the U-WAVE-R.
- 3) When [Yes] button is clicked in [Confirm processing] dialog, processing is executed.

#### 4.5.3 List view

1) Click [List view] button if you want to see the information list of the U-WAVE-R and the U-WAVE-T on U-WAVEPAK.

The following dialog is displayed.

Select	
U-WAVE-T information of all U-WAVE-R	•
	Cancel

- (1) If [Information of all U-WAVE-R] is selected, information on all U-WAVE-R connected with U-WAVEPAK is displayed.
- (2) If [U-WAVE-T information of all U-WAVE-R] is selected, all U-WAVE-T information on all U-WAVE-R connected with U-WAVEPAK is displayed.
- (3) If [U-WAVE-T information of current U-WAVE-R] is selected, all U-WAVE-T information on a current U-WAVE-R is displayed.
- Click [OK] button to display selected information. The following dialog is displayed.

tting inf	ormation list	U-WA	VE-T	informatio	n of all U-WAV	E-R			
No. 1 2 3 4 5	U-WAVE-R 1 [00] 1 [00] 1 [00] 1 [00] 1 [00]	F E A E E	C n c n n	Channel 00 04 08 14 17	Group ID 00 00 00 00 00 00	Device ID 0999999108 0999999129 0999999130 0999999139 0999999189	Band ID 15 15 15 15 15 15	Mode Button driven Button driven Button driven Button driven Button driven	T
									ĸ

## 4.5.4 Select language

1) Click [Select language] button if you want to change the language of U-WAVEPAK. The following dialog is displayed.

Select language		×
English(US)	•	Cancel

Select the language in the list box.

2) When [OK] button is clicked, the following dialog is displayed.

U-WAVE	PAK 🛛 🔀
į,	[Information] New language setting will take effect the next time the application is started.

### 4.5.5 Environment

1) Click [Environment] button if you want to change the environment of [Setup]. The following dialog is displayed.

Environment
The target of multi-processing
The items selected on the list
○ All items on the list
□ Restore of U-WAVE-T information
The flag and status of the outside for restore
□ F = '' □ F = 'E' □ F = 'IA'
□ S = 'n' □ S = 'r,e,s,d' □ S = 'c'
Group ID and Band ID are replaced to value of U-WAVE-R
✓ Status is replaced to 'n' after restore
Cancel

The target of multi-processing
 [The items selected on the list] : Lines selected on the U-WAVE-T information list
 are targets of the multi processing.

 [All items on the list] : All lines in the U-WAVE-T information list are targets of the

[All items on the list] : All lines in the U-WAVE-T information list are targets of the multi processing.

- (2) The flag and status of the outside for restore U-WAVE-T information with checked flag or status are not restored from the CSV file.
- (3) Group ID and Band ID are replaced to value of U-WAVE-R When U-WAVE-T information is restored from the CSV file, Group ID and Band ID of U-WAVE-T are automatically replaced with the value of the U-WAVE-R.
- (4) Status is replaced to 'n' after restore When U-WAVE-T information is restored from the CSV file, the status of U-WAVE-T information is automatically replaced with 'n'.
- **TIP** Refer to '4.4.10 Restore' for the restore.
  - Click [OK] button to decide settings. The settings are memorized to the system.

## 4.5.6 Exit setup

1) Click [Exit setup] button if you want to exit the [Setup].

The following dialog might be displayed by the condition of flag 'F' or status 'S' for information on U-WAVEPAK.

U-WAVE	EPAK 🔀
⚠	[Confirm processing.] The edited U-WAVE-R or U-WAVE-T exists.(F='E,I,A,S') Some disconnected or editing U-WAVE-T exists.(S='r,e,s,d')
	Exit, OK?

# 4.6 Concrete operation example

## 4.6.1 To change group ID or band ID

This chapter describes the operation to change registered group ID and (or) band ID.



1) Assume that U-WAVE-T are registered in the U-WAVE-R of group ID=00 and band ID=15 as shown in the following dialog.

U-WAVE	PAK Setu	р						
- HAWAVE B	(Opened c	ommunication	port pure = 1)					
No	Port		D Dovice I	D Rand ID	Data Jao	k obook loval		E de
110.	COMO		1000000					L UK
	LOMS	00	1000000	100 10		3		
	1							
ILWAVE.T	(Total = 3)	31						
0-000001	(10(a) = 57	3)						
No.	FS	Channel	Group ID	Device ID	Band ID	Mode	<u>^</u>	Add
1	с	00	00	0999999108	15	Button driven		
2	· ·	01						Edit
3	с	02	00	0999999129	15	Button driven		
4	· ·	03	-					Reversal of selection
5	с	04	00	0999999130	15	Button driven		
5	• •	05	-					Multi-processing
6	• •	05						
ő		07	-					Mode change
10		09						
11		10						Group ID change
12		11	-					
13		12						Band ID change
14		13						
15		14						Lable Bas
16		15						Inidalize
17		16						
18	· ·	17						Clear
19	· ·	18						
20	· ·	19						Paaluue
21	• •	20	-					Баскир
22	• •	21	-					Destera
23		22	-				~	mestore
		1			1			1
Send	the setting			List vi	ew	Select language		Exit setup
Receive	e information					Environm	ent	About

2) Click [Backup] button to back up U-WAVE-T information to the CSV file. And, back up to the CSV file.

🖌 U-WAVEPAK	Setup								
No.	ened commur Port F COM3	Group ID 00	um = 1) Device ID 199999990	) E )5	and ID 15	Data lac	ck check level 9		Edit
U-WAVE-T (Tot	al = 3 / 3)								
No. F	S Cha	nnel (	Group ID	Device	e ID	Band ID	Mode	<u>^</u>	Add
1 2 - 3	c ( - (	)0 )1 )2	00  00	099999	9108  9129	15  15	Button driven  Button driven		Edit
4 · 5 ·	· (	)3 )4 )5	 00	099999	 9130	 15	 Button driven		Reversal of selection
-									Multi-processing
Save As						<u>? 🗡</u>			Mode change
Save in: 🗀	backup		•	] 🗢 🖪	D 💣 🛙	<b>∷</b> ∎ <b>•</b>			Group ID change
									Band ID change
									Initialize
									Clear
	-								Backup
File name:	backup.csv					Save		~	Restore
Save as type:	CSV file (*.c:	sv)		•		Cancel			
Send the s	etting				List vie	w	Select lang	uage	Exit setup
Receive info	rmation						Environm	ent	About

3) Select U-WAVE-T information. And, click [Group ID change] button to change group ID of U-WAVE-T information.



If you want to change only band ID, skip this operation.

4) Select U-WAVE-T information. And, click [Band ID change] button to change band ID of U-WAVE-T information.

M U-WAVEP	AK Setup	)						
	Opened or	mmunication po	thours = 1)					
No	Port		Device II	D Band ID	Data la	ck check level		Edit
1	COM3		19999999	05 15		9		
		00	10000000			Ŭ		
U-WAVE-T (	Total = 3 /	3)						
No. F	S	Channel	Group ID	Device ID	Band ID	Mode	<b>^</b>	Add
1 6	с	00	99	0999999108	15	Button driven		
3 6		01		0999999129		 Button driven		Edit
4		03	-					Reveral of celection
5 E	C C	04	99	0999999130	15	Button driven		
7		05	Band ID	change				Multi-processing
8 -		07						Mode change
9 -		08	1000			OK		
11 -		10				Connect		Group ID change
12 -		11			_			
13 -		12				- T		Band ID change
15		13						LuX-E-
16 -		15						Initialize
17 .		16						Clear
19		18						
20 ·		19	-					
21 .		20	-					Васкир
23		22	-				~	Restore
1								
The edited U-	WAVE-R o	r U-WAVE-T exi	sts.(F='E,I,A,S')	Please send.				
Send th	Send the setting			List vie	ew	Select langu	uage	Exit setup
Receive i	information					Environme	ent	About

If you want to change only group ID, skip this operation.

5) Click [Send the setting] button to send the U-WAVE-T information. And, click [OK] button.

Sending	condit	ion setting		
Sendin Sendin The I F F S	nd U-WA g of U-W arget flag f = 'E' i = 'IA' ielect	/E-R information AVE-T information ( for sending	n	
	C C C	00 02 04	0999999108 0999999129 0999999130	
			<u> </u>	Cancel

6) 'S' row in 'U-WAVE-T information' list changes to 'e' when the sending of U-WAVE-T information is completed.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1		е	00	99	0999999108	20	Button driven
2			01				
3		е	02	99	0999999129	20	Button driven
4			03				
5		е	04	99	0999999130	20	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

- 7) U-WAVE-T information is removed from the list when a wireless communication succeeds.
- 8) Click [Edit] button to change group ID and (or) band ID of U-WAVE-R information.



9) Click [Send the setting] button to send the U-WAVE-R information. And, click [OK] button.

M U-WAVEPAK	Setup										
U-WAVE-R (Ope	ened communication p	ort num = 1)									
No.	Port F Group ID	) Device	ID	Band ID	Data la	ck check level	Edit				
1 🗸 0	COM3 99	1999999	1905	20		9					
U-WAVE-T (Tota	al = 0 / 0)										
No. F	S Channel	Group ID	Dev	ice ID	Band ID	Mode	Add				
1 .	· 00	-									
2 .	· 01						Edit				
4 -	· 03						Beversal of selection				
5 -	- 04	-									
7.	- 05						Multi-processing				
Open					? 🗙		Mode change				
Look in: 🗀 t	packup		• ←	🖻 💣 🛙	•		Group ID change				
backup.csv							Band ID change				
							Initialize				
							Clear				
							Backup				
File name:	backup				Open		Restore				
Files of type:	CSV file (*.csv)			-	Cancel						
Send the se	etting			List vie	w	Select language	Exit setup				
Receive infor	mation					Environment	About				

10) Click [Restore] button to restore U-WAVE-T information backed up to the CSV file.

11) Click [Send the setting] button to send the U-WAVE-T information. And, click [OK] button.

Sending c	onditi	ion setting		×
Sending of The tarr F = Sel	U-WAN of U-W/ get flag 'E' 'LA' ect	/E-R information AVE-T information for sending	)	
	n n n	00 00 02 04	099999108 0999999108 0999999129 0999999130	
			OK	Cancel

12) 'S' row in 'U-WAVE-T information' list changes to 'r' when the sending of U-WAVE-T information is completed.

No.	FS	Channel	Group ID	Device ID	Band ID	Mode
1	r	00	99	0999999108	20	Button driven
2		01				
3	r	02	99	0999999129	20	Button driven
4		03				
5	r	04	99	0999999130	20	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations			
Button driven	Push the [DATA] switch on the U-WAVE-T.			
Event driven	Change the data of the measuring tool.			

13) 'S' row changes from 'r' to 'c' when a wireless communication succeeds.

M U-WAVEPAK Setup						
- U-WAVE-R (Opened communication port	t num = 1)					
No. Port F Group ID	Device ID	Band ID	Data lac	ck check level		Edit
1 - COM3 99	1999999905	20		9	— L	
,						
U-WAVE-T (Total = 3 / 3)						
No. F S Channel	Group ID D	evice ID	Band ID	Mode	~	Add
1 c 00	99 099	99999108	20	Button driven		
2 01						Edit
3 c 02	99 099	99999129	20	Button driven	= -	
4 · · U3		9999130		 Button driven		Reversal of selection
6 05	- 030			Button unven	-	
7 06					Γ	Multi-processing
8 07						Mode change
9 08	-				-	
10 · · 09	-					Group ID change
11 • • 10					-	anoup to analigo
12 · · 11	-		-			Read ID alsones
14					_	Banu ID change
15						1.00.0
16 15						Initialize
17 16						
18 · · 17						Clear
19 18					-	
20 19						<b>N</b> 1
21 · · 20	-		-			Васкир
22 21						<b>D</b> (
23 · · 22	-		-		<u>~</u>	Hestore
Send the setting		List view	W	Select languag	e	Exit setup
Receive information				Environment		About

### 4.6.2 To move the U-WAVE-T between U-WAVE-R

This chapter describes the operation to move the U-WAVE-T between U-WAVE-R.



 Assume that U-WAVE-T are registered in the U-WAVE-R of group ID=00 and band ID=15 as shown in the following dialog.

(Assume this U-WAVE-R to be 'U-WAVE-R 1'.)

M	U-WAV	EPA	K Setup	)						
FL	J-WAVE-	R (0	pened co	mmunication por	t num = 2)					
	No.		Port	F Group ID	Device	ID	Band ID	Data la	ck check level	Edit
	1	][	СОМЗ	00	1999999	9905	15		9	
	J-WAVE-	T (T)	otal = 3 /	3)						
	No.	F	S	Channel	Group ID	De	vice ID	Band ID	Mode	🔺 Add
	1		с	00	00	0999	9999108	15	Button driven	
	2			01						Edit
	3		с	02	00	0999	9999129	15	Button driven	<b>E</b>
	4 5	•	c.	03 04	 00	0999	 9999130	 15	 Button driven	Reversal of selection

And, assume that U-WAVE-T are not registered in the U-WAVE-R of group ID=99 and band ID=20 as shown in the following dialog.

(Assume this U-WAVE-R to be ' U-WAVE-R 2'.)

M	U-WAV	EPA	K Setup	þ						
	U-WAVE-	R (0	pened co	ommunication por	t num = 2)—					
	No.		Port	F Group ID	Device	e ID	Band ID	Data la	ck check level	Edit
	2	-	COM4	99	199999	9910	20		9	
	U-WAVE-	тп	otal = 0 /	31						
	No	F	S	Channel	Group ID	De	vice ID	Band ID	Mode	bdd
	1							- Dana ib		
	ż			01						Edit
	3	•		02						
	4	·		03						Reversal of selection
	5	•	•	04						

 Click [Backup] button to back up U-WAVE-T information on 'U-WAVE-R 1' to the CSV file. And, back up to the CSV file.

M U-WAVEPA	K Setup							
U-WAVE-R (0)	pened comm	unication port	num = 2)					
No.	Port F	Group ID	Device IE		Band ID	Data la	ck check level	Edit
1 -	COM3	00	19999999	05	15		9	
- U-WAVE-T (To	otal = 3 / 3) -							
No. E		hannal	Course ID	Der	ine ID	Panel ID	Mada	
1	<u>c</u>			0999	999108	15	Button driven	Auu
2 .	•	01						Edit
3	с	02	00	0999	999129	15	Button driven	
4 .	c	03		0999	999130	15	Button driven	Reversal of selection
6 -		05	-					Multi-processing
7 .		06						Hada abayas
Save As						<u>?</u> ×		Mode change
Save in: 🗀	backup		-	1 ←	🖻 🛉 🖡			Group ID change
,				-				
								Band ID change
								Initialize
								Clear
								Part and
								Васкир
File name:	backup					Save		Restore
Courses	COV CL. C					Canad		
save as type:	USV file (*.	csvj				Jaricei		
Send the	Send the setting			List view			Select language	Exit setup
Receive inf	ormation						Environment	About

3) Select U-WAVE-T information on 'U-WAVE-R 1'. And, click [Group ID change] button to change group ID of U-WAVE-T information.

ΜU	WAVE	PAł	< Setup							
⊢U-\	WAVE-F	) (Oj	pened coi	mmunication po	rt num = 2)					
No	D.	Г	Port	F Group ID	Device	ID Band ID	Data k	ack check level		Edit
1	-		COM3	00	1999999	9905 15		9		
1		1								
	WAVE-T	(To	otal = 373	3)						
	No.	F	S	Channel	Group ID	Device ID	Band ID	Mode	<u> </u>	Add
	1		с	00	00	0999999108	15	Button driven		
	2	•	:	01				nun Durthau deiturau		Edit
	4		с	02				Button driven		
	5		с	04	00	0999999130	15	Button driven		Reversal of selection
	6	•	•	05	0	ID alternation				Multi-processing
	8	:		05	Group	iD change				Mada abayan 1
	9			08			1	04		Mode change
	10			09	99		T I			Group ID change
	11	•	•	10	· · ·			Cancel		
	13			12						Band ID change
	14			13						
	15	·	•	14						Initialize
	16	:		15						
	18			17						Clear
	19			18						
	20	·		19	-					Backup
	21	÷		20 21	-					backup
	23			22			-		~	Restore
	~ *			~~						
	Send	the	setting			List v	iew	Select lang	uage	Exit setup
	Receiv	e inf	ormation					Environm	ent	About

4) Select U-WAVE-T information on 'U-WAVE-R 1'. And, click [Band ID change] button to change band ID of U-WAVE-T information.

M U-1	WAVE	PA	K Setup	)						
⊢U-W	/AVE-F	8 (O)	pened co	mmunication po	t num = 2)					
No.		Г	Port	E Group ID	Device I	D Band IF	) Data la	ack check level		Edit
1					105 15		9			
								-		
		1								
_U-₩	VAVE-	T (To	otal = 3 /	3)						
	No.	F	S	Channel	Group ID	Device ID	Band ID	Mode	<b>^</b>	Add
	1	Е	с	00	99	0999999108	15	Button driven		
	2	÷	-	01						Edit
	3	E	с	02	99	0999999129	15	Button driven		
	5	Ē	c	03	99	0999999130	15	Button driven		Reversal of selection
	6	-	•	05		and the second			_	Multi-processing
			-	05	band IL	change				Mada alaman 1
	9			08			[	04		Mode change
	10		-	09	20		-			Group ID, obango
	11		-	10	,		_	Cancel		choup to change
	12		-	11				<u> </u>		Rand ID obango
	14			13						Band to change
	15		-	14						Initialize
	16		-	15						
	17		-	16						Clear
	10	1		18						
	20		-	19						
	21	-	-	20	-					Backup
	22	•	-	21					_	
	23			22	-				~	Hestore
The e	edited	U-W	AVE-R o	r U-WAVE-T exi	sts.(F='E,I,A,S')	Please send.				
	Send	l the	setting			List v	view	Select lang	uage	Exit setup
F	Receiv	re inf	iormation					Environm	ent	About

5) Click [Send the setting] button to send the U-WAVE-T information on 'U-WAVE-R 1'. And, click [OK] button.

Sending	condit	ion setting		
Sendiny Fendiny F F	nd U-WA g of U-W arget flag = 'E' = 'I,A' elect	VE-R information AVE-T information ) for sending		
	C C C	Channel 00 02 04	Device ID 099999108 099999129 0999999130	
		[		Cancel

6) 'S' row in 'U-WAVE-T information' list changes to 'e' when the sending of U-WAVE-T information is completed.

No.	F	S	Channel	Group ID	Device ID	Band ID	Mode
1		е	00	99	0999999108	20	Button driven
2	-	-	01				
3		е	02	99	0999999129	20	Button driven
4	-	-	03				
5		е	04	99	0999999130	20	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

- 7) U-WAVE-T information on 'U-WAVE-R 1' is removed from the list when a wireless communication succeeds.
- 8) Select 'U-WAVE-R 2' on 'U-WAVE-R information' list.

ſ	- U-WAVE-R (	upenea co	ommu	unication por	: num = 2)			
	No.	Port	F	Group ID	Device ID	Band ID	Data lack check level	Edit
	2 <b>•</b> 1 2	COM4		99	1999999910	20	9	

9) Click [Restore] button to restore U-WAVE-T information backed up to the CSV file.

M U-WAVEPAK Setup			🔳 🗖 🔀
- U-WAVE-R (Opened communication port num =	2]		
No. Port F Group ID D	vice ID Band ID Data la	ck check level	Edit
2 <b>C</b> OM4 99 199	9999910 20	9	
U-WAVE-T (Total = 0 / 0)			
No. F S Channel Group	D Device ID Band ID	Mode 🔼 🔼	Add
1 · · 00 ···			E-B
3 · · 02 ··			
4 · · 03 ··			Reversal of selection
6 05			Multi-processing
7 · · 06			Mode change
Open	Ž 🞽		mode enange
Look in: 🗀 backup			Group ID change
Backup.csv			Band ID change
			Initialize
			Class
			Backup
File name:  backup	Open		Restore
Files of type: CSV file (*.csv)	Cancel		
Send the setting	List view	Select language	Exit setup
Receive information		Environment	About

10) Click [Send the setting] button to send the U-WAVE-T information on 'U-WAVE-R 2'. And, click [OK] button.

Sending	; condit	ion setting		
⊂ Sendir Sendir The	nd U-WA ng of U-W target flag F = 'E'	VE-R information AVE-T informatic for sending	n	
	= 'I,A'			
	Select			
F	S	Channel	Device ID	
	E n E n	00 02	0999999108 0999999129	
	Ēn	04	0999999130	
				Cancel

11) 'S' row in 'U-WAVE-T information' list changes to 'r' when the sending of U-WAVE-T information is completed.

No.	FS	Channel	Group ID	Device ID	Band ID	Mode
1	T	00	99	0999999108	20	Button driven
2		01				
3	r	02	99	0999999129	20	Button driven
4		03				
5	r	04	99	0999999130	20	Button driven

In this state, edited information has not been sent to the U-WAVE-T yet. Therefore, execute the following operation on the U-WAVE-T.

Measurement mode on U-WAVE-T	Operations
Button driven	Push the [DATA] switch on the U-WAVE-T.
Event driven	Change the data of the measuring tool.

12) 'S' row changes from 'r' to 'c' when a wireless communication succeeds.

M	U-WAVEP	AK Setur	þ.							
Г	U-WAVE-R	(Opened co	ommunication por	rt num = 2)						
	No.	Port	F Group ID	Device	ID	Band ID	Data lar	ck check level		Edit
	2 🗸	COM4	99	1999999	910	20		9		
L										
Γ	U-WAVE-II	Total = 37	3)							
	No.	FS	Channel	Group ID	De	vice ID	Band ID	Mode	~	Add
	1	с	00	99	0995	3999108	20	Button driven		
	2	· ·	01							Edit
	3	с	02	99	0995	3999129	20	Button driven		
	4	· ·	03							Reversal of selection
	5	с	04	99	0995	3999130	20	Button driven		neversal of selection



## 5.1 Basic operations of Data I/F

**IMPORTANT** · Use the U-WAVE-R to which one or more U-WAVE-T are registered.

1) Click [Data I/F start] button in the menu dialog. [U-WAVEPAK Data I/F] is minimized and stored in the taskbar of Windows.

🛃 start 🚺 🚺 U-WAVEPAK Data I/F

- 2) Start arbitrary application software ('Notepad' or 'Microsoft Excel', etc.) to collect the measurement data.
- 3) When the measurement data is sent by the U-WAVE-T, the measurement data is input to the key input area in the application software via U-WAVEPAK.



- **NOTE** ·[U-WAVEPAK Data I/F] convert the measurement data into the keyboard emulation data. Therefore, the measurement data can be input to the application software that can be input from the keyboard.
  - •When an orange [DATA] switch on U-WAVE-T or [DATA] switch on measuring tool is pushed, the U-WAVE-T that the measurement mode is set to [Button driven] outputs the measurement data.
  - The U-WAVE-T that the measurement mode is set to [Event driven] outputs the measurement data to the request from the application software.

Refer to '7.1.3.1 Request of measurement data packet' for the request.

4) When the collection of the measurement data is completed, click [Stop data I/F] button after displaying the following dialog clicking [U-WAVEPAK Data I/F] on the taskbar.



Click [Exit data I/F] button if you want to return to the menu dialog.

Click [Start data I/F] button if you want to restart the collection of the measurement data. And, [U-WAVEPAK Data I/F] will be automatically minimized and be stored in the taskbar of Windows.

## 5.2 Functions



Receive data & status display area
 Data or status received from the U-WAVE-R is displayed.

- (2) Channel Channel attached to the data received from the U-WAVE-R is displayed.
- (3) Group ID Group ID attached to the data received from the U-WAVE-R is displayed.
- (4) [Stop data IF] button Reception of data from the U-WAVE-R is stopped.



(5) [Start data I/F] button Reception of data from the U-WAVE-R is started.

- (6) [Exit data I/F] button[U-WAVEPAK Data I/F] is exit.
- (7) [About] button[Version information] dialog is displayed.
- (8) [Select language] button[Select language] dialog is displayed.
- (9) [Environment] button[Environment] dialog is displayed.
## 5.3 Environment

Click [Environment] button if you want to change the settings of the environment. The settings are memorized to the system.

	Environment 🛛 🔀
	Control key ENTER Cancel
M U-WAVEPAK Data I/F	Data collection
	<ul> <li>Measurement data only</li> </ul>
	C All data
Channel	Status code
Group ID	<ul> <li>Disregard</li> </ul>
Start data I/F Select language	C Collects
Exit data I/F Environment	Replace decimal symbol
About	-12345.67890 -> -12345,67890

(1) Control key

Specify the control key that should be attached at the end of the measurement data converted into the keyboard emulation data.

(2) Data collection

Select the method of converting the measurement data into the keyboard emulation data.

When [Measurement data only] is selected, only measurement data is converted into the keyboard emulation data.

When [All data] is selected, the measurement data and attached information (Group ID, Channel and Unit, etc) are converted into the keyboard emulation data.

- **TIP** · Refer to '7.1.2.1 Measurement data packet' for the specification of the measurement data.
  - (3) Status code
     Select whether to convert status received from the U-WAVE-R into the keyboard emulation data.
     When [Disregard] is selected, status is not converted into the keyboard emulation data.
     When [Collects] is selected, status is converted into the keyboard emulation data.
- TIP · Refer to '7.1.2.2 Status packet' for the specification of the status.

(4) Replace decimal symbol

Specify whether to replace the decimal symbol in the measurement data into the symbol in [Control Panel]-[Regional and Language Options]-[Customize Regional Options] of Windows when the measurement data is converted into the keyboard emulation data.

Regional and L	anguage Options	? 🗙	Custo	omize Regional Options		? 🗙
Regional Options	Languages Advanced		Nurr	bers Currency Time Date	•	
Standards and	d formats		-5	ample		
This option a dates, and tin	ffects how some programs format numbers, currencies ne.	ь. -	P	ositive: 123,456,789.00	Negative: -123,456,789.	00
Select an iter your own form	n to match its preferences, or click Customize to choo nats:	se				
English (Uni	ed States) 🛛 🗸 Customize			Decimal symbol:	1	~
Samples			1.4	No. of digits after decimal:	2	~
Number:	123,456,789.00			Diait aroupina symbol:		*
Currency:	\$123,456,789.00			Digit grouping:	123.456.789	
Time:	3:33:34 PM			Maastina sina sumbah	123,430,703	
Short date:	1/3/2006			ivegative sign symbol:	·	×
Long date:	Tuesday, January 03, 2006			Negative number format:	-1.1	*
				Display leading zeros:	0.7	~
Location				List separator:	,	*
To help servi weather, sele	ces provide you with local information, such as news ct your present location:	and		Measurement system:	U.S.	~
United State	8	~				
	OK Cancel	Apply			OK Cancel	Apply

## MEMO



# 6.1 Specification of communication packet

This section shows the communication packet specification for data collection between U-WAVE-R and PC.

## 6.1.1 Common specifications

- (1) Packet data are all coded by ASCII code.
- (2) The code of 'Group ID', 'Channel', 'Device ID', and 'Measurement data' are zero-supplied (If the left side integer number are blank, they are filled by zero).

## 6.1.2 Packets from U-WAVE-R to PC

## 6.1.2.1 Measurement data packet

When receiving the 'Request of measurement data packet' from PC, the U-WAVE-R returns this packet (DT) with the data of the U-WAVE-T which is the event driven mode, or returns the 'Status packet'.

Where the 'Channel' is 00-99, the U-WAVE-R returns a 'Measurement data packet'. Where the 'Channel' is FF, the U-WAVE-R returns multiple 'Measurement data packets' of every U-WAVE-T which has a measurement data.

Also, when receiving a measurement data from the U-WAVE-T of button driven mode, the U-WAVE-R outputs this packet (DT) to the PC.

Item	Value	Bytes	Description
Packet code	DT	2	Measurement data packet
Version number	1	1	U-WAVE API version number
Group ID	00-99	2	Group ID of the U-WAVE-T
Channel	00-99	2	Channel of the U-WAVE-T
Sign	+/-	1	Use '+' where the measurement data = 0.
Measurement data	???????????????????????????????????????	11	?=0-9 or decimal point (Decimal symbol is '.'.)
Unit	M/I/0	1	M=mm, I=Inch, 0=No unit
Terminator	0Dh	1	CR(Carriage return)
Total		21	

## 6.1.2.2 Status packet

To notify the state of U-WAVE, the status packet is sent.

Or, it is sent as a return to the request packet from PC.

Item	Value	Bytes	Description
Packet code	ST	2	Status packet
Version number	1	1	U-WAVE API version number
Group ID	00-99	2	(Refer to 7.1.2.2.1.)
Channel	00-99	2	(Refer to 7.1.2.2.1.)
Device ID	0000000000- 19999999999 (FFFFFFFFF)	10	FFFFFFFFFF=unknown
Status code	00-99	2	(Refer to 7.1.2.2.1.)
Terminator	0Dh	1	CR(Carriage return)
Total		20	

## 6.1.2.2.1 Status code

Code	Message	Detecting device	Description
00	U-WAVE-T's Battery voltage reduction	U-WAVE-T	Battery voltage of the U-WAVE-T reduced. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.
01	Measuring tool doesn't respond	U-WAVE-T	Measuring tool doesn't respond. Measuring tool doesn't connect to the U-WAVE-T. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.
02	The unregistered U-WAVE-T was detected	U-WAVE-R	The U-WAVE-T not registered in the U-WAVE-R was detected. Group ID=Value of the U-WAVE-R. Channel=FF
03	Omission of measurement data	U-WAVE-R	The number of the measurement data omission goes over the alerting level. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.
04	U-WAVE-T disconnected	U-WAVE-R	The U-WAVE-T doesn't connect to the U-WAVE-R. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.
05	No data	U-WAVE-R	The U-WAVE-T's data in the U-WAVE-R is cleared. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.
50	Request packet error	U-WAVE-R	The request packet from PC is illegal. Ex) Illegal packet format; The value in the packet is out of range; The channel isn't registered; Illegal Group ID. Group ID=Value of the request packet. Channel=Value of the request packet.
51	End of search for U-WAVE-T	U-WAVE-R	It was not found though it searched for the U-WAVE-T. Group ID=Value of the request packet. Channel=Value of the request packet.
99	Data cancel	U-WAVE-T	Receive 'data cancel' from the U-WAVE-T. Group ID=Value of the U-WAVE-T. Channel=Value of the U-WAVE-T.

## 6.1.2.3 U-WAVE-R information packet

When the U-WAVE-R receives the 'Request of information packet', where the 'Destination device' is 'U-WAVE-R', the U-WAVE-R returns this packet (RI) or the 'Status packet'.

ltem	Value	Bytes	Description
Packet code	RI	2	U-WAVE-R information packet
Version number	1	1	U-WAVE API version number
Group ID	00-99,FF	2	Group ID of the U-WAVE-R FF=Factory default state
Device ID	000000000- 1999999999	10	Device ID of the U-WAVE-R
Band ID	11-25	2	Band ID of the U-WAVE-R
Data lack check level	0-9	1	(Refer to 1.7.7.)
State of duplication of U-WAVE-R	0/1	1	0: The duplication U-WAVE-R doesn't exist. 1: The duplication U-WAVE-R exists. (Refer to 7.3.1.)
Noise level of band ID 11	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 12	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 13	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 14	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 15	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 16	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 17	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 18	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 19	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 20	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)

Noise level of band ID 21	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 22	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 23	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 24	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Noise level of band ID 25	000-255	3	Value detected by 'All band ID scan'. (Refer to 1.7.6.)
Dummy	000-255	3	Dummy
Terminator	0Dh	1	CR(Carriage return)
Total		68	

## 6.1.2.4 U-WAVE-T information packet

When detecting the change of the 'Status of U-WAVE-T', the U-WAVE-R outputs this packet from the PC.

Item	Value	Bytes	Description
Packet code	TI	2	U-WAVE-T information packet
Version number	1	1	U-WAVE API version number
Status of U-WAVE-T	0/1/2/3/4/5	1	(Refer to 7.1.2.4.1.)
Channel	00-99,FF	2	Channel of the U-WAVE-T FF=Factory default state
Group ID	00-99,FF	2	Group ID of the U-WAVE-T FF=Factory default state
Device ID	000000000- 19999999999	10	Device ID of the U-WAVE-T
Band ID	11-25	2	Band ID of the U-WAVE-T
Measurement mode	0/1	1	0=Button driven 1=Event driven
Terminator	0Dh	1	CR(Carriage return)
Total		22	

## 6.1.2.4.1 Status of U-WAVE-T

Status	Meaning				
0	U-WAVE-T is not registered to the U-WAVE-R.				
1	U-WAVE-T is registered to the U-WAVE-R. However, disconnect.				
2	U-WAVE-T is connected to the U-WAVE-R.				
3	U-WAVE-T information is editing.				
4	U-WAVE-T information is editing. (Source channel)				
5	U-WAVE-T information is editing. (Destination channel)				

## 6.1.3 Packets from PC to U-WAVE-R

## 6.1.3.1 Request of information packet

When the U-WAVE-R receives this packet, where the 'Destination device' is 'U-WAVE-R', the U-WAVE-R returns the 'U-WAVE-R information packet' or the 'Status packet'.

When the U-WAVE-R receives this packet, where the 'Destination device' is 'U-WAVE-T', the U-WAVE-R returns the 'U-WAVE-T information packet' or the 'Status packet'.

Item	Value	Bytes	Description
Packet code	IR	2	Request of information packet
Version number	1	1	U-WAVE API version number
Destination device	0/1	1	0=U-WAVE-R 1=U-WAVE-T
Channel	00-99	2	Channel of the U-WAVE-T
Group ID	00-99	2	Group ID of the U-WAVE-R
Method of search for Channel	0/1/2	1	This field is effective where 'Destination device' = 1(U-WAVE-T) only. 0=Return the U-WAVE-T information which corresponding the specific 'Channel'. 1=Search U-WAVE-T from the specific 'Channel' to upper direction, and return the founded U-WAVE-T information. 2=Search U-WAVE-T from the specific 'Channel' to lower direction, and return the founded U-WAVE-T information.
Terminator	0Dh	1	CR(Carriage return)
Total		10	

## 6.1.3.1.1 About the content of the Status packet

(1) Where the 'Method of search for Channel'=0 and the specific U-WAVE-T isn't registered, the U-WAVE-R returns the 'Status packet' with the following status code.

50 : Request packet error (Specified U-WAVE-T is unregistered.)

(2) Where the 'Method of search for Channel'=1, or 2 and the next U-WAVE-T isn't found, the U-WAVE-R returns the 'Status packet' with the following status code.

51 : End of search for U-WAVE-T

## 6.1.3.2 Request of measurement data packet

When receiving this packet, the U-WAVE-R returns the 'Measurement data packets' of the U-WAVE-T which is event driven mode, or returns the 'Status packet'.

Item	Value	Bytes	Description
Packet code	DR	2	Request of measurement data packet
Version number	1	1	U-WAVE API version number
Channel	00-99,FF	2	Channel of the U-WAVE-T 00-99=Return the measurement data which corresponding the specific 'Channel'. FF=Return the measurement data of all
Group ID	00-99	2	Group ID of the U-WAVE-R
Clear the measurement data	0/1	1	Indicate whether clear or not the measurement data in U-WAVE-R after output it. 0=Not clear 1=Clear
Method of search for Channel	0/1/2	1	<ul> <li>(1) In case of 'Channel' = 00-99:</li> <li>0=Return the measurement data which corresponding the specific 'Channel'.</li> <li>1=Search U-WAVE-T from the specific 'Channel' to upper direction, and return the founded measurement data.</li> <li>2=Search U-WAVE-T from the specific 'Channel' to lower direction, and return the founded measurement data.</li> <li>(2) In case of 'Channel' = FF:</li> <li>0/1=Return the measurement data of all U-WAVE-T which have data in ascending order.</li> <li>2=Return the measurement data of all U-WAVE-T which have data in descending order.</li> </ul>
Terminator	0Dh	1	CR(Carriage return)
Total		10	

## 6.1.3.2.1 About the content of the Status packet

(1) Where the 'Method of search for Channel'=0 and the U-WAVE-R cannot return the measurement data, it returns the 'Status packet' with the following status codes.

04 : U-WAVE-T disconnected

- 05 : No data
- 50 : Request packet error (Specified U-WAVE-T is unregistered.)
- (2) Where the 'Method of search for Channel'=1, or 2 and the U-WAVE-T which have data aren't found, the U-WAVE-R returns the 'Status packet' with the following status code.
  - 51 : End of search for U-WAVE-T

Also, if the U-WAVE-T was registered but it isn't connected or it doesn't have data, it is omitted.

## 6.2 Initialization of U-WAVE

### 6.2.1 Initialization of U-WAVE-R

There are a method of using hardware and a method of using software.

**IMPORTANT** • All information registered in the U-WAVE-R returns to the factory default state when the U-WAVE-R is initialized. (Registered information is cleared.)

### 6.2.1.1 Method of using hardware

- (1) Turn off the power of the U-WAVE-R by removing out the USB cable from PC.
- (2) Push and hold [INIT.] switch on the U-WAVE-R while re-inserting the USB cable in PC.
- (3) When the insertion of the USB cable is completed, release [INIT.] switch.

### 6.2.1.2 Method of using software

Initialize the U-WAVE-R by [Setup] function of U-WAVEPAK.

**TIP** • Refer to '4.3.3 Initialize' for a detailed operation.

## 6.2.2 Initialization of U-WAVE-T

There are a method of using hardware and a method of using software.

**IMPORTANT** • All information registered in the U-WAVE-T returns to the factory default state when the U-WAVE-T is initialized. (Registered information is cleared.)

### 6.2.2.1 Method of using hardware

- (1) Remove the coin cell battery from the U-WAVE-T.
- (2) Push and hold [DATA] switch on the U-WAVE-T while re-inserting the coin cell battery.
- (3) When the insertion of the coin cell battery is completed, release [DATA] switch.

### 6.2.2.2 Method of using software

Initialize the U-WAVE-T by [Setup] function of U-WAVEPAK.

**TIP** • Refer to '4.4.2.4 Initialize' for a detailed operation.

## 6.3 Restriction for use

## 6.3.1 Warning to detection of same group ID and band ID



If two or more U-WAVE-R to which same group ID and band ID are set are detected in the same wireless area, the following warning is shown.

- (1) Green and red LED on U-WAVE-R blinks alternately.
- (2) 'X' mark is displayed in the group ID in 'U-WAVE-R information' list of U-WAVEPAK.

U-WAVE-R (Opened communication port num = 2)							
No.	Port	F	Group ID	Device ID	Band ID	Data lack check level	
2 💌	COM4		05×	1999999924	15	9	

The U-WAVE-R that shows these warning cannot execute a wireless communication to the U-WAVE-T.

Therefore, execute either of following action if this warning is displayed.

(1) Keep away each U-WAVE-R, and separate a wireless area.



(2) Change group ID and band ID of the U-WAVE-R by U-WAVEPAK.



## 6.3.2 Device that continuously outputs data of two or more measuring tools

The device that continuously outputs the digimatic data of two or more measuring tools exists.



Note the following point when you use such a device.

- (1) When the measurement mode of the U-WAVE-T is a 'button driven', the digimatic data output from each measuring tool cannot be discriminated. Therefore, all the digimatic data output from each measuring tool are recognized as digimatic data from the same channel.
- (2) Do not use the measurement mode of U-WAVE-T by the 'event driven'. In the 'event driven', the digimatic data output from each measuring tool are misidentified to 'change of measurement value'.

## 6.3.3 Standby or hibernate of Windows

The power supply from PC to the U-WAVE-R stops when Windows goes to the standby or hibernates.

Therefore, do not go to the standby or hibernate in Windows while using U-WAVE-R.

## 6.3.4 Functions of [DATA] switch

The [DATA] switch exists on U-WAVE-T and the measuring tool.

Functions of each [DATA] switch are as follows.

[DATA] switch	Functions
[DATA] switch on U-WAVE-T	<ul> <li>Data output</li> <li>(When the measurement mode is a button driven)</li> </ul>
	<ul> <li>Output of 'Cancel command' (When the measurement mode is a button driven)</li> <li>U-WAVE-R scan</li> </ul>
[DATA] switch on measuring tool	<ul> <li>Data output</li> <li>(When the measurement mode is a button driven)</li> </ul>

TIP · Refer to 'U-WAVE-T User's Manual' for a detailed operation of [DATA] switch.

#### Europe

#### Mitutoyo Europe GmbH Borsigstrasse 8-10, 41469 Neuss, GERMANY

TEL: 49(0)2137 102-0 FAX: 49(0)2137 102-351 Mitutovo CTL Germany GmbH Von-Gunzert-Strasse 17, 78727 Oberndorf, GERMANY TEL: 49(0)7423 8776-0 FAX: 49(0)7423 8776-99 KOMEG Industrielle Messtechnik GmbH Zum Wasserwerk 3, 66333 Völklingen, GERMANY

TEL: 49(0)6898 91110 FAX: 49(0)6898 911100

#### Germany

Mitutoyo Deutschland GmbH

Borsigstrasse 8-10, 41469 Neuss, GERMANY TEL: 49(0)2137 102-0 FAX: 49(0)2137 86 85

#### M<sup>3</sup> Solution Center Hamburg

Tempowerkring 9 im HIT-Technologiepark 21079 Hamburg, GERMANY TEL: 49(0)40 791894-0 FAX: 49(0)40 791894-50 M<sup>8</sup> Solution Center Berlin Ernst-Lau-Straße 6, 12489 Berlin, GERMANY TEL: 49(0)30 2611 267 FAX: 49 30 67988729

M<sup>8</sup> Solution Center Eisenach Neue Wiese 4, 99817 Eisenach, GERMANY TEL: 49(0)3691 88909-0 FAX: 49(0)3691 88909-9

M<sup>8</sup> Solution Center Ingolstadt

Marie-Curie-Strasse 1A, 85055 Ingolstadt, GERMANY

TEL: 49(0)841 954920 FAX: 49(0)841 9549250

M<sup>3</sup> Solution Center Leonberg

Steinbeisstrasse 2, 71229 Leonberg, GERMANY TEL: 49(0)7152 6080-0 FAX: 49(0)7152 608060

#### Mitutoyo-Messgeräte Leonberg GmbH

Heidenheimer Strasse 14, 71229 Leonberg, GERMANY TEL: 49(0)7152 9237-0 FAX: 49(0)7152 9237-29

#### U.K.

Mitutoyo (UK) Ltd.

Joule Road, West Point Business Park, Andover, Hampshire SP10 3UX, UNITED KINGDOM TEL: 44(0)1264 353 123 FAX: 44(0)1264 354883 M<sup>3</sup> Solution Center Coventry Unit6, Banner Park, Wickmans Drive, Coventry, Warwickshire CV4 9XA, UNITED KINGDOM TEL: 44(0)2476 426300 FAX: 44(0)2476 426339 M<sup>8</sup> Solution Center Halifax

Lowfields Business Park, Navigation Close, Elland, West Yorkshire HX5 9HB, UNITED KINGDOM TEL: 44(0)1422 375566 FAX: 44(0)1422 328025 M<sup>3</sup> Solution Center East Kilbride

The Baird Building, Rankine Avenue, Scottish Enterprise Technology Park, East Killbride G75 0QF, UNITED KINGDOM TEL: 44(0)1355 581170 FAX: 44(0)1355 581171

#### France

#### Mitutoyo France

Paris Nord 2-123 rue de la Belle Etoile, BP 59267 ROISSY EN FRANCE 95957 ROISSY CDG CEDEX, FRANCE TEL: 33(0)149 38 35 00

#### M<sup>8</sup> Solution Center LYON

Parc Mail 523, cours du 3ème millénaire, 69791 Saint-Priest, FRANCE

#### TEL: 33(0)149 38 35 70 M<sup>3</sup> Solution Center STRASBOURG

Parc de la porte Sud, Rue du pont du péage, 67118 Geispolsheim, FRANCE TEL: 33(0)149 38 35 80

#### M<sup>3</sup> Solution Center CLUSES

Espace Scionzier 480 Avenue des Lacs, 74950 Scionzier, FRANCE TEL: 33(0)1 49 38 35 90 M<sup>8</sup> Solution Center TOULOUSE Aeroparc Saint Martin Cellule B08 ZAC de Saint Martin du Touch 12 rue de Caulet 31300 Toulouse, FRANCE TEL: 33(0)1 49 38 42 90 M<sup>3</sup> Solution Center RENNES 2, rue Claude Chappe, PA le Vallon - ZAC Mivoie, 35230 Noyal-Châtillon-sur-Seiche, FRANCE TEL: 33(0)1 49 38 42 10

#### Italy

**MITUTOYO ITALIANA S.r.l.** Corso Europa, 7 - 20020 Lainate (Ml), ITALY TEL: 39 02 935781 FAX: 39 02 9373290 • 93578255 M<sup>3</sup> Solution Center BOLOGNA Via dei Carpini1/A - 40011 Anzola Emilia (BO), ITALY TEL: 39 02 93578215 FAX: 39 02 93578255 M<sup>3</sup> Solution Center CHIETI Contrada Santa Calcagna - 66020 Rocca S. Giovanni (CH), ITALY TEL: 39 02 93578280 FAX: 39 02 93578255 M<sup>3</sup> Solution Center PADOVA Via G. Galilei 21/F - 35035 Mestrino (PD), ITALY TEL: 39 02 93578268 FAX: 39 02 93578255

#### Netherlands

Mitutoyo Nederland B.V. Wiltonstraat 25, 3905 KW Veenendaal, THE NETHERLANDS TEL: 31(0)318-534911 Mitutoyo Research Center Europe B.V. De Rijn 18, 5684 PJ Best, THE NETHERLANDS TEL:31(0)499-320200 FAX:31(0)499-320299

#### Belgium

Mitutoyo Belgium N.V. / M<sup>3</sup> Solution Center Melsele Schaarbeekstraat 20, B-9120 Melsele, BELGIUM TEL: 32(0)3-2540444

#### Sweden

Mitutoyo Scandinavia AB

Släntvägen 6, 194 61 Upplands Väsby, SWEDEN TEL: 46(0)8 594 109 50 FAX: 46(0)8 590 924 10 M<sup>3</sup> Solution Center Alingsås Ängsvaktaregatan 3A, 441 38 Alingsås, SWEDEN TEL: 46(0)8 594 109 50 FAX: 46(0)322 63 31 62 M<sup>3</sup> Solution Center Värnamo

Storgatsbacken 1, 331 30 Värnamo, SWEDEN TEL: 46(0)8 594 109 50 FAX: 46(0)370 463 34

#### Switzerland

Mitutoyo (Schweiz) AG Steinackerstrasse 35, 8902 Urdorf, SWITZERLAND TEL: 41(0)447361150 FAX: 41(0)447361151 Mitutoyo (Suisse) SA Rue Galilée 4, 1400 Yverdon-les Bains, SWITZERLAND TEL: 41(0)244259422 FAX: 41(0)447361151

#### Poland

#### Mitutoyo Polska Sp.z o.o.

Ul.Graniczna 8A, 54-610 Wroclaw, POLAND TEL: 48(0)71354 83 50 FAX: 48(0)71354 83 55

#### Czech Republic

Mitutoyo Česko s.r.o. Dubská 1626, 415 01 Teplice, CZECH REPUBLIC TEL: 420 417-514-011 FAX: 420 417-579-867 Mitutoyo Česko s.r.o. M<sup>8</sup> Solution Center Ivančice Ke Karlovu 62/10, 664 91 Ivančice, CZECH REPUBLIC TEL: 420 417-514-011 FAX: 420 417-579-867 Mitutoyo Česko s.r.o. M<sup>3</sup> Solution Center Ostrava Mošnov Mošnov 314, 742 51 Mošnov, CZECH REPUBLIC TEL: 420 417-514-050 FAX: 420 417-579-867 Mitutoyo Česko s.r.o. Slovakia Branch Hviezdoslavova 124, 017 01 Povážská Bystrica, SLOVAKIA TEL: 421 948-595-590

#### Hungary

#### Mitutoyo Hungária Kft.

Záhony utca 7, D-épület / fsz, 1031 Budapest, HUNGARY TEL: 36(0)1 2141447 FAX: 36(0)1 2141448

#### Romania

#### Mitutovo Romania SRL

1A Drumul Garii Odai Street, showroom, Ground Floor, 075100 OTOPENI-ILFOV, ROMANIA TEL: 40(0)311012088 FAX: 40(0)311012089

#### Showroom in Brasov

Strada Ionescu Crum Nr.1, Brasov Business Park Turnul 1, Mezanin, 500446 Brasov-Judetul Brasov, ROMANIA TEL/FAX: 40(0)371020017

#### **Russian Federation**

### Mitutoyo RUS LLC

13 Sharikopodshipnikovskaya, bld.2, 115088 Moscow, RUSSIAN FEDERATION TEL: 7 495 7450 752

#### Finland

Mitutoyo Scandinavia AB Finnish Branch

Viherkiitäjä 2A, 33960, Pirkkala, FINLAND TEL: 358(0)40 355 8498

### Austria

Mitutovo Austria GmbH Salzburger Straße 260 / 3A-4600 Wels, AUSTRIA TEL: 43(0) 7242 219 998

Mitutoyo Austria GmbH Goetzis Regional showroom Lastenstrasse 48a 6840 Götzis AUSTRIA

#### Singapore

Mitutoyo Asia Pacific Pte. Ltd.

Head office / M<sup>3</sup> Solution Center 24 Kallang Avenue, Mitutoyo Building, SINGAPORE 339415

TEL: (65)62942211 FAX: (65)62996666

#### Malaysia

Mitutoyo (Malaysia) Sdn. Bhd. Kuala Lumpur Head Office / M<sup>3</sup> Solution Center Mah Sing Integrated Industrial Park, 4, Jalan Utarid U5/14, Section U5, 40150 Shah Alam, Selangor, MALAYSIA TEL: (60)3-78459318 FAX: (60)3-78459346 Penang Branch office / M<sup>3</sup> Solution Center 30, Persiaran Mahsuri 1/2, Sunway Tunas, 11900 Bayan

Lepas, Penang, MALAYSIA TEL: (60)4-6411998 FAX: (60)4-6412998 Johor Branch office / M<sup>a</sup> Solution Center 70 (Ground Floor), Jalan Molek 1/28, Taman Molek, 81100 Johor Bahru, Johor, MALAYSIA TEL: (60)7-3521626 FAX: (60)7-3521628

Thailand

### Mitutoyo(Thailand)Co., Ltd.

Bangkok Head Office / M<sup>3</sup> Solution Center

76/3-5, Chaengwattana Road, Kwaeng Anusaowaree, Khet Bangkaen, Bangkok 10220, THAILAND TEL: (66)2-080-3500 FAX: (66)2-521-6136

Chonburi Branch / M<sup>3</sup> Solution Center

7/1, Moo 3, Tambon Bowin, Amphur Sriracha, Chonburi 20230, THAILAND

TEL: (66)2-080-3563 FAX: (66)3-834-5788 ACC Branch / M<sup>8</sup> Solution Center

122/8, 122/9, Moo 6, Tambon Donhuaroh,

Amphur Muangchonburi, Chonburi 20000, THAILAND TEL: (66)2-080-3565

#### Indonesia

#### PT. Mitutoyo Indonesia Head Office / M<sup>3</sup> Solution Center

Jalan Sriwijaya No.26 Desa cibatu Kec. Cikarang Selatan Kab. Bekasi 17530, INDONESIA TEL: (62)21-2962 8600 FAX: (62)21-2962 8604

#### Vietnam

## Mitutoyo Vietnam Co., Ltd

Hanoi Head Office / M<sup>3</sup> Solution Center 1st & 2nd floor, MHDI Building, No. 60 Hoang Quoc Viet Road, Nghia Do Ward, Cau Giay District, Hanoi, VIETNAM TEL: (84)24-3768-8963 FAX: (84)24-3768-8960 Ho Chi Minh City Branch Office / M<sup>3</sup> Solution Center 123 Dien Bien Phu Street, Ward 15, Binh Thanh District, Ho Chi Minh City, VIETNAM TEL: (84)28-3840-3489 FAX: (84)28-3840-3498

#### Philippines

Mitutoyo Philippines, Inc. Head Office / M<sup>3</sup> Solution Center Unit 1B & 2B LTI, Administration Building 1, Annex 1, North Main Avenue, Laguna Technopark, Binan Laguna 4024, PHILIPPINES TEL: (63)49 544 0272 FAX: (63)49 544 0272

#### India

Mitutoyo South Asia Pvt. Ltd. Head Office C-122, Okhla Industrial Area, Phase-l, New Delhi-110 020, INDIA

TEL: (91) 11-26372090 FAX: (91) 11-26372636

MSA Gurgaon technical center Plot no. 65, Ground Floor, Udyog Vihar, Phase-4 Gurgaon, Haryana - 122016 TEL: (91) 124–2340286/287

Mumbai Region Head office

Sentinel Hiranandani Business Powai, 303 Park Mumbai-400 076, INDIA

TEL: (91) 22-25700684/837/839 FAX: (91) 22-25700685

Pune Office / M<sup>3</sup> Solution Center

G4/G5, Pride Kumar Senate, Off. Senapati Bapat Road, Pune-411 016, INDIA

TEL: (91) 20-25660043/44/45 FAX: (91) 20-66033644 Bengaluru Region Head office / M<sup>3</sup> Solution Center

No. 5, 100 Ft. Road, 17th Main, Koramangala, 4th Block, Bengaluru-560 034, INDIA

TEL: (91) 80-25630946/47/48 FAX: (91) 80-25630949

Chennai Office / M<sup>3</sup> Solution Center No. 624, Anna Salai Teynampet, Chennai-600 018, INDIA

#### Kolkata Office Unit No. 1208,Om Tower, 32,J.L..Nehru Road, Kolkata-700 071, INDIA TEL: 91 33-22267088/40060635 FAX: (91)33-22266817 Ahmedabad Office/M<sup>3</sup> Solution Center (Ahmedabad) A-104 & A-105, First Floor, Solitaire Corporate Park, Near Divya Bhaskar Press, S.G. Road, Ahmedabad 380 015, INDIA TEL: (91)079 - 29704902/903 **Coimbatore Office** Regus, Srivari Srimath, 3rd Floor, Door No: 1045, Avinashi Road, Coimbatore - 641 018, INDIA TEL: (91)9345005663 Taiwan Mitutoyo Taiwan Co., Ltd. / M<sup>3</sup> Solution Center Taipei 4F., No.71, Zhouzi St., Neihu Dist., Taipei City 114, TAIWAN (R.O.C.) TEL: 886(2)5573-5900 FAX: 886(2)8752-3267 Taichung Branch / M<sup>3</sup> Solution Center Taichung 1F., No. 299, Gaotie 1st Rd., Wuri Dist., Taichung City 414, TAIWAN(R.O.C.) TEL:886(4)2338-6822 FAX:886(4)2338-6722 Kaohsiung Branch / M<sup>3</sup> Solution Center Kaohsiung 1F., No.31-1, Haibian Rd., Lingya Dist., Kaohsiung City 802, TAIWAN (R.O.C.) TEL: 886(7)334-6168 FAX: 886(7)334-6160 South Korea Mitutovo Korea Corporation Head Office / M<sup>3</sup> Solution Center (Sanbon-Dong, Geumjeong High View Build.), 6F, 153-8, Ls-Ro, Gunpo-Si, Gyeonggi-Do, 15808 KOREA TEL: 82(31)361-4200 FAX: 82(31)361-4201 Busan Office / M<sup>8</sup> Solution Center (3150-3, Daejeo 2-dong) 8, Yutongdanji 1-ro 49beon-gil, Gangseo gu, Busan, 46721 KOREA TEL: 82(51)718-2140 FAX: 82(51)324-0104 Daegu Office / M<sup>3</sup> Solution Center Center), 301-Ho, (Galsan-dong,Daegu Business 217, Seongseogongdan-ro, Dalseo-gu, Daegu 42704 KOREA TEL: 82(53)593-5602 FAX: 82(53)593-5603 China Mitutoyo Measuring Instruments (Shanghai) Co., Ltd. 8th Floor, Tower 1 Lujiazui Jinkong Square No.1788/1800 Century Ave., Pudong New District, Shanghai 200122, CHINA TEL: 86(21)5836-0718 FAX: 86(21)5836-0717 Suzhou Office / M<sup>3</sup> Solution Center (Suzhou) No. 46 Baiyu Road, Suzhou 215021, CHINA TEL: 86(512)6522-1790 FAX: 86(512)6251-3420

Wuhan Office Room 1701, Wuhan Wanda Center, No. 96, Linjiang Road, Wuchang District, Wuhan Hubei 430060, CHINA TEL: 86(027)8544-8631 FAX: 86(027)8544-6227 **Chengdu** Office

1-701, New Angle Plaza, 668# Jindong Road, Jinjiang District, Chengdu, Sichuan 610066, CHINA

TEL: 86(28)8671-8936 FAX: 86(28)8671-9086

#### Hangzhou Office

Room 804, Eastern International Business Center Building 1, No.600 Jinsha Road of Hangzhou Economic and Technological Development Zone, 310018, CHINA TEL: 86(571)8288-0319 FAX: 86(571)8288-0320

Tianjin Office / M<sup>3</sup> Solution Center China (Tianjin)

Room D 12/F, TEDA Building, No.256 Jie-fang Nan Road Hexi District, Tianjin 300042, CHINA

TEL: 86(22)5888-1700 FAX: 86(22)5888-1701

#### Changchun Office

Room 815, 8F, Building A1, Upper East International No.3000 Dongsheng Street, Erdao District, Changchun, Jilin, 130031, CHINA TEL: 86(431)8192-6998 FAX: 86(431)8192-6998

#### **Chongqing Office**

Room 1312, Building 3, Zhongyu Plaza, No.86, Hongjin Avenue, Longxi Street, Yubei District, Chongqing, 400000, CHINA

TEL: 86(23)6595-9950 FAX: 86(23)6595-9950

### Qingdao Office

Room 638, 6F, No.192 Zhengyang Road, Chengyang District, Qingdao, Shandong, 266109, CHINA TEL: 86(532)8096-1936 FAX: 86(532)8096-1937 Xi'an Office Room 805, Xi'an International Trade Center, No. 196 Xiaozhai East Road, Xi'an, 710061, CHINA TEL: 86(29)8538-1380 FAX: 86(29)8538-1381 Dalian Office Room A-106 Shuijing SOHO, No.16 Harbin Road, Economic Development Zone, Dalian, 116600 CHINA TEL: 86(411)8718 1212 FAX: 86(411)8754-7587 Zhengzhou Office Room1801,18/F,Unit1,Building No.23, Shangwu Inner Ring Road, Zhengdong New District, Zhengzhou City, Henan Province, 450018, CHINA

TEL: 86(371)6097-6436 FAX: 86(371)6097-6981

Mitutoyo Leeport Metrology (Hong Kong) Limited Room 818, 8/F, Vanta Industrial Centre, No.21-33, Tai Lin Pai Road, Kwai Chung, NT, HONG KONG TEL: (852)2992-2088 FAX: (852)2670-2488

Mitutoyo Leeport Metrology (Dongguan) Limited / M<sup>3</sup> Solution Center Dongguan

No.26, Guan Chang Road, Chong Tou Zone, Chang An Town, Dong Guan, 523855 CHINA

TEL: 86(769)8541 7715 FAX: 86(769)-8541 7745

Mitutoyo Leeport Metrology (Dongguan) Limited - Fuzhou office

Room 2104, City Commercial Centre, No.129 Wu Yi Road N., Fuzhou City, Fujian Province, 350005 CHINA

TEL: 86 (591) 8761 8095 FAX: 86 (591) 8761 8096

Mitutoyo Leeport Metrology (Dongguan) Limited -Changsha office

Room 2207, Shiner International Plaza, No. 88, Kaiyuan Middle Road, Changsha City, Hunan Province, 410100 CHINA

TEL: 86 (731) 8401 9276 FAX: 86 (731) 8401 9376

Mitutoyo Leeport Metrology (Dongguan) Limited–Guangzhou Office

Room 605, Tower A, No. 264 Xing Tai Road, Shi Qiao Street, Pan Yu District, Guangzhou, Guangdong Province, 511400 CHINA

TEL:(86) 20-8466 1987 FAX:(86) 20-8466 1897 Mitutoyo Measuring Instruments (Suzhou) Co., Ltd. No. 46 Baiyu Road, Suzhou 215021, CHINA TEL: 86(512)6252-2660 FAX: 86(512)6252-2580

#### U.S.A.

Mitutoyo America Corporation

965 Corporate Blvd., Aurora, IL 60502, U.S.A. TEL: 1-(630)820-9666 Toll Free No. 1-888-648-8869 FAX: 1-(630)978-3501 M<sup>3</sup> Solution Center-Illinois

965 Corporate Blvd., Aurora, IL 60502, U.S.A. M<sup>3</sup> Solution Center-Ohio

6220 Hi-Tek Ct., Mason, OH 45040, U.S.A. TEL: 1-(888) -648-8869 FAX: 1-(513)754-0718

M<sup>3</sup> Solution Center-Michigan 46850 Magellan Drive, Suite 100, Novi, MI 48377, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(248)-926-0928 M<sup>8</sup> Solution Center-California 16925 E. Gale Ave., City of Industry, CA 91745, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(626)369-3352 M<sup>3</sup> Solution Center-North Carolina 11515 Vanstory Dr., Suite 140, Huntersville, NC 28078, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(704)875-9273 M<sup>8</sup> Solution Center-Alabama 2100 Riverchase Center, Suite 106, Birmingharm, AL 35244, U.S.A TEL: 1-(888)-648-8869 FAX: 1-(205)-988-3423 M<sup>3</sup> Solution Center-Washington 1000 SW 34th St. Suite G, Renton, WA 98057 U.S.A. TEL: 1-(888)-648-8869 Laboratory M<sup>8</sup> Solution Center-Texas 4560 Kendrick Plaza Drive Suite 120 Houston, TX 77032, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(281)227-0937 M<sup>3</sup> Solution Center-Massachusetts 753 Forest Street, Suite 110, Marlborough, MA 01752, U.S.A. TEL: 1-(888)648-8869 FAX: 1-(508)485-0782 Mitutoyo America Corporation Calibration Lab 965 Corporate Blvd., Aurora, IL 60502, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(630)978-6477 Micro Encoder, Inc. 11533 NE 118th St., Kirkland, WA 98034-7111, U.S.A. TEL: 1-(425)821-3906 FAX: 1-(425)821-3228 Micro Encoder Los Angeles, Inc. 16925 Gale Ave. City of Industry, CA 91745-1806 U.S.A. TEL: 1-626-961-9661 FAX:1-626-333-8019 Mituotyo America Corporation CT-Lab Chicago 965 Corporate Blvd., Aurora, IL 60502, U.S.A. TEL: 1-(888)-648-8869 FAX: 1-(630)-820-3418 Canada

Mitutoyo Canada Inc. 2121 Meadowvale Blvd., Mississauga, Ont. L5N 5N1., CANADA TEL: 1-(905)821-1261 FAX: 1-(905)821-4968 Montreal Office 7075 Place Robert-Joncas Suite 129, Montreal, Quebec H4M 2Z2, CANADA TEL: 1-(514)337-5994 FAX: 1-(514)337-4498

#### Brazil

Mitutoyo Sul Americana Ltda.

Head office / M<sup>a</sup> Solution Center / Factory Rodovia Índio Tibiriçá 1555, CEP 08655-000 - Vila Sol Nascente - Suzano - SP - BRASIL TEL: 55(11) 5643-0040

#### Argentina

### Mitutoyo Sul Americana Ltda.

Argentina Branch / M<sup>8</sup> Solution Center Av. B. Mitre 891/899 – C.P. (B1603CQI) Vicente López –Pcia. **Buenos Aires - ARGENTINA** TEL: 54(11)4730-1433 FAX: 54(11)4730-1411 Sucursal Cordoba / M<sup>3</sup> Solution Center Av. Amadeo Sabattini, 1296, esq. Madrid Bº Crisol Sur - CP 5000, Cordoba, ARGENTINA TEL/FAX: 54(351)456-6251

#### Mexico

#### Mitutoyo Mexicana, S.A. de C.V.

Industria Electrica No.15, Parque Industrial, Naucalpan de Juārez, Estado de Mēxico C.P.53370, MÉXICO TEL: 52 (01-55) 5312-5612 FAX: 52 (01-55) 5312-3380

#### Monterrey Office / M<sup>3</sup> Solution Center

Blv. Interamericana No. 103, Parque Industrial FINSA, C.P. 66636 Apodaca, N.L., MÉXICO TEL: 52(01-81) 8398-8227/8228/8242/8244 FAX: 52(01-81) 8398-8226 Tijuana Office / M<sup>a</sup> Solution Center Calle José María Velazco 10501-C, Col. Cd. Industrial Nueva Tijuana, C.P. 22500 Tijuana, B.C., MÉXICO TEL: 52(01-664) 647-5024 Querétaro Office / M<sup>3</sup> Solution Center Av. Cerro Blanco No.500-1, Colonia Centro Sur, Querétaro, Querétaro, C.P. 76090, MÉXICO TEL: 52(01-442)340-8018, 340-8019 and 340-8020 FAX: 52(01-442)340-8017 Mitutoyo Mexicana, S.A. de C.V. Querétaro Calibration Av. Cerro Blanco 500 30 Centro Sur, Querétaro, Querétaro, C.P. 76090, MÉXICO TEL: 52(01-442)340-8018, 340-8019 and 340-8020 FAX: 52(01-442)340-8017 Aguascalientes Office / M<sup>3</sup> Solution Center Av. Aguascalientes No. 622, Local 15 Centro Comercial El Cilindro Fracc. Pulgas Pandas Norte, C.P. 20138, Aguascalientes, Ags. MÉXICO TEL: 52(01-449)174-4140 and 174-4143 Irapuato Office / M<sup>3</sup> Solution Center Boulevard a Villas de Irapuato No. 1460 L.1 Col. Ejido Irapuato C.P. 36643 Irapuato, Gto., MÉXICO TEL: 52(01-462)144-1200 and 144-1400

# Mitutoyo Corporation

20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa 213-8533, Japan Tel: +81 (0)44 813-8230 Fax: +81 (0)44 813-8231 Home page: http://www.mitutoyo.co.jp/global.html

For the EU Directive, Authorized representative and importer in the EU: Mitutoyo Europe GmbH Borsigstrasse 8-10, 41469 Neuss, Germany