iba KOREA

See the Big Picture

IKS-LM-SN1G

DAQ System for HITACHI μΣNETWORK-1000

Manual

Issue 1.0

Measurement and Automation Systems

Manufacturer

iba Korea System Co., Ltd.

27, Namchoenseo-ro 19 beon-gil, Suyeong-gu, Busan,

48317,

Rep of Korea

Contacts

Main office	+82-51-612-3977
Fax	+82-51-612-3987
Support	+82-51-612-3977
Engineering	+82-51-612-3977
E-Mail	info@ibakorea.co.kr
Web	www.ibakorea.co.kr

The content of this publication has been checked for compliance with the described hardware and software. Nevertheless, discrepancies cannot be ruled out, and we do not provide guarantee for complete conformity. However, the information furnished in this publication is updated regularly. Required corrections are contained in the following regulations or can be downloaded on the Internet.

The current version is available for download on our web site www.ibakorea.co.kr.

Certification

The device is certified according to the European standards and directives. This device corresponds to the general safety and health requirements. Further international customary standards and directives have been observed.

CE

Issue	Date	Revision – Chapter / page	Author	Version HW/FW

Table of contents

1 About this manual

This manual describes the construction, the use and the operation of the IKS-LM-SN1G device.

1.1 Target group

This manual addresses in particular the qualified professionals who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded to as professional if he/she is capable of assessing safety and recognizing possible consequences and risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

1.2 Notations

The following designations are used in this manual:

Action	Notations
Menu command	Menu *Logic diagram*
Call of menu command	*Step 1 – Step 2 – Step 3 – Step x* Example: Select menu *Logic diagram – Add – New logic diagram*
Keys	<Key name> Example: <Alt>; <F1>
Press keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Button name> Example: <OK>; <Cancel>
File names, Paths	„File name“, „Path” Example: „Test.doc“

1.3 Used symbols

If safety instructions or other notes are used in this manual, they mean:

⚠ DANGER

The non-observance of this safety information may result in an imminent risk of death or severe injury:

- By an electric shock!
- Due to the improper handling of software products which are coupled to input and output procedures with control function!

⚠ WARNING

The non-observance of this safety information may result in a potential risk of death or severe injury!

⚠ CAUTION

The non-observance of this safety information may result in a potential risk of injury or material damage!

Note

A note specifies special requirements or actions to be observed.

Important note

Note if some special features must be observed, for example exceptions from the rule.

Tip

Tip or example as a helpful note or insider tip to make the work a little bit easier.

Other documentation

Reference to additional documentation or further reading.

2 Introduction

IKS-LM-SN1G is a middle ware that acquires cycle memory on μΣNETWORK-1000

without adding loads on PCS, PIST, POC system μΣNETWORK-1000 is a control network

for HITACHI HISEC-04-Rxxx series.

μΣNETWORK-1000(High-Speed NETWORK for Control and Information Systems) is consists of PLC, LANBOX, POC. It is developed by HITACHI for control and information with high reliability and high-speed performance.

But due to the exclusive network structure, it was not easy to access the data on the network.

IKS-LM-SN1G is a middleware system to collect all cycle memory data on the HTIACHI micro sigma network by sniffering.

Features of IKS-LM-SN1G

1) Data acquisition in ibaPDA with original sampling rate of the network
2) No adding load on the network or PLC by sniffer function
3) No need to program additionally on POC or LANBOX

Option of IKS-LM-SN1G

1) data acquisition of internal memory of PLC(HPU)

(PLC engineering required in this case)

3 Scope of delivery

After having unpacked the delivery, please check if it is complete and intact.

The following components are included in delivery:

IKS-LM-SN1G System

Brackets (19 Inch Rack Type)

Power Cable

Manual

Case 1: µΣNETWORK-1000 Loop is Multi-mode

IKS-OCMM-LC (Fiber Optical Coupler)

Case 2: µΣNETWORK-1000 Loop is Single-mode

IKS-OCSM-LC (Fiber Optical Coupler)

4 Safety instructions

4.1 Designated use

The device is an electrical equipment. It may only be used for the following applications:

Measurement data acquisition and measurement data analysis

Applications of iba software products (e.g ibaPDA) and iba hardware products

The device may only be used as defined in the "Technical Data" chapter.

4.2 Special safety instructions

⚠ CAUTION

Observing the operating voltage range

Power should be AC 100 - 240V, 50/ 60Hz.

⚠ CAUTION

Do not open the device!

There are no serviceable parts inside the device.

Opening the device will void the warranty.

Note

Cleaning

To clean the device, use a dry or slightly moistened cloth.

5 System requirements

5.1 Hardware

For operation:

100 - 240V AC voltage supply, 50/ 60Hz.

5.2 Software

ibaPDA, version 7.2 or higher

6 Mounting

6.1 Mounting

Connect the power, Ethernet cable, and fiber optic cable to IKS-LM-SN1G properly, then turn on the power switch.

1. The power lamp lights when the power is turned on.
2. The RUN lamp lights when CPU booting is completed.
3. The ibaPDA lamp lights after about 20 to 45 seconds.
4. RX lamp is on : If it is off, there is a frame error in the optical network.
5. ERR lamp is off : Lights when H / W failure occurs.
6. L-ERR lamp is off : Lights when frame error occurs.
7. FD1 lamp is on : If it is off, the optical cable is not connected to Fiber A on the rear panel.
8. FD2 lamp is on : If it is off, the optical cable is not connected to Fiber B on the rear panel.
9. LINK lamp lights : If it is off, you should check the optical network because no data is received from the optical network.
10. ibaPDA lamp lights : If it is off, there is a problem with CPU operation, setting value or Ethernet. You should try to normalize the communication by resetting.

6.2 Operating

Basically, this device can transmit data only when ibaPDA is ready.

Before installation and operation of this device, check whether ibaPDA is installed or not.

If you have difficulty handling device, please contact our customer support team in Appendix D of the User Manual.

6.2.1 Connection and first switching on

CAUTION
Before switching on the device for the first time check if the power supply is connected properly and the connecting cable (fiber optic and copper data cable) are plugged.

1) Connect all cables.
2) Switch on the device using the mains switch.
3) The device is booted automatically.

◈ Note: The power supply must be AC 100 - 240V, 50/60Hz.

6.2.2 Reset switch

1) IKS-LM-SN1G is designed to perform all operations automatically.
2) This device has no function other than the power ON / OFF operation.
3) All functions are performed automatically and maintenance is easy.
4) In special cases, the Reset function can be used to restart the system.
5) The status of this device can be displayed in real time to determine the fault or error.

RESET is a function to reset the CPU that transmits data with ibaPDA.

If the connection with ibaPDA fails, check the CPU operation through Ping Test.
If the CPU is determined to be abnormal, the CPU is restarted via reset.

If CPU is reset, ibaPDA stops collecting data during booting (20 to 45 seconds).
Please reset the CPU only when necessary.

6.2.3 ETHERNET, 10G(SFP+)

This device provides one Gigabit Ethernet port.
It also provides one 10G Fiber Optical Ethernet port (SFP +).
Users can select either Gigabit Ethernet (UTP or STP) or 10 Gigabit Ethernet (SFP +).
It is not possible to use 2 ports at the same time.

The ethernet port is connected to ibaPDA.

IP is shipped with factory default settings.

If possible, use the IP without modification.

Please contact our customer support team when changing.

6.2.4 Maintenance

When you are finished using the device, disconnect the device from the power supply.

If maintenance is required, turn off the power.

6.3 Boot

Basically, it is a mode that collects optical network data by ibaPDA.

If no action is taken, ibaPDA Mode will be executed automatically after power on.

< LCD Display >

1) [Initializing...]
2) [TASK Starting..]
3) [Check Mode xxxxms] : Check setting switch for 3 seconds.
4) [ibaPDA Ready]
5) [PDA 192.168.xxx.xxx]
6) Boot is completed and data is transferred to PDA.

7 Device description

7.1 Device views

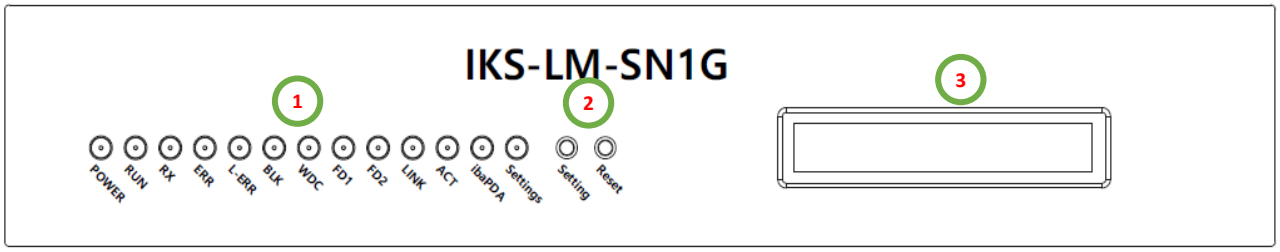


Figure 1 : Front view

Number	Type	Description
①	LEDs	Operating status indicators
②	Switch	Setting switch : Switch to start the system in parameter setting mode Reset switch : Switch to restart the system
③	Display	Display the status of the system and the current settings

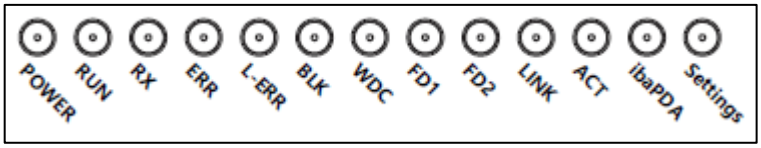


Figure 2 : Status display of LED

Number	Name	Description
①	POWER	Lights when power is applied to the system
②	RUN	Lights when CPU is booted and ready
③	RX	Lights when a frame is received on the optical network
④	ERR	Lights when H / W faults
⑤	E-ERR	Lights when an error occurs in the frame received from the optical network
⑥	BLK	Lights when optical loop is blocked
⑦	WDC	Lights when WDC occurs (normal)
⑧	FD1	Lights when optical signal is received from Port A
⑨	FD2	Lights when optical signal is received from Port B
⑩	LINK	Lights when N address is received on the optical network
⑪	ACT	Status for port for manufacturer management
⑫	ibaPDA	Lights when ibaPDA is transmitting data
⑬	Settings	Lights when setting program is connected and connected to the setting PC

Figure 3 : LCD display=

Number	Name	Description
①	< IKS-LM-SN1G >	Display the model name on the first line.
②	PDA 192.168.xxx.xxx	Displays the IP address of the ibaPDA
③	BLK, OK	Loop Status (BLK, OK)

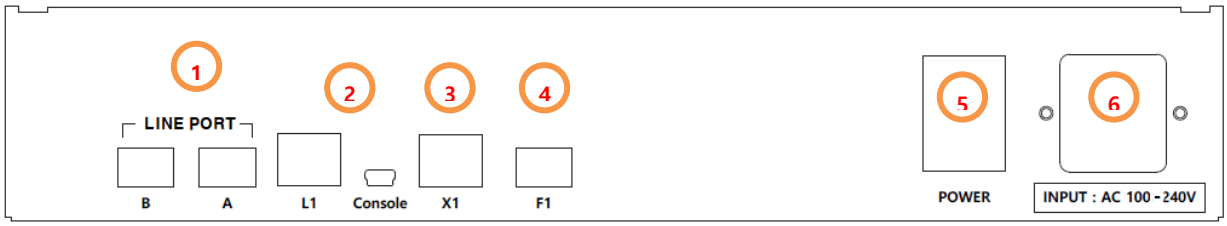


Figure 4 : Rear view

No	Name	Description
①	LINE PORT A, B	Optical port to be connected with IKS-OCMM-LC
②	L1, Console	Manufacturer management port (Do not use the user)
③	X1	Gigabit Ethernet port for ibaPDA connection
④	F1	10 Giga Fiber Ethernet port for ibaPDA connection (SFP+)
⑤	Power switch	Power switch on system
⑥	Power input	Terminals for connecting power to the system

7.2 Display elements

The operating status of the device is shown by colored status LEDs.

LED	State	Description
POWER	On	Lights when power is applied to the system
RUN	On	Lights when CPU is booted and ready
RX	On	Lights when a frame is received on the optical network
ERR	On	Lights when H / W faults
E-ERR	On	Lights when an error occurs in the frame received from the optical network
BLK	On	Lights when optical loop is blocked
WDC	On	Lights when WDC occurs (normal)
FD1	On	Lights when optical signal is received from Port A
FD2	On	Lights when optical signal is received from Port B
LINK	On	Lights when N address is received on the optical network
ACT	On	Status for port for manufacturer management
ibaPDA	On	Lights when ibaPDA is transmitting data
Settings	On	Lights when setting program is connected and connected to the setting PC

7.3 Operating elements, connections

7.3.1 Power connection

Never use the device with a damaged mains cable!

Power should be AC 100 - 240V, 50/ 60Hz.

Always use a socket equipped with earthing contact!

Use a terminal strip with overvoltage protection or an uninterruptible power supply (UPS)!

Never put a damaged device into operation!

7.3.2 Ethernet cable connection

IKS-LM-SN1G performs TCP / IP, UDP/IP communication via Ethernet terminal.

Connect with ethernet cable or 10G fiber optic cable to ibaPDA or a system that supports Ethernet communication.

7.3.3 IKS-OCMM-LC connection

Before installing IKS-LM-SN1G, you must install IKS-OCMM-LC in μΣNETWORK.-1000

It is a device that is necessary to collect by sniffer function in μΣNETWORK-1000.

1) It is recommended to work during the maintenance work because the existing optical cable must be disconnected and reconnected temporarily.

2) Connect using the optical cable provided with the product.

3) Remove one optical cable from the existing NCP-E, reconnect it, and check if there is a problem.

< Sequence of the work >

1) After separating one optical cable from the existing NCP-E, check whether Loopback occurs and data is normally transmitted and received.

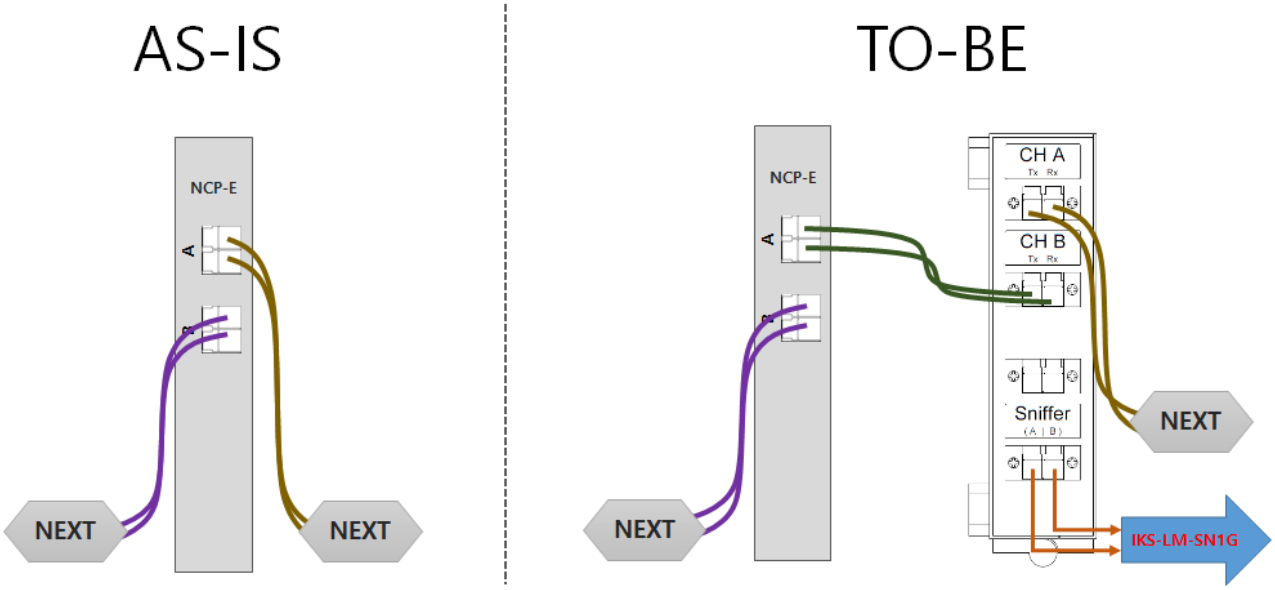
2) Connect the cable again to check if the optical loop is normal.

3) Prepare the IKS-OCMM-LC.

4) Connect the cable of the top port of the NCP-E to the top port of the IKS-OCMM-LC as picture.

5) Connect the top port of the NCP-E and the bottom port of the IKS-OCMM-LC with the provided cable.

6) Connect the third port of IKS-OCMM-LC (to IKS A, B) to IKS-LM-SN1G.



7.3.4 Optical cable connection

Connect the fiber optic cable for μΣNETWORK-1000 to the rear panel of IKS-LM-SN1G.

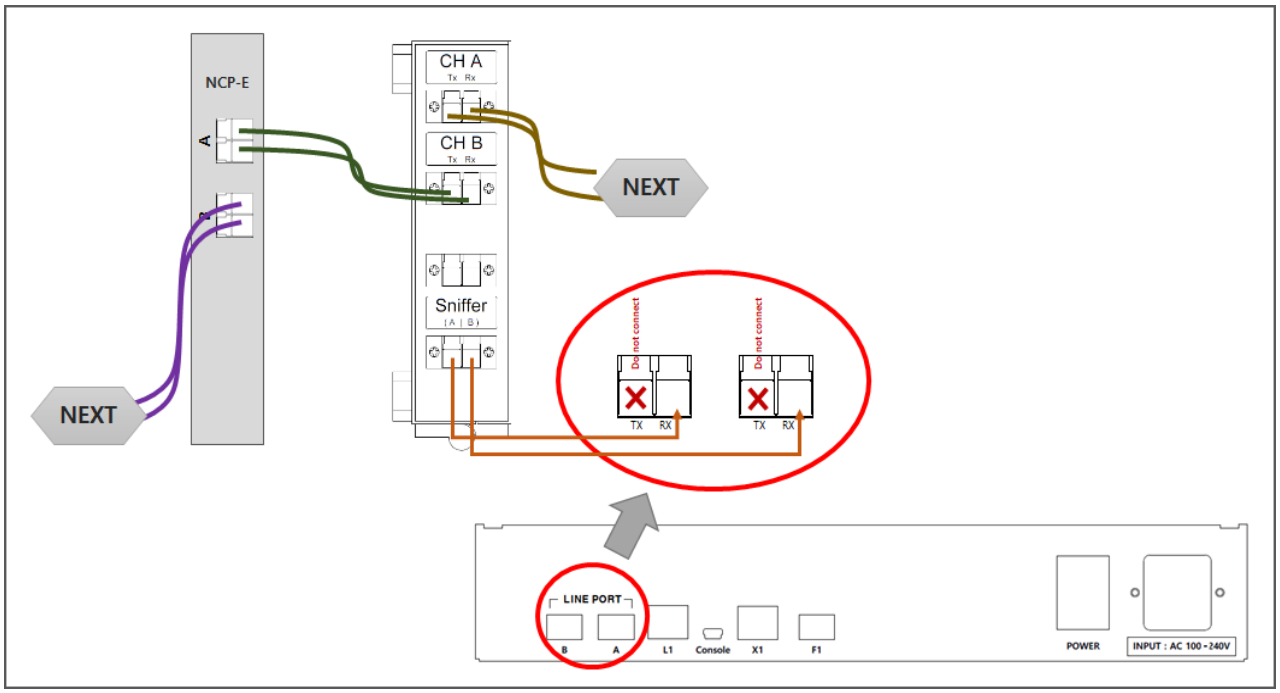
Connect IKS A and B ports of IKS-OCMM-LC to ports A and B of IKS-LM-SN1G..

Only connect to the Rx terminal of IKS-LM-SN1G.

※ **Do not connect the TX terminal.**

Fiber optic cable must use Multi-Mode.

Connect type is LC-LC.



7.3.5 Moving the blocking segments

Caution) You should not install IKS-OCMM-LC on the block node.

μΣNETWORK-1000 maintains the blocking state in one segment even under normal conditions.

If IKS-OCMM-LC is installed in this blocking state, Loop is in Transmission disabled state and data collection is not possible.

The Blocking State location must be located in a different segment than the IKS-OCMM-LC installed segment.

Tip) The Blocking State position is moved by disconnecting and then reconnecting the optical fiber in the segment where IKS-OCMM-LC is not installed.

■Dual Ring Configuration

(1) µΣNETWORK-1000 operates only on ring based topologies. The following figure shows a basic ring configuration. Each node connects to the ring via two ports. In the normal state, two neighboring nodes of the network become the Blocking State and cut off the connections logically between them to prevent loops which cause transmitted frames to go around forever along the ring network.

(2) Each node monitors the neighboring segments including the blocking segment at all the time. If any segment of the network is disconnected, it will be back to a normal state within an ultra high-speed recovery time (less than 250ms) by automatically moving the blocking segments to each end of the faulty part thus isolating it.

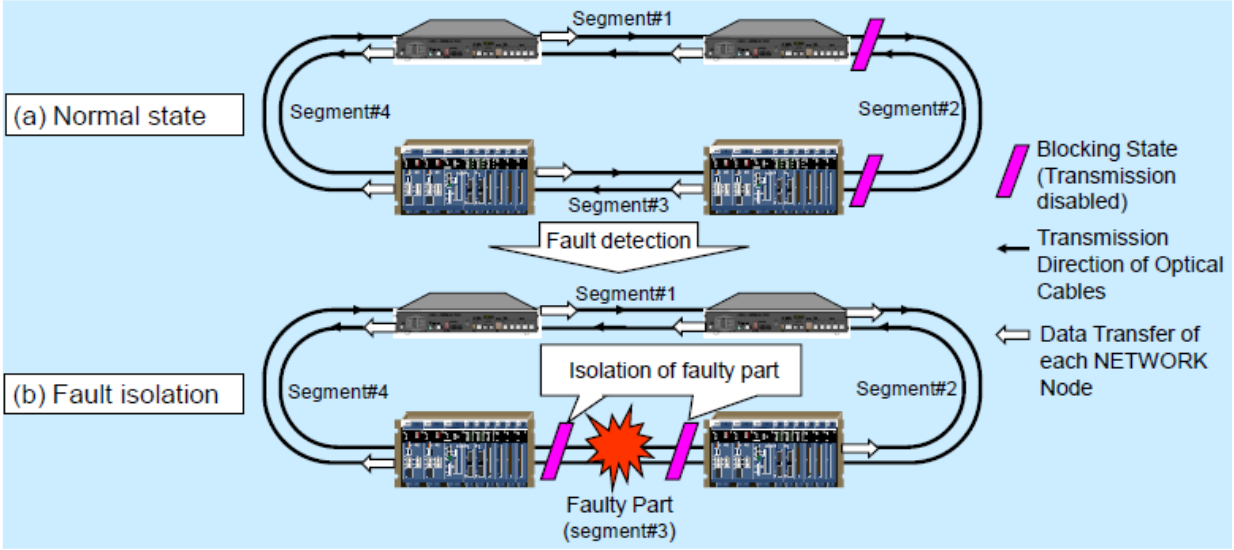
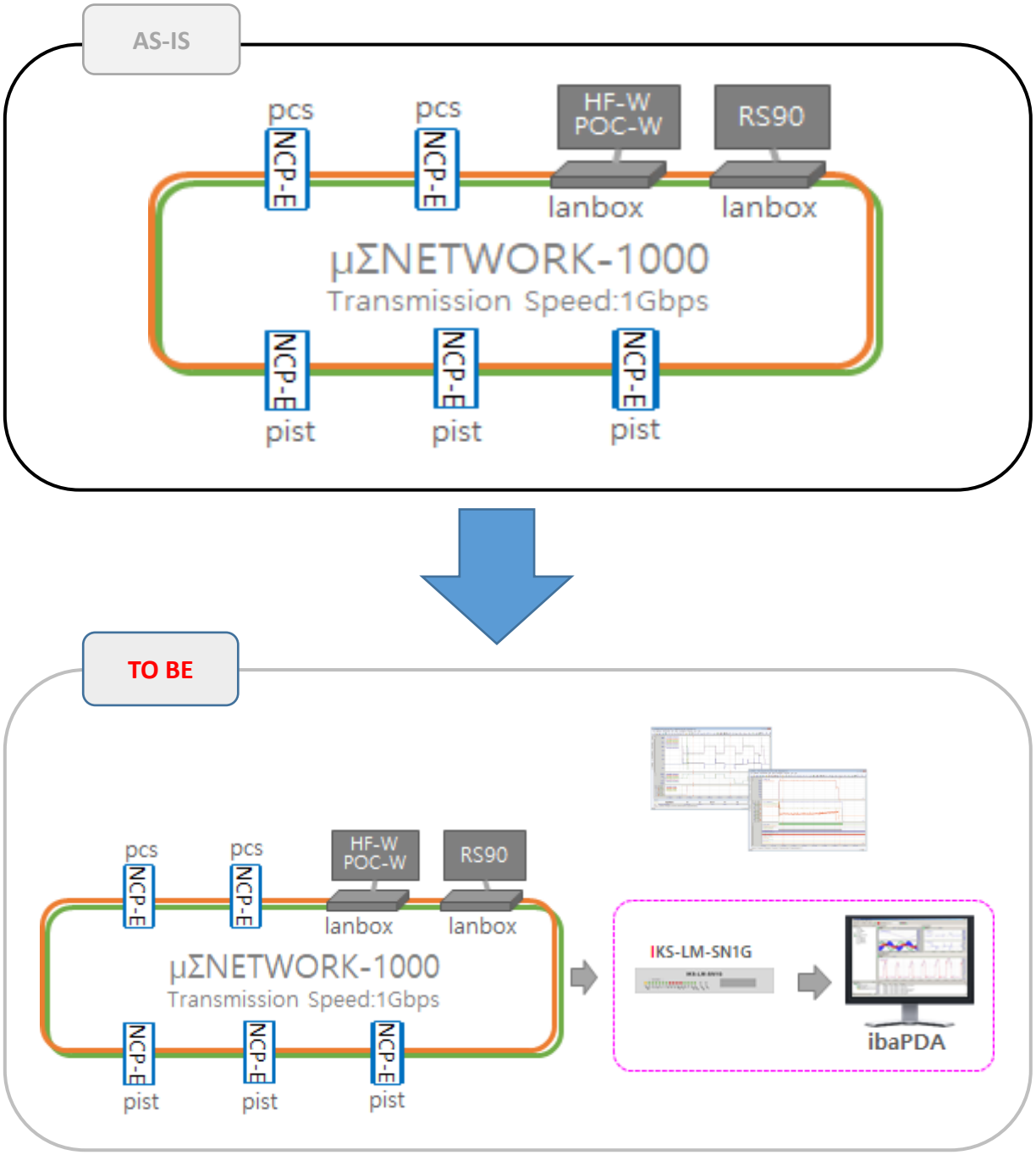


Figure 4: Concepts of dual ring configuration

8 System integration



9 Maintenance work

9.1 Trouble shooting

1) If there is a problem with the device, first check the power and other cable connections.

2) Please check the list below before calling the service center.

3) If the problem persists, turn off the device and disconnect the connected cable.

4) Then contact your service technician or your local authorized iba Korea System service organization.

5) You can save time and money by frequently checking the device in advance

Trouble	Cause	Work
Power lamp is off.	1.Main Power Problems. 2.The device malfunctions.	1.Turn on all devices in the correct order. 2.Check the power cable connection. 3.Request service if necessary.
RUN lamp is off.	1.Main Power Problems. 2.The device malfunctions.	1.Turn on all devices in the correct order. 2.Check the power cable connection. 3.Request service if necessary.
RX lamp is off.	1.Optical cable connection error 2.FD1, FD2 Error 3.Optical Network Blocking Status.	1.Check the optical cable connection. 2.Check if FD1 or FD2 is off. 3.Check the optical network. 4.Request service if necessary.
ERR lights	1.Optical Network Abnormal	1.Turn on all devices in the correct order. 2.Check the power cable connection. 3.Request service if necessary.
L-ERR lights	1.Optical Network Abnormal 2.Fiber Port Abnormal 1.Receive error due to decrease of optical signal power.	1.It is normal when the lamp is lights temporarily. 2.Check the optical signal power if it occurs continuously. (30db or less) 3.Check the optical network. 1.Request service if necessary.
BLK lights	1.Install on block node	1.Change the block node to another location. Check [7.1.5 Moving the blocking segments] to confirm. 2.Request service if necessary.

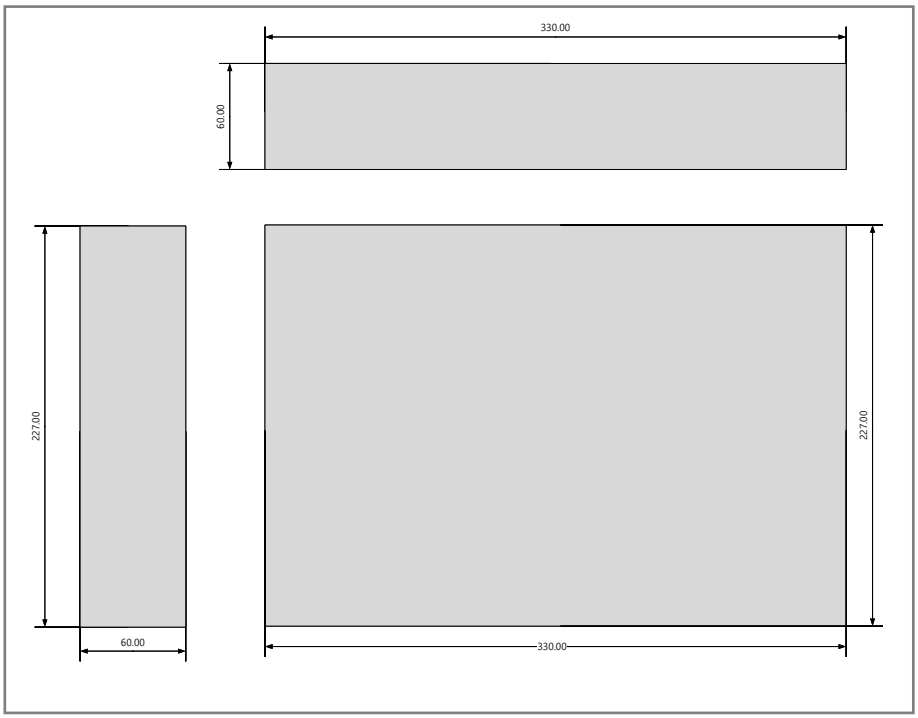
WDC lights	1.Lit once every 10 seconds is normal. (WDC)	1.Lit once every 10 seconds is normal. (WDC) 2.Continuous and continuous lighting is caused by H / W failure. 1) Check the power supply voltage. 2) Turn the power off and on. 3.Request service if necessary.
FD1 lamp is off	1.If there is no optical signal.	1.Lights when there is no signal on the optical network. Check the optical signal power if it occurs continuously. 2.Check the optical network. 3.Request service if necessary.
FD2 lamp is off	1.If there is no optical signal.	1.Lights when there is no signal on the optical network. Check the optical signal power if it occurs continuously. 2.Check the optical network. 3.Request service if necessary
LINK lamp is off	1.If there is no optical signal. 2.Fiber Port 3.System error	1.Lights when there is no signal on the optical network. Check the optical signal power if it occurs continuously. 2.Check the optical network. 3.Request service if necessary.
ibaPDA does not receive data.	1.Device does not turn on. 2.The CPU of the device is not running. 3.LAN Port Error	1.Power on the device. 2.Check that the device is connected normally through ibaPDA and Ethernet port. 3.Check if the ibaPDA Lamp is on. 4.Use the reset switch to restart the CPU. 5.Request service if necessary.
All lamps are blinking.	1.Main power error.	1.Check the power supply voltage. 2.Turn the power off and on. 3.Request service if necessary.
All lamps are off.	1.Main power error. 2.Internal cable connection error.	1.Check the power supply voltage. 2.Turn the power off and on. 3.Request service if necessary.
Lamp Check of LED Display	1.LED Error.	1.Please refer to LED Display

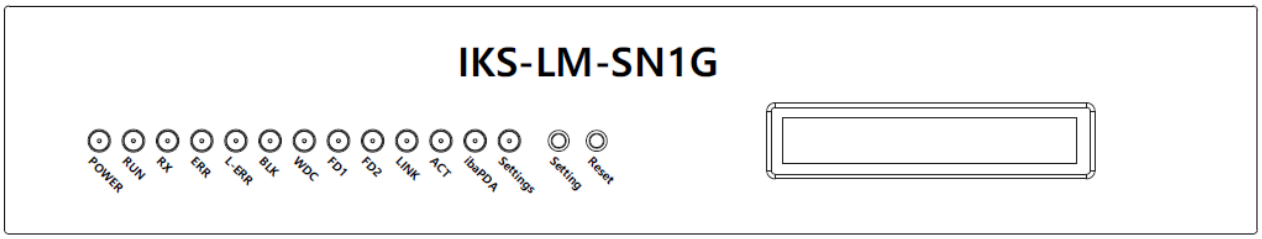
10 Technical data

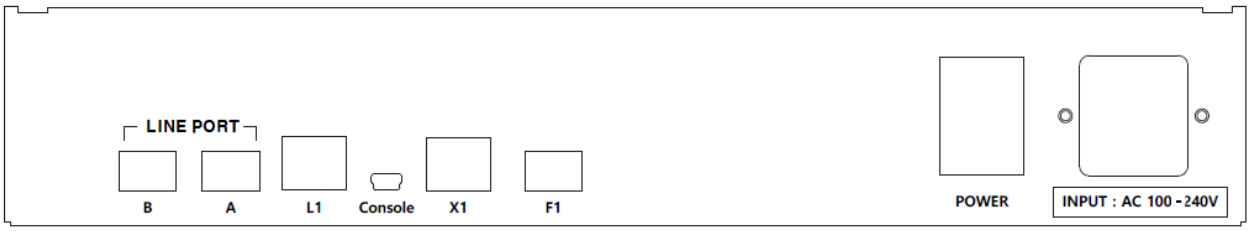
10.1 Main data(IKS-LM-SN1G)

Manufacturer	iba Korea System Co., Ltd.
Order no.	
Description	
Interface	Interface Micro-Sigma
CPU	NXP LS1043A Freescale 1.6GHz (ARM Cortex A53 Quad-Core 64bit processors)
RAM	2Gbyte DDR4 SDRAM
Operating Systems	Embedded Linux
Ethernet	Gigabit Ethernet Controller, 10/100/1000Mbps 10G Ethernet (SFP+)
Interface Controller	Altera MAX Ⅴ
Protocol	μΣNETWORK-1000 Compatible Ethernet (TCP/IP, UDP)
Further interfaces, operating and indicating elements	
Power supply	AC 100 - 240V, 50/60Hz
Power consumption	30W
Indicators	13 LEDs for device status
Operating and environmental conditions	
Cooling	
Operating temperature range	-20°C to +70°C
Storage temperature range	-40°C to +85°C
Transport temperature range	
Humidity class (DIN 40040)	
Protection class	
Mounting	Rack Bracket
Norms and standards	
Dimensions (width x height x depth)	126 x 152 x 44mm
Weight (incl. packaging and manual)	0.5 kg

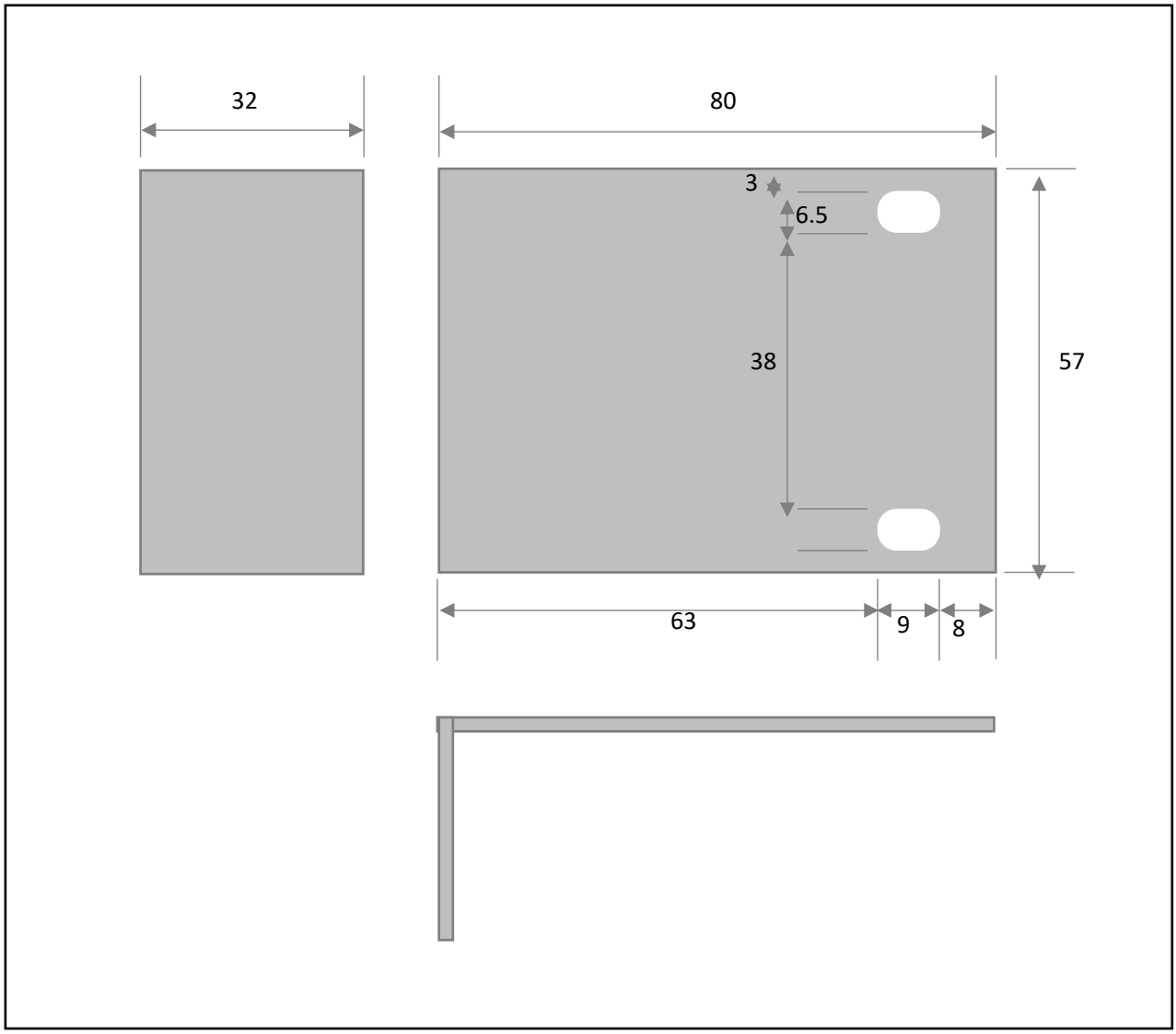
10.2 Dimensions (IKS-LM-SN1G)

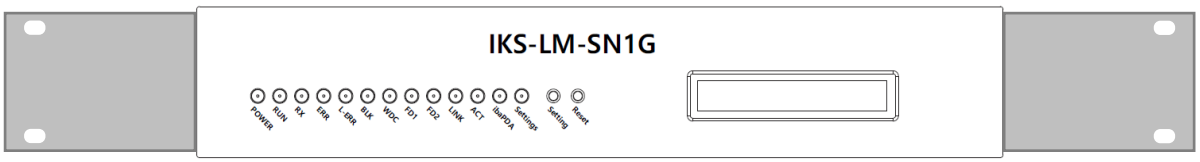






10.3 Dimensions (IKS-LM-SNxx Series Rack Bracket)

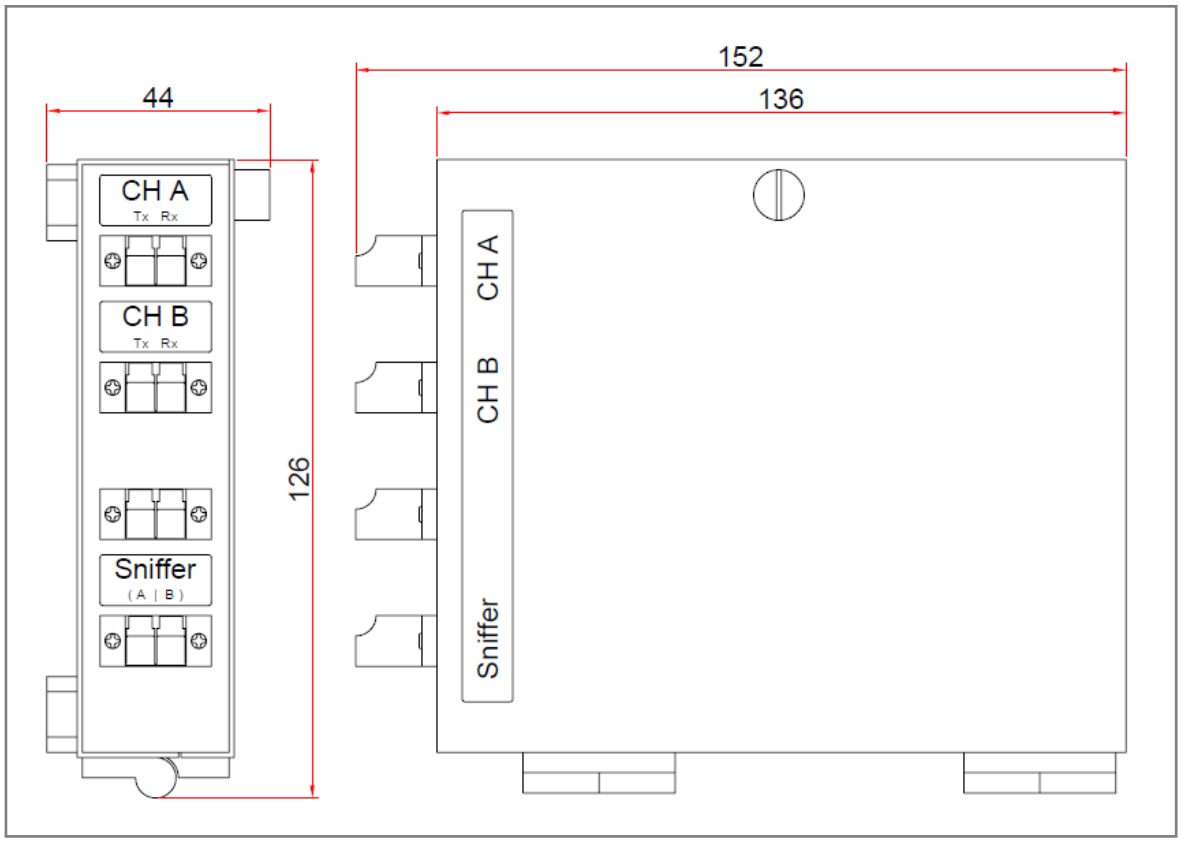




10.4 Main data(IKS-OCMM-LC)

Operation Wavelength	1300nm to 1310nm
Coupling Ratio	50:50
Fiber Type	Multi-Mode
Operating temperature	-20°C to +70°C
Storage temperature	-40°C to +85°C
Operating humidity	30% to 75%
Weight	0.5 kg
Dimension[WxHxD]	126 x 152 x 44mm (WxHxD)

10.5 Dimensions (IKS-OCMM-LC)



11 Quality guarantee

iba Korea System guarantees the first-time purchaser of the device for one year from the date of purchase. When delivered in the proper packaging to protect the device, the device is safe from defects. In addition, iba Korea System will not charge the buyer for repairs or replacement of defective products or parts if defective due to manufacturing problems. If you have a problem, please contact iba Korea System Customer Support. Warranty service is only available when the device is properly installed and in the proper environment, as shown in the user manual. It is also valid only if the device and associated accessories are properly used for operation as indicated in the operating instructions. If the user's negligence or negligence causes damage or breakdown of the device, free service is not supported. We also do not warrant against damage or loss caused by force majeure such as fire, flood, storm, tide, sunlight, earthquake, theft, abnormal operation, disassembly or disassembly of system by unauthorized user. Surface defects are not eligible for refund or exchange. And shall not be liable for any damage or loss that occurs after the warranty period. In order to receive the service accepted by the warranty, you must contact the iba Korea System Customer Support Team or the customer service center of the place where you purchased the device to request service. Please include the model name, serial number, date of purchase, and any specific problems with your service request. The iba Korea System or its distributor will provide the device and parts free of charge for the duration of the warranty period. However, consumable parts or parts damaged by user negligence will not be eligible for free service. Service requests can be sent by post, fax or e-mail. However, this service request will be formulated after formal acceptance to the iba Korea System Customer Support or Customer Service Center at the point of sale. See the manual for additional information. If you wish to deliver your device to your retailer or iba Korea System, you must pack the device in the appropriate return box.

This device must be operated by qualified or trained personnel. The manufacturer of this product is not responsible for damage caused by alteration, use, operation, installation, and maintenance of device and accessories by authorized or unauthorized persons. These actions will not have any right to quality assurance. Thank you.

12 Support and contact

Support

Phone: +82-51-612-3977

Fax: +82-51-612-3987

E-Mail: info@ibakorea.co.kr

Note

If you require support, specify the serial number (iba-S/N) of the product.

Contact

iba Korea System Co., Ltd.

27, Namcheonseo-ro 19beon-gil,

Suyeong-gu, Busan, Korea
Phone: +82-51-612-3977
Fax: +82-51-612-3987
Email: info@ibakorea.co.kr

Shipping address

27, Namcheonseo-ro 19beon-gil,

Suyeong-gu, Busan, Korea

Regional and Worldwide

For contact data of your regional iba office or representative please refer to our web site

www.ibakorea.co.kr

www.iba-ag.com.