OPERATION MANUAL

GPIB INTERFACE
IB11

KIKUSUI
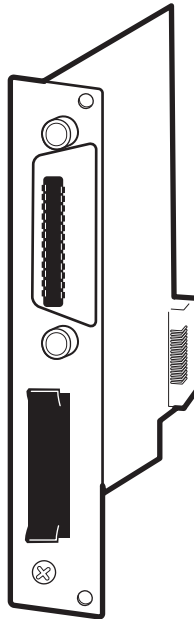
Use of Operation Manual

Please read through and understand this Operation Manual before operating the product. After reading, always keep the manual nearby so that you may refer to it as needed. When moving the product to another location, be sure to bring the manual as well.

If you find any incorrectly arranged or missing pages in this manual, they will be replaced. If the manual gets lost or soiled, a new copy can be provided for a fee. In either case, please contact Kikusui distributor/agent, and provide the "Kikusui Part No." given on cover.

This manual has been prepared with the utmost care; however, if you have any questions, or note any errors or omissions, please contact Kikusui distributor/agent.

◆ Receiving Inspection

Upon receipt of the GPIB interface, please immediately inspect it to check that it has not been damaged when in transportation. Also check that the accessories are not missing.

◆ Accessories

The following accessories accompany the GPIB interface.

- Dummy socket for MCB connector .... 1 (installed)
- Installation bolts 2
- Operation manual ....1 copy

(Caution)   • Do not touch the electrically conductive parts of the GPIB interface. If you do, internal electronic parts can be damaged by static electricity.

Keep this manual near the GPIB interface so that you can refer to this manual whenever you want to.

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Chapter 1. GENERAL

1.1 Introduction

The IB11 is a GPIB interface board to connect an applicable model of instrument to a GPIB bus (IEEE-488).

Also, the IB11 has functions as a master device of a Multi-channel Bus (MCB) for system expansion. As used in conjunction with an MCB board, the IB11 allows you to configure a system comprised of a multiple number of applicable models of DC Power Supplies or Electronic Loads. (The MCB Interface Board, Model MC11S, is optional.)

Before start using these instruments, read this manual and that of the instrument on which the IB11 is to be installed for connection to a GI-IB bus.

Caution • In the text of this manual, term "IB11" denotes Model IB11 GPIB Interface and term "main instrument" denotes the Power Supply or Electronic Load on which the IB11 is to be installed.

1.2 Applicable Series

The IB11 is applicable to the following series of instruments:

1) PAX Series
2) PBX Series
3) PLZ-3W Series
4) PAD-LET Series
5) Other instruments as specified elsewhere

Chapter 2. PREPARATION

2.1 Installing the IB11

Insert the IB11 into the interface board slot of the main instrument and fix the RS11 to the main instrument with the two installation bolts.
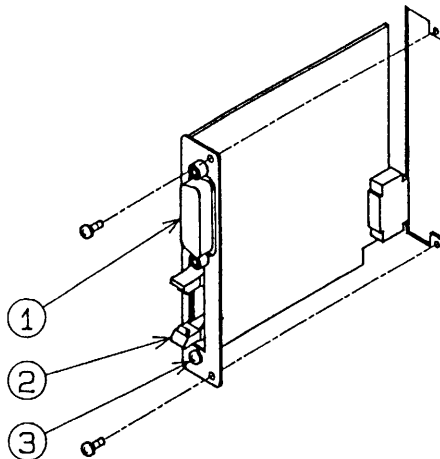
WARNINGS
- Before installing the IB11 on the main instrument, be sure to turn-off the POWER switch of the main instrument and disconnect its AC power cable from the AC line.
- Do not touch the electrically conductive parts of the IB11. If you do this, internal electronic parts can be damaged by static electricity.
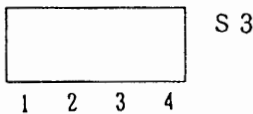
Caution
- Be sure to install the IB11 in the correct direction as illustrated above.
- For the location of the interface board slot of the main instrument, refer to the operation manual of the main instrument.

2.2 Description of Connectors and Terminal

① GPIB connector : A 24-pin connector based on ANSI/IEEE Std488.1-1987. For connection, securely insert the connector of the GPIB cable and fix it with the screws.

② MCB connector
(for master unit)
: A connector for MCB (Multi-channel Bus), to be connected to the MCB IN connector of MCB inteface board (MC11S). For connection, securely insert the connector of the dedicated cable and fix it with the lever.

NOTE • When connecting the cable, remove the dummy socket.
• Connect the MCB cable before connecting the GPIB cable.

③ Frame ground terminal : This terminal is connected to the casing of the main instrument.

2.3 Setting the Short Plugs (S3)

Set all Short plugs (S3) of the IB11 to the "open" state. For the location of the Short plugs, refer to Appendix "External Views and Overall Dimensions" at the end of this manual.

S 3

Caution

• Do not set the Short plugs to other than "open." If you do this, the IB11 may not operate properly. (The factory default is "open" for all Short plugs.)

1 2 3 4

Chapter 3. STARTUP AND TEST

3.1 Turning-on Power

After correctly installing the IB11, turn-on power of the main instrument and check the sign-on display on the main instrument. The sign-on display may differ depending on the model of the main instrument, but will indicate installation of the IB11 as shown below for example--where the main instrument is PAX35-20 Power Supply.

```
PAX  35-20        Ver 1.00
GP01
```

- Message "GP01" on the bottom row means that the IB11 is installed.Argument "01" denotes the device address on GPIB.
- For further details, refer to the operation manual of the main instrument.
- For the setting procedure of a device address, refer to the operation manual of the main instrument.

3.2 Running a Test Program

The sample program to be described later assumes Microsoft Visual Basic 6.0 for the development platform and VISA library (VISA COM) for the I/O library.

You can use the following either VISA libraries.

- Kikusui Corp.: KI-VISA
  (VER.3.0.xor later,
   Downloadable from http://www.kikusui.co.jp/en/download/)
- National Instruments: NI-VISA
  (VER.3.0 or later, Windows 2000 and Windows XP: VER.3.2 or later)
- Agilent Technologies: Agilent VISA
  (Agilent IO Libraries M.01.00 or later)

(NOTE)

- Check VISA COM 3.0 Type Library in the project setting dialogue.
- Make the command button of an object name of "sample" in FORM.
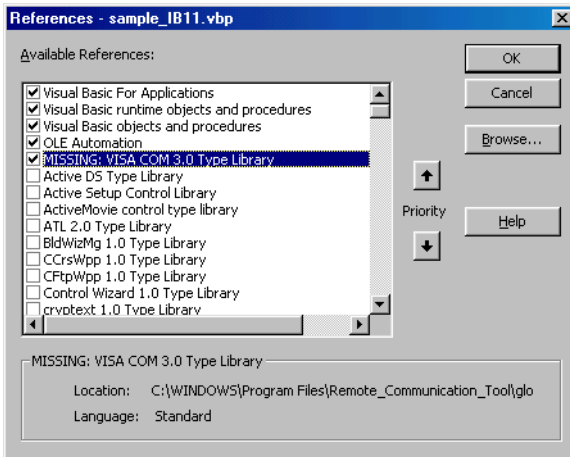
Sample Program

```
Private Sub sample_click()
    '******************************************************
    '* Communication IO open module
    '* Communication port is fixed as follows.
    '* GPIB address: 1
    '*
    '* Substitute a GPIB address for strVisaAddress.
    '* This sample program open the communication port and send IDN?.
    '* The quiry result is stored in strIDN variable.
    '*
    '******************************************************

    ' The acquisition and communication setting of  VISA session
    Dim rm As VisaComLib.IResourceManager
    Dim io As VisaComLib.IMessage
    Dim strVisaAddress As String    ' strVisaAddress variable specifies VISA address.

    strVisaAddress = "GPIB0::1::INSTR"        ' GPIB  address setting

    ' Make a resource manager object.
    ' (First try making the object with VISA Global resource manager.
    ' If you fail, try making the object with Agilent resource manager.)

    On Error Resume Next
    Set rm = CreateObject("VISA.GlobalRM")
    If rm Is Nothing Then
            Set rm = CreateObject("AgilentRM.SRMCls")
    End If
    On Error GoTo 0

    ' VISA session opening
    Set io = rm.Open(strVisaAddress, NO_LOCK)

    ' ID inquiry
    On Error Resume Next
    io.WriteString "IDN?" + vbCrL      ' ID query command +CRLF transmission
    Dim strIDN As String
    strIDN = io.ReadString(256)        ' Assign the received data to a strIDN variable.

    '******************************************************
    '* Communication IO close
    '******************************************************

    ' Close the VISA session
    If rm Is Nothing Then Exit Sub
    io.Close
End Sub
```

Chapter 4. CHECKUP BEFORE ORDERING REPAIR

When the IB11 has become failed seemingly, check it as described in this section in order to make certain that it has actually failed.

Checkup Procedure

Symptoms	Items to be checked	Remedies
The sign-on display does not indicate the installation of IB11.	Installation of the IB11	Correctly install the IB11.
The program message is not sent to or accepted by the main instrument.	GPIB cable Wrong device address Syntactical error of command	Correctly connect the GPIB cable. Correctly set the device address. Correct the command syntax.
No program message is returned from the main instrument.	Wrong device address Wrong setting of terminator (delimiter) Syntactical error of command	Correctly set the device address. Correctly set the terminator (delimiter) Correctly command syntax.

Check the following once more:

- Is not the same address number is used for two or more devices (including the controller) at the same time?
- Have not you sent a command which is inhibited for the operation mode of the main instrument?

◎ If the IB11 does not operate properly even after you have checked and corrected the above items, order your Kikusui agent for repair.

Chapter 5. SPECIFICATIONS

5.1 GPIB Section

5.1.1 Applicable Interface Standards
ANSI/IEEE Std 488.1-1987

5.1.2 Interface Functions

SH1	: Full source handshake function
AH1	: Full acceptor handshake function
T6	: Talker designation (reset from talker by basic output, se - rial polling, or listener designation)
L4	: Listener designation (reset from listener by basic output or listener designation)
SR1	: Full service request function
RL1	: Full remote/local function
PP0	: No parallel polling function
DC1	: Full device clear function
DT1	: Full device trigger function
C0	: No controller function
E1	: Open collector driver

5.1.3 Data Format ASCII codes

5.2 MCB (Master Function) Section

5.2.1 Serial Communications
1) Between master and slave: Synchronized full-duplex, 9600 bps
2) Address designation system
3) ACK control system
4) Balanced transmission system
5) ASCII: 8 bits

5.2.2 Control Lines
1) Non-balanced transmission system

5.2.3 Connectors (MCB Connector)

1) Model: XG4A-1434 of OMRON Corp. (or equivalent)
2) Pin assignment

Pin	Signal	Function
1	TXD−	"−" line of signal transmitted from master
2	TXD+	"+" line of signal transmitted from master
3	RXD−	"−" line of signal received to master
4	RXD+	"+" line of signal received to master
5	GND	Logic ground
6	CLK−	"−" line of clock signal for sync.
7	CLK+	"+" line of clock signal for sync.
8	GND	Logic ground
9	TLKRQ	Talk request signal (negative logic)
10	TLKAK	Talk acknowledge signal (negative logic)
11	TRG	Trigger control signal (negative logic)
12	NRDY	Global address response signal (nagative logic)
13	CABLE	Cable connection signal (negative logic)
14	GND	Logic ground

5.2.4 Cables

1) Type of connectors : XG4M-1434 of OMRON Corp. (or equivalent)
2) Type of cables : BIOS cable of BANTO DENSEN Corp. (or equivalent)
3) Number of units : Up to 15 slave units per 1 master unit
4) Cable length : Up to 30 meters. (As a standard accessory, a 1-meter- long cable accompanies the MC11S.)

5.2.5 Interface Functions

1) Data send/receive function
   (synchronized serial full-duplex communication)
2) Simultaneous trigger function
3) Protection synchronization function
4) Others

NOTE • For these functions, refer to the operation manual of the main instrument.

5.2.6 Others

Master MCB address: 0 (fixed)

5.3 Ambient Conditions (when installed on main instrument)

Operable temperature: 0 to 40℃
Operable humidity   : 10 to 90% RH
Storage temperature   : −20 to 70℃
Storage humidity   : 10 to 90% RH

5.4 Withstanding Voltage and Insulation Resistances

1) Withstanding voltage

Output - main instrument   : 1500 V AC, 1 minute

2) Insulation resistances

Output - chassis   : $\geqq 30\,M\Omega$, at 500 V DC
Main instrument - chassis   : $\geqq 30\,M\Omega$, at 500 V DC

* In the above, term "output" denotes the GPIB or other bus side of IB11 and term "main instrument" denotes the main instrument side of IB11.

5.5 Dimensions and Weight

Dimensions   : As shown in Appendix "External Views and Overall Dimensions."
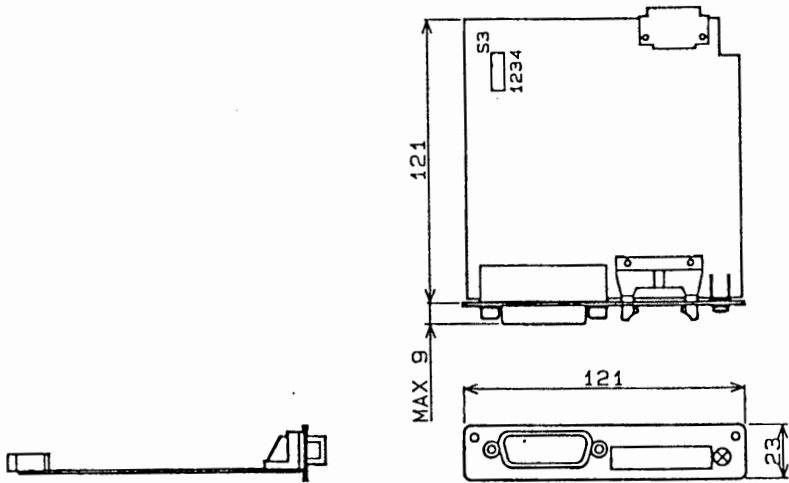Weight   : Approx. 150 g

5.6 Accessories

Dummy socket for MCB connector.................. 1 (installed)
Installation bolts 2
Operation manual............................. 1 copy

Appendix: EXTERNAL VIEWS AND OVERALL DIMENSIONS

[UNIT:mm]

IB11

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