

***Operation Panel
for REX - B850***

OPL - B

**Communication
Instruction
Manual**

RKC. RKC INSTRUMENT INC.

IMOPL03-E1

INTRODUCTION

Thank you for purchasing the "**Operation panel for REX- B850; OPL- B**". This manual describes on the communication function of the "**OPL- B**".

Please carefully read and fully understand the content of this manual before starting operation. And please keep the manual somewhere so that you will know where it is when you need it.

USERS OF THIS MANUAL

This manual is intended to be read by everyone who used the "**OPL- B**". This manual is written on the premises that the reader already has basic knowledge about electricity, process control and communication.

CAUTIONS

- This manual is subject to change without prior notice.
- Examples of figures, diagrams and numeric values used in this manual are for a better understanding of the text, but not for assuring the resultant operation.
- This manual may not be reproduced or copied in whole or in part without RKC's prior consent.
- This instrument and manual are manufactured, prepared, then shipped under strict quality control. However, if any defect is found, please contact your nearest RKC sales office or agent from which you bought the system.
- RKC assumes no responsibility for any of the following damage which the user or third party may suffer.
 - (1) Damage incurred as a result of using this product.
 - (2) Damage caused by product failure which cannot be predicted by RKC.
 - (3) Other indirect damage.
- If there is any conflict between the screens described in this manual and those on the product, the screens on the product take priority over the screens in this manual.



WARNING

● **Wiring precautions**

- If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
- In order to prevent instrument damage or failure, protect the power line and the input/output lines from high currents by using fuses with appropriate ratings.

● **Power supply**

- In order to prevent instrument damage or failure, supply power of the specified rating.
- In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.

● **Never use the instrument near inflammable gases.**

- In order to prevent fire, explosion or instrument damage, never use this instrument at a location where inflammable or explosive gases or vapour exist.

● **Never touch the inside of the instrument.**

- In order to prevent electric shock or burns, never touch the inside of the instrument. Only RKC service engineers can touch the inside of the instrument to check the circuit or to replace parts. High voltage and high temperature sections inside the instrument are extremely dangerous.

● **Never modify the instrument.**

- In order to prevent accident or instrument failure, never modify the instrument.

● **Maintenance**

- In order to prevent electric shock, burns or instrument failure, only RKC service engineers may replace parts.
- In order to use this instrument continuously and safely, conduct periodic maintenance. Some parts used in this instrument have a limited service life and may deteriorate over time.

INSTRUMENT SAFETY CAUTIONS

1. This instrument is designed to be mounted on instrumentation panels. It is therefore manufactured as part of the final product to facilitate wiring. This means that unauthorized personnel can easily access the high-voltage sections in this instrument such as power terminals, etc.
Therefore, when this instrument is installed on the final product, the user should take the necessary measures for the final product to ensure that unauthorized personnel cannot access the high-voltage sections, etc.
2. In order to use this instrument correctly and safely, always observe the cautions described in this manual when performing operations and maintenance.
RKC assumes no responsibility for any injury or accident resulting from not following these cautions.

NOTES ON INDICATIONS

For safe operation of "Operation panel for REX- B850; OPL- B", the following "Signal Words" and "Symbol Mark" are used in this manual.

<Signal Words>

WARNING

: Where there are possible dangers such as electric shock, fire (burns), etc. which could cause loss of life or injury, precautions to avoid such dangers are described.

CAUTION

: These describe precautions to be taken if unit damage may result if operating procedures are not strictly followed.

NOTE

: Extra notes or precautions are added to operating procedures and explanations.

<Symbol Mark>



: This mark is used when great care is needed especially for safety.



: This mark is used to add extra notes, precautions or supplementary explanations to table and figures.

OPERATING CAUTIONS

- In order to prevent electric shock or instrument failure, never turns on the power until all the wiring is completed.
- In order to prevent instrument failure, electric shock or fire, carefully read "Cautions for mounting" and "Mounting", then mount the operation panel in a suitable area and method.
- In order to prevent electric shock or instrument failure, mount or remove the operation panel after turning off the power.
- Only trained, experienced electricians must perform the wiring.
- In order to prevent electric shock or instrument failure, connect or disconnect the connector after turning off the power to this instrument and peripheral equipment.
- In order to prevent instrument damage or failure, do not drop the instrument or do not give a strong shock to the instrument.
- In order to prevent instrument damage or failure, supply power which meets the specification.
- Do not strike or scratch the surface of the touch panel (display unit) with a sharp object such as a ball-point pen or screwdriver. Since this may scratch or damage the panel.
- Avoid indelibly staining the touch panel (display unit), or the display may become unclear or be damaged.
- In order to prevent scratches and damage, do not press the touch switches with anything other than fingers.
- Press the touch switches lightly to avoid damaging them.
- Do not spray insecticide or clean the operation panel with a volatile organic solvent (thinner or benzene), chemicals or chemical dustcloth to avoid damaging or discoloring the panel.

PRECAUTIONS PRIOR TO USE

■ Avoid the following when selecting the mounting location:

- Ambient temperature less than 0 °C or more than 40 °C.
- Ambient humidity of less than 45% or more than 85% RH.
- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes. *
- Excessive dust, salt or iron particles. *
- Excessive induction noise, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Should be used indoors where the system is not exposed to direct sunlight.
- Heat to be accumulated due to radiation heat.

* The front operation panel has a dust-proof, splash-proof construction equivalent to IP55 when the instrument is mounted on the panel, allowing it to be used safely even in harsh environments.

■ Do not ground this OPL-B together with high-voltage equipment or rotating machinery.

■ Mount this OPL-B to prevent noise.

- To prevent the communication cables from being affected by noise, make sure that you place the wiring so that it is as far away as possible from power and load lines.
- If you think that power line noise is going to affect the OPL-B, use a noise filter.

■ Avoid high temperature and high humidity

- As backup batteries are included in the mainframe, do not store the instrument at a location where the ambient temperature and humidity are high.

Name and number of this instruction manual:

Name : **Operation Panel for REX– B850 (OPL– B)
Communication Instruction Manual**

Manual number : **IMOPL03– E1**

■ **Revisions**

Date of revision	Manual number	Reason for revision
September 25, 1997	IMOPL03– E1	The First edition issue

CONTENTS

	Page
INTRODUCTION	i-1
WARNING	i-2
INSTRUMENT SAFETY CAUTIONS	i-3
NOTES ON INDICATIONS	i-3
OPERATING CAUTIONS	i-4
PRECAUTIONS PRIOR TO USE	i-5
Revisions	i-6
CONTENTS	i-7
1. SPECIFICATIONS	1
2. CONNECTION.....	3
2.1 Connection block diagram	3
2.2 Connection method	4
2.3 Initial communication settings	8
3. COMMUNICATION PROTOCOL	9
3.1 Polling	9
3.2 Selection	15
3.3 Communications data configuration	18
3.4 Local/computer transfer (Identifier: C1)	20
4. COMMUNICATION IDENTIFIERS	21
4.1 List of communication identifiers	21
4.2 Initialize settings	24
5. APPENDIXES	25
5.1 Troubleshooting	25
5.2 Error code descriptions (Identifier: ER)	27
5.3 JIS/ASCII 7 bit code table	28

MEMO

1. SPECIFICATIONS

Communication interface:	Based on RS-422A, EIA standard Based on RS-485, EIA standard Based on RS-232C, EIA standard *Can be specified when ordering.
Communication method:	4-wire system, multi-drop connection (RS-422A) 2-wire system, multi-drop connection (RS-485) Point-to-point connection (RS-232C)
Synchronous method:	Start/stop synchronous type
Communication speed:	2400bps, 4800bps, 9600bps
Data format:	Start bit: 1 Data bit: 7 or 8 Parity bit: Unused or Used (Odd number or Even number) Stop bit: 1 or 2
Communication protocol:	Based on ANSI X3.28 subcategory 2.5, A4 Polling/selection type
Error control:	Vertical parity (When parity bit is selected) Horizontal parity
Block length:	128 bytes or less
Maximum number of connection:	16 sets (RS-422A or RS-485) 1 set (RS-232C)
Communication code:	Text: JIS/ASCII (7 bit code) Control codes: ENQ[05H], EOT[04H], STX[02H], ETX[03H], ACK[06H], NAK[15H] *Codes in brackets [] are in hexadecimal.
Time-out time:	3 seconds
Communications content:	Temperature measured-value Temperature set-value Check of alarm state and setting of alarms.
Data sending transfer time:	0 to 300 msec. (Set in steps of 3 msec.)

Terminal voltage and signal logic:
RS-422A and RS-485

Name	Mark status (Stop bit and signal 1)	Space status (Start bit and signal 0)
Send data T(A), T(B)	Voltage between $T(A)-T(B) \leq -2V$	Voltage between $T(A)-T(B) \geq 2V$
Receive data R(A), R(B)	Voltage between $R(A)-R(B) \leq -2V$	Voltage between $R(A)-R(B) \geq 2V$

Voltage between T(A)-T(B) is the voltage at pin T(A) in relation to pin T(B).

Voltage between R(A)-R(B) is the voltage at pin R(A) in relation to pin R(B).

RS-232C

Signal voltage	Logic
+3V or more	0 (Space status)
-3V or less	1 (Mark status)

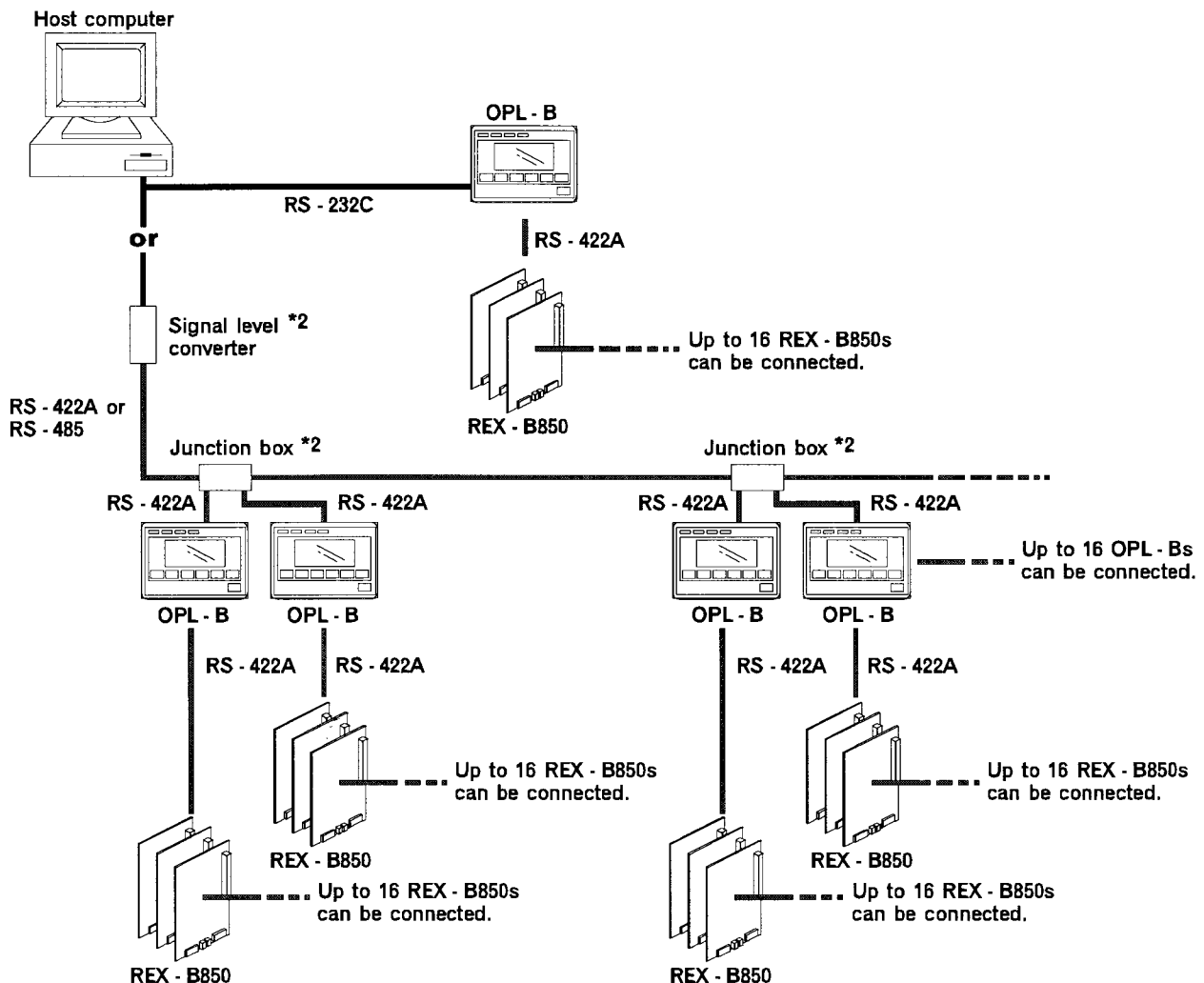
2. CONNECTION

2.1 Connection block diagram

There are three types of OPL-B communication levels: RS-232C, RS-422A and RS-485.

If RS-422A or RS-485 is used, up to 16 OPL-Bs can be connected. However, if the driver is connected to the computer of the RS-232C specification, the communication level must be changed.

Connection example



*1 If a communication interface with the host computer corresponds to RS-232C, no Operation panels (OPL-B) can be multidrop-connected.

*2 A signal level converter and junction branch box are also available from RKC.

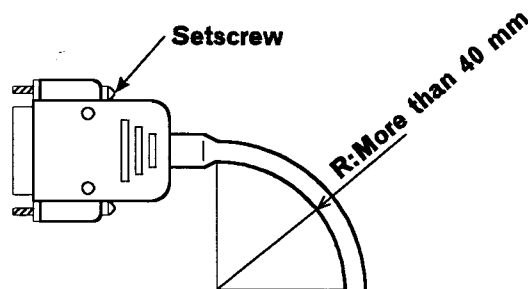
2.2 Connection method

⚠ WARNING

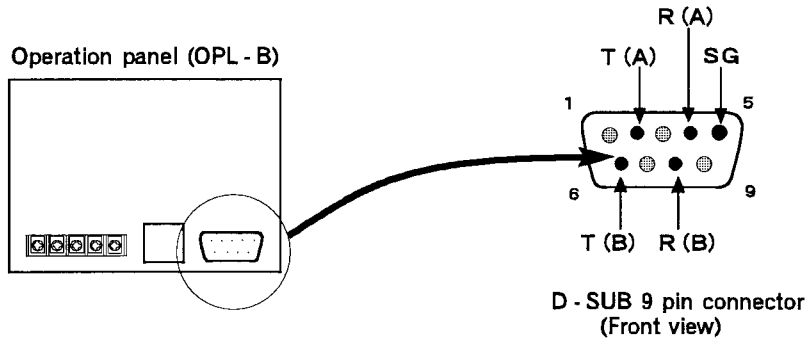
⚡ In order to prevent electric shock or instrument failure, connect or disconnect the connector after turning off the power to this module and peripheral equipment.

CAUTIONS

- Connect the connector in the correct position and direction. In the connector is inserted incorrectly and forcibly into the socket, its pins may be bent to cause instrument failure.
- Connect or disconnect the connector in the direction parallel to the socket surface as much as possible. Otherwise, its pins may be bent to cause instrument failure.
- Disconnect the connector by holding the connector. If the connector is disconnected by pulling the cable, the instrument may become faulty.
- For preventing the instrument from the malfunction, do not touch the contact surface of the connector with bare or oily hands.
- For preventing the instrument from the malfunction, firmly connect the connector, then firmly fix the connector with set screws.
- For preventing the cable from damage, do not forcibly bent it. Keep a bending radius of more than 40 mm.



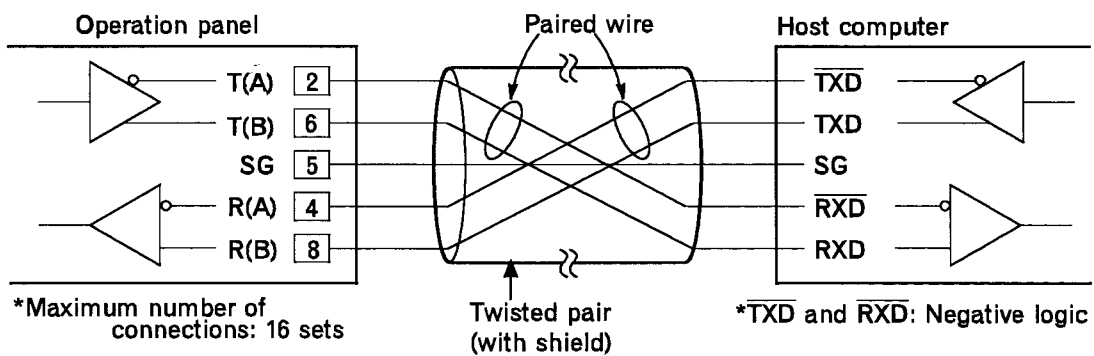
■ RS-422A



● Pin arrangement and signal names

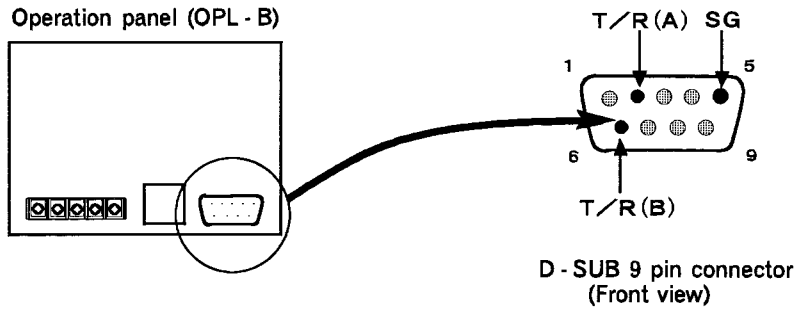
Pin No.	Symbol	Name	Signal direction	
			Operation panel	Host computer
2	T(A)	Send data	→	→
6	T(B)	Send data	→	→
5	SG	Signal ground	—	—
4	R(A)	Receive data	←	←
8	R(B)	Receive data	←	←

● Communication cable core connection



* To connect to the Operation panel (OPL-B), use the D-SUB/9-pin type connector.

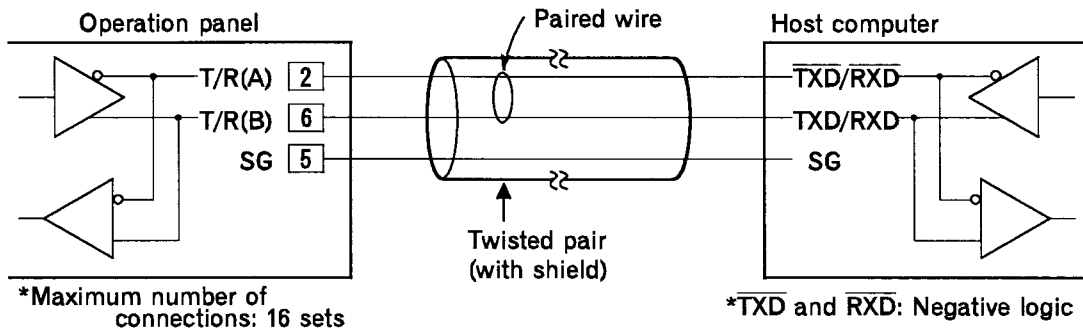
■ RS-485



● Pin arrangement and signal names

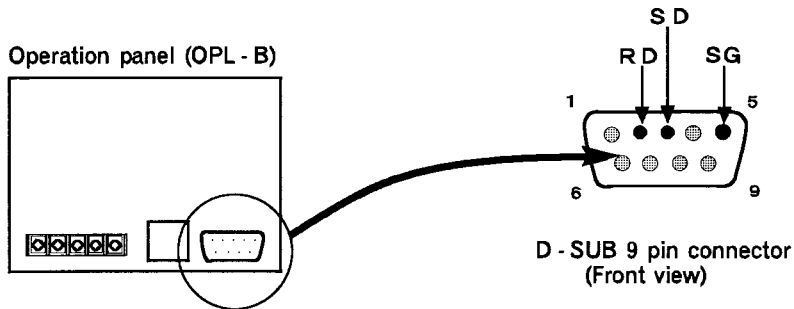
Pin No.	Symbol	Name	Signal direction	
			Operation panel	Host computer
2	T/R (A)	Send and receive data	←→	←→
6	T/R (B)	Send and receive data	←→	←→
5	SG	Signal ground	—	—

● Communication cable core connection



* To connect to the Operation panel (OPL-B), use the D-SUB/9-pin type connector.

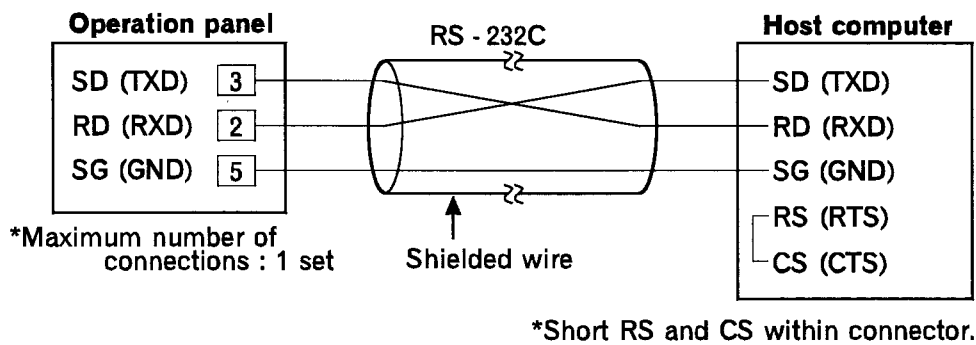
■ RS-232C



● Pin arrangement and signal names

Pin No.	Symbol	Name	Signal direction	
			Operation panel	Host computer
3	SD (TXD)	Send data	→	
2	RD (RXD)	Receive data	←	
5	SG (GND)	Signal ground	—	—

● Communication cable core connection



* To connect to the Operation panel (OPL-B), use the D-SUB/9-pin type connector.

2.3 Initial communication settings

OPL-B communication with the host computer is set on the OPL-B screen.

For the setting and operation methods, see the Supplementary manual for "OPL initialize/controller initialize" of the instruction manual for **OPL-B (IMOPL01-E □)**.

Reference page:

Supplementary manual for "OPL initialize/controller initialize"
"1.7 Host communication initialize setting screen" (P. 10).

CAUTION

Always match the communication settings of the host computer and OPL-B.

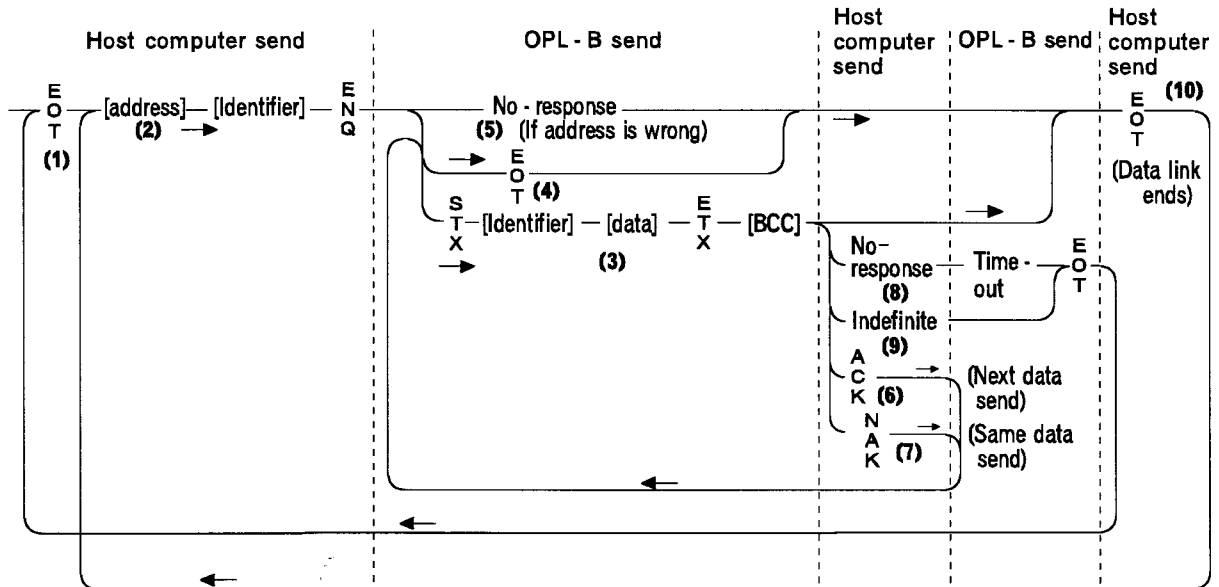
3. COMMUNICATION PROTOCOL

To establish the data link, the polling/selection method is employed. The basic procedures follows the ANSI X3.28 subcategory 2.5, A4 and the JIS basic data transmission control. For selection, fast selection is employed.

- The code use in communication is JIS/ASCII code including transmission control character.
- The transmission control characters are [EOT](04H), [ENQ](05H), [ACK](06H), [NAK](15H), [STX](02H), [ETX](03H).
* Codes in brackets () are in hexadecimal.

3.1 Polling

Polling is an action that host computer requesting one of the device which selected among multi-drop connected, to send the data. The procedure is as the following.



Polling procedure

(1) Data link initialize

In order to initialize the data link before sending the polling sequence, send [EOT] from the host computer.

(2) Polling sequence send

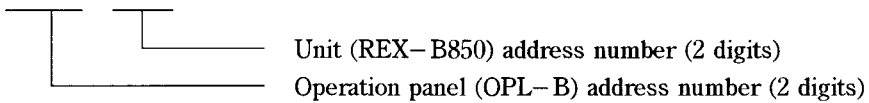
Send the polling sequence from the host computer in the following format.

①	②	③
Address	Identifier	E N Q

① Address

This is the unit address of this device being polled. It is expressed by 4 digit decimal ASCII code.

[0 0 0 0]



② Identifier

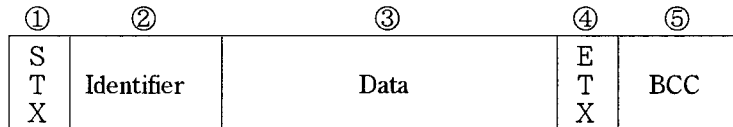
A code which identifies the data requested from this device. It is expressed using 2-digit alphanumeric ASCII code. For details on the identifier, see "4.1 List of communication identifiers" (P. 21).

③ [ENQ]

This transmission control character signifies the end of the polling sequence. After sending this, the host computer waits for a response from this device.

(3) Data send from this device

This device sends data in the following format if it received the polling sequence correctly.

**① [STX]**

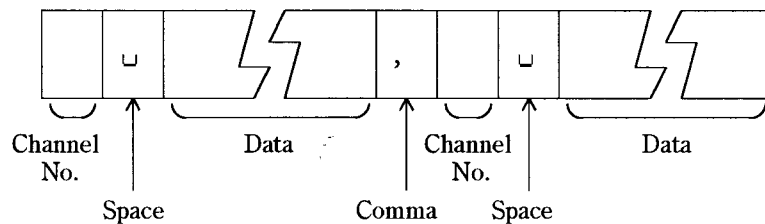
Transmission control character showing the beginning of the text (identifier and data).

② Identifier

A code which identifies the data to be sent to the host computer. It is expressed using 2-digit alphanumeric ASCII code. For details on the identifier, see "4.1 List of communication identifiers" (P. 21).

③ Data

Data which is indicated by an identifier of this device, consisting of channel Nos., data, etc. Each channel No. and data are delimited by a space (20H). The data and the next channel No. are delimited by a comma.

Data configuration (With channels)

Channel No.: 1-digit ASCII code. Channels without channel Nos. may exist depending on the type of identifier.

Data: ASCII code, zero-suppressed with spaces (20H). The number of digits varies depending on the type of identifier.

NOTE

The number of data digits (length) and data configuration vary depending on the type of identifier. For details on the number of data digits and data configuration, see "3.3 Communications data configuration" (P. 18) and "4.1 List of communication identifiers" (P. 21).

④ [ETX]

Transmission control character indicating the end of the text.

⑤ [BCC]

Block check character for error-detection, uses horizontal parity. [BCC] is calculated by horizontal parity (even number).

Calculation method

[BCC] is obtained by EX-OR (exclusive OR) of all characters from the character next to [STX] to [ETX]. No [STX] is included.

- Example -

The calculation method for the following data is shown below.

S												E
T	M	1	1	␣	␣	1	5	0	.	0		T
X												X
(02H)(4DH)(31H)(31H)(20H)(20H)(31H)(35H)(30H)(2EH)(30H)(03H)												

() : Hexadecimal number

␣ : Space

$$\begin{aligned} \text{BCC} &= 4\text{DH} \oplus 3\text{1H} \oplus 3\text{1H} \oplus 2\text{0H} \oplus 2\text{0H} \oplus 3\text{1H} \oplus 3\text{5H} \oplus 3\text{0H} \oplus 2\text{EH} \oplus 3\text{0H} \oplus 0\text{3H} \\ &= 64\text{H} \quad (\oplus : \text{EX-OR.}) \end{aligned}$$

The value of BCC becomes 64H.

(4) End of data send by this device (EOT send)

After finishing data sending shown in the "4.1 List of communication identifiers" (P. 21), or if their is no data to be sent, the device sends an [EOT] and ends the data link.

(5) No-response of this device

If the polling sequence is not received correctly (if the address differs or if there is an error in the data), this device does not respond. In this case, take necessary measures for recovery by time-out on the host computer side if required.

(6) Acknowledge [ACK]

If the host computer receives data sent correctly from this device, send [ACK]. The device then sends data next to the identifier just sent in accordance with the procedure in "4.1 List of communication identifiers" (P. 21). In order to stop sending data from this device, send [EOT] from the host computer to terminate the data link.

(7) Negative acknowledge [NAK]

If the host computer does not correctly receive the data sent from this device, send [NAK]. The device then re-sends the same data. As the number of re-send times is not specified, take necessary measures for recovery on the host computer side if it does not recover.

(8) No-response from host computer

If data sending from the host computer becomes no-response, this device sends [EOT] after the time-out time has elapsed to terminate the data link. (Time-out time : Approx. 3 sec.)

(9) Indefinite response from host computer

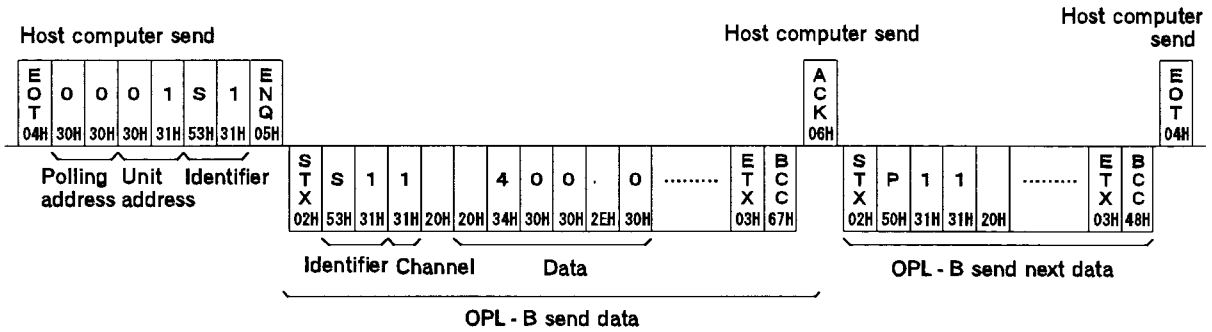
If the response from the host computer is indefinite, this device sends [EOT] to terminate the data link.

(10) Data link termination [EOT]

To terminate communication with this device or to terminate the data link as a result of no-response from this device, send [EOT] from the host computer.

■ Example of polling procedures

Normal transmission

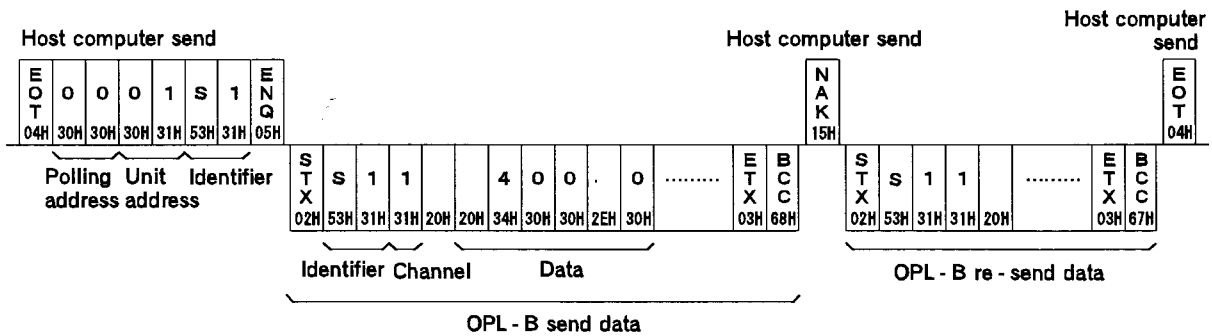


*Polling address: OPL-B address
 Unit address: REX-B850 address

NOTE

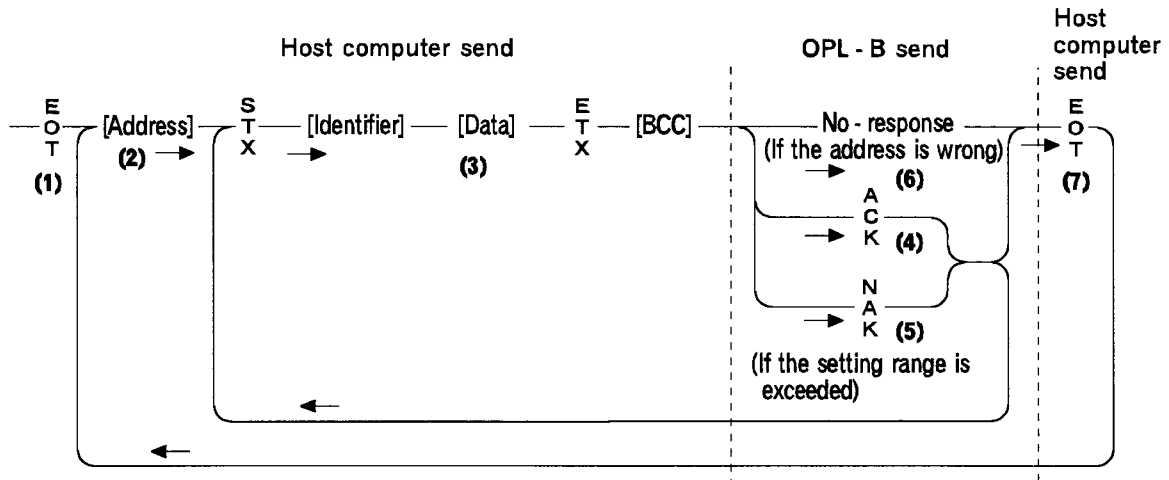
Above example data is with 1 digit below decimal-point.
 The data sent from unit (REX-B850) is different from the specification of unit (REX-B850).

If error exists in data



3.2 Selection

Selection is an operation in which the host computer selects one set from among the devices multiconnected and then of recommending data receive. The selection procedure is as follows. As this device employs fast selection, data is sent continuously to the selected address.



Selection procedure

(1) Data link initialize

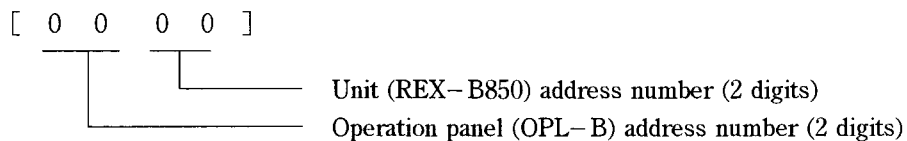
Send [EOT] from the host computer to initialize the data link before sending the selection sequence.

(2) Selection sequence send

Send the selection address for the selection sequence from the host computer.

① Address

This is the unit address of this device being polled. It is expressed by 4 digit decimal ASCII code.



(3) Data send

Send data in the following formats following the selection sequence. The data format is the same as that of polling.

①	②	③	④	⑤
S T X	Identifier	Data	E T X	BCC

* For ① to ⑤, see "(3) Data send from this device" in Item 3.1 (P. 11).

(4) Acknowledge response [ACK]

If this device receives data sent correctly from the host computer, it sends [ACK] to the host computer. Then, if there is data to be sent next from the host computer, send it to the device. After the data has been sent, send [EOT] to terminate the data link.

(5) Negative acknowledge [NAK].

This device sends [NAK] in the following cases. In this case, take necessary measures for recovery such as re-sending the data on the host computer side.

- When an error occurs in the line (parity error or framing error)
- When a BBC check error occurs.
- When there is no specified identifier
- When the specified identifier is not valid
- When an error exists in the data format
- When normal receive data exceeds the setting range

(6) No-response

If this device does not receive the selection address correctly, it is set to no-response. Also, it is set to no-response if it does not receive [STX], [ETX], or [BCC] correctly.

(7) Data link termination [EOT]

To terminate the data link when there is no more data to be sent from the host computer or this device is set to no-response, send [EOT] from the host computer.

3.3 Communications data configuration

■ Description of data (Transmission/receive data structure)

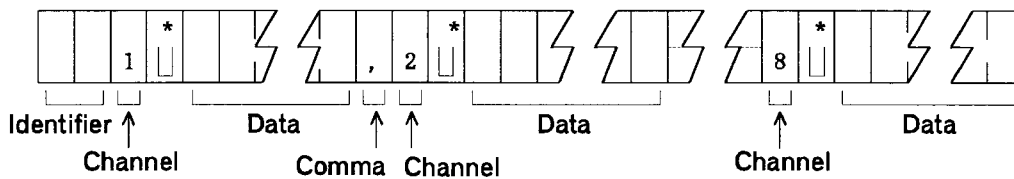


Part of the data above is shown below.

① Data length

6 digits

Identifier No. 1, 5, 6, 8, 10, 11, 12, 13, 14, 16, 20, 21, 22, 24

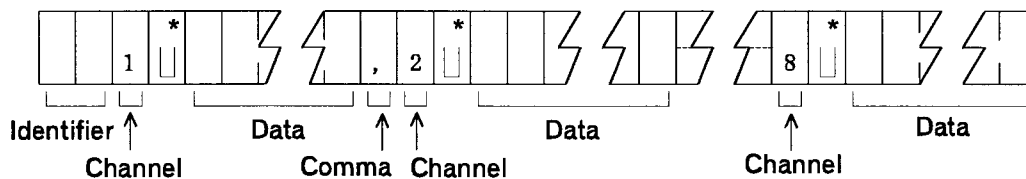


Data length is 6 digits fixed. See "4.1 List of communication identifiers" (P. 21)

*
□ : Indicates a space

② Data length 7 digits

Identifier No. 17, 18

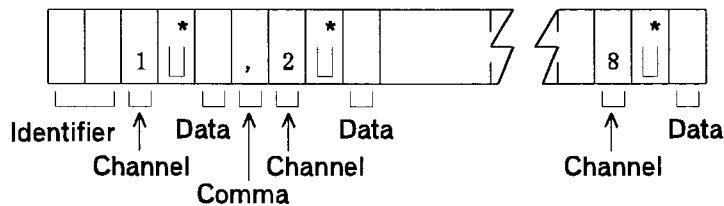


Data length is 7 digits-fixed. See "4.1 List of communication identifiers" (P. 21)

*
□ : Indicates a space

③ Data length 1 digit

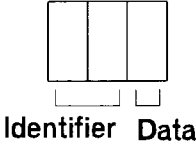
Identifier No. 2, 3, 4, 7, 9, 15, 19



Data length is 1 digit fixed. See "4.1 List of communication identifiers" (P. 21)

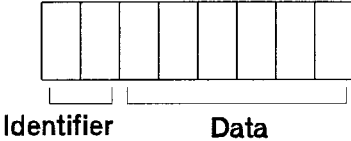
*
□ : Indicates a space

-
- ④ Data length 1 digit (Without channel)
Identifier No. 23, 25, 26, 28, 29, 30, 31



Data length is 1 digit fixed. See "4.1 List of communication identifiers" (P. 21)

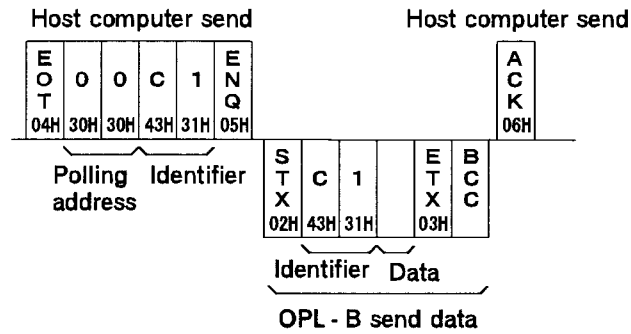
- ⑤ Data length 6 digits (Without channel)
Identifier No. 27



Data length is 6 digits fixed. See "4.1 List of communication identifiers" (P. 21)



3.4 Local/computer transfer (Identifier: C1) * Only polling



4. COMMUNICATION IDENTIFIERS

4.1 List of communication identifiers

(RO : Readout only RW : Readout and write are available WO : Write only)

No. of digits Attribute

NO.	Name	Identifier	No. of digits	Attribute	Data range	Description	default value
1	Temperature measured- value(PV)	M1	6	RO	Input range	Used for monitoring measured- value (PV).	——
2	First alarm status	AA	1	RO	0 : OFF 1 : ON	Used for monitoring first alarm status.	——
3	Second alarm status	AB	1	RO	0 : OFF 1 : ON	Used for monitoring second alarm status.	——
4	Burnout status	B1	1	RO	0 : Normal 1 : Burnout 2 : Burndown	Used for monitoring burnout status.	——
5	Control output status (Cooling- side)	O1	6	RO	0 to 100% (Heating control) -5 to + 105% (H/C control)	Used for monitoring control output.	——
6	Control output status (Heating- side) *1	O2	6	RO	-5 to + 105%		——
7	Heater break alarm status *2	AC	1	RO	0 :Normal 1 : Heater break 2 : Weld relay contact	Used for monitoring heater break alarm status.	——
8	Current transformer input value *2	M2	6	RO	CTL- 6 type : 0.0 to 30.0 A CTL- 12 type : 0.0 to 100.0 A	Heater break alarming value is set by referring to this value.	——
9	PID/AT transfer	G1	1	RW	0 : PID 1 : Auto- tuning (AT)	Selects PID control or AT to be performed. Selecting "1" immediately status AT. Automatically turned to "0" at the end of AT.	——
10	Temperature set- value	S1	6	RW	Input range	Desired value control	0.0
11	Proportional band (Heating- side)	P1	6	RW	0.0 to 1000.0% (Heating control) 0.1 to 1000.0% (Heating /cooling control)	Set when PI or PID control is performed.	3.0
12	Proportional band (Cooling- side) * 1	P2	6	RW	0.1 to 1000.0%	Sets cooling- side proportional band when heating/cooling PID action is performed.	3.0
13	Integral time	I1	6	RW	0 to 3600 second (Heating control) 1 to 3600 second (Heating/cooling control)	Sets the integral time to eliminate the offset produced in proportional action control.	240

To be continue to next page.

4.COMMUNICATION IDENTIFIERS

(RO : Readout only RW : Readout and write are available WO : Write only)

NO	Name	Identifier	Attribute		Data range	Description	Default value
			No. of digits				
14	Derivative time	D1	6	RW	0 to 3600 second	Sets the derivative time to prevent ripples and to stabilize control by predicting output changes.	60
15	Control response parameter	CA	1	RW	0 : SLOW 1 : MEDIUM 2 : FAST	Specifies the response caused by set-value changes in PID control.	2
16	Deadband	V1	6	RW	-10.0 to +10.0 %	Sets control deadband between heating-side cooling-side proportional bands. Minus (-) setting results in overlap.	0
17	First alarm setting	A1	7	RW	Deviation high alarm, Deviation low alarm: - span to + span	Sets the first alarm set-Value.	50.0
18	Second alarm setting	A2	7	RW	Deviation high and low alarm, Band alarm : 0 to span Process alarm : Same as input range	Sets the second alarm set-Value.	-50.0
19	Temperature control function selection	EI	1	RW	0 : Unused (control output OFF, Alarm output OFF) 1 : Monitor (Control output OFF, Alarm : output ON) 2 : Reverse action 3 : Direct action (Valid at heating-side control)	Selects the temperature control function. (Can be selected for each channel.)	2
20	Proportioning cycle (Heating-side)	T0	6	RW	control) 100 second	Sets the control output period.	2
21	Proportioning cycle (Heating-side) *1	T1	6	RW	1 to 100 second	Sets the cooling-side output period in heating/cooling PID action.	2
22	Heater break alarm set-value *2, *3	A3	6	RW	CTL- 6 type : 0.0 to 30.0 A CTL- 12 type : 0.0. to 100.0 A	Sets the heater break alarm set-value.	0.0
23	Control run/stop	X1	1	RW	0 : Control stop 1 : Control run	Selects whether control is required to run or stop.	1
24	PV bias	PB	6	RW	-5.00 to +5.00 %	Sets the bias added to the measured value to perform sensor correction.	0.00
25	Memory area execution No.	ZA	1	RW	1 to 8	Sets the memory area No. used for control.	1

To be continue to next page.

(RO : Readout only RW : Readout and write are available WO : Write only)

NO	Name	Identifier	Attribute		Data range	Description	Default value
			No. of digits				
26	Error code	ER	1	RO	0 : No error 1 : Backup data error 2 : RAM read/write error 3 : A/D converter error 4 : Adjustment data error 5 : System data error 6 : Channel selection error 7 : Output monitoring time exceeded	Displays the error No. corresponding to the content of the error produced.	—
27	Output monitoring	TU	6	RW	0 to 1440 minute	When a signal of 100% is continuously output, sets the output monitoring time until the above output signal is judged to fail. If the set value exceeds the output monitoring time, this is judged to fail.	60
28	Event function selection	YK	1	RW	0 : Unused 1 : Control stop command 2 : Event input monitor 3 : Memory area change command * 4 : AT start command 5 : Control run/stop command 6 : Interlock release command	Select an event function from among the functions described on the left. * Selection is made between the area under control and memory area No. 8.	0
29	Event input status	L1	1	RO	0 : OFF 1 : ON	Displays the event input status. This displaying becomes possible when "2" is selected by event function selection.	—
30	Alarm interlock release	AR	1	WO	1 : Release	Set when the alarm interlock is released.	—
31	Local/Computer transfer	C1	1	RO	0 : Local mode 1 : Computer mode	The present mode state can be checked.	—

*1 : Valid only when heating/cooling control is available.

*2 : Option

*3 : Set heater break alarm set-value to a value about 85% current transformer input value (CT).

However, when power supply variations are large, set the alarm to a slightly smaller value.

In addition, when two or more heaters are connected in parallel, set the alarm to a slightly larger value so that it is activated even with only one heater is broken (However, within the value of CT).

When the heater break alarm set-value is set to "0.0" or the current transformer is not connected, the heater break alarm is turned OFF.

4.2 Initialize settings

Initialize setting items cannot be set from the host computer side. When setting these initialize setting items, set them on the local side (OPL-B). For the setting methods, see the following instruction manuals.

Computer/local transfer method

See *Chapter 4: "OPERATING PROCEDURE"*, "4.4.5 Initialize setting screen, ■ Computer/Local screen" in the instruction manual for "**Operation Panel for REX-B850: OPL-B**" (IMOPL01-E □).

Initialize setting item setting method

See the supplementary manual for "OPL initialize/controller initialize" of the instruction manual for "**Operation Panel for REX-B850: OPL-B**" (IMOPL01-E □).

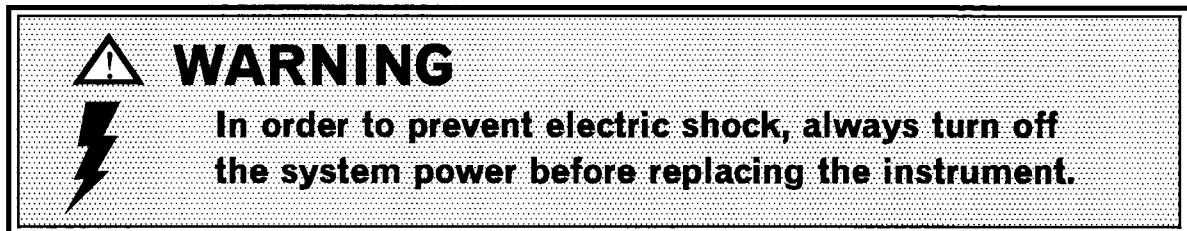
Initialize setting item (Engineer Level) setting method

See the instruction manual for "**Operation Panel for REX-B850: OPL-B initialize setting**" (IMOPL02-E □).

*If you need the instruction manual for "**Operation Panel for REX-B850: OPL-B initialize setting**" (IMOPL02-E □) contact your nearest RKC agent or RKC sales office directly.

5. APPENDIXES

5.1 Troubleshooting



In this section, an explanation is given of the presumed causes and measures of general problems when transmission can not be carried out correctly.

When abnormalities are suspected in the control, operation, operation panel or unit (REX– B850), see the troubleshooting items in the appropriate separate "**Operation Panel for REX– B850 OPL– B Instruction Manual**" (IMOPL01– E □) or "**REX– B850 Instruction Manual**" (IM850B01– E □).

Description	Presumed cause	Measures
No response	REX– B850 power is not switched on	Switch on the power
	There is a mistake in the communication cable connections	Confirm the connection method
	Breakage in the communication cable	Replace the cable
	Detachment of the communication cable	Confirm the connection condition
	Problems with the connectors or contacts	Check and replace the wiring in the connector
	The communication speed or bit structure settings are different	Confirm each setting
	The address specification is different	Confirm the address numbers
	There is a difference in the structure of the transmission data	Change to a structure that matches the identifier
	Breakdown of this instrument	Replace the instrument or request repairing
EOT has been transmitted	The identifier has been mistaken	Confirm the identifier
	The identifier specified is not in this instrument specification	Confirm the identifier
	The block data length of the transmission exceeds 128 bytes	Confirm the block data length

To be continue to next page.

Description	Presumed cause	Measures
NAK has been transmitted	The data exceeds the setting range of this instrument	Confirm the transmitting data range
	The data length exceeds the specification of this instrument	Confirm the transmitting data length
	The identifier specified is not in the specification of this instrument	Confirm the identifier
	BCC error occurred	Confirm transmitting data, Re-send data
	The transmission mode of the operation panel is set to local mode	Change to computer mode
An error code has been transmitted	See " 5.2 Error code descriptions (Identifier: ER) " (P. 27)	

5.2 Error code descriptions (Identifier: ER)

When the following errors have occurred, replace or request repair for the unit (REX– B850) in which the error has occurred.

Error code table

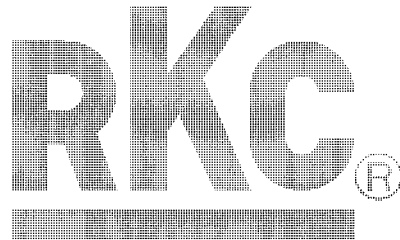
Data	Description	Explanation
0	No abnormality	
1	Back– up data error	The set– value has been destroyed or written wrongly
2	RAM read/write error	Problem with the system RAM
3	A/D converter error	Problem with the A/D converter
4	Adjustment data error	The adjustment data has been written wrongly
5	System data error	The initial data has been written wrongly
6	Channel selection error	Channel No. which does not exist was specified
7	Output monitoring time over	An output of 100% is continuously output and the output monitoring time is exceeded.

Probable causes of occurrence

- When errors 1, 2, 3 or 5 have occurred, a breakdown in the RAM or A/D converter should be suspected.
- If errors 3, 4 or 5 occur, there is a possibility that too much noise, surge or strong shock has been applied to the unit (REX– B850).
- If error 7 occurs, a heater break may have occurred.

5.3 JIS/ASCII 7 bit code table

					b 7	0	0	0	0	1	1	1	1
					b 6	0	0	1	1	0	0	1	1
					b 5	0	1	0	1	0	1	0	1
b5~b7	b4	b3	b2	b1		0	1	2	3	4	5	6	7
	0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
	0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
	0	0	1	0	2	STX	DC2	”	2	B	R	b	r
	0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
	0	1	0	0	4	EOT	DC4	\$	4	D	T	d	t
	0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
	0	1	1	0	6	ACK	SYM	&	6	F	V	f	v
	0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
	1	0	0	0	8	BS	CAN	(	8	H	X	h	x
	1	0	0	1	9	HT	EM	)	9	I	Y	i	y
	1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
	1	0	1	1	B	VT	ESC	+	;	K	[	k	{
	1	1	0	0	C	FF	FS	,	<	L	¥	l	|
	1	1	0	1	D	CR	GS	-	=	M	]	m	}
	1	1	1	0	E	SO	RS	.	>	N	^	n	~
	1	1	1	1	F	SI	US	/	?	O	_	o	DEL



RKC. RKC INSTRUMENT INC.
(RIKA KOGYO CO.,LTD)

HEAD OFFICE: 16 - 6, KUGAHARA 5 - CHOME, OHTA - KU TOKYO 146 JAPAN

PHONE : 03 - 3751 - 9799 (+81 3 3751 9799)

Email : KGI00524@niftyserve.or.jp

FAX : 03 - 3751 - 8585 (+81 3 3751 8585)

IMOPL03- E1
SEP. '97