Rexroth
Bosch Group

PROFIBUS-DP Adapter User Manual

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1 Preface

Thank you for purchasing the PROFIBUS-DP adapter made by Bosch Rexroth. In order to ensure correct operation of the PROFIBUS adapter, please read through this manual carefully before installation and operation. This manual is one of the accessories of the product. Please deliver it to the end-users.
In this chapter, safety instructions that should be followed during installation and operation of the PROFIBUS adapter are introduced. Please make sure to read through the contents of this chapter before operating and using the drive unit. In addition to the safety instructions stated below, please read through the complete safety instructions of the drive unit which you selected.

1.1 General safety instructions

Warning!

- Any electrical installation and maintenance related to the drive unit can only be operated by qualified personnel.
- The drive unit and its adjacent equipments must be correctly grounded.
- Do not operate drive devices when power is on. The operation of the frequency converter, the motor or the motor cables can only be carried out when the discharge of the capacitors is complete. Wait for at least 5 minutes after the main power is switched off.
- It is strongly recommended to check if the frequency converter is completely discharged before any work (with voltmeter).
- When the main power is on, the cable terminal of the motor will always have dangerously high voltage no matter if the motor is running.
- Even if the main power of the drive unit is switched off, dangerously high voltage may be introduced from the external control circuit into the unit. Pay close attention during operation. Ignorance of these safety instructions may cause bodily injury or death.

Note:

The term "qualified personnel" appearing in this manual or on the product marking refers to those people who are familiar with installation of the device, operation steps and the danger associated with the device. They must have the following qualifications:

1） They must be specially trained and qualified to be able to connect and disconnect the power, do clearing to devices and carry out grounding and wiring for lines and devices in accordance with specified safety specifications;
2） They must be trained to properly use and maintain devices in accordance with specified safety specifications;
3） They are trained in first aid.

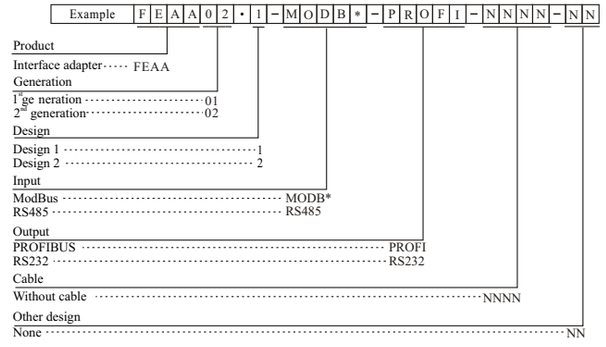
1.2 Delivery inspection

Each PROFIBUS adapter is subject to strict quality inspection and crash-proof packing before delivery. The following articles must be included in the package:

- One PROFIBUS adapter;
- One communication cable (for connection of PROFIBUS adapter to Frequency Converter Fe);
- One copy of User Manual.

Note: If the PROFIBUS adapter you have received is different from what is stated above or is damaged, please contact your agent or dealer.

1.3 Adapter type coding



2 Overview

2.1 Brief introduction of PROFIBUS

PROFIBUS is an open serial communication standard, which enables data exchange among various automatic control devices. PROFIBUS mainly includes three types: PROFIBUS-FMS (Fieldbus Message Specifications), PROFIBUS-DP (Distributed Peripheral Equipment) and PROFIBUS-PA (Process Automation). Bosch Rexroth PROFIBUS adapter module only supports PROFIBUS-DP protocol.
PROFIBUS is widely used in various industries such as manufacturing, automation and process automation, building, transportation, electronics, etc. Through PROFIBUS, automation equipments from different manufacturers can be easily connected into the same network for data exchange. The frame structure of data information in PROFIBUS network is shown in Figure 2-1. Contents of user data will be described in communication protocol section.

Protocol frame (header)	User data (control information/status information)	Protocol frame (end)

Figure 2-1 PROFIBUS Message Frame Structure

Physical transmission medium for PROFIBUS is twisted-pair cable (RS-485 standard). Maximum length of bus cable is within the scope of 100 - 1200 m, depending on the set transmission rate. When no repeater is used, 32 nodes at maximum can be connected to the same PROFIBUS network; if a repeater is used, nodes connected to the network may be increased to 126. In PROFIBUS communication, the master is usually a programmable logic controller (PLC), which is able to select the nodes responsive to commands from the master. no communication can be achieved among nodes in PROFIBUS network.
PROFIBUS protocol is described in detail in EN50170 standard. For further information regarding

2.2 Bosch Rexroth fieldbus adapter

Bosch Rexroth fieldbus adapter is able to control Frequency Converter Fe through PROFIBUS-DP fieldbus. Main functions of the fieldbus adapter are as below:

- Send control commands to frequency converter (such as starting, stopping, jogging, etc.);
- Send given frequency signal to frequency converter;
- Read working status information from frequency converter (such as running or not, rotating direction, rotating speed, error message, etc.);
- Reset frequency converter in case of fault.

PROFIBUS network of Rexroth Fe series frequency converters through connection via PROFIBUS adapter is shown in Figure 2-2.

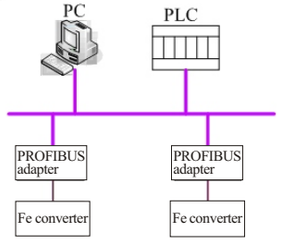


Figure 2-2 PROFIBUS Network Structure of Frequency Converter Fe

3 Electrical Installations

3.1.1 Outline structure

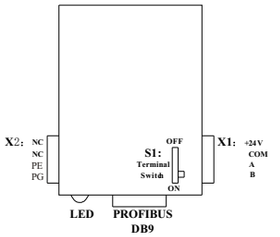


Figure 3-1 Outline Structure of PROFIBUS Adapter

Note:

X1: to connect the power supply of the adapter and the serial communication interface of the converter;
X2: grounding connector ;
PROFIBUS DB9: bus terminal
S1: selection switch of adapter built-in terminal resistor
LED: Indicator light of adapter running status. For details, refer to LED display analysis in section 6.1.

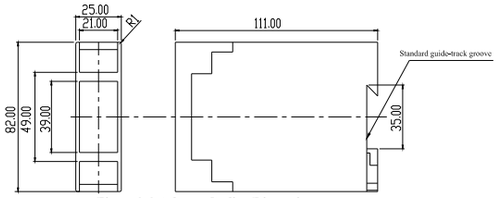


Figure 3-2 Adapter Outline Dimensions

3.1.2 Weight: 120g

3.2 Bus terminal resistor

Switch S1 on PROFIBUS adapter is used to switch ON/OFF built-in bus terminal resistor of the adapter. The bus terminal resistor can prevent signal reflection from bus cable end. If the adapter is the last node or the first node of the network, S1 must be at ON status. When PROFIBUS D-sub connector with built-in terminal resistor (for example, Siemens 6ES7972-0BA12-0XA0) is used, the built-in terminal resistor of the adapter must be disconnected.

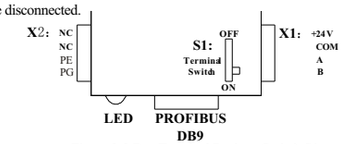


Figure 3-3 Bus Terminal Resistor Switch S1

3.3 Adapter terminal configuration

Terminal sign	Terminal name	Functional description
+24V	Power+	Adapter power supply (connected with frequency converter +24 V or external power supply+24 V)
COM	Power-	Adapter power supply (connected with frequency converter GND or external power supply GND)
A	RS485 terminal A	Data cable A communicates with frequency converter
B	RS485 terminal B	Data cable B communicates with frequency converter

Table 3-1 X1 Terminal Configuration

Note:
If external power supply is used for the PROFIBUS adapter, switch on the power for converter first and then switch on the power for adapter. Otherwise, correct communication cannot be established.

Terminal sign	Terminal name	Functional description
NC		Reserved
NC		Reserved
PE	Grounding terminal of bus cable shield	Refer to 3.6 EMC for measures
PG	Grounding terminal of bus adapter	Grounding terminal

Table 3-2 X2 Terminal Configuration

Outline of the adapter bus connection terminal DB9 is shown in Figure 3-4. Definition of pins is stated in Table 3-3.

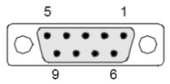


Fig. 3 - 4Bus Connection Terminal PROFIBUS DB9

Stitch No.	Terminal sign	Terminal name	Functional description
1	PE	Terminal of bus cable shield	Connectes with bus cable shield
2	NC		Reserved
3	PROFIBUS_B	PROFIBUS terminal_B	PROFIBUS data cable B
4	RTS	Request for signal sending	
5	GND	Power-	
6	Vcc	Power+	
7	NC		Reserved
8	PROFIBUS_A	PROFIBUS terminal_A	PROFIBUS data cable A
9	NC		Reserved

Table 3-3 Definition of PROFIBUS DB9 Pins

3.4 Requirements for PROFIBUS link

Cable used is shielded twisted pair cable. The shield is able to improve electromagnetic compatibility (EMC) ability. Unshielded twisted pair cable may be used if there is less electromagnetic interference (EMI).
Impedance of the cable should be within 100 Ω to 200 Ω. Cable capacity (among conductors) should be＜60 pF/m and conductor cross section should be≥0.22 (24 AWG). Two kinds of cables are used for PROFIBUS with detail definitions stated as below:

Cable parameters	Type A	Type B
Impedance	135 Ω -165 Ω (f = 3 MHz - 20 Mhz)	100 Ω -130 Ω (f > 100 kHz)
Capacity	<30 pF/m	<60 pF/m
Resistance	≤110 Ω/km	≤110 Ω/km
Conductor cross section	≥0.34 (22 AWG)	≥0.22 (24 AWG)

Table 3- 4 Type of Adapter Cable

Note: standard Siemens PROFIBUS cable is (MLFB) 6XV1830-0EH10 (Type A); and connector is 6ES7972-0BA12-0XA0.

3.5 Relationship between communication rate and cables

Relationship between adapter communication rate and cable length is described in the table below:

Baud rate	Maximum cable length of one segment (m) (Type A)	Maximum cable length of one segment (m) (Type B)
9.6 - 93.75 kbps	1000	1000
187.5 kbps	1000	600
500 kbps	400	200
1.5 Mbps	200	200
3 - 12 Mbps	100	100

Table 3-5 Relationship between Communication Rate and Cable Length

3.6 EMC measures

Conductor of bus cable (signal cable) must be twisted, shielded and installed separately with electric power cable with a distance of at least 20 cm. Bus cable shielding layer should be grounded at one end. Terminal PE at terminal block X2 is taken as connection terminal of the shielding layer. The terminal PE is only valid at the pin 1 of DB9 socket or when DB9 metal cover is connected with the shielding layer of bus cable.
Conductors of communication connection cable (signal cable) for adapter and frequency converter must be twisted, shielded and installed separately at a reasonable distance. Shielding layer for communication cable should be grounded at one end.
Signal cable and electrical power cable should be orthogonal in case of crossing;
Signal cable should be as short as possible;
Large area is required for the connection of shielding layer.

4 Periodical Data Communication

4.1 PPO data type

PROFIBUS-DP defines data structure for periodical data communication as PPO (the Parameter Process date Object). Bosch Rexroth PROFIBUS adapter supports 5 PPO types shown in Figure 4-1. PPO message is divided into two data areas in terms of transmission data contents:
Parameter area (PKW area): read or overwrite the parameter of a certain function code of slave.
Process data area (PZD area): including control word and reference frequency (data flow from master to slave), or status word, actual output frequency and other status monitoring values of slave (data flow from slave to master)
For detail descriptions of PKW area and PZD area, please refer to Section 4.2 and 4.3.

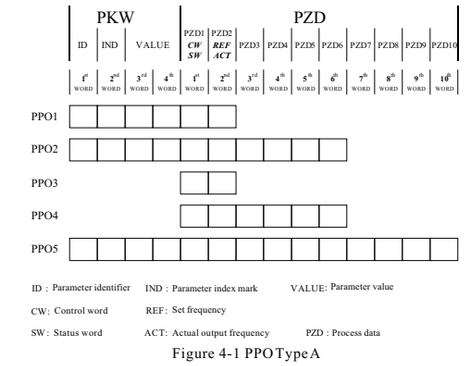


Figure 4-1 PPO Type A

4.2 PKW parameter area

This data area is composed of ID, IND, VALUE_high and VALUE_low, as shown in Figure 4-2. They are used to read or modify the parameter of a certain function code of frequency converter, but only one function code can be read or modified each time. When master gives request and slave makes response, bit definition for each specific word in PKW area is shown in Table 4-1 and Table 4-2. If frequency converter fails to execute PKW area request command, it will return error code to the master in VALUE_low. Refer to Table 4-3 for details.

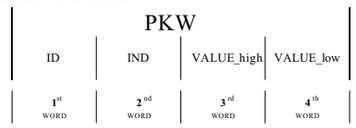


Figure 4-2 Data Formatof PKW Field

4.2.1 Request data frame of PKW area

Word	Identifier	Bit	Value	Description
1st	ID	15 - 12	0000B	No task
			0001B	Request to read function code parameter
			0010B	Request to modify function code parameter
			Other	Illegal command code
		11	0	Reserved
		10 - 8	000B	Group No. for function code parameter
		7 - 0	xxH	

2nd	IND	15 - 8	xxH	Index serial number of function code within the group
		7 - 0	0	Reserved, default is 0
3rd	VALUE_high	15 - 0	0	Reserved, default is 0
4th	VALUE_low	15 - 0	xxxxH	1. When reading parameters, default is 0; 2. When modifying parameters, it is modified value; 3. It can be of any value in case of no operation.

Table 4-1 Request Data Frame in PKW Area (from master to slave)

4.2.2 Response data frame of PKW area

Word	Identifier	Bit	Value	Description
1st	ID	15 - 12	0000B	No task
			0001B	Correct in reading or modifying function code parameter
			0111B	Wrong in reading or modifying function code parameter, and error message is shown in VALUE_low.
		11	0	Reserved, default is 0
		10 - 8	000B	Group No. of function code parameter
		7 - 0	xxH	
2nd	IND	15 - 8	xxH	Index serial number of function code within the group
		7 - 0	0	Reserved, default is 0
3rd	VALUE_high	15 - 0	0	Reserved, default is 0
4th	VALUE_low	15 - 0	xxxxH	1. When reading parameter, it returns the read value ; 2. When modifying parameters, it is the modified value; 3. It returns 0 in case of no operation; 4. It returns error code when PKW area execution failures.

Table 4-2 Response Data Frame in PKW Area (from slave to master)

4.2.3 Error message after execution failure in PKW area

Error code	Name	Possible reasons
0x0002	Illegal command code in PKW area	Command codes (ID bit15 - 12) are not 0, 1 and 2
0x0003	Illegal parameter address in PKW area	Illegal function code group No. or Index serial No. of parameters within the group
0x0004	Illegal parameter value in PKW area	Function code is protected and cannot be modified; Parameter value exceeds limit; Parameter cannot be modified; Factory password is locked.
0x0005	Communication fault in PKW area	Line interference

Table 4-3 Error Code

Note:

Communication line which is subject to hardware disconnection fault will also lead to execution failure in PKW area. The error code will be given in status word of PZD area.

4.2.4 Examples of parameter operation in PKW area

In real application, the PROFIBUS adapter communicates with the master through messages in PPO structure. Among the 5 PPOs stated in Section 4.1, PPO 1, PPO 2 and PPO5 apply both PKW area and PZD area. In following examples, PKW area data frames are taken from complete PPO message to describe its request and response data frames.

The following examples are based on Bosch Rexroth Fe frequency converter and PROFIBUS adapter.

Example 1:

Reading value of function code [E03] (programmable skip frequency range): parameter group No. is 0×01, and index of parameters within the group is 0×03. Then request and response data frames in PKW area are as below:

	ID	IND	VALUE_high	VALUE_low
Request data frame of PKW area	0x1001(or 0x1801)	0x0300	0x0000	0x0000
Response data frame of PKW area	0x1001	0x0300	0x0000	0x0190

Note:

ID of request data frame could be 0×1000 or 0×1800, because the 11th digit of ID in Table 4-1 can be 0 or 1. 0 is strongly recommended. In following examples, only ID value of 0 with this digit is given.

Example 2

Reading value of function code [E03] (programmable skip frequency range): parameter group No. is 0×01, and index of parameters within the group is 0×03. If index of parameters within the group is miswritten as 0×33 (actually 0×33, i.e., index of parameters within the group, exceeds specified limit in Group E), then request and response data frames in PKW area are as below:

	ID	IND	VALUE_high	VALUE_low
Request data frame of PKW area	0x1001	0x3300	0x0000	0x0000
Response data frame of PKW area	0x7001	0x3300	0x0000	0x0003

Example 3

Modifying value of function code [E03] (programmable skip frequency scope): parameter group No. is 0×01, index of parameters within the group is 0×03, and modified value is 0×03E8. Then request and response data frames in PKW area are as below:

	ID	IND	VALUE_high	VALUE_low
Request data frame of PKW area	0x2001	0x0300	0x0000	0x03E8
Response data frame of PKW area	0x1001	0x0300	0x0000	0x03E8

Example 4

Modifying value of function code [E03] (programmable skip frequency scope): parameter group No. is 0×01, index of parameters within the group is 0×03, and modified value is 0×03F0 (actually preset value 0×03F0 exceeds preset upper limit of parameter [E03]). Then request and response data frames in PKW area are as below:

	ID	IND	VALUE_high	VALUE_low
Request data frame of PKW area	0x2001	0x0300	0x0000	0x03F0
Response data frame of PKW area	0x7001	0x0300	0x0000	0x0004

Example 5

Modifying value of function code [E03] (programmable skip frequency scope): parameter group No. is 0×01, index of parameters within the group is 0×03, and modified value is 0×03E8. But, PPO command code (ID bit15-12) is miswritten as 8 (illegal command code). Then request and response data frames in PKW area are as below:

	ID	IND	VALUE_high	VALUE_low
Request data frame of PKW area	0x8001	0x0300	0x0000	0x03E8
Response data frame of PKW area	0x7001	0x0300	0x0000	0x0002

4.3 PZD process data area

When the master is sending a request message to the slave, PZD1 and PZD2 in PZD process data area are respectively corresponding to control word (CW) and reference frequency (REF) and PZD3 - PZD10 (number depending on PPO type) are written as 0. When the slave returns a response message to the master, PZD1 and PZD2 in PZD process data area are respectively corresponding to status word (SW) and actual output frequency (ACT), and PZD3 - PZD10 are corresponding to status monitoring values (such as output current, output voltage, AC bus voltage, etc.) set by function code parameter [H14] - [H21].

4.3.1 Control word (CW)

Bit	Value	Description
15	0	Reserved, default is 0
14	0	Reserved, default is 0
13	0	Reserved, default is 0
12	0	Invalid
	1	Set frequency converter reverse running
11	0	Invalid
	1	Set frequency converter forward running
10	0	Reserved, default is 0
9	0	Invalid
	1	Reverse jogging valid
8	0	Invalid
	1	Forward jogging valid
7	0	Invalid
	1	Fault reset
6	0	Reserved, default is 0
5	0	Reserved, default is 0
4	0	Reserved, default is 0
3	0	Invalid
	1	Start the frequency converter
2	0	Reserved, default is 0
1	0	Reserved, default is 0
0	0	Invalid
	1	Stop as set parameter

Table 4-4 Bit Definition of Control Word

Note:

When all control words are 0, command is invalid.

4.3.2 Status word (SW)

Bit	Value	Description
15 - 14	00	Normal communication
	01	Communication hardware line fault
	10	Communication data fault in PZD area
	11	Communication frequency exceeds in PZD area
13	0	None
	1	In retry after transient stop
12	0	None
	1	Jogging
11	0	None
	1	Under stall over voltage protection
10	0	None
	1	Under stall over current protection
9	0	None
	1	DC braking
8	0	None
	1	Free halt
7	0	None
	1	Reset after fault
6	0	None
	1	Decelerating
5	0	None
	1	Accelerating
4	0	Stopping status
	1	Running status
3 - 2	01	Reserved, default is 0
	10	Reserved, default is 0
1	0	None
	1	System fault
0	0	Voltage abnormal
	1	Voltage normal

Table 4 - 5 Bit Definition of Status Word

Note: When system is subject to fault, please read value of function code [E45] of frequency converter.

4.3.3 Process data PZD3 - PZD10

Number of process data PZD3 - PZD10 depends on PPO type. When the slave returns a response message to the master, status monitoring value reflected by each process data is set in strict correspondence with function codes of Frequency Converter Fe [H14] - [H21]. Details are shown in Table 4-6.

Function code	Corresponding set process data	Parameter set value and its description
H14	PZD3	0: Output frequency
H15	PZD4	1: Reference frequency
H16	PZD5	2: Output current
H17	PZD6	3: Output voltage
H18	PZD7	4: DC bus voltage
H19	PZD8	5: Digital input
H20	PZD9	6: Radiator temperature
H21	PZD10	7: PI feedback

Table 4-6 Status Monitoring Value and Parameter Setting Corresponding to Process Data PZD3 - PZD10

4.3.4 Examples for operation of PZD process data area

Example 1

The master communicates with the slave via PPO4. From Table 4-1 and Table 4-6, we need to set status monitoring value corresponding to PZD3 - PZD6 in parameters of the converter. If we need to start the converter for forward rotation at 50.00 Hz (0×1388), and request PZD3 to reflect output current, PZD4 to reflect output voltage, PZD5 to reflect DC bus voltage, PZD to reflect radiator temperature, respective function codes are set as: [H14]=2; [H15]=3; [H16]=4; [H17]=6. Complete PPO request and response messages are as below:

	PZD1	PZD2	PZD3	PZD4	PZD5	PZD6
PPO request message	CW	REF	0x0000	0x0000	0x0000	0x0000
	0x0808	0x1388				
PPO response message	SW	ACT	0x0001	0x0E61	0x1369	0x0019
	0x0015	0x1388				

Note: In this example, request and response data frame is the message of frequency converter at stable operation. Actually, at the instant start-up of the frequency converter, response data frame in PZD area is "000× 0000 0001 0000 1369 0019" (× means rotation direction is not certain at the instant of activation).

4.4 Addressing of communications function code parameter group number and index number within the group

The communication function code address of the frequency converter is in strict correspondence with the function code. It consists of function code group No. and index of parameters within the group. Reading and writing function codes are possible through reading and writing contents of function code address of PROFIBUS communication. Reading and writing property and value of the function codes should follow the User Manual of the frequency converter.

A complete communication function code address of frequency converter consists of 19 bits, where high 11bit is communication function code group No., and low 18bit is index of parameters within the group. Index of parameters within the group for a certain function code refers to sexadecimal expression group No. of such function code. For example, if it is function code [E03] (programmable skip frequency range), it is numbered as 3 in Group E. So its index of parameters within the group is 0×03. As high 3 bit of 11 bit function code (bit10-8 of ID) must be 000B, in order to describe it in sexadecimal system, function code group No. stated in this manual only refers to its low 8bit (i.e., bit7-10 of ID). For example, if it is function code [E03] (programmable skip frequency range), its function code group No. is 0×01. The function code group No. mentioned above is the same as this number. Addressing the range for PROFIBUS adapter communication function code group No. and index of parameter within the group is shown in Table 4-7.

Function code group name	Group b	Group E	Group P	Group H
Function code group Number	0x00	0x01	0x02	0x03
Index of parameter within the group	0x00 - 0x2B	0x00 - 0x3O	0x00 - 0x25	0x00 - 0x3F

Table 4-7 Addressing of CommunicationFunction Code Parameters

5 Communication Parameter Configuration

5.1 Communication related parameters setting in converter Fe

Function code	Parameter name	Parameter value setting range
b00	Setting of operation command source	5: Master controls Run/Stop, Stop key on operating panel is valid
		6: Master controls Run/Stop, Stop key on operating panel is invalid
b02	Setting of frequency command source	12: Master sets a frequency
H08	Selection of communication protocol	1：PROFIBUS
H09	Address of local machine	1 - 126
H12	Action selection in case of communication disconnection	0: Stop 1: Continue to run
H13	Detection time for communication disconnection	0.0: invalid 0.1 - 60.0s
H14 - H21	Process data	0 - 7, refer to Table 4-6 and related descriptions for details.

Table 5-1 PROFIBUS-DP communication related function codes of Frequency Converter Fe

Note:

If parameter [b00]=5, when the frequency converter is stopped by the Stop key on the operating panel, adapter is isolated from communication software of the frequency converter. If communication is to be re-established, stop and reset commands must be sent to the frequency converter by the adapter.

5.2 Parameter configuration of master station

Parameter configuration for related master may refer to instructions for the master. The address configured for slave in the master should be consistent with the parameter address configured for the slave. Communication baud rate and PPO type is determined by the master.

5.3 GSD file

Users may log on the website of the company at **www.brce.cn** to download electronic database document (RXFEDP01.gsd) and bit map document (RX_FE*.bmp) pack for fieldbus adapter. For specific operation and PROFIBUS system configuration method, please refer to related system configuration documents.

6 Fault and Analysis

6.1 LED display analyses

Run: This light indicates if bus adapter is running normally. If bus adapter is correctly connected to the frequency converter, and related parameter configuration for the frequency converter is correct, this light is always on after power is switched on. If this light is flashing, please switch off the power supply first, and then check if bus adapter is correctly connected with the frequency converter, if frequency converter parameters are correctly configured, and if bus adapter power connection is reliable. After that, switch power on for bus adapter. If this problem still exists, please contact your dealer.

Line: This light indicates the status of communication between the bus adapter and frequency converter. It indicates normal communication if this light is always on. If this light is off, it indicates disconnection between adapter and frequency converter. Then, please check hardware connection between bus adapter and frequency converter. If this light is flashing, it indicates abnormal connection between the adapter and frequency converter. Then, please check hardware connection between the bus adapter and frequency converter.

Net: This light indicates the status of communication between the bus adapter and PROFIBUS master. If this light is always flashing, it indicates normal communication. If this lamp is off, please check hardware wiring between the bus adapter and master and check if the master configuration is correct.

6.2 Diagnosis information of master station

From diagnosis of the adapter by master, 6-byte diagnosis information can be obtained. Detailed meanings for each byte are as below:

First byte (Station_Ststus_1)

0	Diag.Station_Non_Existent (set by master, reset by slave) 1: slave does not exist
1	Diag.Station_Non_Ready (set by slave) 1: slave is not ready for data exchange
2	Diag.Cfg_Fault (set by slave) 1: adapter data received does not match with originally configured data
3	Diag.Ext_Diag (set by slave) 1: diagnosis entrance is at undetermined diagnosis area of the slave
4	Diag.Not-Supported (set by slave) 1: service not supported by slave
5	Diag.Invalid_Slave_Response (set by master, reset by slave) 1: invalid response of slave
6	Diag.Prm_Fault (set by slave) 1: invalid parameter or parameter value
7	Diag.Master_Lock (set by master, reset by slave) 1: parameters of slave are set by other master

Second byte (Station_Status_2)

0	Diag.Prm_Req (set by slave) 1: the slave needs reconfiguration and resetting of parameters
1	Diag.Stat_Diag (set by slave) 1: static diagnosis. The slave (temporarily) fails to provide valid data
2	Always set as 1 by slave
3	Diag.WD_On (set by slave) 1: watchdog is on
4	Diag.Freeze_Mode (set by slave) 1: freezing command received by slave
5	Diag.Sync_Mode (set by slave)1: synchronizing command received by slave
6	Reserved
7	Diag.Deactivated (set by master, reset by slave) 1: slave invalid

Third byte (Station_Status_3)

0-6	Reserved
7	Diag.Ext_Diag_Overflow (set by slave) 1: more diagnosis information in Ext_Diag_Date than what specified information

Fourth byte (Diag.Master_Add)

Log in address of DP master which parameterizes this DP slave in this eight-bit set. If there is no such master which parameterizes this DP slave, address 255 of this DP slave will be logged in this octet.

The fifth and sixth byte (Ident_Numbei) is the identifier of the adapter.

7 Appendix

Appendix A technical data

Parameter	Performance indicator
Input voltage	+24 VDC，±10 %，80 mA
Communication baud rate of DP interface	9.6 kbps - 12 Mbps
Requirements for electromagnetic compatibility	IEC1000-4 standard

Appendix B Application environment for Bosch Rexroth PROFIBUS adapter

Item	Requirements
Application environment	Below altitude 1000 m, indoor (free of corrosive air, liquid or dust)
Ambient temperature	-10 ℃ - +40 ℃ (No condensation or freezing)
Humidity	20 % - 90 %RH (No condensation)
Vibration	Less than 5.9 m/(0.6 G)
Cooling method	Natural wind cooling

Revisions:

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