

**EKI-1220 series -**

**Just-In-Time Data  
Capture Diagnostic  
Interface**

# Just-In-Time Debug Capture Tool

We understand in industrial environment, data communication drop or data missing sometimes it's difficult to figure out the root cause. That's why easily trouble shooting it becomes very important. We add-up Just-In-Time(JIT) Diagnostic Debug Tool function in our Modbus Gateway.

Enable this JIT function, you can see the captured Modbus traffic communication in the WEBGUI interface of gateway.

This capture traffic message can quickly lock down the issue and solve it with no pain.

This SOP we focus on how to enable this JIT function and what's the each debug items message means. And this diagnostic message support system log with WebGUI interface and advanced remote system log message.

# Configuring the JIT interface (1/3)

## How To Enable “Debug Message Mode”

**Step 1:** Using “Launch Browser” in Utility or Key in IP Address to open Web GUI interface

**Step 2:** Support for CE version and BE version (FW “1.65(beta 2) or upper”)

**Step 3:** In “System” page, key in Device Name as “ENABLE\_JIT\_DIAG”

**Step 4:** “Save” to store the configuration



The screenshot displays the 'System Configuration' page in a web GUI. The left sidebar contains a menu with 'System' highlighted. The main content area shows the following configuration details:

- Firmware version: 1.09(beta 1)
- Revision number: 6679
- Device Name: ENABLE\_JIT\_DIAG
- Device Description: Device Description

A 'Save' button is located at the bottom of the configuration area.

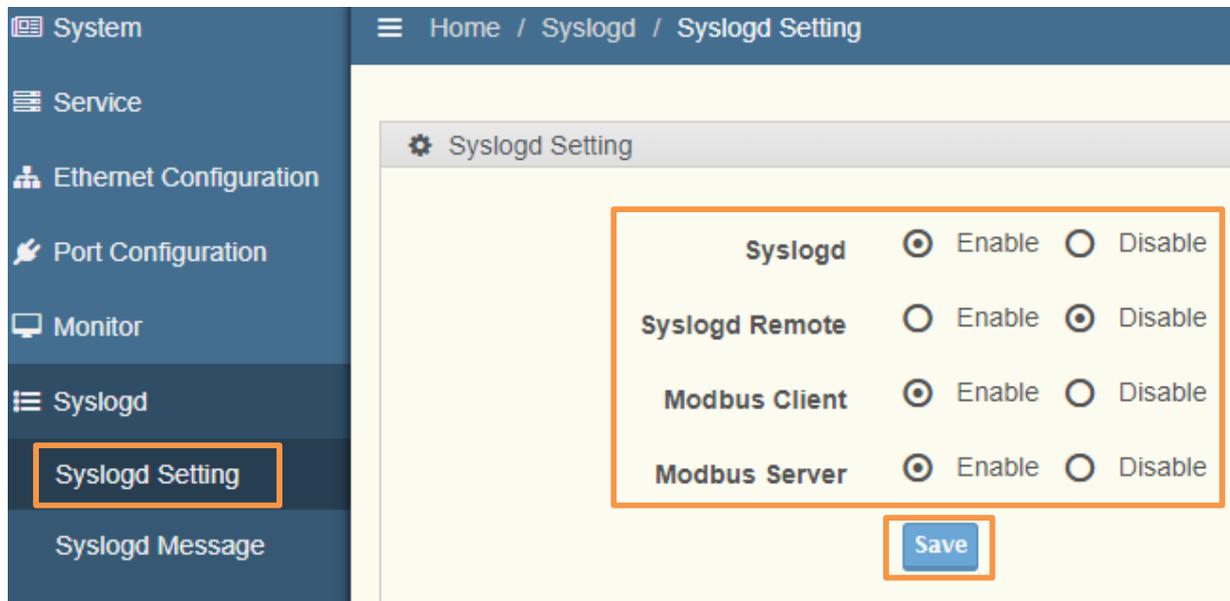
# Configuring the JIT interface (2/3)

Make Sure System log message can be seen, go to “**Syslogd Setting**” page

**Step 5:** Check Syslogd is “**Enable**”

**Step 6:** Check Modbus Client or Server is “**Enable**” (p.s. this item is to enable the Modbus mode which you would like to observe )

**Step 7:** “**Save**” to store the configuration

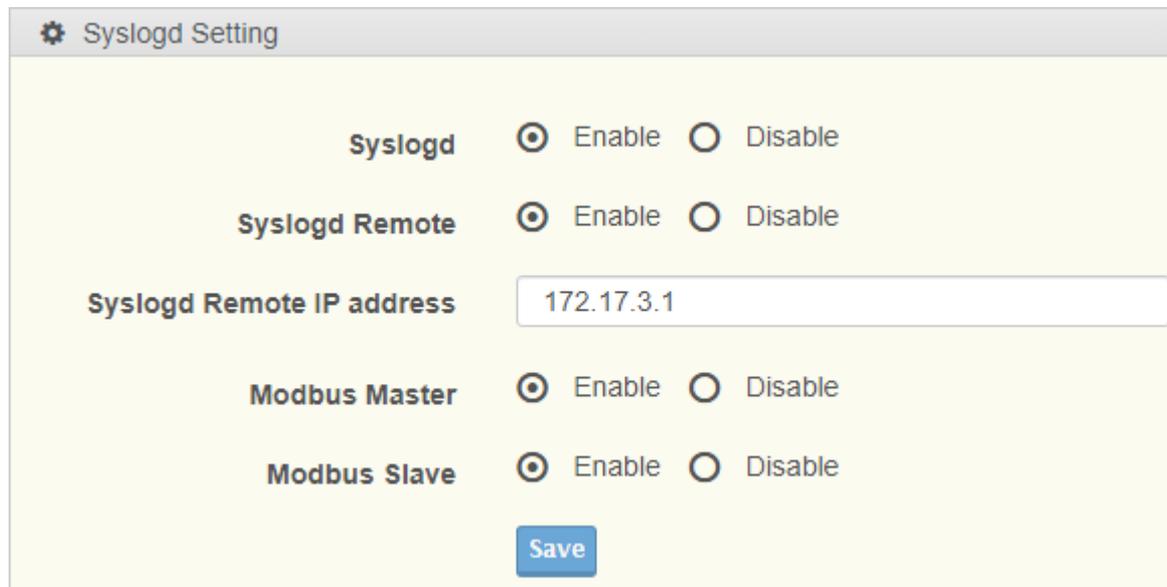


# Configuring the JIT interface (3/3)

The JIT messages could also be sent to external **Syslogd Server** for storage and further analysis.

Set the remote IP address of the Syslogd Server in “**Syslogd Remote IP address**” column. “**Save**” to store the configuration

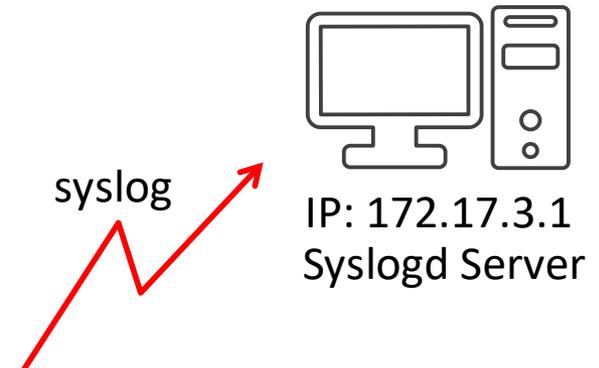
\*If the user enabled the JIT message remote storage, syslog in local window would not be shown. Users can only use one of them at a time.



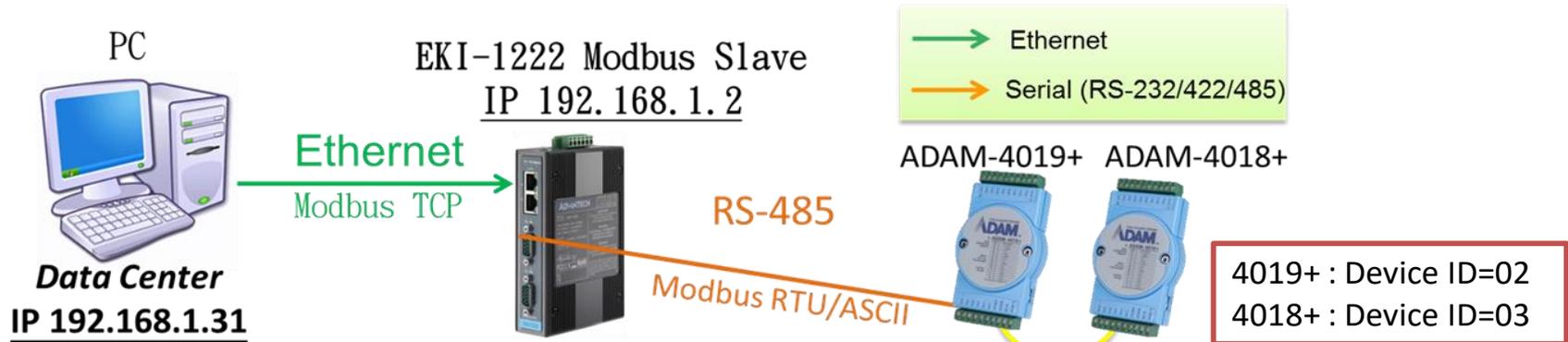
The screenshot shows a configuration window titled "Syslogd Setting" with a gear icon. It contains several settings, each with an "Enable" radio button selected and a "Disable" radio button unselected:

- Syslogd**: Enable  / Disable
- Syslogd Remote**: Enable  / Disable
- Syslogd Remote IP address**:
- Modbus Master**: Enable  / Disable
- Modbus Slave**: Enable  / Disable

A blue "Save" button is located at the bottom center of the window.



# Modbus Server Mode - Server ID Setting



Port Configuration

Port 1

Port 2

Port 3

Port 4

Monitor

Syslogd

Tools

Management

Port 1 configuration

Mode: Modbus Server Mode

Protocol: RTU

Server Timeout(ms): 3000

Delay Time(ms): 0

ASCII Timeout(ms): 10

Direct Access Port: 6000

RTS Control:  Disable  Enable

Peer for Receiving Data

Peer Number: 5

#	Server ID	Description	Mapping ID AS
1	1	TEST	1
2	2	ADAM_4019_PLC	12
3	3	ADAM_4018_conveyor	3
4	4	4	4
5	5	ADAM_4050	5

In "Port configuration",

4019+ : Device Mapping ID=12  
4018+ : Device Mapping ID=03

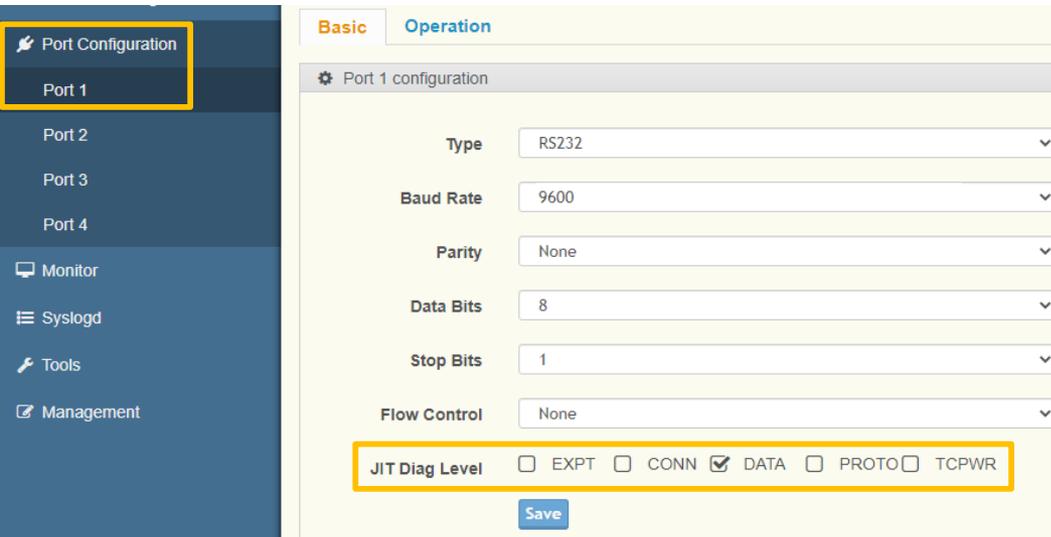
In "Peer for Receiving Data"

**Server ID:** Actual Server Device ID

**Mapping ID:** Host recognize Device ID

\*See more configuration detail in FAQ "SOP\_EKI-1200 series\_How to Configure Modbus Slave mode":  
<https://www.advantech.com/en/support/details/faq?id=1-1L0S268>

# JIT Debug Level- Data Level



In “**Data Level**”, It shows Serial meta Data

\*TID is Transition ID

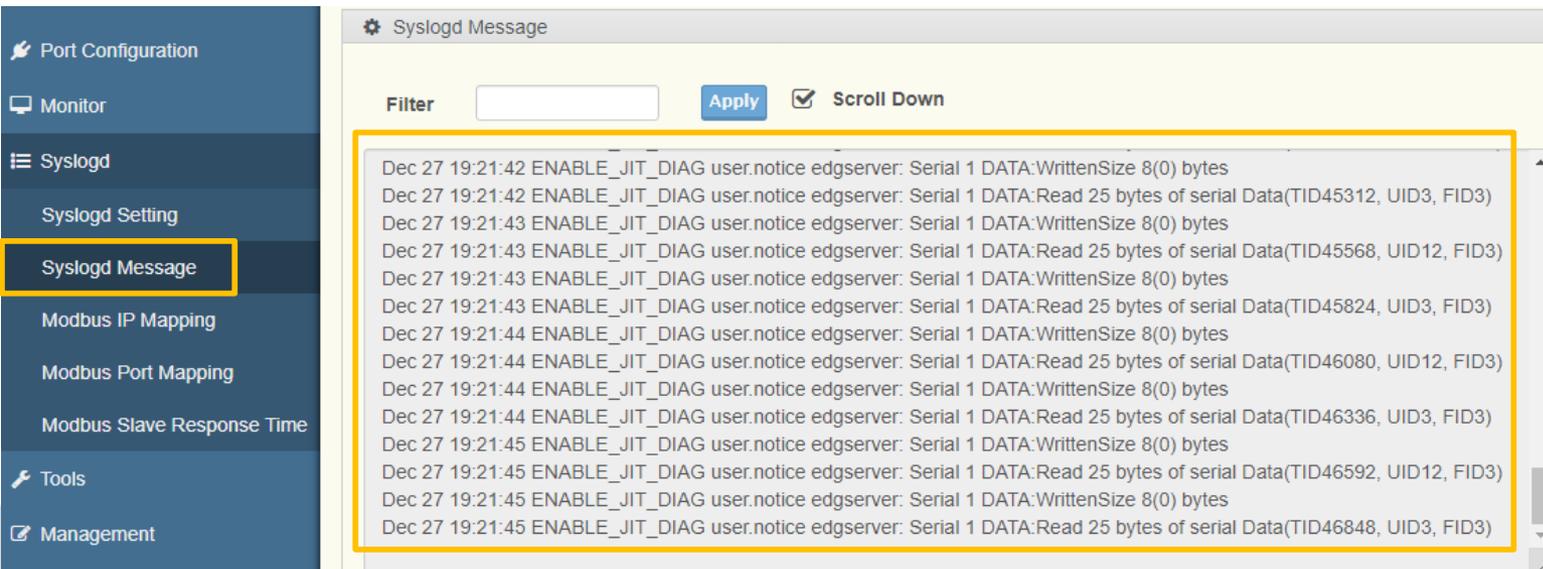
\*UID is Unit ID

\*FID is Function ID

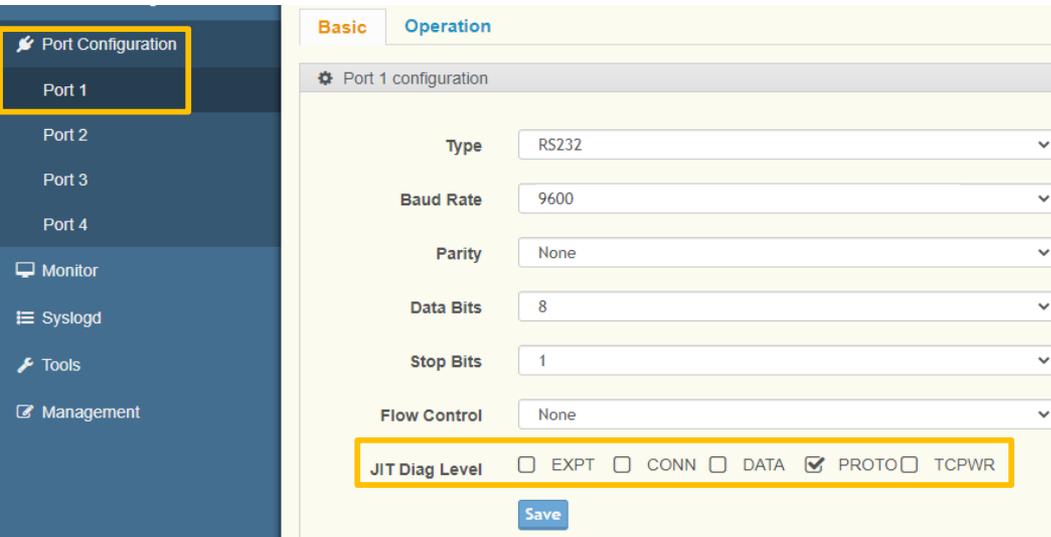
you can see the serial data:

Unit ID: Mapping ID =3, Function Code=3

Unit ID: Mapping ID=12, Function Code=3



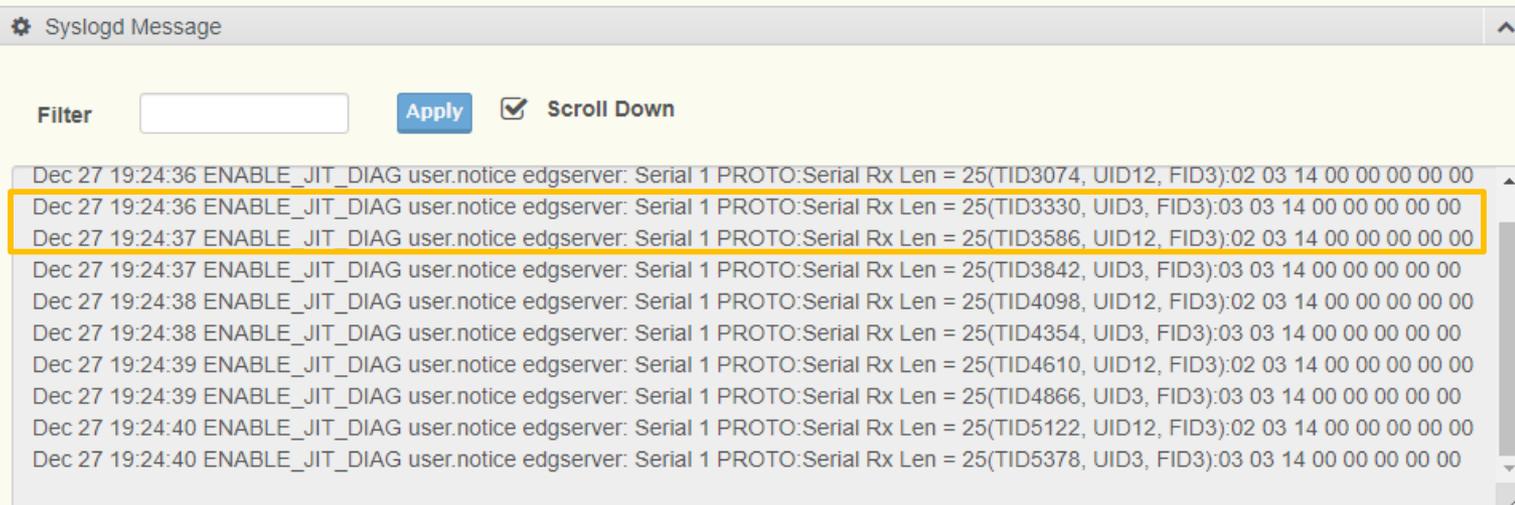
# JIT Debug Level- Protocol Level(1/2)



In “**PROTO Level**”, It shows Protocol relate info:

“PROTO Level” is similar as “Data Level”. And it show more messages compare with “Data Level”

Here, you can see the serial data and the beginning 8 bytes of the data returned by the Serial Port



# JIT Debug Level- Protocol Level(2/2)

## Response message



Address:  Device Id:   
MODBUS Point Type  
Length:

Using ModScan to poll Modbus RTU data, you can see the Modbus Server End Device response the ID & Address & Length & 4 bytes of the data returned in “**PROTO Level**”.

Address:  Device Id:   
MODBUS Point Type  
Length:

Number of Polls: 744  
Valid Slave Responses: 711  
Reset Ctrs

```
Dec 27 19:46:59 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID36876, UID12, FID3):02 03 14 ff ff 7f 52 7f
Dec 27 19:46:59 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID37132, UID3, FID3):03 03 14 00 00 00 00 00
Dec 27 19:47:00 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID37388, UID12, FID3):02 03 14 ff ff 7f 52 7f
Dec 27 19:47:00 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID37644, UID3, FID3):03 03 14 00 00 00 00 00
Dec 27 19:47:01 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID37900, UID12, FID3):02 03 14 ff ff 7f 52 7f
Dec 27 19:47:01 ENABLE_JIT_DIAG user.notice edgserver: Serial 1 PROTO:Serial Rx Len = 25(TID38156, UID3, FID3):03 03 14 00 00 00 00 00
```

# JIT Debug Level- TCP Write/Read Level

Port Configuration

- Port 1
- Port 2
- Port 3
- Port 4

Monitor

Syslogd

Tools

Management

Basic Operation

Port 1 configuration

Type: RS232

Baud Rate: 9600

Parity: None

Data Bits: 8

Stop Bits: 1

Flow Control: None

JIT Diag Level:  EXPT  CONN  DATA  PROTO  TCPWR

Save

In “**TCPWR Level**”, It shows Modbus TCP query/response info:

Here, you can see **Unit ID=12** received Modbus TCP queried **14 bytes** of data;  
**Unit ID=3** received Modbus TCP queried **10 bytes** of data

Server ID=3

Device Id: 3

Address: 0001

MODBUS Point Type

Length: 5

03: HOLDING REGISTER

40001 : <0000H>  
40002 : <0000H>  
40003 : <0000H>  
40004 : <0000H>  
40005 : <0000H>

5\*2=10Byte

Server ID=12

Device Id: 12

Address: 0001

MODBUS Point Type

Length: 7

03: HOLDING REGISTER

40001 : <FFFFH>  
40002 : <7F52H>  
40003 : <7FEEH>  
40004 : <7F7DH>  
40005 : <8007H>  
40006 : <7FFDH>  
40007 : <0000H>

7\*2=14Byte

Port Configuration

Monitor

Syslogd

Syslogd Setting

Syslogd Message

Syslogd Message

Filter: [ ] Apply [x] Scroll Down

Dec 27 19:55:07 ENABLE\_JIT\_DIAG user.notice edgserver: Serial 1 TCPWR:Rcvr MbusTCP Query(TID25360, UID3, FID3) for 10 bytes of data

Dec 27 19:55:08 ENABLE\_JIT\_DIAG user.notice edgserver: Serial 1 TCPWR:Rcvr MbusTCP Query(TID25616, UID12, FID3) for 14 bytes of data

Dec 27 19:55:09 ENABLE\_JIT\_DIAG user.notice edgserver: Serial 1 TCPWR:Rcvr MbusTCP Query(TID25872, UID3, FID3) for 10 bytes of data

Dec 27 19:55:09 ENABLE\_JIT\_DIAG user.notice edgserver: Serial 1 TCPWR:Rcvr MbusTCP Query(TID26128, UID12, FID3) for 14 bytes of data

Dec 27 19:55:10 ENABLE\_JIT\_DIAG user.notice edgserver: Serial 1 TCPWR:Rcvr MbusTCP Query(TID26384, UID3, FID3) for 10 bytes of data

# Reference - JIT Level Message Definition (1/2)

	JIT Level	Message Format
1	Exception	Unable to Open COM Port
2	Exception	Failed to enable RTU detection
3	Exception	Cannot get LSP (State: 0x%X)
4	Exception	LSR_ERRORMASK (State: 0x%X)
5	Exception	Write To Serial Failed
6	Exception	Queue Full, Unable to make a reservation
7	Exception	An Error event has occurred
8	Connection	CRC Error ( 0x%x!=0x%x TID%d, UID%d, FID%d)
9	Data	Read %d bytes non-MBus Data(TID%d, UID%d, FID%d) *TID is the transition ID *UID is the Unit ID *FID is the function ID

# Reference - JIT Level Message Definition (2/2)

	JIT Level	Message Format	Information
10	Data	<b>Data:</b> Read %d bytes of serial Data(TID%d, UID%d, FID%d)	
11	Protocol	<b>Protocol:</b> Serial Rx Len = %d(TID%d, UID%d, FID%d):%s  ※ “%s” shows the beginning 8 bytes of the data returned by the Serial Port	The <b>Protocol level</b> message overwrites the <b>Data level</b> message
12	TCP Write	<b><u>On Modbus Read Commands:</u></b> Recieved MbusTCP Quarry for %u bytes of data(TID%d, UID%d, FID%d)  <b><u>On Modbus Write Commands:</u></b> Recieved MbusTCP Quarry Command(TID%d, UID%d, FID%d)	



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