

EZL-200F Application Notes (003) Serial Interface (RS232/RS422/RS485)

Version 2.0



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1. Overview

EZL-200F supports three serial interfaces: RS232, RS422, and RS485. You can select the interface you want using EZL-200F configuration utility ezConfig.

1.1. RS232

RS232 communication uses voltage difference with reference to the ground. This interface is rather simple and supported by computer COM ports and most types of industrial equipment.

This interface is cost-efficient as data is transmitted over one signal line. On the other hand it is weak in handling noises and communication distance is limited to about 15 m.

1.2. RS422

RS422 interface is based on voltage difference using full-duplex mode where Tx and Rx lines are used separately. It is noise-prone and communication is available for rather long distance.

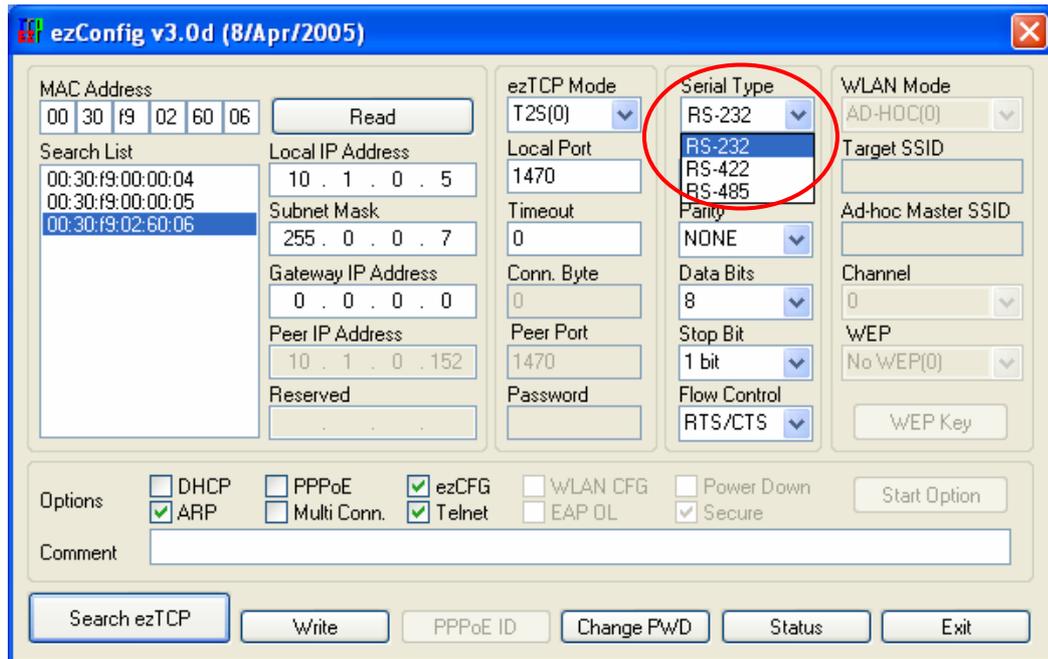
1.3. RS485

RS485 interface is based on voltage difference using half-duplex mode where Tx and Rx lines are shared. Installation cost is rather low, but communication goes in polling mode.

2. Setting Serial Interface

To set serial interface use the ezConfig program.

With ezConfig you can select the serial interface you want as shown in the figure below.



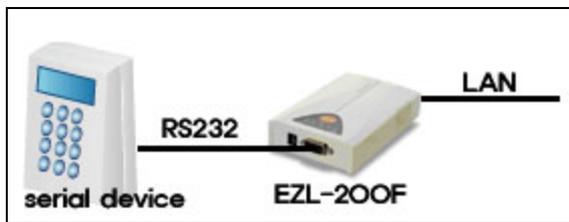
For more details, see the EZL-200F Manual or Application Notes.

3. RS232

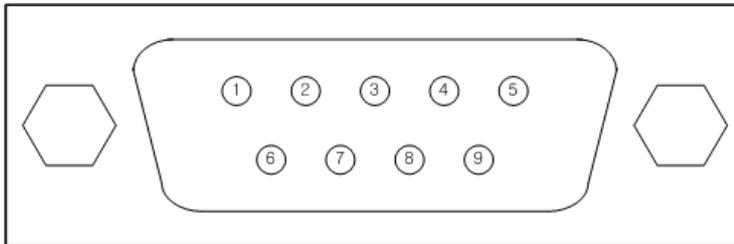
3.1. System Configuration

3.1.1. System Setup

Since RS232 provides peer-to-peer communication, you should configure your system as shown below:



3.1.2. Connector Specification



Pin No	Pin Name	Description	Signal Level	I/O	Remark
1	DCD	Data Carrier Detect	RS232	Input	Optional
2	RXD	Receive Data	RS232	Input	Mandatory
3	TXD	Transmit Data	RS232	Output	Mandatory
4	DTR	Data Terminal Ready	RS232	Output	Optional
5	GND	Ground	Ground	-	Mandatory
6	DSR	Data Set Ready	RS232	Input	Optional
7	RTS	Request To Send	RS232	Output	Optional
8	CTS	Clear To Send	RS232	Input	Optional
9	RI	Ring Indicator	RS232	Input	Optional

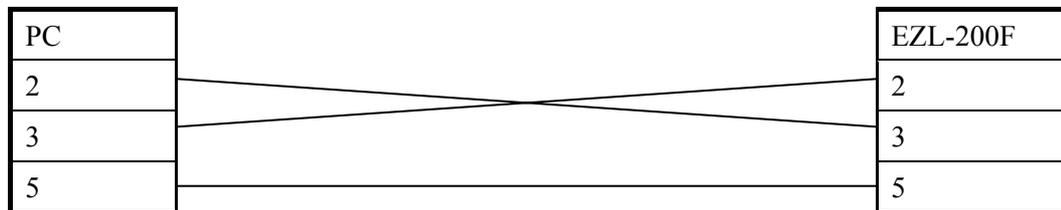
3.2. Cable Connection

The description below illustrates PC connection. Note that connector specification depends on equipment type.

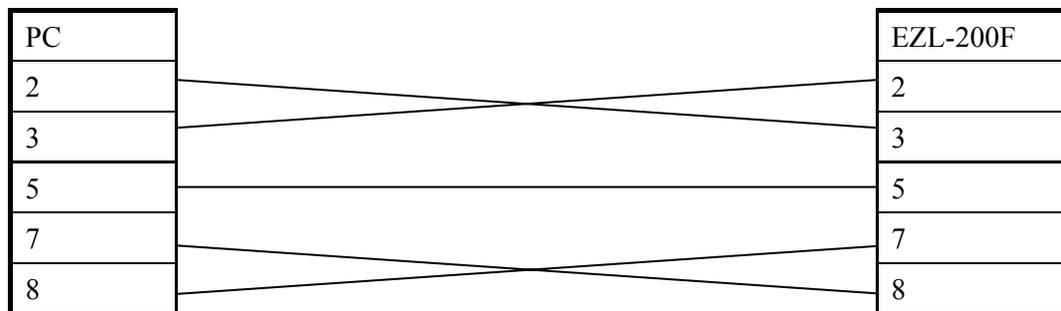
3.2.1. PC Connector Specification

EZL-200F connector specification is the same as that of PC. See '3.1.2 Connector Specification' for PC connector specification.

3.2.2. No Flow Control



3.2.3. Hardware Flow Control (RTS/CTS)



3.3. Flow Control

3.3.1. No Flow Control (NONE)

Flow control can be skipped when the amount of transmitted data is not too large. In case there is no flow control you have to connect only RXD, TXD and GND.

3.3.2. Hardware Flow Control (RTS/CTS)

Flow control is recommended if there is a risk of data loss when large amount of data is transmitted. In hardware flow control, the data flow will be controlled by hardware signal. RTS is used to indicate that there is a space for inbound data in the receive buffer. CTS pin checks the space of the receive buffer from the signal received from RTS.

In other words, RTS signal goes on only when there is a space in the EZL-200F receive buffer. When there is no space in the receive buffer, data transmission is suspended. The availability of the receive buffer is controlled by the RTS signal sent to CTS.

For hardware flow control, RTS and CTS should be connected as shown in 3.2.3.

3.3.3. Software Flow Control (XON/XOFF)

For software flow control (XON/XOFF), XON is sent to indicate that there is space in the receive buffer and XOFF is sent when receive buffer is not available.

XON is coded as 0x11; XOFF is 0x13.

For software flow control, cables should be connected as shown in 3.2.2.

4. RS422 (Full Duplex)

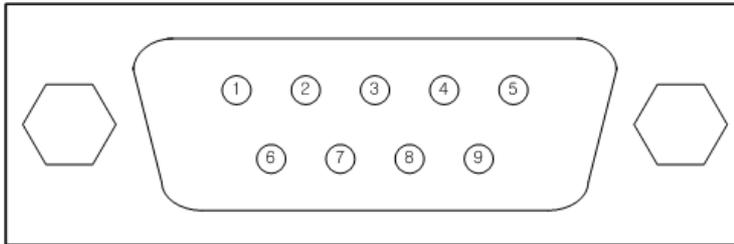
4.1. System Configuration

4.1.1. System Setup

RS422 is normally used for peer-to-peer communication in full duplex mode. As it applies differential level, communication distance is extended longer than RS232.



4.1.2. Connection Specification



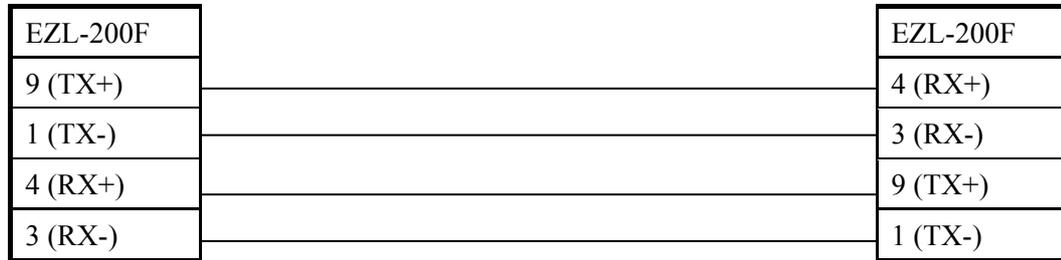
Pin No	Pin Name	Description	Signal Level	I/O	Remark
9	TX+	Transmit Data +	Differential	Output	Mandatory
1	TX-	Transmit Data -			
4	RX+	Receive Data +	Differential	Input	
3	RX-	Receive Data -			

4.2. Cable Connection

The description below illustrates EZL-200F connection. Note that connector specification depends on equipment type.

4.2.1. EZL-200F Connection

Connect the transmitter to the mating receiver and the receiver to the mating transmitter.



4.3. Others

4.3.1. Flow Control

RS422 interface of EZL-200F does not support flow control.

5. RS485 (Half Duplex)

5.1. System Configuration



5.2. Connector Specification

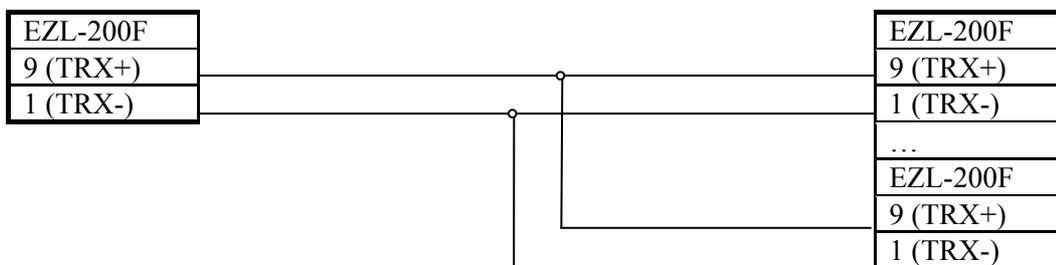
Pin No	Pin Name	Description	Signal Level	I/O	Remark
9	TRX+	Data +	Differential	Input/Output	Mandatory
1	TRX-	Data -			

5.3. Cable Connection

The description below illustrates EZL-200F connection. Note that connector specification depends on equipment type.

5.3.1. EZL-200F Connection

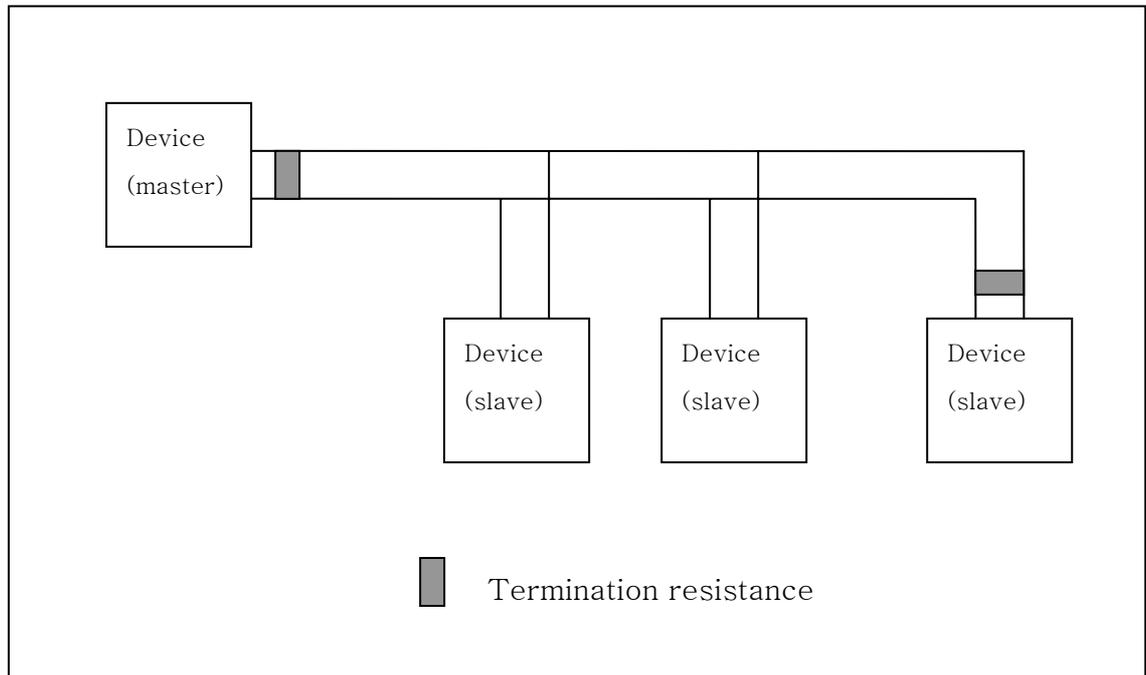
Connect the transmitter to the mating receiver and the receiver to the mating transmitter.



5.4. Termination Resistor

When signal is sent over the transmission line, backward wave generated at the termination affects the transmitted signal. To work around this problem, connect a termination resistor with the same impedance as the transmission line at both ends of the transmission line (typically 120 Ohm).

Note that EZL-200F is not equipped with a termination resistance.



5.5. Other

5.5.1. Flow Control

EZL-200F RS485 interface does not support flow control.

6. Revision History

Date	Version	Comments
Jul.13.2005	1.0	The first release
Dec.06.2005	2.0	Added revision history Changed all fonts into Times New Roman