

## MODBUS RTU (0x/1x Range Adjustable)

Supported Series : MODBUS RTU CONTROLLER

Website : <http://www.modbus.org>

### HMI Setting:

Parameters	Recommended	Options	Notes
PLC type	MODBUS RTU (0x/1x Range Adjustable)		
PLC I/F	RS485	RS232/RS485	
Baud rate	9600	9600~115200	
Data bits	8	7,8	
Parity	Even	Even, Odd, None	
Stop bits	1	1,2	
PLC sta. no.	1	0-255	

<b>Online simulator</b>	YES
<b>Extend address mode</b>	YES

### PLC Setting:

<b>Communication mode</b>	Modbus RTU protocol
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### Device Address:

Bit/Word	Device type	Format	Range	Memo
B	0x	DDDDD	1 ~ 65535	Output bit
B	1x	DDDDD	1 ~ 65535	Input bit (read only)
B	3x_Bit	DDDDDdd	100 ~ 6553515	Input Register bit (read only)
B	4x_Bit	DDDDDdd	100 ~ 6553515	Output Register bit
B	6x_Bit	DDDDDdd	100 ~ 6553515	Output Register bit
B	0x_multi_coils	DDDDD	1 ~ 65535	Write multiple coils
W	3x	DDDDD	1 ~ 65535	Input Register (read only)
W	4x	DDDDD	1 ~ 65535	Output Register
DW	5x	DDDDD	1 ~ 65535	4x double word swap *Note2
W	6x	DDDDD	1 ~ 65535	4x single word write
W	4x_32Bit*	DDDDD	1 ~ 65535	Output Register *Note1

\*Note1: 4x\_32Bit will only read / write 2 words for each package, for continuous addresses, it will be divided into several packages.

\*Note2: Please assign all the addresses to Even addresses, or all to Odd addresses, in order to prevent communication failure.

Note3: EBPro V6.03.02 or later supports 64 bits data type (**cMT Series only**), but please note that the address limit range is 48 bits in maximum..

## NOTE:

Address type “5x” is mapping to Hold Reg. The communication protocol of “5x” is almost the same as “4x” except that “5x” swaps double words.

If 4x contains the following information:

Address	1	2	3	4	5	6	...
Data in word	0x1	0x2	0x3	0x4	0x5	0x6	
Data	0x0201		0x0403		0x0605		

For 5x, it will be:

Address	1	2	3	4	5	6	...
Data in word	0x1	0x2	0x3	0x4	0x5	0x6	
Data	0x0102		0x0304		0x0506		

Modbus RTU function code:

0x	0x01	Read coil	0x05	Write single coil
0x_multi_coils	0x01	Read coil	0x0f	Write multiple coils
1x	0x02	Read discrete input		N/A for writing operation
3x	0x04	Read input register		N/A for writing operation
4x	0x03	Read holding register	0x10	Write multiple registers
5x	0x03	Read holding register	0x10	Write multiple registers

(Note: reverse word order in double words format)


3xbit is equivalent to 3x

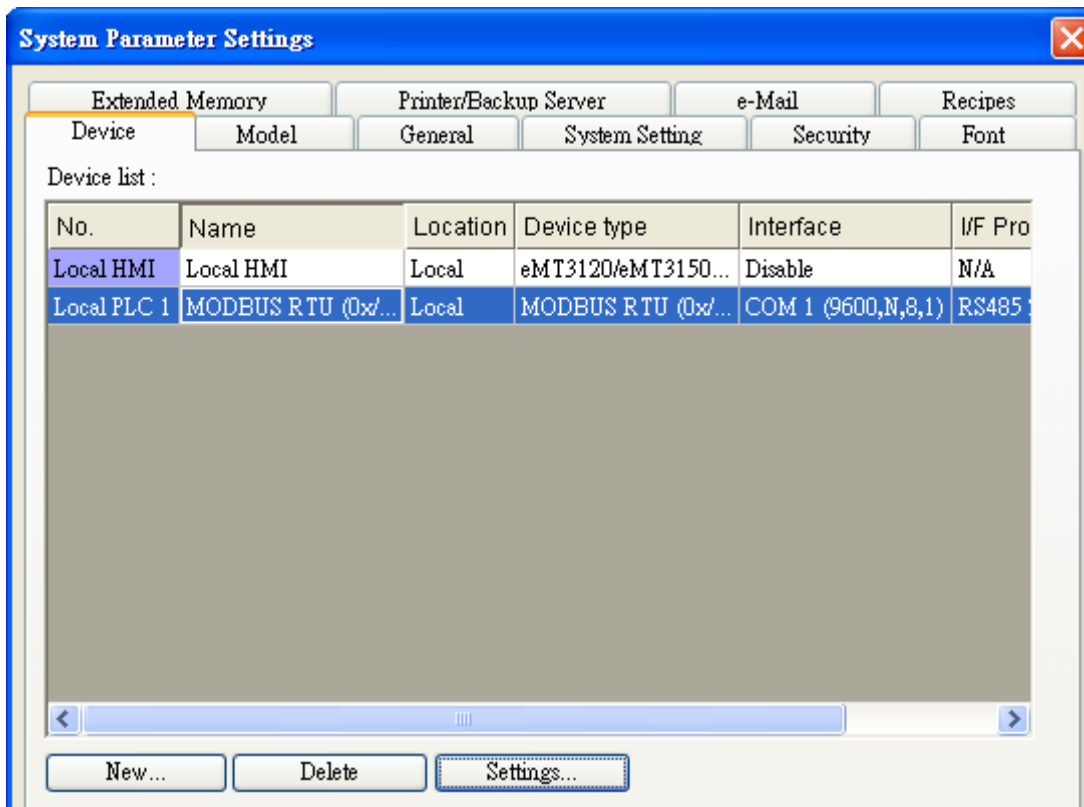
4xbit is equivalent to 4x

6x	0x03	Read holding register	0x06	Write single register
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(Note: 6x is limited to device of one word only)

## Setting Instructions:

- Go to [System Parameter Settings]  , click [New] to add a new device -Modbus RTU (0x 1x range adjustable) , as shown below:



- After adding Modbus RTU (0x 1x Range Adjustable) driver, [Add Address Range Limit] button will be enabled as below. Users can set maximum read/write command size here.

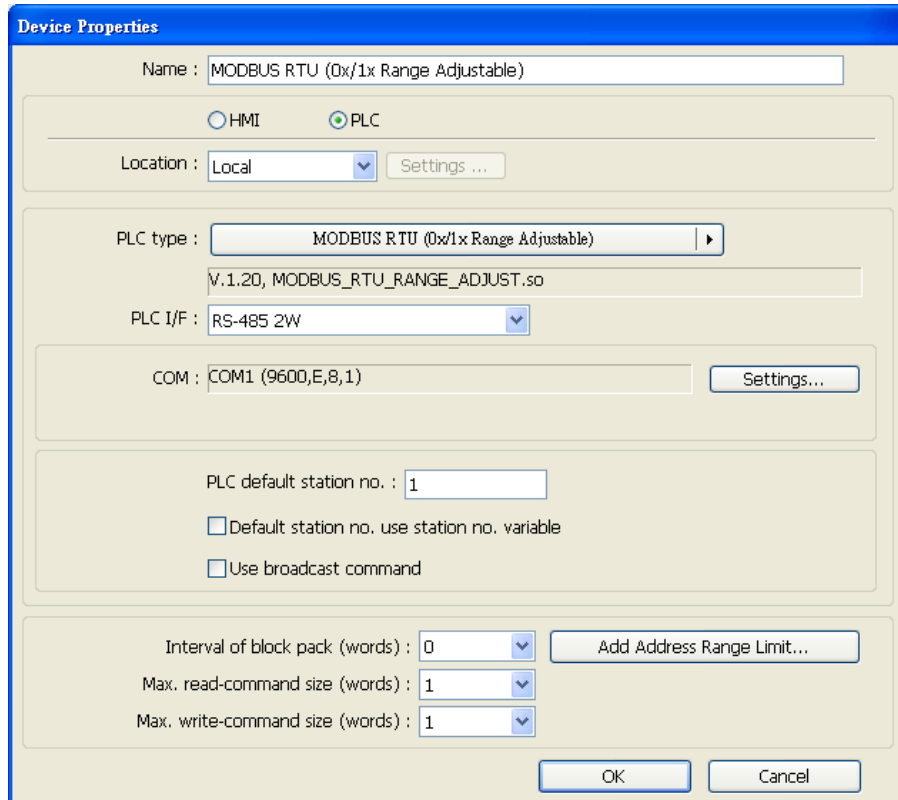
- Max.read-command size (words): Pull down to select PLC reading range.

Max. read-command size (words) :

- Max.write-command size (words): Pull down to select PLC writing range.

Max. write-command size (words) :

Note: Setting [Add Address Range Limit] is enabled only when bit address is not a multiple of 16bit.



**Device Properties**

Name : MODBUS RTU (0x/1x Range Adjustable)

HMI  PLC

Location : Local

PLC type : MODBUS RTU (0x/1x Range Adjustable)

PLC I/F : RS-485 2W

COM : COM1 (9600,E,8,1)

PLC default station no. : 1

Default station no. use station no. variable

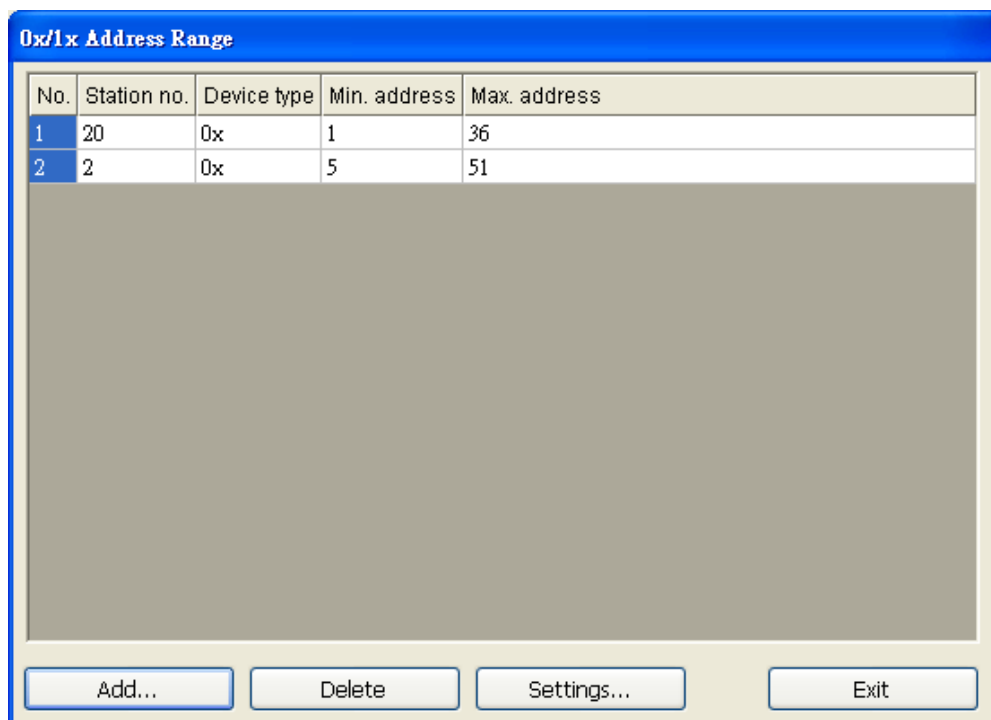
Use broadcast command

Interval of block pack (words) : 0

Max. read-command size (words) : 1

Max. write-command size (words) : 1

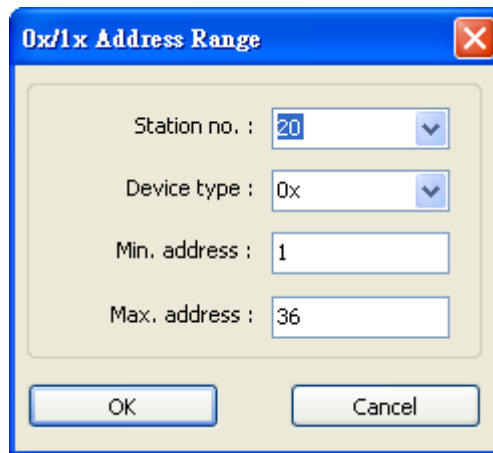
- Click [Add Address Range Limit] button, Users can define 0x , 1x and 0x\_multi\_coils address range in [0x 1x Address Range] dialog box, referring to bit range of the device used.



**0x/1x Address Range**

No.	Station no.	Device type	Min. address	Max. address
1	20	0x	1	36
2	2	0x	5	51

Add : Set [Station No.], [Device Type], [Min. Address], [Max. Address] then click [OK] to finish adding as below:



0x/1x Address Range

Station no. : 20

Device type : 0x

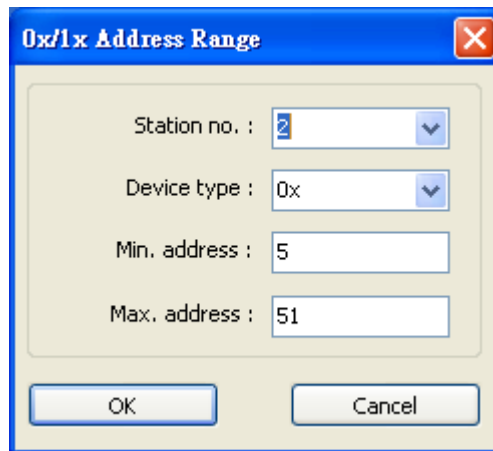
Min. address : 1

Max. address : 36

OK Cancel

Delete : The selected items will be deleted.

Settings : Set [Station No.], [Device Type], [Min. Address], [Max. Address] then click [OK] to finish adding as below:



0x/1x Address Range

Station no. : 2

Device type : 0x

Min. address : 5

Max. address : 51

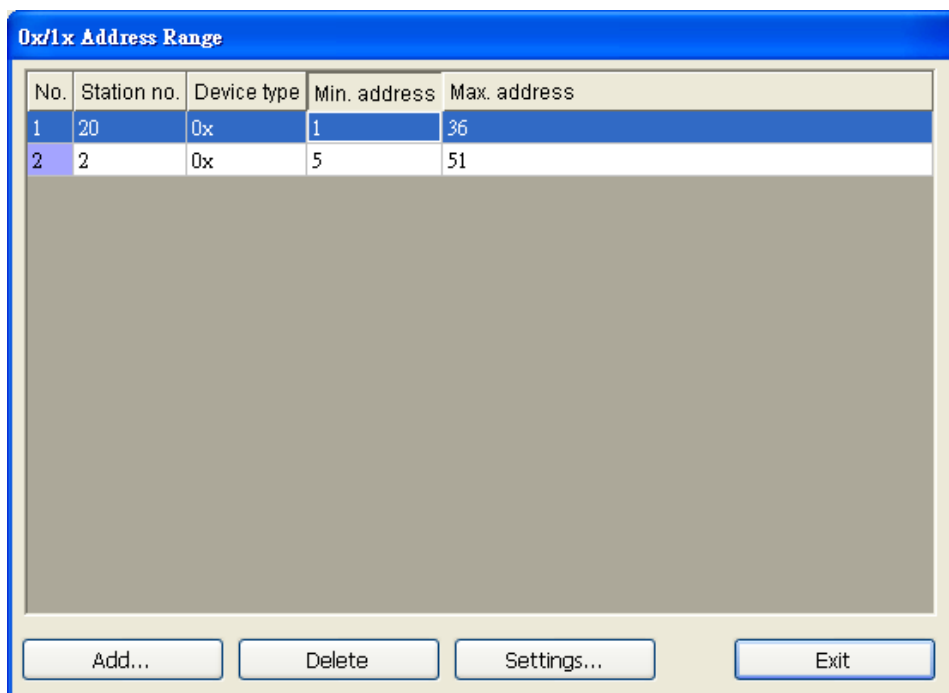
OK Cancel

Example :

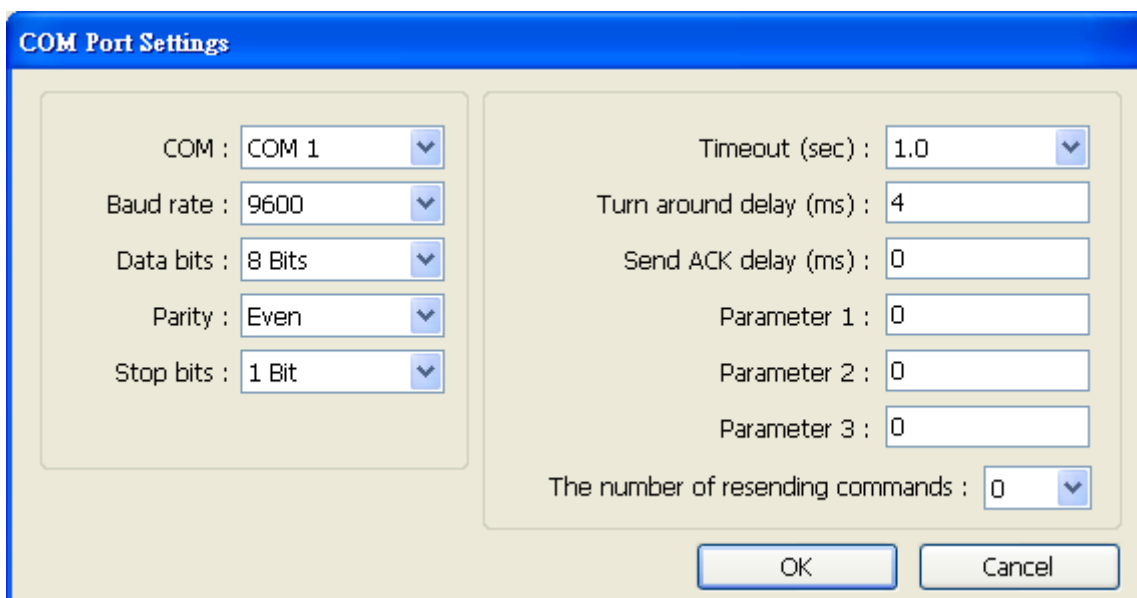
Take D2 and D8 of SCON as example, the settings depend on bit range of different PLC types. Set [Station No.] and address first.

For D2, set [Station No.] to **20**, [Device Type] **0x**, [Max. Address] **36**.

For D8, set [Station No.] to **2**, [Device Type] **0x**, [Max. Address] **51**.



Note: If communicating with a RS-485 2W PLC, the [Turn around delay] setting may need to be adjusted according to the reply speed of the device. Please click [Settings] in [Device Properties], and set the [Turn around delay (ms)] parameter as shown:



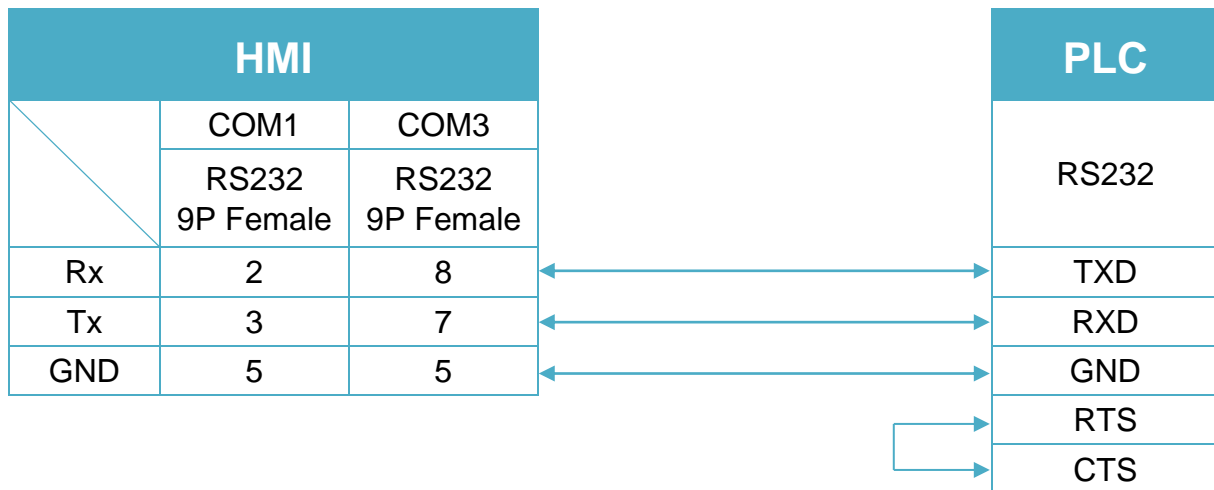
After completing all settings above, the communication is enabled.

## Wiring Diagram:

RS232 (Diagram 1 ~ Diagram 3)

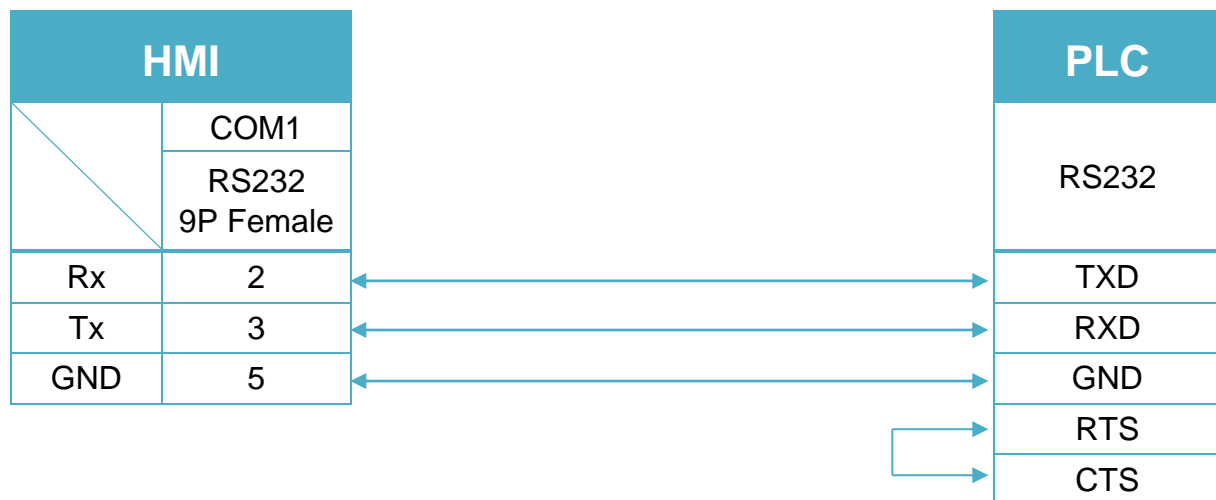
### Diagram 1

<b>cMT Series</b>	<b><i>cMT3071 / cMT3072 / cMT3090 / cMT3103 / cMT3151</i></b>
<b>eMT Series</b>	<b><i>eMT3070 / eMT3105 / eMT3120 / eMT3150</i></b>
<b>MT-iE</b>	<b><i>MT8073iE / MT8102iE</i></b>
<b>MT-XE</b>	<b><i>MT8092XE</i></b>
<b>MT-iP</b>	<b><i>MT6103iP / MT8102iP</i></b>



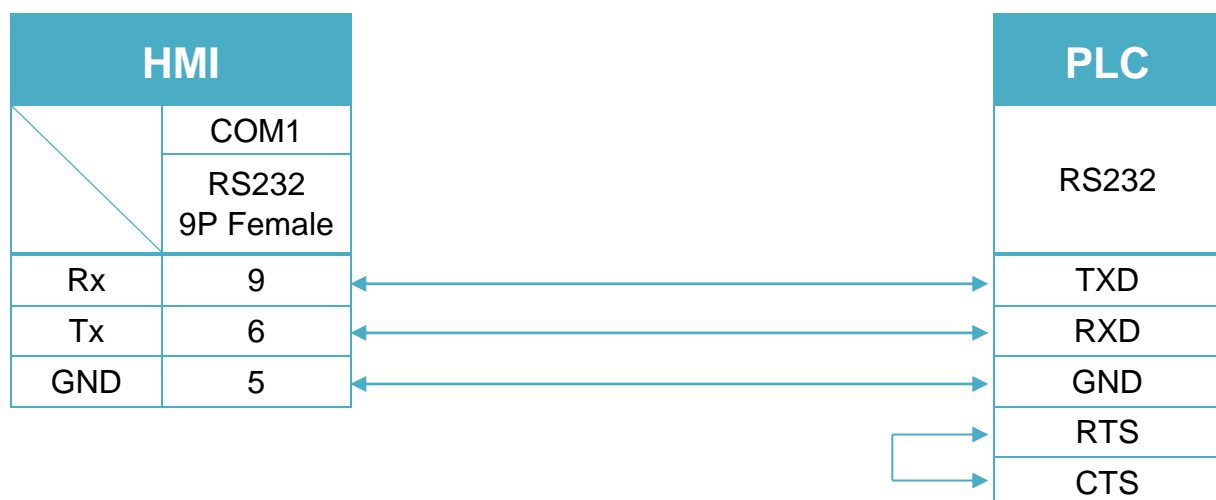
## Diagram 2

<b>cMT Series</b>	<b><i>cMT-SVR / cMT-G01 / cMT-G02 / cMT-HDM / cMT-FHD</i></b>
<b>mTV</b>	<b><i>mTV</i></b>
<b>MT-iE</b>	<b><i>MT8070iE / MT6070iE / MT8100iE / MT8121iE / MT8150iE / MT8071iE / MT6071iE / MT8072iE / MT6072iE / MT8073iE / MT8101iE / MT8102iE / MT8103iE</i></b>
<b>MT-XE</b>	<b><i>MT8121XE / MT8150XE / MT8090XE</i></b>



## Diagram 3

<b>MT-iE</b>	<b><i>MT8050iE / MT8053iE</i></b>
<b>MT-iP</b>	<b><i>MT6051iP / MT8051iP / MT6071iP / MT8071iP</i></b>

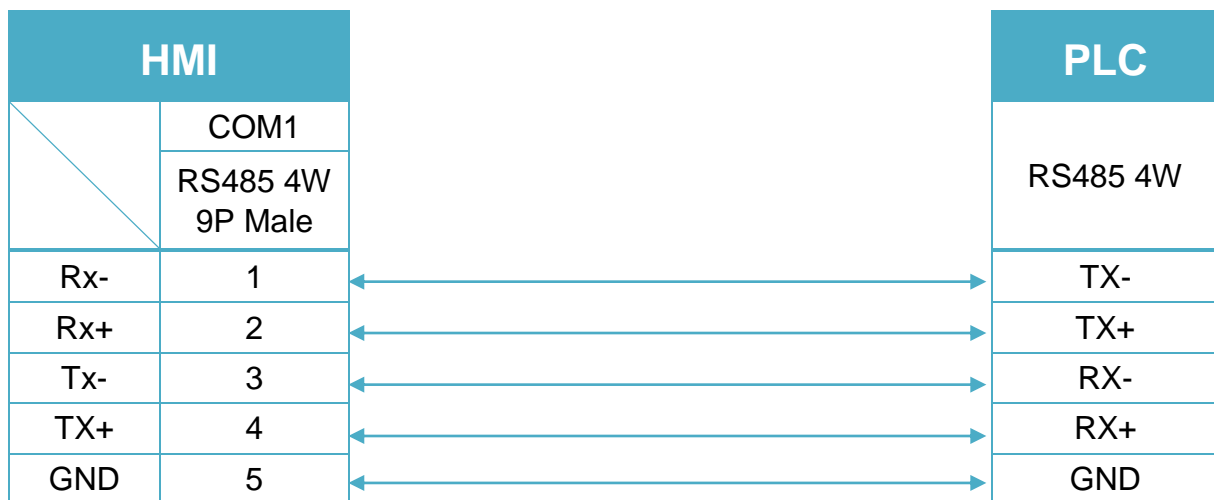




RS485 4W (Diagram 4 ~ Diagram 7)

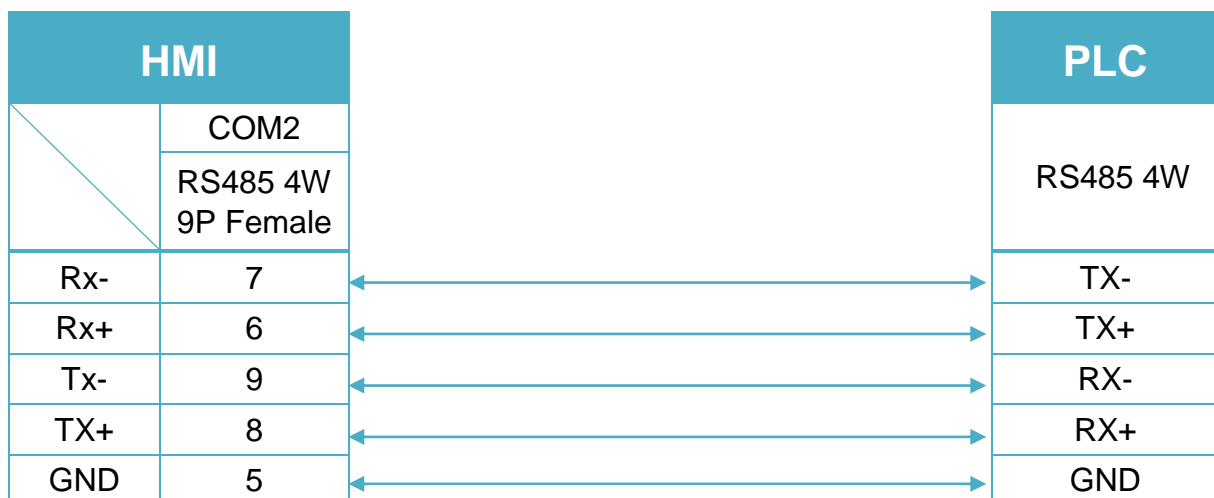
### Diagram 4

<b>cMT Series</b>	<b><i>cMT3151</i></b>
<b>eMT Series</b>	<b><i>eMT3070 / eMT3105 / eMT3120 / eMT3150</i></b>
<b>MT-iE</b>	<b><i>MT8070iE / MT6070iE / MT8100iE / MT8121iE / MT8150iE</i></b>
<b>MT-XE</b>	<b><i>MT8121XE / MT8150XE</i></b>



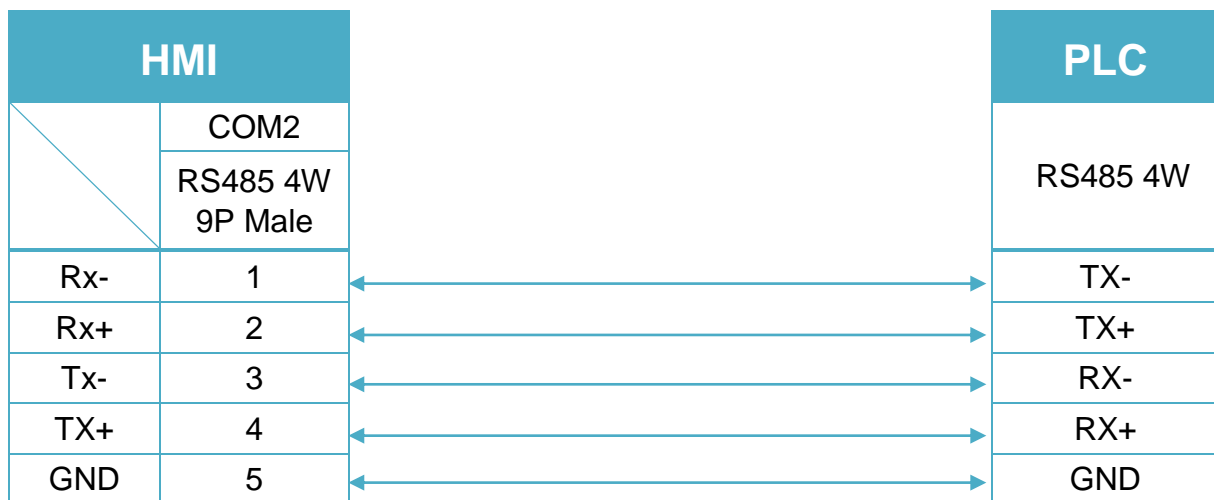
### Diagram 5

<b>cMT Series</b>	<b><i>cMT-SVR / cMT-G01 / cMT-G02 / cMT-HDM / cMT-FHD</i></b>
<b>mTV</b>	<b><i>mTV</i></b>



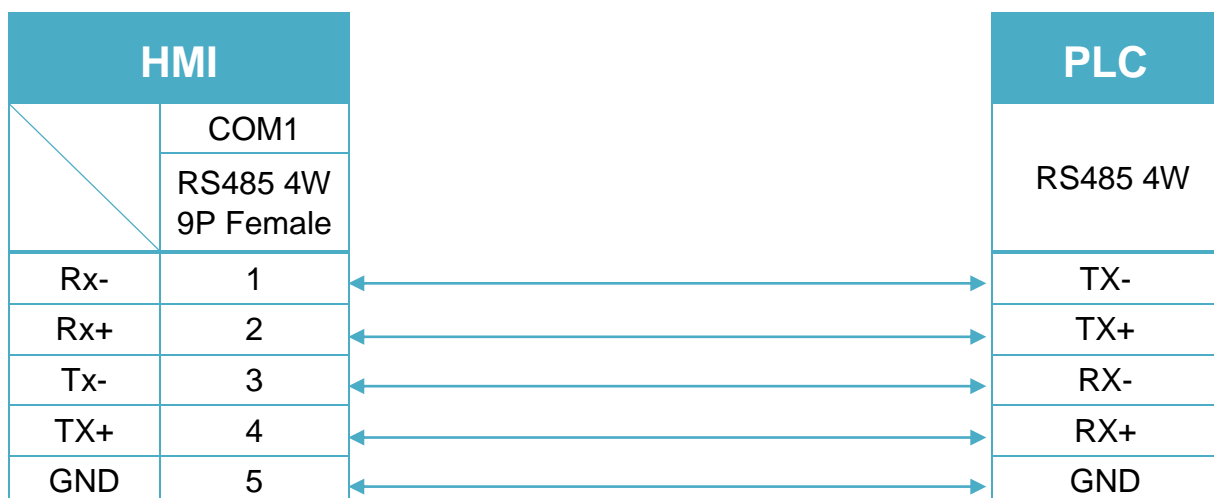
## Diagram 6

<b>cMT Series</b>	<b><i>cMT3071 / cMT3072 / cMT3090 / cMT3103</i></b>
<b>MT-iE</b>	<b><i>MT8071iE / MT6071iE / MT8072iE / MT6072iE / MT8073iE / MT8101iE / MT8102iE / MT8103iE</i></b>
<b>MT-XE</b>	<b><i>MT8090XE / MT8092XE</i></b>
<b>MT-iP</b>	<b><i>MT6071iP / MT8071iP / MT6103iP / MT8102iP</i></b>



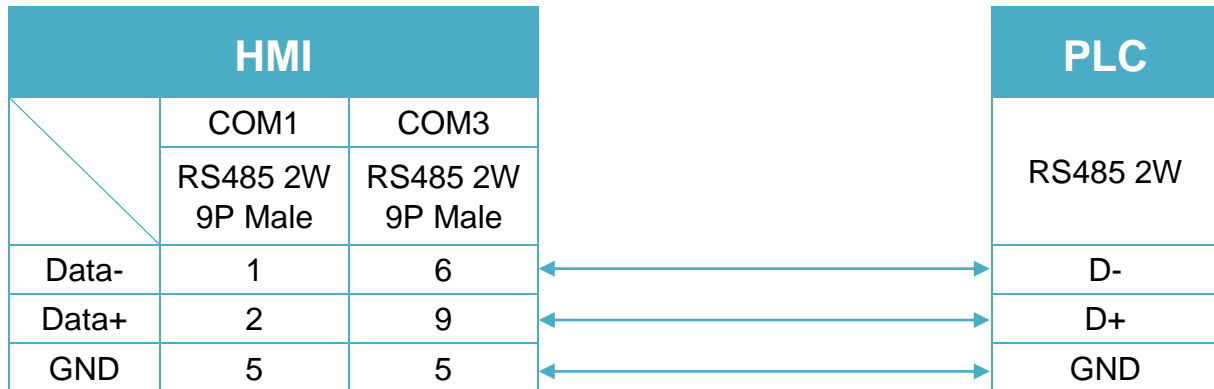
## Diagram 7

<b>MT-iE</b>	<b><i>MT8050iE / MT8053iE</i></b>
<b>MT-iP</b>	<b><i>MT6051iP / MT8051iP</i></b>

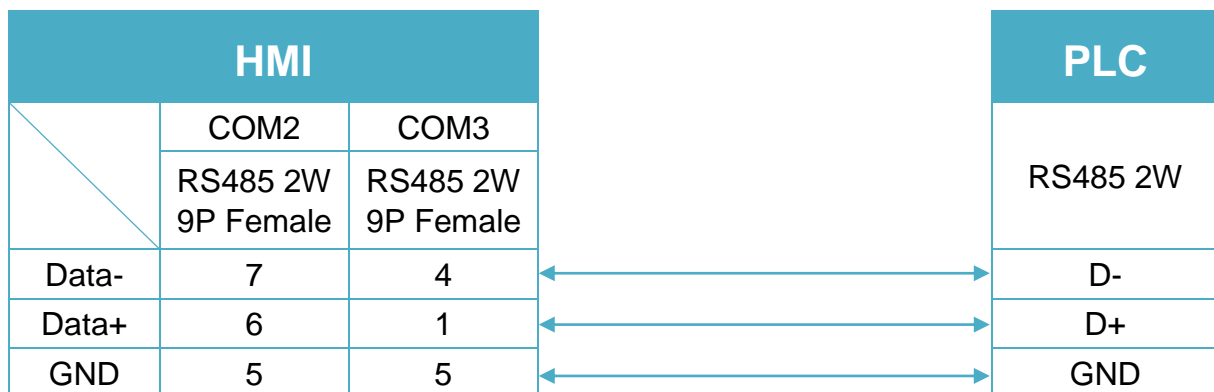


RS485 2W (Diagram 8 ~ Diagram 13)

### Diagram 8

**cMT Series**                      *cMT3151*
**eMT Series**                      *eMT3070 / eMT3105 / eMT3120 / eMT3150*


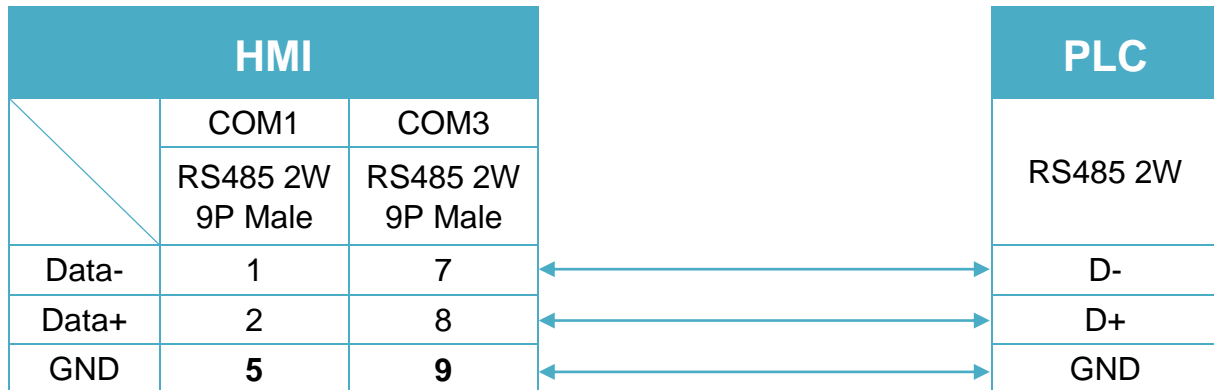
### Diagram 9

**cMT Series**                      *cMT-SVR / cMT-G01 / cMT-G02 / cMT-HDM / cMT-FHD*
**mTV**                                  *mTV*


## Diagram 10

**MT-iE** *MT8070iE / MT6070iE / MT8100iE / MT8121iE / MT8150iE*

**MT-XE** *MT8121XE / MT8150XE*



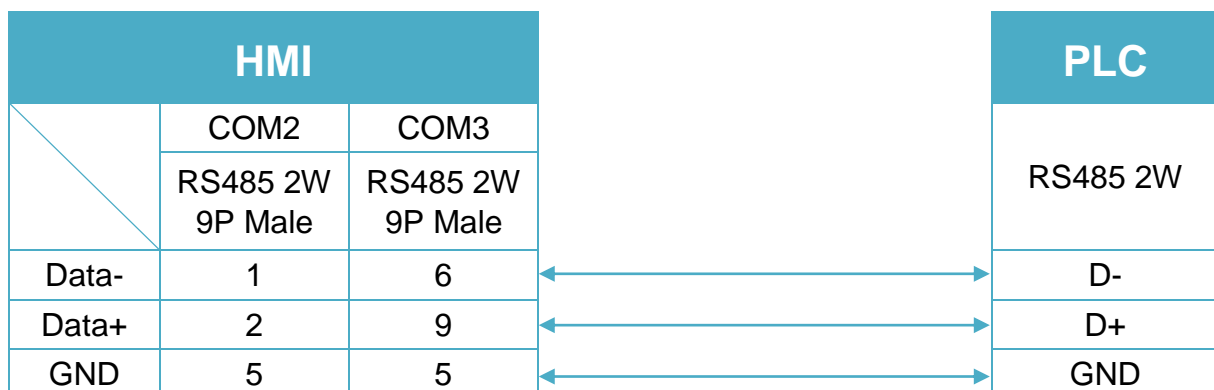
## Diagram 11

**cMT Series** *cMT3071 / cMT3072 / cMT3090 / cMT3103*

**MT-iE** *MT8071iE / MT6071iE / MT8072iE / MT6072iE / MT8073iE /  
MT8101iE / MT8102iE / MT8103iE*

**MT-XE** *MT8090XE / MT8092XE*

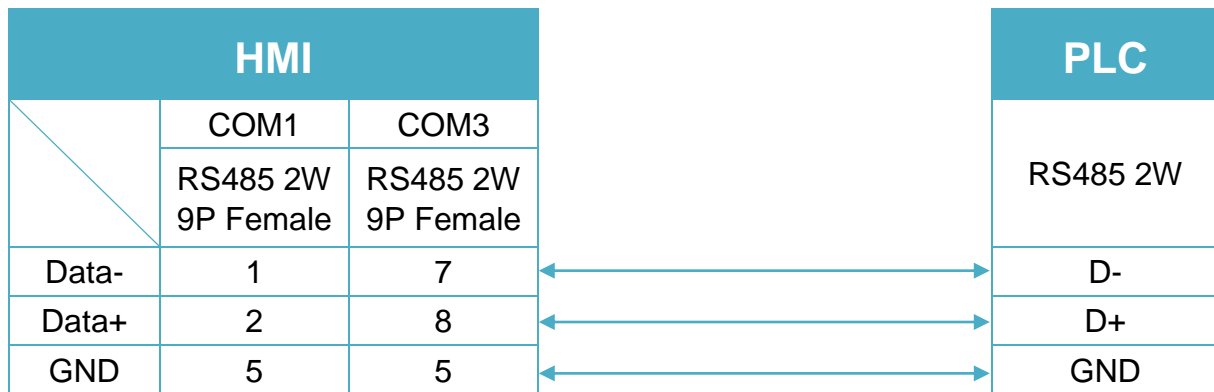
**MT-iP** *MT6103iP / MT8102iP*



## Diagram 12

**MT-iE** *MT8050iE / MT8053iE*

**MT-iP** *MT6051iP / MT8051iP*



## Diagram 13

**MT-iP** *MT6071iP / MT8071iP*

