Triangle Research M Series V2.00B

MMI-TS Setting

Communication parameters must be set the same as those of the PLC. The following settings are recommended.

PLC type: Triangle RI [PDS 2.00B]

Parameter	Recommended Setting	Notes
PLC I/F port	RS-232, RS-485(2W)	Options: RS-232, RS-485 default, RS-485(2W)
Baud rate	38400*	Options: 9600, 19200, 38400, 57600, 115200 – Must match PLC port setting ***Note:*** if PLC dipswitch SW1-4 is on default is 9600
Parity	None*	Options: Odd, Even, None – Must match PLC port setting
Data bits	8*	Options: 7, 8 - Must match PLC port setting
Stop bits	1*	Options: 1, 2 – Must match PLC port setting
HMI station No.	0	Not Used
PLC station No.**	1	Must match PLC port setting (0~255)
Comm delay (10ms)	0	Command send out delay (0~999) This Parameter puts a delay of 10 milliseconds per count between communications requests. (For example: Setting this parameter to 100, puts a one second delay between communications requests from the touchscreen.)

*Settings given are the PLC defaults.

**This is the PLC address to which communications are sent if Extended Address Mode is not used.

Notes:

1. This driver supports Extended Address mode for multiple drive connections.

T100 Settings

Communication parameters must be the same as those of MMI-TS. (See recommendation above).
Set Station Number as “01” if not using Extended Address mode or RS232 connections.

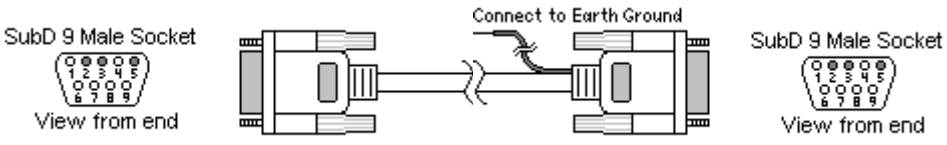
Compatible with:

T100MD+
T100MX+

MMI-TS to T100 Cable Wiring

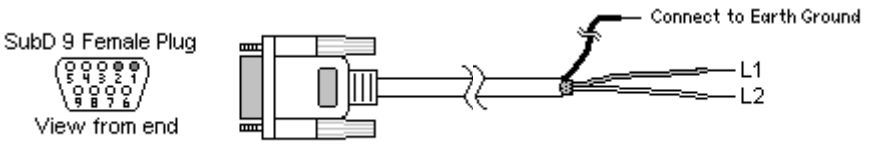
Wiring for cable connections using **T100MD+ or T100MX+ Series** with RS-232 D-Sub 9 pin port.
(D-Sub 9 Male Socket to D-Sub 9 Male Socket Cable)

MMI PLC[RS-232]	**M Series RS-232 port**
2 TD ->	3 RD
3 RD ->	2 TD
5 GND ->	5 GND
	Shield -> Earth Ground



Wiring for cable connections using **T100MD+ or T100MX+ Series** with RS-485 screw terminal port.
(D-Sub 9 Female Plug to Flying Leads Cable)

MMI PLC[RS-485]	**T100MD+ or T100MX+ Series RS485 Port**
1 RXD/TXD - ->	-> 1 RXD/TXD -
2 RXD/TXD + ->	-> 2 RXD/TXD +
	Shield -> Earth Ground



Note: Graphic representation may not reflect the actual appearance of the cable.

Device Types

Type	Device Type	Format	Range	Notes
Bit	LB	bbbb	bbbb: 0~9999	Internal MMI bits, non retentive (0 to 8998 available user memory) (9000 to 9999 system bits)
Bit	LB 8999	-	8999	Internal MMI bit, non-retentive state indicates if any invalid PLC address detected.
Bit	INPUT	bb	bb: 00~96	Always use 2 digits for bit designation
Bit	OUTPUT	bb	bb: 00~96	Always use 2 digits for bit designation
Bit	RELAY	bbb	bbb: 00~512	Always use 2 digits for bit designation
Bit	TMR_BIT	bb	bb: 00~64	Timer Completion coil status
Bit	CTR_BIT	bb	bb: 00~64	Counter Completion coil status
Bit	RST_DD	0	-	Reset Device Detect (See notes below)
Word	LW	dddd	dddd: 0~9999	Internal MMI registers, non retentive (0 to 9999) (0 to 8998 available user memory) (9000 to 9999 system words)
Word	LW	8998	-	PLC response Error Code. (See notes below)
Word	LW	8999	-	Alternate default Drive number assignment (“0” in LW8999 disables this feature). **Note:** Alternate drive assignment overrides Extended Mode Addresses.
Word	DM	dddd	dddd: 1~4000	T100 Data words
Word	TMR_PV	dd	dd: 1~64	T100 Timer Present Value (Accumulator)
Word	CTR_PV	dd	dd: 1~64	T100 Counter Present Value (Accumulator)
Word	TMR_SV	dd	dd: 1~64	T100 Timer Set Value (Accumulator)
Word	CTR_SV	dd	dd: 1~64	T100 Counter Set Value (Accumulator)
Word	IN_W	dd	dd: 1~96	T100 Inputs as 16 bit words
Word	OUTW	dd	dd: 1~96	T100 Outputs as 16 bit words
Word	RELW	dd	dd: 1~96	T100 Relays as 16 bit words
Word	INTEGER	dd	dd: 1~26	T100 Internal Integers
Word	STRING	dd	dd: 1~26	T100 Internal Strings. Supports first 32 characters only. 1~26 corresponds to A~Z
DWord	HSCPV	d	d: 1~3	T100 High Speed Counter Present Values (Accumulator)
Word	ADC	dd	dd: 1~16	T100 Analog Input Values
Word	DAC	dd	dd: 1~16	T100 Analog Output Values
Word	TIME	d	d: 1~3	T100 Internal RTC Time Values
Word	DATE	d	d: 1~4	T100 Internal RTC Date Values
Word	EE_INT	ddddd	ddddd: 1~655354	T100 EEPROM Data Words
Word	EE_STR	ddddd	ddddd: 1~655354	T100 EEPROM String Values. Supports first 32 characters only. 1~26 corresponds to A~Z

	Retentive Memory	Format	Range	
Word	RWI	NNNNN	0 to 32767	Internal MMI index pointer to word memory, retentive
Bit	RBI	HHHH	0 to 2047 (hexadecimal)	Internal MMI index pointer to bit memory, retentive
Bit	RB	HHHH	0 to 2047 (hexadecimal)	Internal MMI bit memory, retentive
Word	RW	NNNNN	0 to 59999	Internal MMI retentive word memory,
Word	RW	NNNNN	60000 to 65535	Internal MMI retentive word memory, used for system parameters
	External Master Memory	Format	Range	
Bit	Ms_RB	HHHH	0 to 4095 (hexadecimal)	Remote Master Internal MMI bit memory, retentive
Bit	Ms_LB	NNNN	0 to 9999	Remote Master Internal MMI bit memory, non-retentive
Word	Ms_RW	NNNNN	0 to 65535	Remote Master Internal MMI word memory, retentive
Word	Ms_LW	NNNN	0 to 9999	Remote Master Internal MMI word memory, non-retentive

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Notes:

1. PLC Browsing Feature

LW8999 is an internal word that has been set aside for PLC browsing. When LW8999 is set to 0 (zero) browsing is disabled. When a number (1~128) is put in LW8999, all screen objects that get and send data to a PLC are redirected to that particular drive address. LW8999 over rides the PLC address setting in the System Parameters and also over rides any Extended addresses present (if Extended Address Mode is active). This feature allows the creation of projects with a screen that can display PLC data for a number of different PLC's by letting the operator select the PLC address by some means (Set Word Part, MultiState Part or Data Input Extend Part). If a PLC address does not exist, the Automatic PLC Loss Detection displays the "Attach PLC…" error message briefly (see below) and all data goes to zero.

2. Automatic PLC Loss Detection

Triangle Research Driver Versions 1.00a and later have communications compensation for PLC's that dropout or are removed from the communications network. When this occurs, the "Attach PLC…" error message appears briefly and bit LB8999 is set ON. The Touchscreen then establishes a bypass for that particular PLC address. Additionally, a system bit is set to indicate which PLC address has failed. The addresses begin at LB9100 with the failed address used as an offset. (i.e. if PLC address 7 fails bit LB9107 is set on.) All data related to that address is displayed as 0. Bringing the PLC back online later does not automatically restore the connection. Cycling power to the Touchscreen or activating bit RST_DD (Reset Device Detect) restores the connection and resets all of the bit addresses from LB9100 to 9228 (failed PLC addresses 0 to 128). The proper way to activate the RST_DD bit is via a Set Bit Part with the Momentary Attribute. If a PLC is detected then bit LB8999 is set OFF.
Note: If several PLC's are disconnected at startup it may take a minute to accomplish all of the automatic bypasses.

3. PLC Error Code Reporting

Internal word LW8998 is used to hold error codes returned from the PLC and MMI internal operations. The error code list is as follows:

PLC Error Codes	Comment
ER	Error - Check that PLC model supports this device.
EF	Field error – one of the fields in the request is out of bounds. Check that address is correct.
MMI Error Codes	**Comment**
CK	Checksum - Returned Checksum is incorrect. Check that that device address is correct.
TO	Time Out – PLC has timed out. Check that the PLC is powered up and connected to the MMI. Check that the cable from MMI to PLC is correct. Check that that device address is correct.
NR	No Response – PLC is not responding to requests. Check that the PLC is powered up and connected to the MMI. Check that the cable from MMI to PLC is correct.
OK	Okay – No errors at this time.