PLC Command Interface

16 Bit Word															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Module Word Status WX 1

Module Status Bits								Timer or Error Value							
MOD FAIL	CFG RQD	PLC ERR	MOD FAIL	CFG ERR	PORT ERR	CMD ERR								CMD ERR ACK	
Nibble Hex Value															
8	4	2	1	8	4	2	1								

Module Command Status WX 2

Command 1				Command 2				Command 3				Command 4			
CMD ERR	PLC ERR	CMD BUSY	ABRT BUSY	CMD ERR	PLC ERR	CMD BUSY	ABRT BUSY	CMD ERR	PLC ERR	CMD BUSY	ABRT BUSY	CMD ERR	PLC ERR	CMD BUSY	ABRT BUSY
Nibble Hex Value				**Nibble Hex Value**				**Nibble Hex Value**				**Nibble Hex Value**			
8	4	2	1	8	4	2	1	8	4	2	1	8	4	2	1
Command Slot WY 5				**Command Slot WY 6**				**Command Slot WY 7**				**Command Slot WY 8**			
V-Memory Address of Command No. 1 Integer Format				V-Memory Address of Command No. 2 Integer Format				V-Memory Address of Command No. 3 Integer Format				V-Memory Address of Command No. 4 Integer Format			

Module Control Bits WY 3

MOD RESET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PLC Command Control WY 4

Command 1				Command 2				Command 3				Command 4			
ERR ACK	CMD MODE	CMD TRIG	ABRT TRIG	ERR ACK	CMD MODE	CMD TRIG	ABRT TRIG	ERR ACK	CMD MODE	CMD TRIG	ABRT TRIG	ERR ACK	CMD MODE	CMD TRIG	ABRT TRIG
Nibble Hex Value				**Nibble Hex Value**				**Nibble Hex Value**				**Nibble Hex Value**			
8	4	2	1	8	4	2	1	8	4	2	1	8	4	2	1
Command Slot WY 5				**Command Slot WY 6**				**Command Slot WY 7**				**Command Slot WY 8**			
V-Memory Address of Command No. 1 Integer Format				V-Memory Address of Command No. 2 Integer Format				V-Memory Address of Command No. 3 Integer Format				V-Memory Address of Command No. 4 Integer Format			

16 Bit Word															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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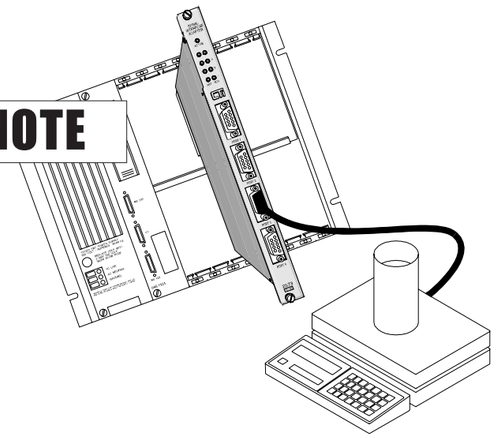
APPLICATION NOTE

2573-TCM2 Serial Interface Adapter to METTLER/TOLEDO SM3000 Scale



The CTI 2573-TCM2 Serial Interface Adapter is used to include the Mettler/Toledo SM3000 scale in a Simatic® 505 PLC system.

The following examples describe the configuration of the 2573-TCM2 to READ the weight values from the Mettler/Toledo SM3000 scale with the supporting ladder logic. This application note assumes the Mettler SM3000 scale is set up in continuous read mode and the data output from the scale is as follows:
XX_DDDDDDDDD_UUUUCrLf

Where **XX** = __ Stable result
= _D Unstable result
= S_ Stable result
= SD Unstable result

_ = Space **DDDDDDDD** = Weight Value (9 char)

UUUU = Unit Value (4 char)

DIP SWITCH SETTINGS
(Ref. CTI 2573-TCM2 IOG Section 2.3)

For this example setting the Port Protocol via Dip Switch is required for Port No. 1. Set switches 6, 7, and 8 for PLC Select configuration to allow the General ASCII Support (GAS) Protocol Manager to be initiated by the ladder logic using the Create Connection Command Block.

PLC COMMAND INTERFACE
(Ref. Appendix D of the 2573-TCM2 Installation and Operation Guide)

In this example, the 2573-TCM2 is logged into the I/O Base in Slot No. 1. The 2573 logs into the CPU memory as a Special Function Module with 2WX and 6 WY. The following addresses are used: WX1, WX2, WY3, WY4, WY5, WY6, WY7, WY8.

PLC ladder logic controls the 2573 by placing pointers in WY registers to tables stored in V memory. Command triggers are controlled via RLL to "wake up" the 2573 and capture the instructions from V memory. Areas of V memory called **Command Blocks** are used to store the command parameters.

COMMAND BLOCKS
In this application V memory values contain the parameters in the **Command Blocks** necessary to read the ASCII input string and to parse the weight from the Mettler/Toledo SM3000 scale.

CREATE CONNECTION COMMAND (V200 - V215)
(Ref. CTI General ASCII Support Protocol Manager Reference Manual Section 2.2)

The Create Connection Command starts the GAS protocol manager and creates a physical connection to Port No. 1 of the 2573. The communication parameters are set up for the port. These should match the communication parameters of the Mettler/Toledo SM3000 scale attached serially to the module port. The communication parameters are: 9600 baud, 7 bits, no parity, one stop bit, no handshaking.

P/N 06200228v1.0 051303

READ COMMAND (V220 - V235)
(Ref. CTI General ASCII Support Protocol Manager Reference Manual Section 2.5)

The Read Command tells the 2573 to read the input buffer based on parameters set up in V memory locations V226 through V229, and Format Specifications tables (V240) pointed to in this command at V memory V224. Note the Input Deliminators specified to be valid are a Space (_) and Line Feed (Lf) or an "S" and a Line Feed (Lf). When a valid string is received the 2573 will read the format specification tables for instructions on how to parse the value.

INPUT FORMAT SPECIFICATION 2002 (V240-V250)
(Ref. CTI General ASCII Support Protocol Manager Reference Manual Section 3.16)

In this example, the Format Specification tells the GAS protocol manager to begin at position four (4) of the ASCII input string (this is the actual weight value), read nine (9) chararacters (length of the weight value), and convert the value to a PLC Real Number. The Real Number value of the weight is stored at V memory V246.

NOTE: A format specification table must begin with a signature value of 4C00 hex (19456 integer) and must end with 65000 integer.

(Ref. CTI General ASCII Support Protocol Manager Reference Manual Chapter 3)

LADDER LOGIC EXAMPLE

The ladder logic example, used in relationship with V memory Command Blocks, creates a connection (V200) to Port No. 1 of the 2573 on first power up. Then a Read Command (V220) is executed on completion of a PLC scan cycle. Command errors are monitored at V200 and V220 of the respective Command Blocks. If an error occurs, the error code is moved to V401 and V402 respectively for examination. The error conditions are acknowledged and another command cycle begins.

I/O CONFIGURATION CHART FOR CHANNEL . . . 1 BASE 00

		I/O POINTS							
		1	2	3	4	5	6	7	8
SF	SLOT 1	WX0001	WX0002	WY0003	WY0004	WY0005	WY0006	WY0007	WY0008
	SLOT 2								
	. . . . .								
	. . . . .								
	SLOT 15								
	SLOT 16								

2573-TCM2 TO METTLER/TOLEDO SM3000

V200	INTEGER	00000	**CREATE CONNECTION COMMAND**
V201	INTEGER	00001	
V202	INTEGER	19221	
V203	INTEGER	00038	
V204	INTEGER	00001	
V205	INTEGER	09600	
V206	INTEGER	00007	
V207	INTEGER	00000	
V208	INTEGER	00001	
V209	INTEGER	00000	
V210	INTEGER	00000	
V211	INTEGER	00000	
V212	INTEGER	00000	
V213	INTEGER	00000	
V214	INTEGER	00000	
V215	INTEGER	00000	
V240	INTEGER	19456	**FORMAT SPECIFICATION**
V241	INTEGER	02002	
V242	INTEGER	00004	
V243	INTEGER	00009	
V244	INTEGER	00000	
V245	INTEGER	00000	
V246	REAL	+0.00000	
V247			
V248	HEX	0020	
V249	INTEGER	00000	
V250	INTEGER	00000	
V251	INTEGER	65000	

V220	INTEGER	00000	**READ COMMAND**
V221	INTEGER	09730	
V222	INTEGER	19221	
V223	INTEGER	00000	
V224	INTEGER	00240	
V225	INTEGER	00000	
V226	INTEGER	00000	
V227	INTEGER	00019	
V228	HEX	200A	
V229	HEX	530A	
V230	INTEGER	00000	
V231	INTEGER	00000	
V232	INTEGER	00000	
V233	INTEGER	00000	
V234	INTEGER	00000	
V235	INTEGER	00000