

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

CTI 2500 Series PLC System Application Note

Using the CTI 2573-TCM2 Serial Interface Adapter with OHAUS IP Series High Capacity Precision Toploaders

The CTI 2573-TCM2 Serial Interface Adapter allows the Ohaus IP Series scales to be added to a Simatic® 505 PLC system.

The following examples describe the configuration of the 2573-TCM2 to read the weight values from the Ohaus IP Series Scale with the supporting ladder logic. This application note uses the GAS Read Command to read the weight value from the scale and write it to a PLC V memory location as a Real Number.

The Ohaus scale must be configured for continuous print mode, 9600 baud and NO parity.

The output string from the scale contains 18 characters and for a weight of 182.4g the string would be: `___182.4_g_____<CR><LF>`

If the weight were negative, the output string would be: `-___182.4_g_____<CR><LF>`

In this example, only the weight value is parsed from the string and written into the PLC V memory as a Real Number.

Note: This example shows the ladder logic and command blocks necessary to configure Port 1 of the 2573-TCM2 to communicate with the Ohaus IP Series High Capacity Precision Toploader scales, Models IP12KS and IP15KS. Additional ports may be configured by creating additional ladder logic and command blocks.

Dip Switch Settings

(Ref. CTI 2573-TCM2 IOG pages 6 & 7)

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

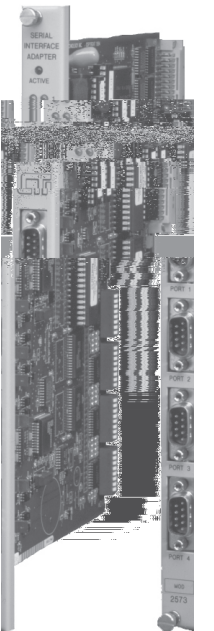
(Ref. CTI 257x PLC Command Interface Reference Manual)

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 6WY. 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 send a command and read the ASCII input string and to parse the weight from the Ohaus IP scale.



Create Connection Command (V200 - V215)

(Ref. CTI General ASCII Support Protocol Manager Reference Manual page 12)

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 Ohaus IP scale attached serially to the module port. The communication parameters are: 9600 baud, bits, no parity, one stop bit, no handshaking.

Read Command (V220 - V235)

(Ref. CTI General ASCII Support Protocol Manager Reference Manual page 15)

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 Delimiters specified to be valid are a Space () and Line Feed (Lf) or a "-" 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 (V241 - V250)

(Ref. CTI General ASCII Support Protocol Manager Reference Manual page 46)

In this example, the Format Specification tells the GAS protocol manager to begin at position one (1) of the ASCII input string (this is the actual weight value), read 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 page 22)

Ladder Logic Example

(Ref. CTI 2573-TCM2 Serial Device Interface Adapter IOG pages 41 & 42)

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 Ohaus IP15KS

Create Connection Command			Input Format Specification			Read Command		
V200	Integer	00000	V240	Integer	19456	V220	Integer	00000
V201	Integer	00001	V241	Integer	02002	V221	Integer	09730
V202	Integer	19221	V242	Integer	00001	V222	Integer	19221
V203	Integer	00038	V243	Integer	65535	V223	Integer	00000
V204	Integer	00001	V244	Integer	00000	V224	Integer	00240
V205	Integer	09600	V245	Integer	00000	V225	Integer	00000
V206	Integer	00007	V246	Real	+0.00000	V226	Integer	00000
V207	Integer	00000	V247			V227	Integer	00018
V208	Integer	00001	V248	Hex	0020	V228	Hex	200A
V209	Integer	00000	V249	Integer	00000	V229	Hex	2D0A
V210	Integer	00000	V250	Integer	00000	V230	Integer	00000
V211	Integer	00000	V251	Integer	65000	V231	Integer	00000
V212	Integer	00000				V232	Integer	00000
V213	Integer	00000				V233	Integer	00000
V214	Integer	00000				V234	Integer	00000
V215	Integer	00000				V235	Integer	00000

