

## MODBUS RTU REGISTER MAP FOR TECO A510 DRIVES

Register Address (Hex)	Register Address (Dec)	Parameter Name	Function Code	Data Type	Scaling/Unit	Description
2500H	9472	Command Register	Read/Write (06/10)	16-bit	Bitfield	<b>Control bits:</b> Run, Reverse, Fault Reset, etc.
2501H	9473	Frequency Command	Write (06/10)	16-bit	0.01 Hz	Frequency reference (0.01 Hz resolution)
2502H	9474	Torque Command	Write (06/10)	16-bit	$\pm 8192 = \pm 100\%$	Torque reference (% of rated torque)
2503H	9475	Speed Limit	Write (06/10)	16-bit	$\pm 120 = \pm 120\%$	Speed limit (% of max speed)
2504H	9476	AO1 Output	Write (06/10)	16-bit	0–1000 → 0.00–10.00V	Analog output 1 voltage
2505H	9477	AO2 Output	Write (06/10)	16-bit	0–1000 → 0–10V or 4–20mA	Analog output 2 voltage/current
2506H	9478	DO Output	Write (06/10)	16-bit	Bitfield	Digital output states
2520H	9504	Status Register	Read (03)	16-bit	Bitfield	<b>Inverter status:</b> Run, Fault, Ready, etc.
2521H	9505	Error Code	Read (03)	16-bit	Enum	Active error code (see manual for list)
2522H	9506	Digital Input Status	Read (03)	16-bit	Bitfield	State of digital inputs S1–S8
2523H	9507	Frequency Command	Read (03)	16-bit	0.01 Hz	Current frequency command
2524H	9508	Output Frequency	Read (03)	16-bit	0.01 Hz	Actual output frequency
2526H	9510	DC Voltage	Read (03)	16-bit	0.1 V	DC bus voltage
2527H	9511	Output Current	Read (03)	16-bit	0.1 A	Output current (0.1 A resolution)
2529H	9513	DO Status	Read (03)	16-bit	Bitfield	Digital output status
252AH	9514	AO1 Output	Read (03)	16-bit	0.00–10.00V	Analog output 1 value
252BH	9515	AO2 Output	Read (03)	16-bit	0–1000	Analog output 2 value
252CH	9516	AI1 Input	Read (03)	16-bit	0.1%	Analog input 1 (0–1000 = 0–100%)
252DH	9517	AI2 Input	Read (03)	16-bit	0.1%	Analog input 2 (0–1000 = 0–100%)

## Priority Monitoring & Control Registers

Register (Dec)	Register (Hex)	Name	Data Type	R/W	Description & Scaling
9508	2524H	Output Frequency	16-bit	Read	<b>Actual output frequency.</b> Scaling: 0.01 Hz (e.g., 5000 = 50.00 Hz)
9473	2501H	Frequency Reference	16-bit	Write	<b>Commanded frequency setpoint.</b> Scaling: 0.01 Hz (e.g., 5000 = 50.00 Hz)
9511	2527H	Output Current	16-bit	Read	<b>Actual output current.</b> Scaling: 0.1 A (e.g., 300 = 30.0 A)
9510	2526H	DC Bus Voltage	16-bit	Read	<b>DC bus voltage.</b> Scaling: 0.1 V (e.g., 5400 = 540.0 V)
9504	2520H	Status Register	16-bit	Read	<b>Bitfield for key statuses:</b> Bit 0: Run, Bit 1: Reverse, Bit 2: Ready, Bit 3: Fault, etc.
9472	2500H	Control Register	16-bit	Write	<b>Bitfield for control commands:</b> Bit 0: Run/Stop, Bit 1: FWD/REV, Bit 3: Fault Reset, etc.

### Note on Torque and Power Registers

The provided section of the manual does not explicitly list dedicated Modbus registers for **Output Torque** or **Output Power**. These values are often calculated by the drive and may be accessible in other parameter groups (e.g., Group 5 or 6). To access them via Modbus, you would typically:

1. Find the parameter number for "Output Torque" or "Output Power" in the full parameter list (e.g., 5-XX).
2. Use the **Parameter Data** mapping table (Section 1.0.3 in the manual) to convert that parameter number to its Modbus register address.

*Example: Parameter 5-00 is located at register 0500H (1280 dec).*

## Fault Code Register

Register (Dec)	Register (Hex)	Name	Data Type	R/W	Description
9505	2521H	Error Code	16-bit	Read	<b>Active fault code.</b> Value corresponds to the list below.

### Fault Code List (Register 2521H / 9505 dec)

When read, this register returns a value that corresponds to the active fault. The manual provides this extensive list:

Value (Dec)	Fault Code	Description	Value (Dec)	Fault Code	Description
0		No Alarm	30		Over Torque 2
1	OV	Over Voltage	31	UV	Under Voltage
2	UV	Under Voltage	32	OC	Over Current
3	OC	Over Current	33	OV	Over Voltage
4	OH1	Heatsink Overheat 1	34	OH1	Heatsink Overheat 1
5	OL1	Motor Overload 1	35	OL1	Motor Overload 1
6	OL2	Inverter Overload 2	36	OL2	Inverter Overload 2
7	OT	Over Torque	37	OT	Over Torque

8	UT	Under Torque	38	CF07	
9	SC	Short Circuit	39	SC	Short Circuit
10	GOC	Ground Over Current	40	GOC	Ground Over Current
11		Fuse Broken	41	OLDOP	
12		Input Phase Loss	42		Input Phase Loss
13		Output Phase Loss	43		Output Phase Loss
14		PG Overspeed	44		PG Overspeed
15		PG Open	45		PG Open
16		PG Speed Deviation	46		PG Speed Deviation
17	EF0	External Fault 01	47	SS1	
18	EF1	External Fault 02	48	CF20	
19	EF2	External Fault 03	49	RUN	
20	EF3	External Fault 04	50		External Fault 04
21	EF4	External Fault 05	51		External Fault 05
22	EF5	External Fault 06	52		External Fault 06
23	EF6	External Fault 07	53		External Fault 07
24	EF7	External Fault 08	54		External Fault 08
25		FB	55		FB
26		OPR	56		OPR
27			57		
28	CE		58	CE	
29	STO	Safe Torque Off	59	STO	Safe Torque Off
...	...	...	61		Over Torque 2
			75	STP2	

*Note: The list contains duplicates and gaps as per the original manual. The drive will return the single value that corresponds to the active fault.*

### Example Modbus RTU Frames (with CRC16)

All examples assume:

- Slave Address: 01
- Function Code: 03 (Read) or 06 (Write Single Register)
- CRC16 computed using standard Modbus polynomial: 0xA001

#### 1. Read Motor Current (Register 2527H = 9511 dec)

**Request:**

text

01 03 09 D7 00 01 54 0F

- 01: Slave Address
- 03: Function Code (Read Holding Registers)
- 09 D7: Start Address = 2527H (9511 dec)
- 00 01: Number of Registers = 1
- 54 0F: CRC16

**Response (e.g., 30.0 A = 300 in decimal = 0x012C):**

text

01 03 02 01 2C B8 4A

- 01: Slave Address
- 03: Function Code
- 02: Byte Count
- 01 2C: Data = 300 (0x012C) = 30.0 A
- B8 4A: CRC16

## 2. Read Output Frequency (Register 2524H = 9508 dec)

### Request:

text

01 03 09 D4 00 01 95 CF

- 09 D4: Start Address = 2524H (9508 dec)
- 95 CF: CRC16

### Response (e.g., 50.00 Hz = 5000 = 0x1388):

text

01 03 02 13 88 78 5C

- 13 88: Data = 5000 = 50.00 Hz
  - 78 5C: CRC16
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## 3. Write Frequency Reference (Register 2501H = 9473 dec, Value = 50.00 Hz = 5000)

### Request:

text

01 06 09 C1 13 88 8B 94

- 01: Slave Address
- 06: Function Code (Write Single Register)
- 09 C1: Register Address = 2501H (9473 dec)
- 13 88: Value = 5000 (50.00 Hz)
- 8B 94: CRC16

### Response (Echo of Write):

text

01 06 09 C1 13 88 8B 94

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## 4. Read Active Fault Register (Register 2520H = 9504 dec)

### Request:

text

01 03 09 D0 00 01 D5 CF

- 09 D0: Start Address = 2520H (9504 dec)
- D5 CF: CRC16

### Response (e.g., Overcurrent Fault = 0x0002):

text

01 03 02 00 02 79 84

- 00 02: Data = Overcurrent Fault (see manual for fault codes)
  - 79 84: CRC16
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### CRC16 Calculation Note

All CRCs are computed using the standard Modbus RTU CRC16 algorithm (polynomial 0xA001). You can verify them using online Modbus CRC calculators or the provided C code in the manual.

Let me know if you need further decoding of fault codes or more examples.