

# Thyro-PX<sup>®</sup> Anybus<sup>®</sup> Modbus RTU

## Guide

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### Related Documentation

For complete information on the Thyro-PX unit, see the user manual that accompanied the system. In particular, reference the safety information in Chapter 1 of the user manual for the Thyro-PX unit.

## ANYBUS MODBUS RTU MODULE

The Anybus Modbus RTU module is an optional accessory for the Thyro-PX power controller.

### Related Links

- [“Hardware Description” on page 2](#)
- [“Configuring With Thyro-Tool Pro PC Software” on page 3](#)
- [“Installing Optional Modules” on page 8](#)
- [“Fast Process Data Communication” on page 9](#)
- [“Modbus RTU Parameter List” on page 13](#)
- [“AE Global Services” on page 34](#)

# HARDWARE DESCRIPTION

This module is compliant with the Modbus® RTU standard.

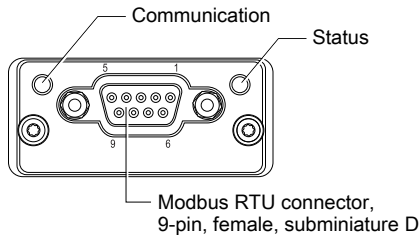


Figure 1. Hardware

Table 1. Communication LED

State	Indication
Off	No power or no traffic
Yellow	Frame reception or transmission
Red	A fatal error has occurred

Table 2. Status LED

State	Indication
Off	No power or initializing
Green	Module initialized, no error
Red	Internal error or major unrecoverable fault
Red, single flash	Communication fault or configuration error Case 1: Invalid settings in Network Configuration Object. Case 2: Settings in Network Configuration Object has been changed during runtime, the settings does not match the currently used configuration.
Red, double flash	Application diagnostics available

Table 3. Connector pinout

Pin	Direction	Signal	Description
Housing		Cable shield	Protective Earth
1		Gnd	Bus polarization, ground (isolated)
2	Output <sup>[1]</sup>	5 V	Bus polarization power +5 VDC (isolated)

**Table 3. Connector pinout (Continued)**

Pin	Direction	Signal	Description
3	Input	PMC	Connect to pin #2 for RS-232 operation. Leave unconnected for RS-485 operation.
4			Not used
5	Bidirectional	B-line	RS-485 B-line
6			Not used
7	Input	Rx	RS-232 data receive
8	Output	Tx	RS-232 data transmit
9	Bidirectional	A-line	RS-485 A-Line

<sup>l</sup> Any current drawn from this pin will affect the total power consumption.

## CONFIGURING WITH THYRO-TOOL PRO PC SOFTWARE

You can configure the Thyro-PX power controller using either the Thyro-Tool Pro PC software or the Thyro-Touch display.

To configure the unit, you will:

- Adapt the Thyro-PX hardware configuration

If required, you can also:

- Select the configuration
- Configure the diagnostics
- Configure the flexible link parameters

### Adapting Thyro-PX Hardware Configuration

Open parameter file with the unit online in the **Port Explorer** tab of the Thyro-Tool Pro PC software, or use the Thyro-Touch display.

Set the Anybus module slot to **Modbus RTU** in the Thyro-PX device hardware configuration:

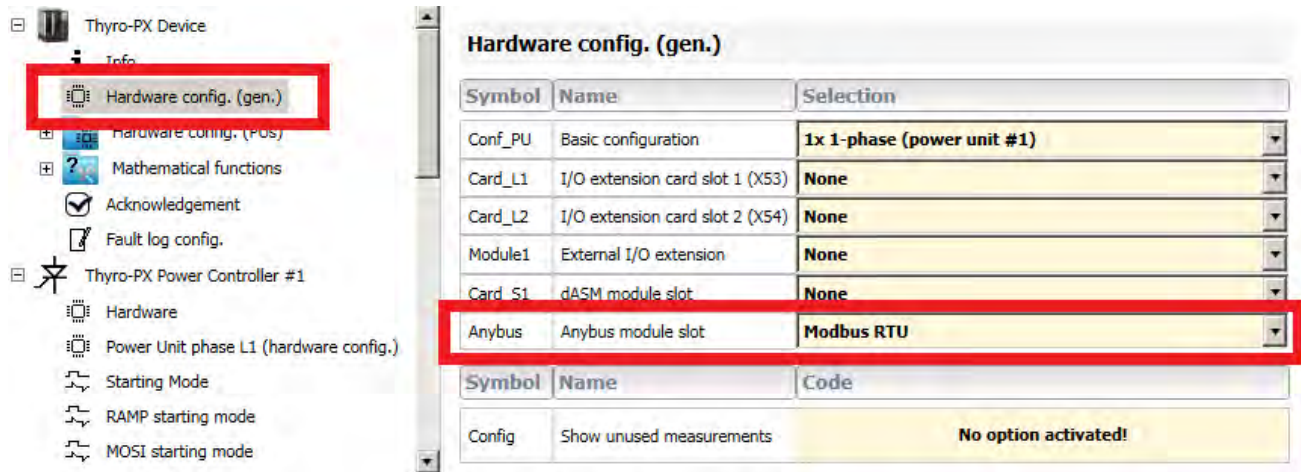


Figure 2. Menu tree

### Anybus Parameter Group

When the computer is connected to the Thyro-PX power controller, the Anybus parameter group will be added to the parameter list after updating the hardware configuration, as shown in the previous figure.

If the unit is not available for online configuration, the software can also be configured offline. Contact AE Global Services to obtain a parameter file appropriate to your hardware configuration.

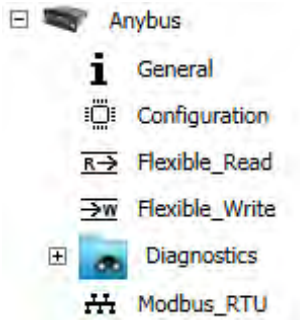


Figure 3. Anybus parameter group

## Configuring Modbus RTU Communication Parameters

Set the Modbus RTU communication parameters in the submenu **Modbus\_RTU**:

Modbus_RTU				
Symbol	Name	Value	Minimum	Maximum
Address	Address	100	1	247

Symbol	Name	Selection
BaudRate	BaudRate	19200bps
Mode	Mode	Even parity, 1 stop bit

Symbol	Name	Value	Minimum	Maximum
Timeout	Timeout	2.00 s	0.00 s	60.00 s

Figure 4. Configure Modbus RTU communication parameters

## Selecting Configuration

Configuration		
Symbol	Name	Status
Valid	Control of validity	<input checked="" type="radio"/> Cyclic telegram valid only if bit is set
SetMopo	Motorpotentiometer = Master	<input checked="" type="radio"/> Motorpotentiometer = Master

Symbol	Name	Selection
SP_Error	Setpoint Error	Zero
LRConfig	Local remote configuration	Unchanged behaviour

Figure 5. Select configuration

Each configuration name, status, and selection is described in the following table:

Table 4. Configuration

Name	Status/Selection	Description
<b>Control of validity</b>	<b>Cyclic telegram valid only if bit is set</b>	When enabled, the cyclic telegrams received from the master will only be considered as valid and processed if bit 15 of the Device Command (ADI # 41) is set. This function allows several settings to be changed one after another before enabling the complete change, thereby avoiding unwanted effects due to an incomplete change.
<b>Motorpotentiometer = Master</b>	<b>Motorpotentiometer = Master</b>	When enabled, the value of the motorpotentiometer continuously follows the master setpoint while in

**Table 4. Configuration (Continued)**

Name	Status/Selection	Description
		remote operation, so that no setpoint leap occurs during the switch-over to the local setpoint.
<b>Setpoint Error</b>	<b>Zero</b>	Zero is used as the setpoint when the master setpoint is missing.
	<b>Last valid master setpoint</b>	The last valid master setpoint is used as the setpoint when the master setpoint is missing.
	<b>Last valid error setpoint</b>	The last valid error setpoint is used as the setpoint when the master setpoint is missing.
<b>Local remote configuration</b>	<b>Unchanged behavior</b>	Configuration of the master's influence to the local remote behavior.
	<b>Automatic switch to local</b>	The unit will automatically switch to local mode when the communication with master is interrupted.
	<b>Ignore master in local</b>	When the unit is in local mode, data and commands from the master will be ignored.

## Configuring Diagnostics

Modbus RTU diagnostic information is available according to the following tables.

**Table 5. Diagnostic registers**

Input Register	Dec	Hex	
Diagnostic event count	256	100	Number of pending diagnostic events. There may be gaps between active diagnostic events. Inactive diagnostic events return 0000h when read.
Diagnostic event #1	257	101	High byte = severity Low byte = event code
Diagnostic event #2	258	102	
Diagnostic event #3	259	103	
Diagnostic event #4	260	104	
Diagnostic event #5	261	105	
Diagnostic event #6	262	106	

The following two diagnostic events are supported:

**Table 6. Diagnostic events**

Event Code	Event
0x10 (= 16)	Error

**Table 6. Diagnostic events (Continued)**

Event Code	Event
0x40 (= 64)	Temperature

You can configure both events in the Thyro-Tool Pro PC software. You can add any Thyro-PX error or status message. Once an error or status message is added, the message will trigger the corresponding extended diagnosis event.

## Configuring Flexible Link Parameters

The flexible link parameters have been designed to allow access to Thyro-PX internal data, such as parameters and actual values, that are not listed in the parameter list.

There are 20 flexible link parameters for writing and 20 flexible link parameters for reading data.

The default read links are shown in the Thyro-Tool Pro PC software, and in the table “[Default Flexible Links](#)”.

Once the respective data point has been selected in the flexible link parameter configuration, it can be accessed on the Modbus RTU using the respective flexible link parameter ADI that is listed in the parameter list (see “[Modbus RTU Parameter List](#)” on page 13).

## Default Flexible Links

**Table 7. Default flexible links**

Flexible Link	Type	Default Link Setting
Flexible read-link 01 r	FLOAT	Power Controller #1: Total power - read
Flexible read-link 02 r	FLOAT	Power Controller #1: L1 Urms - read
Flexible read-link 03 r	FLOAT	Power Controller #1: L1 Irms - read
Flexible read-link 04 r	FLOAT	Power Controller #1: L1 Power - read
Flexible read-link 05 r	FLOAT	Power Controller #1: L1 Resistance - read
Flexible read-link 06 r	FLOAT	Power Controller #1: L1 Umains - read
Flexible read-link 07 r	FLOAT	Power Controller #1: L1 Temperature - read
Flexible read-link 08 r	FLOAT	Power Controller #1: L2 Urms - read
Flexible read-link 09 r	FLOAT	Power Controller #1: L2 Irms - read
Flexible read-link 10 r	FLOAT	Power Controller #1: L2 Power - read
Flexible read-link 11 r	FLOAT	Power Controller #1: L2 Resistance - read
Flexible read-link 12 r	FLOAT	Power Controller #1: L2 Umains - read
Flexible read-link 13 r	FLOAT	Power Controller #1: L2 Temperature - read
Flexible read-link 14 r	FLOAT	Power Controller #1: L3 Urms - read
Flexible read-link 15 r	FLOAT	Power Controller #1: L3 Irms - read

**Table 7. Default flexible links (Continued)**

Flexible Link	Type	Default Link Setting
Flexible read-link 16 r	FLOAT	Power Controller #1: L3 Power - read
Flexible read-link 17 r	FLOAT	Power Controller #1: L3 Resistance - read
Flexible read-link 18 r	FLOAT	Power Controller #1: L3 Umains - read
Flexible read-link 19 r	FLOAT	Power Controller #1: L3 Temperature - read
Flexible read-link 20 r	UINT32 FLOAT	Not applicable

## INSTALLING OPTIONAL MODULES



### **DANGER:**

**RISK OF DEATH OR BODILY INJURY.** Disconnect and lockout/tagout all sources of input power before working on this unit or anything connected to it.



### **DANGER:**

**RISQUE DE MORT OU DE BLESSURES CORPORELLES.** Débrancher et verrouiller/ étiqueter toutes les sources de puissance d'entrée avant de travailler sur cette unité ou sur tout élément qui y est raccordé.

The optional modules may be shipped separately.

1. Verify that the unit is disconnected from all power sources.
2. Unpack each optional module at an ESD safe work space.
3. Plug each optional module into the unit.

When an Anybus module is inserted into the unit, guide the module towards the left during insertion.

4. Secure each module with the two TORX® T8 screws provided with the module.

If an Anybus module must be removed from the unit, loosen the TORX T8 mounting screws 3 turns, and pry out the module with a small flat-bladed screwdriver, as shown in the following figure.





*Figure 6. Anybus module removal*

## FAST PROCESS DATA COMMUNICATION

For fast communication, some process data are buffered in the communication module. To read or write a buffered parameter, use the address in the following tables, rather than the ADI associated address in table [“Modbus RTU Parameter List”](#) on page 13.



### **Important**

The parameter assigned to each address changes depending on how the Thyro-PX power controller is configured.

## Buffered Read Addresses

The parameter assigned to each address changes with each of the following configurations:

- Single-phase (1 \* 1 phase)
- 2x single-phase (2 \* 1 phase)
- 3x single-phase (3 \* 1 phase)
- Three-phase economic circuit (two phase) (1 \* 2 phase)
- Three-phase (1 \* 3 phase)

Use the column in the following table which corresponds with your hardware configuration. For the default flexible links, see [“Default Flexible Links”](#) on page 7.

Table 8. Buffered read addresses

Address		Read Parameter by Thyro-PX Configuration				
Dec	Hex	1 * 1 phase	2 * 1 phase	3 * 1 phase	1 * 2 phase	1 * 3 phase
256	100	Device Error device r	Device Error device r	Device Error device r	Device Error device r	Device Error device r
258	102	Device Error extension r	Device Error extension r	Device Error extension r	Device Error extension r	Device Error extension r
260	104	#1 Actual setpoint r	#1 Actual setpoint r	#1 Actual setpoint r	#1 Actual setpoint r	#1 Actual setpoint r
262	106	#1 Output r	#1 Output r	#1 Output r	#1 Output r	#1 Output r
264	108	#1 Error PC r	#1 Error PC r	#1 Error PC r	#1 Error PC r	#1 Error PC r
266	10A	#1 Status PC r	#1 Status PC r	#1 Status PC r	#1 Status PC r	#1 Status PC r
268	10C	#1 Monitoring PC r	#1 Monitoring PC r	#1 Monitoring PC r	#1 Monitoring PC r	#1 Monitoring PC r
270	10E	Flexible link 01 r [1]	#2 Actual setpoint r	#2 Actual setpoint r	Flexible link 01 r	Flexible link 01 r
272	110	Flexible link 02 r	#2 Output r	#2 Output r	Flexible link 02 r	Flexible link 02 r
274	112	Flexible link 03 r	#2 Error PC r	#2 Error PC r	Flexible link 03 r	Flexible link 03 r
276	114	Flexible link 04 r	#2 Status PC r	#2 Status PC r	Flexible link 04 r	Flexible link 04 r
278	116	Flexible link 05 r	#2 Monitoring PC r	#2 Monitoring PC r	Flexible link 05 r	Flexible link 05 r
280	118	Flexible link 06 r	Flexible link 01 r	#3 Actual setpoint r	Flexible link 06 r	Flexible link 06 r
282	11A	Flexible link 07 r	Flexible link 02 r	#3 Output r	Flexible link 07 r	Flexible link 07 r
284	11C	Flexible link 08 r	Flexible link 03 r	#3 Error PC r	Flexible link 08 r	Flexible link 08 r
286	11E	Flexible link 09 r	Flexible link 04 r	#3 Status PC r	Flexible link 09 r	Flexible link 09 r
288	120	Flexible link 10 r	Flexible link 05 r	#3 Monitoring PC r	Flexible link 10 r	Flexible link 10 r
290	122	Flexible link 11 r	Flexible link 06 r	Flexible link 01 r	Flexible link 11 r	Flexible link 11 r
292	124	Flexible link 12 r	Flexible link 07 r	Flexible link 02 r	Flexible link 12 r	Flexible link 12 r
294	126	Flexible link 13 r	Flexible link 08 r	Flexible link 03 r	Flexible link 13 r	Flexible link 13 r
296	128	Flexible link 14 r	Flexible link 09 r	Flexible link 04 r	Flexible link 14 r	Flexible link 14 r
298	12A	Flexible link 15 r	Flexible link 10 r	Flexible link 05 r	Flexible link 15 r	Flexible link 15 r
300	12C	Flexible link 16 r	Flexible link 11 r	Flexible link 06 r	Flexible link 16 r	Flexible link 16 r
302	12E	Flexible link 17 r	Flexible link 12 r	Flexible link 07 r	Flexible link 17 r	Flexible link 17 r
304	130	Flexible link 18 r	Flexible link 13 r	Flexible link 08 r	Flexible link 18 r	Flexible link 18 r
306	132	Flexible link 19 r	Flexible link 14 r	Flexible link 09 r	Flexible link 19 r	Flexible link 19 r
308	134	Flexible link 20 r	Flexible link 15 r	Flexible link 10 r	Flexible link 20 r	Flexible link 20 r
309	135		Flexible link 16 r	Flexible link 11 r		

**Table 8.** Buffered read addresses (Continued)

Address		Read Parameter by Thyro-PX Configuration				
Dec	Hex	1 * 1 phase	2 * 1 phase	3 * 1 phase	1 * 2 phase	1 * 3 phase
310	136		Flexible link 17 r	Flexible link 12 r		
311	137		Flexible link 18 r	Flexible link 13 r		
312	138		Flexible link 19 r	Flexible link 14 r		
313	139		Flexible link 20 r	Flexible link 15 r		
314	13A			Flexible link 16 r		
315	13B			Flexible link 17 r		
316	13C			Flexible link 18 r		
317	13D			Flexible link 19 r		
318	13E			Flexible link 20 r		

<sup>1</sup> See “Default Flexible Links” on page 7

## Buffered Write Addresses

The parameter assigned to each address changes with each of the following configurations:

- Single-phase (1 \* 1 phase)
- 2x single-phase (2 \* 1 phase)
- 3x single-phase (3 \* 1 phase)
- Three-phase economic circuit (two phase) (1 \* 2 phase)
- Three-phase (1 \* 3 phase)

Use the column in the following table which corresponds with your hardware configuration. For the default flexible links, see “Default Flexible Links” on page 7.

**Table 9.** Buffered write addresses

Address		Write Parameter by Thyro-PX Configuration				
Dec	Hex	1 * 1 phase	2 * 1 phase	3 * 1 phase	1 * 2 phase	1 * 3 phase
0	0	Device Commands w	Device Commands w	Device Commands w	Device Commands w	Device Commands w
1	1	#1 Fieldbus setpoint w	#1 Fieldbus setpoint w	#1 Fieldbus setpoint w	#1 Fieldbus setpoint w	#1 Fieldbus setpoint w
3	3	#1 Error setpoint w	#1 Error setpoint w	#1 Error setpoint w	#1 Error setpoint w	#1 Error setpoint w
5	5	Flexible link 01 w [1]	#2 Fieldbus setpoint w	#2 Fieldbus setpoint w	Flexible link 01 w	Flexible link 01 w

**Table 9. Buffered write addresses (Continued)**

Address		Write Parameter by Thyro-PX Configuration				
Dec	Hex	1 * 1 phase	2 * 1 phase	3 * 1 phase	1 * 2 phase	1 * 3 phase
7	7	Flexible link 02 w	#2 Error setpoint w	#2 Error setpoint w	Flexible link 02 w	Flexible link 02 w
9	9	Flexible link 03 w	Flexible link 01 w	#3 Fieldbus setpoint w	Flexible link 03 w	Flexible link 03 w
11	B	Flexible link 04 w	Flexible link 02 w	#3 Error setpoint w	Flexible link 04 w	Flexible link 04 w
13	D	Flexible link 05 w	Flexible link 03 w	Flexible link 01 w	Flexible link 05 w	Flexible link 05 w
15	F	Flexible link 06 w	Flexible link 04 w	Flexible link 02 w	Flexible link 06 w	Flexible link 06 w
17	11	Flexible link 07 w	Flexible link 05 w	Flexible link 03 w	Flexible link 07 w	Flexible link 07 w
19	13		Flexible link 06 w	Flexible link 04 w		
21	15		Flexible link 07 w	Flexible link 05 w		
23	17			Flexible link 06 w		
25	19			Flexible link 07 w		

<sup>1</sup> See “Default Flexible Links” on page 7

## MODBUS RTU PARAMETER LIST

*Table 10. Parameter list*

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
1	Read	528	210	Flexible link 01 r	UINT32 FLOAT	Flexible link number 01 - read
2	Read	530	212	Flexible link 02 r	UINT32 FLOAT	Flexible link number 02 - read
3	Read	532	214	Flexible link 03 r	UINT32 FLOAT	Flexible link number 03 - read
4	Read	534	216	Flexible link 04 r	UINT32 FLOAT	Flexible link number 04 - read
5	Read	536	218	Flexible link 05 r	UINT32 FLOAT	Flexible link number 05 - read
6	Read	538	21A	Flexible link 06 r	UINT32 FLOAT	Flexible link number 06 - read
7	Read	540	21C	Flexible link 07 r	UINT32 FLOAT	Flexible link number 07 - read
8	Read	542	21E	Flexible link 08 r	UINT32 FLOAT	Flexible link number 08 - read
9	Read	544	220	Flexible link 09 r	UINT32 FLOAT	Flexible link number 09 - read
10	Read	546	222	Flexible link 10 r	UINT32 FLOAT	Flexible link number 10 - read
11	Read	548	224	Flexible link 11 r	UINT32 FLOAT	Flexible link number 11 - read
12	Read	550	226	Flexible link 12 r	UINT32 FLOAT	Flexible link number 12 - read
13	Read	552	228	Flexible link 13 r	UINT32 FLOAT	Flexible link number 13 - read
14	Read	554	22A	Flexible link 14 r	UINT32 FLOAT	Flexible link number 14 - read
15	Read	556	22C	Flexible link 15 r	UINT32 FLOAT	Flexible link number 15 - read
16	Read	558	22E	Flexible link 16 r	UINT32 FLOAT	Flexible link number 16 - read

**Table 10. Parameter list (Continued)**

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
17	Read	560	230	Flexible link 17 r	UINT32 FLOAT	Flexible link number 17 - read
18	Read	562	232	Flexible link 18 r	UINT32 FLOAT	Flexible link number 18 - read
19	Read	564	234	Flexible link 19 r	UINT32 FLOAT	Flexible link number 19 - read
20	Read	566	236	Flexible link 20 r	UINT32 FLOAT	Flexible link number 20 - read
21	Write	568	238	Flexible link 01 w	UINT32 FLOAT	Flexible link number 01 - write
22	Write	570	23A	Flexible link 02 w	UINT32 FLOAT	Flexible link number 02 - write
23	Write	572	23C	Flexible link 03 w	UINT32 FLOAT	Flexible link number 03 - write
24	Write	574	23E	Flexible link 04 w	UINT32 FLOAT	Flexible link number 04 - write
25	Write	576	240	Flexible link 05 w	UINT32 FLOAT	Flexible link number 05 - write
26	Write	578	242	Flexible link 06 w	UINT32 FLOAT	Flexible link number 06 - write
27	Write	580	244	Flexible link 07 w	UINT32 FLOAT	Flexible link number 07 - write
28	Write	582	246	Flexible link 08 w	UINT32 FLOAT	Flexible link number 08 - write
29	Write	584	248	Flexible link 09 w	UINT32 FLOAT	Flexible link number 09 - write
30	Write	586	24A	Flexible link 10 w	UINT32 FLOAT	Flexible link number 10 - write
31	Write	588	24C	Flexible link 11 w	UINT32 FLOAT	Flexible link number 11 - write
32	Write	590	24E	Flexible link 12 w	UINT32 FLOAT	Flexible link number 12 - write
33	Write	592	250	Flexible link 13 w	UINT32 FLOAT	Flexible link number 13 - write
34	Write	594	252	Flexible link 14 w	UINT32 FLOAT	Flexible link number 14 - write
35	Write	596	254	Flexible link 15 w	UINT32 FLOAT	Flexible link number 15 - write

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
36	Write	598	256	Flexible link 16 w	UINT32 FLOAT	Flexible link number 16 - write
37	Write	600	258	Flexible link 17 w	UINT32 FLOAT	Flexible link number 17 - write
38	Write	602	25A	Flexible link 18 w	UINT32 FLOAT	Flexible link number 18 - write
39	Write	604	25C	Flexible link 19 w	UINT32 FLOAT	Flexible link number 19 - write
40	Write	606	25E	Flexible link 20 w	UINT32 FLOAT	Flexible link number 20 - write
41	Write	608	260	Device Commands w	UINT16	Device command - write Bit 0: Clear energy counter power controller #1 Bit 1: Clear energy counter power controller #2 Bit 2: Clear energy counter power controller #3 Bit 3: Regulator lock power controller #1 Bit 4: Regulator lock power controller #2 Bit 5: Regulator lock power controller #3 Bit 6: Pulse lock power controller #1 Bit 7: Pulse lock power controller #2 Bit 8: Pulse lock power controller #3 Bit 9: External Error 1 Bit 10: External Error 2 Bit 11: External Error 3 Bit 12: Load parameters (from EEPROM to Flash) Bit 13: Save parameters (from Flash to EEPROM) Bit 14: Fault acknowledgement (Quit) Bit 15: "Only if bit set" (special function)
42		610	262			
43	Read	612	264	Device operating hours r	FLOAT	Operating hours - read

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
44	Read	614	266	Device CPU temperature	FLOAT	CPU temperature - read
45	Read	616	268	Device error r	UINT32	Error - read Bit 0: Aux. supply error Bit 1: Parameter error Bit 2: Frequency error Bit 3: Internal communication error Bit 4: Temperature CPU too high Bit 8: Phase L1 missing Bit 9: Phase L2 missing Bit 10: Phase L3 missing Bit 11: Fuse 1 broken Bit 12: Fuse 2 broken Bit 13: Fuse 3 broken Bit 14: Thyristor 1 short-circuit Bit 15: Thyristor 2 short-circuit Bit 16: Thyristor 3 short-circuit Bit 17: External error 1 (customer-specific) Bit 18: External error 2 (customer-specific) Bit 19: External error 3 (customer-specific) Bit 21: Extension card X53 configuration error Bit 22: Extension card X54 configuration error Bit 23: External extension 1 configuration error Bit 24: External extension 2 configuration error Bit 25: dASM card configuration error Bit 26: Anybus configuration error Bit 27: Internal error



Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
46	Read	618	26A	Device error extension r	UINT32	Error extension - read Bit 1: Extension card X53 error Bit 2: Extension card X54 error Bit 3: External extension 1 error Bit 4: External extension 2 error Bit 5: dASM card error Bit 6: Anybus module error Bit 8: dASM total power exceeded Bit 9: dASM count error
47		620	26C			
48	Read	622	26E	#1 Analog setpoint r	FLOAT	Power controller #1: Analog setpoint - read
49	Read	624	270	#1 Motor pot. setpoint r	FLOAT	Power controller #1: Motor potentiometer setpoint - read
50	Write	626	272	#1 Fieldbus setpoint w	FLOAT	Power controller #1: Fieldbus setpoint - write
51	Read	628	274	#1 Actual setpoint r	FLOAT	Power controller #1: Actual setpoint - read
52	Write	630	276	#1 Error setpoint w	FLOAT	Power controller #1: Error setpoint - write
53	Read	632	278	#1 Total power r	FLOAT	Power controller #1: Total power - read
54	Read	634	27A	#1 Alpha r	FLOAT	Power controller #1: Alpha - read
55	Read	636	27C	#1 TimeOn r	FLOAT	Power controller #1: Time on - read
56	Read	638	27E	#1 Output r	FLOAT	Power controller #1: Output - read
57	Read	640	280	#1 Frequency r	FLOAT	Power controller #1: Frequency - read
58	Read	642	282	#1 Energy counter r	FLOAT	Power controller #1: Energy counter - read

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
59	Read	644	284	#1 Error PC r	UINT32	Error PC - read Bit 4: Synchronization error Bit 5: Phase missing Bit 6: Fuse broken Bit 7: Thyristor short circuit Bit 16: Internal communication error Bit 17: U clipping Bit 18: I clipping Bit 19: Negative power Bit 20: Temperature probe error Bit 21: Overtemperature Bit 24: I/O error
60	Read	646	286	#1 Status PC r	UINT32	Power controller #1: Status PC - read Bit 0: Output (pulses) on Bit 1: Power controller OK) Bit 2: Mains OK Bit 3: Remote setpoint Bit 6: Pulse lock (with ack.) Bit 7: Pulse lock (auto-ack.) Bit 8: Regulator lock Bit 12: Left rotation field Bit 13: Output restricted Bit 14: Max output reached Bit 16: Active limit Bit 17: U limit Bit 18: I limit Bit 19: $I_{peak}$ limit Bit 20: P limit Bit 21: Temperature limit Bit 22: Limit external feedback signal Bit 24: RAMP starting mode Bit 25: MOSI starting mode Bit 26: MOSI starting mode $I_{RMS}$ Bit 27: MOSI starting mode $I_{peak}$

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
61	Read	648	288	#1 Monitoring PC r	UINT32	Power controller #1: Monitoring PC - read Bit 4: $U_{mains} < \text{minimum}$ Bit 5: $U_{mains} > \text{maximum}$ Bit 6: $U_{RMS} < \text{minimum}$ Bit 7: $U_{RMS} < \text{maximum}$ Bit 8: $U_{rect} < \text{minimum}$ Bit 9: $U_{rect} > \text{maximum}$ Bit 11: $U_{peak} > \text{maximum}$ Bit 14: $I_{RMS} < \text{minimum}$ Bit 15: $I_{RMS} > \text{maximum}$ Bit 16: $I_{rect} < \text{minimum}$ Bit 17: $I_{rect} > \text{maximum}$ Bit 19: $I_{peak} > \text{maximum}$ Bit 22: $P < \text{minimum}$ Bit 23: $P > \text{maximum}$ Bit 24: $R < \text{minimum}$ Bit 25: $R > \text{maximum}$ Bit 26: $T_{device} < \text{minimum}$ Bit 27: $T_{device} > \text{maximum}$ Bit 28: $R_{abs} < \text{minimum}$ Bit 29: $R_{abs} > \text{maximum}$ Bit 30: $R_{rel} < \text{minimum}$ Bit 31: $R_{rel} > \text{maximum}$
62		650	28A			
63	Read	652	28C	#1 L1 Umains r	FLOAT	Power controller #1: L1 $U_{mains}$ - read
64	Read	654	28E	#1 L1 Urms r	FLOAT	Power controller #1: L1 $U_{RMS}$ - read
65	Read	656	290	#1 L1 Urect r	FLOAT	Power controller #1: L1 $U_{rect}$ - read
66	Read	658	292	#1 L1 Upeak r	FLOAT	Power controller #1: L1 $U_{peak}$ - read
67	Read	660	294	#1 L1 Irms r	FLOAT	Power controller #1: L1 $I_{RMS}$ - read
68	Read	662	296	#1 L1 Irect r	FLOAT	Power controller #1: L1 $I_{rect}$ - read
69	Read	664	298	#1 L1 Ipeak r	FLOAT	Power controller #1: L1 $I_{peak}$ - read
70	Read	666	29A	#1 L1 Power r	FLOAT	Power controller #1: L1 Power - read

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
71	Read	668	29C	#1 L1 Resistance r	FLOAT	Power controller #1: L1 Resistance - read
72	Read	670	29E	#1 L1 Temperature r	FLOAT	Power controller #1: L1 Temperature - read
73	Read	672	2A0	#1 L1 External control r	FLOAT	Power controller #1: L1 External control - read
74		674	2A2			
75	Read	676	2A4	#1 L2 Umains r	FLOAT	Power controller #1: L2 $U_{mains}$ - read
76	Read	678	2A6	#1 L2 Urms r	FLOAT	Power controller #1: L2 $U_{RMS}$ - read
77	Read	680	2A8	#1 L2 Urect r	FLOAT	Power controller #1: L2 $U_{rect}$ - read
78	Read	682	2AA	#1 L2 Upeak r	FLOAT	Power controller #1: L2 $U_{peak}$ - read
79	Read	684	2AC	#1 L2 Irms r	FLOAT	Power controller #1: L2 $I_{RMS}$ - read
80	Read	686	2AE	#1 L2 Irect r	FLOAT	Power controller #1: L2 $I_{rect}$ - read
81	Read	688	2B0	#1 L2 Ipeak r	FLOAT	Power controller #1: L2 $I_{peak}$ - read
82	Read	690	2B2	#1 L2 Power r	FLOAT	Power controller #1: L2 Power - read
83	Read	692	2B4	#1 L2 Resistance r	FLOAT	Power controller #1: L2 Resistance - read
84	Read	694	2B6	#1 L2 Temperature r	FLOAT	Power controller #1: L2 Temperature - read
85	Read	696	2B8	#1 L2 External control r	FLOAT	Power controller #1: L2 External control - read
86		698	2BA			
87	Read	700	2BC	#1 L3 Umains r	FLOAT	Power controller #1: L3 $U_{mains}$ - read
88	Read	702	2BE	#1 L3 Urms r	FLOAT	Power controller #1: L3 $U_{RMS}$ - read
89	Read	704	2C0	#1 L3 Urect r	FLOAT	Power controller #1: L3 $U_{rect}$ - read
90	Read	706	2C2	#1 L3 Upeak r	FLOAT	Power controller #1: L3 $U_{peak}$ - read
91	Read	708	2C4	#1 L3 Irms r	FLOAT	Power controller #1: L3 $I_{RMS}$ - read
92	Read	710	2C6	#1 L3 Irect r	FLOAT	Power controller #1: L3 $I_{rect}$ - read
93	Read	712	2C8	#1 L3 Ipeak r	FLOAT	Power controller #1: L3 $I_{peak}$ - read
94	Read	714	2CA	#1 L3 Power r	FLOAT	Power controller #1: L3 Power - read
95	Read	716	2CC	#1 L3 Resistance r	FLOAT	Power controller #1: L3 Resistance - read
96	Read	718	2CE	#1 L3 Temperature r	FLOAT	Power controller #1: L3 Temperature - read

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
97	Read	720	2D0	#1 L3 External control r	FLOAT	Power controller #1: L3 External control - read
98		722	2D2			
99	Read	724	2D4	#2 Analog setpoint r	FLOAT	Power controller #2: Analog setpoint - read
100	Read	726	2D6	#2 Motor pot. setpoint r	FLOAT	Power controller #2: Motor potentiometer setpoint - read
101	Write	728	2D8	#2 Fieldbus setpoint w	FLOAT	Power controller #2: Fieldbus setpoint - write
102	Read	730	2DA	#2 Actual setpoint r	FLOAT	Power controller #2: Actual setpoint - read
103	Write	732	2DC	#2 Error setpoint w	FLOAT	Power controller #2: Error setpoint - write
104	Read	734	2DE	#2 Total power r	FLOAT	Power controller #2: Total power - read
105	Read	736	2E0	#2 Alpha r	FLOAT	Power controller #2: Alpha - read
106	Read	738	2E2	#2 TimeOn r	FLOAT	Power controller #2: Time on - read
107	Read	740	2E4	#2 Output r	FLOAT	Power controller #2: Output - read
108	Read	742	2E6	#2 Frequency r	FLOAT	Power controller #2: Frequency - read
109	Read	744	2E8	#2 Energy counter r	FLOAT	Power controller #2: Energy counter - read
110	Read	746	2EA	#2 Error PC r	UINT32	Power controller #2: Error PC - read Bit 4: Synchronization error Bit 5: Phase missing Bit 6: Fuse broken Bit 7: Thyristor short circuit Bit 16: Internal communication error Bit 17: U clipping Bit 18: I clipping Bit 19: Negative power Bit 20: Temperature probe error Bit 21: Overtemperature Bit 24: I/O error

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
111	Read	748	2EC	#2 Status PC r	UINT32	Power controller #2: Status PC - read Bit 0: Output (pulses) on Bit 2: Mains OK Bit 3: Remote setpoint Bit 6: Pulse lock (with ack.) Bit 7: Pulse lock (auto-ack.) Bit 8: Regulator lock Bit 12: Left rotation field Bit 13: Output restricted Bit 14: Max output reached Bit 16: Active limit Bit 17: U limit Bit 18: I limit Bit 19: I <sub>peak</sub> limit Bit 20: P limit Bit 21: Temperature limit Bit 22: Limit external feedback signal Bit 24: RAMP starting mode Bit 25: MOSI starting mode Bit 26: MOSI starting mode I <sub>RMS</sub> Bit 27: MOSI starting mode I <sub>peak</sub>

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
112	Read	750	2EE	#2 Monitoring PC r	UINT32	Power controller #2: Monitoring PC - read Bit 4: $U_{mains} < \text{minimum}$ Bit 5: $U_{mains} > \text{maximum}$ Bit 6: $U_{RMS} < \text{minimum}$ Bit 7: $U_{RMS} > \text{maximum}$ Bit 8: $U_{rect} < \text{minimum}$ Bit 9: $U_{rect} > \text{maximum}$ Bit 11: $U_{peak} > \text{maximum}$ Bit 14: $I_{RMS} < \text{minimum}$ Bit 15: $I_{RMS} > \text{maximum}$ Bit 16: $I_{rect} < \text{minimum}$ Bit 17: $I_{rect} > \text{maximum}$ Bit 19: $I_{peak} > \text{maximum}$ Bit 22: $P < \text{minimum}$ Bit 23: $P > \text{maximum}$ Bit 24: $R < \text{minimum}$ Bit 25: $R > \text{maximum}$ Bit 26: $T_{device} < \text{minimum}$ Bit 27: $T_{device} > \text{maximum}$ Bit 28: $R_{abs} < \text{minimum}$ Bit 29: $R_{abs} > \text{maximum}$ Bit 30: $R_{rel} < \text{minimum}$ Bit 31: $R_{rel} > \text{maximum}$
113		752	2F0			
114	Read	754	2F2	#2 L1 Umains r	FLOAT	Power controller #2: L1 $U_{mains}$ - read
115	Read	756	2F4	#2 L1 Urms r	FLOAT	Power controller #2: L1 $U_{RMS}$ - read
116	Read	758	2F6	#2 L1 Urect r	FLOAT	Power controller #2: L1 $U_{rect}$ - read
117	Read	760	2F8	#2 L1 Upeak r	FLOAT	Power controller #2: L1 $U_{peak}$ - read
118	Read	762	2FA	#2 L1 Irms r	FLOAT	Power controller #2: L1 $I_{RMS}$ - read
119	Read	764	2FC	#2 L1 Irect r	FLOAT	Power controller #2: L1 $I_{rect}$ - read
120	Read	766	2FE	#2 L1 Ipeak r	FLOAT	Power controller #2: L1 $I_{peak}$ - read
121	Read	768	300	#2 L1 Power r	FLOAT	Power controller #2: L1 Power - read

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
122	Read	770	302	#2 L1 Resistance r	FLOAT	Power controller #2: L1 Resistance - read
123	Read	772	304	#2 L1 Temperature r	FLOAT	Power controller #2: L1 Temperature - read
124	Read	774	306	#2 L1 External control r	FLOAT	Power controller #2: L1 External control - read
125		776	308			
126	Read	778	30A	#3 Analog setpoint r	FLOAT	Power controller #3: Analog setpoint - read
127	Read	780	30C	#3 Motor pot. setpoint r	FLOAT	Power controller #3: Motor potentiometer setpoint - read
128	Write	782	30E	#3 Fieldbus setpoint w	FLOAT	Power controller #3: Fieldbus setpoint - write
129	Read	784	310	#3 Actual setpoint r	FLOAT	Power controller #3: Actual setpoint - read
130	Write	786	312	#3 Error setpoint w	FLOAT	Power controller #3: Error setpoint - write
131	Read	788	314	#3 Total power r	FLOAT	Power controller #3: Total power - read
132	Read	790	316	#3 Alpha r	FLOAT	Power controller #3: Alpha - read
133	Read	792	318	#3 TimeOn r	FLOAT	Power controller #3: Time on - read
134	Read	794	31A	#3 Output r	FLOAT	Power controller #3: Output - read
135	Read	796	31C	#3 Frequency r	FLOAT	Power controller #3: Frequency - read
136	Read	798	31E	#3 Energy counter r	FLOAT	Power controller #3: Energy counter - read
137	Read	800	320	#3 Error PC r	UINT32	Power controller #3: Error PC - read Bit 4: Synchronization error Bit 5: Phase missing Bit 6: Fuse broken Bit 7: Thyristor short circuit Bit 16: Internal communication error Bit 17: U clipping Bit 18: I clipping Bit 19: Negative power Bit 20: Temperature probe error Bit 21: Overtemperature Bit 24: I/O error



**Table 10. Parameter list (Continued)**

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
138	Read	802	322	#3 Status PC r	UINT32	Power controller #3: Status PC - read Bit 0: Output (pulses) on Bit 1: Power controller OK) Bit 2: Mains OK Bit 3: Remote setpoint Bit 6: Pulse lock (with ack.) Bit 7: Pulse lock (auto-ack.) Bit 8: Regulator lock Bit 12: Left rotation field Bit 13: Output restricted Bit 14: Max output reached Bit 16: Active limit Bit 17: U limit Bit 18: I limit Bit 19: I <sub>peak</sub> limit Bit 20: P limit Bit 21: Temperature limit Bit 22: Limit external feedback signal Bit 24: RAMP starting mode Bit 25: MOSI starting mode Bit 26: MOSI starting mode I <sub>RMS</sub> Bit 27: MOSI starting mode I <sub>peak</sub>

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
139	Read	804	324	#3 Monitoring PC r	UINT32	Power controller #3: Monitoring PC - read Bit 4: $U_{mains} < \text{minimum}$ Bit 5: $U_{mains} > \text{maximum}$ Bit 6: $U_{RMS} < \text{minimum}$ Bit 7: $U_{RMS} > \text{maximum}$ Bit 8: $U_{rect} < \text{minimum}$ Bit 9: $U_{rect} > \text{maximum}$ Bit 11: $U_{peak} > \text{maximum}$ Bit 14: $I_{RMS} < \text{minimum}$ Bit 15: $I_{RMS} > \text{maximum}$ Bit 16: $I_{rect} < \text{minimum}$ Bit 17: $I_{rect} > \text{maximum}$ Bit 19: $I_{peak} > \text{maximum}$ Bit 22: $P < \text{minimum}$ Bit 23: $P > \text{maximum}$ Bit 24: $R < \text{minimum}$ Bit 25: $R > \text{maximum}$ Bit 26: $T_{device} < \text{minimum}$ Bit 27: $T_{device} > \text{maximum}$ Bit 28: $R_{abs} < \text{minimum}$ Bit 29: $R_{abs} > \text{maximum}$ Bit 30: $R_{rel} < \text{minimum}$ Bit 31: $R_{rel} > \text{maximum}$
140		806	326			
141	Read	808	328	#3 L1 Umains r	FLOAT	Power controller #3: L1 $U_{mains}$ - read
142	Read	810	32A	#3 L1 Urms r	FLOAT	Power controller #3: L1 $U_{RMS}$ - read
143	Read	812	32C	#3 L1 Urect r	FLOAT	Power controller #3: L1 $U_{rect}$ - read
144	Read	814	32E	#3 L1 Upeak r	FLOAT	Power controller #3: L1 $U_{peak}$ - read
145	Read	816	330	#3 L1 Irms r	FLOAT	Power controller #3: L1 $I_{RMS}$ - read
146	Read	818	332	#3 L1 Irect r	FLOAT	Power controller #3: L1 $I_{rect}$ - read
147	Read	820	334	#3 L1 Ipeak r	FLOAT	Power controller #3: L1 $I_{peak}$ - read
148	Read	822	336	#3 L1 Power r	FLOAT	Power controller #3: L1 Power - read

**Table 10. Parameter list (Continued)**

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
149	Read	824	338	#3 L1 Resistance r	FLOAT	Power controller #3: L1 Resistance - read
150	Read	826	33A	#3 L1 Temperature r	FLOAT	Power controller #3: L1 Temperature - read
151	Read	828	33C	#3 L1 External control r	FLOAT	Power controller #3: L1 External control - read
152	Write	830	33E			
153	Write	832	340	I/O Int LED 1-7 rd/gr w	UINT16	Internal I/O: LED 1-7 - red/green - write Bit 0: LED 1 green Bit 1: LED 1 red Bit 2: LED 2 green Bit 3: LED 2 red Bit 4: LED 3 green Bit 5: LED 3 red Bit 6: LED 4 green Bit 7: LED 4 red Bit 8: LED 5 green Bit 9: LED 5 red Bit 10: LED 6 green Bit 11: LED 6 red Bit 12: LED 7 green Bit 13: LED 7 red

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
154	Read	834	342	I/O Int LED 1-7 rd/gr r	UINT16	Internal I/O: LED 1-7 - red/green - read Bit 0: LED 1 green Bit 1: LED 1 red Bit 2: LED 2 green Bit 3: LED 2 red Bit 4: LED 3 green Bit 5: LED 3 red Bit 6: LED 4 green Bit 7: LED 4 red Bit 8: LED 5 green Bit 9: LED 5 red Bit 10: LED 6 green Bit 11: LED 6 red Bit 12: LED 7 green Bit 13: LED 7 red
155	Write	836	344	I/O Int Relay 1-3 w	UINT16	Internal I/O: Relay 1-3 - write Bit 0: Relay 1 Bit 1: Relay 2 Bit 2: Relay 3
156	Read	838	346	I/O Int Relay 1-3 r	UINT16	Internal I/O: Relay 1-3 - read Bit 0: Relay 1 Bit 1: Relay 2 Bit 2: Relay 3
157		840	348			
158		842	34A			
159	Read	844	34C	I/O Int Analog In 1 r	FLOAT	Internal I/O: Analog input 1 - read
160	Read	846	34E	I/O Int Analog In 2 r	FLOAT	Internal I/O: Analog input 2 - read
161	Read	848	350	I/O Int Analog In 3 r	FLOAT	Internal I/O: Analog input 3 - read
162		850	352			
163	Write	852	354	I/O Int Analog Out 1 w	FLOAT	Internal I/O: Analog output 1 - write
164	Write	854	356	I/O Int Analog Out 2 w	FLOAT	Internal I/O: Analog output 2 - write
165	Write	856	358	I/O Int Analog Out 3 w	FLOAT	Internal I/O: Analog output 3 - write
166		858	35A			
167		860	35C			

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
168	Read	862	35E	I/O Int Digital In 1-6 r	UINT16	Internal I/O: Digital input 1-6 - read Bit 0: Digital input 1 Bit 1: Digital input 2 Bit 2: Digital input 3 Bit 3: Digital input 4 Bit 4: Digital input 5 Bit 5: Digital input 6
169		864	360			
170		866	362			
171		868	364			
172		870	366			
173	Write	872	368	I/O Ext1 Relay w	UINT16	I/O Extension 1: Relay - write Bit 0: Relay 1 Bit 1: Relay 2
174	Read	874	36A	I/O Ext1 Relay r	UINT16	I/O Extension 1: Relay - read Bit 0: Relay 1 Bit 1: Relay 2
175		876	36C			
176	Read	878	36E	I/O Ext1 Analog In 1 r	FLOAT	I/O Extension 1: Analog input 1 - read
177	Read	880	370	I/O Ext1 Analog In 2 r	FLOAT	I/O Extension 1: Analog input 2 - read
178	Read	882	372	I/O Ext1 Analog In 3 r	FLOAT	I/O Extension 1: Analog input 3 - read
179		884	374			
180	Write	886	376	I/O Ext1 Analog Out 1 w	FLOAT	I/O Extension 1: Analog output 1 - write
181	Write	888	378	I/O Ext1 Analog Out 2 w	FLOAT	I/O Extension 1: Analog output 2 - write
182	Write	890	37A	I/O Ext1 Analog Out 3 w	FLOAT	I/O Extension 1: Analog output 3 - write
183		892	37C			
184		894	37E			
185	Read	896	380	I/O Ext1 Digital In r	UINT16	I/O Extension 1: Digital input - read Bit 0: Digital input 1 Bit 1: Digital input 2
186		898	382			

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
187	Write	900	384	I/O Ext1 Digital Out w	UINT16	I/O Extension 1: Digital output - write Bit 0: Digital output 1 Bit 1: Digital output 2
188	Read	902	386	I/O Ext1 Digital Out r	UINT16	I/O Extension 1: Digital output - read Bit 0: Digital output 1 Bit 1: Digital output 2
189		904	388			
190		906	38A			
191		908	38C			
192		910	38E			
193	Write	912	390	I/O Ext2 Relay w	UINT16	I/O Extension 2: Relay - write Bit 0: Relay 1 Bit 1: Relay 2
194	Read	914	392	I/O Ext2 Relay r	UINT16	I/O Extension 2: Relay - read Bit 0: Relay 1 Bit 1: Relay 2
195		916	394			
196	Read	918	396	I/O Ext2 Analog In 1 r	FLOAT	I/O Extension 2: Analog input 1 - read
197	Read	920	398	I/O Ext2 Analog In 2 r	FLOAT	I/O Extension 2: Analog input 2 - read
198	Read	922	39A	I/O Ext2 Analog In 3 r	FLOAT	I/O Extension 2: Analog input 3 - read
199		924	39C			
200	Write	926	39E	I/O Ext2 Analog Out 1 w	FLOAT	I/O Extension 2: Analog output 1 - write
201	Write	928	3A0	I/O Ext2 Analog Out 2 w	FLOAT	I/O Extension 2: Analog output 2 - write
202	Write	930	3A2	I/O Ext2 Analog Out 3 w	FLOAT	I/O Extension 2: Analog output 3 - write
203		932	3A4			
204		934	3A6			
205	Read	936	3A8	I/O Ext2 Digital In r	UINT16	I/O Extension 2: Digital input - read Bit 0: Digital input 1 Bit 1: Digital input 2
206		938	3AA			

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
207	Write	940	3AC	I/O Ext2 Digital Out w	UINT16	I/O Extension 2: Digital output - write Bit 0: Digital output 1 Bit 1: Digital output 2
208	Read	942	3AE	I/O Ext2 Digital Out r	UINT16	I/O Extension 2: Digital output - read Bit 0: Digital output 1 Bit 1: Digital output 2
209		944	3B0			
210	Read	946	3B2	dASM Total power r	FLOAT	dASM Total power - read
211	Read	948	3B4	dASM Count r	UINT8	dASM Count - read
212		950	3B6			
213	Write	952	3B8	#1 Starting mode w	UINT8	Power controller #1: Starting mode - write 0: None 1: Ramp 2: MOSI 3: MOSI and ramp
214	Write	954	3BA	#1 Operating mode w	UINT8	Power controller #1: Operating mode - write 0: TAKT (full wave) 1: VAR (phase angle)
215	Write	956	3BC	#1 Control mode w	UINT8	Power controller #1: Control mode - write 0: None 1: U 2: U <sup>2</sup> 3: I 4: I <sup>2</sup> 5: P
216	Write	958	3BE	#1 PID Kp w	FLOAT	Power controller #1: PID Kp - write
217	Write	960	3C0	#1 PID Ki w	FLOAT	Power controller #1: PID Ki - write
218	Write	962	3C2	#1 PID Kd w	FLOAT	Power controller #1: PID Kd - write
219		964	3C4			
220		966	3C6			
221		968	3C8			

Table 10. Parameter list (Continued)

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
222	Write	970	3CA	#2 Starting mode w	UINT8	Power controller #2: Starting mode - write 0: None 1: Ramp 2: MOSI 3: MOSI and ramp
223	Write	972	3CC	#2 Operating mode w	UINT8	Power controller #2: Operating mode - write 0: TAKT (full wave) 1: VAR (phase angle)
224	Write	974	3CE	#2 Control mode w	UINT8	Power controller #2: Control mode - write 0: None 1: U 2: U <sup>2</sup> 3: I 4: I <sup>2</sup> 5: P
225	Write	976	3D0	#2 PID K <sub>p</sub> w	FLOAT	Power controller #2: PID K <sub>p</sub> - write
226	Write	978	3D2	#2 PID K <sub>i</sub> w	FLOAT	Power controller #2: PID K <sub>i</sub> - write
227	Write	980	3D4	#2 PID K <sub>d</sub> w	FLOAT	Power controller #2: PID K <sub>d</sub> - write
228		982	3D6			
229		984	3D8			
230		986	3DA			
231	Write	988	3DC	#3 Starting mode w	UINT8	Power controller #3: Starting mode - write 0: None 1: Ramp 2: MOSI 3: MOSI and ramp
232	Write	990	3DE	#3 Operating mode w	UINT8	Power controller #3: Operating mode - write 0: TAKT (full wave) 1: VAR (phase angle)



**Table 10. Parameter list (Continued)**

ADI #	Read / Write	Address		Parameter Name	Type	Parameter Description
		Dec	Hex			
233	Write	992	3E0	#3 Control mode w	UINT8	Power controller #3: Control mode - write 0: None 1: U 2: U <sup>2</sup> 3: I 4: I <sup>2</sup> 5: P
234	Write	994	3E2	#3 PID Kp w	FLOAT	Power controller #3: PID Kp - write
235	Write	996	3E4	#3 PID Ki w	FLOAT	Power controller #3: PID Ki - write
236	Write	998	3E6	#3 PID Kd w	FLOAT	Power controller #3: PID Kd - write

## AE GLOBAL SERVICES

Please contact AE Global Services if you have questions or problems that cannot be resolved by working through the provided troubleshooting. When you call Global Services, make sure to have the unit serial number and part number. These numbers are available on unit labels.



### Important

For returns and repairs, please call AE Global Services to get the correct shipping address.

**Table 11.** AE Global Services 24 X 7 contact information

Office	Contact
AE World Headquarters	Address: 1625 Sharp Point Drive Fort Collins, CO 80525 USA  Phone (24 hrs/day, 7 days/week): 800.446.9167 or +1.970.221.0108  Email: (We will respond to email by the next business day.) <a href="mailto:technical.support@aei.com">mailto:technical.support@aei.com</a>
Thermal product support	Contact by phone or email: +1.360.694.7871 <a href="mailto:thermalapplications@aei.com">mailto:thermalapplications@aei.com</a>
Power Control Module product support	Contact by phone or email: +49 (0) 2902 910370 10 (technical support during German business hours) <a href="mailto:powercontroller@aei.com">mailto:powercontroller@aei.com</a>
High Voltage product support: HiTek Power, Ltd.	Contact by phone or email: +44 (0) 1903 712400 <a href="mailto:support.centre@aei.com">mailto:support.centre@aei.com</a>
High Voltage product support: UltraVolt, Inc.	Contact by phone or email: +1.631.471.4444 <a href="mailto:sales.support-uv@aei.com">mailto:sales.support-uv@aei.com</a>

*Table 11. AE Global Services 24 X 7 contact information (Continued)*

Office	Contact
Local or regional sales or service office	Visit the Advanced Energy website for current contact information:  <a href="http://www.advanced-energy.com">http://www.advanced-energy.com</a>

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