Optimizer SCR-DSP Fieldbus Data Exchange Map

Firmware version: 5.21, 3/26/2013

Process READ Data (Data Read from Power Supply)

Web Idx (Note 6)	Application Data Instance (ADI) #	Parameter	Bit Assignments	Data Type	Units	Max Value	Min Value	Default Value	Increment	Modbus Register # (Anybus-CC and Net Port)	Notes	Firmware Version Notes
1	1	Device Status		UINT16		65.535	1	READ ONLY		30001		
			Bit 0 - Heartbeat					READ ONLY			Toggles every second	
			Bit 1 - Spare					READ ONLY				
			Bit 2 - Device = SCR DSP					READ ONLY				
			Bit 3 - Device = PowerPlus					READ ONLY				
			Bit 4 - Spare					READ ONLY				
			Bit 5 - Spare					READ ONLY				
			Bit 6 - Spare					READ ONLY				
			Bit 7 - Spare					READ ONLY				
			Bit 8 - Fieldbus Sontrol Status					READ ONLY			1 = Fieldbus Write enabled, 0 = Fieldbus Write disabled	New in 5.21
			Bit 9 - Net Port Control Status					READ ONLY			1 = Net Port Write enabled, 0 = Net Port Write disabled	New in 5.21
			Bit 10 - Spare					READ ONLY				
			Bit 11 - Spare					READ ONLY				
			Bit 12 - Spare					READ ONLY				
			Bit 13 - Spare					READ ONLY				
			Bit 14 - Spare					READ ONLY				
			Bit 15 - Spare					READ ONLY				
2	2	Conduction Angle		UINT16	Degrees	160	0	READ ONLY		30002		
3	3	Primary Voltage		UINT16	VAC	720	0	READ ONLY		30003		
4	4	Primary Current		UINT16	AAC x 10	7500	0	READ ONLY		30004		
5	5	KVDC1		UINT16	KVDC	200	0	READ ONLY		30005		
6	6	Output Current		UINT16	mADC	5000	0	READ ONLY		30006		
7	7	KVDC2 / KVDC1 Peak		UINT16	KVDC	283	0	READ ONLY		30007		
8	8	Output Voltage Product		UINT16		65,535	0	READ ONLY		30008		
9	9	Output Power		UINT16	KW x10	9999	0	READ ONLY		30009		
10	10	Spark Rate		UINT16	SPM	999	0	READ ONLY		30010		
11	11	Arc Rate		UINT16	APM	99	0	READ ONLY		30011		
12	12	Operating Status		UINT16		65,535	0	READ ONLY		30012		
			Bit 0 - I.E. Mode					READ ONLY				
			Bit 1 - Manual Mode					READ ONLY				
			Bit 2 - Fast Recovery					READ ONLY				
			Bit 3 - Reserved					READ ONLY				
			Bit 4 - Local / Remote					READ ONLY			0 = Local, 1 = Remote	
			Bit 5 - Contactor Status					READ ONLY			0 = Off, 1 = On	
			Bit 6 - Back Corona Mode					READ ONLY				See Note 8
			Bit 7 - Reserved					READ ONLY				
			Bit 8 - Setback Offset Auto/Man					READ ONLY			0 = Manual, 1 = Auto	
			Bit 9 - KV1 Feedback					READ ONLY				
			Bit 10 - KV2 Feedback					READ ONLY				
			Bit 11 - Reserved					READ ONLY				
			Bit 12 - Max Conduction Select					READ ONLY			0 = Voltage, 1 = Current	
			Bit 13 - Power Control Active					READ ONLY				
			Bit 14 - Loss of Line Sync					READ ONLY				
			Bit 15 - Reserved					READ ONLY				
13	13	Discrete Logic		UINT16		65,535	0	READ ONLY		30013		
			Bit 0 - Hammer 1 Output					READ ONLY			0 = Off, 1 = On	
			Bit 1 - Hammer 2 Output					READ ONLY				
			Bit 2 - Hammer 3 Output					READ ONLY				
			Bit 3 - Reserved					READ ONLY				
			Bit 4 - Hammer 4 Output					READ ONLY				
			Bit 5 - Hammer 1 Feedback					READ ONLY				
			Bit 6 - Hammer 2 Feedback					READ ONLY				
			Bit 7 - Reserved					READ ONLY				
			Bit 8 - Hammer 3 Feedback					READ ONLY				
			Bit 9 - Hammer 4 Feedback					READ ONLY				
			Bit 10 - Over-Cur Alarm Source					READ ONLY			0 = OC detected by ext. relay, 1 = detected by firmware	
			Bit 11 - Reserved					READ ONLY				
			Bit 12 - Reduced Voltage					READ ONLY				
			Bit 13 - Remote On					READ ONLY				
			Bit 14 - Remote Enable					READ ONLY				
			Bit 15 - Reserved					READ ONLY				
14	14	Limit Status		UINT16		65,535	0	READ ONLY		30014		
			Bit 0 - Current Limit					READ ONLY				
			Bit 1 - Voltage Limit					READ ONLY				
			Bit 2 - Full Conduction					READ ONLY				
			Bit 3 - Reserved					READ ONLY				
			Bit 4 - Back Corona Hold					READ ONLY				
			Bit 5 - V/I Curve in Operation					READ ONLY				
			Bit 6 - Hammer 1 Feedback Alarm					READ ONLY				

Web Idx (Note 6)	Application Data Instance (ADI) #	Parameter	Bit Assignments	Data Type	Units	Max Value	Min Value	Default Value	Increment	Modbus Register # (Anybus-CC and Net Port)	Notes	Firmware Version Notes
			Bit 7 - Reserved					READ ONLY				
			Bit 8 - Hammer 2 Feedback Alarm					READ ONLY				
			Bit 9 - Hammer 3 Feedback Alarm					READ ONLY				
			Bit 10 - Hammer 4 Feedback Alarm					READ ONLY				
			Bit 11 - Reserved					READ ONLY				
			Bit 12 - Spark Occurred					READ ONLY				
			Bit 13 - Arc Occurred					READ ONLY				
			Bit 14 - BC Check in Progress					READ ONLY				
			Bit 15 - Reserved					READ ONLY				
15	15	Alarm Status		UINT16		65,535	0	READ ONLY		30015		
			Bit 0 - T/R Over-Current					READ ONLY				
			Bit 1 - SCR Over-Temperature					READ ONLY				
			Bit 2 - T/R Oil Over-Temperature					READ ONLY				
			Bit 3 - Reserved					READ ONLY				
			Bit 4 - T/R Low Oil					READ ONLY				
			Bit 5 - Under Voltage					READ ONLY				
			Bit 6 - Over Voltage					READ ONLY				
			Bit 7 - Reserved					READ ONLY				
			Bit 8 - SCR Unbalance					READ ONLY				
			Bit 9 - Loss of Line Sync					READ ONLY				
			Bit 10 - Aux. Alarm 1					READ ONLY				
			Bit 11 - Reserved					READ ONLY				
			Bit 12 - Aux. Alarm 2					READ ONLY				
			Bit 13 - Aux. Alarm 3					READ ONLY				
			Bit 14 - Aux. Alarm 4					READ ONLY				
			Bit 15 - Reserved					READ ONLY				
16	16	Alarm Status 2		UINT16		65,535	0	READ ONLY		30016		
			Bit 0 - Vref Abnormal					READ ONLY				
			Bit 1 - Spare					READ ONLY				
			Bit 2 - Spare					READ ONLY				
			Bit 3 - Reserved					READ ONLY				
			Bit 4 - Spare					READ ONLY				
			Bit 5 - Spare					READ ONLY				
			Bit 6 - Spare					READ ONLY				
			Bit 7 - Reserved					READ ONLY				
			Bit 8 - Spare					READ ONLY				
			Bit 9 - Spare					READ ONLY				
			Bit 10 - Spare					READ ONLY				
			Bit 11 - Reserved					READ ONLY				
			Bit 12 - Low Battery					READ ONLY				
			Bit 13 - Blown Fuse					READ ONLY				
			Bit 14 - Spare					READ ONLY				
			Bit 15 - Reserved					READ ONLY				
17	17	Spare						READ ONLY		30017		
18	18	Spare						READ ONLY		30018		
19	19	Spare						READ ONLY		30019		
20	20	Spare						READ ONLY		30020		
21	21	I.E. On (Actual)		UINT16	1/2 Cycles	20	1	READ ONLY		30021		
22	22	I.E. Off (Actual)		UINT16	Cycles	20	1	READ ONLY		30022		

Process WRITE Data (Data Written to Power Supply)

Note: 'Comm Status' must be set to Remote before writing to any register

Web Idx (Note 6)	Application Data Instance (ADI) #	Parameter	Bit Assignments	Data Type	Units	Max Value	Min Value	Default Value	Increment	Modbus Register # (Anybus-CC and Net Port)	Modbus Register # (Net Port only)	Notes	Firmware Version Notes
23	50	Clear Alarm		UINT16		1	0	0	1	40578	40001	Remote Enable has to be off in V5.11 and earlier; must write 0 prior to writing 1	See Notes 3-5, 7
24	51	HV On/Off Control		UINT16		2	0	0	1	40579	40002	1 = HV Off, 2 = HV On; must write 0 prior to writing 1 or 2	See Notes 3-5, 7
25	52	Spark Setback		UINT16	%	30	1	15	1	40580	40003		See Notes 3-5, 7
26	53	Quench		UINT16	Cycles	10	1	1	1	40581	40004		See Notes 3-5, 7
27	54	Current Limit		UINT16	%	110	10	100	1	40582	40005		See Notes 3-5, 7
28	55	Secondary Voltage Limit		UINT16	%	110	10	100	1	40583	40006		See Notes 3-5, 7
29	56	U.V. Trip Level		UINT16	KVDC	30	0	10	1	40584	40007		See Notes 3-5, 7
30	57	U.V. Trip Delay		UINT16	Seconds	45	5	30	1	40585	40008		See Notes 3-5, 7
31	58	Spark Rate (setpoint)		UINT16	SPM	120	1	12	1	40586	40009		See Notes 3-5, 7
32	59	Max. Voltage Conduction		UINT16	Degrees	160	90	160	1	40587	40010		See Notes 3-5, 7
32	60	Max. Current Limit		UINT16	%	110	30	110	1	40588	40011		See Notes 3-5, 7
34	61	Mode Control		UINT16		5	1	1	1	40589	40012	1 = DC Mode	See Notes 3-5, 7
												2 = Manual Mode	See Notes 3-5, 7
												3 = I.E. Mode	See Notes 3-5, 7
												4 = Back Corona / DC Hold	See Notes 3-5, 7
												5 = Back Corona / DC -> IE	See Notes 3-5, 7
35	62	I.E. Half-Cycles On		UINT16	1/2 Cycles	20	1	1	1	40590	40013		See Notes 3-5, 7

Web Idx (Note 6)	Application Data Instance (ADI) #	Parameter	Bit Assignments	Data Type	Units	Max Value	Min Value	Default Value	Increment	Modbus Register # (Anybus-CC and Net Port)		Notes	Firmware Version Notes
36	63	I.E. Cycles Off		UINT16	Cycles	20	1	1	1	40591	40014		See Notes 3-5, 7
37	64	Manual Mode Setpoint		UINT16	Degrees	160	0	0	1	40592	40015	0 - 160 degrees conduction angle	See Notes 3-5, 7
		Notes:											
		1. For Ethernet/IP Class											
		Device Application Object = A2 (hex) for explicit data exchange											
		Instance attribute for all values is 5											
		CIP class 1 connection parameters:											
		Configuration connection instance = 1											
		Originator -> Target Connection Point = 150, Data Size = 30 bytes											
		Target -> Originator Connection Point = 100, Data Size = 44 bytes											
		Default IP address is 192.168.1.10. Set IP address using NWL GVC setup screen.											
		2. "Comm Status" must be set to Remote before writing to any register.											
		3. Modbus holding registers accessed via Anybus-CC adapter were mapped as 40001-40015 in firmware versions 5.17 and earlier. Starting from firmware version 5.18, these registers are mapped as 40578-40592.											
		This change affects Anybus-CC Modbus-RTU and -TCP only.											
		4. Starting with firmware 5.18, it is possible to select (via GVC menu) which process WRITE variables are enabled (mapped) for cyclical data exchanges via Anybus-CC interface.											
		By default, all process WRITE variables are enabled and network data exchange map is as shown in the table.											
		For example, if user chooses not to map "Clear Alarm" ADI as a process WRITE variable, then the number of process WRITE variables will be reduced by one,											
		and the first process WRITE variable will be "HV On/Off Control".											
		User selections do not affect Modbus register addresses (Anybus-CC and Network port). For Modbus adapters (-RTU and -TCP), the entire process WRITE range is always accessible.											
		5. PROFIBUS notes:											
		- On PROFIBUS master side, map ADIs to process data exactly in the order they are listed in this document; otherwise network connection establishment will fail.											
		- If user disables mapping of a process WRITE variable (see Note 5 above), it must be taken into account by PROFIBUS master before attempting to establish connection.											
		6. Web Index of an ADI only applies to Anybus-CC adapters with a Web interface (Ethernet/IP, Modbus-TCP, Profinet, etc.) This index will be displayed in a Web browser. Web interface is enabled by default, but may be disabled by user.											
		7. Starting with firmware 5.21, Modbus holding registers are accessible via Net Port both as 40001-40015 and 40578-40592.											
		8. Prior to firmware 5.21, this bit was set only when back corona was detected (same as bit 4 in "Limit Status" register).											
		Revisions:											
		8/30/2010 - JLS	Discrete Logic Word, Bit 10 was changed to "0 = OC detected by ext. relay, 1 = detected by firmware" in order to match protocol document.										
		7/7/2011 - JLS	Modified the notes for 'Clear Alarm' (index # 23). The Remote Enable does not have to be off to clear an alarm in V5.12 and later.										
		9/20/2011 - JLS	Changed data instance #1 from 'Device Type ID' to 'Device Status'. Changed the 'Firmware Ref.' column to 'Firmware Version Notes'.										
			Changed the 'Register #' column to 'Modbus Register #'.										
		1/24/2012 - JLS	In Note 2, the connection points were changed from hex to decimal and the data size was swapped on earlier spreadsheets										
		9/10/2012 - PM	Changed Modbus register numbers for Process WRITE data										
		3/26/2013 - PM	Added notes regarding firmware 5.21 changes.										