BECKWITH ELECTRIC®

MODBUS/BECO2200 Communication Database

Rev. 1.15a

M-3425A

HUBBELL®

PROTOCOL

M-3425A MODBUS/BECO2200 COMMUNICATION DATABASE

DEVICE I.D. = 150

Specifications presented herein are thought to be accurate at the time of publication but are subject to change without notice.
No warranties of any kind are implied on the information contained in this document.

Rev 1.01 10/26/06
Changed scaling for 3-165

Rev 1.02 09/13/07
Added point 1-50

Rev 1.03 03/06/08
Changed range for 3-166
Changed increments and range 3-165, 3-167

Rev 1.04 04/07/08
Put correct number of blocks for 9 partitions in the Osc. Recorder (Type 6 points)

Rev 1.05 12/16/09
Modified description for points 3-165, 3-166, 3-167

Rev 1.06 9/10/2010
Added setpoints 5-246, 5-247, 5-248, 5-249, 5-250, 5-251, 5-252, 5-253

Rev 1.07 09/04/2014
Added points 0-40 - 50

Rev 1.08 03/21/2018
Added points 4-253, 4-254, Changed range for 3-112

Rev 1.09 06/23/2020
Added points 6-238, 6-239, 6-240, 6-241

Rev 1.10 07/17/2020
Added point 4-15

Rev 1.11 03/01/2022
Added point 2-236 to 2-239, Changed ranges for 3-166

Rev 1.12 03/08/2022
Changed range for 2-239

Rev 1.13 03/23/2022
Changed bit 1 description for 3-166

Rev 1.14 03/28/2022
Update bit 12 for 1-75 and 1-80

Rev 1.15 04/08/2022
Changed bit descriptions for 2-236, 2-237, 2-238, 2-239, 3-166, 3-167

Rev 1.15a 08/01/2024
Updating logos and removing “Co. Inc.”. No updates to points.

MODBUS COMMUNICATION PROTOCOL FOR M-3425A

This document along with BECO2200 and BECO2200-M3425A document describes the implementation of the MODBUS protocol as it relates to the M3425A IPS control.

The M-3425A may be programmed to support a subset of the MODBUS protocol. The following restrictions apply:

1. MODBUS protocol is only supported on COM2 (rear RS232) and COM3 (rear RS485). COM1 (front RS232) is fixed BECO2200 protocol only.

2. Parity is supported on MODBUS enabled ports COM2 and COM3 only, valid selections are 8,N,2, 8,O,1 or 8,E,1.

3. Only RTU mode is implemented, ASCII mode is not supported.

4. Standard baud rates from 300-9600 are supported.

5. Only the following 4 MODBUS commands are supported:
   1) Read Holding register (Function 03)
   2) Read Input register (Function 04)
   3) Force Single Coil (Function 05)
   4) Preset Single Register (Function 06)

6. Limited support for oscillograph record downloading is supported.

Dead sync delay setpoint on the relay should be programmed according to the baud rate set for the channel:

Baud Rate	Dead Sync Delay
300	124 ms
600	62 ms
1200	31 ms
2400	16 ms
4800	8 ms
9600	4 ms

In most implementations the dead sync time is not critical. Some master stations may error if dead sync time is not set correctly and the control looses sync.

The various communication points may be accessed by translating the BECO2200-M3425A database Type and Point Number to an equivalent MODBUS register. For example: To read 46DT pickup setpoint, (TYPE 3, POINT NUMBER 43) we would multiply the type by 256 and add the point number to get 811 (3 x 256 + 43). Reading address 811 (base 10) would give us this point. According to MODBUS definition, this would be register 812.

No more than 46 contiguous points should be read with one request.

Read input register (04) may be used to retrieve any point defined as readable in BECO2200.

Read holding register (03) is identical to read input register and returns the same data.

Preset single register is used to write any point defined as writeable in BECO2200.

Force single coil is used to simulate the RESET and MASTER RESET command as defined in BECO2200. Sending a force single coil with data equal ON (FF00) to a resettable point will simulate RESET. Sending a force single coil with data equal to ON (FF00) to a MASTER RESET point simulates a MASTER RESET.

The following exception codes are implemented:

ILLEGAL FUNCTION	01
ILLEGAL DATA ADDRESS	02
ILLEGAL DATA VALUE	03
SLAVE DEVICE BUSY	06
COMM PORT LOCKED	16 (10hex)

SLAVE DEVICE BUSY is returned if control is in the local mode.

COMM PORT LOCKED is a BECKWITH ELECTRIC extension code used to identify if the communication port is locked.

Care must be taken when choosing communication addresses if simultaneous use of BECO2200 and MODBUS protocol is desired. Addresses above 200 are reserved for group addressing when any port is configured for BECO2200. Consult the BECO2200 protocol document for further information on group addressing. If possible, communication addresses should be set only between 1-200 to avoid communication conflicts.

All voltage, current and power metering values (see TYPE 1-XXX status points) are returned as secondary values (I.E. 120 V 5 Amps). These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.

Ex: Reactive power

Given:

C.T. Ratio 240: 1 (1200 A : 5 A)	Communication point 3-xxx returns 240
V.T. Ratio 100.0: 1 (12 Kv : 120 V)	Communication point 3-xxx returns 1000
V.T. Configuration Line to Line	Communication point 3-xxx returns 0
Nominal Voltage 120 V	Communication point 3-xxx returns 120
Nominal Current 5.00 A	Communication point 3-xxx returns 500
Reactive power -1.2348 PU	Communication point 1-44 returns 65535
	Communication point 1-45 returns 53188 (-12348)

If V.T. configuration Line-to-Line or Line_Gnd-to-Line_Line:

Primary reactive power = 1.732 * C.T. ratio * V.T. ratio * Nominal Voltage * Nominal Current * Secondary reactive power

Else if V.T. configuration Line-to-Ground:

Primary reactive power = 3 * C.T. ratio * V.T. ratio * Nominal Voltage * Nominal Current * Secondary reactive power

-30796899 = 1.732 * 240 * 1000 / 10 * 120 * 500 / 100 * (-12348) / 10000

-30.7969 Mvar = Reactive power

When the appropriate communication interface hardware is connected and the proper initialization of the communication options are complete, the data defined herein can be accessed and modified by remote communications.

THE FOLLOWING DEFINITIONS APPLY TO THE DATA TABLES IN THIS SPECIFICATION:

TYPE POINT are the “type” number and “point” numbers used in the protocol to refer to the variable listed.

SCALE FACTOR is the factor by which an integer value read from the control is divided to get the value of the variable in the indicated **UNITS**.

Points marked with a (U) appended to the scale factor field should be taken as unsigned value (0-65535) before scaling.

UNITS unit of the described data point.

W/R/M is the read, Write, Reset and Master reset indicator.

All points defined as **NOT USED** can be read and will return 0 for data.
All points defined as Write can also be read.
If not listed otherwise, a point is READ-ONLY.
W indicates a point that may be altered by a WRITE command.
R indicates a point that may be altered by a RESET command.
M indicates a point that will be reset by a MASTER RESET command.

RANGE/INCREMENT indicates the valid range and increments of the integer data field variable for WRITE commands.

Consult the controls Specification Sheet for unscaled setpoint ranges and increments.

DESCRIPTION description of communication point.

Notes:

Multipoint writes are not supported.

Multipoint reads are supported.

Reading a NOT USED point which is within the defined range of a type will return 0 for data with no error.

Two byte data words are transmitted and must be received most significant (high-order) byte first.

Communication is effectively half duplex in that a request packet is transmitted and a response packet received. Further requests should not be sent until the previous packets response is received. Communication ports are fixed at 8 data bits, no parity and 2 stop bits unless otherwise noted.

If communication security is enabled, the communication channel is locked on power up and remains locked until commanded to unlock or until the communication access code is changed to 9999 (Disable communication security) locally. When locked only TYPE 0 points may be read and only TYPE 0 point 35 written (0-35). Attempts to read or write other points while the communication channel is locked will return a system error code 6, "Communication locked". To open (unlocked) the communication channel, the correct communication access code must be written to 0-35.

A write response packet will always return OK (no error) if data is between 0 and 9999 even if the incorrect access code is given.

Writing an incorrect access code or writing 9999, with security enabled will unconditionally lock the communication channel.

The communication channel is also locked if security is enabled and no communication activity occurs for ~2.5 minutes.

Type 7 points are reserved for factory use and are not supported under MODBUS protocol.
Type 7 communication points are covered in an accompanying proprietary document.
DO NOT attempt to write or read from these points, unexpected operations may result!

CONTROL INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
0-00	1	1	–	–	–	Control identification (Device type)
0-01	2	1U	–	–	–	Control serial number
0-02	3	1	–	–	–	Control communication address
0-03	4	100	–	–	–	Software version number (Major and minor) For example: V01.34.28 0-03 to 134
0-04	5	1	–	–	–	Software version number (Build) See 0-03. 0-04 to 28
0-05	6	1	–	–	–	User control number
0-06	7	–	–	–	–	User line 1 text Most significant 2 ASCII characters of 24 character user line 1 (Character position 1 & 2)
0-07	8	–	–	–	–	User line 1 text Next significant 2 ASCII characters of 24 character user line 1 (Character position 3 & 4)
0-08 to 0-17	9 to 18	–	–	–	–	User line 1 text Next significant 2 ASCII characters of 24 character user line 1 (Character position 5 & 24)
0-18	19	–	–	–	–	User line 2 text see 0-06
0-19	20	–	–	–	–	User line 2 text see 0-07
0-20 to 0-29	21 to 30	–	–	–	–	User line 2 text see 0-08 to 0-17
0-30	31	1	–	–	–	Communication channel lock status 0 = comm channel unlocked 1 = comm channel locked
0-31	32	–	–	–	–	Not used
0-32	33	1	–	–	–	Options software
0-33	34	1	–	–	–	Options hardware
0-34	35	–	–	–	–	Dip switch (Factory use)
0-35	36	1	–	W	0-9999 / 1	Unlock comm channel access code read returns 0
0-36	37	1	–	–	–	Checksum setpoints
0-37	38	1	–	–	–	Checksum calibration

Table 1 – Control Information (1 of 2)

CONTROL INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
0-38	39	1U	–	–	–	Checksum ROM
0-39	40	1	–	–	–	Extended inputs/outputs enabled
0-40	41	1	–	–	–	Ext password option 0 = Disabled 1 = Enabled
0-41 to 0-50	42 to 51	1	–	W	0-65535/1	Unlock comm channel extended password. Enabled only if option in 0-40 is set. 20 ASCII characters total. Each registers holds two characters. MSB byte is the most left character. Unused characters must be padded with 0. Always write all 10 registers regardless of password's string length. Read returns 0

Table 1 – Control Information (2 of 2)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-00	257	1U	–	–	–	Input status, Extended input status Bit 0 Input 1 (52b) Bit 9 Input 8 Bit 1 Input 2 Bit 10 Input 9 Bit 2 Input 3 Bit 11 Input 10 Bit 3 Input 4 Bit 12 Input 11 Bit 4 Input 5 Bit 13 Input 12 Bit 5 Input 6 Bit 14 Input 13 Bit 6 Fuse Loss Bit 15 Input 14 Bit 7 Not used (0) 0 = OFF Bit 8 Input 7 1 = ON (Circuit closed)
1-01	258	1U	–	–	–	Output status Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Bit 8-15 Not used (0)
1-02	259	1U	–	–	–	Front panel LED status 0 OFF 1 ON Bit 0 TIME SYNC Bit 1 BREAKER CLOSED Bit 2 OSC. TRIGGERED Bit 3 TARGET Bit 4-15 Not used (0)
1-03	260	10	VOLTS	–	–	VX Voltage
1-04	261	10	VOLTS	–	–	Phase A voltage
1-05	262	10	VOLTS	–	–	Phase B voltage
1-06	263	10	VOLTS	–	–	Phase C voltage
1-07	264	10	VOLTS	–	–	Phase N voltage
1-08	265	10	VOLTS	–	–	Positive Sequence Voltage
1-09	266	10	VOLTS	–	–	Negative Sequence Voltage

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (1 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-10	267	10	VOLTS	–	–	Zero Sequence Voltage
1-11	268	–	–	–	–	Not used
1-12	269	100	VOLTS	–	–	Third harmonic neutral voltage
1-13	270	100	–	–	–	Third harmonic diff ratio (59D) This point will be equal to 1000 if metering value is greater than 10.00 (1000 unscaled)
1-14	271	100	–	–	–	Third harmonic VX/3V0 voltage (59D)
1-15	272	1U	–	–	–	Output status extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
1-16	273	1000	AMPS	–	–	Phase A line side current
1-17	274	1000	AMPS	–	–	Phase B line side current
1-18	275	1000	AMPS	–	–	Phase C line side current
1-19	276	1000	AMPS	–	–	Phase N line side current
1-20	277	1000	AMPS	–	–	Phase a neutral side current
1-21	278	1000	AMPS	–	–	Phase b neutral side current
1-22	279	1000	AMPS	–	–	Phase c neutral side current
1-23	280	1000	KOHM	–	–	F64S Impedance real
1-24	281	1000	KOHM	–	–	F64S Impedance imaginary
1-25	282	1000	AMPS	–	–	Positive Sequence current
1-26	283	1000	AMPS	–	–	Negative Sequence current
1-27	284	1000	AMPS	–	–	Zero Sequence current
1-28	285	100	AMPS	–	–	Phase A - a differential current

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (2 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-29	286	100	AMPS	–	–	Phase B - b differential current
1-30	287	100	AMPS	–	–	Phase C - c differential current
1-31	288	100	AMPS	–	–	Ground differential current (signed)
1-32	289	1	OHMS	–	–	Rotor Insulation Most significant word
1-33	290	–	–	–	–	Rotor Insulation Least significant word see 1-32 if 1-32 and 33 = 0 then insulation is less than 5K else if 1-32 = 16383 (3FFF) then insulation is greater than 100K
1-34	291	1.639	mV	–	–	Brush voltage
1-35	292	100	HZ	–	–	Frequency 0 = Disabled (unmeasurable)
1-36	293	1	–	–	–	Power factor lead/lag 0 = LEAD 1 = LAG
1-37	294	100	HZ/Sec	–	–	Rate of change of frequency
1-38	295	10	%	–	–	Volts per Hertz
1-39	296	10	Volts	–	–	Stator Injection Voltage
1-40	297	10	mA	–	–	Stator Injection Current
1-41	298	100	–	–	–	Power Factor
1-42	299	10000	PU	–	–	Real power Most significant word
1-43	300	–	–	–	–	Real power Least significant word Note: Both least and most significant words must be combined to form a signed long integer, for example: 1-42 = 65534 or fffeHEX 1-43 = 25804 or 64ccHEX would be –10.5268 PU

■ NOTES:

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. ***** Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ****** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (3 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-44	301	10000	PU	–	–	Reactive power Most significant word
1-45	302	–	–	–	–	Reactive power Least significant word Note: Both least and most significant words must be combined to form a signed long integer, for example: 1-44 = 0 or 0000HEX 1-45 = 21589 or 5455HEX would be 2.1589 PU
1-46	303	10000	PU	–	–	Apparent power Most significant word
1-47	304	–	–	–	–	Apparent power Least significant word Note: 1-46 and 1-47 must be combined to form a signed long integer.
1-48	305	100	AMPS	–	–	F49 #1 thermal current
1-49	306	100	AMPS	–	–	F49 #2 thermal current
1-50	307	10	mA	–	–	Stator real component
1-51	308	100	OHMS	–	–	AB resistance (21) Most significant word
1-52	309	–	–	–	–	AB resistance Least significant word Note:1-51 and 1-52 must be combined to form a signed long integer.
1-53	310	100	OHMS	–	–	AB reactance (21) Most significant word
1-54	311	–	–	–	–	AB reactance Least significant word
1-55	312	100	OHMS	–	–	BC resistance (21) Most significant word
1-56	313	–	–	–	–	BC resistance Least significant word

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (4 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-57	314	100	OHMS	–	–	BC reactance (21) Most significant word
1-58	315	–	–	–	–	BC reactance Least significant word
1-59	316	100	OHMS	–	–	CA resistance (21) Most significant word
1-60	317	–	–	–	–	CA resistance Least significant word
1-61	318	100	OHMS	–	–	CA reactance (21) Most significant word
1-62	319	–	–	–	–	CA reactance Least significant word
1-63	320	100	OHMS	–	–	Positive Sequence resistance (40) Most significant word
1-64	321	–	–	–	–	Positive Sequence resistance Least significant word
1-65	322	100	OHMS	–	–	Positive Sequence reactance (40) Most significant word
1-66	323	–	–	–	–	Positive Sequence reactance Least significant word
1-67	324	100	OHMS	–	–	Positive Sequence resistance (78) Most significant word
1-68	325	–	–	–	–	Positive Sequence resistance Least significant word
1-69	326	100	OHMS	–	–	Positive Sequence reactance (78) Most significant word
1-70	327	–	–	–	–	Positive Sequence reactance Least significant word

■ NOTES:

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (5 of 13)

STATUS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
1-71	328	1U	–	–	–	Function status (picked up) [0] Bit 0 21 #1 Bit 1 21 #2 Bit 2 24DT #1 Bit 3 24DT #2 Bit 4 24IT Bit 5 27 #1 Bit 6 27 #2 Bit 7 27TN #1 Bit 8 27TN #2 Bit 9 32 #1 Bit 10 32 #2 Bit 11 40 #1 Bit 12 40 #2 Bit 13 46DT Bit 14 46IT Bit 15 50
1-72	329	1U	–	–	–	Function status (picked up) [1] Bit 0 5027 Bit 1 50BF Bit 2 50DT #1 Bit 3 50DT #2 Bit 4 50N Bit 5 51N Bit 6 21 #3 Bit 7 51V Bit 8 59 #1 Bit 9 59 #2 Bit 10 59N #1 Bit 11 59N #2 Bit 12 60FL Bit 13 64B Bit 14 64F #1 Bit 15 64F #2
1-73	330	1U	–	–	–	Function status (picked up) [2] Bit 0 64S Bit 1 78 Bit 2 81 #1 Bit 3 81 #2 Bit 4 81 #3 Bit 5 81 #4 Bit 6 81R #1 Bit 7 81R #2 Bit 8 87 Bit 9 87GD Bit 10 25S Bit 11 25D Bit 12 Not used Bit 13 Not used Bit 14 27 #3 Bit 15 32 #3
1-74	331	1U	–	–	–	Function status (picked up) [3] Bit 0 50 #2 Bit 1 59 #3 Bit 2 59D Bit 3 59N #3 Bit 4 67NDT Bit 5 67NIT Bit 6 87 #2 Bit 7 49 #1 Bit 8 49#2 Bit 9 Breaker Monitor Bit 10 Not used Bit 11 Trip Circuit Monitor Bit 12 81A #1 Bit 13 81A #2 Bit 14 81A #3 Bit 15 81A #4

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (6 of 13)

STATUS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
1-75	332	1U	–	–	–	Function status (picked up) [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 7 F40VC #2 Bit 8 F59VX_1 Bit 9 F59VX_2 Bit 10 F81A #5 Bit 11 F81A #6 Bit 12 20Hz Fuse Failure Bit 13 Not used Bit 14 Not used Bit 15 Not used
1-76	333	1U	–	–	–	Function status (timed out) [0] Bit 0 21 #1 Bit 1 21 #2 Bit 2 24DT #1 Bit 3 24DT #2 Bit 4 24IT Bit 5 27 #1 Bit 6 27 #2 Bit 7 27TN #1 Bit 8 27TN #2 Bit 9 32 #1 Bit 10 32 #2 Bit 11 40 #1 Bit 12 40 #2 Bit 13 46DT Bit 14 46IT Bit 15 50
1-77	334	1U	–	–	–	Function status (timed out) [1] Bit 0 5027 Bit 1 50BF Bit 2 50DT #1 Bit 3 50DT #2 Bit 4 50N Bit 5 51N Bit 6 21 #3 Bit 7 51V Bit 8 59 #1 Bit 9 59 #2 Bit 10 59N #1 Bit 11 59N #2 Bit 12 60FL Bit 13 64B Bit 14 64F #1 Bit 15 64F #2
1-78	335	1U	–	–	–	Function status (timed out) [2] Bit 0 64S Bit 1 78 Bit 2 81 #1 Bit 3 81 #2 Bit 4 81 #3 Bit 5 81 #4 Bit 6 81R #1 Bit 7 81R #2 Bit 8 87 Bit 9 87GD Bit 10 25S Bit 11 25D Bit 12 Not Used Bit 13 Not used Bit 14 27 #3 Bit 15 32 #3

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. ***** Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ****** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (7 of 13)

STATUS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
1-79	336	1U	–	–	–	Function status (timed out) [3] Bit 0 50 #2 Bit 1 59 #3 Bit 2 59D Bit 3 59N #3 Bit 4 67NDT Bit 5 67NIT Bit 6 87 #2 Bit 7 49 #1 Bit 8 49#2 Bit 9 Breaker Monitor Bit 10 Not used Bit 11 Trip Circuit Monitor Bit 12 81A #1 Bit 13 81A #2 Bit 14 81A #3 Bit 15 81A #4
1-80	337	1U	–	–	–	Function status (timed out) [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 7 F40VC #2 Bit 8 F59VX_1 Bit 9 F59VX_2 Bit 10 F81A #5 Bit 11 F81A #6 Bit 12 20Hz Fuse Failure Bit 13 Not used Bit 14 Not used Bit 15 Not used
1-81	338	1U	–	–	–	Remote target led status [0] Bit 0 21 #1 Bit 1 21 #2 Bit 2 24DT #1 Bit 3 24DT #2 Bit 4 24IT Bit 5 27 #1 Bit 6 27 #2 Bit 7 27TN #1 Bit 8 27TN #2 Bit 9 32 #1 Bit 10 32 #2 Bit 11 40 #1 Bit 12 40 #2 Bit 13 46DT Bit 14 46IT Bit 15 50
1-82	339	1U	–	–	–	Remote target led status [1] Bit 0 5027 Bit 1 50BF Bit 2 50DT #1 Bit 3 50DT #2 Bit 4 50N Bit 5 51N Bit 6 21 #3 Bit 7 51V Bit 8 59 #1 Bit 9 59 #2 Bit 10 59N #1 Bit 11 59N #2 Bit 12 60FL Bit 13 64B Bit 14 64F #1 Bit 15 64F #2

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (8 of 13)

STATUS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
1-83	340	1U	–	–	–	Remote target led status [2] Bit 0 64S Bit 1 78 Bit 2 81 #1 Bit 3 81 #2 Bit 4 81 #3 Bit 5 81 #4 Bit 6 81R #1 Bit 7 81R #2 Bit 8 87 Bit 9 87GD Bit 10 25S Bit 11 25D Bit 12 Not Used Bit 13 Not used Bit 14 27 #3 Bit 15 32 #3
1-84	341	–	–	–	–	Remote target led status [3] Bit 0 50 #2 Bit 1 59 #3 Bit 2 59D Bit 3 59N #3 Bit 4 67NDT Bit 5 67NIT Bit 6 87 #2 Bit 7 49 #1 Bit 8 49#2 Bit 9 Breaker Monitor Bit 10 Not used Bit 11 Trip Circuit Monitor Bit 12 81A #1 Bit 13 81A #2 Bit 14 81A #3 Bit 15 81A #4
1-85	342	1U	–	–	–	Remote target led status [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 7 F40VC #2 Bit 8 F59VX_1 Bit 9 F59VX_2 Bit 10 F81A #5 Bit 11 F81A #6 Bit 12 Not used Bit 13 Not used Bit 14 Not used Bit 15 Not used
1-86	343	1	–	–	–	Voltage phasor real VX*
1-87	344	1	–	–	–	Voltage phasor imaginary VX*
1-88	345	1	–	–	–	Voltage phasor real VA*
1-89	346	1	–	–	–	Voltage phasor imaginary VA*
1-90	347	1	–	–	–	Voltage phasor real VB*
1-91	348	1	–	–	–	Voltage phasor imaginary VB*
1-92	349	1	–	–	–	Voltage phasor real VC*
1-93	350	1	–	–	–	Voltage phasor imaginary VC*

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (9 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-94	351	1	–	–	–	Voltage phasor real VN*
1-95	352	1	–	–	–	Voltage phasor imaginary VN*
1-96	353	1	–	–	–	Current phasor real IA*
1-97	354	1	–	–	–	Current phasor imaginary IA*
1-98	355	1	–	–	–	Current phasor real IB*
1-99	356	1	–	–	–	Current phasor imaginary IB*
1-100	357	1	–	–	–	Current phasor real IC*
1-101	358	1	–	–	–	Current phasor imaginary IC*
1-102	359	1	–	–	–	Current phasor real IN*
1-103	360	1	–	–	–	Current phasor imaginary IN*
1-104	361	1	–	–	–	Current phasor real Ia*
1-105	362	1	–	–	–	Current phasor imaginary Ia*
1-106	363	1	–	–	–	Current phasor real Ib*
1-107	364	1	–	–	–	Current phasor imaginary Ib*
1-108	365	1	–	–	–	Current phasor real Ic*
1-109	366	1	–	–	–	Current phasor imaginary Ic*
1-110	367	1	%	–	–	24IT Timer
1-111	368	1	%	–	–	46IT Timer
1-112	369	1	%	–	–	51N Timer
1-113	370	1	%	–	–	51V Phase A Timer
1-114	371	1	%	–	–	51V Phase B Timer
1-115	372	1	%	–	–	51V Phase C Timer
1-116	373	10000	PU	–	–	Instant. Real power Most significant word

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (10 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-117	374	–	–	–	–	Instant. Real power Least significant word Note: Both least and most significant words must be combined to form a signed long integer, for example: 1-116 = 65534 or fffeHEX 1-117 = 25804 or 64ccHEX would be -10.5268 PU
1-118	375	10000	PU	–	–	Instant. Reactive power Most significant word
1-119	376	–	–	–	–	Instant. Reactive power Least significant word Note: Both least and most significant words must be combined to form a signed long integer, for example: 1-118 = 0 or 0000HEX 1-119 = 21589 or 5455HEX would be 2.1589 PU
1-120 to 131	377 to 388	–	–	–	–	Not used
1-132	389	10	VOLTS	–	–	Delta volts
1-133	390	10000	HZ	–	–	Delta frequency
1-134	391	10	Degrees	–	–	Phase angle -180.0 to +180.0
1-135	–	–	–	–	–	Not used
1-136	–	–	–	–	–	Not used
1-137	–	–	–	–	–	Not used
1-138	–	–	–	–	–	Not used
1-139	–	–	–	–	–	Not used
1-140	–	–	–	–	–	Not used
1-141	–	–	–	–	–	Not used
1-142	–	–	–	–	–	Not used

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. ***** Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ****** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (11 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-143	400	1	AMPS	–	0-65535 / 1	Phase A Most significant word Breaker monitoring arc current acc.
1-144	401	1	AMPS	–	0-65535 / 1	Phase A Least significant word Breaker monitoring arc current acc.
1-145	402	1	AMPS	–	0-65535 / 1	Phase B Most significant word Breaker monitoring arc current acc.
1-146	403	1	AMPS	–	0-65535 / 1	Phase B Least significant word Breaker monitoring arc current acc.
1-147	404	1	AMPS	–	0-65535 / 1	Phase C Most significant word Breaker monitoring arc current acc.
1-148	405	1	AMPS	–	0-65535 / 1	Phase C Least significant word Breaker monitoring arc current acc.
1-149	406	2	C°	–	–	Relay internal temperature
1-150	407	–	–	–	–	Not used
1-151	408	–	–	–	–	Not used
1-152	409	–	–	–	–	Not used
1-153	410	–	–	–	–	Not used
1-154	411	–	–	–	–	Not used
1-155	412	1	CYCLES	–	0-5 / 1	81A #1 Accumulator. Most significant word
1-156	413	1	CYCLES	–	0-65535 / 1	81A #1 Accumulator. Least significant word
1-157	414	1	CYCLES	–	0-5 / 1	81A #2 Accumulator. Most significant word
1-158	415	1	CYCLES	–	0-65535 / 1	81A #2 Accumulator. Least significant word
1-159	416	1	CYCLES	–	0-5 / 1	81A #3 Accumulator. Most significant word
1-160	417	1	CYCLES	–	0-65535 / 1	81A #3 Accumulator. Least significant word
1-161	418	1	CYCLES	–	0-5 / 1	81A #4 Accumulator. Most significant word
1-162	419	1	CYCLES	–	0-65535 / 1	81A #4 Accumulator. Least significant word
1-163	420	1	CYCLES	–	0-5 / 1	81A #5 Accumulator. Most significant word

■ **NOTES:**

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (12 of 13)

STATUS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-164	421	1	CYCLES	–	0-65535 / 1	81A #5 Accumulator. Least significant word
1-165	422	1	CYCLES	–	0-5 / 1	81A #6 Accumulator. Most significant word
1-166	423	1	CYCLES	–	0-65535 / 1	81A #6 Accumulator. Least significant word

■ NOTES:

1. All voltage, current and power values are returned as secondary values. These values need to be scaled by the proper C.T. and/or (V.T.) ratios to obtain an equivalent primary quantity. Also, the VT configuration needs to be considered to obtain the proper primary reading.
2. * Phasor information must be read as a set. Sending a RESET command to 4-11 will trigger an update of the phasor set.
3. ** These values are returned as secondary values. These values need to be scaled by the proper C.T. (V.T.) ratios to obtain an equivalent primary quantity.

Table 2 – Status (13 of 13)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-00	513	1U	–	W	0-65535 / 1	21 #1 Phase Distance enable Outputs/Blocking Bit 0 Out 1 Bit 8 In 1 Bit 1 Out 2 Bit 9 In 2 Bit 2 Out 3 Bit 10 In 3 Bit 3 Out 4 Bit 11 In 4 Bit 4 Out 5 Bit 12 In 5 Bit 5 Out 6 Bit 13 In 6 Bit 6 Out 7 Bit 14 Fuse Loss Bit 7 Out 8 Bit 15 Enable Function
2-01	514	1U	–	W	0-65535 / 1	21 #2 Phase Distance enable See 2-00
2-02	515	1U	–	W	0-65535 / 1	21 #3 Phase Distance enable See 2-00
2-03	516	1U	–	W	0-65535 / 1	24DT #1 Volts Per Hertz See 2-00
2-04	517	1U	–	W	0-65535 / 1	24DT #2 Volts Per Hertz See 2-00
2-05	518	1U	–	W	0-65535 / 1	24IT Volts Per Hertz See 2-00
2-06	519	1U	–	W	0-65535 / 1	25D Dead Check See 2-00 Cannot write this point if 59D line side voltage is set to VX! Cannot write this point if 67N polarizing quantity is set to VX!
2-07	520	1U	–	W	0-65535 / 1	25S Sync Check See 2-00 Cannot write this point if 59D line side voltage is set to VX! Cannot write this point if 67N polarizing quantity is set to VX!
2-08	521	1U	–	W	0-65535 / 1	27 #1 RMS Undervoltage See 2-00
2-09	522	1U	–	W	0-65535 / 1	27 #2 RMS Undervoltage See 2-00
2-10	523	1U	–	W	0-65535 / 1	27 #3 RMS Undervoltage See 2-00
2-11	524	1U	–	W	0-65535 / 1	27TN #1 3rd Harmonic Neutral Undervoltage See 2-00

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (1 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-12	525	1U	–	W	0-65535 / 1	27TN #2 3rd Harmonic Neutral Undervoltage See 2-00
2-13	526	1U	–	W	0-65535 / 1	32 #1 Directional Power See 2-00
2-14	527	1U	–	W	0-65535 / 1	32 #2 Directional Power See 2-00
2-15	528	1U	–	W	0-65535 / 1	32 #3 Directional Power See 2-00
2-16	529	1U	–	W	0-65535 / 1	40 #1 Loss of Field See 2-00
2-17	530	1U	–	W	0-65535 / 1	40 #2 Loss of Field See 2-00
2-18	531	1U	–	W	0-65535 / 1	46DT Negative Sequence Overcurrent See 2-00
2-19	532	1U	–	W	0-65535 / 1	46IT Negative Sequence Overcurrent See 2-00
2-20	533	1U	–	W	0-65535 / 1	49 #1 Thermal Protection See 2-00
2-21	534	1U	–	W	0-65535 / 1	49 #2 Thermal Protection See 2-00
2-22	535	1U	–	W	0-65535 / 1	50 #1 Instantaneous Phase Overcurrent See 2-00
2-23	536	1U	–	W	0-65535 / 1	50 #2 Instantaneous Phase Overcurrent See 2-00
2-24	537	1U	–	W	0-65535 / 1	50/27 Inadvertent Energizing See 2-00
2-25	538	1U	–	W	0-65535 / 1	50BF Breaker Failure See 2-00
2-26	539	1U	–	W	0-65535 / 1	50DT #1 Time Overcurrent See 2-00
2-27	540	1U	–	W	0-65535 / 1	50DT #2 Time Overcurrent See 2-00
2-28	541	1U	–	W	0-65535 / 1	50N Instantaneous Neutral Overcurrent See 2-00
2-29	542	1U	–	W	0-65535 / 1	51N Inverse Time Neutral Overcurrent See 2-00

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (2 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-30	543	1U	–	W	0-65535 / 1	51V Inverse Time Phase Overcurrent See 2-00
2-31	544	1U	–	W	0-65535 / 1	59 #1 Phase Overvoltage See 2-00
2-32	545	1U	–	W	0-65535 / 1	59 #2 Phase Overvoltage See 2-00
2-33	546	1U	–	W	0-65535 / 1	59 #3 Phase Overvoltage See 2-00
2-34	547	1U	–	W	0-65535 / 1	59N #1 Neutral Overvoltage See 2-00
2-35	548	1U	–	W	0-65535 / 1	59N #2 Neutral Overvoltage See 2-00
2-36	549	1U	–	W	0-65535 / 1	59N #3 Neutral Overvoltage See 2-00
2-37	550	1U	–	W	0-65535 / 1	59D 3rd Harmonic Voltage diff. See 2-00 This function cannot be enabled if 59D line side voltage is set to Vx and 25 function is enabled! This function cannot be enabled if 59D line side voltage is set to 3V0 and V.T. config is not Line to Ground
2-38	551	1U	–	W	0-65535 / 1	60FL VT Fuse loss See 2-00
2-39	552	1U	–	W	0-65535 / 1	64B Brush lift off See 2-00
2-40	553	1U	–	W	0-65535 / 1	64F #1 Field Ground See 2-00
2-41	554	1U	–	W	0-65535 / 1	64F #2 Field Ground See 2-00
2-42	555	1U	–	W	0-65535 / 1	64S 100% Stator Ground See 2-00 If this function is enabled then 67N function will be disabled, 59N 20 Hz injection mode will be enabled

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (3 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-43	556	1U	–	W	0-65535 / 1	67NDT Resid. Directional overcurrent Definite Time See 2-00 This function cannot be enabled if 67N operating current is set to IN and 87GD is enabled This function cannot be enabled if 67N polarizer is set to 3V0 and V.T. config is not Line to Ground
2-44	557	1U	–	W	0-65535 / 1	67NIT Resid. Directional overcurrent Inverse Time See 2-00 This function cannot be enabled if 67N operating current is set to IN and 87GD is enabled This function cannot be enabled if 67N polarizer is set to 3V0 and V.T. config is not Line to Ground
2-45	558	1U	–	W	0-65535 / 1	78 Out of Step See 2-00
2-46	559	1U	–	W	0-65535 / 1	81 #1 Over/Under frequency See 2-00
2-47	560	1U	–	W	0-65535 / 1	81 #2 Over/Under frequency See 2-00
2-48	561	1U	–	W	0-65535 / 1	81 #3 Over/Under frequency See 2-00
2-49	562	1U	–	W	0-65535 / 1	81 #4 Over/Under frequency See 2-00
2-50	563	1U	–	W	0-65535 / 1	81A #1 Over/Under Frequency Accumulator * See 2-00
2-51	564	1U	–	W	0-65535 / 1	81A #2 Over/Under Frequency Accumulator * See 2-00
2-52	565	1U	–	W	0-65535 / 1	81A #3 Over/Under Frequency Accumulator * See 2-00
2-53	566	1U	–	W	0-65535 / 1	81A #4 Over/Under Frequency Accumulator * See 2-00
2-54	567	1U	–	W	0-65535 / 1	81R #1 Rate of Change of Frequency See 2-00
2-55	568	1U	–	W	0-65535 / 1	81R #2 Rate of Change of Frequency See 2-00
2-56	569	1U	–	W	0-65535 / 1	87 #1 Phase Differential See 2-00
2-57	570	1U	–	W	0-65535 / 1	87 #2 Phase Differential See 2-00

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (4 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-58	571	1U	–	W	0-65535 / 1	87GD Ground Differential See 2-00 This function cannot be enabled if 67N is enabled and operating current is set to IN
2-59	572	1U	–	W	0-65535 / 1	IPS LOGIC #1 See 2-00
2-60	573	1U	–	W	0-65535 / 1	IPS LOGIC #2 See 2-00
2-61	574	1U	–	W	0-65535 / 1	IPS LOGIC #3 See 2-00
2-62	575	1U	–	W	0-65535 / 1	IPS LOGIC #4 See 2-00
2-63	576	1U	–	W	0-65535 / 1	IPS LOGIC #5 See 2-00
2-64	577	1U	–	W	0-65535 / 1	IPS LOGIC #6 See 2-00
2-65	578	1U	–	W	0-65535 / 1	TC Trip Coil Monitor See 2-00
2-66	579	1U	–	W	0-65535 / 1	BM Breaker Monitor See 2-00
2-67	580	–	–	–	–	Not Used
2-68	581	1U	–	W	0-65535 / 1	40VC #1 Loss of Field See 2-00
2-69	582	1U	–	W	0-65535 / 1	40VC #2 Loss of Field See 2-00
2-70	583	1U	–	W	0-65535 / 1	59X #1 Overvoltage See 2-00
2-71	584	1U	–	W	0-65535 / 1	59X #2 Overvoltage See 2-00
2-72	585	1U	–	W	0-65535 / 1	81A #5 Over/Under Frequency Accumulator * See 2-00
2-73	586	1U	–	W	0-65535 / 1	81A #6 Over/Under Frequency Accumulator * See 2-00

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (5 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
2-74	587	1U	–	W	0-65535 / 1	21 #1 Phase distance ext outputs Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
2-75	588	1U	–	W	0-255 / 1	21 #1 Phase distance ext blocking Bit 0 In 7 Bit 1 In 8 Bit 2 In 9 Bit 3 In 10 Bit 4 In 11 Bit 5 In 12 Bit 6 In 13 Bit 7 In 14
2-76	589	1U	–	W	0-65535 / 1	21 #2 Phase distance ext outputs See 2-74
2-77	590	1U	–	W	0-255 / 1	21 #2 Phase distance ext blocking See 2-75
2-78	591	1U	–	W	0-65535 / 1	21 #3 Phase distance ext outputs See 2-74
2-79	592	1U	–	W	0-255 / 1	21 #3 Phase distance ext blocking See 2-75
2-80	593	1U	–	W	0-65535 / 1	24DT #1 Volts per Hertz ext outputs See 2-74
2-81	594	1U	–	W	0-255 / 1	24DT #1 Volts per Hertz ext blocking See 2-75
2-82	595	1U	–	W	0-65535 / 1	24DT #2 Volts per Hertz ext outputs See 2-74
2-83	596	1U	–	W	0-255 / 1	24DT #2 Volts per Hertz ext blocking See 2-75
2-84	597	1U	–	W	0-65535 / 1	24IT Volts per Hertz ext outputs See 2-74
2-85	598	1U	–	W	0-255 / 1	24IT Volts per Hertz ext blocking See 2-75
2-86	599	1U	–	W	0-65535 / 1	25D Dead Check ext outputs See 2-74

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (6 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-87	600	1U		W	0-255 / 1	25D Dead Check ext blocking See 2-75
2-88	601	1U		W	0-65535 / 1	25S Sync Check ext outputs See 2-74
2-89	602	1U		W	0-255 / 1	25S Sync Check ext blocking See 2-75
2-90	603	1U		W	0-65535 / 1	27 #1 RMS Undervoltage ext outputs See 2-74
2-91	604	1U		W	0-255 / 1	27 #1 RMS Undervoltage ext blocking See 2-75
2-92	605	1U		W	0-65535 / 1	27 #2 RMS Undervoltage ext outputs See 2-74
2-93	606	1U		W	0-255 / 1	27 #2 RMS Undervoltage ext blocking See 2-75
2-94	607	1U		W	0-65535 / 1	27 #3 RMS Undervoltage ext outputs See 2-74
2-95	608	1U		W	0-255 / 1	27 #3 RMS Undervoltage ext blocking See 2-75
2-96	609	1U		W	0-65535 / 1	27TN #1 3rd Harmonic Neutral Undervoltage ext outputs See 2-74
2-97	610	1U		W	0-255 / 1	27TN #1 3rd Harmonic Neutral Undervoltage ext blocking See 2-75
2-98	611	1U		W	0-65535 / 1	27TN #2 3rd Harmonic Neutral Undervoltage ext outputs See 2-74
2-99	612	1U		W	0-255 / 1	27TN #2 3rd Harmonic Neutral Undervoltage ext blocking See 2-75
2-100	613	1U	–	W	0-65535 / 1	32 #1 Directional power ext outputs See 2-74
2-101	614	1U	–	W	0-255 / 1	32 #1 Directional power ext blocking See 2-75
2-102	615	1U	–	W	0-65535 / 1	32 #2 Directional power ext outputs See 2-74

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (7 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-103	616	1U	–	W	0-255 / 1	32 #2 Directional power ext blocking See 2-75
2-104	617	1U	–	W	0-65535 / 1	32 #3 Directional power ext outputs See 2-74
2-105	618	1U	–	W	0-255 / 1	32 #3 Directional power ext blocking See 2-75
2-106	619	1U	–	W	0-65535 / 1	40 #1 Loss of Field ext outputs See 2-74
2-107	620	1U	–	W	0-255 / 1	40 #1 Loss of Field ext blocking See 2-75
2-108	621	1U	–	W	0-65535 / 1	40 #2 Loss of Field ext outputs See 2-74
2-109	622	1U	–	W	0-255 / 1	40 #2 Loss of Field ext blocking See 2-75
2-110	623	1U	–	W	0-65535 / 1	46DT Negative sequence overcurrent ext outputs See 2-74
2-111	624	1U	–	W	0-255 / 1	46DT Negative sequence overcurrent ext blocking See 2-75
2-112	625	1U	–	W	0-65535 / 1	46IT Negative sequence overcurrent ext outputs See 2-74
2-113	626	1U	–	W	0-255 / 1	46IT Negative sequence overcurrent ext blocking See 2-75
2-114	627	1U	–	W	0-65535 / 1	49 #1 Thermal protection ext outputs See 2-74
2-115	628	1U	–	W	0-255 / 1	49 #1 Thermal protection ext blocking See 2-75
2-116	629	1U	–	W	0-65535 / 1	49 #2 Thermal protection ext outputs See 2-74
2-117	630	1U	–	W	0-255 / 1	49 #2 Thermal protection ext blocking See 2-75
2-118	631	1U	–	W	0-65535 / 1	50 #1 Instantaneous phase overcurrent ext outputs See 2-74
2-119	632	1U	–	W	0-255 / 1	50 #1 Instantaneous phase overcurrent ext blocking See 2-75

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (8 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-120	633	1U	–	W	0-65535 / 1	50 #2 Instantaneous phase overcurrent ext outputs See 2-74
2-121	634	1U	–	W	0-255 / 1	50 #2 Instantaneous phase overcurrent ext blocking See 2-75
2-122	635	1U	–	W	0-65535 / 1	50/27 Inadvertent Energizing ext outputs See 2-74
2-123	636	1U	–	W	0-255 / 1	50/27 Inadvertent Energizing ext blocking See 2-75
2-124	637	1U	–	W	0-65535 / 1	50BF Breaker Failure ext outputs See 2-74
2-125	638	1U	–	W	0-255 / 1	50BF Breaker Failure ext blocking See 2-75
2-126	639	1U	–	W	0-65535 / 1	50DT #1 Time overcurrent ext outputs See 2-74
2-127	640	1U	–	W	0-255 / 1	50DT #1 Time overcurrent ext blocking See 2-75
2-128	641	1U	–	W	0-65535 / 1	50DT #2 Time overcurrent ext outputs See 2-74
2-129	642	1U	–	W	0-255 / 1	50DT #2 Time overcurrent ext blocking See 2-75
2-130	643	1U	–	W	0-65535 / 1	50N Instantaneous neutral overcurrent ext outputs See 2-74
2-131	644	1U	–	W	0-255 / 1	50N Instantaneous neutral overcurrent ext blocking See 2-75
2-132	645	1U	–	W	0-65535 / 1	51N Inverse time neutral overcurrent ext outputs See 2-74
2-133	646	1U	–	W	0-255 / 1	51N Inverse time neutral overcurrent ext blocking See 2-75
2-134	647	1U	–	W	0-65535 / 1	51V Inverse time phase overcurrent ext outputs See 2-74
2-135	648	1U	–	W	0-255 / 1	51V Inverse time phase overcurrent ext blocking See 2-75
2-136	649	1U	–	W	0-65535 / 1	59 #1 Phase Overvoltage ext outputs See 2-74

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (9 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-137	650	1U	–	W	0-255 / 1	59 #1 Phase Overvoltage ext blocking See 2-75
2-138	651	1U	–	W	0-65535 / 1	59 #2 Phase Overvoltage ext outputs See 2-74
2-139	652	1U	–	W	0-255 / 1	59 #2 Phase Overvoltage ext blocking See 2-75
2-140	653	1U	–	W	0-65535 / 1	59 #3 Phase Overvoltage ext outputs See 2-74
2-141	654	1U	–	W	0-255 / 1	59 #3 Phase Overvoltage ext blocking See 2-75
2-142	655	1U	–	W	0-65535 / 1	59N #1 Neutral Overvoltage ext outputs See 2-74
2-143	656	1U	–	W	0-255 / 1	59N #1 Neutral Overvoltage ext blocking See 2-75
2-144	657	1U	–	W	0-65535 / 1	59N #2 Neutral Overvoltage ext outputs See 2-74
2-145	658	1U	–	W	0-255 / 1	59N #2 Neutral Overvoltage ext blocking See 2-75
2-146	659	1U	–	W	0-65535 / 1	59N #3 Neutral Overvoltage ext outputs See 2-74
2-147	660	1U	–	W	0-255 / 1	59N #3 Neutral Overvoltage ext blocking See 2-75
2-148	661	1U	–	W	0-65535 / 1	59D 3rd Harmonic Voltage diff. ext outputs See 2-74
2-149	662	1U	–	W	0-255 / 1	59D 3rd Harmonic Voltage diff. ext blocking See 2-75
2-150	663	1U	–	W	0-65535 / 1	60FL VT Fuse loss ext outputs See 2-74
2-151	664	1U	–	W	0-255 / 1	60FL VT Fuse loss ext blocking See 2-75
2-152	665	1U	–	W	0-65535 / 1	64B Brush lift off ext outputs See 2-74
2-153	666	1U	–	W	0-255 / 1	64B Brush lift off ext blocking See 2-75
2-154	667	1U	–	W	0-65535 / 1	64F #1 Field Ground ext outputs See 2-74

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (10 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-155	668	1U	–	W	0-255 / 1	64F #1 Field Ground ext blocking See 2-75
2-156	669	1U	–	W	0-65535 / 1	64F #2 Field Ground ext outputs See 2-74
2-157	670	1U	–	W	0-255 / 1	64F #2 Field Ground ext blocking See 2-75
2-158	671	1U	–	W	0-65535 / 1	64S 100% Stator Ground ext outputs See 2-74
2-159	672	1U	–	W	0-255 / 1	64S 100% Stator Ground ext blocking See 2-75
2-160	673	1U	–	W	0-65535 / 1	67NDT Resid. Directional overcurrent Definite Time ext outputs See 2-74
2-161	674	1U	–	W	0-255 / 1	67NDT Resid. Directional overcurrent Definite Time ext blocking See 2-75
2-162	675	1U	–	W	0-65535 / 1	67NIT Resid. Directional overcurrent Inverse Time ext outputs See 2-74
2-163	676	1U	–	W	0-255 / 1	67NIT Resid. Directional overcurrent Inverse Time ext blocking See 2-75
2-164	677	1U	–	W	0-65535 / 1	78 Out of Step ext outputs See 2-74
2-165	678	1U	–	W	0-255 / 1	78 Out of Step ext blocking See 2-75
2-166	679	1U	–	W	0-65535 / 1	81 #1 Over/under frequency ext outputs See 2-74
2-167	680	1U	–	W	0-255 / 1	81 #1 Over/under frequency ext blocking See 2-75
2-168	681	1U	–	W	0-65535 / 1	81 #2 Over/under frequency ext outputs See 2-74
2-169	682	1U	–	W	0-255 / 1	81 #2 Over/under frequency ext blocking See 2-75
2-170	683	1U	–	W	0-65535 / 1	81 #3 Over/under frequency ext outputs See 2-74
2-171	684	1U	–	W	0-255 / 1	81 #3 Over/under frequency ext blocking See 2-75

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (11 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-172	685	1U	–	W	0-65535 / 1	81 #4 Over/under frequency ext outputs See 2-74
2-173	686	1U	–	W	0-255 / 1	81 #4 Over/under frequency ext blocking See 2-75
2-174	687	1U	–	W	0-65535 / 1	81A #1 Over/under frequency accumulator ext outputs See 2-74
2-175	688	1U	–	W	0-255 / 1	81A #1 Over/under frequency accumulator ext blocking See 2-75
2-176	689	1U	–	W	0-65535 / 1	81A #2 Over/under frequency accumulator ext outputs See 2-74
2-177	690	1U	–	W	0-255 / 1	81A #2 Over/under frequency accumulator ext blocking See 2-75
2-178	691	1U	–	W	0-65535 / 1	81A #3 Over/under frequency accumulator ext outputs See 2-74
2-179	692	1U	–	W	0-255 / 1	81A #3 Over/under frequency accumulator ext blocking See 2-75
2-180	693	1U	–	W	0-65535 / 1	81A #4 Over/under frequency accumulator ext outputs See 2-74
2-181	694	1U	–	W	0-255 / 1	81A #4 Over/under frequency accumulator ext blocking See 2-75
2-182	695	1U	–	W	0-65535 / 1	81R #1 Rate of change of frequency ext outputs See 2-74
2-183	696	1U	–	W	0-255 / 1	81R #1 Rate of change of frequency ext blocking See 2-75
2-184	697	1U	–	W	0-65535 / 1	81R #2 Rate of change of frequency ext outputs See 2-74
2-185	698	1U	–	W	0-255 / 1	81R #2 Rate of change of frequency ext blocking See 2-75
2-186	699	1U	–	W	0-65535 / 1	87 #1 Phase Differential ext outputs See 2-74
2-187	700	1U	–	W	0-255 / 1	87 #1 Phase Differential ext blocking See 2-75

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (12 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-188	701	1U	–	W	0-65535 / 1	87 #2 Phase Differential ext outputs See 2-74
2-189	702	1U	–	W	0-255 / 1	87 #2 Phase Differential ext blocking See 2-75
2-190	703	1U	–	W	0-65535 / 1	87GD Ground Differential ext outputs See 2-74
2-191	704	1U	–	W	0-255 / 1	87GD Ground Differential ext blocking See 2-75
2-192	705	1U	–	W	0-65535 / 1	IPS LOGIC #1 ext outputs See 2-74
2-193	706	1U	–	W	0-255 / 1	IPS LOGIC #1 ext blocking See 2-75
2-194	707	1U	–	W	0-65535 / 1	IPS LOGIC #2 ext outputs See 2-74
2-195	708	1U	–	W	0-255 / 1	IPS LOGIC #2 ext blocking See 2-75
2-196	709	1U	–	W	0-65535 / 1	IPS LOGIC #3 ext outputs See 2-74
2-197	710	1U	–	W	0-255 / 1	IPS LOGIC #3 ext blocking See 2-75
2-198	711	1U	–	W	0-65535 / 1	IPS LOGIC #4 ext outputs See 2-74
2-199	712	1U	–	W	0-255 / 1	IPS LOGIC #4 ext blocking See 2-75
2-200	713	1U	–	W	0-65535 / 1	IPS LOGIC #5 ext outputs See 2-74
2-201	714	1U	–	W	0-255 / 1	IPS LOGIC #5 ext blocking See 2-75
2-202	715	1U	–	W	0-65535 / 1	IPS LOGIC #6 ext outputs See 2-74
2-203	716	1U	–	W	0-255 / 1	IPS LOGIC #6 ext blocking See 2-75
2-205	718	1U	–	W	0-255 / 1	TC Trip coil monitor ext blocking See 2-75
2-206	719	1U	–	W	0-65535 / 1	BM Breaker monitor ext outputs See 2-74
2-207	720	1U	–	W	0-255 / 1	BM Breaker monitor ext blocking See 2-75

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (13 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-208	721	1U	–	W	0-65535 / 1	40VC #1 Loss of Field ext outputs See 2-74
2-209	722	1U	–	W	0-255 / 1	40VC #1 Loss of Field ext blocking See 2-75
2-210	723	1U	–	W	0-65535 / 1	40VC #2 Loss of Field ext outputs See 2-74
2-211	724	1U	–	W	0-255 / 1	40VC #2 Loss of Field ext blocking See 2-75
2-212	725	1U	–	W	0-65535 / 1	59X #1 Overvoltage ext outputs See 2-74
2-213	726	1U	–	W	0-255 / 1	59X #1 Overvoltage ext blocking See 2-75
2-214	727	1U	–	W	0-65535 / 1	59X #2 Overvoltage ext outputs See 2-74
2-215	728	1U	–	W	0-255 / 1	59X #2 Overvoltage ext blocking See 2-75
2-216	729	1U	–	W	0-65535 / 1	81A #5 Over/under frequency accumulator ext outputs See 2-74
2-217	730	1U	–	W	0-255 / 1	81A #5 Over/under frequency accumulator ext blocking See 2-75
2-218	731	1U	–	W	0-65535 / 1	81A #6 Over/under frequency accumulator ext outputs See 2-74
2-219	732	1U	–	W	0-255 / 1	81A #6 Over/under frequency accumulator ext blocking See 2-75
2-220	733	1U	–	W	0-255 / 1	50BF ext input initiate Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (14 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-221	734	1U	–	W	0-65535 / 1	50BF ext output initiate Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
2-222	735	1U	–	W	0-255 / 1	60FL ext input initiate Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14
2-223	736	1U	–	W	0-255 / 1	IPS LOGIC #1 ext input initiate Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14
2-224	737	1U	–	W	0-65535 / 1	IPS LOGIC #1 ext output initiate Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
2-225	738	1U	–	W	0-255 / 1	IPS LOGIC #2 ext input initiate See 2-223
2-226	739	1U	–	W	0-65535 / 1	IPS LOGIC #2 ext output initiate See 2-224
2-227	740	1U	–	W	0-255 / 1	IPS LOGIC #3 ext input initiate See 2-223
2-228	741	1U	–	W	0-65535 / 1	IPS LOGIC #3 ext output initiate See 2-224

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (15 of 16)

CONFIGURATION AND EXTENDED INPUTS/OUTPUTS SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-229	742	1U	–	W	0-255 / 1	IPS LOGIC #4 ext input initiate See 2-223
2-230	743	1U	–	W	0-65535 / 1	IPS LOGIC #4 ext output initiate See 2-224
2-231	744	1U	–	W	0-255 / 1	IPS LOGIC #5 ext input initiate See 2-223
2-232	745	1U	–	W	0-65535 / 1	IPS LOGIC #5 ext output initiate See 2-224
2-233	746	1U	–	W	0-255 / 1	IPS LOGIC #6 ext input initiate See 2-223
2-234	747	1U	–	W	0-65535 / 1	IPS LOGIC #6 ext output initiate See 2-224
2-235	748	1U	–	W	0-255 / 1	25D dead input initiate extended Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14
2-236	749	1U	–	W	0-65535/1	64S Fuse Fail Extended Alarm outputs Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
2-237	750	1U	–	W	0-255/1	64S Fuse Fail Alarm outputs Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8
2-238	751	10	V	W	1-150/1	VN20min. Threshold
2-239	752	10	mA	W	10-250/1	IN20min. Threshold

■ **NOTE:** * Disabling any element of 81A function will disable the rest of the elements below this one. For example: Enabled elements #1, #2, #3, #4, Disabled elements: #5, #6. If element #2 is going to be disabled, then elements #3 and #4 will be disabled automatically.

Table 3 – Configuration and Extended Inputs/Outputs Setpoints (16 of 16)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-00	769	10	OHMS	W	if C.T. secondary rating = 5 Amp 1-1000 / 1 if C.T. secondary rating = 1 Amp 5-5000 / 1	21 #1 Diameter
3-01	770	1	CYCLES	W	1-8160 / 1	21 #1 Delay
3-02	771	10	OHMS	W	if C.T. secondary rating = 5 Amp (-1000) to 1000 / 1 if C.T. secondary rating = 1 Amp (-5000) to 5000 / 1	21 #1 Offset
3-03	772	1	DEGREE	W	0-90 / 1	21 #1 Impedance angle
3-04	773	1	DEGREE	W	1-90 / 1	21 #1 Load Angle
3-05	774	10	OHMS	W	1-1000 / 1	21 #1 Load R reach
3-06	775	10	OHMS	W	If C.T. secondary rating = 5 Amp 1-1000 / 1 if C.T. secondary rating = 1 Amp 5-5000 / 1	21 #2 Diameter
3-07	776	1	CYCLES	W	1-8160 / 1	21 #2 Delay
3-08	777	10	OHMS	W	If C.T. secondary rating = 5 Amp (-1000) to 1000 / 1 if C.T. secondary rating = 1 Amp (-5000) to 5000 / 1	21 #2 Offset
3-09	778	1	DEGREE	W	0-90 / 1	21 #2 Impedance angle
3-10	779	1	DEGREE	W	1-90 / 1	21 #2 Load Angle
3-11	780	10	OHMS	W	1-1000 / 1	21 #2 Load R reach
3-12	781	10	OHMS	W	If C.T. secondary rating = 5 Amp 1-1000 / 1 if C.T. secondary rating = 1 Amp 5-5000 / 1	21 #3 Diameter

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (1 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-13	782	1	CYCLES	W	1-8160 / 1	21 #3 Delay
3-14	783	10	OHMS	W	If C.T. secondary rating = 5 Amp (-1000) to 1000 / 1 if C.T. secondary rating = 1 Amp (-5000) to 5000 / 1	21 #3 Offset
3-15	784	1	DEGREE	W	0-90 / 1	21 #3 Impedance angle
3-16	785	1	DEGREE	W	1-90 / 1	21 #3 Load Angle
3-17	786	10	OHMS	W	1-1000 / 1	21 #3 Load R reach
3-18	787	1	CYCLES	W	1-8160 / 1	21 #3 Out of step delay
3-19	788	–	–	–	–	Not used
3-20	789	–	–	–	–	Not used
3-21	790	1	%	W	100-200 / 1	24DT #1 Pickup
3-22	791	1	CYCLES	W	30-8160 / 1	24DT #1 Delay
3-23	792	1	%	W	100-200 / 1	24DT #2 Pickup
3-24	793	1	CYCLES	W	30-8160 / 1	24DT #2 Delay
3-25	794	1	%	W	100-200 / 1	24IT Pickup
3-26	795	1	–	W	1-4 / 1	24IT Curve **
3-27	796	10	–	W	if curve = 1 10-1000 / 10 if curve = 2, 3, 4 0-90	24IT Time dial **
3-28	797	1	SEC	W	1-999 / 1	24IT Reset rate
3-29	798	1	DEGREES	W	0-90 / 1	25S Phase Angle Window
3-30	799	1	VOLTS	W	60-140 / 1	25S Upper voltage limit
3-31	800	1	VOLTS	W	40-120 / 1	25S Lower Voltage limit
3-32	801	1	–	W	0-1 / 1	25S Delta Voltage enable 0 = disabled 1 = enabled
3-33	802	10	VOLTS	W	10-500 / 1	25S Delta Voltage limit

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (2 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-34	803	1	–	W	0-1 / 1	25S Delta Frequency enable 0 = disabled 1 = enabled
3-35	804	1000	HERTZ	W	1-500 / 1	25S Delta Frequency Limit
3-36	805	1	VOLTS	W	0-60 / 1	25D Dead Voltage Limit
3-37	806	1	–	W	0-1 / 1	25D Dead V1 Hot VX 0 = disabled 1 = enabled
3-38	807	1	–	W	0-1 / 1	25D Dead VX Hot V1 0 = disabled 1 = enabled
3-39	808	1	–	W	0-1 / 1	25D Dead V1 Dead VX 0 = disabled 1 = enabled
3-40	809	1	–	W	0-63 / 1	25D Dead Input initiate Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6-15 not used
3-41	810	1	CYCLES	W	1-8160 / 1	25D Dead Time delay
3-42	811	1	CYCLES	W	1-8160 / 1	25S Sync Check time delay
3-43	812	1	–	W	0-2 / 1	25S Sync Check Phase 0 = phase A 1 = phase B 2 = phase C
3-44	813	1	VOLTS	W	5-180 / 1	27 #1 Pickup
3-45	814	1	CYCLES	W	1-8160 / 1	27 #1 Delay
3-46	815	1	VOLTS	W	5-180 / 1	27 #2 Pickup
3-47	816	1	CYCLES	W	1-8160 / 1	27 #2 Delay
3-48	817	1	VOLTS	W	5-180 / 1	27 #3 Pickup
3-49	818	1	CYCLES	W	1-8160 / 1	27 #3 Delay
3-50	819	100	VOLTS	W	10-1400 / 1	27TN #1 Pickup

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (3 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-51	820	1	VOLTS	W	5-180 / 1	27TN #1 Positive Sequence Voltage Block
3-52	821	100	PU	W	1-100 / 1	27TN #1 Forward Power Block
3-53	822	100	PU	W	(-100) to (-1) /1	27TN #1 Reverse Power Block
3-54	823	100	PU	W	(-100) to (-1) /1	27TN #1 Lead VAr Block
3-55	824	100	PU	W	1-100 / 1	27TN #1 Lag VAr Block
3-56	825	100	LEAD	W	1-100 / 1	27TN #1 Lead Power Factor Block
3-57	826	100	LAG	W	1-100 / 1	27TN #1 Lag Power Factor Block
3-58	827	100	PU	W	1-100 / 1	27TN #1 Low Band Forward Power Block
3-59	828	100	PU	W	1-100 / 1	27TN #1 Hi Band Forward Power Block
3-60	829	1	CYCLES	W	1-8160 / 1	27TN #1 Delay
3-61	830	100	VOLTS	W	10-1400 / 1	27TN #2 Pickup
3-62	831	1	VOLTS	W	5-180 / 1	27TN #2 Positive Sequence Voltage Block
3-63	832	100	PU	W	1-100 / 1	27TN #2 Forward Power Block
3-64	833	100	PU	W	(-100) to (-1) /1	27TN #2 Reverse Power Block
3-65	834	100	PU	W	(-100) to (-1) /1	27TN #2 Lead VAr Block
3-66	835	100	PU	W	1-100 / 1	27TN #2 Lag VAr Block
3-67	836	100	LEAD	W	1-100 / 1	27TN #2 Lead Power Factor Block
3-68	837	100	LAG	W	1-100 / 1	27TN #2 Lag Power Factor Block
3-69	838	100	PU	W	1-100 / 1	27TN #2 Low Band Forward Power Block
3-70	839	100	PU	W	1-100 / 1	27TN #2 Hi Band Forward Power Block
3-71	840	1	CYCLES	W	1-8160 / 1	27TN #2 Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (4 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-72	841	1U	–	W	0-65535 / 1	27TN Blocks config Bit 0 #1 Fwd. power block Bit 1 #1 Rev. power block Bit 2 #1 Lead VAr block Bit 3 #1 Lag VAr block Bit 4 #1 Lead PF block Bit 5 #1 Lag PF block Bit 6 #1 Pos seq voltage block Bit 7 #1 Fwd power band en. Bit 8 #2 Fwd. power block Bit 9 #2 Rev. power block Bit 10 #2 Lead VAr block Bit 11 #2 Lag VAr block Bit 12 #2 Lead PF block Bit 13 #2 Lag PF block Bit 14 #2 Pos seq voltage block Bit 15 #2 Fwd power band en.
3-73	842	1000	PU	W	(-3000) to 3000 / 1 excluding 1, 0, -1	32 #1 Pickup
3-74	843	1	–	W	0-1 / 1	32 #1 Under/Over Power option 0 = over power 1 = under power
3-75	844	1	–	W	0-1 / 1	32 #1 Target LED enable 0 = disabled 1 = enabled
3-76	845	1	CYCLES	W	1-8160 / 1	32 #1 Delay
3-77	846	1000	PU	W	(-3000) to 3000 / 1 excluding 1, 0, -1	32 #2 Pickup
3-78	847	1	–	W	0-1 / 1	32 #2 Under/Over Power option 0 = over power 1 = under power
3-79	848	1	–	W	0-1 / 1	32 #2 Target LED enable 0 = disabled 1 = enabled
3-80	849	1	CYCLES	W	1-8160 / 1	32 #2 Delay
3-81	850	1000	PU	W	(-3000) to 3000 / 1 excluding 1, 0, -1	32 #3 Pickup
3-82	851	1	–	W	0-1 / 1	32 #3 Under/Over Power option 0 = over power 1 = under power

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (5 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-83	852	1	–	W	0-1 / 1	32 #3 Target LED enable 0 = disabled 1 = enabled
3-84	853	1	CYCLES	W	1-8160 / 1	32 #3 Delay
3-85	854	10	OHMS	W	if C.T. secondary rating = 5 Amp 1-1000 / 1 --- if C.T. secondary rating = 1 Amp 5-5000 / 1	40 #1 Diameter
3-86	855	10	OHMS	W	if C.T. secondary rating = 5 Amp -500 to 500 / 1 --- if C.T. secondary rating = 1 Amp -2500 to 2500 / 1	40 #1 Offset
3-87	856	–	–	–	–	Not used
3-88	857	1	CYCLES	W	1-8160 / 1	40 #1 Delay
3-89	858	1	CYCLES	W	1-8160 / 1	40 #1 Delay with Voltage control
3-90	859	10	OHMS	W	if C.T. secondary rating = 5 Amp 1-1000 / 1 --- if C.T. secondary rating = 1 Amp 5-5000 / 1	40 #2 Diameter
3-91	860	10	OHMS	W	if C.T. secondary rating = 5 Amp -500 to 500 / 1 --- if C.T. secondary rating = 1 Amp -2500 to 2500 / 1	40 #2 Offset
3-92	861	–	–	–	–	Not used
3-93	862	1	CYCLES	W	1-8160 / 1	40 #2 Delay
3-94	863	1	CYCLES	W	1-8160 / 1	40 #2 Delay with Voltage control
3-95	864	1	VOLTS	W	5-180 / 1	40 Voltage control
3-96	865	1	%	W	3-100 / 1	46DT Pickup

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (6 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-97	866	1	CYCLES	W	1-8160 / 1	46DT Delay
3-98	867	1	%	W	3-100 / 1	46IT Pickup
3-99	868	1	–	W	1-95 / 1	46IT Time dial
3-100	869	1U	CYCLES	W	600-65500 / 1	46IT Definite max time
3-101	870	1	SECONDS	W	1-600 / 1	46IT Reset time
3-102	871	10	MINUTES	W	10-9999 / 1	49 #1 Time constant
3-103	872	100	AMPS	W	if C.T. secondary rating = 5 Amp 100-1000 / 1 if C.T. secondary rating = 1 Amp 20-200 / 1	49 #1 Max overload current
3-104	873	10	MINUTES	W	10-9999 / 1	49 #2 Time constant
3-105	874	100	AMPS	W	if C.T. secondary rating = 5 Amp 100-1000 / 1 if C.T. secondary rating = 1 Amp 20-200 / 1	49 #2 Max overload current
3-106	875	10	AMPS	W	if C.T. secondary rating = 5 Amp 1-2400 / 1 if C.T. secondary rating = 1 Amp 1-480 / 1	50 #1 Phase pickup
3-107	876	1	CYCLES	W	1-8160 / 1	50 #1 Delay
3-108	877	10	AMPS	W	if C.T. secondary rating = 5 Amp 1-2400 / 1 if C.T. secondary rating = 1 Amp 1-480 / 1	50 #2 Phase pickup
3-109	878	1	CYCLES	W	1-8160 / 1	50 #2 Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (7 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-110	879	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-1500 / 1 if C.T. secondary rating = 1 Amp 10-300 / 1	50/27 Pickup
3-111	880	1	VOLTS	W	5-130 / 1	50/27 Voltage control
3-112	881	1	CYCLES	W	30-8160 / 1	50/27 Pickup delay
3-113	882	1	CYCLES	W	1-8160 / 1	50/27 Dropout delay
3-114	883	1	–	W	0-1 / 1	50BF Phase initiate 0 = disable 1 = enable
3-115	884	100	AMPS	W	if C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating = 1 Amp 2-200 / 1	50BF Phase pickup
3-116	885	1	–	W	0-1 / 1	50BF Neutral initiate 0 = disable 1 = enable Cannot enable if 64S is purchased
3-117	886	100	AMPS	W	if C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating = 1 Amp 2-200 / 1	50BF Neutral pickup
3-118	887	1	–	W	0-63 / 1	50BF Input initiate Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6-15 Not used (0)

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (8 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-119	888	1	–	W	0-255 / 1	50BF Output initiate Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Bit 8-15 Not used (0)
3-120	889	1	CYCLES	W	1-8160 / 1	50BF Delay
3-121	890	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #1 Phase A pickup
3-122	891	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #1 Phase B pickup
3-123	892	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #1 Phase C pickup
3-124	893	1	CYCLES	W	1-8160 / 1	50DT #1 Delay
3-125	894	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #2 Phase A pickup
3-126	895	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #2 Phase B pickup

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (9 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-127	896	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-24000 / 1 if C.T. secondary rating = 1 Amp 4-4800 / 1	50DT #2 Phase C pickup
3-128	897	1	CYCLES	W	1-8160 / 1	50DT #2 Delay
3-129	898	10	AMPS	W	if C.T. secondary rating = 5 Amp 1-2400 / 1 if C.T. secondary rating = 1 Amp 1-480 / 1	50N Neutral pickup
3-130	899	1	CYCLES	W	1-8160 / 1	50N Delay
3-131	900	100	AMPS	W	if C.T. secondary rating = 5 Amp 25-1200 / 1 if C.T. secondary rating = 1 Amp 5-240 / 1	51N Pickup
3-132	901	1	–	W	1-11 / 1	51N Curve type ** 1 = Beco Definite time 2 = Beco Inverse 3 = Beco Very inverse 4 = Beco Extremely inverse 5 = IEC Inverse 6 = IEC Very Inverse 7 = IEC Extremely inverse 8 = IEC Long time inverse 9 = IEEE Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely inverse
3-133	902	100	–	W	if curve = 1 to 4 50-1100 / 10 if curve = 5 to 8 5-110 / 1 if curve = 9 to 11 50-1500 / 10	51N Time dial **

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (10 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-134	903	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-1200 / 1 if C.T. secondary rating = 1 Amp 10-240 / 1	51V Pickup
3-135	904	1	–	W	1-11 / 1	51V Curve type ** 1 = Beco Definite time 2 = Beco Inverse 3 = Beco Very inverse 4 = Beco Extremely inverse 5 = IEC Inverse 6 = IEC Very Inverse 7 = IEC Extremely inverse 8 = IEC Long time inverse 9 = IEEE Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely inverse
3-136	905	100	–	W	if curve = 1 to 4 50-1100 / 10 if curve = 5 to 8 5-110 / 1 if curve = 9 to 11 50-1500 / 10	51V Time dial **
3-137	906	1	–	W	1-3 / 1	51V Voltage control 1 = Disable 2 = Voltage control 3 = Voltage restraint
3-138	907	1	VOLTS	W	5-180 / 1	51V Voltage control level If Voltage control = 2
3-139	908	1	VOLTS	W	5-180 / 1	59 #1 Pickup
3-140	909	1	CYCLES	W	1-8160 / 1	59 #1 Delay
3-141	910	1	VOLTS	W	5-180 / 1	59 #2 Pickup
3-142	911	1	CYCLES	W	1-8160 / 1	59 #2 Delay
3-143	912	1	VOLTS	W	5-180 / 1	59 #3 Pickup
3-144	913	1	CYCLES	W	1-8160 / 1	59 #3 Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (11 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-145	914	1	–	W	0-63 / 1	59 Input voltage select Bit 0 59 #1 element Bit 1 59 #2 element Bit 2 59 #3 element 0 = phase voltage select 1 = pos. seq. voltage select Bit 3 59 #1 element Bit 4 59 #2 element Bit 5 59 #3 element 0 = phase or pos. seq select 1 = neg. seq. voltage select
3-146	915	10	VOLTS	W	50-1800 / 1	59N #1 Pickup
3-147	916	1	CYCLES	W	1-8160 / 1	59N #1 Delay
3-148	917	10	VOLTS	W	50-1800 / 1	59N #2 Pickup
3-149	918	1	CYCLES	W	1-8160 / 1	59N #2 Delay
3-150	919	10	VOLTS	W	50-1800 / 1	59N #3 Pickup
3-151	920	1	CYCLES	W	1-8160 / 1	59N #3 Delay
3-152	921	10	–	W	1-50 / 1	59D Ratio
3-153	922	1	CYCLES	W	1-8160 / 1	59D Delay
3-154	923	1	–	W	0-1 / 1	59D Line side voltage 0 = 3V0 1 = Vx Cannot set to Vx if 25 function is enabled Cannot set to 3V0 if V.T. config is not set to Line to Ground
3-155	924	1	–	W	0-127 / 1	60FL Input initiate Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6 Fuse loss Bit 7-15 Not used (0)
3-156	925	1	CYCLES	W	1-8160 / 1	60FL Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (12 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-157	926	–	–	–	–	Not Used
3-158	927	1	mV	W	0-5000 / 1	64B Pickup
3-159	928	1	CYCLES	W	1-8160 / 1	64B Delay
3-160	929	1	**K**Ω	W	5-100 / 1	64F #1 Pickup
3-161	930	1	CYCLES	W	1-8160 / 1	64F #1 Delay
3-162	931	1	**K**Ω	W	5-100 / 1	64F #2 Pickup
3-163	932	1	CYCLES	W	1-8160 / 1	64F #2 Delay
3-164	933	100	Hz	W	10-100 / 1	64F Injection Frequency
3-165	934	10	mA	W	20-750 / 1 20-400/5 (if real component disabled)	64S Total Current Pickup
3-166	935	1	–	W	0-63/1	64S Option (if real component purchased) Bit 0 Voltage Restraint Enable (Not Used for versions ≥ V08.03.xx) Bit 1 Frequency Inhibit Enable Bit 2 Total Current Pickup Enable Bit 3 Real Component Current Enable Bit 4 VN20min Enable Bit 5 IN20min Enable
					0-50/1	64S Option (if real component unpurchased) Bit 0 Not Used Bit 1 Frequency Inhibit Enable Bit 2 Not Used Bit 3 Not Used Bit 4 VN20min Enable Bit 5 IN20min Enable

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (13 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-167	936	10	mA/ Volts	W	20-750 / 1 (if real component purchased) 5-30/1 (if real component unpurchased)	This is a dual use register: 1). 64S Real Component Purchased 64S Real Component Pickup (2.0-75.0 mA) 2). 64S Real Component Unpurchased 64S Undervoltage Inhibit (5.0-30.0 Volts)
3-168	937	1	CYCLES	W	1-8160 / 1	64S Delay
3-169	938	10	AMPS	W	if C.T. secondary rating = 5 Amp 5-2400 / 1 --- if C.T. secondary rating = 1 Amp 1-480 / 1	67NDT Pickup
3-170	939	1	–	W	0-1 / 1	67NDT Directional element 0 = disabled 1 = Enabled
3-171	940	1	CYCLES	W	1-8160 / 1	67NDT Time delay
3-172	941	100	AMPS	W	if C.T. secondary rating = 5 Amp 25-1200 / 1 --- if C.T. secondary rating = 1 Amp 5-240 / 1	67NIT Pickup
3-173	942	1	–	W	1-11 / 1	67NIT Curve type ** 1 = Beco Definite time 2 = Beco Inverse 3 = Beco Very inverse 4 = Beco Extremely inverse 5 = IEC Inverse 6 = IEC Very Inverse 7 = IEC Extremely inverse 8 = IEC Long time inverse 9 = IEEE Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely inverse

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (14 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-174	943	100	–	W	if curve = 1 to 4 50-1100 / 10 if curve = 5 to 8 5-110 / 1 if curve = 9 to 11 50-1500 / 10	67NIT Time dial **
3-175	944	1	–	W	0-1 / 1	67NIT Directional element enable 0 = disabled 1 = enabled
3-176	945	1	DEGREES	W	0-359 / 1	67NIT Max sensitivity angle
3-177	946	1	CYCLES	W	1-8160 / 1	78 Reset time for pole slip count
3-178	947	10	OHMS	W	If C.T. secondary rating = 5 Amp 1-1000 / 1 if C.T. secondary rating = 1 Amp 5-5000 / 1	78 Diameter
3-179	948	10	OHMS	W	If C.T. secondary rating = 5 Amp (-1000) to 1000 / 1 if C.T. secondary rating = 1 Amp (-5000) to 5000 / 1	78 Offset
3-180	949	1	DEGREE	W	0-90 / 1	78 Impedance angle
3-181	950	10	OHMS	W	If C.T. secondary rating = 5 Amp 1-500 / 1 if C.T. secondary rating = 1 Amp 5-2500 / 1	78 Blinder
3-182	951	1	–	W	0-1 / 1	78 Trip on MHO exit
3-183	952	1	CYCLES	W	1-8160 / 1	78 Delay
3-184	953	1	–	W	1-20 / 1	78 Pole slip counter

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (15 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-185	954	100	HZ	W	If nominal frequency = 60Hz 5000-6700 / 1 excluding 6000 if nominal frequency = 50Hz 4000-5700 / 1 excluding 5000	81 #1 Pickup
3-186	955	1U	CYCLES	W	3-65500 / 1	81 #1 Delay
3-187	956	100	HZ	W	If nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81 #2 Pickup
3-188	957	1U	CYCLES	W	3-65500 / 1	81 #2 Delay
3-189	958	100	HZ	W	If nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81 #3 Pickup
3-190	959	1U	CYCLES	W	3-65500 / 1	81 #3 Delay
3-191	960	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81 #4 Pickup
3-192	961	1U	CYCLES	W	3-65500 / 1	81 #4 Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (16 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-193	962	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #1 Low pickup
3-194	963	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #1 High pickup
3-195	964	1	–	W	0-1 / 1	81A #1 Band enable 0 = band disabled 1 = band enabled
3-196	965	1U	CYCLES	W	0-5 / 1	81A #1 Delay. Most significant word
3-197	966	1U	CYCLES	W	0-65535 / 1 ***	81A #1 Delay. Least significant word
3-198	967	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #2 Low pickup
3-199	968	1U	CYCLES	W	0-5 / 1	81A #2 Delay. Most significant word
3-200	969	1U	CYCLES	W	0-65535 / 1 ***	81A #2 Delay. Least significant word
3-201	970	–	–	–	–	Not used

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (17 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-202	971	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #3 Low pickup
3-203	972	1U	CYCLES	W	0-5 / 1	81A #3 Delay. Most significant word
3-204	973	1U	CYCLES	W	0-65535 / 1 ***	81A #3 Delay. Least significant word
3-205	974	–	–	–	–	Not used
3-206	975	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #4 Low pickup
3-207	976	1U	CYCLES	W	0-5 / 1	81A #4 Delay. Most significant word
3-208	977	1U	CYCLES	W	0-65535 / 1 ***	81A #4 Delay. Least significant word
3-209	978	1	–	W	0-63 / 1	81A reset accumulators Bit 0 reset #1 element acc. Bit 1 reset #2 element acc. Bit 2 reset #3 element acc. Bit 3 reset #4 element acc. Bit 4 reset #5 element acc. Bit 5 reset #6 element acc. Bits 6-7 Not used
3-210	979	100	HZ/Sec	W	10-2000 / 1	81R #1 Rate of change of frequency
3-211	980	1	CYCLES	W	3-8160 / 1	81R #1 Delay
3-212	981	100	HZ/Sec	W	10-2000 / 1	81R #2 Rate of change of frequency
3-213	982	1	CYCLES	W	3-8160 / 1	81R #2 Delay

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (18 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-214	983	1	%	W	0-99 / 1	81R Inhibit
3-215	984	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-300 / 1 if C.T. secondary rating = 1 Amp 4-60 / 1	87 #1 Pickup
3-216	985	1	%	W	1-100 / 1	87 #1 Slope
3-217	986	1	CYCLES	W	1-8160 / 1	87 #1 Delay
3-218	987	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-300 / 1 if C.T. secondary rating = 1 Amp 4-60 / 1	87 #2 Pickup
3-219	988	1	%	W	1-100 / 1	87 #2 Slope
3-220	989	1	CYCLES	W	1-8160 / 1	87 #2 Delay
3-221	990	1	–	–	–	Not used
3-222	991	100	AMPS	W	50-200 / 1	87 CT correction
3-223	992	100	AMPS	W	if C.T. secondary rating = 5 Amp 20-1000 / 1 if C.T. secondary rating = 1 Amp 4-200 / 1	87GD Pickup
3-224	993	1	CYCLES	W	1-8160 / 1	87GD Delay
3-225	994	100	–	W	10-799 / 1	87GD CT Ratio Correction
3-226	995	1	DEGREES	W	0-20 / 1	40 Directional element
3-227	996	1	–	W	0-1 / 1	21 #1 Out of step block enable 0 = disabled 1 = enabled
3-228	997	1	–	W	0-1 / 1	21 #2 Out of step block enable 0 = disabled 1 = enabled

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (19 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-229	998	1	–	W	0-1 / 1	21 #3 Out of step block enable 0 = disabled 1 = enabled
3-230	999	1	–	W	0-1 / 1	21 #1 Load encroachment enable 0 = disabled 1 = enabled
3-231	1000	1	–	W	0-1 / 1	21 #2 Load encroachment enable 0 = disabled 1 = enabled
3-232	1001	1	–	W	0-1 / 1	21 #3 Load encroachment enable 0 = disabled 1 = enabled
3-233	1002	1	–	W	0-1 / 1	21 #1 Overcurrent supervision enable 0 = disabled 1 = enabled
3-234	1003	1	–	W	0-1 / 1	21 #2 Overcurrent supervision enable 0 = disabled 1 = enabled
3-235	1004	1	–	W	0-1 / 1	21 #3 Overcurrent supervision enable 0 = disabled 1 = enabled
3-236	1005	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-2000 / 10 --- If C.T. secondary rating = 1 Amp 2-400 / 1	21 #1 Overcurrent supervision
3-237	1006	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-2000 / 10 --- If C.T. secondary rating = 1 Amp 2-400 / 1	21 #2 Overcurrent supervision

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (20 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-238	1007	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-2000 / 10 If C.T. secondary rating = 1 Amp 2-400 / 1	21 #3 Overcurrent supervision
3-239	1008	1	–	W	0-1 / 1	32 #3 Directional power sensing 0 = Real 1 = Reactive
3-240	1009	1	–	W	0-1 / 1	67N Operating current 0 = 3I0 1 = IN Operating current cannot be set to IN if 87GD is enabled or 64S is purchased
3-241	1010	1	–	W	0-2 / 1	67N Polarizing quantity 0 = 3V0 1 = VN 2 = VX Cannot write if 25S or 25D is enabled and Polarizing quantity going to be set to VX! Cannot set to 3V0 if V.T. configuration is not Line to Ground Cannot set to VN if 64S is purchased
3-242	1011	1	VOLTS	W	5-180 / 1	59X #1 Pickup
3-243	1012	1	CYCLES	W	1-8160 / 1	59X #1 Delay
3-244	1013	1	VOLTS	W	5-180 / 1	59X #2 Pickup
3-245	1014	1	CYCLES	W	1-8160 / 1	59X #2 Delay
3-246	1015	1	–	W	0-1 / 1	60FL 3 phase enable 0 = disabled 1 = enabled

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (21 of 22)

SETPOINTS (See Table 6 for Extra Setpoints)						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-247	1016	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #5 Low pickup
3-248	1017	1U	CYCLES	W	0-5 / 1	81A #5 Delay. Most significant word
3-249	1018	1U	CYCLES	W	0-65535 / 1 ***	81A #5 Delay. Least significant word
3-250	1019	100	HZ	W	if nominal frequency = 60 Hz 5000-6700 / 1 excluding 6000 --- if nominal frequency = 50 Hz 4000-5700 / 1 excluding 5000	81A #6 Low pickup
3-251	1020	1U	CYCLES	W	0-5 / 1	81A #6 Delay. Most significant word
3-252	1021	1U	CYCLES	W	0-65535 / 1 ***	81A #6 Delay. Least significant word
3-253	1022	1	–	W	0-1 / 1	59D Positive Sequence Voltage Block enable/disable 0 = disabled 1 = enabled
3-254	1023	1	VOLTS	W	5-180 / 1	59D Positive Sequence Voltage Block

■ **NOTES:**

1. ** When writing these points, curve should always proceed time dial as range checking is dependent on curve selection.
2. *** Combined with most significant word the value should not exceed 360000 and must be greater than 3.

Table 4 – Setpoints (22 of 22)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-00	1025	1	–	W	0-1 / 1	Clock control If write (0 = Stop, 1 = Run) Read returns 0
4-01	1026	1	–	W	0-99 / 1	Year
4-02	1027	1	–	W	1-12 / 1	Month
4-03	1028	1	–	W	1-31 / 1	Date
4-04	1029	1	–	W	1-7 / 1	Day 1 = Sun . . . 7 = Sat
4-05	1030	1	–	W	0-23 / 1	Hour
4-06	1031	1	–	W	0-59 / 1	Minute
4-07	1032	1	–	W	0-59 / 1	Second
4-08	1033	10U	–	W	10-65500 / 1	V.T. Vx ratio
4-09	1034	1	–	W	1-24/1	Output counter index (OUT1-24). Used together with point 4-10 to read output counter
4-10	1035	–	–	–	–	Output counter data point (OUT1-OUT24). To access any counter (OUT1-OUT24) set counter's index in the point 4-09.
4-11	1036	1	–	R	–	Phasor set update trigger See 1-86 to 1-109
4-12	1037	1	–	R	–	Processor reset counter
4-13	1038	1	–	R	–	Powerloss counter
4-14	1039	1	–	R	–	Clear all output counters (OUT1-OUT24)
4-15	1040	1	–	R	–	Last BBB DNP Error Code
4-16	1041	–	–	–	–	Not used
4-17	1042	–	–	–	–	Not used
4-18	1043	–	–	–	–	Not used
4-19	1044	–	–	–	–	Not used
4-20	1045	–	–	–	–	Not used
4-21	1046	–	–	–	–	Not used
4-22	1047	1	–	R	–	Alarm counter

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (1 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-23	1048	1	–	–	–	EEPROM selftest counter
4-24	1049	1	–	R	–	Last selftest error code
4-25	1050	1	–	R	–	Last selftest error code -1
4-26	1051	1	–	R	–	Last selftest error code -2
4-27	1052	1	–	R	–	Last selftest error code -3
4-28	1053	1	–	R W	–	Clear target led (if all tripping conditions cleared). If read = 0 tripping conditions are cleared, OK to reset. If read = 1 tripping conditions are still active, do not reset
4-29	1054	1	–	R	–	Clear target history
4-30	1055	1	–	R	–	Clear oscillograph recorder
4-31	1056	1	–	R	–	Last comm error code
4-32	1057	1	–	–	–	Target LED status 0 = off 1 = on
4-33	1058	1	–	–	–	Calibration checksum
4-34	1059	1	–	–	–	Setpoint checksum
4-35	1060	1	–	R	–	Receive packet error
4-36	1061	1	–	–	–	IRIG-B Time Sync status 0 = Invalid 1 = Valid

■ NOTES:

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (2 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-37 to 4-48	1062 to 1073	–	–	–	–	Present Time encoded as an ASCII string. * DD-MMM-YYYY HH:MM:SS.TTT For example: 03-Mar-1990 12:15:03.468 4-37 = 12339 or 3033HEX or '0' '3' 4-38 = 11597 or 2d4dHEX or '-' 'M' 4-39 = 24946 or 6172HEX or 'a' 'r' 4-40 = 11569 or 2d31HEX or '-' '1' 4-41 = 14649 or 3939HEX or '9' '9' 4-42 = 12320 or 3020HEX or '0' ' ' 4-43 = 12594 or 3132HEX or '1' '2' 4-44 = 14896 or 3a30HEX or ':' '1' 4-45 = 13626 or 353aHEX or '5' ':' 4-46 = 12339 or 3033HEX or '0' '3' 4-47 = 11828 or 2E34HEX or '.' '4' 4-48 = 13880 or 3638HEX or '6' '8'
4-49	1074	1	–	W	0-65535 / 1	Pulse relay extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used Pulse and latched outputs cannot be enabled at the same time
4-50	1075	1	–	W	0-65535/1	Latched outputs extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used Pulse and latched outputs cannot be enabled at the same time
4-51	1076	10	VOLTS	W	500-1400 / 1	Nominal voltage
4-52	1077	100	AMPS	W	50-600 / 1	Nominal current

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (3 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-53	1078	1	–	W	0-2 / 1	V.T. Configuration 0 = Line to Line 1 = Line to Ground 2 = Line to Ground-to-Line to Line Line to Line or Line to Ground-to-Line to Line V.T. config can be set only if 67N and 59D polarization is not 3V0
4-54	1079	1	–	W	0-1 / 1	Phase rotation 0 = ACB 1 = ABC
4-55	1080	1	–	W	0-255 / 1	Pulse relay Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Pulse and latched outputs cannot be enabled at the same time
4-56	1081	1	–	W	0-65535 / 1	Input status active state Bit 0 0 IN1 active closed Bit 0 1 IN1 active open Bit 1 to Bit 5 same as above for IN2-IN6 Bit 8 to Bit15 same as above for IN7-IN14 Bit6-Bit7 not used(0)
4-57	1082	1	–	W	0-1 / 1	59/27 Magnitude select 0 = RMS 1 = DFT
4-58	1083	1	–	W	0-1 / 1	50DT Split Phase Operation 0 = disable 1 = enable
4-59	1084	1	CYCLES	W	2-8160 / 1	Seal in delay relay 1
4-60	1085	1	CYCLES	W	2-8160 / 1	Seal in delay relay 2
4-61	1086	1	CYCLES	W	2-8160 / 1	Seal in delay relay 3
4-62	1087	1	CYCLES	W	2-8160 / 1	Seal in delay relay 4
4-63	1088	1	CYCLES	W	2-8160 / 1	Seal in delay relay 5
4-64	1089	1	CYCLES	W	2-8160 / 1	Seal in delay relay 6

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (4 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-65	1090	1	CYCLES	W	2-8160 / 1	Seal in delay relay 7
4-66	1091	1	CYCLES	W	2-8160 / 1	Seal in delay relay 8
4-67	1092	10U	–	W	10-65500 / 1	V.T. Phase ratio
4-68	1093	10U	–	W	10-65500 / 1	V.T. Neutral ratio
4-69	1094	1U	–	W	1-65500 / 1	C.T. Phase ratio
4-70	1095	1U	–	W	1-65500 / 1	C.T. Neutral ratio
4-71	1096	1	–	W	0-2 / 1	Delta-Y Transform 0 = Disable 1 = Lead 30 degrees 2 = Lag 30 degrees
4-72	1097	1	–	–	–	Nominal frequency 0 = 50Hz 1 = 60Hz
4-73	1098	–	–	–	–	CT secondary rating 0 = 1 Amp 1 = 5 Amp
4-74	1099	1	–	–	–	Injection frequency for F64S 0 = 12.5 Hz 1 = 15 Hz 2 = 20 Hz
4-75	1100	1	–	W	0-255 / 1	Latched outputs Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Pulse and latched outputs cannot be enabled at the same time
4-76	1101	1	–	W	0-2 / 1	Profile switching method 0 = Manual 1 = Input contacts 2 = Time clock * *Not implemented

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (5 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-77	1102	1	–	W	0-3 / 1	Active profile 0 = profile 1 1 = profile 2 2 = profile 3 3 = profile 4 This point is only writeable when 4-76 above is set to Manual (0).
4-78	1103	1	–	W	1-4 / 1	Copy active profile to: 1 = profile 1 2 = profile 2 3 = profile 3 4 = profile 4 This command may take several minutes to complete. Read returns copy status: 0 = OK 1 = Busy
4-79 to 4-88	1104 to 1113	–	–	–	–	Not used
4-89	1114	–	–	–	–	Not used
4-90 to 4-101	1115 to 1126	–	–	–	–	81A#1 startup time encoded as an ASCII string. * DD-MMM-YYYY HH:MM:SS.TTT For example: 03-Mar-1990 12:15:03.468 4-37 = 12339 or 3033HEX or '0' '3' 4-38 = 11597 or 2d4dHEX or '-' 'M' 4-39 = 24946 or 6172HEX or 'a' 'r' 4-40 = 11569 or 2d31HEX or '-' '1' 4-41 = 14649 or 3939HEX or '9' '9' 4-42 = 12320 or 3020HEX or '0' ' ' 4-43 = 12594 or 3132HEX or '1' '2' 4-44 = 14896 or 3a30HEX or ':' '1' 4-45 = 13626 or 353aHEX or '5' ':' 4-46 = 12339 or 3033HEX or '0' '3' 4-47 = 11828 or 2E34HEX or '.' '4' 4-48 = 13880 or 3638HEX or '6' '8'
4-102 to 4-113	1127 to 1138	–	–	–	–	81A#2 startup time encoded as an ASCII string. * See 4-90 to 4-101
4-114 to 4-125	1139 to 1150	–	–	–	–	81A#3 startup time encoded as an ASCII string. * See 4-90 to 4-101

■ NOTES:

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (6 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-126 to 4-137	1151 to 1162	–	–	–	–	81A#4 startup time encoded as an ASCII string. * See 4-90 to 4-101
4-138	1163	1	–	–	–	Not used
4-139	1164	1	–	–	–	Not used
4-140	1165	1	–	–	–	Not used
4-141	1166	1	–	R	–	Restart Ethernet board. This point should be written after any change has been made to the IP settings (points 4-142 to 4-161). It will take up to 15 seconds for the Ethernet board to reconfigure itself. During this time the communication with the relay on any COM port or Ethernet port will not be available.
4-142	1167	1	–	W	0-65535 / 1	Ethernet board IP address Most significant word Example: IP = 192.168.1.47 Upper byte = 192 Lower byte = 168 If DHCP protocol is enabled then reading of this point will give a current IP address acquired via DHCP protocol This point requires the restart of ethernet board (see point 4-141)
4-143	1168	1	–	W	0-65535 / 1	Ethernet board IP address Least significant word Example: IP = 192.168.1.47 Upper byte = 1 Lower byte = 47 If DHCP protocol is enabled then reading of this point will give a current IP address acquired via DHCP protocol This point requires the restart of ethernet board (see point 4-141)
4-144	1169	1	–	W	0-65535 / 1	Ethernet board Net Mask Most significant word See 4-142 for details This point requires the restart of ethernet board (see point 4-141)

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (7 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-145	1170	1	–	W	0-65535 / 1	Ethernet board Net Mask Least significant word See 4-143 for details This point requires the restart of ethernet board (see point 4-141)
4-146	1171	1	–	W	0-65535 / 1	Ethernet board Gateway IP Most significant word See 4-142 for details This point requires the restart of ethernet board (see point 4-141)
4-147	1172	1	–	W	0-65535 / 1	Ethernet board Gateway IP Least significant word See 4-143 for details This point requires the restart of ethernet board (see point 4-141)
4-148	1173	–	–	–	–	Not used
4-149	1174	–	–	–	–	Not used
4-150	1175	1	–	W	0-65535 / 1	EGD remote IP Most significant word See 4-142 for details This point requires the restart of ethernet board (see point 4-141)
4-151	1176	1	–	W	0-65535 / 1	EGD remote IP Least significant word See 4-143 for details This point requires the restart of ethernet board (see point 4-141)
4-152	1177	1	–	W	0-65535 / 1	EGD Remote Port This point requires the restart of ethernet board (see point 4-141)
4-153	1178	1	–	W	0-65535 / 1	EGD Local Port This point requires the restart of ethernet board (see point 4-141)
4-154	1179	1	ms	W	0-65535 / 1	EGD Broadcast interval This point requires the restart of ethernet board (see point 4-141)

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (8 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-155	1180	1	–	W	257-423 / 1	EGD Type 1 start address This point requires the restart of ethernet board (see point 4-141)
4-156	1181	1	–	W	0-167 / 1	EGD Type 1 size This point requires the restart of ethernet board (see point 4-141)
4-157	1182	1	–	W	1025-1277 / 1	EGD Type 4 start address This point requires the restart of ethernet board (see point 4-141)
4-158	1183	1	–	W	0-253 / 1	EGD Type 4 size This point requires the restart of ethernet board (see point 4-141)
4-159	1184	1	–	W	0-65535 / 1	EGD config. Signature This point requires the restart of ethernet board (see point 4-141)
4-160	1185	1	–	W	0-2 / 1 1-2 / 1 if EGD is not available	Ethernet board protocol: 0* = EGD 1 = MODBUS TCP/IP 2 = SERIAL CONVERTER *EGD is an optional protocol This point requires the restart of ethernet board (see point 4-141)
4-161	1186	1	–	W	0-1 / 1	Ethernet board DHCP enable 0 = disabled 1 = enabled This point requires the restart of ethernet board (see point 4-141)
4-162	1187	1	–	W	0-1 / 1	Ethernet board settings status (points 4-142 to 4-161) 0 = no change 1 = one or more setpoints changed
4-163	1188	1	–	–	–	Software version number for ethernet board (Major and minor) For example: V01.34.28 4-163 to 134
4-164	1189	1	–	–	–	Software version number for ethernet board (Build) See 4-163. 1-164 to 28

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (9 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-165 to 4-176	1190 to 1201	–	–	–	–	81A#5 startup time encoded as an ASCII string. * See 4-90 to 4-101
4-177 to 4-188	1202 to 1213	–	–	–	–	81A#6 startup time encoded as an ASCII string. * See 4-90 to 4-101
4-189	1214	1	CYCLES	W	0-5 / 1	81A #1 Preset accumulator value (most significant word). Write only
4-190	1215	1	CYCLES	W	0-65535 / 1 ***	81A #1 Preset accumulator value (least significant word). Write only
4-191	1216	1	CYCLES	W	0-5 / 1	81A #2 Preset accumulator value (most significant word). Write only
4-192	1217	1	CYCLES	W	0-65535 / 1 ***	81A #2 Preset accumulator value (least significant word). Write only
4-193	1218	1	CYCLES	W	0-5 / 1	81A #3 Preset accumulator value (most significant word). Write only
4-194	1219	1	CYCLES	W	0-65535 / 1 ***	81A #3 Preset accumulator value (least significant word). Write only
4-195	1220	1	CYCLES	W	0-5 / 1	81A #4 Preset accumulator value (most significant word). Write only
4-196	1221	1	CYCLES	W	0-65535 / 1 ***	81A #4 Preset accumulator value (least significant word). Write only
4-197	1222	1	CYCLES	W	0-5 / 1	81A #5 Preset accumulator value (most significant word). Write only
4-198	1223	1	CYCLES	W	0-65535 / 1 ***	81A #5 Preset accumulator value (least significant word). Write only
4-199	1224	1	CYCLES	W	0-5 / 1	81A #6 Preset accumulator value (most significant word). Write only
4-200	1225	1	CYCLES	W	0-65535 / 1 ***	81A #6 Preset accumulator value (least significant word). Write only

■ **NOTES:**

1. ***** Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. ******* Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (10 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-201	1226	1U	–	W	0-65535 / 1	IPS LOGIC #1 Timed out functions initiate mask Least significant word [0] Bit 0 21 #1 Bit 8 27TN #2 Bit 1 21 #2 Bit 9 32 #1 Bit 2 24DT #1 Bit 10 32 #2 Bit 3 24DT #2 Bit 11 40 #1 Bit 4 24IT Bit 12 40 #2 Bit 5 27 #1 Bit 13 46DT Bit 6 27 #2 Bit 14 46IT Bit 7 27TN #1 Bit 15 50 #1
4-202	1227	1U	–	W	0-65535 / 1	IPS LOGIC #1 Timed out functions initiate mask Next significant word [1] Bit 0 5027 Bit 8 59 #1 Bit 1 50BF Bit 9 59 #2 Bit 2 50DT #1 Bit 10 59N #1 Bit 3 50DT #2 Bit 11 59N #2 Bit 4 50N Bit 12 60FL Bit 5 51N Bit 13 64B Bit 6 21 #3 Bit 14 64F #1 Bit 7 51V Bit 15 64F #2
4-203	1228	1U	–	W	0-65535 / 1	IPS LOGIC #1 Timed out functions initiate mask Next significant word [2] Bit 0 64S Bit 8 87 #1 Bit 1 78 Bit 9 87GD Bit 2 81 #1 Bit 10 25S Bit 3 81 #2 Bit 11 25D Bit 4 81 #3 Bit 12 Not used Bit 5 81 #4 Bit 13 Not used Bit 6 81R #1 Bit 14 27 #3 Bit 7 81R #2 Bit 15 32 #3
4-204	1229	1U	–	W	0-65535 / 1	IPS LOGIC #1 Timed out functions initiate mask Next significant word [3] Bit 0 50 #2 Bit 9 Breaker monitor Bit 1 59 #3 Bit 2 59D Bit 10 Not used Bit 3 59N #3 Bit 11 Trip Coil Monitor Bit 4 67NDT Bit 5 67NIT Bit 12 81A #1 Bit 6 87 #2 Bit 13 81A #2 Bit 7 49 #1 Bit 14 81A #3 Bit 8 49 #2 Bit 15 81A #4

■ NOTES:

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (11 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-205	1230	1U	–	W	0-65535 / 1	IPS LOGIC #1 Timed out functions initiate mask Most significant word [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 11 F81A #6 Bit 7 F40VC #2 Bit 12 Not used Bit 8 F59VX_1 Bit 13 not used Bit 9 F59VX_2 Bit 14 not used Bit 10 F81A #5 Bit 15 not used
4-206	1231	1U	–	W	0-65535 / 1	IPS LOGIC #2 Timed out functions initiate mask Least significant word [0] See 4-201
4-207	1232	1U	–	W	0-65535 / 1	IPS LOGIC #2 Timed out functions initiate mask Next significant word [1] See 4-202
4-208	1233	1U	–	W	0-65535 / 1	IPS LOGIC #2 Timed out functions initiate mask Next significant word [2] See 4-203
4-209	1234	1U	–	W	0-65535 / 1	IPS LOGIC #2 Timed out functions initiate mask Next significant word [3] See 4-204
4-210	1235	1U	–	W	0-65535 / 1	IPS LOGIC #2 Timed out functions initiate mask Most significant word [4] See 4-205
4-211	1236	1U	–	W	0-65535 / 1	IPS LOGIC #3 Timed out functions initiate mask Least significant word [0] See 4-201
4-212	1237	1U	–	W	0-65535 / 1	IPS LOGIC #3 Timed out functions initiate mask Next significant word [1] See 4-202

■ **NOTES:**

1. ***** Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. ******* Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (12 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-213	1238	1U	–	W	0-65535 / 1	IPS LOGIC #3 Timed out functions initiate mask Next significant word [2] See 4-203
4-214	1239	1U	–	W	0-65535 / 1	IPS LOGIC #3 Timed out functions initiate mask Next significant word [3] See 4-204
4-215	1240	1U	–	W	0-65535 / 1	IPS LOGIC #3 Timed out functions initiate mask Most significant word [4] See 4-205
4-216	1241	1U	–	W	0-65535 / 1	IPS LOGIC #4 Timed out functions initiate mask Least significant word [0] See 4-201
4-217	1242	1U	–	W	0-65535 / 1	IPS LOGIC #4 Timed out functions initiate mask Next significant word [1] See 4-202
4-218	1243	1U	–	W	0-65535 / 1	IPS LOGIC #4 Timed out functions initiate mask Next significant word [2] See 4-203
4-219	1244	1U	–	W	0-65535 / 1	IPS LOGIC #4 Timed out functions initiate mask Next significant word [3] See 4-204
4-220	1245	1U	–	W	0-65535 / 1	IPS LOGIC #4 Timed out functions initiate mask Most significant word [4] See 4-205
4-221	1246	1U	–	W	0-65535 / 1	IPS LOGIC #5 Timed out functions initiate mask Least significant word [0] See 4-201
4-222	1247	1U	–	W	0-65535 / 1	IPS LOGIC #5 Timed out functions initiate mask Next significant word [1] See 4-202

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. *** Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (13 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-223	1248	1U	–	W	0-65535 / 1	IPS LOGIC #5 Timed out functions initiate mask Next significant word [2] See 4-203
4-224	1249	1U	–	W	0-65535 / 1	IPS LOGIC #5 Timed out functions initiate mask Next significant word [3] See 4-204
4-225	1250	1U	–	W	0-65535 / 1	IPS LOGIC #5 Timed out functions initiate mask Most significant word [4] See 4-205
4-226	1251	1U	–	W	0-65535 / 1	IPS LOGIC #6 Timed out functions initiate mask Least significant word [0] See 4-201
4-227	1252	1U	–	W	0-65535 / 1	IPS LOGIC #6 Timed out functions initiate mask Next significant word [1] See 4-202
4-228	1253	1U	–	W	0-65535 / 1	IPS LOGIC #6 Timed out functions initiate mask Next significant word [2] See 4-203
4-229	1254	1U	–	W	0-65535 / 1	IPS LOGIC #6 Timed out functions initiate mask Next significant word [3] See 4-204
4-230	1255	1U	–	W	0-65535 / 1	IPS LOGIC #6 Timed out functions initiate mask Most significant word [4] See 4-205
4-231	1256	1	CYCLES	W	2-8160 / 1	Seal in delay relay 9
4-232	1257	1	CYCLES	W	2-8160 / 1	Seal in delay relay 10
4-233	1258	1	CYCLES	W	2-8160 / 1	Seal in delay relay 11
4-234	1259	1	CYCLES	W	2-8160 / 1	Seal in delay relay 12
4-235	1260	1	CYCLES	W	2-8160 / 1	Seal in delay relay 13
4-236	1261	1	CYCLES	W	2-8160 / 1	Seal in delay relay 14
4-237	1262	1	CYCLES	W	2-8160 / 1	Seal in delay relay 15

■ **NOTES:**

1. ***** Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. ******* Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (14 of 15)

SYSTEM SETTINGS, EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-238	1263	1	CYCLES	W	2-8160 / 1	Seal in delay relay 16
4-239	1264	1	CYCLES	W	2-8160 / 1	Seal in delay relay 17
4-240	1265	1	CYCLES	W	2-8160 / 1	Seal in delay relay 18
4-241	1266	1	CYCLES	W	2-8160 / 1	Seal in delay relay 19
4-242	1267	1	CYCLES	W	2-8160 / 1	Seal in delay relay 20
4-243	1268	1	CYCLES	W	2-8160 / 1	Seal in delay relay 21
4-244	1269	1	CYCLES	W	2-8160 / 1	Seal in delay relay 22
4-245	1270	1	CYCLES	W	2-8160 / 1	Seal in delay relay 23
4-246	1271	1	CYCLES	W	0-65500 / 1	IPS LOGIC #1 dropout delay
4-247	1272	1	CYCLES	W	0-65500 / 1	IPS LOGIC #2 dropout delay
4-248	1273	1	CYCLES	W	0-65500 / 1	IPS LOGIC #3 dropout delay
4-249	1274	1	CYCLES	W	0-65500 / 1	IPS LOGIC #4 dropout delay
4-250	1275	1	CYCLES	W	0-65500 / 1	IPS LOGIC #5 dropout delay
4-251	1276	1	CYCLES	W	0-65500 / 1	IPS LOGIC #6 dropout delay
4-252	1277	1	–	W	0-255/1	IPS LOGIC reset/dropout timer config Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 not used Bit 7 not used 0 = Reset timer 1 = Dropout timer
4-253	1278	10	VOLTS	W	500-1400/1	25S VX Nominal Voltage
4-254	1279	1	Degree	W	-180 – 180/1	25S VX Phase Angle Compensation

■ **NOTES:**

1. ***** Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-36 is 0, if IRIG-B sync status is valid these points will return full time information.
2. ******* Combined with high word should not exceed 360000.

Table 5 – System Settings, Extra Setpoints (15 of 15)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
5-00	1281	1U	–	W	0-63 / 1	IPS LOGIC #1 Input initiate Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6-15 Not used (0)
5-01	1282	1U	–	W	0-255 / 1	IPS LOGIC #1 Output initiate Bit 0 Output 1 Bit 1 Output 2 Bit 2 Output 3 Bit 3 Output 4 Bit 4 Output 5 Bit 5 Output 6 Bit 6 Output 7 Bit 7 Output 8 Bit 8-15 Not used (0)
5-02	1283	1U	–	W	0-255 / 1	IPS LOGIC #1 Gate config Bit 0 Output initiate gate Bit 1 Picked up functions initiate gate Bit 2 Input initiate gate Bit 3 Blocking inputs gate Bit 4 Inputs main gate Bit 5-6 Not used (0) Bit 7 Picked up functions initiate gate NOT element enable/disable 0 = NOT disabled 1 = NOT enabled 0 = gate configured for “OR” 1 = gate configured for “AND”
5-03	1284	1U	–	W	0-65535 / 1	IPS LOGIC #1 Picked up functions initiate mask Least significant word [0] Bit 0 21 #1 Bit 8 27TN #2 Bit 1 21 #2 Bit 9 32 #1 Bit 2 24DT #1 Bit 10 32 #2 Bit 3 24DT #2 Bit 11 40 #1 Bit 4 24IT Bit 12 40 #2 Bit 5 27 #1 Bit 13 46DT Bit 6 27 #2 Bit 14 46IT Bit 7 27TN #1 Bit 15 50 #1

Table 6 – Extra Setpoints (1 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
5-04	1285	1U	–	W	0-65535 / 1	IPS LOGIC #1 Picked up functions initiate mask Next significant word [1] Bit 0 5027 Bit 8 59 #1 Bit 1 50BF Bit 9 59 #2 Bit 2 50DT #1 Bit 10 59N #1 Bit 3 50DT #2 Bit 11 59N #2 Bit 4 50N Bit 12 60FL Bit 5 51N Bit 13 64B Bit 6 21 #3 Bit 14 64F #1 Bit 7 51V Bit 15 64F #2
5-05	1286	1U	–	W	0-65535 / 1	IPS LOGIC #1 Picked up functions initiate mask Next significant word [2] Bit 0 64S Bit 8 87 #1 Bit 1 78 Bit 9 87GD Bit 2 81 #1 Bit 10 25S Bit 3 81 #2 Bit 11 25D Bit 4 81 #3 Bit 12 Not used Bit 5 81 #4 Bit 13 Not used Bit 6 81R #1 Bit 14 27 #3 Bit 7 81R #2 Bit 15 32 #3
5-06	1287	1U	–	W	0-65535 / 1	IPS LOGIC #1 Picked up functions initiate mask Next significant word [3] Bit 0 50 #2 Bit 9 Breaker monitor Bit 1 59 #3 Bit 2 59D Bit 10 Not used Bit 3 59N #3 Bit 11 Trip Circuit Monitor Bit 4 67NDT Bit 5 67NIT Bit 12 81A #1 Bit 6 87 #2 Bit 13 81A #2 Bit 7 49 #1 Bit 14 81A #3 Bit 8 49 #2 Bit 15 81A #4
5-07	1288	1U	–	W	0-65535 / 1	IPS LOGIC #1 Picked up functions initiate mask Most significant word [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 11 F81A #6 Bit 7 F40VC #2 Bit 12 Not used Bit 8 F59VX_1 Bit 13 not used Bit 9 F59VX_2 Bit 14 not used Bit 10 F81A #5 Bit 15 not used

Table 6 – Extra Setpoints (2 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-08	1289	1U	–	W	0-4 / 1	EXT #1 Switch profile 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
5-09	1290	1	CYCLES	W	1-8160 / 1	IPS LOGIC #1 Delay
5-10	1291	1U	–	W	0-63 / 1	IPS LOGIC #2 Input initiate See 5-00
5-11	1292	1U	–	W	0-255 / 1	IPS LOGIC #2 Output initiate See 5-01
5-12	1293	1U	–	W	0-255 / 1	IPS LOGIC #2 Gate config See 5-02
5-13	1294	1U	–	W	0-65535 / 1	IPS LOGIC #2 Picked up functions initiate mask Least significant word [0] See 5-03
5-14	1295	1U	–	W	0-65535 / 1	IPS LOGIC #2 Picked up functions initiate mask Next significant word [1] See 5-04
5-15	1296	1U	–	W	0-65535 / 1	IPS LOGIC #2 Picked up functions initiate mask Next significant word [2] See 5-05
5-16	1297	1U	–	W	0-65535 / 1	IPS LOGIC #2 Picked up functions initiate mask Next significant word [3] See 5-06
5-17	1298	1U	–	W	0-65535 / 1	IPS LOGIC #2 Picked up functions initiate mask Most significant word [4] See 5-07
5-18	1299	1U	–	W	0-4 / 1	IPS LOGIC #2 Switch profile See 5-08
5-19	1300	1	CYCLES	W	1-8160 / 1	IPS LOGIC #2 Delay
5-20	1301	1U	–	W	0-63 / 1	IPS LOGIC #3 Input initiate See 5-00
5-21	1302	1U	–	W	0-255 / 1	IPS LOGIC #3 Output initiate See 5-01
5-22	1303	1U	–	W	0-255/1	IPS LOGIC #3 Gate config See 5-02

Table 6 – Extra Setpoints (3 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-23	1304	1U	–	W	0-65535 / 1	IPS LOGIC #3 Picked up functions initiate mask Least significant word [0] See 5-03
5-24	1305	1U	–	W	0-65535 / 1	IPS LOGIC #3 Picked up functions initiate mask Next significant word [1] See 5-04
5-25	1306	1U	–	W	0-65535 / 1	IPS LOGIC #3 Picked up functions initiate mask Next significant word [2] See 5-05
5-26	1307	1U	–	W	0-65535 / 1	IPS LOGIC #3 Picked up functions initiate mask Next significant word [3] See 5-06
5-27	1308	1U	–	W	0-65535 / 1	IPS LOGIC #3 Picked up functions initiate mask Most significant word [4] See 5-07
5-28	1309	1U	–	W	0-4 / 1	IPS LOGIC #3 Switch profile See 5-08
5-29	1310	1	CYCLES	W	1-8160 / 1	IPS LOGIC #3 Delay
5-30	1311	1U	–	W	0-63 / 1	IPS LOGIC #4 Input initiate See 5-00
5-31	1312	1U	–	W	0-255 / 1	IPS LOGIC #4 Output initiate See 5-01
5-32	1313	1U	–	W	0-255 / 1	IPS LOGIC #4 Gate config See 5-02
5-33	1314	1U	–	W	0-65535 / 1	IPS LOGIC #4 Picked up functions initiate mask Least significant word [0] See 5-03
5-34	1315	1U	–	W	0-65535 / 1	IPS LOGIC #4 Picked up functions initiate mask Next significant word [1] See 5-04
5-35	1316	1U	–	W	0-65535 / 1	IPS LOGIC #4 Picked up functions initiate mask Next significant word [2] See 5-05

Table 6 – Extra Setpoints (4 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-36	1317	1U	–	W	0-65535 / 1	IPS LOGIC #4 Picked up functions initiate mask Next significant word [3] See 5-06
5-37	1318	1U	–	W	0-65535 / 1	IPS LOGIC #4 Picked up functions initiate mask Most significant word [4] See 5-07
5-38	1319	1U	–	W	0-4 / 1	IPS LOGIC #4 Switch profile See 5-08
5-39	1320	1	CYCLES	W	1-8160 / 1	IPS LOGIC #4 Delay
5-40	1321	1U	–	W	0-63 / 1	IPS LOGIC #5 Input initiate See 5-00
5-41	1322	1U	–	W	0-255 / 1	IPS LOGIC #5 Output initiate See 5-01
5-42	1323	1U	–	W	0-255 / 1	IPS LOGIC #5 Gate config See 5-02
5-43	1324	1U	–	W	0-65535 / 1	IPS LOGIC #5 Picked up functions initiate mask Least significant word [0] See 5-03
5-44	1325	1U	–	W	0-65535 / 1	IPS LOGIC #5 Picked up functions initiate mask Next significant word [1] See 5-04
5-45	1326	1U	–	W	0-65535 / 1	IPS LOGIC #5 Picked up functions initiate mask Next significant word [2] See 5-05
5-46	1327	1U	–	W	0-65535 / 1	IPS LOGIC #5 Picked up functions initiate mask Next significant word [3] See 5-06
5-47	1328	1U	–	W	0-65535 / 1	IPS LOGIC #5 Picked up functions initiate mask Most significant word [4] See 5-07
5-48	1329	1U	–	W	0-4 / 1	IPS LOGIC #5 Switch profile See 5-08
5-49	1330	1	CYCLES	W	1-8160 / 1	IPS LOGIC #5 Delay
5-50	1331	1U	–	W	0-63 / 1	IPS LOGIC #6 Input initiate See 5-00

Table 6 – Extra Setpoints (5 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-51	1332	1U	–	W	0-255 / 1	IPS LOGIC #6 Output initiate See 5-01
5-52	1333	1U	–	W	0-255 / 1	IPS LOGIC #6 Gate config See 5-02
5-53	1334	1U	–	W	0-65535 / 1	IPS LOGIC #6 Picked up functions initiate mask Least significant word [0] See 5-03
5-54	1335	1U	–	W	0-65535 / 1	IPS LOGIC #6 Picked up functions initiate mask Next significant word [1] See 5-04
5-55	1336	1U	–	W	0-65535 / 1	IPS LOGIC #6 Picked up functions initiate mask Next significant word [2] See 5-05
5-56	1337	1U	–	W	0-65535 / 1	IPS LOGIC #6 Picked up functions initiate mask Next significant word [3] See 5-06
5-57	1338	1U	–	W	0-65535 / 1	IPS LOGIC #6 Picked up functions initiate mask Most significant word [4] See 5-07
5-58	1339	1U	–	W	0-4 / 1	IPS LOGIC #6 Switch profile See 5-08
5-59	1340	1	CYCLES	W	1-8160 / 1	IPS LOGIC #6 Delay
5-60	1341	1	CYCLES	W	1-8160 / 1	TC (Trip Circuit) Delay
5-61	1342	1	KAMPS	W	0-50000 /1	BM Pickup
5-62	1343	10	CYCLES	W	1-40959 /1	BM Delay
5-63	1344	1U	–	W	0-63 / 1	BM Input initiate Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6-15 Not used (0)

Table 6 – Extra Setpoints (6 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
5-64	1345	1U	–	W	0-255 / 1	BM Output initiate Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 BitS 8-15 Not used (0)
5-65	1346	1U	–	W	0-255/1	BM Input initiate extended Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14
5-66	1347	1U	–	W	0-65535/1	BM Output initiate extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
5-67	1348	1U	–	W	0-1/1	Breaker monitor timing method select Bit 0 = BM Bits 1-7 = Not Used 0 = I*t method selected 1 = I2*t method selected
5-68	1349	1	KAMPS	W	0-50000/1	Phase A Breaker monitoring arc current acc.
5-69	1350	1	KAMPS	W	0-50000/1	Phase B Breaker monitoring arc current acc.
5-70	1351	1	KAMPS	W	0-50000 / 1	Phase C Breaker monitoring arc current acc.
5-71	1352	1	–	W	0-1/1	59D fundamental enable 0 = disabled 1 = enabled
5-72	1353	1	–	W	0-1/1	27TN #1 overvoltage select 0 = undervoltage selected 1 = overvoltage selected

Table 6 – Extra Setpoints (7 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-73	1354	1	–	W	0-1/1	27TN #2 overvoltage select 0 = undervoltage selected 1 = overvoltage selected
5-74	1355	1	–	W	0-1/1	59N 20 Hz injection mode 0 = disabled 1 = enabled The injection mode cannot be disabled if 64S function is enabled
5-75	1356	1	–	W	0-255/1	IPS Logic functions gate config Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 not used Bit 7 not used 0 = gate configured for "OR" 1 = gate configured for "AND"
5-76	1357	–	–	–	–	Not used
5-77	1358	1U	–	W	0-1 / 1	IPS LOGIC #1 Communication initiate
5-78	1359	1U	–	W	0-1 / 1	IPS LOGIC #1 Communication block
5-79	1360	1U	–	W	0-1 / 1	IPS LOGIC #2 Communication initiate
5-80	1361	1U	–	W	0-1 / 1	IPS LOGIC #2 Communication block
5-81	1362	1U	–	W	0-1 / 1	IPS LOGIC #3 Communication initiate
5-82	1363	1U	–	W	0-1 / 1	IPS LOGIC #3 Communication block
5-83	1364	1U	–	W	0-1 / 1	IPS LOGIC #4 Communication initiate
5-84	1365	1U	–	W	0-1 / 1	IPS LOGIC #4 Communication block
5-85	1366	1U	–	W	0-1 / 1	IPS LOGIC #5 Communication initiate
5-86	1367	1U	–	W	0-1 / 1	IPS LOGIC #5 Communication block
5-87	1368	1U	–	W	0-1 / 1	IPS LOGIC #6 Communication initiate
5-88	1369	1U	–	W	0-1 / 1	IPS LOGIC #6 Communication block
5-89	1370	–	–	–	–	Not Used
5-90	1371	1U	–	–	0-512 / 1	SER Number of stored events

Table 6 – Extra Setpoints (8 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-91	1372	1U	–	W	0-1 / 1	SER Inhibit. Must be set to 1 before downloading the data block from points 5-93 to 5-220. Must be set to 0 after download is completed, to enable the SER operation. Will be automatically reset to 0 in 5 minutes of inactivity data block downloads. Note: Inhibiting SER will also inhibit the oscillograph recorder.
5-92	1373	1U	–	W	0-1000/1	SER number of data block for download. Auto incremented by 1 every time a new block of data has been downloaded from points 5-93 to 5-220. Block number cannot exceed value from point 5-90.
5-93 to 5-220	1374 to 1501	1U	–	–	0-65535 / 1	SER Data block. Can be downloaded only as a block of N points (see point 5-222) starting from point 5-93. Block number is selected in point 5-92. SER must be inhibited before starting the download (point 5-91), otherwise the relay will report an error. Point 5-93 has a current block number being downloaded. The rest of the N-1 points consist of actual data. The structure of the data block is defined below.
5-221	1502	1U	–	W	0-1 / 1	SER clear events. Writing 1 to this point will clear all the events. Read back of this point will always return 0
5-222	1503	1U	–	–	0-65535 / 1	SER size of the block in points. Only block consisting of this number of points can be read from points 5-93 to 5-220
5-223	1504	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [0] See points 1-71 to 1-75 for bits definition
5-224	1505	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [1] See points 1-71 to 1-75 for bits definition
5-225	1506	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [2] See points 1-71 to 1-75 for bits definition
5-226	1507	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [3] See points 1-71 to 1-75 for bits definition
5-227	1508	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [4] See points 1-71 to 1-75 for bits definition
5-228	1509	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [0] See points 1-71 to 1-75 for bits definition

Table 6 – Extra Setpoints (9 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-229	1510	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [1] See points 1-71 to 1-75 for bits definition
5-230	1511	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [2] See points 1-71 to 1-75 for bits definition
5-231	1512	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [3] See points 1-71 to 1-75 for bits definition
5-232	1513	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [4] See points 1-71 to 1-75 for bits definition
5-233	1514	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [0] See points 1-71 to 1-75 for bits definition
5-234	1515	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [1] See points 1-71 to 1-75 for bits definition
5-235	1516	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [2] See points 1-71 to 1-75 for bits definition
5-236	1517	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [3] See points 1-71 to 1-75 for bits definition
5-237	1518	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [4] See points 1-71 to 1-75 for bits definition
5-238	1519	1U	–	W	0-255 / 1	SER Trigger on output pickup Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Bit 8-15 Not used (0)
5-239	1520	1U	–	W	0-255 / 1	SER Trigger on output dropout. See 5-238 for bits definition
5-240	1521	1U	–	W	0-63 / 1	SER Trigger on input pickup Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6-15 Not used (0)
5-241	1522	1U	–	W	0-63 / 1	SER Trigger on input dropout See 5-240 for bits definition

Table 6 – Extra Setpoints (10 of 11)

EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-242	1523	1U	–	W	0-65535/1	SER Trigger on output pickup extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
5-243	1524	1U	–	W	0-65535/1	SER Trigger on output dropout extended. See 5-242 for bits definition
5-244	1525	1U	–	W	0-255/1	SER Trigger on input pickup extended Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 6 Input 13 Bit 7 Input 14
5-245	1526	1U	–	W	0-255/1	SER Trigger on input dropout extended See 5-244 for bits definition
5-246	1527	10	Volts	W	10-1000/1	59N#1 Negative sequence voltage inhibit
5-247	1528	10	Volts	W	10-1000/1	59N#1 Zero sequence voltage inhibit
5-248	1529	10	Volts	W	10-1000/1	59N#2 Negative sequence voltage inhibit
5-249	1530	10	Volts	W	10-1000/1	59N#2 Zero sequence voltage inhibit
5-250	1531	10	Volts	W	10-1000/1	59N#3 Negative sequence voltage inhibit
5-251	1532	10	Volts	W	10-1000/1	59N#3 Zero sequence voltage inhibit
5-252	1533	1	–	W	0-255/1	59N Neg. seq. & Zero Seq. voltage inhibit enable/disable Bit 0 #1 NS Enable/Disable Bit 1 #2 NS Enable/Disable Bit 2 #3 NS Enable/Disable Bit 3 #1 ZS Enable/Disable Bit 4 #2 ZS Enable/Disable Bit 5 #3 ZS Enable/Disable Bits 6-7 Not used (0)
5-253	1534	1	–	W	0-7/1	59N Zero sequence voltage selection Bit 0 #1: 0 = 3V0; 1 = VX Bit 1 #2: 0 = 3V0; 1 = VX Bit 2 #3: 0 = 3V0; 1 = VX

Table 6 – Extra Setpoints (11 of 11)

OSCILLOGRAPH RECORDER						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
6-00	1537	1	–	W	1-16 / 1	Number of partitions* 1 = 1 @ 416 Cycles 9 = 9 @ 80 Cycles 2 = 2 @ 280 Cycles 10 = 10 @ 72 Cycles 3 = 3 @ 208 Cycles 11 = 11 @ 64 Cycles 4 = 4 @ 168 Cycles 12 = 12 @ 64 Cycles 5 = 5 @ 136 Cycles 13 = 13 @ 56 Cycles 6 = 6 @ 120 Cycles 14 = 14 @ 56 Cycles 7 = 7 @ 104 Cycles 15 = 15 @ 48 Cycles 8 = 8 @ 88 Cycles 16 = 16 @ 48 Cycles
6-01	1538	1	–	W	0-255 / 1	Trigger inputs ** Bit 0 Input 1 Bit 1 Input 2 Bit 2 Input 3 Bit 3 Input 4 Bit 4 Input 5 Bit 5 Input 6 Bit 6 Fuse loss Bit 7-15 Not used (0)
6-02	1539	1	–	W	0-255 / 1	Trigger outputs Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Bit 8-15 Not used (0)
6-03	1540	1	%	W	5-95 / 1	Post trigger delay *
6-04	1541	1	–	W	0-1 / 1	Recorder trigger inhibit 0 = recorder active (running) 1 = recorder trigger inhibit when read: Bit 0 Inhibit by COM1 Bit 1 Inhibit by COM2 Bit 2 Inhibit by COM3 Bit 3-15 Not used (0) Note: Inhibiting Osc. recorder will also inhibit the SER recorder.

■ **NOTE:** * / ** / *** / **** See Notes at end of Table 7.

Table 7 – Oscillograph Recorder (1 of 5)

OSCILLOGRAPH RECORDER						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
6-05	1542	1	–	W	0-2 / 1	Recorder status If read: 0 = no records available 1 = at least 1 record available (follows OSC REC led) If write: 0 = Do nothing 1 = Remotely trigger recorder 2 = Clear all records
6-06	1543	1	–	W	0-255 / 1	Trigger inputs extended** Bit 0 Input 7 Bit 1 Input 8 Bit 2 Input 9 Bit 3 Input 10 Bit 4 Input 11 Bit 5 Input 12 Bit 7 Input 13 Bit 8 Input 14
6-07	1544	1	–	W	0-65535 / 1	Trigger outputs extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
6-08	1545	–	–	–	–	Not used
6-09	1546	–	–	–	–	Not used
6-10	1547	1	–	W	0-1 / 1	Comtrade current file type: 1 = CFG 2 = DAT
6-11	1548	1U	–	–	0-65535	Comtrade Total number of blocks for current file
6-12	1549	1U	–	W	0-65535	Comtrade current block number available for download. This number is automatically incremented by 1 when the download of current block complete.
6-13	1550	1	–	–	0-255	Comtrade Number of registers required for download the current block
6-14	1551	1U	–	W***	0-65535 / 1	Download Record #1 block
6-15	1552	1U	–	W***	0-65535 / 1	Download Record #2 block

■ **NOTE:** * / ** / *** / **** See Notes at end of Table 7.

Table 7 – Oscillograph Recorder (2 of 5)

OSCILLOGRAPH RECORDER						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
6-16	1553	1U	–	W***	0-65535 / 1	Download Record #3 block
6-17	1554	1U	–	W***	0-65535 / 1	Download Record #4 block
6-18	1555	1U	–	W***	0-65535 / 1	Download Record #5 block
6-19	1556	1U	–	W***	0-65535 / 1	Download Record #6 block
6-20	1557	1U	–	W***	0-65535 / 1	Download Record #7 block
6-21	1558	1U	–	W***	0-65535 / 1	Download Record #8 block
6-22	1559	1U	–	W***	0-65535 / 1	Download Record #9 block
6-23	1560	1U	–	W***	0-65535 / 1	Download Record #10 block
6-24	1561	1U	–	W***	0-65535 / 1	Download Record #11 block
6-25	1562	1U	–	W***	0-65535 / 1	Download Record #12 block
6-26	1563	1U	–	W***	0-65535 / 1	Download Record #13 block
6-27	1564	1U	–	W***	0-65535 / 1	Download Record #14 block
6-28	1565	1U	–	W***	0-65535 / 1	Download Record #15 block
6-29	1566	1U	–	W***	0-65535 / 1	Download Record #16 block
6-30	1567	1	–	W	0-16 / 1	Comtrade current record selected for download. 0 = None of the record selected or none of them are available 1 = Record 1 selected 2 = Record 2 selected 3 = Record 3 selected 4 = Record 4 selected 5…15 = Record 5…15 selected 16 = Record 16 selected
6-31	1568	1	–	W	1-16/1	Record number for points 6-32 to 6-44. To read status and time stamp of record N, write N to this point and read points 6-32 to 6-44

■ **NOTE:** * / ** / *** / **** See Notes at end of Table 7.

Table 7 – Oscillograph Recorder (3 of 5)

OSCILLOGRAPH RECORDER						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
6-32 to 6-41	1569 to 1578	–	–	–	–	Record #N date and time stamp Encoded as an ASCII string. DD-MMM-YYYY HH:MM:SS:TTT For example: 03-Mar-1990 12:15:03 6-32 = 12339 or 3033HEX or '0' '3' 6-33 = 11597 or 2d4dHEX or '-' 'M' 6-34 = 24946 or 6172HEX or 'a' 'r' 6-35 = 11569 or 2d31HEX or '-' '1' 6-36 = 14649 or 3939HEX or '9' '9' 6-37 = 12320 or 3020HEX or '0' ' ' 6-38 = 12594 or 3132HEX or '1' '2' 6-39 = 14896 or 3a30HEX or ':' '1' 6-40 = 13626 or 353aHEX or '5' ':' 6-41 = 12339 or 3033HEX or '0' '3' To select a record number, use point 6-31
6-42 to 6-43	1579 to 1580	****	–	–	–	Record #N extended time stamp Encoded as ASCII string. 10's 100's and 1000's. For example: 03-Mar-1990 12:15:03.468 6-42 = 11828 or 2E34HEX or '.' '4' 6-43 = 13880 or 3638HEX or '6' '8' To select a record number, use point 6-31

6-44	1581	1	–	–	–	Record #N status (latest)
						0 = untriggered
						(Cleared)
						1 = triggered, full record
						(Available for downloading)
						2 = triggered, incomplete record
						(Available for downloading)
						To select a record number, use point 6-31

6-45 to 6-69	1582 to 1606	–	–	–	–	Not used
6-70	1607	–	–	–	–	Comtrade request for download the block of data starting from the 6-71 setpoint. Number of registers required for the current block is defined in setpoint 6-13. Reading from this setpoint also increments by 1 current block number (setpoint 6-12).
6-71	1608	–	–	–	0-65535	Comtrade number of registers for the next block of data.
6-72 to 6-140	1609 to 1677	–	–	–	0-65535	Comtrade data for the current block. Cannot read individual registers. Start setpoint should be 6-70
6-150 to 6-215	1687 to 1752	–	–	–	–	MODBUS data block

■ **NOTE:** * / ** / *** / **** See Notes at end of Table 7.

Table 7 – Oscillograph Recorder (4 of 5)

OSCILLOGRAPH RECORDER						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
6-238	1775	1	–	W	0-65535 / 1	Last selftest error code timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020
6-239	1776	1	–	W	0-65535 / 1	Last selftest error code – 1 timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020
6-240	1777	1	–	W	0-65535 / 1	Last selftest error code – 2 timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020
6-241	1778	1	–	W	0-65535 / 1	Last selftest error code – 3 timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020

■ NOTES:

1. * Changing the number of partitions automatically resets the post trigger delay setting to %5 and clears all previously stored records.
2. ** Trigger bits are OR'ed to create multiple trigger options. An incomplete record only occurs when the trigger appears before the buffer is full. This can happen if triggered immediately on power up or when partition is switched and the post trigger delay is set very small.
3. *** Downloading should not be attempted until record is checked for availability. A block request is sent by the master with a write formatted packet. This data point is the block number of the requested record. Depending on the protocol selected, use the following:
4. BECO2200
   The slave will respond with a large packet (134 bytes) containing the address, byte count, system/data error status and 130 bytes of data and the checksum. The first two data bytes being an echo of the block number the remaining 128 bytes the data block. The master must read the number of partitions data point (6-00) to determine how many blocks to request. Ex: If partitions is set to 1, there are 496 blocks (block 0 - block 495).
5. MODBUS
   After the block request is written, perform a multipoint read of point 6-150 with a number of points equal to 65. This will return 130 bytes of block data (2 bytes block number, 128 bytes data). This is the only point that allows a multipoint read with number of points greater than 15.
6. Also, the oscillograph recorder MUST be inhibited from triggering before any block is requested (6-04). Be sure to un-inhibit triggering when downloading is completed or if downloading is aborted.

Partitions	Blocks	Record size	Partitions	Blocks	Record size
1	0-1510	193280	9	0-292	37376
2	0-1017	130176	10	0-263	33664
3	0-756	96768	11	0-234	29952
4	0-611	78208	12	0-234	29952
5	0-495	63360	13	0-205	26240
6	0-437	55936	14	0-205	26240
7	0-379	48512	15	0-176	22528
8	0-321	41088	16	0-176	22528

   It is up to the master to re-request bad packets and do all the error checking.
7. **** Extended time information will read XX:XX:XX.000 (i.e. zeros) if IRIG-B signal is invalid or not used.

Table 7 – Oscillograph Recorder (5 of 5)

TARGET INFORMATION						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE INCREMENT**	**DESCRIPTION**
8-00	2049	1U	–	–	–	Target #1 relay status Bit 0 Out 1 Bit 1 Out 2 Bit 2 Out 3 Bit 3 Out 4 Bit 4 Out 5 Bit 5 Out 6 Bit 6 Out 7 Bit 7 Out 8 Bit 8-15 Not used (0) If point reads 0 target is cleared.
8-01	2050	1U	–	–	–	Target #1 input status Bit 0 Input 1 Bit 8 Input 7 Bit 1 Input 2 Bit 9 Input 8 Bit 2 Input 3 Bit 10 Input 9 Bit 3 Input 4 Bit 11 Input 10 Bit 4 Input 5 Bit 12 Input 11 Bit 5 Input 6 Bit 13 Input 12 Bit 6 Fuse Loss Bit 14 Input 13 Bit 7 Not used Bit 15 Input 14
8-02	2051	1U	–	–	–	Target #1 Function status (picked up) [0] Bit 0 21 #1 Bit 8 27TN #2 Bit 1 21 #2 Bit 9 32 #1 Bit 2 24DT #1 Bit 10 32 #2 Bit 3 24DT #2 Bit 11 40 #1 Bit 4 24IT Bit 12 40 #2 Bit 5 27 #1 Bit 13 46DT Bit 6 27 #2 Bit 14 46IT Bit 7 27TN #1 Bit 15 50 #1
8-03	2052	1U	–	–	–	Target #1 Function status (picked up) [1] Bit 0 5027 Bit 8 59 #1 Bit 1 50BF Bit 9 59 #2 Bit 2 50DT #1 Bit 10 59N #1 Bit 3 50DT #2 Bit 11 59N #2 Bit 4 50N Bit 12 60FL Bit 5 51N Bit 13 64B Bit 6 21 #3 Bit 14 64F #1 Bit 7 51V Bit 15 64F #2

Table 9 – Target Information (1 of 11)

TARGET INFORMATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
8-04	2053	1U	–	–	–	Target #1 Function status (picked up) [2] Bit 0 64S Bit 1 78 Bit 2 81 #1 Bit 3 81 #2 Bit 4 81 #3 Bit 5 81 #4 Bit 6 81R #1 Bit 7 81R #2 Bit 8 87 Bit 9 87GD Bit 10 25S Bit 11 25D Bit 12 Not used Bit 13 Not used Bit 14 27 #3 Bit 15 32 #3
8-05	2054	1U	–	–	–	Target #1 Function status (picked up) [3] Bit 0 50 #2 Bit 1 59 #3 Bit 2 59D Bit 3 59N #3 Bit 4 67NDT Bit 5 67NIT Bit 6 87 #2 Bit 7 49 #1 Bit 8 49#2 Bit 9 Breaker monitor Bit 10 Not used Bit 11 Trip Circuit Monitor Bit 12 81A #1 Bit 13 81A #2 Bit 14 81A #3 Bit 15 81A #4
8-06	2055	1U	–	–	–	Target #1 Function status (picked up) [4] Bit 0 IPS LOGIC #1 Bit 1 IPS LOGIC #2 Bit 2 IPS LOGIC #3 Bit 3 IPS LOGIC #4 Bit 4 IPS LOGIC #5 Bit 5 IPS LOGIC #6 Bit 6 F40VC #1 Bit 7 F40VC #2 Bit 8 F59VX_1 Bit 9 F59VX_2 Bit 10 F81A #5 Bit 11 F81A #6 Bit 12 Not used Bit 13 Not used Bit 14 Not used Bit 15 Not used
8-07	2056	1U	–	–	–	Target #1 Function status (timed out) [0] Bit 0 21 #1 Bit 1 21 #2 Bit 2 24DT #1 Bit 3 24DT #2 Bit 4 24IT Bit 5 27 #1 Bit 6 27 #2 Bit 7 27TN #1 Bit 8 27TN #2 Bit 9 32 #1 Bit 10 32 #2 Bit 11 40 #1 Bit 12 40 #2 Bit 13 46DT Bit 14 46IT Bit 15 50

Table 9 – Target Information (2 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE INCREMENT**	**DESCRIPTION**
8-08	2057	1U	–	–	–	Target #1 Function status (timed out) [1] Bit 0 5027 Bit 8 59 #1 Bit 1 50BF Bit 9 59 #2 Bit 2 50DT #1 Bit 10 59N #1 Bit 3 50DT #2 Bit 11 59N #2 Bit 4 50N Bit 12 60FL Bit 5 51N Bit 13 64B Bit 6 21 #3 Bit 14 64F #1 Bit 7 51V Bit 15 64F #2
8-09	2058	1U	–	–	–	Target #1 Function status (timed out) [2] Bit 0 64S Bit 8 87 Bit 1 78 Bit 9 87GD Bit 2 81 #1 Bit 10 25S Bit 3 81 #2 Bit 11 25D Bit 4 81 #3 Bit 12 Not used Bit 5 81 #4 Bit 13 Not used Bit 6 81R #1 Bit 14 27 #3 Bit 7 81R #2 Bit 15 32 #3
8-10	2059	1U	–	–	–	Target #1 Function status (timed out) [3] Bit 0 50 #2 Bit 9 Breaker monitor Bit 1 59 #3 Bit 2 59D Bit 10 Not used Bit 3 59N #3 Bit 11 Trip Circuit Monitor Bit 4 67NDT Bit 5 67NIT Bit 12 81A #1 Bit 6 87 #2 Bit 13 81A #2 Bit 7 49 #1 Bit 14 81A #3 Bit 8 49#2 Bit 15 81A #4
8-11	2060	1U	–	–	–	Target #1 Function status (timed out) [4] Bit 0 IPS LOGIC #1 Bit 8 F59VX_1 Bit 1 IPS LOGIC #2 Bit 9 F59VX_2 Bit 2 IPS LOGIC #3 Bit 10 F81A #5 Bit 3 IPS LOGIC #4 Bit 11 F81A #6 Bit 4 IPS LOGIC #5 Bit 12 Not used Bit 5 IPS LOGIC #6 Bit 13 Not used Bit 6 F40VC #1 Bit 14 Not used Bit 7 F40VC #2 Bit 15 Not used

Table 9 – Target Information (3 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE INCREMENT**	**DESCRIPTION**
8-12	2061	1U	–	–	–	Target #1 21 Phase status information Bit 0 #1 Phase A status Bit 1 #1 Phase B status Bit 2 #1 Phase C status Bit 3 Not used Bit 4 #2 Phase A status Bit 5 #2 Phase B status Bit 6 #2 Phase A status Bit 7 Not used Bit 8 #3 Phase A status Bit 9 #3 Phase B status Bit 10 #3 Phase C status Bit 11-15 Not used
8-13	2062	1U	–	–	–	Target #1 21 Phase timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase A timer Bit 7 Not used Bit 8 #3 Phase A timer Bit 9 #3 Phase B timer Bit 10 #3 Phase C timer Bit 11-15 Not used
8-14	2063	1U	–	–	–	Target #1 27 Phase status information Bit 0 #1 Phase A status Bit 1 #1 Phase B status Bit 2 #1 Phase C status Bit 3 Not used Bit 4 #2 Phase A status Bit 5 #2 Phase B status Bit 6 #2 Phase A status Bit 7 Not used Bit 8 #3 Phase A status Bit 9 #3 Phase B status Bit 10 #3 Phase C status Bit 11-15 Not used

Table 9 – Target Information (4 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE INCREMENT**	**DESCRIPTION**
8-15	2064	1U	–	–	–	Target #1 27 Phase timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase A timer Bit 7 Not used Bit 8 #3 Phase A timer Bit 9 #3 Phase B timer Bit 10 #3 Phase C timer Bit 11-15 Not used
8-16	2065	1U	–	–	–	Target #1 50 Phase status/timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used (0) Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase C timer Bit 7 Not used (0) Bit 8 #1 Phase A status Bit 9 #1 Phase B status Bit 10 #1 Phase C status Bit 11 Not used (0) Bit 12 #2 Phase A status Bit 13 #2 Phase B status Bit 14 #2 Phase C status Bit 15 Not used (0)
8-17	2066	1U	–	–	–	Target #1 50DT Phase status/timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used (0) Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase C timer Bit 7 Not used (0) Bit 8 #1 Phase A status Bit 9 #1 Phase B status Bit 10 #1 Phase C status Bit 11 Not used (0) Bit 12 #2 Phase A status Bit 13 #2 Phase B status Bit 14 #2 Phase C status Bit 15 Not used (0)

Table 9 – Target Information (5 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
8-18	2067	1U	–	–	–	Target #1 51V Phase status/timer Bit 0 Phase A timer Bit 1 Phase B timer Bit 2 Phase C timer Bit 3-7 Not used (0) Bit 8 Phase A status Bit 9 Phase B status Bit 10 Phase C status Bit 11-15 Not used (0)
8-19	2068	1U	–	–	–	Target #1 59 Phase status information Bit 0 #1 Phase A status Bit 1 #1 Phase B status Bit 2 #1 Phase C status Bit 3 Not used Bit 4 #2 Phase A status Bit 5 #2 Phase B status Bit 6 #2 Phase A status Bit 7 Not used Bit 8 #3 Phase A status Bit 9 #3 Phase B status Bit 10 #3 Phase C status Bit 11-15 Not used
8-20	2069	1U	–	–	–	Target #1 59 Phase timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase A timer Bit 7 Not used Bit 8 #3 Phase A timer Bit 9 #3 Phase B timer Bit 10 #3 Phase C timer Bit 11-15 Not used

Table 9 – Target Information (6 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
8-21	2070	1U	–	–	–	Target #1 87 Phase status/timer information Bit 0 #1 Phase A timer Bit 1 #1 Phase B timer Bit 2 #1 Phase C timer Bit 3 Not used (0) Bit 4 #2 Phase A timer Bit 5 #2 Phase B timer Bit 6 #2 Phase C timer Bit 7 Not used (0) Bit 8 #1 Phase A status Bit 9 #1 Phase B status Bit 10 #1 Phase C status Bit 11 Not used (0) Bit 12 #2 Phase A status Bit 13 #2 Phase B status Bit 14 #2 Phase C status Bit 15 Not used (0)
8-22	2071	100	AMPS	–	–	Target #1 Phase A current
8-23	2072	100	AMPS	–	–	Target #1 Phase B current
8-24	2073	100	AMPS	–	–	Target #1 Phase C current
8-25	2074	100 or 10	AMPS or mA	–	–	Target #1 Phase N current or Injection current if 64S function purchased
8-26	2075	–	–	–	–	Not used.
8-27 to 8-38	2076 to 2087	–	–	–	–	Target #1 Target date and time stamp Encoded as an ASCII string. DD-MMM-YYYY HH:MM:SS:TTT For example: 03-Mar-1990 12:15:03.982 8-27 = 12339 or 3033HEX or '0' '3' 8-28 = 11597 or 2d4dHEX or '-' 'M' 8-29 = 24946 or 6172HEX or 'a' 'r' 8-30 = 11569 or 2d31HEX or '-' '1' 8-31 = 14649 or 3939HEX or '9' '9' 8-32 = 12320 or 3020HEX or '0' ' ' 8-33 = 12594 or 3132HEX or '1' '2' 8-34 = 14896 or 3a30HEX or ':' '1' 8-35 = 13626 or 353aHEX or '5' ':' 8-36 = 12339 or 3033HEX or '0' '3' 8-37 = 15929 or 2E39HEX or '.' '9' 8-38 = 14386 or 3832HEX or '8' '2'

Table 9 – Target Information (7 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE INCREMENT**	**DESCRIPTION**
8-39	2088	–	–	–	–	Target #1 relay status extended Bit 0 Out 9 Bit 8 Out 17 Bit 1 Out 10 Bit 9 Out 18 Bit 2 Out 11 Bit 10 Out 19 Bit 3 Out 12 Bit 11 Out 20 Bit 4 Out 13 Bit 12 Out 21 Bit 5 Out 14 Bit 13 Out 22 Bit 6 Out 15 Bit 14 Out 23 Bit 7 Out 16 Bit 15 Not used
8-40	2089	–	–	–	–	Target #2 relay status see 8-00
8-41	2090	–	–	–	–	Target #2 input status see 8-01
8-42	2091	–	–	–	–	Target #2 Function status [0] (picked up) see 8-02
8-43	2092	–	–	–	–	Target #2 Function status [1] (picked up) see 8-03
8-44	2093	–	–	–	–	Target #2 Function status [2] (picked up) see 8-04
8-45	2094	–	–	–	–	Target #2 Function status [3] (picked up) see 8-05
8-46	2095	–	–	–	–	Target #2 Function status [4] (picked up) see 8-06
8-47	2096	–	–	–	–	Target #2 Function status [0] (timed out) see 8-07
8-48	2097	–	–	–	–	Target #2 Function status [1] (timed out) see 8-08
8-49	2098	–	–	–	–	Target #2 Function status [2] (timed out) see 8-09
8-50	2099	–	–	–	–	Target #2 Function status [3] (timed out) see 8-10
8-51	2100	–	–	–	–	Target #2 Function status [4] (timed out) see 8-11
8-52	2101	–	–	–	–	Target #2 21 Phase status information see 8-12
8-53	2102	–	–	–	–	Target #2 21 Phase timer information see 8-13

Table 9 – Target Information (8 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
8-54	2103	–	–	–	–	Target #2 27 Phase status information see 8-14
8-55	2104	–	–	–	–	Target #2 27 Phase timer information see 8-15
8-56	2105	–	–	–	–	Target #2 50 Phase status/timer see 8-16
8-57	2106	–	–	–	–	Target #2 50DT Phase status/timer see 8-17
8-58	2107	–	–	–	–	Target #2 51V Phase status/timer see 8-18
8-59	2108	–	–	–	–	Target #2 59 Phase status information see 8-19
8-60	2109	–	–	–	–	Target #2 59 Phase timer information see 8-20
8-61	2110	–	–	–	–	Target #2 87 Phase status/timer see 8-21
8-62	2111	–	–	–	–	Target #2 Phase A current see 8-22
8-63	2112	–	–	–	–	Target #2 Phase B current see 8-23
8-64	2113	–	–	–	–	Target #2 Phase C current see 8-24
8-65	2114	–	–	–	–	Target #2 Phase N current see 8-25
8-66	2115	–	–	–	–	Not used
8-67 to 8-78	2116 to 2127	–	–	–	–	Target #2 Target date and time stamp see 8-27 to 8-38
8-79	2128	–	–	–	–	Target #2 relay status extended See 8-39

Table 9 – Target Information (9 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
8-80 to 8-119	2129 to 2168	–	–	–	–	Target #3 see 8-0 to 8-39
8-120 to 8-159	2169 to 2208	–	–	–	–	Target #4 see 8-0 to 8-39
8-160 to 8-199	2209 to 2248	–	–	–	–	Target #5 see 8-0 to 8-39
8-200 to 8-239	2249 to 2288	–	–	–	–	Target #6 see 8-0 to 8-39
9-0 to 9-39	2305 to 2344	–	–	–	–	Target #7 see 8-0 to 8-39
9-40 to 9-79	2345 to 2384	–	–	–	–	Target #8 see 8-0 to 8-39
9-80 to 9-119	2385 to 2424	–	–	–	–	Target #9 see 8-0 to 8-39
9-120 to 9-159	2425 to 2464	–	–	–	–	Target #10 see 8-0 to 8-39
9-160 to 9-199	2465 to 2504	–	–	–	–	Target #11 see 8-0 to 8-39
9-200 to 9-239	2505 to 2544	–	–	–	–	Target #12 see 8-0 to 8-39
10-0 to 10-39	2561 to 2600	–	–	–	–	Target #13 see 8-0 to 8-39
10-40 to 10-79	2601 to 2640	–	–	–	–	Target #14 see 8-0 to 8-39
10-80 to 10-119	2641 to 2680	–	–	–	–	Target #15 see 8-0 to 8-39
10-120 to 10-159	2681 to 2720	–	–	–	–	Target #16 see 8-0 to 8-39
10-160 to 10-199	2721 to 2760	–	–	–	–	Target #17 see 8-0 to 8-39
10-200 to 10-239	2761 to 2800	–	–	–	–	Target #18 see 8-0 to 8-39
11-0 to 11-39	2817 to 2856	–	–	–	–	Target #19 see 8-0 to 8-39
11-40 to 11-79	2857 to 2896	–	–	–	–	Target #20 see 8-0 to 8-39

Table 9 – Target Information (10 of 11)

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE INCREMENT	DESCRIPTION
11-80 to 11-119	2897 to 2936	–	–	–	–	Target #21 see 8-0 to 8-39
11-120 to 11-159	2937 to 2976	–	–	–	–	Target #22 see 8-0 to 8-39
11-160 to 11-199	2977 to 3016	–	–	–	–	Target #23 see 8-0 to 8-39
11-200 to 11-239	3017 to 3056	–	–	–	–	Target #24 see 8-0 to 8-39
12-0 to 12-39	3073 to 3112	–	–	–	–	Target #25 see 8-0 to 8-39
12-40 to 12-79	3113 to 3152	–	–	–	–	Target #26 see 8-0 to 8-39
12-80 to 12-119	3153 to 3192	–	–	–	–	Target #27 see 8-0 to 8-39
12-120 to 12-159	3193 to 3232	–	–	–	–	Target #28 see 8-0 to 8-39
12-160 to 12-199	3233 to 3272	–	–	–	–	Target #29 see 8-0 to 8-39
12-200 to 12-239	3273 to 3312	–	–	–	–	Target #30 see 8-0 to 8-39
13-0 to 13-39	3329 to 3368	–	–	–	–	Target #31 see 8-0 to 8-39
13-40 to 13-79	3369 to 3408	–	–	–	–	Target #32 see 8-0 to 8-39

Table 9 – Target Information (11 of 11)

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