BECKWITH ELECTRIC

MODBUS/BECO2200
Communication Database
Rev. 1.09a

M-3311A 2/3 Winding

HUBBELL

M-3311A 2/3 MODBUS/BECO2200 COMMUNICATION DATABASE

DEVICE I.D. = 205

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	**1.00**	**08/12/07**
		Initial revision
Rev	**1.01**	**07/31/08**
		Nominal current range
Rev	**1.02**	**03/16/09**
		Added positive power flow Modified VT Phase or Ground config
Rev	**1.03**	**07/23/09**
		Nominal setting range for 1 A version of relay has changed
Rev	**1.04**	**04/21/10**
		Added (TCM2, CCM1,2, 87H/T phase current selection for IPS logic trigger)
Rev	**1.05**	**06/05/2015**
		Added point 4-200
Rev	**1.06**	**09/18/2015**
		Renamed 59N to 59G and VN to VG through the entire document
Rev	**1.07**	**07/21/2017**
		Updated point 6-150
Rev	**1.08**	**11/08/2018**
		Added points: 0-45 – 0-54, 5-157
Rev	**1.09**	**07/10/2020**
		Added points: 4-201, 4-204 -4-207
Rev	**1.09a**	**08/01/2024**
		Updating logos and removing "Co. Inc.". No updates to points.

MODBUS / BECO2200 COMMUNICATION PROTOCOL FOR M-3311A 2/3

This document along with BECO2200 and BECO2200-M3311A document describes the implementation of the MODBUS protocol as it relates to the M-3311A 2/3 IPS control.

The M-3311A 2/3 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 COM2 and COM3 only. Only RTU mode is implemented, ASCII mode is not supported.

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

4. 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)

5. Oscillograph record downloading is not supported as MODBUS does not support large enough packets.

6. The control is always considered a MODBUS slave device.

The various communication points may be accessed by translating the BECO2200-M3311A 2/3 data base Type and Point Number to an equivalent MODBUS address. For example: To read 24DT #2 Pickup pickup setpoint, (TYPE 3, POINT NUMBER 2) we would convert the two fields to hex then concatenate the type and point to get 0302(hex) and convert to decimal. Reading address 770 (base 10) would give us this point. According to MODBUS definition, this would be register 771.

No more than 45 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.

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 1 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 communication points are reserved for factory use and are 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 active profile setpoints

Table 1 – Control Information (1 of 2)

CONTROL INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
0-37	38	1	–	–	–	Checksum calibration
0-38	39	1U	–	–	–	Checksum ROM
0-39	40	–	–	–	–	Not used
0-40	41	–	–	–	–	Not used
0-41	42	1U	–	–	–	Checksum profile 1
0-42	43	1U	–	–	–	Checksum profile 2
0-43	44	1U	–	–	–	Checksum profile 3
0-44	45	1U	–	–	–	Checksum profile 4
0-45 to 0-54	46 to 55	1	–	W	0-65535/1	Unlock comm channel extended password. Enabled only if option in 0-40 is set. 20 ASCII characters total. Each register holds two characters. MSB byte is the left most 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 / DEMAND

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-00	257	1U	–	–	–	Input status Bit 0 = Input 1 (52b) 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) 0 = OFF 1 = ON (Circuit closed)
1-01	258	–	–	–	–	Input status ext. Bit 0 = In 7 Bit 8 = In 15 Bit 1 = In 8 Bit 9 = In 16 Bit 2 = In 9 Bit 10 = In 17 Bit 3 = In 10 Bit 11 = In 18 Bit 4 = In 11 Bit 12 = Not used Bit 5 = In 12 Bit 13 = Not used Bit 6 = In 13 Bit 14 = Not used Bit 7 = In 14 Bit 15 = Not used
1-02	259	1U	–	–	–	Output status Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16
1-03	260	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 = TCM STATUS Bit 5-15 = Not used (0)
1-04	261	1000	AMPS	–	–	W1 Phase A Current
1-05	262	1000	AMPS	–	–	W1 Phase B Current
1-06	263	1000	AMPS	–	–	W1 Phase C Current
1-07	264	1000	AMPS	–	–	W1 Positive Sequence current

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (1 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
STATUS / DEMAND						
1-08	265	1000	AMPS	–	–	W1 Negative Sequence current
1-09	266	1000	AMPS	–	–	W1 Zero Sequence current
1-10	267	1000	AMPS	–	–	W2 Phase A current
1-11	268	1000	AMPS	–	–	W2 Phase B current
1-12	269	1000	AMPS	–	–	W2 Phase C current
1-13	270	1000	AMPS	–	–	W2 Phase G current
1-14	271	1000	AMPS	–	–	W2 Positive Sequence current
1-15	272	1000	AMPS	–	–	W2 Negative Sequence current
1-16	273	1000	AMPS	–	–	W2 Zero Sequence current
1-17	274	1000	AMPS	–	–	W3 Phase A current
1-18	275	1000	AMPS	–	–	W3 Phase B current
1-19	276	1000	AMPS	–	–	W3 Phase C current
1-20	277	1000	AMPS	–	–	W3 Phase G current
1-21	278	1000	AMPS	–	–	W3 Positive Sequence current
1-22	279	1000	AMPS	–	–	W3 Negative Sequence current
1-23	280	1000	AMPS	–	–	W3 Zero Sequence current
1-24	281	10	VOLTS	–	–	Phase A Voltage
1-25	282	10	VOLTS	–	–	Phase B Voltage
1-26	283	10	VOLTS	–	–	Phase C Voltage
1-27	284	10	VOLTS	–	–	VG Voltage
1-28	285	10	VOLTS	–	–	Positive Sequence Voltage
1-29	286	10	VOLTS	–	–	Negative Sequence Voltage
1-30	288	10	VOLTS	–	–	Zero Sequence Voltage
1-31	288	1000	PU	–	–	Phase A differential current
1-32	289	1000	PU	–	–	Phase B differential current
1-33	290	1000	PU	–	–	Phase C differential current

■ **NOTES:**

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2. ****** 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. See Example at end of this Table.

Table 2 – Status / Demand (2 of 13)

				STATUS / DEMAND			
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION	
1-34	291	100	AMPS	–	–	W2 Ground differential current (signed)	
1-35	292	100	AMPS	–	–	W3 Ground differential current (signed)	
1-36	293	100	HZ	–	–	Frequency 0 = Disabled (unmeasurable)	
1-37	294	10	%	–	–	Volts Per Hertz	
1-38	295	1000	PU	–	–	Phase A Restraint current	
1-39	296	1000	PU	–	–	Phase B Restraint current	
1-40	297	1000	PU	–	–	Phase C Restraint current	
1-41	298	1000	PU	–	–	Phase A 2nd Harmonic Restraint current	
1-42	299	1000	PU	–	–	Phase B 2nd Harmonic Restraint current	
1-43	300	1000	PU	–	–	Phase C 2nd Harmonic Restraint current	
1-44	301	1000	PU	–	–	Phase A 4th Harmonic Restraint current	
1-45	302	1000	PU	–	–	Phase B 4th Harmonic Restraint current	
1-46	303	1000	PU	–	–	Phase C 4th Harmonic Restraint current	
1-47	304	1000	PU	–	–	Phase A 5th Harmonic Restraint current	
1-48	305	1000	PU	–	–	Phase B 5th Harmonic Restraint current	
1-49	306	1000	PU	–	–	Phase C 5th Harmonic Restraint current	
1-50	307	1U	–	–	–	Function status (picked up) Least significant word [0]	
						Bit 0 = F24DT_1 Bit 8 = F49 Bit 1 = F24DT_2 Bit 9 = F50_W1_1 Bit 2 = F24IT Bit 10 = F50_W1_2 Bit 3 = F27_1 Bit 11 = F50_W2_1 Bit 4 = F46DT_W2 Bit 12 = F50_W2_2 Bit 5 = F46IT_W2 Bit 13 = F50_W3_1 Bit 6 = F46DT_W3 Bit 14 = F50_W3_2 Bit 7 = F46IT_W3 Bit 15 = F50BF_W1	

■ **NOTES:**

1. ***** Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.
2. ****** 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. See Example at end of this Table.

Table 2 – Status / Demand (3 of 13)

STATUS / DEMAND						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-51	308	1U	–	–	–	Function status (picked up) Next significant word [1] Bit 0 = F50BF_W2 Bit 8 = F50N_W2_1 Bit 1 = F50BF_W3 Bit 9 = F50N_W2_2 Bit 2 = F50G_W2_1 Bit 10 = F50N_W3_1 Bit 3 = F50G_W2_2 Bit 11 = F50N_W3_2 Bit 4 = F50G_W3_1 Bit 12 = F51_W1 Bit 5 = F50G_W3_2 Bit 13 = F51_W2 Bit 6 = F50N_W1_1 Bit 14 = F51_W3 Bit 7 = F50N_W1_2 Bit 15 = F51G_W2
1-52	309	1U	–	–	–	Function status (picked up) Next significant word [2] Bit 0 = F51G_W3 Bit 8 = F81_3 Bit 1 = F51N_W1 Bit 9 = F81_4 Bit 2 = F51N_W2 Bit 10 = F87H Bit 3 = F51N_W3 Bit 11 = F87T Bit 4 = F59_1 Bit 12 = F87GD_W2_1 Bit 5 = F59_2 Bit 13 = F87GD_W2_2 Bit 6 = F81_1 Bit 14 = F87GD_W3_1 Bit 7 = F81_2 Bit 15 = F87GD_W3_2
1-53	310	1U	–	–	–	Function status (picked up) Next significant word [3] Bit 0 = FTHFLT Bit 1 = FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59G_1 Bit 15 = F59G_2

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (4 of 13)

STATUS / DEMAND

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-54	311	1U	–	–	–	Function status (picked up) Most significant word [4] Bit 0 = F59G_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bits 4-15 = not used
1-55	312	1U	–	–	–	Function status (timed out) Least significant word [0] Bit 0 = F24DT_1 Bit 8 = F49 Bit 1 = F24DT_2 Bit 9 = F50_W1_1 Bit 2 = F24IT Bit 10 = F50_W1_2 Bit 3 = F27_1 Bit 11 = F50_W2_1 Bit 4 = F46DT_W2 Bit 12 = F50_W2_2 Bit 5 = F46IT_W2 Bit 13 = F50_W3_1 Bit 6 = F46DT_W3 Bit 14 = F50_W3_2 Bit 7 = F46IT_W3 Bit 15 = F50BF_W1
1-56	313	1U	–	–	–	Function status (timed out) Next significant word [1] Bit 0 = F50BF_W2 Bit 8 = F50N_W2_1 Bit 1 = F50BF_W3 Bit 9 = F50N_W2_2 Bit 2 = F50G_W2_1 Bit 10 = F50N_W3_1 Bit 3 = F50G_W2_2 Bit 11 = F50N_W3_2 Bit 4 = F50G_W3_1 Bit 12 = F51_W1 Bit 5 = F50G_W3_2 Bit 13 = F51_W2 Bit 6 = F50N_W1_1 Bit 14 = F51_W3 Bit 7 = F50N_W1_2 Bit 15 = F51G_W2
1-57	314	1U	–	–	–	Function status (timed out) Next significant word [2] Bit 0 = F51G_W3 Bit 8 = F81_3 Bit 1 = F51N_W1 Bit 9 = F81_4 Bit 2 = F51N_W2 Bit 10 = F87H Bit 3 = F51N_W3 Bit 11 = F87T Bit 4 = F59_1 Bit 12 = F87GD_W2_1 Bit 5 = F59_2 Bit 13 = F87GD_W2_2 Bit 6 = F81_1 Bit 14 = F87GD_W3_1 Bit 7 = F81_2 Bit 15 = F87GD_W3_2

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (5 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				STATUS / DEMAND		
1-58	315	1U	–	–	–	Function status (timed out) Next significant word [3] Bit 0 = FTHFLT Bit 1 = FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59G_1 Bit 15 = F59G_2
1-59	316	1U	–	–	–	Function status (timed out) Most significant word [4] Bit 0 = F59G_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bits 4-15 = not used
1-60	317	1	–	–	–	Voltage phasor real Phase A
1-61	318	1	–	–	–	Voltage phasor imaginary Phase A
1-62	319	1	–	–	–	Voltage phasor real Phase B
1-63	320	1	–	–	–	Voltage phasor imaginary Phase B
1-64	321	1	–	–	–	Voltage phasor real Phase C
1-65	322	1	–	–	–	Voltage phasor imaginary Phase C
1-66	323	1	–	–	–	Voltage phasor real VG
1-67	324	1	–	–	–	Voltage phasor imaginary VG
1-68	325	1	–	–	–	Current phasor real IA W1 *
1-69	326	1	–	–	–	Current phasor imaginary IA W1 *
1-70	327	1	–	–	–	Current phasor real IB W1 *
1-71	328	1	–	–	–	Current phasor imaginary IB W1 *

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (6 of 13)

STATUS / DEMAND

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-72	329	1	–	–	–	Current phasor real IC W1 *
1-73	330	1	–	–	–	Current phasor imaginary IC W1 *
1-74	331	1	–	–	–	Current phasor real IA W2 *
1-75	332	1	–	–	–	Current phasor imaginary IA W2 *
1-76	333	1	–	–	–	Current phasor real IB W2 *
1-77	334	1	–	–	–	Current phasor imaginary IB W2 *
1-78	335	1	–	–	–	Current phasor real IC W2 *
1-79	336	1	–	–	–	Current phasor imaginary IC W2 *
1-80	337	1	–	–	–	Current phasor real IA W3 *
1-81	338	1	–	–	–	Current phasor imaginary IA W3 *
1-82	339	1	–	–	–	Current phasor real IB W3 *
1-83	340	1	–	–	–	Current phasor imaginary IB W3 *
1-84	341	1	–	–	–	Current phasor real IC W3 *
1-85	342	1	–	–	–	Current phasor imaginary IC W3 *
1-86	343	1	–	–	–	Current phasor real IG W2 *
1-87	344	1	–	–	–	Current phasor imaginary IG W2 *
1-88	345	1	–	–	–	Current phasor real IG W3 *
1-89	346	1	–	–	–	Current phasor imaginary IG W3 *
1-90	347	1000	AMPS	–	–	W1 Phase A current demand **
1-91	348	1000	AMPS	–	–	W1 Phase B current demand **
1-92	349	1000	AMPS	–	–	W1 Phase C current demand **
1-93	350	1000	AMPS	–	–	W2 Phase A current demand **
1-94	351	1000	AMPS	–	–	W2 Phase B current demand **
1-95	352	1000	AMPS	–	–	W2 Phase C current demand **
1-96	353	1000	AMPS	–	–	W2 Phase G current demand **
1-97	354	1000	AMPS	–	–	W3 Phase A current demand **

■ NOTES:

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (7 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				STATUS / DEMAND		
1-98	355	1000	AMPS	–	–	W3 Phase B current demand **
1-99	356	1000	AMPS	–	–	W3 Phase C current demand **
1-100	357	1000	AMPS	–	–	W3 Phase G current demand **
1-101	358	1U	–	–	–	Remote target LED status Least significant word [0] Bit 0 = F24DT_1 Bit 8 = F49 Bit 1 = F24DT_2 Bit 9 = F50_W1_1 Bit 2 = F24IT Bit 10 = F50_W1_2 Bit 3 = F27_1 Bit 11 = F50_W2_1 Bit 4 = F46DT_W2 Bit 12 = F50_W2_2 Bit 5 = F46IT_W2 Bit 13 = F50_W3_1 Bit 6 = F46DT_W3 Bit 14 = F50_W3_2 Bit 7 = F46IT_W3 Bit 15 = F50BF_W1
1-102	359	1U	–	–	–	Remote target LED status Next significant word [1] Bit 0 = F50BF_W2 Bit 8 = F50N_W2_1 Bit 1 = F50BF_W3 Bit 9 = F50N_W2_2 Bit 2 = F50G_W2_1 Bit 10 = F50N_W3_1 Bit 3 = F50G_W2_2 Bit 11 = F50N_W3_2 Bit 4 = F50G_W3_1 Bit 12 = F51_W1 Bit 5 = F50G_W3_2 Bit 13 = F51_W2 Bit 6 = F50N_W1_1 Bit 14 = F51_W3 Bit 7 = F50N_W1_2 Bit 15 = F51G_W2
1-103	360	1U	–	–	–	Remote target LED status Least significant word [2] Bit 0 = F51G_W3 Bit 8 = F81_3 Bit 1 = F51N_W1 Bit 9 = F81_4 Bit 2 = F51N_W2 Bit 10 = F87H Bit 3 = F51N_W3 Bit 11 = F87T Bit 4 = F59_1 Bit 12 = F87GD_W2_1 Bit 5 = F59_2 Bit 13 = F87GD_W2_2 Bit 6 = F81_1 Bit 14 = F87GD_W3_1 Bit 7 = F81_2 Bit 15 = F87GD_W3_2

■ **NOTES:**

1. ***** Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ****** 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. See Example at end of this Table.

Table 2 – Status / Demand (8 of 13)

STATUS / DEMAND						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-104	361	1U	–	–	–	Remote target LED status Next significant word [3] Bit 0 = FTHFLT Bit 1 = FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59X_1 Bit 15 = F59X_2
1-105	362	1U	–	–	–	Remote target LED status Most significant word [4] Bit 0 = F59X_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bits 4-15 = not used
1-106	363	1U	–	–	–	Precompensated phasor IA W1 real
1-107	364	1U	–	–	–	Precompensated phasor IA W1 imag.
1-108	365	1U	–	–	–	Precompensated phasor IB W1 real
1-109	366	1U	–	–	–	Precompensated phasor IB W1 imag.
1-110	367	1U	–	–	–	Precompensated phasor IC W1 real
1-111	368	1U	–	–	–	Precompensated phasor IC W1 imag.
1-112	369	1U	–	–	–	Precompensated phasor IA W2 real
1-113	370	1U	–	–	–	Precompensated phasor IA W2 imag.
1-114	371	1U	–	–	–	Precompensated phasor IB W2 real
1-115	372	1U	–	–	–	Precompensated phasor IB W2 imag.
1-116	373	1U	–	–	–	Precompensated phasor IC W2 real
1-117	374	1U	–	–	–	Precompensated phasor IC W2 imag.

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (9 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				STATUS / DEMAND		
1-118	375	1U	–	–	–	Precompensated phasor IA W3 real
1-119	376	1U	–	–	–	Precompensated phasor IA W3 imag.
1-120	377	1U	–	–	–	Precompensated phasor IB W3 real
1-121	378	1U	–	–	–	Precompensated phasor IB W3 imag.
1-122	379	1U	–	–	–	Precompensated phasor IC W3 real
1-123	380	1U	–	–	–	Precompensated phasor IC W3 imag.
1-124	381	–	–	–	–	Not used
1-125	382	–	–	–	–	Not used
1-126	383	–	–	–	–	Not used
1-127	384	–	–	–	–	Not used
1-128	385	–	–	–	–	Not used
1-129	386	–	–	–	–	Not used
1-130	387	1U	–	–	–	Postcompensated phasor IA W1 real
1-131	388	1U	–	–	–	Postcompensated phasor IA W1 imag.
1-132	389	1U	–	–	–	Postcompensated phasor IB W1 real
1-133	390	1U	–	–	–	Postcompensated phasor IB W1 imag.
1-134	391	1U	–	–	–	Postcompensated phasor IC W1 real
1-135	392	1U	–	–	–	Postcompensated phasor IC W1 imag.
1-136	393	1U	–	–	–	Postcompensated phasor IA W2 real
1-137	394	1U	–	–	–	Postcompensated phasor IA W2 imag.
1-138	395	1U	–	–	–	Postcompensated phasor IB W2 real
1-139	396	1U	–	–	–	Postcompensated phasor IB W2 imag.
1-140	397	1U	–	–	–	Postcompensated phasor IC W2 real
1-141	398	1U	–	–	–	Postcompensated phasor IC W2 imag.
1-142	399	1U	–	–	–	Postcompensated phasor IA W3 real
1-143	400	1U	–	–	–	Postcompensated phasor IA W3 imag.

■ **NOTES:**

1. ***** Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ****** 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. See Example at end of this Table.

Table 2 – Status / Demand (10 of 13)

STATUS / DEMAND						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-144	401	1U	–	–	–	Postcompensated phasor IB W3 real
1-145	402	1U	–	–	–	Postcompensated phasor IB W3 imag.
1-146	403	1U	–	–	–	Postcompensated phasor IC W3 real
1-147	404	1U	–	–	–	Postcompensated phasor IC W3 imag.
1-148	405	–	–	–	–	Not used
1-149	406	–	–	–	–	Not used
1-150	407	–	–	–	–	Not used
1-151	408	–	–	–	–	Not used
1-152	409	–	–	–	–	Not used
1-153	410	–	–	–	–	Not used
1-154	411	1	AMPS	–	0-65535 / 1	Phase A W1 High word Breaker monitoring arc current acc.
1-155	412	1	AMPS	–	0-65535 / 1	Phase A W1 Low word Breaker monitoring arc current acc.
1-156	413	1	AMPS	–	0-65535 / 1	Phase B W1 High word Breaker monitoring arc current acc.
1-157	414	1	AMPS	–	0-65535 / 1	Phase B W1 Low word Breaker monitoring arc current acc.
1-158	415	1	AMPS	–	0-65535 / 1	Phase C W1 High word Breaker monitoring arc current acc.
1-159	416	1	AMPS	–	0-65535 / 1	Phase C W1 Low word Breaker monitoring arc current acc.
1-160	417	1	AMPS	–	0-65535 / 1	Phase A W2 High word Breaker monitoring arc current acc.
1-161	418	1	AMPS	–	0-65535 / 1	Phase A W2 Low word Breaker monitoring arc current acc.
1-162	419	1	AMPS	–	0-65535 / 1	Phase B W2 High word Breaker monitoring arc current acc.
1-163	420	1	AMPS	–	0-65535 / 1	Phase B W2 Low word Breaker monitoring arc current acc.
1-164	421	1	AMPS	–	0-65535 / 1	Phase C W2 High word Breaker monitoring arc current acc.

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (11 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				STATUS / DEMAND		
1-165	422	1	AMPS	–	0-65535 / 1	Phase C W2 Low word Breaker monitoring arc current acc.
1-166	423	1	AMPS	–	0-65535 / 1	Phase A W3 High word Breaker monitoring arc current acc.
1-167	424	1	AMPS	–	0-65535 / 1	Phase A W3 Low word Breaker monitoring arc current acc.
1-168	425	1	AMPS	–	0-65535 / 1	Phase B W3 High word Breaker monitoring arc current acc.
1-169	426	1	AMPS	–	0-65535 / 1	Phase B W3 Low word Breaker monitoring arc current acc.
1-170	427	1	AMPS	–	0-65535 / 1	Phase C W3 High word Breaker monitoring arc current acc.
1-171	428	1	AMPS	–	0-65535 / 1	Phase C W3 Low word Breaker monitoring arc current acc.
1-172	429	100	AMPS	–	–	F49 Thermal Current Phase A
1-173	430	100	AMPS	–	–	F49 Thermal Current Phase B
1-174	431	100	AMPS	–	–	F49 Thermal Current Phase C
1-175	432	–	–	–	–	Through Fault events counter
1-176	433	–	–	–	–	Through Fault total i2t Most significant word [3]
1-177	434	–	–	–	–	Through Fault total i2t Next significant word [2]
1-178	435	–	–	–	–	Through Fault total i2t Next significant word [1]
1-179	436	–	–	–	–	Through Fault total i2t Least significant word [0]
1-180	437	100	–	–	–	Power Factor (-) = LEAD (+) = LAG
1-181	438	10000	PU	–	–	Real Power Most significant word

■ **NOTES:**

1. * Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ** 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. See Example at end of this Table.

Table 2 – Status / Demand (12 of 13)

STATUS / DEMAND						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
1-182	439	–	–	–	–	Real Power Least significant word Note: Both least and most significant words must be combined to form a signed long integer for example: 1-181 = 65534 or fffeHEX 1-182 = 25804 or 64ccHEX would be –10.5268 PU
1-183	440	10000	PU	–	–	Reactive Power Most significant word
1-184	441	–	–	–	–	Reactive Power Least significant word Note: Both least and most significant words must be combined to form a signed long integer for example: 1-183 = 0 or 0000HEX 1-184 = 21589 or 5455HEX would be 2.1589 PU
1-185	442	10000	PU	–	–	Apparent Power Most significant word
1-186	443	–	–	–	–	Apparent Power Least significant word Note: 1-185 and 1-186 must be combined to form a signed long integer.
1-187	444	–	–	–	–	Not Used

■ **NOTES:**

1. ***** Phasor information must be read as a set. Sending a RESET command to 4-09 will trigger an update of the phasor set.

2. ****** 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. See Example at end of this Table.

Example: #1 W2 phase A demand current
Given:
W2 C.T. Ratio 240 : 1 (1200 A : 5 A)   Communication point 8-24 returns 240
Secondary current 4.300 Amps   Communication point 1-12 returns 4300
Primary current   =   C.T. ratio * W2 phase A current demand
    1.032   =   240 * 4300 / 1000
    1.032 kAmps   =   W2 phase A demand current

Table 2 – Status / Demand (13 of 13)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
						CONFIGURATION
2-00	513	1U	–	W	0-255 / 1	24DT #1 Volts Per Hertz Blocking inputs Bit 0 = In 1 Bit 1 = In 2 Bit 2 = In 3 Bit 3 = In 4 Bit 4 = In 5 Bit 5 = In 6 Bit 6 = Not used Bit 7 = Function Enable Bit 8-14 = Not used (0) Writing 0 disables function
2-01	514	1U	–	W	0-65535 / 1	24DT #1 Volts Per Hertz Ext. Inputs Bit 0 = In 7 Bit 8 = In 15 Bit 1 = In 8 Bit 9 = In 16 Bit 2 = In 9 Bit 10 = In 17 Bit 3 = In 10 Bit 11 = In 18 Bit 4 = In 11 Bit 12 = Not used Bit 5 = In 12 Bit 13 = Not used Bit 6 = In 13 Bit 14 = Not used Bit 7 = In 14 Bit 15 = Not used
2-02	515	1U	–	W	0-65535 / 1	24DT #1 Volts Per Hertz Outputs Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16
2-03	516	1U	–	W	0-255 / 1	24DT #2 Volts Per Hertz inputs see 2-00
2-04	517	1U	–	W	0-65535 / 1	24DT #2 Volts Per Hertz ext. inputs see 2-01
2-05	518	1U	–	W	0-65535 / 1	24DT #2 Volts Per Hertz outputs see 2-02
2-06	519	1U	–	W	0-255 / 1	24IT Volts Per Hertz inputs see 2-00
2-07	520	1U	–	W	0-65535 / 1	24IT Volts Per Hertz ext. inputs see 2-01
2-08	521	1U	–	W	0-65535 / 1	24IT Volts Per Hertz outputs see 2-02

Table 3 – Configuration (1 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-09	522	1U	–	W	0-255 / 1	27#1 Phase Under voltage inputs see 2-00
2-10	523	1U	–	W	0-65535 / 1	27#1 Phase Under voltage ext. inputs see 2-01
2-11	524	1U	–	W	0-65535 / 1	27#1 Phase Under voltage outputs see 2-02
2-12	525	1U	–	W	0-255 / 1	27#2 Phase Under voltage inputs see 2-00
2-13	526	1U	–	W	0-65535 / 1	27#2 Phase Under voltage ext. inputs see 2-01
2-14	527	1U	–	W	0-65535 / 1	27#2 Phase Under voltage outputs see 2-02
2-15	528	1U	–	W	0-255 / 1	27#3 Phase Under voltage inputs see 2-00
2-16	529	1U	–	W	0-65535 / 1	27#3 Phase Under voltage ext. inputs see 2-01
2-17	530	1U	–	W	0-65535 / 1	27#3 Phase Under voltage outputs see 2-02
2-18	531	–	–	–	–	Not used
2-19	532	–	–	–	–	Not used
2-20	533	–	–	–	–	Not used
2-21	534	–	–	–	–	Not used
2-22	535	–	–	–	–	Not used
2-23	536	–	–	–	–	Not used
2-24	537	–	–	–	–	Not used
2-25	538	–	–	–	–	Not used
2-26	539	–	–	–	–	Not used
2-27	540	1U	–	W	0-255 / 1	46DTW2 Negative Sequence current inputs see 2-00
2-28	541	1U	–	W	0-65535 / 1	46DTW2 Negative Sequence current ext. inputs see 2-01
2-29	542	1U	–	W	0-65535 / 1	46DTW2 Negative Sequence current outputs see 2-02
2-30	543	1U	–	W	0-255 / 1	46ITW2 Negative Sequence current inputs see 2-00

Table 3 – Configuration (2 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-31	544	1U	–	W	0-65535 / 1	46ITW2 Negative Sequence current ext. inputs see 2-01
2-32	545	1U	–	W	0-65535 / 1	46ITW2 Negative Sequence current outputs see 2-02
2-33	546	1U	–	W	0-255 / 1	46DTW3 Negative Sequence current inputs see 2-00
2-34	547	1U	–	W	0-65535 / 1	46DTW3 Negative Sequence current ext. inputs see 2-01
2-35	548	1U	–	W	0-65535 / 1	46DTW3 Negative Sequence current outputs see 2-02
2-36	549	1U	–	W	0-255 / 1	46ITW3 Negative Sequence current inputs see 2-00
2-37	550	1U	–	W	0-65535 / 1	46ITW3 Negative Sequence current ext. inputs see 2-01
2-38	551	1U	–	W	0-65535 / 1	46ITW3 Negative Sequence current outputs see 2-02
2-39	552	1U	–	W	0-255 / 1	49 Thermal Overcurrent inputs See 2-00
2-40	553	1U	–	W	0-65535 / 1	49 Thermal Overcurrent ext. inputs See 2-01
2-41	554	1U	–	W	0-65535 / 1	49 Thermal Overcurrent outputs See 2-02
2-42	555	1U	–	W	0-255 / 1	50 #1 Inst. Phase Overcurrent inputs see 2-00
2-43	556	1U	–	W	0-65535 / 1	50 #1 Inst. Phase Overcurrent ext. inputs see 2-01
2-44	557	1U	–	W	0-65535 / 1	50 #1 Inst. Phase Overcurrent outputs see 2-02
2-45	558	1U	–	W	0-255 / 1	50 #2 Inst. Phase Overcurrent inputs see 2-00
2-46	559	1U	–	W	0-65535 / 1	50 #2 Inst. Phase Overcurrent ext. inputs see 2-01
2-47	560	1U	–	W	0-65535 / 1	50 #2 Inst. Phase Overcurrent outputs see 2-02
2-48	561	1U	–	W	0-255 / 1	50 #3 Inst. Phase Overcurrent inputs See 2-00
2-49	562	1U	–	W	0-65535 / 1	50 #3 Inst. Phase Overcurrent ext. inputs See 2-01

Table 3 – Configuration (3 of 12)

						CONFIGURATION
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
2-50	563	1U	–	W	0-65535 / 1	50 #3 Inst. Phase Overcurrent outputs See 2-02
2-51	564	1U	–	W	0-255 / 1	50 #4 Inst. Phase Overcurrent inputs see 2-00
2-52	565	1U	–	W	0-65535 / 1	50 #4 Inst. Phase Overcurrent ext. inputs see 2-01
2-53	566	1U	–	W	0-65535 / 1	50 #4 Inst. Phase Overcurrent outputs see 2-02
2-54	567	1U	–	W	0-255 / 1	50 #5 Inst. Phase Overcurrent inputs see 2-00
2-55	568	1U	–	W	0-65535 / 1	50 #5 Inst. Phase Overcurrent ext. inputs see 2-01
2-56	569	1U	–	W	0-65535 / 1	50 #5 Inst. Phase Overcurrent outputs see 2-02
2-57	570	1U	–	W	0-255 / 1	50 #6 Inst. Phase Overcurrent inputs see 2-00
2-58	571	1U	–	W	0-65535 / 1	50 #6 Inst. Phase Overcurrent ext. inputs see 2-01
2-59	572	1U	–	W	0-65535 / 1	50 #6 Inst. Phase Overcurrent outputs see 2-02
2-60	573	1U	–	W	0-255 / 1	50GW2 #1 Inst Ground Overcurrent inputs see 2-00
2-61	574	1U	–	W	0-65535 / 1	50GW2 #1 Inst Ground Overcurrent ext inputs see 2-01
2-62	575	1U	–	W	0-65535 / 1	50GW2 #1 Inst Ground Overcurrent outputs see 2-02
2-63	576	1U	–	W	0-255 / 1	50GW2 #2 Inst Ground Overcurrent inputs see 2-00
2-64	577	1U	–	W	0-65535 / 1	50GW2 #2 Inst Ground Overcurrent ext. inputs see 2-01
2-65	578	1U	–	W	0-65535 / 1	50GW2 #2 Inst Ground Overcurrent outputs see 2-02
2-66	579	1U	–	W	0-255 / 1	50GW3 #1 Inst Ground Overcurrent inputs see 2-00
2-67	580	1U	–	W	0-65535 / 1	50GW3 #1 Inst Ground Overcurrent ext. inputs see 2-01
2-68	581	1U	–	W	0-65535 / 1	50GW3 #1 Inst Ground Overcurrent outputs see 2-02

Table 3 – Configuration (4 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-69	582	1U	–	W	0-255 / 1	50GW3 #2 Inst Ground Overcurrent inputs see 2-00
2-70	583	1U	–	W	0-65535 / 1	50GW3 #2 Inst Ground Overcurrent ext. inputs see 2-01
2-71	584	1U	–	W	0-65535 / 1	50GW3 #2 Inst Ground Overcurrent outputs see 2-02
2-72	585	1U	–	W	0-255 / 1	50BFW1 Breaker Failure inputs see 2-00
2-73	586	1U	–	W	0-65535 / 1	50BFW1 Breaker Failure ext. inputs see 2-01
2-74	587	1U	–	W	0-65535 / 1	50BFW1 Breaker Failure outputs see 2-02
2-75	588	1U	–	W	0-255 / 1	50BFW2 Breaker Failure inputs see 2-00
2-76	589	1U	–	W	0-65535 / 1	50BFW2 Breaker Failure ext. inputs see 2-01
2-77	590	1U	–	W	0-65535 / 1	50BFW2 Breaker Failure outputs see 2-02
2-78	591	1U	–	W	0-255 / 1	50BFW3 Breaker Failure inputs see 2-00
2-79	592	1U	–	W	0-65535 / 1	50BFW3 Breaker Failure ext. inputs see 2-01
2-80	593	1U	–	W	0-65535 / 1	50BFW3 Breaker Failure outputs see 2-02
2-81	594	1U	–	W	0-255 / 1	51 #1 Inverse Time Overcurrent inputs see 2-00
2-82	595	1U	–	W	0-65535 / 1	51#1 Inverse Time Overcurrent ext. inputs see 2-01
2-83	596	1U	–	W	0-65535 / 1	51#1 Inverse Time Overcurrent outputs see 2-02
2-84	597	1U	–	W	0-255 / 1	51#2 Inverse Time Overcurrent inputs see 2-00
2-85	598	1U	–	W	0-65535 / 1	51#2 Inverse Time Overcurrent ext. inputs see 2-01
2-86	599	1U	–	W	0-65535 / 1	51#2 Inverse Time Overcurrent outputs see 2-02
2-87	600	1U	–	W	0-255 / 1	51#3 Inverse Time Overcurrent inputs see 2-00

Table 3 – Configuration (5 of 12)

						CONFIGURATION
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
2-88	601	1U	–	W	0-65535 / 1	51#3 Inverse Time Overcurrent ext. inputs see 2-01
2-89	602	1U	–	W	0-65535 / 1	51#3 Inverse Time Overcurrent outputs see 2-02
2-90	603	1U	–	W	0-255 / 1	51N #1 Inverse Residual Time inputs Overcurrent see 2-00
2-91	604	1U	–	W	0-65535 / 1	51N #1 Inverse Residual Time Overcurrent ext. inputs see 2-01
2-92	605	1U	–	W	0-65535 / 1	51N #1 Inverse Residual Time Overcurrent outputs see 2-02
2-93	606	1U	–	W	0-255 / 1	51N #2 Inverse Residual Time Overcurrent inputs see 2-00
2-94	607	1U	–	W	0-65535 / 1	51N #2 Inverse Residual Time Overcurrent ext. inputs see 2-01
2-95	608	1U	–	W	0-65535 / 1	51N #2 Inverse Residual Time Overcurrent outputs see 2-02
2-96	609	1U	–	W	0-255 / 1	51N #3 Inverse Residual Time Overcurrent inputs see 2-00
2-97	610	1U	–	W	0-65535 / 1	51N #3 Inverse Residual Time Overcurrent ext. inputs see 2-01
2-98	611	1U	–	W	0-65535 / 1	51N #3 Inverse Residual Time Overcurrent outputs see 2-02
2-99	612	1U	–	W	0-255 / 1	51GW2 Inverse Ground Time Overcurrent inputs see 2-00
2-100	613	1U	–	W	0-65535 / 1	51GW2 Inverse Ground Time Overcurrent ext. inputs see 2-01
2-101	614	1U	–	W	0-65535 / 1	51GW2 Inverse Ground Time Overcurrent outputs see 2-02
2-102	615	1U	–	W	0-255 / 1	51GW3 Inverse Ground Time Overcurrent inputs see 2-00
2-103	616	1U	–	W	0-65535 / 1	51GW3 Inverse Ground Time Overcurrent ext. inputs see 2-01
2-104	617	1U	–	W	0-65535 / 1	51GW3 Inverse Ground Time Overcurrent outputs see 2-02

Table 3 – Configuration (6 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-105	618	1U	–	W	0-255 / 1	59#1 Phase Over Voltage inputs see 2-00
2-106	619	1U	–	W	0-65535 / 1	59#1 Phase Over Voltage ext. inputs see 2-01
2-107	620	1U	–	W	0-65535 / 1	59#1 Phase Over Voltage outputs see 2-02
2-108	621	1U	–	W	0-255 / 1	59#2 Phase Over Voltage inputs see 2-00
2-109	622	1U	–	W	0-65535 / 1	59#2 Phase Over Voltage ext. inputs see 2-01
2-110	623	1U	–	W	0-65535 / 1	59#2 Phase Over Voltage outputs see 2-02
2-111	624	1U	–	W	0-255 / 1	59#3 Phase Over Voltage inputs see 2-00
2-112	625	1U	–	W	0-65535 / 1	59#3 Phase Over Voltage ext. inputs see 2-01
2-113	626	1U	–	W	0-65535 / 1	59#3 Phase Over Voltage outputs see 2-02
2-114	627	1U	–	W	0-255 / 1	59G#1 VG Over Voltage inputs see 2-00
2-115	628	1U	–	W	0-65535 / 1	59G#1 VG Over Voltage ext. inputs see 2-01
2-116	629	1U	–	W	0-65535 / 1	59G#1 VG Over Voltage outputs see 2-02
2-117	630	1U	–	W	0-255 / 1	59G#2 VG Over Voltage inputs see 2-00
2-118	631	1U	–	W	0-65535 / 1	59G#2 VG Over Voltage ext. inputs see 2-01
2-119	632	1U	–	W	0-65535 / 1	59G#2 VG Over Voltage outputs see 2-02
2-120	633	1U	–	W	0-255 / 1	59G#3 VG Over Voltage inputs see 2-00
2-121	634	1U	–	W	0-65535 / 1	59G#3 VG Over Voltage ext. inputs see 2-01
2-122	635	1U	–	W	0-65535 / 1	59G#3 VG Over Voltage outputs see 2-02
2-123	636	1U	–	W	0-255 / 1	81 #1 Underfrequency inputs see 2-00

Table 3 – Configuration (7 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-124	637	1U	–	W	0-65535 / 1	81 #1 Underfrequency ext. inputs see 2-01
2-125	638	1U	–	W	0-65535 / 1	81 #1 Underfrequency outputs see 2-02
2-126	639	1U	–	W	0-255 / 1	81 #2 Underfrequency inputs see 2-00
2-127	640	1U	–	W	0-65535 / 1	81 #2 Underfrequency ext. inputs see 2-01
2-128	641	1U	–	W	0-65535 / 1	81 #2 Underfrequency outputs see 2-02
2-129	642	1U	–	W	0-255 / 1	81 #3 Underfrequency inputs see 2-00
2-130	643	1U	–	W	0-65535 / 1	81 #3 Underfrequency ext. inputs see 2-01
2-131	644	1U	–	W	0-65535 / 1	81 #3 Underfrequency outputs see 2-02
2-132	645	1U	–	W	0-255 / 1	81 #4 Underfrequency inputs see 2-00
2-133	646	1U	–	W	0-65535 / 1	81 #4 Underfrequency ext. inputs see 2-01
2-134	647	1U	–	W	0-65535 / 1	81 #4 Underfrequency outputs see 2-02
2-135	648	1U	–	W	0-255 / 1	87H Phase Differential inputs see 2-00
2-136	649	1U	–	W	0-65535 / 1	87H Phase Differential ext. inputs see 2-01
2-137	650	1U	–	W	0-65535 / 1	87H Phase Differential outputs see 2-02
2-138	651	1U	–	W	0-255 / 1	87T High Set Phase Differential inputs see 2-00
2-139	652	1U	–	W	0-65535 / 1	87T High Set Phase Differential ext. inputs see 2-01
2-140	653	1U	–	W	0-65535 / 1	87T High Set Phase Differential outputs see 2-02
2-141	654	1U	–	W	0-255 / 1	87GDW2 #1 Ground Differential inputs see 2-00
2-142	655	1U	–	W	0-65535 / 1	87GDW2 #1 Ground Differential ext. inputs see 2-01

Table 3 – Configuration (8 of 12)

						CONFIGURATION
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-143	656	1U	–	W	0-65535 / 1	87GDW2 #1 Ground Differential outputs see 2-02
2-144	657	1U	–	W	0-255 / 1	87GDW2 #2 Ground Differential inputs see 2-00
2-145	658	1U	–	W	0-65535 / 1	87GDW2 #2 Ground Differential ext. inputs see 2-01
2-146	659	1U	–	W	0-65535 / 1	87GDW2 #2 Ground Differential outputs see 2-02
2-147	660	1U	–	W	0-255 / 1	87GDW3 #1 Ground Differential inputs see 2-00
2-148	661	1U	–	W	0-65535 / 1	87GDW3 #1 Ground Differential ext. inputs see 2-01
2-149	662	1U	–	W	0-65535 / 1	87GDW3 #1 Ground Differential outputs see 2-02
2-150	663	1U	–	W	0-255 / 1	87GDW3 #2 Ground Differential inputs see 2-00
2-151	664	1U	–	W	0-65535 / 1	87GDW3 #2 Ground Differential ext. inputs see 2-01
2-152	665	1U	–	W	0-65535 / 1	87GDW3 #2 Ground Differential outputs see 2-02
2-153	666	1U	–	W	0-255 / 1	IPS Logic #1 inputs see 2-00
2-154	667	1U	–	W	0-65535 / 1	IPS Logic #1 ext. inputs see 2-01
2-155	668	1U	–	W	0-65535 / 1	IPS Logic #1 outputs see 2-02
2-156	669	1U	–	W	0-255 / 1	IPS Logic #2 External inputs see 2-00
2-157	670	1U	–	W	0-65535 / 1	IPS Logic #2 ext. inputs see 2-01
2-158	671	1U	–	W	0-65535 / 1	IPS Logic #2 outputs see 2-02
2-159	672	1U	–	W	0-255 / 1	IPS Logic #3 inputs see 2-00
2-160	673	1U	–	W	0-65535 / 1	IPS Logic #3 ext. inputs see 2-01
2-161	674	1U	–	W	0-65535 / 1	IPS Logic #3 outputs see 2-02

Table 3 – Configuration (9 of 12)

						CONFIGURATION
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
2-162	675	1U	–	W	0-255 / 1	EXT #4 External inputs see 2-00
2-163	676	1U	–	W	0-65535 / 1	IPS Logic #4 ext. inputs see 2-01
2-164	677	1U	–	W	0-65535 / 1	IPS Logic #4 outputs see 2-02
2-165	678	1U	–	W	0-255 / 1	IPS Logic #5 inputs see 2-00
2-166	679	1U	–	W	0-65535 / 1	IPS Logic #5 ext. inputs see 2-01
2-167	680	1U	–	W	0-65535 / 1	IPS Logic #5 outputs see 2-02
2-168	681	1U	–	W	0-255 / 1	IPS Logic #6 inputs see 2-00
2-169	682	1U	–	W	0-65535 / 1	IPS Logic #6 ext. inputs see 2-01
2-170	683	1U	–	W	0-65535 / 1	IPS Logic #6 outputs see 2-02
2-171	684	1U	–	W	0-255 / 1	50N #1 Inst. Neutral Overcurrent inputs see 2-00
2-172	685	1U	–	W	0-65535 / 1	50N #1 Inst. Neutral Overcurrent ext. inputs see 2-01
2-173	686	1U	–	W	0-65535 / 1	50N #1 Inst. Neutral Overcurrent outputs see 2-02
2-174	687	1U	–	W	0-255 / 1	50N #2 Inst. Neutral Overcurrent inputs see 2-00
2-175	688	1U	–	W	0-65535 / 1	50N #2 Inst. Neutral Overcurrent ext. inputs see 2-01
2-176	689	1U	–	W	0-65535 / 1	50N #2 Inst. Neutral Overcurrent outputs see 2-02
2-177	690	1U	–	W	0-255 / 1	50N #3 Inst. Neutral Overcurrent inputs see 2-00
2-178	691	1U	–	W	0-65535 / 1	50N #3 Inst. Neutral Overcurrent ext. inputs see 2-01
2-179	692	1U	–	W	0-65535 / 1	50N #3 Inst. Neutral Overcurrent outputs see 2-02
2-180	693	1U	–	W	0-255 / 1	50N #4 Inst. Neutral Overcurrent inputs see 2-00

Table 3 – Configuration (10 of 12)

						CONFIGURATION
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
2-181	694	1U	–	W	0-65535 / 1	50N #4 Inst. Neutral Overcurrent ext. inputs see 2-01
2-182	695	1U	–	W	0-65535 / 1	50N #4 Inst. Neutral Overcurrent outputs see 2-02
2-183	696	1U	–	W	0-255 / 1	50N #5 Inst. Neutral Overcurrent inputs see 2-00
2-184	697	1U	–	W	0-65535 / 1	50N #5 Inst. Neutral Overcurrent ext. inputs see 2-01
2-185	698	1U	–	W	0-65535 / 1	50N #5 Inst. Neutral Overcurrent outputs see 2-02
2-186	699	1U	–	W	0-255 / 1	50N #6 Inst. Neutral Overcurrent inputs see 2-00
2-187	700	1U	–	W	0-65535 / 1	50N #6 Inst. Neutral Overcurrent ext. inputs see 2-01
2-188	701	1U	–	W	0-65535 / 1	50N #6 Inst. Neutral Overcurrent outputs see 2-02
2-189	702	1U	–	W	0-255 / 1	BM W1 Breaker Monitoring inputs see 2-00
2-190	703	1U	–	W	0-65535 / 1	BM W1 Breaker Monitoring ext. inputs see 2-01
2-191	704	1U	–	W	0-65535 / 1	BM W1 Breaker Monitoring outputs see 2-02
2-192	705	1U	–	W	0-255 / 1	BM W2 Breaker Monitoring inputs see 2-00
2-193	706	1U	–	W	0-65535 / 1	BM W2 Breaker Monitoring ext. inputs see 2-01
2-194	707	1U	–	W	0-65535 / 1	BM W2 Breaker Monitoring outputs see 2-02
2-195	708	1U	–	W	0-255 / 1	BM W3 Breaker Monitoring inputs see 2-00
2-196	709	1U	–	W	0-65535 / 1	BM W3 Breaker Monitoring ext. inputs see 2-01
2-197	710	1U	–	W	0-65535 / 1	BM W3 Breaker Monitoring outputs see 2-02
2-198	711	1U	–	W	0-255 / 1	TF Through Fault Alarm inputs See 2-00
2-199	712	1U	–	W	0-65535 / 1	TF Through Fault Alarm ext. inputs See 2-01

Table 3 – Configuration (11 of 12)

CONFIGURATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
2-200	713	1U	–	W	0-65535 / 1	TF Through Fault Alarm outputs See 2-02
2-201	714	1U	–	W	0-255 / 1	TCM1 Trip Circuit Monitor inputs see 2-00
2-202	715	1U	–	W	0-65535 / 1	TCM1 Trip Circuit Monitor ext. inputs see 2-01
2-203	716	1U	–	W	0-65535 / 1	TCM1 Trip Circuit Monitor outputs see 2-02
2-204	717	1U	–	W	0-255 / 1	TCM2 Trip Circuit Monitor inputs see 2-00
2-205	718	1U	–	W	0-65535 / 1	TCM2 Trip Circuit Monitor ext. inputs see 2-01
2-206	719	1U	–	W	0-65535 / 1	TCM2 Trip Circuit Monitor outputs see 2-02
2-207	720	1U	–	W	0-255 / 1	CCM1 Close Circuit Monitor inputs see 2-00
2-208	721	1U	–	W	0-65535 / 1	CCM1 Close Circuit Monitor ext. inputs see 2-01
2-209	722	1U	–	W	0-65535 / 1	CCM1 Close Circuit Monitor outputs see 2-02
2-210	723	1U	–	W	0-255 / 1	CCM2 Close Circuit Monitor inputs see 2-00
2-211	724	1U	–	W	0-65535 / 1	CCM2 Close Circuit Monitor ext. inputs see 2-01
2-212	725	1U	–	W	0-65535 / 1	CCM2 Close Circuit Monitor outputs see 2-02

Table 3 – Configuration (12 of 12)

						SETPOINTS
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-00	769	1	%	W	100-200 / 1	24DT #1 Pickup
3-01	770	1	CYCLES	W	30-8160 / 1	24DT #1 Time Delay
3-02	771	1	%	W	100-200 / 1	24DT #2 Pickup
3-03	772	1	CYCLES	W	30-8160 / 1	24DT #2 Time Delay
3-04	773	1	%	W	100-150 / 1	24IT Pickup
3-05	774	1	–	W	1-4 / 1	24IT Curve **
3-06	775	10	–	W	if curve = 1 10-1000 / 10 —— if curve = 2, 3, 4 0-90 / 1	24IT Time dial **
3-07	776	1	SEC	W	1-999 / 1	24IT Reset Rate
3-08	777	1	VOLTS	W	5-140 / 1	27#1 Undervoltage Pickup
3-09	778	1	–	W	0-1 / 1	27#1 Undervoltage Inhibit 0 = Disable 1 = Enable
3-10	779	1	VOLTS	W	5-140 / 1	27#1 Undervoltage Inhibit
3-11	780	1	CYCLES	W	1-8160 / 1	27#1 Time Delay
3-12	781	1	VOLTS	W	5-140 / 1	27#2 Undervoltage Pickup
3-13	782	1	–	W	0-1 / 1	27#2 Undervoltage Inhibit 0 = Disable 1 = Enable
3-14	783	1	VOLTS	W	5-140 / 1	27#2 Undervoltage Inhibit
3-15	784	1	CYCLES	W	1-8160 / 1	27#2 Time Delay
3-16	785	1	VOLTS	W	5-140 / 1	27#3 Undervoltage Pickup
3-17	786	1	–	W	0-1 / 1	27#3 Undervoltage Inhibit 0 = Disable 1 = Enable
3-18	787	1	VOLTS	W	5-140 / 1	27#3 Undervoltage Inhibit
3-19	788	1	CYCLES	W	1-8160 / 1	27#3 Time Delay
3-20	789	–	–	–	–	Not used
3-21	790	–	–	–	–	Not used
3-22	791	–	–	–	–	Not used

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (1 of 28)

						SETPOINTS
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-23	792	–	–	–	–	Not used
3-24	793	–	–	–	–	Not used
3-25	794	–	–	–	–	Not used
3-26	795	–	–	–	–	Not used
3-27	796	–	–	–	–	Not used
3-28	797	–	–	–	–	Not used
3-29	798	–	–	–	–	Not used
3-30	799	–	–	–	–	Not used
3-31	800	–	–	–	–	Not used
3-32	801	–	–	–	–	Not used
3-33	802	100	AMPS	W	if C.T. secondary rating = 5 Amp 10-2000 / 1 if C.T. secondary rating = 1 Amp 2-400 / 1	46DTW2 Pickup
3-34	803	1	CYCLES	W	1-8160 / 1	46DTW2 Time Delay
3-35	804	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-500 / 1 if C.T. secondary rating = 1 Amp 10-100 / 1	46ITW2 Pickup
3-36	805	1	–	W	1-11 / 1	46ITW2 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (2 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-37	806	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	46ITW2 Time dial **
3-38	807	100	AMPS	W	if C.T. secondary rating = 5 Amp 10-2000 / 1 if C.T. secondary rating = 1 Amp 2-400 / 1	46DTW3 Pickup
3-39	808	1	CYCLES	W	1-8160 / 1	46DTW3 Time Delay
3-40	809	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-500 / 1 if C.T. secondary rating = 1 Amp 10-100 / 1	46ITW3 Pickup
3-41	810	1	–	W	1-11 / 1	46ITW3 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-42	811	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	46ITW3 Time dial **
3-43	812	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50 #1 Pickup

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (3 of 28)

			SETPOINTS				
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**	
3-44	813	1	CYCLES	W	1-8160 / 1	50W1 #1 Time Delay	
3-45	814	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1	50 #2 Pickup	
					if C.T. secondary rating =1 Amp 2-200 / 1		
3-46	815	1	CYCLES	W	1-8160 / 1	50 #2 Time Delay	
3-47	816	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1	50 #3 Pickup	
					if C.T. secondary rating =1 Amp 2-200 / 1		
3-48	817	1	CYCLES	W	1-8160 / 1	50 #3 Time Delay	
3-49	818	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1	50 #4 Pickup	
					if C.T. secondary rating =1 Amp 2-200 / 1		
3-50	819	1	CYCLES	W	1-8160 / 1	50 #4 Time Delay	
3-51	820	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1	50 #5 Pickup	
					if C.T. secondary rating =1 Amp 2-200 / 1		
3-52	821	1	CYCLES	W	1-8160 / 1	50 #5 Time Delay	
3-53	822	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1	50 #6 Pickup	
					if C.T. secondary rating =1 Amp 2-200 / 1		
3-54	823	1	CYCLES	W	1-8160 / 1	50 #6 Time Delay	

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (4 of 28)

						SETPOINTS
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-55	824	1	–	W	0-4 / 1	F50 #1 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-56	825	1	–	W	0-4 / 1	F50 #2 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-57	826	1	–	W	0-4 / 1	F50 #3 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-58	827	1	–	W	0-4 / 1	F50 #4 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-59	828	1	–	W	0-4 / 1	F50 #5 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-60	829	1	–	W	0-4 / 1	F50 #6 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-61	830	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50GW2 #1 Pickup
3-62	831	1	CYCLES	W	1-8160 / 1	50GW2 #1 Time Delay

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (5 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-63	832	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50GW2 #2 Pickup
3-64	833	1	CYCLES	W	1-8160 / 1	50GW2 #2 Time Delay
3-65	834	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50GW3 #1 Pickup
3-66	835	1	CYCLES	W	1-8160 / 1	50GW3 #1 Time Delay
3-67	836	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50GW3#2 Pickup
3-68	837	1	CYCLES	W	1-8160 / 1	50GW3 #2 Time Delay
3-69	838	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW1 Phase Pickup
3-70	839	1U	–	W	0-255 / 1	50BFW1 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)

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (6 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-71	840	1U	–	W	0-65535 / 1	50BFW1 Input Initiate ext inputs Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used
3-72	841	1U	–	W	0-65535 / 1	50BFW1 Output Initiate Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16
3-73	842	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW1 Residual Pickup
3-74	843	1	CYCLES	W	1-8160 / 1	50BFW1 Time Delay
3-75	844	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW2 Phase Pickup
3-76	845	1U	–	W	0-255 / 1	50BFW2 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)

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (7 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-77	846	1U	–	W	0-65535 / 1	50BFW2 Input Initiate ext Inputs Bit 0 = Input 7　　Bit 8 = Input 15 Bit 1 = Input 8　　Bit 9 = Input 16 Bit 2 = Input 9　　Bit 10 = Input 17 Bit 3 = Input 10　Bit 11 = Input 18 Bit 4 = Input 11　Bit 12 = Not used Bit 5 = Input 12　Bit 13 = Not used Bit 6 = Input 13　Bit 14 = Not used Bit 7 = Input 14　Bit 15 = Not used
3-78	847	1U	–	W	0-65535 / 1	50BFW2 Output Initiate Bit 0 = Out 1　　Bit 8 = Out 9 Bit 1 = Out 2　　Bit 9 = Out 10 Bit 2 = Out 3　　Bit 10 = Out 11 Bit 3 = Out 4　　Bit 11 = Out 12 Bit 4 = Out 5　　Bit 12 = Out 13 Bit 5 = Out 6　　Bit 13 = Out 14 Bit 6 = Out 7　　Bit 14 = Out 15 Bit 7 = Out 8　　Bit 15 = Out 16
3-79	848	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW2 Residual Pickup
3-80	849	1	CYCLES	W	1-8160 / 1	50BFW2 Delay
3-81	850	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW3 Phase Pickup
3-82	851	1U	–	W	0-255 / 1	50BFW3 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)

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (8 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-83	852	1U	–	W	0-65535 / 1	50BFW3 Input Initiate ext inputs Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used
3-84	853	1U	–	W	0-65535 / 1	50BFW3 Output Initiate Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16
3-85	854	100	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50BFW3 Residual Pickup
3-86	855	1	CYCLES	W	1-8160 / 1	50BFW3 Delay
3-87	856	100	AMPS	W	If C.T. secondary rating = 5 Amp 50-1200 / 1 if C.T. secondary rating = 1 Amp 10-240 / 1	51 #1 Pickup
3-88	857	1	–	W	1-11 / 1	51 #1 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (9 of 28)

				SETPOINTS		
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-89	858	100	–	W	if curve = 1 to 4 50-1100 / 10 <hr> if curve = 5 to 8 5-110 / 1 <hr> if curve = 9 to 11 50-1500 / 10	51 #1 Time Dial **
3-90	859	100	AMPS	W	If C.T. secondary rating = 5 Amp 50-1200 / 1 <hr> if C.T. secondary rating = 1 Amp 10-240 / 1	51 #2 Pickup
3-91	860	1	–	W	1-11 / 1	51 #2 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-92	861	100	–	W	if curve = 1 to 4 50-1100 / 10 <hr> if curve = 5 to 8 5-110 / 1 <hr> if curve = 9 to 11 50-1500 / 10	51 #2 Time Dial **
3-93	862	100	AMPS	W	If C.T. secondary rating = 5 Amp 50-1200 / 1 <hr> if C.T. secondary rating = 1 Amp 10-240 / 1	51#3 Pickup

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (10 of 28)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
					SETPOINTS	
3-94	863	1	–	W	1-11 / 1	51#3 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-95	864	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	51#3 Time Dial **
3-96	865	1	–	W	0-4 / 1	F51 #1 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-97	866	1	–	W	0-4 / 1	F51 #2 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-98	867	1	–	W	0-4 / 1	F51 #3 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-99	868	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-600 / 1 if C.T. secondary rating = 1 Amp 10-120 / 1	51N #1 Pickup

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (11 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-100	869	1	–	W	1-11 / 1	51N #1 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-101	870	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 #1 Time Dial **
3-102	871	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-600 / 1 if C.T. secondary rating = 1 Amp 10-120 / 1	51N #2 Pickup
3-103	872	1	–	W	1-11 / 1	51N #2 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-104	873	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 #2 Time Dial **

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (12 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-105	874	100	AMPS	W	if C.T. secondary rating = 5 Amp 50-600 / 1 if C.T. secondary rating = 1 Amp 10-120 / 1	51N #3 Pickup
3-106	875	1	–	W	1-11 / 1	51N #3 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-107	876	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 #3 Time Dial **
3-108	877	1	–	W	0-4 / 1	F51N #1 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-109	878	1	–	W	0-4 / 1	F51N #2 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
3-110	879	1	–	W	0-4 / 1	F51N #3 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (13 of 28)

				SETPOINTS			
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**		**DESCRIPTION**
3-111	880	100	AMPS	W	If C.T. secondary rating = 5 Amp 50-1200 / 1 if C.T. secondary rating = 1 Amp 10-240 / 1		51GW2 Pickup
3-112	881	1	–	W	1-11 / 1		51GW2 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse
3-113	882	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		51GW2 Time Dial **
3-114	883	100	AMPS	W	If C.T. secondary rating = 5 Amp 50-1200 / 1 if C.T. secondary rating = 1 Amp 10-240 / 1		51GW3 Pickup
3-115	884	1	–	W	1-11 / 1		51GW3 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 Moderately Inverse 10 = IEEE Very Inverse 11 = IEEE Extremely Inverse

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (14 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-116	885	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	51GW3 Time Dial **
3-117	886	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #1 Pickup
3-118	887	1	CYCLES	W	1-8160 / 1	50N #1 Time Delay
3-119	888	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #2 Pickup
3-120	889	1	CYCLES	W	1-8160 / 1	50N #2 Time Delay
3-121	890	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #3 Pickup
3-122	891	1	CYCLES	W	1-8160 / 1	50N #3 Time Delay
3-123	892	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #4 Pickup
3-124	893	1	CYCLES	W	1-8160 / 1	50N #4 Time Delay
3-125	894	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #5 Pickup
3-126	895	1	CYCLES	W	1-8160 / 1	50N #5 Time Delay

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (15 of 28)

						SETPOINTS	
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**	
3-127	896	10	AMPS	W	If C.T. secondary rating = 5 Amp 10-1000 / 1 if C.T. secondary rating =1 Amp 2-200 / 1	50N #6 Pickup	
3-128	897	1	CYCLES	W	1-8160 / 1	50N #6 Time Delay	
3-129	898	1	–	W	0-4 / 1	F50N #1 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	
3-130	899	1	–	W	0-4 / 1	F50N #2 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	
3-131	900	1	–	W	0-4 / 1	F50N #3 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	
3-132	901	1	–	W	0-4 / 1	F50N #4 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	
3-133	902	1	–	W	0-4 / 1	F50N #5 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	
3-134	903	1	–	W	0-4 / 1	F50N #6 Winding config 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3	

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (16 of 28)

SETPOINTS							
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION	
3-135	904	1	VOLTS	W	5-180 / 1	59 #1 Pickup	
3-136	905	1	CYCLES	W	1-8160 / 1	59 #1 Delay	
3-137	906	1	VOLTS	W	5-180 / 1	59 #2 Pickup	
3-138	907	1	CYCLES	W	1-8160 / 1	59 #2 Delay	
3-139	908	1	VOLTS	W	5-180 / 1	59 #3 Pickup	
3-140	909	1	CYCLES	W	1-8160 / 1	59 #3 Delay	
3-141	910	1	–	W	0-7 / 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 <hr>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	
3-142	911	10	VOLTS	W	5-180 / 1	59G #1 Pickup	
3-143	912	1	CYCLES	W	1-8160 / 1	59G #1 Delay	
3-144	913	10	VOLTS	W	5-180 / 1	59G #2 Pickup	
3-145	914	1	CYCLES	W	1-8160 / 1	59G #2 Delay	
3-146	915	10	VOLTS	W	5-180 / 1	59G #3 Pickup	
3-147	916	1	CYCLES	W	1-8160 / 1	59G #3 Delay	
3-148	917	100	HZ	W	if nominal frequency = 60 Hz 5500-6500 / 1 if nominal frequency = 50 Hz 4500-5500 / 1	81 #1 Pickup For 60 Hz nominal freq. 6000 pickup value excluded. For 50 Hz nominal freq. 5000 pickup value excluded.	
3-149	918	1	CYCLES	W	2-65500 / 1	81 #1 Time Delay	
3-150	919	100	HZ	W	if nominal frequency = 60 Hz 5500-6500 / 1 if nominal frequency = 50 Hz 4500-5500 / 1	81 #2 Pickup For 60 Hz nominal freq. 6000 pickup value excluded. For 50 Hz nominal freq. 5000 pickup value excluded.	

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (17 of 28)

						SETPOINTS
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-151	920	1	CYCLES	W	2-65500 / 1	81 #2 Time Delay
3-152	921	100	HZ	W	if nominal frequency = 60 Hz 5500-6500 / 1	81 #3 Pickup For 60 Hz nominal freq. 6000 pickup value excluded.
					if nominal frequency = 50 Hz 4500-5500 / 1	For 50 Hz nominal freq. 5000 pickup value excluded.
3-153	922	1	CYCLES	W	2-65500 / 1	81 #3 Time Delay
3-154	923	100	HZ	W	if nominal frequency = 60 Hz 5500-6500 / 1	81 #4 Pickup For 60 Hz nominal freq. 6000 pickup value excluded.
					if nominal frequency = 50 Hz 4500-5500 / 1	For 50 Hz nominal freq. 5000 pickup value excluded.
3-155	924	1	CYCLES	W	2-65500 / 1	81 #4 Time Delay
3-156	925	100	AMPS	W	If C.T. secondary rating = 5 Amp 20-1000 / 1	87GDW2 #1 Pickup
					if C.T. secondary rating = 1 Amp 4-200 / 1	
3-157	926	1	CYCLES	W	1-8160 / 1	87GDW2 #1 Time Delay
3-158	927	100	AMPS	W	If C.T. secondary rating = 5 Amp 20-1000 / 1	87GDW2 #2 Pickup
					if C.T. secondary rating = 1 Amp 4-200 / 1	
3-159	928	1	–	W	0-1 / 1	87GDW2 Directional Element enable 0 = disabled 1 = enabled
3-160	929	100	–	W	10-799 / 1	87GDW2 C.T. Ratio correction
3-161	930	1	CYCLES	W	1-8160 / 1	87GDW2 #2 Time Delay
3-162	931	100	AMPS	W	If C.T. secondary rating = 5 Amp 20-1000 / 1	87GDW3 #1 Pickup
					if C.T. secondary rating = 1 Amp 4-200 / 1	
3-163	932	1	CYCLES	W	1-8160 / 1	87GDW3 #1 Time Delay

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (18 of 28)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
					SETPOINTS	
3-164	933	100	AMPS	W	If C.T. secondary rating = 5 Amp 20-1000 / 1 <hr> if C.T. secondary rating = 1 Amp 4-200 / 1	87GDW3 #2 Pickup
3-165	934	1	–	W	0-1 / 1	87GDW3 Directional Element enable 0 = disabled 1 = enabled
3-166	935	100	–	W	10-799 / 1	87GDW3 C.T. Ratio correction
3-167	936	1	CYCLES	W	1-8160 / 1	87GDW3 #2 Time Delay
3-168	937	1	–	W	0-2 / 1	F87GD W2 Winding config 0 = summing #1 phase current 1 = summing #2 phase current 2 = single winding phase current
3-169	938	1	–	W	0-2 / 1	F87GD W3 Winding config 0 = summing #1 phase current 1 = summing #2 phase current 2 = single winding phase current
3-170	939	1U	–	W	0-255 / 1	IPSLogic #1 Initiating 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 6-15 = Not used (0)
3-171	940	1U	–	W	0-65535 / 1	IPSLogic #1 Initiating Inputs ext. Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (19 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-172	941	1U	–	W	0-65535 / 1	IPSLogic #1 Initiating Outputs Bit 0 = Output 1 Bit 8 = Output 9 Bit 1 = Output 2 Bit 9 = Output 10 Bit 2 = Output 3 Bit 10 = Output 11 Bit 3 = Output 4 Bit 11 = Output 12 Bit 4 = Output 5 Bit 12 = Output 13 Bit 5 = Output 6 Bit 13 = Output 14 Bit 6 = Output 7 Bit 14 = Output 15 Bit 7 = Output 8 Bit 15 = Output 16

3-173	942	1U	–	W	0-65535 / 1	IPSLogic #1 Gate Config
						Bit 0 = Initiating outputs gate
						Bit 1 = Initiating functions trip gate
						Bit 2 = Initiating inputs gate
						Bit 3 = Blocking inputs gate
						Bit 4 = Inputs main gate
						Bit 5-6 = Not used (0)
						Bit 7 = Initiating functions gate NOT
						        element enable/disable
						Bit 8 = Blocking Inputs NOT element
						        enable/disable
						Bits 9-15 = Not used
						
						Bits 7-8 = 0 NOT disabled
						Bits 7-8 = 1 NOT enabled
						
						0 = gate configured for "OR"
						1 = gate configured for "AND"

3-174	943	1U	–	W	0-65535 / 1	IPSLogic #1 Picked up functions initiate mask Least significant word [0] Bit 0 = F24DT_1 Bit 1 = F24DT_2 Bit 2 = F24IT Bit 3 = F27_1 Bit 4 = F46DT_W2 Bit 5 = F46IT_W2 Bit 6 = F46DT_W3 Bit 7 = F46IT_W3 Bit 8 = F49 Bit 9 = F50_W1_1 Bit 10 = F50_W1_2 Bit 11 = F50_W2_1 Bit 12 = F50_W2_2 Bit 13 = F50_W3_1 Bit 14 = F50_W3_2 Bit 15 = F50BF_W1

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (20 of 28)

			SETPOINTS				
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**	
3-175	944	1U	–	W	0-65535 / 1	IPSLogic #1 Picked up functions initiate mask Next significant word [1] Bit 0 = F50BF_W2 Bit 1 = F50BF_W3 Bit 2 = F50G_W2_1 Bit 3 = F50G_W2_2 Bit 4 = F50G_W3_1 Bit 5 = F50G_W3_2 Bit 6 = F50N_W1_1 Bit 7 = F50N_W1_2 Bit 8 = F50N_W2_1 Bit 9 = F50N_W2_2 Bit 10 = F50N_W3_1 Bit 11 = F50N_W3_2 Bit 12 = F51_W1 Bit 13 = F51_W2 Bit 14 = F51_W3 Bit 15 = F51G_W2	
3-176	945	1U	–	W	0-65535 / 1	IPSLogic #1 Picked up functions initiate mask Next significant word [2] Bit 0 = F51G_W3 Bit 1 = F51N_W1 Bit 2 = F51N_W2 Bit 3 = F51N_W3 Bit 4 = F59_1 Bit 5 = F59_2 Bit 6 = F81_1 Bit 7 = F81_2 Bit 8 = F81_3 Bit 9 = F81_4 Bit 10 = F87H Bit 11 = F87T Bit 12 = F87GD_W2_1 Bit 13 = F87GD_W2_2 Bit 14 = F87GD_W3_1 Bit 15 = F87GD_W3_2	

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (21 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-177	946	1U	–	W	0-65535 / 1	IPSLogic #1 Picked up functions initiate mask Next significant word [3] Bit 0 = FTHFLT Bit 1 = FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59G_1 Bit 15 = F59G_2
3-178	947	1U	–	W	0-65535 / 1	IPSLogic #1 Picked up functions initiate mask Most significant word [4] Bit 0 = F59G_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bit 4 = 87H/T Phase A Bit 5 = 87H/T Phase B Bit 6 = 87H/T Phase C Bits 7-15 = not used
3-179	948	1U	–	W	0-4 / 1	IPSLogic #1 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-180	949	1U	–	W	0-1 / 1	IPSLogic #1 Initiate via communication
3-181	950	1U	–	W	0-1 / 1	IPSLogic #1 Block via communication
3-182	951	1	CYCLES	W	1-65500 / 1	IPSLogic #1 Time Delay
3-183	952	1U	–	W	0-255 / 1	IPSLogic #2 Initiating inputs See 3-170
3-184	953	1U	–	W	0-65535 / 1	IPSLogic #2 Initiating inputs ext. See 3-171

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (22 of 28)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
						SETPOINTS
3-185	954	1U	–	W	0-65535 / 1	IPSLogic #2 Initiating outputs See 3-172
3-186	955	1U	–	W	0-65535 / 1	IPSLogic #2 Gate Config See 3-173
3-187	956	1U	–	W	0-65535 / 1	IPSLogic #2 Picked up functions initiate mask Least significant word [0] See 3-174
3-188	957	1U	–	W	0-65535 / 1	IPSLogic #2 Picked up functions initiate mask Next significant word [1] See 3-175
3-189	958	1U	–	W	0-65535 / 1	IPSLogic #2 Picked up functions initiate mask Next significant word [2] See 3-176
3-190	959	1U	–	W	0-65535 / 1	IPSLogic #2 Picked up functions initiate mask Next significant word [3] See 3-177
3-191	960	1U	–	W	0-65535 / 1	IPSLogic #2 Picked up functions initiate mask Most significant word [4] See 3-178
3-192	961	1U	–	W	0-4 / 1	IPSLogic #2 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-193	962	1U	–	W	0-1 / 1	IPSLogic #2 Initiate via communication
3-194	963	1U	–	W	0-1 / 1	IPSLogic #2 Block via communication
3-195	964	1	CYCLES	W	1-65500 / 1	IPSLogic #2 Time Delay
3-196	965	1U	–	W	0-255 / 1	IPSLogic #3 Initiating inputs See 3-170
3-197	966	1U	–	W	0-65535 / 1	IPSLogic #3 Initiating inputs ext. See 3-171
3-198	967	1U	–	W	0-65535 / 1	IPSLogic #3 Initiating outputs See 3-172

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (23 of 28)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				SETPOINTS		
3-199	968	1U	–	W	0-65535 / 1	IPSLogic #3 Gate Config See 3-173
3-200	969	1U	–	W	0-65535 / 1	IPSLogic #3 Picked up functions initiate mask Least significant word [0] See 3-174
3-201	970	1U	–	W	0-65535 / 1	IPSLogic #3 Picked up functions initiate mask Next significant word [1] See 3-175
3-202	971	1U	–	W	0-65535 / 1	IPSLogic #3 Picked up functions initiate mask Next significant word [2] See 3-176
3-203	972	1U	–	W	0-65535 / 1	IPSLogic #3 Picked up functions initiate mask Next significant word [3] See 3-177
3-204	973	1U	–	W	0-65535 / 1	IPSLogic #3 Picked up functions initiate mask Most significant word [4] See 3-178
3-205	974	1U	–	W	0-4 / 1	IPSLogic #3 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-206	975	1U	–	W	0-1 / 1	IPSLogic #3 Initiate via communication
3-207	976	1U	–	W	0-1 / 1	IPSLogic #3 Block via communication
3-208	977	1	CYCLES	W	1-65500 / 1	IPSLogic #3 Time Delay
3-209	978	1U	–	W	0-255 / 1	IPSLogic #4 Initiating inputs See 3-170
3-210	979	1U	–	W	0-65535 / 1	IPSLogic #4 Initiating inputs ext. See 3-171
3-211	980	1U	–	W	0-65535 / 1	IPSLogic #4 Initiating outputs See 3-172
3-212	981	1U	–	W	0-65535 / 1	IPSLogic #4 Gate Config See 3-173

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (24 of 28)

SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-213	982	1U	–	W	0-65535 / 1	IPSLogic #4 Picked up functions initiate mask Least significant word [0] See 3-174
3-214	983	1U	–	W	0-65535 / 1	IPSLogic #4 Picked up functions initiate mask Next significant word [1] See 3-175
3-215	984	1U	–	W	0-65535 / 1	IPSLogic #4 Picked up functions initiate mask Next significant word [2] See 3-176
3-216	985	1U	–	W	0-65535 / 1	IPSLogic #4 Picked up functions initiate mask Next significant word [3] See 3-177
3-217	986	1U	–	W	0-65535 / 1	IPSLogic #4 Picked up functions initiate mask Most significant word [4] See 3-178
3-218	987	1U	–	W	0-4 / 1	IPSLogic #4 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-219	988	1U	–	W	0-1 / 1	IPSLogic #4 Initiate via communication
3-220	989	1U	–	W	0-1 / 1	IPSLogic #4 Block via communication
3-221	990	1	CYCLES	W	1-65500 / 1	IPSLogic #4 Time Delay
3-222	991	1U	–	W	0-255 / 1	IPSLogic #5 Initiating inputs See 3-170
3-223	992	1U	–	W	0-65535 / 1	IPSLogic #5 Initiating inputs ext. See 3-171
3-224	993	1U	–	W	0-65535 / 1	IPSLogic #5 Initiating outputs See 3-172
3-225	994	1U	–	W	0-65535 / 1	IPSLogic #5 Gate Config See 3-173

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (25 of 28)

SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
3-226	995	1U	–	W	0-65535 / 1	IPSLogic #5 Picked up functions initiate mask Least significant word [0] See 3-174
3-227	996	1U	–	W	0-65535 / 1	IPSLogic #5 Picked up functions initiate mask Next significant word [1] See 3-175
3-228	997	1U	–	W	0-65535 / 1	IPSLogic #5 Picked up functions initiate mask Next significant word [2] See 3-176
3-229	998	1U	–	W	0-65535 / 1	IPSLogic #5 Picked up functions initiate mask Next significant word [3] See 3-177
3-230	999	1U	–	W	0-65535 / 1	IPSLogic #5 Picked up functions initiate mask Most significant word [4] See 3-178
3-231	1000	1U	–	W	0-4 / 1	IPSLogic #5 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-232	1001	1U	–	W	0-1 / 1	IPSLogic #5 Initiate via communication
3-233	1002	1U	–	W	0-1 / 1	IPSLogic #5 Block via communication
3-234	1003	1	CYCLES	W	1-65500 / 1	IPSLogic #5 Time Delay
3-235	1004	1U	–	W	0-255 / 1	IPSLogic #6 Initiating inputs See 3-170
3-236	1005	1U	–	W	0-65535 / 1	IPSLogic #6 Initiating inputs ext. See 3-171
3-237	1006	1U	–	W	0-65535 / 1	IPSLogic #6 Initiating outputs See 3-172
3-238	1007	1U	–	W	0-65535 / 1	IPSLogic #6 Gate Config See 3-173

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (26 of 28)

SETPOINTS
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
3-239	1008	1U	–	W	0-65535 / 1	IPSLogic #6 Picked up functions initiate mask Least significant word [0] See 3-174
3-240	1009	1U	–	W	0-65535 / 1	IPSLogic #6 Picked up functions initiate mask Next significant word [1] See 3-175
3-241	1010	1U	–	W	0-65535 / 1	IPSLogic #6 Picked up functions initiate mask Next significant word [2] See 3-176
3-242	1011	1U	–	W	0-65535 / 1	IPSLogic #6 Picked up functions initiate mask Next significant word [3] See 3-177
3-243	1012	1U	–	W	0-65535 / 1	IPSLogic #6 Picked up functions initiate mask Most significant word [4] See 3-178
3-244	1013	1U	–	W	0-4 / 1	IPSLogic #6 Profile Switch 0 = not activated 1 = switch to profile 1 2 = switch to profile 2 3 = switch to profile 3 4 = switch to profile 4
3-245	1014	1U	–	W	0-1 / 1	IPSLogic #6 Initiate via communication
3-246	1015	1U	–	W	0-1 / 1	IPSLogic #6 Block via communication
3-247	1016	1	CYCLES	W	1-65500 / 1	IPSLogic #6 Time Delay
3-248	1017	1	–	W	0-63 / 1	IPS Logic Latch Reset Bit 0 = IPS #1 Bit 1 = IPS #2 Bit 2 = IPS #3 Bit 3 = IPS #4 Bit 4 = IPS #5 Bit 5 = IPS #6
3-249	1018	1	CYCLES	W	0-65500 / 1	IPS LOGIC #1 Dropout Delay
3-250	1019	1	CYCLES	W	0-65500 / 1	IPS LOGIC #2 Dropout Delay
3-251	1020	1	CYCLES	W	0-65500 / 1	IPS LOGIC #3 Dropout Delay
3-252	1021	1	CYCLES	W	0-65500 / 1	IPS LOGIC #4 Dropout Delay

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (27 of 28)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				SETPOINTS		
3-253	1022	1	CYCLES	W	0-65500 / 1	IPS LOGIC #5 Dropout Delay
3-254	1023	1	CYCLES	W	0-65500 / 1	IPS LOGIC #6 Dropout Delay

■ **NOTE:** ** When writing these points, curve should always precede time dial. If a change is made in Inverse curve type of any function, the corresponding time dial should be written irrespective of a change.

Table 4 – Setpoints (28 of 28)

MISCELLANEOUS / MAXIMUMS / 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	1	–	R	–	Pre and Post compensated phasors set update trigger See 1-106 to 1-147
4-09	1034	1	–	R	–	Phasor set update trigger See 1-60 to 1-89
4-10	1035	1	–	R	–	Processor Reset Counter
4-11	1036	1	–	R	–	Powerloss Counter
4-12	1037	1	–	R	–	OUT1 Counter
4-13	1038	1	–	R	–	OUT2 Counter
4-14	1039	1	–	R	–	OUT3 Counter
4-15	1040	1	–	R	–	OUT4 Counter
4-16	1041	1	–	R	–	OUT5 Counter
4-17	1042	1	–	R	–	OUT6 Counter
4-18	1043	1	–	R	–	OUT7 Counter
4-19	1044	1	–	R	–	OUT8 Counter
4-20	1045	1	–	R	–	OUT9 Counter
4-21	1046	1	–	R	–	OUT10 Counter

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (1 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-22	1047	1	–	R	–	OUT11 Counter
4-23	1048	1	–	R	–	OUT12 Counter
4-24	1049	1	–	R	–	OUT13 Counter
4-25	1050	1	–	R	–	OUT14 Counter
4-26	1051	1	–	R	–	OUT15 Counter
4-27	1052	1	–	R	–	OUT16 Counter
4-28	1053	1	–	R	–	Alarm Counter
4-29	1054	1	–	–	–	EEPROM Selftest Counter
4-30	1055	1	–	R	–	Last Selftest Error Code
4-31	1056	1	–	R	–	Last Selftest Error Code -1
4-32	1057	1	–	R	–	Last Selftest Error Code -2
4-33	1058	1	–	R	0-59 / 1	Last Selftest Error Code -3
4-34	1059	1	–	R	0-59 / 1	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
4-35	1060	1	–	R	–	Clear Target History
4-36	1061	1	–	R	–	Clear Oscillograph Recorder
4-37	1062	1	–	R	–	Last Comm Error Code
4-38	1063	1	–	–	–	Target LED status 0 = off 1 = on
4-39	1064	1	–	R	–	Receive Packet Errors
4-40	1065	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 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (2 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-41 to 4-52	1066 to 1077	–	–	–	–	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'
4-53	1078	1	KAMPS	W	1-50000 /1	BM W1 Pickup
4-54	1079	1U	–	W	0-255 / 1	BM W1 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 6-7 = Not used (0)
4-55	1080	1U	–	W	0-65535 / 1	BM W1 Input Initiate ext. Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used
4-56	1081	1U	–	W	0-65535 / 1	BM W1 Output Initiate Bit 0 = Output 1 Bit 8 = Output 9 Bit 1 = Output 2 Bit 9 = Output 10 Bit 2 = Output 3 Bit 10 = Output 11 Bit 3 = Output 4 Bit 11 = Output 12 Bit 4 = Output 5 Bit 12 = Output 13 Bit 5 = Output 6 Bit 13 = Output 14 Bit 6 = Output 7 Bit 14 = Output 15 Bit 7 = Output 8 Bit 15 = Output 16

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (3 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-57	1082	10	CYCLES	W	1-40959 / 1	BM W1 Time Delay
4-58	1083	1	KAMPS	W	1-50000 / 1	BM W2 Pickup
4-59	1084	1U	–	W	0-255 / 1	BM W2 Input Initiate See 4-54
4-60	1085	1U	–	W	0-65535 / 1	BM W2 Input Initiate ext. See 4-55
4-61	1086	1U	–	W	0-65535 / 1	BM W2 Output Initiate See 4-56
4-62	1087	10	CYCLES	W	1-40959 / 1	BM W2 Time Delay
4-63	1088	1	KAMPS	W	1-50000 / 1	BM W3 Pickup
4-64	1089	1U	–	W	0-255 / 1	BM W3 Input Initiate See 4-54
4-65	1090	1U	–	W	0-65535 / 1	BM W3 Input Initiate ext. See 4-55
4-66	1091	1U	–	W	0-65535 / 1	BM W3 Output Initiate See 4-56
4-67	1092	10	CYCLES	W	1-40959 / 1	BM W3 Delay
4-68	1093	1U	–	W	0-15 / 1	Breaker Monitor Timing Method select Bit 0 = W1 Bit 1 = W2 Bit 2 = W3 Bit 3-7 = Not Used 0 = I*t method selected 1 = I^2*t method selected
4-69	1094	1	KAMPS	W	0-50000 / 1	BM W1 Accumulator preset phase A
4-70	1095	1	KAMPS	W	0-50000 / 1	BM W1 Accumulator preset phase B
4-71	1096	1	KAMPS	W	0-50000 / 1	BM W1 Accumulator preset phase C
4-72	1097	1	KAMPS	W	0-50000 / 1	BM W2 Accumulator preset phase A
4-73	1098	1	KAMPS	W	0-50000 / 1	BM W2 Accumulator preset phase B
4-74	1099	1	KAMPS	W	0-50000 / 1	BM W2 Accumulator preset phase C
4-75	1100	1	KAMPS	W	0-50000 / 1	BM W3 Accumulator preset phase A
4-76	1101	1	KAMPS	W	0-50000 / 1	BM W3 Accumulator preset phase B

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (4 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-77	1102	1	KAMPS	W	0-50000 / 1	BM W3 Accumulator preset phase C
4-78	1103	10	MINS	W	10 –9999/1	49 Time Constant
4-79	1104	100	AMPS	W	if C.T. secondary rating = 5Amp 100-1000 / 1 if C.T. secondary rating = 1Amp 20-200 / 1	49 Max Overload Current
4-80	1105	1	–	W	0-4 / 1	49 Winding Select 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
4-81 to 4-86	1106 to 1111	–	–	–	–	W1 Phase A current Max Time encoded as binary data. 4-81 = Date [0-30] 4-82 = Month [0-11] 4-83 = Year [00-99] 4-84 = Hours [0-23] 4-85 = Minutes [0-59] 4-86 = Seconds [0-59]
4-87 to 4-92	1112 to 1117	–	–	–	–	W2 Phase A current Max Time See 4-81 to 4-86
4-93 to 4-98	1118 to 1123	–	–	–	–	W3 Phase A current Max Time See 4-81 to 4-86
4-99 to 4-104	1124 to 1129	–	–	–	–	W1 Phase B current Max Time See 4-81 to 4-86
4-105 to 4-110	1130 to 1135	–	–	–	–	W2 Phase B current Max Time See 4-81 to 4-86
4-111 to 4-116	1136 to 1141	–	–	–	–	W3 Phase B current Max Time See 4-81 to 4-86
4-117 to 4-122	1142 to 1147	–	–	–	–	W1 Phase C current Max Time See 4-81 to 4-86
4-123 to 4-128	1148 to 1153	–	–	–	–	W2 Phase C current Max Time See 4-81 to 4-86

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (5 of 11)

M-3311A 2/3 MODBUS/BECO2200 COMMUNICATION DATABASE

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-129 to 4-134	1154 to 1159	–	–	–	–	W3 Phase C current Max Time See 4-81 to 4-86
4-135 to 4-140	1160 to 1165	–	–	–	–	W2 Phase G current Max Time See 4-81 to 4-86
4-141 to 4-146	1166 to 1171	–	–	–	–	W3 Phase G current Max Time See 4-81 to 4-86
4-147	1172	1000	AMPS	R	–	W1 Phase A current Max **
4-148	1173	1000	AMPS	R	–	W2 Phase A current Max **
4-149	1174	1000	AMPS	R	–	W3 Phase A current Max **
4-150	1175	1000	AMPS	R	–	W1 Phase B current Max **
4-151	1176	1000	AMPS	R	–	W2 Phase B current Max **
4-152	1177	1000	AMPS	R	–	W3 Phase B current Max **
4-153	1178	1000	AMPS	R	–	W1 Phase C current Max **
4-154	1179	1000	AMPS	R	–	W2 Phase C current Max **
4-155	1180	1000	AMPS	R	–	W3 Phase C current Max **
4-156	1181	1000	AMPS	R	–	W2 Phase G current Max **
4-157	1182	1000	AMPS	R	–	W3 Phase G current Max **
4-158	1183	1	–	W	0-1 / 1	Through Fault Inrush Inhibit 0 = Disable inhibit 1 = Enable inhibit
4-159	1184	10	AMPS	W	10-1000 / 1 for 5 A Relay 2-200 / 1 for 1 A Relay	Through Fault current threshold
4-160	1185	1	–	W	0-4 / 1	Through Fault winding selection 0 = summing current #1 1 = summing current #2 2 = W1 3 = W2 4 = W3
4-161	1186	1U	kA2 cycle	W	0-65535 / 1	Through Fault cumulative I^2t limit high word

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (6 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-162	1187	1U	kA2 cycle	W	0-65535 / 1	Through Fault cumulative I^2t limit low word
4-163	1188	1U	–	W	1-65535 / 1	Through Fault pickup operation limit
4-164	1189	1	CYCLES	W	1-8160 / 1	Through Fault time delay
4-165	1190	1	–	R	–	Restart Ethernet Board. This point should be written after any change has been made to the IP settings (points 4-166 to 4-173). 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.
4-166	1191	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 4-165)
4-167	1192	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 4-165)
4-168	1193	1	–	W	0-65535 / 1	Ethernet Board Net Mask Most significant word See 4-166 for details This point requires the restart of ethernet board (see point 4-165)

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (7 of 11)

						MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-169	1194	1	–	W	0-65535 / 1	Ethernet Board Net Mask Least significant word See 4-167 for details This point requires the restart of ethernet board (see point 4-165)
4-170	1195	1	–	W	0-65535 / 1	Ethernet Board Gateway IP Most significant word See 4-166 for details This point requires the restart of ethernet board (see point 4-165)
4-171	1196	1	–	W	0-65535 / 1	Ethernet Board Gateway IP Least significant word See 4-167 for details This point requires the restart of ethernet board (see point 4-165)
4-172	1197	1	–	W	1-2 / 1	Ethernet Board protocol: 1 = MODBUS TCP/IP 2 = SERIAL CONVERTER This point requires the restart of ethernet board (see point 4-165)
4-173	1198	1	–	W	0-1 / 1	Ethernet Board DHCP enable 0 = disabled 1 = enabled This point requires the restart of ethernet board (see point 4-165)
4-174	1199	1	–	W	0-1 / 1	Ethernet Board settings status (points 4-166 to 4-173) 0 = no change 1 = one or more setpoints changed
4-175	1200	1	–	–	–	Software version number for ethernet board (Major and minor) For example: V01.34.28 4-175 to 134
4-176	1201	1	–	–	–	Software version number for ethernet board (Build) See 4-175. 4-176 to 28
4-177	1202	1	CYCLES	W	1-8160 / 1	TCM Delay
4-178	1203	10	PU	W	50-200 / 1	87H Pickup

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (8 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-179	1204	1	CYCLES	W	1-8160 / 1	87H Time Delay
4-180	1205	100	PU	W	10-100 / 1	87T Pickup
4-181	1206	1	%	W	5-100 / 1	87T Percent Slope #1
4-182	1207	1	%	W	5-200 / 1	87T Percent Slope #2
4-183	1208	10	PU	W	10-40 / 1	87T Slope Break Point
4-184	1209	1	%	W	5-50 / 1	87T Even Harmonic Restraint (2nd & 4th)
4-185	1210	1	–	W	0-2 / 1	87T Even Harmonic Restraint (2nd & 4th) 0 = Disable 1 = Enable 2 = Enable w/cross average
4-186	1211	1	%	W	5-50 / 1	87T 5th Harmonic Restraint
4-187	1212	1	–	W	0-2 / 1	87T 5th Harmonic Restraint 0 = Disable 1 = Enable 2 = Enable w/cross average
4-188	1213	100	PU	W	10-200 / 1	87T Pickup at 5th harmonic restraint
4-189	1214	100	–	W	if C.T. secondary rating = 5 Amp 100-10000 / 1 if C.T. secondary rating = 1 Amp 20-2000 / 1	87 W1 C.T. tap
4-190	1215	100	–	W	if C.T. secondary rating = 5 Amp 100-10000 / 1 if C.T. secondary rating = 1 Amp 20-2000 / 1	87 W2 C.T. tap
4-191	1216	100	–	W	if C.T. secondary rating = 5 Amp 100-10000 / 1 if C.T. secondary rating = 1 Amp 20-2000 / 1	87 W3 C.T. tap

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (9 of 11)

MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
4-192	1217	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
4-193	1218	1	CYCLES	W	1-8160 / 1	TCM1 Dropout Delay
4-194	1219	1	CYCLES	W	1-8160 / 1	TCM2 Delay
4-195	1220	1	CYCLES	W	1-8160 / 1	TCM2 Dropout Delay
4-196	1221	1	CYCLES	W	1-8160 / 1	CCM1 Delay
4-197	1222	1	CYCLES	W	1-8160 / 1	CCM1 Dropout Delay
4-198	1223	1	CYCLES	W	1-8160 / 1	CCM2 Delay
4-199	1224	1	CYCLES	W	1-8160 / 1	CCM2 Dropout Delay
4-200	1225	1	–	W	0-1/1	59G Voltage selection 0 = VG 1 = 3V0
4-201	1226	–	–	–	–	Not Used
4-202	1227	–	–	–	–	Not Used
4-203	1228	–	–	–	–	Not Used
4-204	1229	1	–	W	0-65535/1	Last selftest error code timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020
4-205	1230	1	–	W	0-65535/1	Last selftest error code – 1 timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020
4-206	1231	1	–	W	0-65535/1	Last selftest error code – 2 timestamp. BCD format. High byte – month, Low byte – year Example: 0x0620 – date: 06/2020

■ **NOTES:**

1. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

Table 5 – Miscellaneous / Maximums / Extra Setpoints (10 of 11)

			MISCELLANEOUS / MAXIMUMS / EXTRA SETPOINTS			
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
4-207	1232	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. * Present time will return the local time from the RTC chip with .TTT = .000 if IRIG-B time sync status 4-40 is 0, if IRIG-B sync status is valid these points will return full time information.

2. ** 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. See Example at end of this Table.

    Example: #1 W2 phase A demand current
    Given:
    W2 C.T. Ratio 240 : 1 (1200 A : 5 A)   Communication point 8-24 returns 240
    Secondary current 4.300 Amps   Communication point 1-12 returns 4300
    Primary current   = C.T. ratio * W2 phase A current demand
        1.032   = 240 * 4300 / 1000
        1.032 kAmps = W2 phase A demand current

Table 5 – Miscellaneous / Maximums / Extra Setpoints (11 of 11)

SEQUENCE OF EVENTS RECORDER						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-00	1281	1U	–	–	0-512 / 1	SER Number of stored events
5-01	1282	1U	–	W	0-512 / 1	SER number of data block for download. Auto incremented by 1 every time a new block of data has been downloaded from points 5-02 to 5-129
5-02 to 5-129	1283 to 1410	1U	–	–	0-65535 / 1	SER Data block. Can be downloaded only as a block of N points (see point 5-131) starting from point 5-02. Block number is selected in point 5-01. SER must be inhibited before starting the download (point 6-04), otherwise the relay will report an error. Point 5-02 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.
5-130	1411	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
5-131	1412	1U	–	–	0-65535 / 1	SER size of the block in points. Only block consisting of this number of points can be read from points 5-02 to 5-129
5-132	1413	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [0] See point 1-58 for bits definition
5-133	1414	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [1] See point 1-59 for bits definition
5-134	1415	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [2] See point 1-60 for bits definition
5-135	1416	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [3] See point 1-61 for bits definition
5-136	1417	1U	–	W	0-65535 / 1	SER Trigger on function status pickup word [4] See point 1-62 for bits definition
5-137	1418	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [0] See point 1-58 for bits definition
5-138	1419	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [1] See point 1-59 for bits definition
5-139	1420	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [2] See point 1-60 for bits definition
5-140	1421	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [3] See point 1-61 for bits definition
5-141	1422	1U	–	W	0-65535 / 1	SER Trigger on function status dropout word [4] See point 1-62 for bits definition

Table 6 – Sequence of Events Recorder (1 of 3)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
						SEQUENCE OF EVENTS RECORDER
5-142	1423	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [0] See point 1-58 for bits definition
5-143	1424	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [1] See point 1-59 for bits definition
5-144	1425	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [2] See point 1-60 for bits definition
5-145	1426	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [3] See point 1-61 for bits definition
5-146	1427	1U	–	W	0-65535 / 1	SER Trigger on function timeout word [4] See point 1-62 for bits definition
5-147	1428	1U	–	W	0-65535 / 1	SER Trigger on output pickup Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16
5-148	1429	1U	–	W	0-255 / 1	SER Trigger on output dropout See 5-147 for bits definition
5-149	1430	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 6-15 = Not used (0)
5-150	1431	1U	–	W	0-63 / 1	SER Trigger on input dropout See 5-149 for bits definition
5-151	1432	1U	–	–	0-65535 / 1	SER Trigger on input pickup ext. Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used

Table 6 – Sequence of Events Recorder (2 of 3)

						SEQUENCE OF EVENTS RECORDER					
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
5-152	1433	1U	–	–	0-65535 / 1	SER Trigger on input dropout ext. Bit 0 = Input 7　　　　Bit 8 = Input 15 Bit 1 = Input 8　　　　Bit 9 = Input 16 Bit 2 = Input 9　　　　Bit 10 = Input 17 Bit 3 = Input 10　　　Bit 11 = Input 18 Bit 4 = Input 11　　　Bit 12 = Not used Bit 5 = Input 12　　　Bit 13 = Not used Bit 6 = Input 13　　　Bit 14 = Not used Bit 7 = Input 14　　　Bit 15 = Not used
5-153	1434	1U	–	W	0-65535 / 1	Through Fault preset total I2t LSB word [0] Write only. Read always returns 0 Use points 1-176 to 1-179 for read
5-154	1435	1U	–	W	0-65535 / 1	Through Fault preset total I2t word [1] Write only. Read always returns 0 Use points 1-176 to 1-179 for read
5-155	1436	1U	–	W	0-65535 / 1	Through Fault preset total word [2] Write only. Read always returns 0 Use points 1-176 to 1-179 for read
5-156	1437	1U	–	W	0-65535 / 1	Through Fault preset total I2t MSB word [3] Write only. Read always returns 0 Use points 1-176 to 1-179 for read
5-157	1438	1U	–	W	0-1/1	Password Enable 0 = Classic 1 = Extended

Table 6 – Sequence of Events Recorder (3 of 3)

						OSCILLOGRAPH RECORDER	

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION	
6-00	1537	1	–	W	1-24 / 1	Number of partitions *	
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 6-15 = Not used (0)	
6-02	1539	1	–	W	0-65535 / 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 = Out 9 Bit 9 = Out 10 Bit 10 = Out 11 Bit 11 = Out 12 Bit 12 = Out 13 Bit 13 = Out 14 Bit 14 = Out 15 Bit 15 = Out 16
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.	
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	

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

Table 7 – Oscillograph Recorder (1 of 5)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
			OSCILLOGRAPH RECORDER			
6-06	1543	1U	–	–	0-65535 / 1	Trigger Inputs ext.** Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used
6-07	1544	1	–	W	0-5 / 1	OSC Recorder Config 0 = W1 and W2 no Voltage 1 = W1 and W2 plus two Voltage 2 = W1 and W2 plus four Voltage 3 = all windings no Voltage 4 = all windings plus two Voltage 5 = all windings plus four Voltage
6-08	1545	1U	–	W***	0-65535 / 1	Download Record #1 block
6-09	1546	1U	–	W***	0-65535 / 1	Download Record #2 block
6-10	1547	1U	–	W***	0-65535 / 1	Download Record #3 block
6-11	1548	1U	–	W***	0-65535 / 1	Download Record #4 block
6-12	1549	1U	–	W***	0-65535 / 1	Download Record #5 block
6-13	1550	1U	–	W***	0-65535 / 1	Download Record #6 block
6-14	1551	1U	–	W***	0-65535 / 1	Download Record #7 block
6-15	1552	1U	–	W***	0-65535 / 1	Download Record #8 block
6-16	1553	1U	–	W***	0-65535 / 1	Download Record #9 block
6-17	1554	1U	–	W***	0-65535 / 1	Download Record #10 block
6-18	1555	1U	–	W***	0-65535 / 1	Download Record #11 block
6-19	1556	1U	–	W***	0-65535 / 1	Download Record #12 block
6-20	1557	1U	–	W***	0-65535 / 1	Download Record #13 block
6-21	1558	1U	–	W***	0-65535 / 1	Download Record #14 block
6-22	1559	1U	–	W***	0-65535 / 1	Download Record #15 block
6-23	1560	1U	–	W***	0-65535 / 1	Download Record #16 block
6-24	1561	1U	–	W***	0-65535 / 1	Download Record #17 block
6-25	1562	1U	–	W***	0-65535 / 1	Download Record #18 block
6-26	1563	1U	–	W***	0-65535 / 1	Download Record #19 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
6-27	1564	1U	–	W***	0-65535 / 1	Download Record #20 block
6-28	1565	1U	–	W***	0-65535 / 1	Download Record #21 block
6-29	1566	1U	–	W***	0-65535 / 1	Download Record #22 block
6-30	1567	1U	–	W***	0-65535 / 1	Download Record #23 block
6-31	1568	1U	–	W***	0-65535 / 1	Download Record #24 block
6-32	1569	1	–	W	1-24 / 1	Record number for points 6-33 to 6-46. To read status and time stamp of record N, write N to this point and read points 6-33 to 6-46
6-33 to 6-42	1570 to 1579	–	–	–	–	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 6-29 = 12339 or 3033HEX or '0' '3' 6-30 = 11597 or 2d4dHEX or '-' 'M' 6-31 = 24946 or 6172HEX or 'a' 'r' 6-32 = 11569 or 2d31HEX or '-' '1' 6-33 = 14649 or 3939HEX or '9' '9' 6-34 = 12320 or 3020HEX or '0' ' ' 6-35 = 12594 or 3132HEX or '1' '2' 6-36 = 14896 or 3a30HEX or ':' '1' 6-37 = 13626 or 353aHEX or '5' ':' 6-38 = 12339 or 3033HEX or '0' '3' To select a record number, use point 6-32
6-43 to 6-45	1580 to 1582	****	–	–	–	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 6-39 = 11828 or 2E34HEX or '.' '4' 6-41 = 13880 or 3638HEX or '6' '8' To select a record number, use point 6-32
6-46	1583	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 6-32
6-47	1584	1U	–	W	0-65535 / 1	OSC Trigger on function status pickup word [0] See point 1-58 for bits definition

■ **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
6-48	1585	1U	–	W	0-65535 / 1	OSC Trigger on function status pickup word [1] See point 1-59 for bits definition
6-49	1586	1U	–	W	0-65535 / 1	OSC Trigger on function status pickup word [2] See point 1-60 for bits definition
6-50	1587	1U	–	W	0-65535 / 1	OSC Trigger on function status pickup word [3] See point 1-61 for bits definition
6-51	1588	1U	–	W	0-65535 / 1	OSC Trigger on function status pickup word [4] See point 1-62 for bits definition
6-52	1589	1U	–	W	0-65535 / 1	OSC Trigger on function timeout pickup word [0] See point 1-58 for bits definition
6-53	1590	1U	–	W	0-65535 / 1	OSC Trigger on function timeout pickup word [1] See point 1-59 for bits definition
6-54	1591	1U	–	W	0-65535 / 1	OSC Trigger on function timeout pickup word [2] See point 1-60 for bits definition
6-55	1592	1U	–	W	0-65535 / 1	OSC Trigger on function timeout pickup word [3] See point 1-61 for bits definition
6-56	1593	1U	–	W	0-65535 / 1	OSC Trigger on function timeout pickup word [4] See point 1-62 for bits definition
6-57 to 6-149	1594 to 1686	–	–	–	–	Not used
6-150	1687	–	–	–	–	MODBUS osc. data (must read fixed length block of 65 points)
6-215	1752	1	–	W	1-1 / 1	Through Clear all records 1 = clear all events
6-216	1753	1	–	–	0-255 / 1	Through Fault total number of stored records
6-217	1754	1	–	W	0-255 / 1	Through Fault current record number
6-218	1755	–	A2 cycle	–	–	Through Fault record #N Total I2t least significant word [0]
6-219	1756	–	A2 cycle	–	–	Through Fault record #N Total I2t next significant word [1]
6-220	1757	–	A2 cycle	–	–	Through Fault record #N Total I2t next significant word [2]
6-221	1758	–	A2 cycle	–	–	Through Fault record #N Total I2t most significant word [3]
6-222	1759	–	AMPS	–	–	Through Fault record #N Imax least significant word [0]

■ **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
6-223	1760	–	AMPS	–	–	Through Fault record #N Imax most significant word [1]
6-224	1761	–	¼ CYCLE	–	–	Through Fault record #N Duration low word
6-225	1762	–	¼ CYCLE	–	–	Through Fault record #N Duration high word
6-226	1763	–	–	–	0-7 / 1	Through Fault record #N Phase identification Bit 0 = phase A Bit 1 = phase B Bit 2 = phase C
6-227	1764	–	–	–	0-65535 / 1	Through Fault record #N Serial number
6-228 to 6-237	1765 to 1774	–	–	–	–	Through Fault 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'
6-238 to 6-239	1775 to 1776	****	–	–	–	Through Fault 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'

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

Table 7 – Oscillograph Recorder (5 of 5)

TABLE 7 NOTES (OSCILLOGRAPH RECORDER)

■ 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:

    BECO2200
    The slave will respond with a large packet (134 bytes) containing the address, bytecount, 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).

    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.

4. 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	0-1535	196608	9	0-306	39296
2	0-1024	131200	10	0-277	35584
3	0-768	98432	11	0-254	32640
4	0-615	78848	12	0-235	30208
5	0-511	65536	13	0-218	28032
6	0-439	56320	14	0-205	26368
7	0-384	49280	15	0-192	24704
8	0-342	43904	16	0-179	23040

    It is up to the master to re-request bad packets and do all the error checking.

5. **** Extended time information will read XX:XX:XX.000 (i.e. zeros) if IRIG-B signal is invalid or not used.

Table 7 – Notes (Oscillograph Recorder)

						SYSTEM SETUP	
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**	
8-00	2049	1	–	W	0-1 / 1	Profile switching method 0 = Manual 1 = Input contacts	
8-01	2050	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 8-00 above is set to Manual (0).	
8-02	2051	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 seconds to complete. Read returns copy status: 0 = OK 1 = Busy	
8-03	2052	1	VOLTS	W	60-140 / 1	Nominal voltage	
8-04	2053	1	–	W	0-1 / 1	Transformer and CT connection custom mode enable 0 = custom mode disabled 1 = custom mode enabled	
8-05	2054	1	–	W	0-1/ 2	V.T. Configuration 0 = LINE_TO_LINE 1 = LINE_TO_GROUND 2 = LINE_TO_GND_TO_LL	
8-06**	2055	1	–	W	0-5 / 1	CT connection type W1 0 = Y connection 1 = Delta AB connection 2 = Delta AC connection 3 = Y inverse connection 4 = Delta AB inverse connection 5 = Delta AC inverse connection	
8-07**	2056	1	–	W	0-5 / 1	CT connection type W2 see 8-06	
8-08**	2057	1	–	W	0-5 / 1	CT connection type W3 see 8-06	

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)

2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)

3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (1 of 6)

SYSTEM SETUP

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
8-09**	2058	1	–	W	0-5 / 1	PT connection type W1 see 8-06
8-10**	2059	1	–	W	0-5 / 1	PT connection type W2 see 8-06
8-11**	2060	1	–	W	0-5 / 1	PT connection type W3 see 8-06
8-12	2061	1	–	W	0-1 / 1	Phase Rotation 0 = ACB 1 = ABC
8-13	2062	1	–	–	–	C.T. Secondary rating 0 = 1 Amp 1 = 5 Amp
8-14	2063	1	–	–	–	Nominal Frequency 0 = 50 HZ 1 = 60 HZ
8-15	2064	1	–	W	0-3 / 1	Winding Disable 0 = All windings enabled 1 = W1 disabled 2 = W2 disabled 3 = W3 disabled
8-16	2065	1U	–	W	0-255 / 1	Input status active state 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 6-7 = Not used 0 = active closed 1 = active open

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)
2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)
3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (2 of 6)

						SYSTEM SETUP
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
8-17	2066	1U	–	W	0-65535 / 1	Input status active state ext. Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used 0 = active closed 1 = active open
8-18	2067	1	–	W	1-3 / 1	Demand Timing Method 1 = 15 Minutes 2 = 30 Minutes 3 = 60 Minutes
8-19	2068	10	–	W	10-65500 / 1	V.T. ratio
8-20	2069	1	–	W	1-65500 / 1	C.T. W1 Phase ratio
8-21	2070	1	–	W	1-65500 / 1	C.T. W2 Phase ratio
8-22	2071	1	–	W	1-65500 / 1	C.T. W3 Phase ratio
8-23	2072	1	–	W	1-65500 / 1	C.T. W2 Ground ratio
8-24	2073	1	–	W	1-65500 / 1	C.T. W3 Ground ratio
8-25	2074	10	–	W	10-65500 / 1	VG.T. ratio
8-26***	2075	1	–	W	0-11 / 1	Transformer phase comp. type W1 0 = 1∠0° 6 = 1∠180° 1 = 1∠30° 7 = 1∠210° 2 = 1∠60° 8 = 1∠240° 3 = 1∠90° 9 = 1∠270° 4 = 1∠120° 10 = 1∠300° 5 = 1∠150° 11 = 1∠330°
8-27***	2076	1	–	W	0-11 / 1	Transformer phase comp. type W2 See 8-26
8-28***	2077	1	–	W	0-11 / 1	Transformer phase comp. type W3 See 8-26

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)

2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)

3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (3 of 6)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
SYSTEM SETUP

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
8-29***	2078	1	–	W	0-23 / 1	CT phase/magnitude comp. W1 0 = 1∠ 0° 12 = 1/√3∠ 0° 1 = 1∠30° 13 = 1/√3∠30° 2 = 1∠60° 14 = 1/√3∠60° 3 = 1∠90° 15 = 1/√3∠90° 4 = 1∠120° 16 = 1/√3∠120° 5 = 1∠150° 17 = 1/√3∠150° 6 = 1∠180° 18 = 1/√3∠180° 7 = 1∠210° 19 = 1/√3∠210° 8 = 1∠240° 20 = 1/√3∠240° 9 = 1∠270° 21 = 1/√3∠270° 10 = 1∠300° 22 = 1/√3∠300° 11 = 1∠330° 23 = 1/√3∠330°
8-30***	2079	1	–	W	0-23 / 1	CT phase/magnitude comp. W2 See 8-29
8-31***	2080	1	–	W	0-23 / 1	CT phase/magnitude comp. W3 See 8-29
8-32***	2081	1	–	W	0-255 / 1	Zero Sequence Enable Bit 0 = W1 zero seq. Enable Bit 1 = W2 zero seq. Enable Bit 2 = W3 zero seq. Enable Bits 3-7 Not used
8-33	2082	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT1
8-34	2083	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT2
8-35	2084	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT3
8-36	2085	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT4
8-37	2086	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT5
8-38	2087	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT6
8-39	2088	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT7
8-40	2089	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT8
8-41	2090	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT9
8-42	2091	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT10
8-43	2092	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT11
8-44	2093	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT12

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)
2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)
3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (4 of 6)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
						SYSTEM SETUP
8-45	2094	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT13
8-46	2095	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT14
8-47	2096	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT15
8-48	2097	1	CYCLES	W	2-8160 / 1	Sealin Delay OUT16
8-49	2098	1	–	W	0-65535 / 1	Latched Outputs Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16 Note: All active bits will automatically disable same bits in pulsed outputs setpoint
8-50	2099	1	–	W	0-65535 / 1	Pulsed Outputs Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16 Note: All active bits will automatically disable same bits in latched outputs setpoint
8-51	2100	1	–	W	0-255 / 1	Winding Summing Bit 0 = W1 #1 Bit 1 = W2 #1 Bit 2 = W3 #1 Bit 3 = Not Used Bit 4 = W1 #2 Bit 5 = W2 #2 Bit 6 = W3 #2 Bit 7 = Not Used
8-52	2101	1	–	W	0-2 / 1	Power Winding Selection 0 = W1 1 = W2 2 = W3

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)

2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)

3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (5 of 6)

SYSTEM SETUP

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
8-53	2102	100	AMPS	W	if C.T. secondary rating = 5Amp 50-1500 / 1 if C.T. secondary rating = 1Amp 10-300 / 1	Nominal current
8-54	2104	1	–	W	0-1 / 1	Positive Power flow direction 0 = IN 1 = OUT
8-55	2105	1	–	W	0-5 / 1	Phase Voltage Option (two voltage input) 0 = Va 1 = Vb 2 = Vc 3 = VAB 4 = VBC 5 = VCA
8-56	2106	1	–	W	0-6 / 1	VG voltage option (two voltage input) 0 = VG 1 = VBC

■ **NOTES:**

1. ** Setpoints are in use only if the Transformer and CT connection custom mode is disabled (setpoint 8-04)

2. *** Setpoints are in use only if the Transformer and CT connection custom mode is enabled (setpoint 8-04)

3. ** or *** (based on the Custom mode change) setpoints should be written irrespective of a change if a change is made in Custom mode disabled (setpoint 8-04)

Table 8 – System Setup (6 of 6)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
9-00	2305	1U	–	W	0-11 / 1	Target index
9-01	2306	1U		–	–	Target #1 Relay status Bit 0 = Out 1 Bit 8 = Out 9 Bit 1 = Out 2 Bit 9 = Out 10 Bit 2 = Out 3 Bit 10 = Out 11 Bit 3 = Out 4 Bit 11 = Out 12 Bit 4 = Out 5 Bit 12 = Out 13 Bit 5 = Out 6 Bit 13 = Out 14 Bit 6 = Out 7 Bit 14 = Out 15 Bit 7 = Out 8 Bit 15 = Out 16 If point reads 0 target is cleared.
9-02	2307	1U		–	–	Target #1 Input status 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)
9-03	2308	1U		–	–	Target #1 Input status ext. Bit 0 = Input 7 Bit 8 = Input 15 Bit 1 = Input 8 Bit 9 = Input 16 Bit 2 = Input 9 Bit 10 = Input 17 Bit 3 = Input 10 Bit 11 = Input 18 Bit 4 = Input 11 Bit 12 = Not used Bit 5 = Input 12 Bit 13 = Not used Bit 6 = Input 13 Bit 14 = Not used Bit 7 = Input 14 Bit 15 = Not used
9-04	2309	1U		–	–	Function Status (picked up) Least significant word [0] Bit 0 = F24DT_1 Bit 8 = F49 Bit 1 = F24DT_2 Bit 9 = F50_W1_1 Bit 2 = F24IT Bit 10 = F50_W1_2 Bit 3 = F27_1 Bit 11 = F50_W2_1 Bit 4 = F46DT_W2 Bit 12 = F50_W2_2 Bit 5 = F46IT_W2 Bit 13 = F50_W3_1 Bit 6 = F46DT_W3 Bit 14 = F50_W3_2 Bit 7 = F46IT_W3 Bit 15 = F50BF_W1
9-05	2310	1U		–	–	Function Status (picked up) Next significant word [1] Bit 0 = F50BF_W2 Bit 8 = F50N_W2_1 Bit 1 = F50BF_W3 Bit 9 = F50N_W2_2 Bit 2 = F50G_W2_1 Bit 10 = F50N_W3_1 Bit 3 = F50G_W2_2 Bit 11 = F50N_W3_2 Bit 4 = F50G_W3_1 Bit 12 = F51_W1 Bit 5 = F50G_W3_2 Bit 13 = F51_W2 Bit 6 = F50N_W1_1 Bit 14 = F51_W3 Bit 7 = F50N_W1_2 Bit 15 = F51G_W2

Table 9 – Target Information (1 of 7)

M-3311A 2/3 MODBUS/BECO2200 COMMUNICATION DATABASE   Beckwith Electric

TARGET INFORMATION						
BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
9-06	2311	1U	–	–	–	Function Status (picked up) Next significant word [2] Bit 0 = F51G_W3 Bit 8 = F81_3 Bit 1 = F51N_W1 Bit 9 = F81_4 Bit 2 = F51N_W2 Bit 10 = F87H Bit 3 = F51N_W3 Bit 11 = F87T Bit 4 = F59_1 Bit 12 = F87GD_W2_1 Bit 5 = F59_2 Bit 13 = F87GD_W2_2 Bit 6 = F81_1 Bit 14 = F87GD_W3_1 Bit 7 = F81_2 Bit 15 = F87GD_W3_2
9-07	2312	1U	–	–	–	Function Status (picked up) Next significant word [3] Bit 0 = FTHFLT Bit 1 = FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59G_1 Bit 15 = F59G_2 Note: The three function status words represent which detectors are picked up (not necessarily timed out) at the time the target is tagged.
9-08	2313	1U	–	–	–	Function Status (picked up) Most significant word [4] Bit 0 = F59G_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bits 4-15 = not used
9-09	2314	1U	–	–	–	Function Timer Least significant word [0] Bit 0 = F24DT_1 Bit 8 = F49 Bit 1 = F24DT_2 Bit 9 = F50_W1_1 Bit 2 = F24IT Bit 10 = F50_W1_2 Bit 3 = F27_1 Bit 11 = F50_W2_1 Bit 4 = F46DT_W2 Bit 12 = F50_W2_2 Bit 5 = F46IT_W2 Bit 13 = F50_W3_1 Bit 6 = F46DT_W3 Bit 14 = F50_W3_2 Bit 7 = F46IT_W3 Bit 15 = F50BF_W1

Table 9 – Target Information (2 of 7)

	TARGET INFORMATION					
BECO2200 TYPE POINT	**MODBUS REGISTER**	**SCALE FACTOR**	**UNITS**	**W/R/M**	**RANGE/ INCREMENT**	**DESCRIPTION**
9-10	2315	1U	–	–	–	Function Timer Next significant word [1] Bit 0 = F50BF_W2 Bit 8 = F50N_W2_1 Bit 1 = F50BF_W3 Bit 9 = F50N_W2_2 Bit 2 = F50G_W2_1 Bit 10 = F50N_W3_1 Bit 3 = F50G_W2_2 Bit 11 = F50N_W3_2 Bit 4 = F50G_W3_1 Bit 12 = F51_W1 Bit 5 = F50G_W3_2 Bit 13 = F51_W2 Bit 6 = F50N_W1_1 Bit 14 = F51_W3 Bit 7 = F50N_W1_2 Bit 15 = F51G_W2
9-11	2316	1U	–	–	–	Function Timer Next significant word [2] Bit 0 = F51G_W3 Bit 8 = F81_3 Bit 1 = F51N_W1 Bit 9 = F81_4 Bit 2 = F51N_W2 Bit 10 = F87H Bit 3 = F51N_W3 Bit 11 = F87T Bit 4 = F59_1 Bit 12 = F87GD_W2_1 Bit 5 = F59_2 Bit 13 = F87GD_W2_2 Bit 6 = F81_1 Bit 14 = F87GD_W3_1 Bit 7 = F81_2 Bit 15 = F87GD_W3_2
9-12	2317	1U	–	–	–	Function Timer Next significant word [3] Bit 0 = FTHFLT Bit 1 FTCM Bit 2 = FEXT_1 Bit 3 = FEXT_2 Bit 4 = FEXT_3 Bit 5 = FEXT_4 Bit 6 = FEXT_5 Bit 7 = FEXT_6 Bit 8 = FBRKR_MON_W1 Bit 9 = FBRKR_MON_W2 Bit 10 = FBRKR_MON_W3 Bit 11 = F27_2 Bit 12 = F27_3 Bit 13 = F59_3 Bit 14 = F59G_1 Bit 15 = F59G_2 Note: The four function timer words represent which detectors timer are timed out at the time the target is tagged.
9-13	2318	1U	–	–	–	Function Timer (picked up) Most significant word [4] Bit 0 = F59G_3 Bit 1 = TCM2 Bit 2 = CCM1 Bit 3 = CCM2 Bits 4-15 not used

Table 9 – Target Information (3 of 7)

TARGET INFORMATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
9-14	2319	1U	–	–	–	Target #1 Active Profile 0 = Profile 1 1 = Profile 2 2 = Profile 3 3 = Profile 4
9-15	2320	1U	–	–	–	Target #1 50 #1, #2 W1 and W2 Phase Bit 0 = W1 #1 Phase A Bit 1 = W1 #1 Phase B Bit 2 = W1 #1 Phase C Bit 3 = W1 #2 Phase A Bit 4 = W1 #2 Phase B Bit 5 = W1 #2 Phase C Bit 6 = Not used (0) Bit 7 = Not used (0) Bit 8 = W2 #1 Phase A Bit 9 = W2 #1 Phase B Bit 10 = W2 #1 Phase C Bit 11 = W2 #2 Phase A Bit 12 = W2 #2 Phase B Bit 13 = W2 #2 Phase C Bit 14 = Not used (0) Bit 15 = Not used (0)
9-16	2321	1U	–	–	–	Target #1 50 #1, #2 W3 Phase Bit 0 = W3 #1 Phase A Bit 1 = W3 #1 Phase B Bit 2 = W3 #1 Phase C Bit 3 = W3 #2 Phase A Bit 4 = W3 #2 Phase B Bit 5 = W3 #2 Phase C Bit 6 = Not used (0) Bit 7 = Not used (0) Bit 8 = Not used (0) Bit 9 = Not used (0) Bit 10 = Not used (0) Bit 11 = Not used (0) Bit 12 = Not used (0) Bit 13 = Not used (0) Bit 14 = Not used (0) Bit 15 = Not used (0)

Table 9 – Target Information (4 of 7)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
				TARGET INFORMATION		
9-17	2322	1U	–	–	–	Target #1 51 Phase status/timer W1 and W2 Bit 0 = W1 Phase A timer Bit 1 = W1 Phase B timer Bit 2 = W1 Phase C timer Bit 3 = W1 Phase A status Bit 4 = W1 Phase B status Bit 5 = W1 Phase C status Bit 6 = Not used (0) Bit 7 = Not used (0) Bit 8 = W2 Phase A timer Bit 9 = W2 Phase B timer Bit 10 = W2 Phase C timer Bit 11 = W2 Phase A status Bit 12 = W2 Phase B status Bit 13 = W2 Phase C status Bit 14 = Not used (0) Bit 15 = Not used (0)
9-18	2323	1U	–	–	–	Target #1 51 Phase status/timer W3 Bit 0 = W3 Phase A timer Bit 1 = W3 Phase B timer Bit 2 = W3 Phase C timer Bit 3 = W3 Phase A status Bit 4 = W3 Phase B status Bit 5 = W3 Phase C status Bit 6 = Not used (0) Bit 7 = Not used (0) Bit 8 = Not used (0) Bit 9 = Not used (0) Bit 10 = Not used (0) Bit 11 = Not used (0) Bit 12 = Not used (0) Bit 13 = Not used (0) Bit 14 = Not used (0) Bit 15 = Not used (0)

Table 9 – Target Information (5 of 7)

TARGET INFORMATION

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
9-19	2324	1U	–	–	–	Target #1 87H and 87T Phase status/timer Bit 0 = 87H Phase A timer Bit 1 = 87H Phase B timer Bit 2 = 87H Phase C timer Bit 3 = 87T Phase A timer Bit 4 = 87T Phase B timer Bit 5 = 87T Phase C timer Bit 6 = Not used (0) Bit 7 = Not used (0) Bit 8 = 87H Phase A status Bit 9 = 87H Phase B status Bit 10 = 87H Phase C status Bit 11 = 87T Phase A status Bit 12 = 87T Phase B status Bit 13 = 87T Phase C status Bit 14 = Not used (0) Bit 15 = Not used (0)
9-20	2325	100	AMPS	–	–	Target #1 Phase A W1 current
9-21	2326	100	AMPS	–	–	Target #1 Phase B W1 current
9-22	2327	100	AMPS	–	–	Target #1 Phase C W1 current
9-23	2328	100	AMPS	–	–	Target #1 Phase A W2 current
9-24	2329	100	AMPS	–	–	Target #1 Phase B W2 current
9-25	2330	100	AMPS	–	–	Target #1 Phase C W2 current
9-26	2331	100	AMPS	–	–	Target #1 Phase G W2 current
9-27	2332	100	AMPS	–	–	Target #1 Phase A W3 current
9-28	2333	100	AMPS	–	–	Target #1 Phase B W3 current
9-29	2334	100	AMPS	–	–	Target #1 Phase C W3 current
9-30	2335	100	AMPS	–	–	Target #1 Phase G W3 current

Table 9 – Target Information (6 of 7)

BECO2200 TYPE POINT	MODBUS REGISTER	SCALE FACTOR	UNITS	W/R/M	RANGE/ INCREMENT	DESCRIPTION
9-31 to 9-42	2340 to 2351	–	–	–	–	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 9-31 = 12339 or 3033HEX or '0' '3' 9-32 = 11597 or 2d4dHEX or '-' 'M' 9-33 = 24946 or 6172HEX or 'a' 'r' 9-34 = 11569 or 2d31HEX or '-' '1' 9-35 = 14649 or 3939HEX or '9' '9' 9-36 = 12320 or 3020HEX or '0' ' ' 9-37 = 12594 or 3132HEX or '1' '2' 9-38 = 14896 or 3a30HEX or ':' '1' 9-39 = 13626 or 353aHEX or '5' ':' 9-40 = 12339 or 3033HEX or '0' '3' 9-41 = 15929 or 2E39HEX or '.' '9' 9-42 = 14386 or 3832HEX or '8' '2'

Table 9 – Target Information (7 of 7)

BECKWITH ELECTRIC

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