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GE Energy Services

BECCO2200 DCA Configuration Guide

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About this Guide

Purpose of this Guide

This guide describes, in detail, how to configure **the BECO2200 Data Collection Application (DCA)** for GE Energy Services products. The configuration information customizes the behavior of the BECO2200 DCA for communications with the Beckwith Electric BECO2200-M-0420 Multifunction Relays.

Each configurable parameter for the BECO2200 DCA is described along with the range of valid entries and a typical entry, where applicable. The grouping of related parameters is also described.

Who Should Use this Guide

This document is intended for use by individuals responsible for the configuration of the BECO2200 DCA in GE Energy Services RTUs. These people should be familiar with the operation and maintenance of RTUs in general, but may not be familiar with the GE Energy Services family of products.

Before reading this document, you should have a basic understanding of the WESDAC hardware environment, the configuration system, and the BECO2200 DCA.

Additional Documentation

If you require more detail that this document provides, several supporting texts are available. These include:

- *BECCO2200 DCA Functional Specification (A164-0FS.WES)*
- This document provides detailed information on the functionality of the BECCO2200 DCA.
- *Introduction to the WESDAC D20 RTU (GEN-0003)*
- This document provides introductory information into the components and operation of a D20 RTU.
- *WESMAINT II Maintenance Facility User's Guide (B014-0UG.D20)*
- This document describes the general usage of the WESMAINT MMI provided with every RTU.
- *WESMAINT II Maintenance Facility Configuration Guide (B014-0CG.D20)*
- This manual provides information on how to configure the WESMAINT MMI application.
- *D20 M Monitor User's Reference (S001-0UG)*
- This manual describes the use of the monitor function available in all RTUs.
- *Config Pro Configuration System User's Guide (P012-0UG)*
- This manual provides information on using the Config Pro configuration system to configure applications.
- *WESDAC Configuration System User's Guide (P005-0UG)*
- This manual provides information on using Configuration System 1 to configure applications.
- *WIN User's Configuration Guide (B008-0CG.D20)*
- This manual provides detailed information on configuring the WESDAC Interface Node (WIN).

How this Guide is Organized

This guide is organized into the following sections:

- Overview:** The Overview discusses the general operation of the BECO2200 DCA.
- Chapter 1:** *Configuration Tables* provides general information on the configuration tables required by the BECO2200 DCA.
- Chapter 2:** *Configuring Win for the BECO2200 DCA* details the WESDAC points allocation required by the BECO2200 DCA.
- Chapter 3:** *Configuring the A164APPL Table* provides detailed information on configuring the BECO2200 DCA application configuration table.
- Chapter 4:** *Configuring the A164PORT Table* provides detailed information on configuring the BECO2200 DCA communication port configuration table.
- Chapter 5:** *Configuring the A164UNIT Table* provides detailed information on configuring the BECO2200 DCA unit configuration table.
- Chapter 6:** *Configuring the A164MODE Table* provides detailed information on configuring the BECO2200 DCA Mode Download Pseudo Control configuration table.
- Chapter 7:** *Configuring the A164DVCF Configuration Table* provides detailed information on configuring the BECO2200 DCA Device/Configuration Map configuration table.
- Chapter 8:** *Configuring the A164DTBL Configuration Table* provides detailed information on configuring the BECO2200 DCA Data Records configuration table.
- Appendix A:** *Messages Logged by the BECO2200 DCA* lists all fatal, error, warning, and information messages logged by the BECO2200 DCA. This section also provides a definition of all output request return codes.

Overview

The BECO2200 DCA is a custom software package that provides an interface to Beckwith Electric M-0420 Multifunction Relays.

The communication system consists of a master-slave sequence of messages, where the BECO2200 DCA acts as the master and the BECO2200 devices act as slaves.

The BECO2200 DCA is an application module intended to be integrated in a modular software environment. *Figure 1* shows the data flow between the software modules in a typical integration. As shown in this figure, the WESDAC Interface Node (WIN) provides the only interface between the BECO2200 and the other modules in the system.

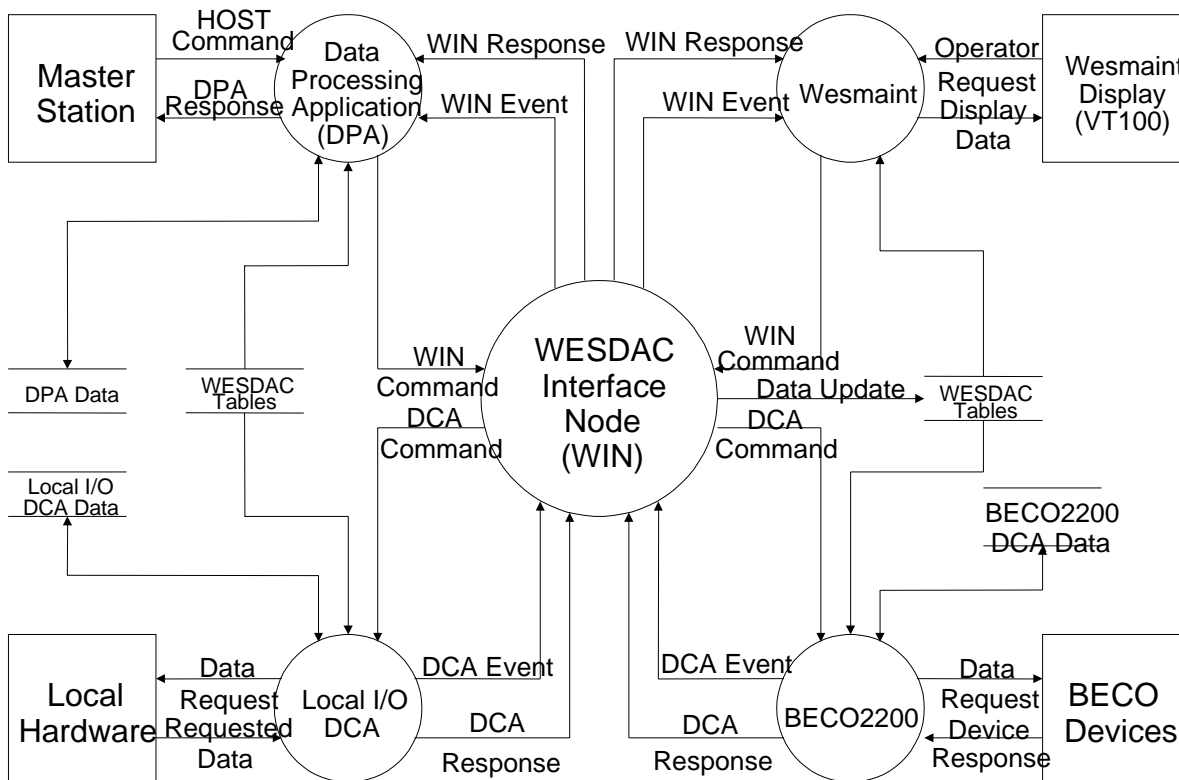


Figure 1 System Overview

Chapter 1: Configuration Tables

The BECO2200 DCA configuration contains all of the data structures necessary to configure an RTU to communicate with BECO2200 slave devices.

1.1 BECO2200 DCA Configuration Tables

There are a total of six (6) configuration tables in the BECO2200 DCA configuration. Each table is named according to a standard convention that is used for all tables commonly found in GE Energy Services applications. The standard naming convention dictates that the prefix (first four characters) of the table name consist of an application descriptor. This descriptor is an arbitrary identification code chosen by GE Energy Services to indicate the application with which the table is associated. The application descriptor for the BECO2200 DCA is **A164**. The last four characters of the name describe the function of the table. For example, **A164PORT** defines the characteristics of the communication ports. The purpose of each table is described below.

TABLE NAME	DESCRIPTION
A164APPL	This table always contains a single record, defining parameters that affect the entire operation of the BECO2200 DCA.
A164PORT	This table configures the communication characteristics of each serial port used. Each record in this table defines one port.
A164UNIT	This table defines each BECO2200 device with which the BECO2200 DCA will communicate. Each record in this table defines a single unit.
A164MODE	This table defines the associated action of each Mode Download Pseudo Control.
A164DVCF	This table defines the set of data table records to download to a range of BECO2200 Relays.
A164DTBL	This table defines each data table record being written to the Data Table of the BECO2200 Relays.

Table 1 BECO2200 DCA Configuration Tables

1.2 Configuration Sequence

The following is a list of the steps required to configure the BECO2200 DCA:

1. Edit the A164 configuration. Prepare it according to the guidelines in this document and the specific use for which the BECO2200 DCA is required.
2. Edit the configuration for all other applications that will run on the product. Prepare them according to their own configuration guides.
3. Generate the configuration and download it to the product using the GE Energy Services Configuration System provided. The list of applications to be compiled must include A164.
4. Restart the product. The BECO2200 DCA will check the validity of its configuration parameters and begin its initialization. If it determines that a configuration parameter is incorrect or encounters an error during its initialization, it will log a message to the WESMAINT Error Log and then, depending on the severity of the error, terminate or continue with its run-time function. Self-termination of the BECO2200 DCA prevents it from running using invalid data.
5. Check for error messages. Log into the WESMAINT maintenance interface, select the System Functions item from the Main Menu, and then select the Error Log item from the System Functions Menu. If any error messages are displayed, correct the problem as described in *Appendix A: Messages Logged by the BECO2200*, and repeat steps 3 through 5.

Configuration is complete when the BECO2200 DCA has successfully validated all configuration parameters.

Chapter 2: Configuring Win for the BECO2200 DCA

This chapter describes how to configure the WESDAC Interface Node (WIN) for the BECO2200 DCA. The application number for WIN is **B008**. Refer to *the WIN User's Configuration Guide* for more information on how to configure WIN. The functionality of all points required by the BECO2200 DCA is defined in the BECO2200 DCA Functional Specification.

2.1 WESDAC Point Allocation

WESDAC data point allocation is accomplished by specifying the required number of points in the WIN configuration tables. Any points allocated to the BECO2200 DCA are maintained solely by the BECO2200 DCA. This means the BECO2200 DCA is the only application that may modify the value or the status of those points. All points allocated to the BECO2200 DCA are initialized to off-line and not communicating. If the WESDAC table is in NVRAM, points are initialized to the current value (state) in NVRAM. If the WESDAC table is in RAM, the points are initialized to zero (off).

WESDAC DATA TYPE	Number of points required
	BECO 2200 M-0420
Binary Inputs	42
Binary Outputs	44+MDPC
Counters	38
Analog Input	281
Analog Outputs	78
Device Status	1

Table 2 Required Points BECO2200 Device

 **NOTE:** The actual number of Binary Output points required must be incremented by the number of Mode Download Pseudo Controls configured.

2.1.1 Binary Inputs

When communication is established with a device and valid data is returned for the binary input point, the point is turned on-line and communication OK. If communication between the device and the point fails, all binary input points associated with the device will be set off-line and communication failed.

2.1.2 Binary Outputs

On startup, all pseudo controls associated with a valid device and all Mode Download Pseudo Controls are placed on-line and communication OK. When communication is established with a device, the remaining binary outputs are set on-line and communication OK. If communication between the device and the points fails, all binary output points, excluding pseudo controls, will be set off-line and communication failed.

2.1.3 Counters

When communication is established with a device and valid data is returned for the counter, the point is turned on-line and communication OK. If communication between the device and the point fails, all counters associated with the device will be set off-line and communication failed.

2.1.4 Analog Inputs

When communication is established with a device and valid data is returned for the analog input point, the point is turned on-line and communication OK. If communication between the device and the point fails, all analog input points associated with the device will be set off-line and communication failed.

2.1.5 Analog Outputs

On startup, all analog outputs associated with a valid device are placed on-line and communication OK. If communication between the device and the point fails, all analog output points associated with the device will be set off-line and communication failed.

2.1.6 Device Status

When communication is established with a device, the device status point is set on-line and communication OK. If communication between the device and the point fails, the device status point will be set off-line and communication failed.

Chapter 3: Configuring the A164APPL Table

This chapter describes the configurable parameters in the Configuration Table (**A164APPL**).

3.1 General Information

The **A164APPL** table provides information for the overall application functionality. The table must contain only one record.

3.2 Description of Fields

Where applicable, *Table 3* describes the field name, range, special case, and typical value for each field of the **A164APPL** table. Following the table is a textual description of each field's meaning.

Field	Range	Special	Typical
DCA Index	Index into the WIN CFG_DCA table	N/A	N/A
Reply Buffer Size Adjustment	0..65535	N/A	2 * the number of devices configured
SOE Buffer Size Adjustment	0..65535	N/A	100
SOE Buffer Overflow Option	0 - Overwrite Oldest 1 - Discard Newest	N/A	0 - Overwrite Oldest
Device Event Response Time	0..65535	N/A	1000


Table 3 BECO2200 DCA A164APPL Configuration Table

3.2.1 DCA Index

This parameter specifies the WIN DCA index of the BECO2200 DCA application in the WIN_CFG_DCA table. The index is zero based. This parameter will be automatically assigned by ConfigPro.


3.2.2 Reply Buffer Size Adjustment

This parameter specifies an increment to the total number of reply buffers allocated by the BECO2200 DCA. The BECO2200 DCA will allocate, at a minimum, two (2) reply buffers for each device configured. The configured adjustment will be added to this total. The number of extra reply buffers should increase in proportion to the baud rate selected, and the frequency of polling for each device.

 **NOTE:** This parameter affects the RAM requirements of the BECO2200 DCA. By decreasing this parameter, more RAM will be made available to other applications running in the system.

3.2.3 SOE Buffer Size Adjustment

This parameter specifies an increment to the total number of SOE buffers allocated by the BECO2200 DCA. The BECO2200 DCA will allocate, at a minimum, one (1) SOE Buffer for each Digital Input point configured. The configured adjustment will be added to this total. The number of extra reply buffers should increase in proportion to the expected event reporting of the BECO2200 devices (the more events reported by the BECO2200 devices, the more buffers are required to sort the information).

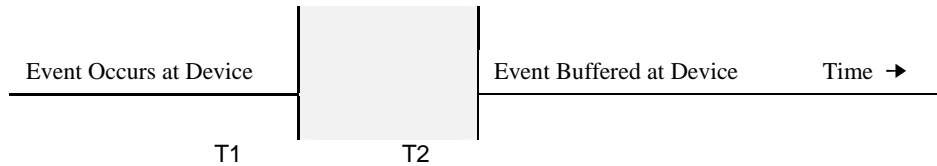
 **NOTE:** This parameter affects the RAM requirements of the BECO2200 DCA. By decreasing this parameter, more RAM will be made available to other applications running in the system.

3.2.4 SOE Buffer Overflow Option

This parameter indicates what the BECO2200 DCA should do if the time sorted SOE list becomes full. The DCA can be configured to either overwrite the oldest event in the list or to discard the newest event.

3.2.5 Device Event Response Time

This parameter specifies the maximum time required by a BECO2200 device to recognize and to be able to report an event. This parameter is used to determine what SOE event in the system is the oldest, in order to sort and distribute the time-tagged binary input data accurately.



In the above figure, it takes the BECO2200 device $t_2 - t_1$ units of time to recognize and buffer the event data. If the BECO2200 DCA had polled the device at time T , which was after t_1 but prior to time t_2 , no event data would have been reported, event though an event has occurred. The BECO2200 DCA will, therefore, distribute time-sorted SOE events up to the time $T - (t_2 - t_1)$, instead of up to the time T .

Chapter 4: Configuring the A164PORT Table

This chapter describes the configurable parameters in the Communication Port Configuration Table (**A164PORT**).

4.1 General Information

The **A164PORT** table provides information for the operation of the BECO2200 DCA's communication port(s). One record is required for every communication port configured.

4.2 Description of Fields

Where applicable, *Table 4* describes the field name, range, special case, and typical value for each field of the **A164PORT** table. Following the table is a textual description of each field's meaning.

Table 4 BECO2200 DCA A164PORT Configuration Table

Field	Range	Special	Typical
Communication Port Name	COM1..COM9 COMA..COMZ	COM0 is typically reserved for WESMAINT	COM1
Communication Port Parity	0 = None 1 = Even 2 = Odd	N/A	1 = Even Parity
Baud rate	110, 300, 600, 1200, 2400, 4800, 9600	N/A	4800 or 9600
RTS On Time	0..65535	Must be at least 1 if modem signals are used	N/A

Field	Range	Special	Typical
RTS Off Time	0..65535	Must be at least 1 character time if modem signals are used	2 character times
Intercharacter Timeout (milliseconds)	one character time to 65535 ms	N/A	2 character times
Remote Reply Timeout (milliseconds)	255 character times to 4294967295 ms	N/A	500 character times
Line Idle Time (milliseconds)	0..65535	N/A	N/A
Retries Before Failure	0..65535	N/A	3
Failures Before Off-line	1..255	N/A	3
Number of Devices on Port	1 to the number of A164UNIT records	N/A	N/A

4.2.1 Communication Port Name

This parameter specifies the communication port name string to be used for communications. The range of valid port names is dependent on the hardware platform within which the BECO2200 DCA resides.

4.2.2 Communication Port Parity


This parameter specifies the communication Parity of the configured port. Parity can be configured as Even, Odd, or None. The default parity is Even.

4.2.3 BAUD Rate

This parameter specifies the communication BAUD rate for the configured port.

4.2.4 RTS On Time

This parameter specifies the time, in milliseconds, that the RTS line will be asserted prior to the data transmission. The value configured here will be dependent on the speed and the type of communication hardware used. Refer to *Table 5* for a list of character times at the supported BAUD rates.


 **NOTE:** If either RTS On Time or the RTS Off Time are configured to be non-zero, the RTS On Time must be configured to at least 1 ms. If modem signals are not desired, set both the RTS On Time and RTS Off Time to 0.

BAUD Rate	Character Time (ms)
110	91
300	34
600	17
1200	9
2400	5
4800	3
9600	2

Table 5 Character Times at the Supported BAUD Rates


4.2.5 RTS Off Time

This parameter specifies the time, in milliseconds, that the RTS line will remain asserted after the last character has entered the SIO output buffer. The value configured here will be dependent on the speed and the type of communication hardware used. Refer to *Table 5* for a list of character times at the supported baud rates.

 **NOTE:** If either RTS On Time or the RTS Off Time are configured to be non-zero, the RTS Off Time must be configured to at least one character time. If modem signals are not desired, set both the RTS On Time and RTS Off Time to 0.

4.2.6 Intercharacter Timeout

This parameter specifies the maximum time, in milliseconds, that the BECO2200 DCA should wait for the next character in the reply message. The value configured here will be dependent on the speed and the type of communication hardware used, and must be at least one character time. Refer to *Table 5* for a list of character times at the supported baud rates.

 **NOTE:** Since the BECO2200 DCA uses the Intercharacter Timeout to determine the end of a variable length message, this parameter should be configured to no more than 2 to 5 character times. Configuring this value with too large of a value may impede the speed at which the BECO2200 DCA polls the devices.

4.2.7 Remote Reply Timeout

This parameter specifies the maximum time, in milliseconds, that the BECO2200 DCA should wait for the receipt of a complete device response. The value configured here will be dependent on the speed and the type of communication hardware used. The value must be large enough to receive the maximum message length possible from the BECO2200 device. The maximum message length is 255 characters. Refer to *Table 5* for a list of character times at the supported baud rates.

4.2.8 Line Idle Time

This parameter specifies the minimum time, in milliseconds, that the communication line should remain idle between the end of a response from a BECO2200 device and the beginning of the next transmission from the BECO2200 DCA.

4.2.9 Retries Before Failure

This parameter specifies the number of automatic retries that can be conducted by the BECO2200 DCA on a single transaction (scan/response). For every given transaction, the scan can be retried this number of times in the event of a data link error. If no response is received that passes the data link error check within the number of retries configured, the transaction is considered failed.

4.2.10 Failures Before Off-line

This parameter specifies the number of consecutive transactions that must fail before a BECO2200 device is considered off-line.

4.2.11 Number of Devices on Port

This parameter specifies the number of devices to communicate on this port. This is configured as a range of records in the **A164PORT** table. For example, if the first **A164PORT** record has four devices and the second **A164PORT** record has three devices, the first four devices configured in the **A164PORT** table will communicate on the first port, and the next three devices configured in the **A164UNIT** table will communicate on the second port.

Chapter 5: Configuring the A164UNIT Table

This chapter describes the configurable parameters in the Unit Configuration Table (A164UNIT).

5.1 General Information

The A164UNIT table provides information about each device to which the BECO2200 DCA will be communicating. One record is required for every BECO2200 device in the system.

5.2 Description of Fields

Where applicable, *Table 6* describes the field name, range, special case, and typical value for each field of the A164UNIT table. Following the table is a textual description of each field's meaning.

Table 6 BECO2200 DCA A164UNIT Configuration Table

Field	Range	Special	Typical
Unit Remote Address	-1..255	-1 for Spare Device	N/A
Unit Type	0 -BECO2200-M-0420	N/A	N/A
Type 0 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 1 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10

Field	Range	Special	Typical
Type 2 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 3 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	Use Type 7 Read Instead	-1
Type 4 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 5 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 6 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 7 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Type 8 Read Interval (seconds)	< 0 - Demand Only = 0 - Continuous > 0 - Interval	N/A	10
Time Synchronization Interval (seconds)	£ 0 - Demand Only > 0 - Interval	N/A	600

5.2.1 Remote Address

This parameter specifies the remote address programmed at the unit. Each unit on the same communication port must be given a unique address. -1 is used to indicate a SPARE device. Spare devices are allocated WESDAC points, as described in *Chapter 2*: but no communication is ever initiated to the device.

5.2.2 Unit Type

This parameter specifies the type of unit. Only BECO2200-M-0420 Control Relay is supported.

5.2.3 Type 0 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 0 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 0 Read Pseudo Control.

5.2.4 Type 1 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 1 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 1 Read Pseudo Control.

5.2.5 Type 2 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 2 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 2 Read Pseudo Control.

5.2.6 Type 3 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 3 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 3 Read Pseudo Control.

 **NOTE:** Use Type 7 Read for Consecutive Status instead of Type 3 Read.

5.2.7 Type 4 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 4 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 4 Read Pseudo Control.

5.2.8 Type 5 Read Interval


This parameter specifies, in seconds, the minimum interval between Type 5 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 5 Read Pseudo Control.

5.2.9 Type 6 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 6 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 6 Read Pseudo Control.

5.2.10 Type 7 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 7 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 7 Read Pseudo Control.

 **NOTE:** Do not use Type 3 Read if Type 7 is enabled.

5.2.11 Type 8 Read Interval

This parameter specifies, in seconds, the minimum interval between Type 8 Read requests issued to the device. A negative number configured indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Type 8 Read Pseudo Control.

5.2.12 Time Synchronization Interval

This parameter specifies, in seconds, the minimum interval between Time Synchronization requests issued to the device. A number less than or equal to zero indicates that no timed scans of this type are required for this device. The device may, at any time, be scanned through the activation of the Set Time Pseudo Control.

Chapter 6: Configuring the A164MODE Table

This chapter describes the configurable parameters in the Mode Download Pseudo Control Table (**A164MODE**).

6.1 General Information

The **A164MODE** table defines the associated action of each Mode Download Pseudo Control (MDPC). One record is required for every Mode Download Pseudo Control in the system. As shown in *Figure 2: Relationship of the A164MODE, A164DVCF, A164UNIT, and the A164DTBL tables*, the size of each table is defined by how it is individually configured.

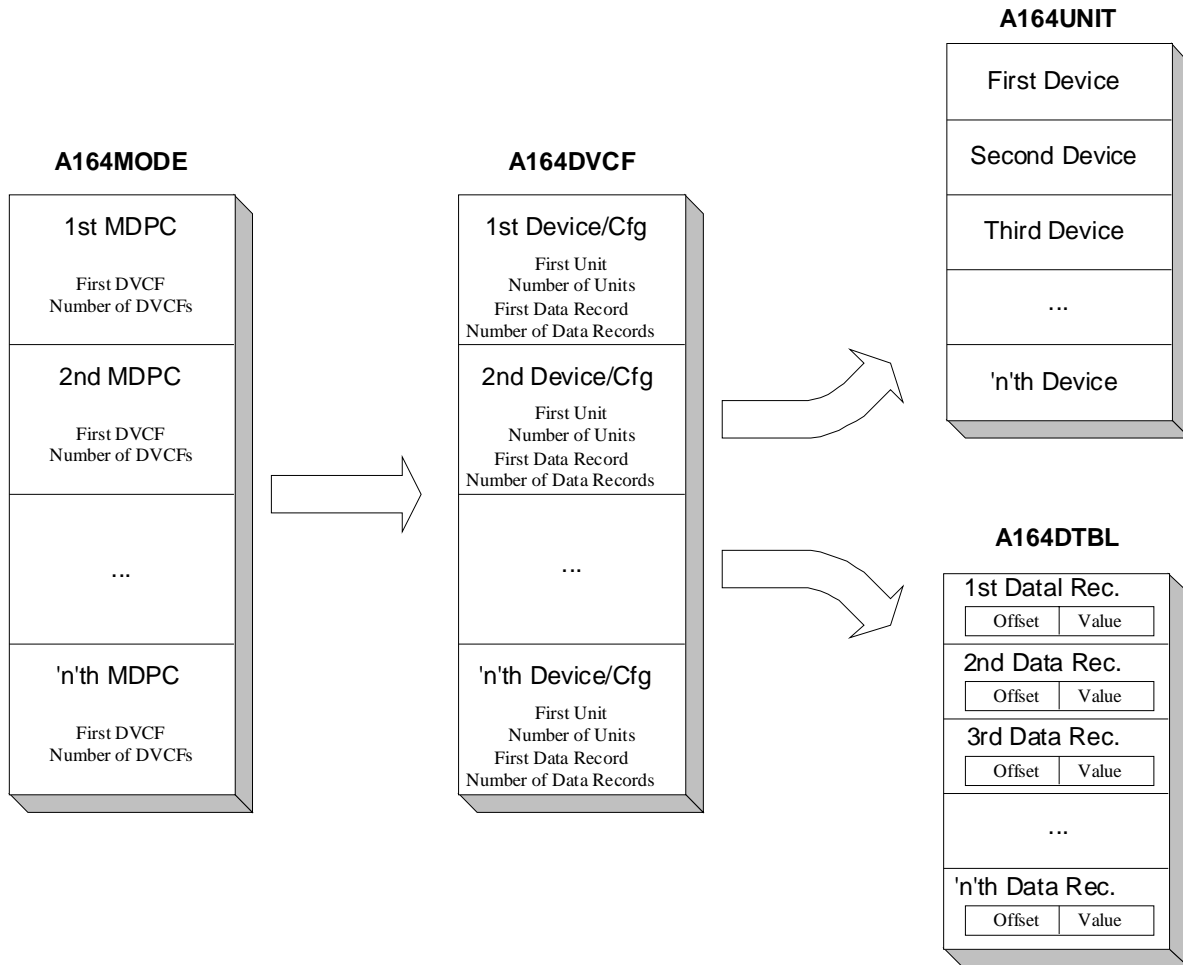


Figure 2 Relationship between A164MODE, A164UNOT. And A164FTBL Tables

6.2 Description Of Fields

Where applicable, *Table 7* gives an overview of each field of the **A164MODE** table. Following the table is a textual description of each field’s meaning.

Field Name	Range	Special Case	Typical Value
First DVCF	(Indexes A164DVCF)	N/A	N/A
Number of DVCF	00..65535	00 = Spare	N/A


Table 7 BECO2200 DCA A164MODE Configuration Table

6.2.1 First DVCF

This parameter specifies the first Device/Configuration Map (DVCF) record to execute for this Mode Download Pseudo Control. The First DVCF and the Number of DVCF must specify a valid range of records in the **A164DVCF** table.

6.2.2 Number of DVCF

This parameter specifies the number of Device/Configuration Map records to execute for this Mode Download Pseudo Control. The First DVCF and the Number of DVCF must specify a valid range of records in the **A164DVCF** table.

 **NOTE:** Configuring this parameter to 00 indicates a spare mode download pseudo control.

Chapter 7: Configuring the A164DVCF Configuration Table

This chapter describes the configurable parameters in the Device/Configuration Map Table (A164DVCF).

7.1 General Information

The configuration of this table defines the set of data records to download to a range of BECO2200 Multifunction Relay M-0420. Each record in the A164DVCF table defines a set of data records to be downloaded to a range of BECO2200 units.

7.2 Description of Fields

Where applicable, *Table 8* describes the field name, range, special case, and typical value for each field of the A164DVCF table. Following the table is a textual description of each field's meaning.

Field	Range	Special	Typical
First Unit	(Indexes A164UNIT)	N/A	N/A
Number of Units	1..65535	N/A	N/A
First Data Record	(Indexes A164DTBL)	N/A	N/A
Number of Data Records	1..65535	N/A	N/A

Table 8 BECO2200 DCA A164DVCF Configuration Table

7.2.1 First Unit

This parameter specifies the first unit to which this set of data records will be downloaded. The First Unit must specify a valid range of records in the **A164UNIT**.

7.2.2 Number of Units

This parameter specifies the number of units to which this set of data records will be downloaded. The Number of Units must specify a valid range of records in the **A164UNIT**.

7.2.3 First Data Record

This parameter specifies the first data record of this set. The First Data Record must specify a valid range of records in the **A164DTBL** table.

7.2.4 Number of Data Records

This parameter specifies the number of data records contained in this set. The Number of Data Records must specify a valid range of records in the **A164DTBL** table.

Chapter 8: Configuring the A164DTBL Configuration Table

This chapter describes the configurable parameters in the Data Records Table (A164DTBL).

8.1 General Information

The A164DTBL table provides information on each data record being written to the data Table of the BECO2200 M-0420 Multifunction Relay. Each record defines a value, table type, and the table point number that value will be written to in the data table.

8.2 Description of Fields

Where applicable, *Table 9* describes the field name, range, special case, and typical value for each field of the A164DTBL table. Following the table is a textual description of each field's meaning.

Field	Range	Special	Typical
Table Type	00..8	N/A	N/A
Point Number	00..255	N/A	N/A
Data Value	-32768..32767	N/A	N/A

Table 9 BECO2200 DCA A164DTBL Configuration Table

8.2.1 Table Type

This parameter specifies the table type of the BECO2200 to write the data value. Valid Type number is zero (0), one (1), two (2), and eight (8).

8.2.2 Point Number

This parameter specifies the point number of the table type of the BECO2200 to write the data value. For M-0420 relay the valid points are as follows:

- Type 0: Points 14-23,26-28,70-73
- Type 1: Points 0-17,19,21-26 ,28-31
- Type 2: Points 1-9,13-18,20-23,25-28,30-32,34,38-41,45-52,57-65,69
- Type 8: Points 5

8.2.3 Data Value

This parameter specifies the value to be written to the data table of the BECO2200 Multifunction Relay.

**NOTE:**

The configured value is the value that will be written to the unit. No scaling by the BECO2200 DCA will occur.

Appendix A: Messages Logged by the BECO2200 DCA

This appendix describes all fatal, error, warning, and information messages logged by the BECO2200 DCA to the WESMAINT Error Log. This appendix also provides an explanation of all output request return codes.

Messages logged to the WESMAINT Error Log by the BECO2200 DCA will be pre-pended with a process name. This name will be one of the following:

A164:

or

A164-<x>-<y>:

where: <x> represents the process type (C,P,M,D)

<y> represents the process invocation number

A.1 Fatal Error Messages

During startup, the BECO2200 DCA checks its configuration and begins its initialization. If the BECO2200 DCA encounters errors in the configuration or the initialization that will impede the overall functionality of the DCA, it will log an error message to the WESMAINT Error Log and suspend.

This section contains a description of all fatal errors. Expressions in angular brackets like “<x>”, are filled with the appropriate values by the BECO2200 DCA. Each fatal error message contains a unique identification number, within the range of F100 through F299.

F100: Bad A164APPL record counts, must be 1**Cause:**

- The **A164APPL** configuration table contained a number of records not equal to one.

Remedy:

- Review the section on configuring the **A164APPL** table (*Chapter 3:*), and ensure that the table consists of only one record.

F101: Bad A164PORT record counts, must be > 0**Cause:**

- The **A164PORT** configuration table contained a number of records less than one.

Remedy:

- Review the section on configuring the **A164PORT** (*Chapter 4:*), and ensure that the table consists of one or more records.

F102: Bad A164UNIT record counts, must be > 0**Cause:**

- The **A164UNIT** contained a number of records less than one.

Remedy:

- Review the section on configuring the **A164UNIT** (*Chapter 5:*), and ensure that the table consists of one or more records.

F103: Bad CFG_DCA record counts, must be > 0**Cause:**

- The **CFG_DCA** configuration table contained a number of records less than one.

Remedy:

- Review the section on configuring WIN for the BECO2200 DCA (*Chapter 2:*), and ensure that the table consists of one record for every DCA and DTA in the system.
- Review the WIN User's Configuration Guide for more information on how to configure WIN.

F104: Invalid DCA index**Cause:**

- The DCA Index configuration parameter in the **A164APPL** table specifies an invalid index into the WIN **CFG_DCA** table.

Remedy:

- Review the section on configuring WIN for the BECO2200 DCA (*Chapter 2:*), and ensure that the table consists of one record for every DCA and DTA in the system.
- Review the section on configuring the **A164APPL** table (*Chapter 3:*) and verify that the DCA Index parameter specifies a valid index into the WIN **CFG_DCA** table (the index is a zero based table offset).

F105: Invalid SOE Overflow parameter

Cause:

- The SOE Buffer Overflow Option configuration parameter in the **A164APPL** table is neither Overwrite Oldest (0) nor Discard Newest (1).

Remedy:

- Review the section on configuring the **A164APPL** table (*Chapter 3:*) and verify that the SOE Buffer Overflow Option is configured correctly.

F106: Total # devices exceeds UNIT size

Cause:

- The sum of all BECO2200 devices specified in all records of the **A164PORT** table is greater than the number of records in the **A164UNIT** table.

Remedy:

- Address all fatal and non-fatal error messages preceding this message.
- Review the section on configuring the **A164PORT** table (*Chapter 4:*) and verify that the Number of Devices on Port configuration parameter in each record is correct.
- Verify the sum of all Number of Devices on Port configuration parameters is less than or equal to the number of records in the **A164UNIT** table.

F107: <x> WESDAC_<y> pnts configured, <z> required

Cause:

- <x> number of WESDAC_<y> points were configured in the WIN CFG_DCA table for the BECO2200 DCA. <z> points are required.

Remedy:

- Review the section on configuring WIN for the BECO2200 DCA (*Chapter 2:*) and verify that the number of WESDAC_<y> points configured for the BECO2200 DCA is greater than or equal to <z>.

WESDAC NUMBER	DATA TYPE
WESDAC_1	Binary Input
WESDAC_2	Binary Output
WESDAC_3	Counter
WESDAC_4	Analog Input
WESDAC_5	Analog Output
WESDAC_6	Device Status

Table 10 WESDAC Number Definitions

F108: <x> table creation error**Cause:**

- The BECO2200 DCA tried to create the <x> table in RAM, and it failed.

Remedy:

- Reduce the amount of RAM used by this and any other application residing in the system. Parameters that affect the amount of RAM used by this application are noted in their associated chapters.
- Upgrade the GE Energy Services product to a model with more memory.
- Call the Customer Service department and report this error.

F109: Cannot find <x> database table**Cause:**

- The BECO2200 DCA requires a number of points of a certain WESDAC point type, but cannot find the associated table, <x>.

Remedy:

- Review the section on configuring WIN for the BECO2200 DCA (*Chapter 2:*) and verify that there are points of type <x> configured in one or more of the CFG_DCA records.
- Call the Customer Service department and report this error.

F110: Fatal errors exist in configuration**Cause:**

- The BECO2200 DCA encountered fatal errors in the configuration.

Remedy:

- Address all fatal error messages preceding this message.

F111: Bad A164DVCF record counts, must be > 0**Cause:**

- The A164DVCF configuration table contained a number of records less than one.

Remedy:

- Review the section on configuring the A164DVCF table (*Chapter 7:*), and ensure that the table consists of at least zero records.

F112: Bad A164DTBL record counts, must be > 0**Cause:**

- The A164DTBL configuration table contained a number of records less than one.

Remedy:

- Review the section on configuring the A164DTBL table (*Chapter 8:*), and ensure that the table consists of one or more records.

F120: Mode Record <x>, invalid First DVCF

Cause:

- The First DVCF record chosen for Mode Download Pseudo Control record <x> is not within a valid range of records in the **A164DVCF** configuration table.

Remedy:

- Review the section on configuring the **A164MODE** table (*Chapter 6:*), and verify that the First DVCF chosen is within a valid range of records in the **A164DVCF** table.

F121: Mode Record <x>, invalid Number of DVCF

Cause:

- The Number of DVCF record(s) defined for Mode Download Pseudo Control record <x> is not within a valid range of records in the **A164DVCF** configuration table.

Remedy:

- Review the section on configuring the **A164MODE** table (*Chapter 6:*), and verify that the Number of DVCF chosen is within a valid range of records in the **A164DVCF** table.

F122: DVCF Record <x>, invalid First Unit

Cause:

- The First Unit record defined for this Device/Configuration (DVCF) record <x> is not within a valid range of records in the **A164UNIT** table.

Remedy:

- Review the section on configuring the **A164DVCF** table (*Chapter 6: and Chapter 7:*), and verify that the First DVCF is configured within a valid range of records in the **A164UNIT** table.

F123: DVCF Record <x>, invalid Number of Units

Cause:

- The Number of Units record defined for this Device/Configuration (DVCF) record <x> is not within a valid range of records in the **A164UNIT** table.

Remedy:

- Review the section on configuring the **A164DVCF** table (*Chapter 6: and Chapter 7:*), and verify that the Number of Units is configured within a valid range of records in the *BECCO2200 DCA A164UNIT Configuration Table*.

F124: DVCF Record <x>, invalid First Type-Point

Cause:

- The First Data record defined for this Device/Configuration (DVCF) record <x> is not within a valid range of records in the **A164DTBL** configuration table.

Remedy:

- Review the section on configuring the **A164DVCF** table (*Chapter 6:, Chapter 7: & Chapter 8:*), and verify that the First Data is configured within a valid range of records in the **A164DTBL** table.

F125: DVCF Record <x>, invalid Number of Type-Point**Cause:**

- The Number of Data record defined for this Device/Configuration (DVCF) record <x> is not within a valid range of records in the **A164DTBL** configuration table.

Remedy:

- Review the section on configuring the **A164DVCF** table (*Chapter 6:*, *Chapter 7:*, and *Chapter 8:*), and verify that the Number of Data is configured within a valid range of records in the **A164DTBL** table.

F200: Error <x> on win open**Cause:**

- The BECO2200 DCA failed in its attempt to open a channel to WIN. The error code returned was <x>.

Remedy:

- Call the Customer Service department and report this error.

F201: Error <x> signaling A164-D-00 process**Cause:**

- The BECO2200 DCA was unable to signal one of its critical processes. The error code returned was <x>.

Remedy:

- Call the Customer Service department and report this error.

F202: No communication ports have been started**Cause:**

- No communication processes have been properly initialized. This is either due to the configuration of the BECO2200 DCA or due to the process initialization itself.

Remedy:

- Address all fatal and non-fatal error messages preceding this message.

F203: Error <x> creating A164-<y>-<z> exchange**Cause:**

- The BECO2200 DCA failed in its attempt to create the A164-<y>-<z> exchange. The error code returned was <x>.

Remedy:

- Call the Customer Service department and report this error.

F204: Error <x> spawning A164-<y>-<z> process

Cause:

- The BECO2200 DCA failed in its attempt to spawn the A164-<y>-<z> process. The error code returned was <x>.

Remedy:

- Call the Customer Service department and report this error.

F205: Error <x> activating A164-<y>-<z> process

Cause:

- The BECO2200 DCA failed in its attempt to activate the A164-<y>-<z> process. The error code returned was <x>.

Remedy:

- Call the Customer Service department and report this error.

F206: Process A164-<x>-<y> died while initializing

Cause:

- The A164-<x>-<y> process was deleted while initializing.

Remedy:

- Address any fatal or non-fatal errors preceding this message.
- Call the Customer Service department and report this error.

F207: Unable to allocate buffers

Cause:

- The BECO2200 DCA was unable to allocate enough memory for its internal buffers.

Effect:

- The BECO2200 DCA will be unable to communicate to any device configured.

Remedy:

- Reduce the amount of RAM used by this and any other application in the system. The parameters that affect the amount of RAM required by this application are noted in their associated chapters.
- Upgrade the GE Energy Services product to a model with more memory.
- Call the Customer Service department and report this error.

A.2 Non-Fatal Error Messages

Non-fatal errors cause the offending process to log a message to the WESMAINT Error Log and suspend without affecting the rest of the BECO2200 DCA. For example, if a single polling process encounters a non-fatal error, no polling will occur on the associated communication port. However, demand scans on the communication port will still be an available option.

This section contains a description of all these non-fatal errors. Expressions in angular brackets like “<x>”, are filled with the appropriate values by the BECO2200 DCA. Each non-fatal error message contains a unique identification number, within the range of E300 through E499.

E300: PORT rec <x>, invalid baud rate

Cause:

- Record <x> of the **A164PORT** table contains an invalid Baud Rate.

Effect:

- Communication to all BECO2200 devices configured to use this port will be unavailable.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and verify that the Baud Rate configuration parameter is configured as either 110, 300, 600, 1200, 2400, 4800, or 9600.

E301: PORT rec <x>, invalid failures before offline

Cause:

- Record <x> of the **A164PORT** table contains an invalid Failures Before Offline.

Effect:

- Communication to all BECO2200 devices configured to use this port will be unavailable.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and verify that the Failures Before Off-line configuration parameter is greater than zero.

E302: PORT rec <x>, num of devices exceeds UNIT

Cause:

- The Number of Devices on Port parameter in record <x> of the **A164PORT** table is greater than the number of records in the **A164UNIT** table.

Effect:

- Communication to all BECO2200 devices configured to use this port will be unavailable.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and verify that the Number of Devices on Port is correct.

E303: PORT rec <x>, configuration bad

Cause:

- The BECO2200 DCA encounter non-fatal errors in record <x> of the **A164PORT** table.

Effect:

- Communication to all BECO2200 devices configured to use this port will be unavailable.

Remedy:

- Address all non-fatal errors preceding this message.

E304: PORT rec <x>, invalid unit address

Cause:

- Record <x> of the **A164PORT** table contains an invalid Unit Address.

Effect:

- Communication to all BECO2200 devices configured to use this port will be unavailable.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and verify that the Unit Address configuration parameter is within the range of 0 through 255.

E305: UNIT rec <x>, invalid unit type

Cause:

- Record <x> of the **A164UNIT** table contains an invalid Unit Type.

Effect:

- Communication to this unit will be unavailable.

Remedy:

- Review the section on configuring the BECO2200 DCA A164UNIT Configuration Table (*Chapter 5:*), and verify that the Unit Type is BECO2200-M-0420 (0)

E306: Unit <x> and <y>, same address on port <z>

Cause:

- Two BECO2200 devices have been configured with the same address on port <z>.

Effect:

- Communication to the two devices will be unavailable.

Remedy:

- Review the section on configuring the **A164UNIT** table (*Chapter 5:*), and verify that the addresses of records <x> and <y>. Each unit address on a given port must be unique.

E307: UNIT rec <x>, configuration bad

Cause:

- The BECO2200 DCA encountered non-fatal errors in record <x> of the **A164UNIT** table.

Effect:

- Communication to this unit will be unavailable.

Remedy:

- Address all non-fatal errors preceding this message.

E308: PORT rec <x>, num of devices cannot = 0**Cause:**

- The Number of Devices on Port parameter in record <x> of the **A164PORT** table is equal to zero.

Effect:

- Communication on this port will be unavailable.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and verify that the Number of Devices on Port is correct.

E399: Non-fatal errors exist in configuration**Cause:**

- The BECO2200 DCA encountered non-fatal error in its configuration.

Effect:

- The BECO2200 will be unable to communicate to some or all of the devices configured.

Remedy:

- Address all non-fatal error messages preceding this message.

E400: Error <x> opening port <y>**Cause:**

- The BECO2200 DCA failed in its attempt to open the communication port <y>. The error code returned was <x>.

Effect:

- Communication to all devices configured for this port will be unavailable.

Remedy:

- Ensure that no other application is configured to use port <y>.
- Call the Customer Service department and report this error.

E401: Error <x> setting character port**Cause:**

- The BECO2200 DCA failed in its attempt to set the communication port characteristics. The error code returned was <x>.

Effect:

- Communication to all devices configured for this port will be unavailable.

Remedy:

- Call the Customer Service department and report this error.

E402: Error <x> setting SIO timers

Cause:

- The BECO2200 DCA failed in its attempt to set the communication port timers. The error code returned was <x>.

Effect:

- Communication to all devices configured for this port will be unavailable.

Remedy:

- Call the Customer Service department and report this error.

E403: Error <x> creating A164-<y>-<z> exchange

Cause:

- The BECO2200 DCA failed in its attempt to create the A164-<z>-<z> exchange. The error code returned was <x>.

Effect:

- Communication to all devices configured for this port will be unavailable.

Remedy:

- Call the Customer Service department and report this error.

E404: Error <x> spawning A164-<y>-<z> process

Cause:

- The BECO2200 DCA failed in its attempt to spawn the A164-<y>-<z> process. The error code returned was <x>.

Effect:

- If <y> equals C: Communication to all devices configured for this port will be unavailable.
- If <y> equals P: No polling of devices will occur for this port. Demand scanning is available.

Remedy:

- Call the Customer Service department and report this error.

E405: Error <x> activating A164-<y>-<z> process

Cause:

- The BECO2200 DCA failed in its attempt to activate the A164-<y>-<z> process. The error code returned was <x>.

Effect:

- If <y> equals C: Communication to all devices configured for this port will be unavailable.
- If <y> equals P: No polling of devices will occur for this port. Demand scanning is available.

Remedy:

- Call the Customer Service department and report this error.

E406: Process A164--<y> died while initializing**Cause:**

- Process A164--<y> was deleted during its initialization.

Effect:

- If <y> equals C: Communication to all devices configured for this port will be unavailable.
- If <y> equals P: No polling of devices will occur for this port. Demand scanning is available.

Remedy:

- Address any fatal or non-fatal error message preceding this message.
- Call the Customer Service Department and report this error.

E407: Error <x> signalling A164-**Cause:**

- The BECO2200 DCA was unable to signal the A164-

Effect:

- If <y> equals C: Communication to all devices configured for this port will be unavailable.
- If <y> equals P: No polling of devices will occur for this port. Demand scanning is available.

Remedy:

- Call the Customer Service Department and report this error.

E408: Unable to allocate polling list**Cause:**

- The BECO2200 DCA was unable to allocate enough memory for its polling lists.

Effect:

- The BECO2200 DCA will be unable to poll any of the devices configured. Demand scanning is available.

Remedy:

- Reduce the amount of RAM used by this and any other application in the system. The parameters that affect the amount of RAM required by this application are noted in their associated chapters.
- Upgrade the GE Energy Services product to a model with more memory.
- Call the Customer Service department and report this error.

E409: Error <x>, invalid start signal from Spawner**Cause:**

- This process failed to receive the start signal from the BECO2200 DCA spawner. The error code returned was <x>.

Effect:

- This process will not start. The associated functionality of this process will not be available:
 - A164-D-00: The Event process reports all events to WIN.
 - A164-M-00: The Command process receives and interprets WIN command requests.
 - A164-C-00: The Communication process transmits and receives all messages for a single communication port.
 - A164-P-00: The Poller process initiates all polling for al single communication port.

Remedy:

- Call the Customer Service department and report this error.

A.3 Warning Messages

This section describes the warning messages the BECO2200 DCA may log to the WESMAINT Error Log. The warnings are divided into two groups: pSOS Interface Warnings and WIN Interface Warnings. If you find any of these messages in the WESMAINT Error Log, contact the Customer Service Department and report the message.

Expressions in angular brackets like “<x>”, are filled with the appropriate values by the BECO2200 DCA.

pSOS Interface Warnings

The BECO2200 DCA uses a number of message exchanges and signals for inter-process communications. If a process is unable to send or receive a message or a signal, the functionality of the BECO2200 DCA may be compromised. pSOS exchange warnings are numbered from W500 through W599.

W500: Error <x> on send_x to A164-D-00

W501: Error <x> on send_x to A164-C-<y>

W502: Error <x> on jam_x to A164-C-<y>

W503: Error <x> on wait_v from A164-C-<y>

W504: Error <x> signaling back response

W505: Error <x> on req_x

WIN Interface Warnings

During run-time, the BECO2200 DCA interfaces to the WESDAC Interface Node (WIN) by writing various commands. If any of these writes fail, the command can not be passed to other applications in the system. WIN interface warnings are numbered from W600 through W699.

W600: Error <x> on win read

W601: Error <x> on ACK/NACK win write

W602: Error <x> on DATA UPDATED CMD win write

W603: Error <x> on TIME SYNC win write

W604: Error <x> on WES<y> REST_COMM win write

W605: Error <x> on WES<y> LOSS_COMM win write

W606: Error <x> on WES<y> ON_LINE win write

W607: Error <x> on WES<y> OFF_LINE win write

W608: Error <x> on WES<y> INIT_POINT win write
W609: Error <x> on WES6 CHANGE_TRANS win write
W610: Error <x> on WES6 CHANGE_FAILS win write
W611: Error <x> on WES6 CHANGE_RETRIES win write
W612: Error <x> on WES1 DATA_CHANGE win write
W613: Error <x> on WES<y> TT DATA CHANGE win write

A.4 Information Messages

Information messages are posted when the BECO2200 DCA encounters a situation where it must, as a result, perform some action. Expressions in angular brackets like “<x>”, are filled with the appropriate values by the BECO2200 DCA. Each information message is given a unique identification number, within the range of I700 through I799.

I700: PORT rec <x>, invalid reply time-out

Cause:

- Record <x> of the **A164PORT** table contains a Remote Reply Timeout that is less than the amount of time required to receive the maximum message length.

Effect:

- The BECO2200 DCA will set this parameter to the minimum time required to receive the maximum message length.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*), and configure the Remote Reply Timeout to at least the time required to receive the maximum message length.

I701: PORT rec <x>, invalid RTS on time

Cause:

- Record <x> of the **A164PORT** table contains a RTS On Time that is less than one.

Effect:

- The BECO2200 DCA will set this parameter to one.

Remedy:

- If modem signals are required, review the section on configuring the **A164PORT** table (*Chapter 4:*) and verify the RTS On Time is a valid time.
- If modem signals are not required, set this parameter and the RTS Off Time to zero.

I702: PORT rec <x>, invalid RTS off time

Cause:

- Record <x> of the **A164PORT** table contains a RTS Off Time that is less than one character time.

Effect:

- The BECO2200 DCA will set this parameter to one character time.

Remedy:

- If modem signals are required, review the section on configuring the **A164PORT** table (*Chapter 4:*) and verify the RTS Off Time is a valid time.
- If modem signals are not required, set this parameter and the RTS On Time to zero.

I703: PORT rec <x>, invalid intercharacter timeout

Cause:

- Record <x> of the *BECCO2200 DCA A164PORT Configuration Table* contains an Intercharacter Timeout that is less than one character time.

Effect:

- The BECO2200 DCA will set this parameter to one character time.

Remedy:

- Review the section on configuring the **A164PORT** table (*Chapter 4:*) and verify that the Intercharacter Timeout is a valid time.

I704: No Configuration - deleting

Cause:

- The BECO2200 DCA could not find the **A164APPL** table.

Effect:

- The BECO2200 DCA will delete itself.

Remedy:

- If the BECO2200 DCA is supposed to run, verify that the **A164APPL** table is included in the configuration. Also verify that the BECO2200 DCA application (A164) is included in the configuration.

I705: PORT rec <x>, no polling required

Cause:

- All units configured for this port are either configured as spare devices, configured for no polling, or contain invalid configurations.

Effect:

- The polling process will suspend, and no polling of devices will occur for this port. Demand scanning is available.

Remedy:

- If polling is required by some or all the devices on this port, address all fatal and non- fatal error messages preceding this message.

A.5 Output Request Return Codes

When processing WIN output requests, the BECO2200 DCA may not be able to execute the request. If this occurs, the BECO2200 DCA will set the status code returned with the request to the appropriate error code, and negatively acknowledge (NACK) the control request. This section describes the possible status codes returned.

Demand Scan Failed (0x0080)

The BECO2200 DCA was unable to successfully execute the requested Read to the device.

DO Operate Failed (0x0081)

The BECO2200 DCA failed in its attempt to issue the Control Operate request.

AO Operate Failed (0x0082)

The BECO2200 DCA failed in its attempt to issue the Analog Output request.

Download Failed (0x0083)

The BECO2200 DCA Write to IEDs request was not successful in that at least one of the writes to a device failed.

Glossary of Terms

application	A piece of software (a program) consisting of one or more processes and supporting functions.
ASCII	American Standard Code for Information Interchange. A seven-bit code that standardizes a set of characters representing letters and numbers for international use.
Baud rate	A measurement of the speed of a communications line; the number of times a line can change state in one second; the rate at which a signal is modulated.
Binary	A number system having only two symbols (1 and 0), and where values are expressed in the base two number system.
Bit	Abbreviation of binary digit. The smallest unit of information in a binary system. Has a value of either one (1) or zero (0).
Bits per second	The speed at which a channel transmits (in a serial transmission) a single bit. A serial transmission sends one bit at a time. Abbreviated as bps.
Byte	A group of eight adjacent bits that function as a single unit. Defined as an octet by the International Electrotechnical Commission (IEC).
Change of state	A significant change (as defined by a particular system) in the condition of a point being monitored, for example, a change in flow rate, temperature, voltage, etc. Usually associated with dual-state status (that is, alarm/normal conditions). Abbreviated as COS.
Char	The name of a data-type in the C programming language. Stands for character, or a group of eight bits that function as a single unit.
Configuration information	The data or information that defines the operational limits and characteristics of a particular device. Depending on the device, this information is either manually downloaded into NVRAM or EEPROM, or is pre-programmed into EPROM.
Configuration system	See WESDAC Configuration System.

Data-collection application	A software application that acquires data from and sends data to various intelligent electronic devices. Abbreviated as DCA.
Data-translation application	A software application that translates data from one form to another (for example digital input to analog input). A data-translation application usually has no direct interface to external devices. Abbreviated as DTA.
Decimal	A number system having ten symbols, and where values are expressed in the base ten number system.
Hexadecimal	A number system having 16 symbols, and where values are expressed in the base 16 number system. Commonly used to abbreviate binary data. Sometimes referred to as hex. Hexadecimal numbers are often preceded by the prefix 0x.
Master	The client or host station or computer, with which the RTU equipment communicates. Also referred to as a host or host computer.
Non-volatile random-access memory	A semi-permanent type of data storage (memory) that is backed up by batteries to maintain stored data even if system power is lost. Can be both read and changed by the system. Abbreviated as NVRAM.
Port	An interface point connecting a communications channel and a device.
Random-access memory	A type of temporary data storage (memory) that can be read and changed while the computer is in use. Data stored in random-access memory is lost if the system loses power. Abbreviated as RAM.
Read-only memory	A type of permanent data storage (memory) that can be read but not altered by the system. Data stored in read-only memory is not affected by power loss to the system. Abbreviated as ROM.
Remote terminal unit	A piece of equipment located at a distance from a master station to monitor and control the status of outlying equipment, and to communicate the information back to the master station or host. Abbreviated as RTU.
Sequence of events	A time-tagged change of state, logged as part of a chronological record of significant changes in the condition of a particular point or points being monitored. Abbreviated as SOE.
Slave	See sub-remote unit.
Source code	A piece of code that has not yet been compiled or assembled (that is, it is still in the language it was programmed in) and so cannot yet run on a machine.
Sub-remote unit	A physical device (e.g., peripheral boards, D20 RTUs, non-D20 RTUs, meters, or other intelligent electronic device) that collects data, processes it in some way, and communicates it to a master remote unit (MRU). SRUs (also called slave units) are able to respond to commands from MRUs.
WESDAC	A module of software that manages the transfer, storage, and

Interface Node	manipulation of data between data- collection applications (DCA), data-processing applications (DPA) and data-translation applications (DTA). Abbreviated as WIN.
WESDAC Configuration System	A menu-oriented software program that operates on a personal computer and allows you to download configuration information to D20 RTUs or CPM RTUs.

List of Acronyms and Abbreviations

AI	Analog Input
ASCII	American Standard Code for Information Interchange
COS	change of state
DCA	data-collection application
DPA	data-processing application
DTA	data-translation application
DVCF	device configuration map
IED	intelligent electronic device
MAXRECS	maximum number of records
MDPC	mode download pseudo control
MMI	man-machine interface
NACK	negative acknowledgment
NVRAM	non-volatile random-access memory
RAM	random-access memory
RTS	request to send
RTU	remote terminal unit
SIO	serial input/output
SOE	sequence of events
Tx	transmit
WESDAC	WESDAC Data Acquisition and Control
WESMAINT	WESDAC Maintenance Facility
WIN	WESDAC Interface Node