GE Power Systems

Custom ABB C3000/C0300 DPA
Configuration Guide

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About this Guide

Purpose of this Guide

This document describes all Custom ABB C3000/C0300 Data-Processing Application (DPA) configuration parameters. The Custom ABB C3000/C0300 configuration tables are discussed in terms of the data, which must be entered in order to create valid parameters for the Custom ABB C3000/C0300 DPA.

Each configurable parameter for the Custom ABB C3000/C0300 is described along with the range of valid entries and a typical value where applicable.

This document describes only the DPA-specific aspects of configuring a GE Power Systems device for use with the Custom ABB C3000/C0300 DPA. It does not describe the protocol or how to use Config Pro configuration system.

If the information contained in this document is insufficient for your needs, refer to the section called *Additional Documentation* for a list of supplementary information.

Who Should Use this Guide

This guide is for use by persons who create configuration tables to customize the behaviour of the A016-1 C3000/C0300 DPA for emulation of the C3000/C0300 protocol in communications with master stations.

Additional Documentation

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

- *C3000/C0300 DPA Functional Specification* (A016-1FS)
- *Config Pro Configuration System User's Guide* (P012-0UG)
- *WESDAC Interface Node (WIN+) User's Guide* (B008-1CG).
- *Wesmaint II+ Configure Guide* (B014-1CG)

Overview

The C3000/C0300 DPA may be installed in GE Power Systems products, to provide emulation of the C3000/C0300 protocol in communications with an upstream master station. Status, Analog, and Accumulator data may be passed to the master; Analog, and Binary controls may be performed for the master.

The C3000/C0300 DPA provides for definition of multiple Logical Remote Units (LRUs) within GE Power Systems products, each of which behaves as though it were a physically separate devices with its own address for communication with the host station. LRUs may work within separate areas within the overall WESDAC system database, or they may overlap and share data as required.

On GE Power Systemsdevices where multiple communications ports are available for use, the C3000/C0300 DPA may be configured for multi-porting. Multi-porting allows the C3000/C0300 DPA to be capable of responding on one or more communication ports to one or more master stations. Each communication port has its own defined set of LRUs, with each LRU having the same or different configurations. If two LRUs have the same configuration, then the same data is sent to both master stations.

The C3000/C0300 DPA when resident in GE Power Systems along with the WESDAC Interface Node (WIN) application provides translation of data between the WIN database and a C3000/C0300 speaking host station. The WIN application and its database provide a consistent means of transferring data between different DPAs and Data Collection Applications (DCAs) within the GE Power Systems systems. For example, a WESDAC DCA may collect data from field devices via protocol X and provide the information to WIN. A DPA may then get the data from WIN and provide it to a host station via protocol Y (in this case C3000/C0300).

Conversely C3000/C0300 control requests may be received from a master station and passed to WIN for execution. WIN may then pass these to a DCA, which utilize protocol X to have an end field device actually perform the physical control operation. The interaction between the C3000/C0300 DPA, WIN, and other applications resident within a typical WESDAC system is illustrated in the following figure:
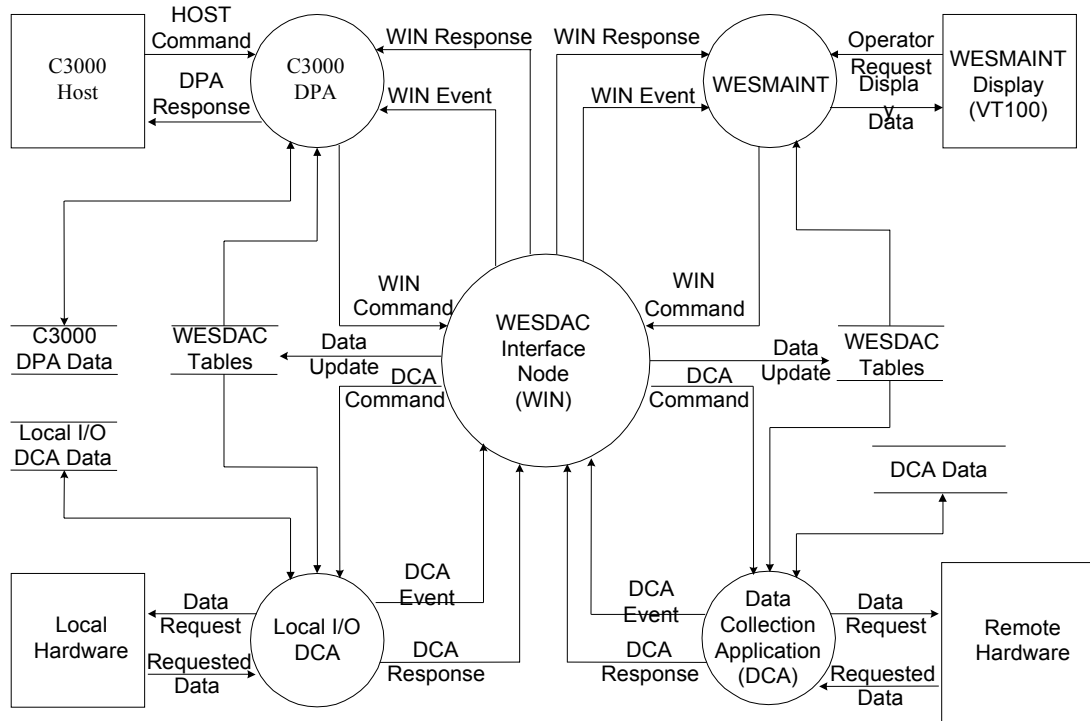
Figure 1. System Overview

Chapter 1: Configuration Tables

The C3000/C0300 DPA is configured by means of the tables, which contain all of its configuration data.

The purpose of each configuration table is described in the following table:

Table Name	Description
A016_COM	This table contains parameters related to communication ports. One record is entered for each port the application uses.
A016_XRF	This table contains the cross-reference parameters between A016_LRU records and LRU addresses. One record is entered for each LRU to be addressed.
A016_LRU	This table contains parameters related to LRUs. One record is entered for each LRU in the system.
A016_GRP	This table contains parameters related to groups of points in LRUs. One record is entered for each data group on an LRU.
A016SCAN	This table contains parameters related to scan sections within groups. One record is entered for each scan section in a group.
A016_DI	This table contains parameters to customize the use of status input points in the system. One record is entered for each status input point used.
A016_AI	This table contains parameters to customize the use of analog input points in the system. One record is entered for each analog input point used.
A016_ACC	This table contains parameters to customize the use of accumulator input points in the system. One record is entered for each accumulator input point used.
A016_TC	This table contains parameters to customize the control out put points used for Trip or Close requests. One record is entered for each Trip/Close point used.
A016_RL	This table contains parameters to customize the control out put points used for Raise or Lower requests. One record is entered for each Raise/Lower pair used.
A016_SP	This table contains parameters to customize the analog and binary control output points used for Setpoint requests. One record is entered for each setpoint used.

Table 1 Name and Description of Tables Used

1.1   Configuration Sequence

The following is a list of the steps required to configure the A016-1 C3000/C0300 DPA:

1. Edit the C3000/C0300 DPA configuration. Prepare it according to the guidelines in this document and the specific use for which the C3000/C0300 DPA is required.

2. Edit the configuration for the 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 a Config Pro Configuration System. The list of applications to be compiled must include the C3000/C0300 DPA, application A016-1.

4. Restart the system. If the C3000/C0300 DPA 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.

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: Error Messages* and repeat steps 3 through 5. When the C3000/C0300 DPA has successfully validated all the configuration parameters, configuration is complete.

Chapter 2: Configuration the Port Configuration Table (A016_COM)

The A016_COM table provides information for communication ports, which are used by the C3000/C0300 DPA. It contains one record for each communication port configured to customize the communications related settings for the C3000/C0300 DPA. The fields contained in the table are described in the table below:

Table 2. C3000/C0300 A016_COM Configuration Table

Field	Range	Description
Port ID	COM1 – COM7	ASCII name which defines the communication port name in the device.
Baud Rate	110, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600	A016-1 DPA actual baud rate cannot be changed and is set to 9600 baud. However, this setting can be used to change the RTS on time (pre transmission delay). RTS on time = Pre-TX Char * 8000 / Baud Rate. Default setting should be 9600.
Pre-TX Char	0 to 500	The number of Mark characters (8 bits of 1 = 0xFF), which is sent prior to each message transmission. Note that the last character send prior to each message is 0xFE to provide a start Space for master synchronization.
Post-TX Char	0 to 500	The number of Space characters (8 bits of 0 = Chars 0x00), which is sent immediately after each message transmission before dropping the carrier.
TPTM Bias	-32767 to 32767	The fine tuning (in 0.5 milli-seconds) of the remote turnaround delay time that allows time compatibility with different systems.
TRX Bias	-32767 to 32767	The fine tuning (in 0.5 milli-seconds) of the remote time at end of received message that allows time compatibility with different systems.
Comm Fail Output Point	Any valid system Digital Output point or Undefined (-1).	The system control DO point number, which is to be latched on when communications fail. The control point is in the on state (contact closed) when communications have failed, and in the off state (contact open) when communications are restored. The high entry limit is confined to the highest control point number configured in the system. The feature can be disabled by setting this to Undefined (-1).

Field	Range	Description
Comm Fail Timer	10 to 3600	The amount of time in seconds that the C3000/C0300 DPA waits to receive an intelligible message from a master station before declaring that communications have failed for the affected communication port. This entry is ignored if the Fail Output option is Undefined (-1).
LRU Offset	Indexes into A016_XRF table.	The one based offset from the first entry in the A016_XRF table, which corresponds to this port. The A016_XRF table is described in the next chapter.
Total LRUs	1 to 32767	The number of LRUs communicating on this port. This entry is used in conjunction with the XRF Offset entry to determine the exact range of records in the A016_XRF table that this communication port is to utilize. The high entry limit is confined to the number of records in the A016_XRF table. Also the entered value, plus the XRF Offset entry, must not exceed the number of records in the A016_XRF table.

Table 3. Character Times at the selected Baud Rate

Baud Rate	One Character Time(ms)
110	91
300	34
600	17
1200	9
1800	6
2400	5
4800	3
7200	2
9600	2

Chapter 3: Configuring the C3000/C0300 DPA A016_XRF Table

This chapter describes entries the user must provide in the A016_XRF table found in the C3000/C0300 DPA configuration.

3.1 General Information

The A016_XRF table provides information to cross-reference between communications ports and LRUs, which are used by the C3000/C0300 DPA. It contains one record for each LRU configured, and each record provides the station address to be used for the LRU and an offset into the A016_LRU table. The fields contained in the table are described in the following table:

Field	Range	Description
LRU Address	0x01 – 0x0F, -1	The hexadecimal address of the LRU associated with the entries of this record. This is the address used in protocol messages for this LRU. Entries accepted by the C3000/C0300 DPA correspond to the C3000/C0300 protocol valid address range. Entering -1 disables the LRU.
LRU Offset	Indexes into A016_LRU table.	The one based offset from the first entry in the A016_LRU table, which corresponds to this record. The A016_LRU table is described in the next chapter.

Table 4 C3000/C0300 A016_XRF Configuration Table

Chapter 4: Configuring the C3000/C0300 DPA A016_LRU Table

This chapter describes entries the user must provide in the A016_LRU table found in the C3000/C0300 DPA configuration.

The A016_LRU table provides information for LRUs, which are used by the C3000/C0300 DPA. It contains one record for each LRU configured, for database customization. The fields contained in the table are described in the following table:

Table 5 A016_LRU Table Fields

Field	Range	Description
Local/Remote Input	Any valid system Digital Input point or Undefined (-1).	The system DI point number, which is used to switch the LRU between local and remote operation. In local mode, LRU controls are disabled, and in remote mode, LRU controls are enabled. The high entry limit is confined to the highest status point number configured in the system. Entering Undefined (-1) disables the local/remote option and the LRU is always in remote mode (controls enabled).
Local/Remote State	0 to 1	The state (0 or 1) of the local/remote input which corresponds to the local (controls disabled) mode. This entry is ignored if the local/remote option is disabled.
Accum. Freeze Output	Any valid system Digital Output point or Undefined (-1).	The system control output point number (zero-based), which is to be pulsed on when an accumulator freeze (update) command is received from the master station. The high entry limit is confined to the highest control point number configured in the system. Entering -1 disables the freeze output option.
Accum Freeze Time	1 to 60000	The time duration in milli-seconds that the freeze output relay is pulsed on. This entry is ignored if the freeze output option is disabled.
T/C Select Timeout	1 to 60	The amount of time in seconds that the C3000/C0300 DPA allows execution of a trip or close request after enabling a control point selection.

Field	Range	Description
Number of SOEs	10 to 255 (When SOE Methods is set to Time Correlated) 10 to 2000 (When SOE Methods is set to Time Sync)	The maximum number of SOE events that can be buffered per group of points.
Group Offset	Indexes into A016_GRP table.	The one based offset from the first entry in the A016_GRP table. The A016_GRP table is described in a later chapter.
Group Count	0 to 16	The number of A016_GRP records which correspond to this LRU. This entry is used in conjunction with the LRU Group Offset entry to determine the exact range of records in the A016_GRP table that this LRU is to utilize. Possible entries accepted by the C3000/C0300 DPA are from 0 to 16, but the entered value, plus the LRU Group Offset entry, must not exceed the number of records in the A016_GRP table.
SOE Methods	Time Correlated or Time Sync	This entry sets the SOE reply method when the master station sends a SOE data request or a Scan Data request.

Chapter 5: Configuring the C3000/C0300 DPA A016_GRP Table

This chapter describes entries the user must provide in the A016_GRP table found in the C3000/C0300 DPA configuration.

The A016_GRP table provides information for groups of points associated with LRUs, which are used by the C3000/C0300 DPA. It contains one record for each group of points configured, for database customization. The fields contained in the table are described in the following table:

Table 6 A016_GRP Table Fields

Field	Range	Description
Group Number	0 to 15	The group number of the group of points referenced by this record.
Scan Offset	Indexes into A016SCAN table.	The one based offset from the first entry in the A016SCAN table. The A016SCAN table is described in a later chapter.
Scan Count	0 to 32	The number of A016SCAN records which correspond to this group. This entry is used in conjunction with the Scan Offset entry to determine the exact range of records in the A016SCAN table that this group is to utilize. Possible entries accepted by the C3000/C0300 DPA are from 0 to 32, but the entered value, plus the Scan Offset entry, must not exceed the number of records in the A016SCAN table.
T/C Offset	Indexes into A016_TC table.	The one based offset from the first entry in the A016_TC table. The A016_TC table is described in a later chapter.
T/C Count	0 to 12	The number of A016_TC records which correspond to this group. This entry is used in conjunction with the T/C Offset entry to determine the exact range of records in the A016_TC table that this group is to utilize. Possible entries accepted by the C3000/C0300 DPA are from 0 to 12, but the entered value, plus the T/C Offset entry, must not exceed the number of records in the A016_TC table.
R/L Offset	Indexes into A016_RL table.	The one based offset from the first entry in the A016_RL table. The A016_RL table is described in a later chapter.

Field	Range	Description
R/L Count	0 to 3	The one based offset from the first entry in the A016_RL table. The A016_RL table is described in a later chapter.
Set Point Offset	Indexes into A016_SP table.	The one based offset from the first entry in the A016_RL table. The A016_RL table is described in a later chapter.
Set Point Count	0 to 2	The number of A016_SP records which correspond to this group. This entry is used in conjunction with the SP Offset entry to determine the exact range of records in the A016_SP table that this group is to utilize. Possible entries accepted by the C3000/C0300 DPA are from 0 to 2, but the entered value, plus the SP Offset entry, must not exceed the number of records in the A016_SP table.

Chapter 6: Configuring the C3000/C0300 DPA A016SCAN Table

This chapter describes entries the user must provide in the A016SCAN table found in the C3000/C0300 DPA configuration.

The A016SCAN table provides information for scan sections of groups associated with LRUs, which are used by the C3000/C0300 DPA. It contains one record for each scan section configured, for database customization. The fields contained in the table are described in the following table:

Field	Range	Description
Section Type	Echo Master CONITEL Poll Word SOE Poll Word Terminal Status Word Spare MCD Status Data Non-MCD status Data Analog Data Accumulator Data	Used to select the different types of data that can be returned in a scan selection. The first selection of all scan groups must be defined as Echo Master. Spare replies to the master station as all zeros.
Table Offset	Entry is either ignored, or entry is a valid System point, depending on the Section Type.	Echo Master: Section offset entry is ignored. CONITEL Poll Word: Section offset entry is ignored. SOE Poll Word: Section offset entry is ignored. Terminal Status Word: Section offset entry is ignored. Spare: Section offset entry is ignored. MCD Status Data: The Section Offset entry defines the zero based offset from the first entry in the A016_DI table. The A016_DI table is described in a later chapter. Non-MCD status Data: The Section Offset entry defines the zero based offset from the first entry in the A016_DI table. The A016_DI table is described in a later chapter. Analog Data: The Section Offset entry defines the zero based offset from the first entry in the A016_AI table. The A016_AI table is described in a later chapter. Accumulator Data: The Section Offset entry defines the zero based offset from the first entry in the A016_ACC table. The A016_ACC table is described in a later chapter.

Table 7 A016SCAN Table Fields

Chapter 7: Configuring the C3000/C0300 DPA A016_DI Table

This chapter describes entries the user must provide in the A016_DI table found in the C3000/C0300 DPA configuration.

The A016_DI table provides information for system status input points, which are used by the C3000/C0300 DPA. The table contains one record for each system status input point to customize the usage of the point. The fields contained in the table are described in the following table:

Field	Range	Description
DI Point	Any valid system Digital Input point or Undefined (-1).	The system status input point number, which is used as one of the sources for a scan section. The high entry limit is confined to the highest system status input point configured in the system. Entering Undefined (-1) causes the LRU to always return a constant value for this point as it is not mapped to a real system status input point.
Invert	Yes or No	Indicates if the System Status point value should be inverted by the DPA.
SOE Enable	Yes or No	Indicates if the System Status point should be logged in the SOE buffer (SOE enabled) or not (SOE disabled).

Table 8 A016_DI Table Fields

Chapter 8: Configuring the C3000/C0300 DPA A016_AI Table

This chapter describes entries the user must provide in the A016_AI table found in the C3000/C0300 DPA configuration.

The A016_AI table provides information for system analog input points, which are used by the C3000/C0300 DPA. It contains one record for each system analog input point to customize the usage of the point. The fields contained in the table are described in the following table:

Table 9 A016_AI Table Fields

Field	Range	Description
Analog Input Point	Any valid system Analog Input point or Undefined (-1).	The system analog input point number, which is used as the source for a scan section. The high entry limit is confined to the highest system analog input point configured in the system. Entering -1 causes the LRU to always return a zero value for this point, as it is not mapped to a real system analog input point.
Conversion Mode	Bipolar 2's complement Bipolar sign/magnitude Unipolar	The conversion mode specific to the system analog input point associated with this record entry. It can be one of three modes, as follows: Bipolar 2's complement (11 bits + sign) Bipolar sign/magnitude (11 bits + sign) Unipolar (12 bits, no sign)
Range	0 to 5000	The range used in converting the value of the system analog input point associated with this record entry to a C3000/C0300 protocol value via the formula: C3000/C0300 value = (AI value * range / divisor) + offset The typical entry is 2047, the full scale of the C3000/C0300 protocol for a Bipolar analog value.

Field	Range	Description
Divisor	1 to 35000	The divisor used in converting the value of the system analog input point associated with this record entry to a C3000/C0300 protocol value via the formula: C3000/C0300 value = (AI value * range / divisor) + offset The typical entry is 32767, the full-scale value of WIN database.
Offset	-5000 to 5000	The offset used in converting the value of the system analog input point associated with this record entry to a C3000/C0300 protocol value via the formula: C3000/C0300 value = (AI value * range / divisor) + offset The typical entry is 00 for no offset.
Dead Band	1 to 5000	If the C3000/C0300 protocol value of the system analog input point associated with this record entry changes by more than the dead band limit between master scans, the appropriate bit in the CONITEL polling word is set.
Alarm Limit	0 to 5000	If the C3000/C0300 protocol value of the system analog input point associated with this record entry exceeds the range of the alarm limit; the appropriate bit in the CONITEL polling word is set.

Chapter 9: Configuration the C3000/C0300 DPA A016_ACC Table

This chapter describes entries the user must provide in the A016_ACC table found in the C3000/C0300 DPA configuration.

The A016_ACC table provides information for system accumulator input points, which are used by the C3000/C0300 DPA. The table contains one record for each system accumulator input point to customize the usage of the point. The fields contained in the table are described in the following table:

Field	Range	Description
ACC Point	Any valid system Accumulator Input point or Undefined (-1).	The system accumulator input point number, which is used as the source for a scan section. The high entry limit is confined to the highest system accumulator input point configured in the system. Entering -1 causes the LRU to always return a zero value for this point as it is not mapped to a real system accumulator input point.
Type	12 bit Accumulator Upper 12 bits Lower 12 bits	Sets the accumulator to indicate that this record entry is either the top (Upper 12 bits) or bottom part (Lower 12 bits) of a 24 bit accumulator. Setting to 12 bit Accumulator indicates that the whole accumulator is only 12 bits long.
Freeze Enable	Yes or No	No indicates that master requests for accumulator freeze does not cause transfer of running count buffer to frozen count buffer, Yes otherwise.
Freeze-reset Enabled	Yes or No	No indicates that master requests for accumulator freeze with reset does not cause zeroing of the running count buffer, Yes otherwise.
Counting Method	Transition, Pulse	Pulse indicates that pulse counting method is used in providing values to the master station. Transition indicates that transition counting method is used in providing values to the master station. Note that two transitions (changes of state) of the accumulator input point is counted as a pulse.
Counter Source	Frozen buffer, Running buffer	Indicates if the running or frozen buffer is used in providing values to the master station.

Table 10 A016_ACC Table Fields

Chapter 10: Configuring the C3000/C0300 DPA A016_TC Table

This chapter describes entries the user must provide in the A016_TC table found in the C3000/C0300 DPA configuration.

The A016_TC table provides information for Trip/Close control output points, which are used by the C3000/C0300 DPA. The table contains one record for each Trip/Close control output point to customize the usage of the point. The fields contained in the table are described in the following table:

Field	Range	Description
DO Point	Any valid system Digital Output point or Undefined (-1).	The system control output point number, which is used as the destination for a LRU Trip/Close control point. The high entry limit is confined to the highest system control output point configured in the system. Entering Undefined (-1) disables Tripping or Closing of the protocol point corresponding to this record.
Trip Duration	1 to 60000	The amount of time in milli-seconds that the control output contact is to operate for when a Trip is requested for the protocol point corresponding to this record.
Close Duration	1 to 60000	The amount of time in milli-seconds that the control output contact is to operate for when a Close is requested for the protocol point corresponding to this record.
Operation Mode	T/C Latch Pulse	The Trip/Close (T/C) mode of operation uses the Master Trip and Close relays in conjunction with operation of the output relay. The configured Trip and Close durations are used. The control board hardware must be configured to correspond to this mode of operation. The Latch mode of operation latches the output relay on or off. A Trip command from the master latches the point off and a Close command from the master will latch the point on. The configured Trip and Close durations are not used. The control board hardware must be configured to correspond to this mode of operation. The Pulse mode of operation does not use the Master Trip and Close relays in conjunction with operation of the output relay. The configured Trip and Close durations are used. The control board hardware must be configured to correspond to this mode of operation.

Table 11 A016_TC Table Fields

Chapter 11: Configuring the C3000/C0300 DPA A016_RL Table

This chapter describes entries the user must provide in the A016_RL table found in the C3000/C0300 DPA configuration.

The A016_RL table provides information for Raise/Lower control output points, which are used by the C3000/C0300 DPA. The table contains one record for each Raise/Lower control output point to customize the usage of the point. The fields contained in the table are described in the following table:

Table 12 A016_RL Table Fields

Field	Range	Description
Raise DO Point	Any valid system Digital Output point or Undefined (-1).	The system control output point number, which is used as the destination for a Raise DO control point. The high entry limit is confined to the highest system control output point configured in the system. Entering Undefined (-1) disables Raising of the protocol point.
Raise Base Duration	0 to 30000	This is the base duration, in milliseconds, used to operate for when a Raise is requested for the protocol point corresponding to this record, via the formula: pulse duration = (inc. duration * mult.) + base duration where the inc. duration is also configurable and the mult. factor is specified in the master Raise/Lower request.
Raise Inc. Duration	1 to 30000	This is the incremental duration, in milli-seconds, used to specify how long the control output contact is to operate for when a Raise is requested for the protocol point corresponding to this record, via the formula: pulse duration = (inc. duration * mult.) + base duration where the base duration is also configurable and the mult. factor is specified in the master Raise/Lower request.

Field	Range	Description
Lower DO Point	Any valid system Digital Output point or Undefined (-1).	The system control output point number which is used as the destination for a LRU Lower control point. The high entry limit is confined to the highest system control output point configured in the system. Entering Undefined (-1) disables Lowering of the protocol point corresponding to this record.
Lower Base Duration	0 to 30000	This is the base duration, in milli-seconds, used to specify how long the control output contact is to operate for when a Lower is requested for the protocol point corresponding to this record, via the formula: pulse duration = (inc. duration * mult.) + base duration where the inc. duration is also configurable and the mult. factor is specified in the master Raise/Lower request.
Lower Inc. Duration	1 to 30000	This is the incremental duration, in milli-seconds, used to specify how long the control output contact is to operate for when a Lower is requested for the protocol point corresponding to this record, via the formula: pulse duration = (inc. duration * mult.) + base duration where the base duration is also configurable and the mult. factor is specified in the master Raise/Lower request.

NOTE: The Raise/Lower command operates in the Pulse mode. The same relay number may be entered for both the Raise point and the Lower point if desired, but normally two different point relays are used. The C3000/C0300 DPA ensures that the Raise point relay is off before operating the Lower point relay, and vice versa. The WESDAC control board hardware must be configured to correspond to this mode of operation.

Chapter 12: Configuring the C3000/C0300 DPA A016_SP Table

This chapter describes entries the user must provide in the A016_SP table found in the C3000/C0300 DPA configuration.

The A016_SP table provides information for setpoints, which are used by the C3000/C0300 DPA. The table contains one record for each setpoint to customize the usage of the point. The fields contained in the table are described in the following table:

Table 13 A016_SP Table Fields

Field	Range	Description
System point	If System point set to Analog Output: Any valid system Analog Output point or Undefined (-1). If System point set to Digital Output: Any valid system Digital Output point or Undefined (-1).	If System point is set to Analog Output this field is the system analog output point number (zero-based), which is used as the destination for a LRU Setpoint. The high entry limit is confined to the highest system analog output point configured in the system. If options set to Digital Output this field is the point number of the first of twelve contiguous system control output points, which are used as the destination for a LRU Setpoint. The high entry limit is confined to 11 less than the highest system control output point configured in the system.
Options	If System point set to Analog Output: AO: 2's complement AO: sign/magnitude AO: unipolar If System point set to Digital Output: DO: 2's comp. D20 Latch DO: sign/mag D20 Latch DO: unipolar D20 Latch DO: 2's comp. Ext Latch DO: sign/mag. Ext Latch DO: unipolar Ext Latch	Specifies the setpoint output to either Analog Output or Digital Output's output in either 2's complement, sign magnitude, or unipolar format.

Field	Range	Description
Range	0 to 35000	This field is used in conjunction with the Options entry. If the Options entry is set to Digital Output, this field is ignored, else this field is the range used in converting a C3000/C0300 protocol value to the value of the system analog output point associated with this record entry, via the formula: Analog Output value = (C3000/C0300 value * range / divisor) + offset The typical entry is 32767, the full scale value of WIN database.
Divisor	1 to 5000	This field is used in conjunction with the Options entry. If the Options entry is set to DO, this field is ignored, else this field is the divisor used in converting a C3000/C0300 protocol value to the value of the system analog output point associated with this record entry, via the formula: Analog Output value = (C3000/C0300 value * range / divisor) + offset The typical entry is 2047, the full scale of the C3000/C0300 protocol for a Bipolar analog output.
Offset	-30000 to 30000	This field is used in conjunction with the Options entry. If the Options entry is set to AO, this field is the offset used in converting a C3000/C0300 protocol value to the value of the system analog output point associated with this record entry, via the formula: Analog Output value = (C3000/C0300 value * range / divisor) + offset If the Options entry is set to DO, this field is the offset used in converting a C3000/C0300 protocol value to the value of the 12 contiguous system control output points associated with this record entry, via the formula: Digital Output value = C3000/C0300 value + offset The typical entry is 0 for no offset.
DO Operate Time	1 to 1000	If the options for the setpoint record are configured to perform a digital output setpoint via external latching relays, this field is used as the control pulse operation time in milliseconds for latching or de-latching the relays.
DO Delay Time	1 to 1000	If the options for the setpoint record are configured to perform a digital output setpoint via external latching relays, this field is used as the delay time in milliseconds between issuing a de-latch output and a subsequent latch output to the relays.

Appendix A: Error Messages

The C3000/C0300 DPA logs messages to the WESMAINT II Error Log display when run time errors occur. The messages are divided into two categories, the first being fatal error messages and the second being warning messages.

Fatal errors messages are logged when the application is unable to recover from an error condition and must suspend operation. Warning messages are logged when an error is not severe enough to require that the program suspend operation, but functionality of the application may be compromised.

When any of the messages listed in this appendix are logged to the Error Log display, they are prefixed with the C3000/C0300 DPA identifier "A016" or "A016-<y>-<zz> where <y> identifies a C3000/C0300 DPA sub-process and <zz> identifies a specific instance of the sub-process.

The symbol <xx> shown in some of the error messages listed in this appendix represents a variable value. When the error is logged, the <xx> symbol is replaced by an alphanumeric value specific to the occurrence of the error.

Many fatal errors may be remedied by the user as noted in the description of each error. Upon occasion however, it may be necessary to contact the GE Power Systems Customer Service Department in regard to a logged error. In this case the exact text of the message should be reported in order to assure correct diagnosis of the problem.

A.1   Fatal Error Messages

ERR 1000: TERMINATING, PRIMARY CONFIG NOT FOUND

Why:

- The application cannot find its primary configuration information table A016_COM.

Remedy:

- Review the section in this document about configuring the A016_COM table and verify the table has been correctly defined and loaded into memory. NOTE: The A016_COM table may be deleted from memory in order to intentionally disable the application.

ERR 1001: NO A016_COM RECORDS FOUND

Why:

- The application found an A016_COM configuration table in memory, but the table contained no records.

Remedy:

- Ensure that at least one record has been defined and loaded into memory for the A016_COM table.

ERR 1002: NO A016_XRF RECORDS FOUND

Why:

- The application could not find any A016_XRF configuration table records in memory.

Remedy:

- Ensure that at least one record has been defined and loaded into memory for the A016_XRF table.

ERR 1003: NO A016_LRU RECORDS FOUND

Why:

- The application could not find any A016_LRU configuration table records in memory.

Remedy:

- Ensure that at least one record has been defined and loaded into memory for the A016_LRU table.

ERR 1004: NO A016_GRP RECORDS FOUND

Why:

- The application could not find any A016_GRP configuration table records in memory.

Remedy:

- Ensure that at least one record has been defined and loaded into memory for the A016_GRP table.

ERR 1100: WIN OPEN FAIL, ERR= <xx>

Why:

- The application cannot attach to WIN. Remedy:

- Contact the Customer Service Department and report this error.

ERR 1101: CAN'T SPAWN PROCESS

Why:

- The application cannot spawn a required communication port task or LRU task.

Remedy:

- Contact the Customer Service Department and report this error.

ERR 1102: CREATE EXCHANGE FAIL, ERR= <xx>

Why:

- The application cannot create a required internal message exchange.

Remedy:

- Contact the Customer Service Department and report this error.

ERR 1103: CANNOT ALLOCATE RAM

Why:

- The application cannot allocate required RAM memory.

Remedy:

- Increase the amount of RAM available in the system or reduce the RAM requirements of the configured applications. If neither of these remedies is sufficient, contact the Customer Service Department and report the error.

ERR 1104: Error creating message exchange

Why:

- The application was not able to create a message exchange process.

Remedy:

- Contact the Customer Service Department and report the error.

-

ERR 1105: ERROR ATTACHING TO SEMAPHORE

Why:

- The application was not able attach a semaphore to a LRU.

Remedy:

- Contact the Customer Service Department and report the error.

-

ERR 1106: ERROR ATTACHING TO SEMAPHORE

Why:

- The application was not able attach a semaphore to the port data structure.

Remedy:

- Contact the Customer Service Department and report the error.

ERR 1200: PORT TASK, CAN'T OPEN PORT <xx> Why:

- The task for the indicated port can't open the port. Remedy:

- Ensure that the displayed text string represents a valid port for the GE Power Systems product being utilized, and that no other application is configured to use the same port. If the text string is valid and no other application is configured to use the port, contact the Customer Service Department and report the error.

ERR 1201: PORT TASK, CAN'T INIT PORT <xx>

Why:

- The task for the indicated port cannot initialize the communication settings or communication timing for the port after it had been opened successfully.

Remedy:

- Contact the Customer Service Department and report this error.

ERR 1300: LRU TASK WIN OPEN ERR = *<xx>*

Why:

- A LRU task cannot attach to WIN. Remedy:

- Contact the Customer Service Department and report this error.

ERR 1301: LRU TASK REPORT ENABLE FAIL

Why:

- A LRU task cannot enable reporting of binary input events from the WIN subsystem.

Remedy:

- Contact the Customer Service Department and report this error.

ERR 1400: SETPOINT TASK WIN OPEN ERR = *<xx>*

Why:

- The setpoint task cannot attach to WIN. Remedy:

- Contact the Customer Service Department and report this error.

ERR 2000: INVALID BAUD RATE, REC *<xx>*

Why:

- The Baud Rate entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2001: INVALID PRE TX MARK, REC *<xx>*

Why:

- The Pre-TX Mark Chars entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2002: INVALID POST TX SPACE, REC <xx>

Why:

- The Post-TX Space Chars entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2003: INVALID COMM FAIL POINT, REC <xx>

Why:

- The Fail Output entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2004: INVALID COMM FAIL TIME, REC <xx>

Why:

- The Fail Time entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2005: INVALID XRF OFFSET, REC <xx>

Why:

- The XRF Offset entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2006: INVALID LRU COUNT, REC <xx>

Why:

- The LRU Count entry for the indicated A016_COM record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2007: INVALID OFFSET/COUNT, REC <xx>

Why:

- The XRF Offset and LRU Count entries for the indicated A016_COM record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2008: DUPLICATE LRU ADDRESS, REC <xx>

Why:

- The LRU address for the indicated A016_XRF record number is the same as another one for the same communications port. LRU addresses must be unique for all LRUs associated with a communications port.

Remedy:

- Modify and download the configuration with correct entries in the specified configuration record.

ERR 2100: INVALID ADDRESS, REC <xx>

Why:

- The LRU Address entry for the indicated A016_XRF record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2101: INVALID OFFSET, REC <xx>

Why:

- The LRU Offset entry for the indicated A016_XRF record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2200: INVALID LOCAL/REMOTE POINT, REC <xx>

Why:

- The Local/Remote entry for the indicated **A016_LRU** record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2201: INVALID LOCAL STATE, REC <xx>

Why:

- The Local State entry for the indicated A016_LRU record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2202: INVALID FREEZE POINT, REC <xx>

Why:

- The Freeze Output entry for the indicated A016_LRU record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2203: INVALID FREEZE DURATION, REC <xx>

Why:

- The Freeze Duration entry for the indicated A016_LRU record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2204: INVALID T/C TIMEOUT, REC <xx>

Why:

- The T/C Timeout entry for the indicated A016_LRU record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2206: INVALID GROUP OFFSET, REC <xx>

Why:

- The LRU Group Offset entry for the indicated **A016_LRU** record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2207: INVALID GROUP COUNT, REC <xx>

Why:

- The LRU Group Count entry for the indicated **A016_LRU** record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2208: INVALID GROUP OFFSET/COUNT, REC <xx>

Why:

- The LRU Group Offset and LRU Group Count entries for the indicated A016_LRU record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2300: INVALID GROUP NUMBER, REC <xx>

Why:

- The Group No entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2301: INVALID SCAN COUNT, REC <xx>

Why:

- The Scan Count entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2302: INVALID SCAN OFFSET, REC <xx>

Why:

- The Scan Offset entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2303: INVALID SCAN OFFSET/COUNT, REC <xx>

Why:

- The Scan Offset and Scan Count entries for the indicated A016_GRP record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2304: INVALID T/C COUNT, REC <xx>

Why:

- The T/C Count entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2305: INVALID T/C OFFSET, REC <xx>

Why:

- The T/C Offset entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2306: INVALID T/C OFFSET/COUNT, REC *<xx>*

Why:

- The T/C Offset and T/C Count entries for the indicated A016_GRP record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2307: INVALID R/L COUNT, REC *<xx>*

Why:

- The R/L Count entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2308: INVALID R/L OFFSET, REC *<xx>*

Why:

- The R/L Offset entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2309: INVALID R/L OFFSET/COUNT, REC *<xx>*

Why:

- The R/L Offset and R/L Count entries for the indicated A016_GRP record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2310: INVALID S/P COUNT, REC <xx>

Why:

- The SP Count entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2311: INVALID S/P OFFSET, REC <xx>

Why:

- The SP Offset entry for the indicated A016_GRP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2312: INVALID S/P OFFSET/COUNT, REC <xx>

Why:

- The SP Offset and SP Count entries for the indicated A016_GRP record number, in combination, are not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2313: SECTION 1 NOT MASTER ECHO, REC <xx>

Why:

- The first A016SCAN section mapped in the indicated A016_GRP record number is not defined as a master echo type.

Remedy:

- Modify and re-download the configuration with correct entries in the specified configuration record.

ERR 2314: INVALID SOE GROUP METHOD REC *<xx>*

Why:

- The A016_GRP table has an invalid SOE group method. This may be caused by the corruption of the configuration table.

- Remedy:

- Rebuild and re-download the configuration. If the problem persists contact customer service.

ERR 2400: INVALID SECTION TYPE, REC *<xx>*

Why:

- The Section Type entry for the indicated A016SCAN record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2401: INVALID TABLE OFFSET, REC *<xx>*

Why:

- The Section Offset entry for the indicated A016SCAN record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2500: INVALID POINT, REC *<xx>*

Why:

- The DI Point Number entry for the indicated A016_DI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2501: INVALID OPTIONS, REC <xx>

Why:

- The DI Point Options entry for the indicated A016_DI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2600: INVALID POINT, REC <xx>

Why:

- The AI Point Number entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2601: INVALID MODE, REC <xx>

Why:

- The Conversion Mode entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2602: INVALID RANGE, REC <xx>

Why:

- The Range entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2603: INVALID DIVISOR, REC <xx>

Why:

- The Divisor entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2604: INVALID OFFSET, REC <xx>

Why:

- The Offset entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2605: INVALID DEADBAND, REC <xx>

Why:

- The Dead Band entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2606: INVALID LIMIT, REC <xx>

Why:

- The Alarm Limit entry for the indicated A016_AI record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2700: INVALID POINT, REC <xx>

Why:

- The AC Point Number entry for the indicated A016_ACC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2701: INVALID OPTIONS, REC <xx>

Why:

- The AC Point Options entry for the indicated A016_ACC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2800: INVALID POINT NUMBER, REC <xx>

Why:

- The T/C Point Number entry for the indicated A016_TC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2801: INVALID TRIP DURATION, REC <xx>

Why:

- The Trip Duration entry for the indicated A016_TC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2802: INVALID CLOSE DURATION, REC <xx>

Why:

- The Close Duration entry for the indicated A016_TC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2803: INVALID OPERATION MODE, REC <xx>

Why:

- The Operation Mode entry for the indicated A016_TC record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2900: INVALID RAISE POINT, REC <xx>

Why:

- The Raise Point Number entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2901: INVALID RAISE BASE DURATION, REC <xx>

Why:

- The Raise Base Duration entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2902: INVALID RAISE INC DURATION, REC <xx>

Why:

- The Raise Inc. Duration entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2903: INVALID LOWER POINT, REC <xx>

Why:

- The Lower Point Number entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2904: INVALID LOWER BASE DURATION, REC <xx>

Why:

- The Lower Base Duration entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 2905: INVALID LOWER INC DURATION, REC <xx>

Why:

- The Lower Inc. Duration entry for the indicated A016_RL record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3000: INVALID POINT NUMBER, REC <xx>

Why:

- The Setpoint Number entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3001: INVALID OPTIONS, REC <xx>

Why:

- The Setpoint Options entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3002: INVALID RANGE, REC <xx>

Why:

- The Range entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3003: INVALID DIVISOR, REC <xx>

Why:

- The Divisor entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3004: INVALID OFFSET, REC <xx>

Why:

- The Offset entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3005: INVALID OPERATE TIME, REC <xx>

Why:

- The Operate Time entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

ERR 3006: INVALID DELAY TIME, REC <xx>

Why:

- The Delay Time entry for the indicated A016_SP record number is not within the valid entry range described earlier in this document.

Remedy:

- Modify and re-download the configuration with a correct entry in the specified configuration record.

A.2   Warning Messages

The following warning messages are caused by errors within WIN, pSOS, or other function calls within the application. If you encounter one of these messages, note the exact text of the displayed message and contact the GE Power Systems Customer Service Department to report the problem.

- *WARNING, WIN DPA CLOSE FAILED, STATUS = \<xx\>*

- *WARNING, DPA READY COMMAND FAILED*

- *WARNING, CAN'T ENABLE RX ON PORT \<xx\>, ERR = \<xx\>*

- *WARNING, SIO_CN_RX_HIT ERR = \<xx\>*

- *WARNING, CAN'T DISABLE RX ON PORT \<xx\>, ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, PORT \<xx\> TX WRITE ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, PORT \<xx\>, CAN'T CHANGE RTS OFF DELAY*

- *WARNING, RUN TIME ERROR, SEND_X, ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, WIN WRITE, ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, RX'D NACK FOR CONTROL REQUEST*

- *WARNING, RUN TIME ERROR, RX'D NACK FOR ACCUM REQUEST*

- *WARNING, RUN TIME ERROR, SIGNAL_V, ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, CANNOT ALLOCATE RAM*

- *WARNING, RUN TIME ERROR, SET TX DELAY, ERR = \<xx\>*

- *WARNING, RUN TIME ERROR, GET RX TIME, ERR = \<xx\>*

- *WARNING, UNABLE TO RESET SYSTEM*

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