GATEWAY 16000

16000 Series I/O
and
Modicon® S908 Remote I/O
To Profibus DP
Gateway

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Acknowledgements

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Introduction

Application

GATEWAY 16000 provides a cost effective method of migrating 16000 Series I/O and Modicon® Quantum and 800 Series Remote I/O (RIO) onto a Profibus-enabled Distributed Control System (DCS). The GATEWAY 16000 can also be used to add Modicon® S908 RIO to an existing DCS via Profibus-DP.

The GATEWAY 16000 transparently translates the 16000 I/O and S908 protocols to Profibus-DP by appearing as multiple Profibus slaves to the Control System controller. By translating both these protocols to Profibus, all existing D/3 I/O hardware and associated field wiring remain intact, resulting in a significant cost and time savings. The GATEWAY 16000 allows hardware installation and transition time to be reduced from weeks to a matter of hours.

Features

- Supports up to 16 16000 Series I/O Multiplexers
- Supports full S908 network of 32 drops.
- 16000 Series I/O, Modicon® Quantum and 800 Series remote I/O are supported on the same GATEWAY 16000.
- Connects to any DCS with Profibus-DP connectivity
- The GATEWAY 16000 is completely configured via the standard Profibus configuration utilities supplied with the Control System. No offline configuration of the GATEWAY 16000 is required.
- Retains all I/O diagnostic functionality
- Rack mounts in existing D/3 cabinetry
- Auto ranging AC input power
- Redundancy is supported with single or dual Profibus-DP segments

Table of Acronyms

The following acronyms are used throughout this document:

GSD	German acronym roughly translated to Device Specification
PCT	Process Computer Technology, Inc.
RIO	Remote I/O. In this document, RIO refers specifically to the Modicon® Quantum and 800 Series hardware and network cabling.

Table 1 Acronyms

Specifications

Maximum Power Requirements

120 VAC 60HZ	240 VAC 50HZ
0.5 Amps	0.25 Amps

Table 2 Maximum Power Requirements

Dimensions

The dimensions of the GATEWAY 16000 chassis are 17” (Width) x 6” (height) x 13.5” (depth).

Mounting

The GATEWAY 16000 chassis mounts in a standard 19” rack.

Overview

About PCT

Process Computer Technology (PCT) is an innovative dynamic company serving the process control industry. PCT has been providing engineered solutions for Industrial Automation and Process Control for ten years.

The GATEWAY 16000, gateway for connecting 16000 Series I/O and Modicon® Remote I/O to Profibus enabled control systems, is the result of a convergence between two PCT core competencies: PLC systems integration and upgrade hardware development for the D/3 DCS®. Many D/3 DCS® systems have both 16000 Series I/O and Modicon® Remote I/O installed.

After successfully developing the GATEWAY 16000 for connecting the D/3 DCS® 16000 I/O to any Profibus enabled control system, PCT hardware and software designers added support for the Modicon® Remote I/O. This added option results in PCT being able to offer a total D/3 I/O migration strategy.

PCT was incorporated in 1992 to provide products and services for Factory Automation and Process Control. We specialize in programmable logic controller (PLC) systems integration, D/3 DCS® third party hardware upgrades and Profibus solutions for open control systems.

- For more information about PCT's products and services, refer to the web site at www.pct-inc.com.

Profibus-DP

Profibus is a defacto industry-standard remote I/O network supported by most major Control System vendors. Profibus–DP is specifically optimized to support large volumes of high-speed remote I/O on a single network.

Profibus supports I/O equipment from several vendors in a very structured and standardized manner. All Profibus device vendors must supply information on the characteristics of their device via a GSD file. This GSD file (German acronym for Device Specification) contains information used by the control system to present vendor-specific configuration options to the user for new equipment in a consistent manner.

Profibus devices are addressed by means of Slave ID (0-125) and offset. Most control systems present the addressing to the user by means of slave, module, offset or channel. Each Profibus slave can be configured with up to 244 bytes of input data and up to 244 bytes of output data. Some control systems and configurations may limit the maximum amount of data a slave can handle.

Process Computer Technology, Inc (PCT) is a member of the Profibus Trade Organization (PTO). For more information on Profibus and the PTO, refer to the PTO web site at www.profibus.com.

16000 Series I/O

16000 Series I/O is the original native I/O to the D/3 DCS. The I/O Multiplexer Unit, which houses the I/O, has redundant backplanes that provide independent paths to the I/O for each Processor Control Module (PCM) in a redundant PCM pair.

16000 Series I/O addressing is based upon MUX Number (0-15), Slot Number (0-15) and Point Number (0-15). The GATEWAY 16000 transparently translates between the Profibus Slave/Module/Channel addressing and the 16000 Series I/O MUX/Slot/Point addressing. All module diagnostics are translated to standard or vendor-specific Profibus diagnostics for presentation via the control system's diagnostic reporting mechanisms. Each 16000 Series I/O MUX can be configured as 1-16 Profibus Slaves with up to 244 bytes of input data and up to 244 bytes of output data per slave.

Modicon® S908 RIO Network

S908 is a Remote I/O (RIO) network by Schneider Automation, Inc.'s Modicon® unit. The network and protocol are optimized for the Modicon® RIO hardware and processors. S908 supports, among others, remote I/O hardware from the Modicon® Quantum and 800 Series. Modicon® Quantum and 800 Series RIO hardware can be mixed on the same network. Both redundant (dual cable) and non-redundant (single cable) configurations are supported.

S908 addressing is based upon Drop Number (1-32), Rack Number (1-5), Slot Number (1-16) and Point Number. The GATEWAY 16000 transparently translates between the Profibus Slave/Module/Channel addressing and the S908 Drop/Rack/Slot/Point addressing. All module diagnostics are translated to standard or vendor-specific Profibus diagnostics for presentation via the control system's diagnostic reporting mechanisms. Each S908 drop can be configured with up to 128 bytes of input data and up to 128 bytes of output data.

For more information regarding the S908 network, Quantum RIO hardware or 800 Series RIO hardware, refer to the Modicon® web site at www.modicon.com.

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GATEWAY 16000 Functional Overview

The GATEWAY 16000 appears as several slaves on the Profibus network. It creates one Profibus "Management Slave" and multiple Profibus I/O slaves. The Management Slave is used to configure and control the GATEWAY 16000 as a unit. The Profibus I/O slaves communicate with the 16000 Series I/O, Modicon® Quantum or 800 Series RIO hardware.

The GATEWAY 16000 Profibus "Management Slave" configures the GATEWAY 16000 unit as a whole. By adding and configuring virtual modules into the management slave, the GATEWAY 16000 is directed to create Profibus I/O slaves to map to 16000 Series I/O and Modicon® Quantum and/or 800 Series RIO hardware. This management slave does not correspond to any physical I/O hardware external to the GATEWAY 16000.

The GATEWAY 16000 creates multiple Profibus I/O slaves, 1-16 slaves for each 16000 Series I/O Multiplexer and one Profibus slave for each Modicon® Quantum and/or 800 Series RIO rack. For each 16000 Series I/O MUX a Profibus I/O slave can be created for a single module in the MUX or for multiple contiguous modules in the same MUX, up to a maximum of 16 I/O slaves per MUX. For each RIO rack, the GATEWAY 16000 creates one Profibus I/O slave. Each module in the RIO rack is configured as a module in the Profibus slave on the control system. Different Profibus slave types are used for 16000 Series I/O, Modicon® Quantum and 800 Series RIO racks. Output data is received from the Profibus network, translated and presented to the 16000 Series I/O and Modicon® S908 RIO network. Input data and status are received from the 16000 Series I/O and Modicon® S908 RIO network, translated and presented to the control system via Profibus. This translation is completely transparent to the control system and the configured I/O.

Configuration

General

All configuration of the GATEWAY 16000, 16000 Series I/O, and RIO modules is performed via the Profibus slave configuration utilities supplied by the control system vendor. No additional utilities are required. This configuration capability is facilitated by device-specific Profibus GSD files supplied by PCT. These files are loaded in accordance with the control system's instructions. Four English language GSD files, corresponding to each Profibus slave type, are supplied with the GATEWAY 16000: GATEWAY 16000 Management Slave (PCT_06d6.GSD), GATEWAY 16000 Series I/O Slave (PCT_06d7.GSD), GATEWAY 16000 Quantum I/O Slave (PCT_06d8.GSD) and GATEWAY 16000 Modicon® 800 Series I/O Slave (PCT_06d9.GSD).

Configuration Sequence

The general steps involved in configuring the control system for use with GATEWAY 16000 are as follows:

1. Install the GSD files on the control system. This is done in accordance with the control system's procedures and varies by system. Note that this step is required to be completed before any GATEWAY 16000 units can be configured. Regardless of the number of GATEWAY 16000 units installed, this step is only performed once for the control system.
2. Create Management Slave. This Management slave is the central management unit for each GATEWAY 16000 and must be created first. The Profibus slave ID of the management slave must be set to an unused Profibus address on the segment and must match the ID set on the thumbwheel switch on the GATEWAY 16000 unit shown in Figure 2 GATEWAY 16000 Front Panel.
3. Configure the 16000 I/O and S908 Interface Modules in the Management Slave. These modules are required to be the first modules in the Management slave. These modules define parameters that refer to the 16000 Series I/O and S908 RIO network as a whole.
4. For each 16000 Series I/O slave to be configured create and configure a Slave I/O module into the Management slave. This module directs the GATEWAY 16000 unit to create a Profibus slave and maps it to the appropriate 16000 Series I/O Hardware.
5. Configure appropriate 16000 I/O Profibus slaves to each corresponding 16000 I/O Slave Module in the Management Slave.
6. Configure required I/O modules in the 16000 I/O Profibus slave.
7. Repeat steps 4-6 for each 16000 Slave I/O Module.
8. For each RIO rack to be configured create and configure a Slave I/O module into the Management slave. This module directs the GATEWAY 16000 unit to create a Profibus slave and maps it to the appropriate S908 RIO Hardware.

9. For each RIO rack to be configured create and configure a Profibus slave of the corresponding type (Quantum or 800 Series).
10. Create and configure I/O modules in the Profibus I/O slave.
11. Repeat steps 8-10 for each RIO rack connected to the GATEWAY 16000 unit
12. Repeat steps 2-11 for each GATEWAY 16000 unit to be connected to the control system.

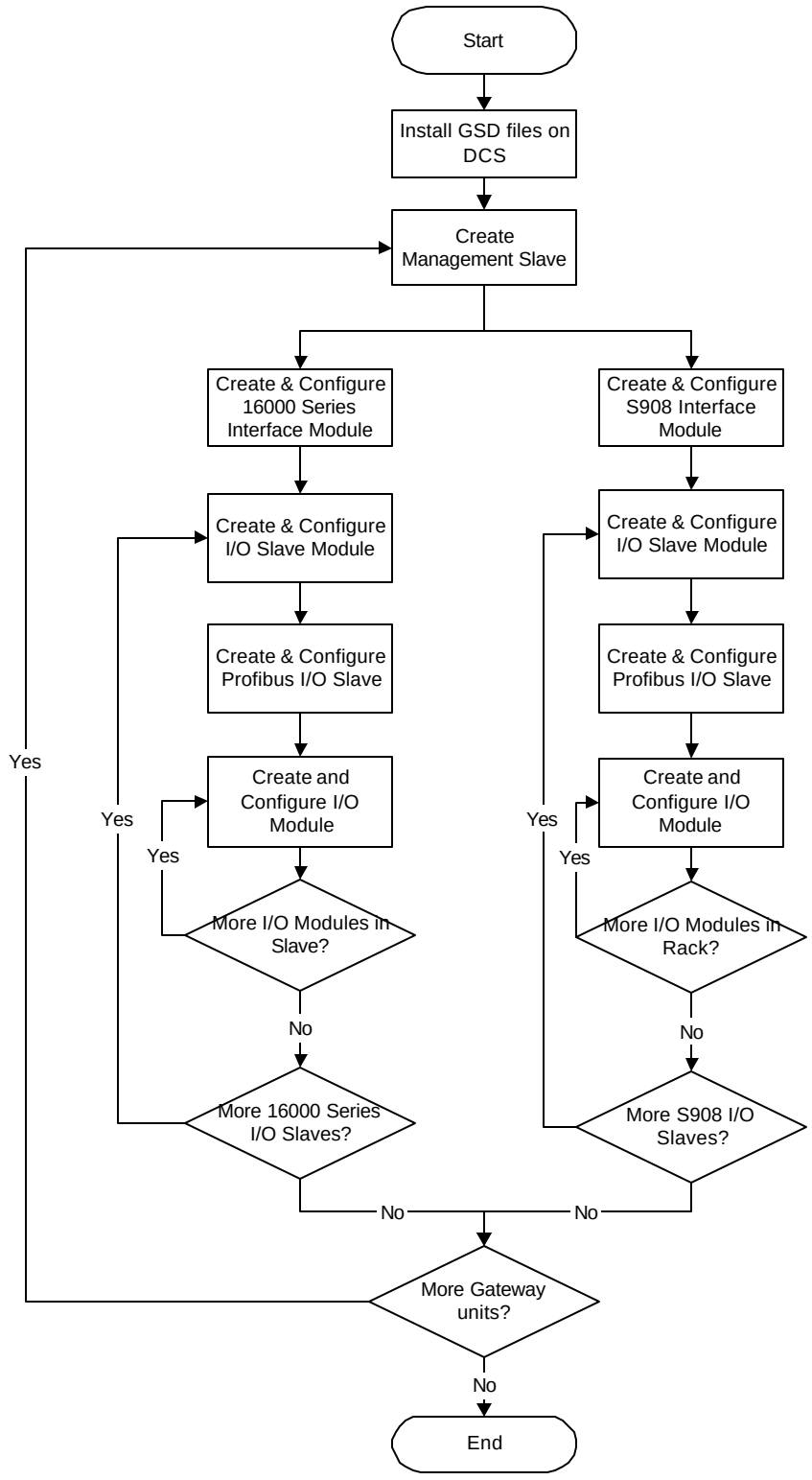

Figure 1 General GATEWAY 16000 Configuration Steps

GATEWAY 16000 Management Slave

General

When initially configuring a GATEWAY 16000, the Profibus Management Slave for the unit is created and configured first in the control system. The address assigned to the Management Slave in the control system is also set on the thumbwheel switches on the actual unit. Once the slave is created, a "16000 I/O Interface Module" and an "S908 Interface Module" are configured as the first modules in the Management Slave. For each 16000 I/O slave a "16000 I/O Slave Module" is configured into the Management Slave. For each Quantum RIO rack, a "S908 Quantum I/O Slave Module" is configured into the Management Slave. For each Modicon® 800 Series RIO rack, an "S908 800 Series I/O Slave Module" is configured into the Management Slave. A "System Monitoring Module" can optionally be configured into the Management Slave to retrieve GATEWAY 16000 internal statistics.

16000 I/O Interface Module

The "16000 I/O Interface Module" is configured into the Management Slave for each GATEWAY 16000. This module directs the GATEWAY 16000 to configure the 16000 I/O interface for communicating with the 16000 Series I/O. Each MUX type and Power Supply monitoring configurations are set as parameters to this module.

S908 Interface Module

The "S908 Interface Module" is configured into the Management Slave for each GATEWAY 16000. This module directs the GATEWAY 16000 to configure the S908 interface for communicating with the S908 RIO network. Any network-wide parameters are set on this module.

16000 I/O Slave Module

Each 16000 I/O Slave to be scanned by the GATEWAY 16000 must have a corresponding "16000 I/O Slave Module" configured into the Management Slave. The parameters to this module determine the mapping between Profibus (Slave Address) and 16000 Series I/O (MUX Number, Slot Number) addressing. In addition, the fail over priority is set for the slave. By configuring this module into the Management Slave, the GATEWAY 16000 creates a Profibus slave of the appropriate type and maps it to the corresponding 16000 Series I/O hardware.

Quantum I/O Slave Module

Each Quantum RIO rack to be scanned by the GATEWAY 16000 must have a corresponding “S908 Quantum I/O Slave Module” configured into the Management Slave. The parameters to this module determine the mapping between Profibus (Slave Address) and S908 (Drop Number, Rack Number) addressing. In addition, the fail over priority is set for the slave. By configuring this module into the Management Slave, the GATEWAY 16000 creates a Profibus slave of the appropriate type and maps it to the corresponding Quantum RIO hardware.

Modicon® 800 Series I/O Slave Module

Each Modicon® 800 Series RIO rack to be scanned by the GATEWAY 16000 must have a corresponding “S908 800 Series I/O Slave Module” configured into the Management Slave. The parameters to this module determine the mapping between Profibus (Slave Address) and S908 (Drop Number, Rack Number) addressing. In addition, the fail over priority is set for the slave. By configuring this module into the Management Slave, the GATEWAY 16000 creates a Profibus slave of the appropriate type and maps it to the corresponding Modicon® 800 Series RIO hardware.

GATEWAY 16000 16000 Series I/O Slave

General

Configuring a “16000 I/O Slave Module” into the Management Slave directs the GATEWAY 16000 to create a Profibus slave and map it to the corresponding 16000 Series I/O hardware. The actual Profibus I/O slave must then be created and configured into the control system. Each 16000 Series I/O Profibus slave can contain 1 module, or multiple contiguous modules, up to 16 modules without exceeding 244 bytes of input and 244 bytes of output data.

EXAMPLE:	16000 I/O MUX	SLOT(s)	Profibus I/O Slave
	0	0-3	10
	0	4	11
	0	5-13	12
	0	14-15	13
	1	0-15	14

Each module’s configuration parameters are then set.

Supported Modules

The list of supported 16000 Series I/O modules is shown below. Additional module support may be added in the future. Contact PCT directly for information regarding new module support or to request support for new modules.

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Module Number	Function
A16420	16 Point Discrete Input Module
A16430	16 Point Discrete Output Module
A16435	8 Channel 4-20 ma Analog Output Module
A16450	Single Channel 4-20ma Analog Output Module
A16451	Single Channel 4-20ma Analog Output Module
A16460	16 Channel Analog Input Module (Voltage Input)
A16460	16 Channel Analog Input Module (4-20 ma Input)
A16460	16 Channel Analog Input Module (RTD Input)
A16460	16 Channel Analog Input Module (Thermocouple Input)
PCT435	16 Channel 4-20 ma Analog Output Module

Table 3 Supported 16000 Series Modules

GATEWAY 16000 Quantum I/O Slave

General

Configuring a "S908 Quantum I/O Slave Module" into the Management Slave directs the GATEWAY 16000 to create a Profibus slave and map it to the corresponding Quantum RIO hardware. The actual Profibus I/O slave must then be created and configured into the control system. For each Quantum RIO rack, a Profibus Quantum I/O Slave must be created and configured in the control system. Once the slave has been created, the slave parameters (Drop Holdup Time) are set. Each module in the rack, starting in slot 1, is inserted and configured. Each module's configuration parameters are then set.

Supported Quantum Modules

The list of supported Quantum RIO modules is shown below. Additional module support may be added in the future. Contact PCT directly for information regarding new module support or to request support for new modules.

Module Number	Function
140-CRA-931-00	Remote I/O Drop Module (Non-redundant applications only)
140-CRA-931-01	Remote I/O Drop Module
140-CRA-932-00	Dual-channel Remote I/O Drop Module
140-DAI-340-00	Discrete 16 Channel Input, AC 24V, 2x8
140-DAI-353-00	Discrete 32 Channel Input, AC 24V, 4x8
140-DAI-440-00	Discrete 16 Channel Input, AC 48V, 2x8
140-DAI-453-00	Discrete 32 Channel Input, AC 48V, 4x8
140-DAI-540-00	Discrete 16 Channel Input, AC 115V, 16x1
140-DAI-543-00	Discrete 16 Channel Input, AC 115V, 2x8
140-DAI-553-00	Discrete 32 Channel Input, AC 115V, 4x8
140-DAI-740-00	Discrete 16 Channel Input, AC 230V, 16x1
140-DAO-840-00	Discrete 16 Channel Output, AC 24-230V, 16x1
140-DAO-842-10	Discrete 16 Channel Output, AC 100-230V, 4x4
140-DAO-842-20	Discrete 16 Channel Output, AC 24-48V, 4x4
140-DAM-590-00	Discrete 16 Channel Input, 8 Channel Output, AC 115V
140-DDI-153-10	Discrete 32 Channel Input, DC 5V, 4x8
140-DDI-353-00	Discrete 32 Channel Input, DC 24V, 4x8
140-DDI-841-00	Discrete 16 Channel Input, DC 10-60V, 8x2
140-DDI-853-00	Discrete 32 Channel Input, DC 10-60V, 4x8
140-DDO-153-00	Discrete 32 Channel Output, DC 5V, 4x8
140-DDO-353-00	Discrete 32 Channel Output, DC 24V, 4x8
140-DDO-843-00	Discrete 16 Channel Output, DC 10-60V, 2x8
140-DDM-390-00	Discrete 16 Channel Input, 8 Channel Output, DC 24V
140-DRA-840-00	Discrete 16 Channel Output, Relay Output (NO)
140-DRC-830-00	Discrete 8 Channel Output, Relay Output (NO/NC)
140-ACI-030-00	Analog 8 Channel Input, Unipolar
140-AVI-030-00	Analog 8 Channel Input, Bipolar

Module Number	Function
140-ACO-020-00	Analog 4 Channel Output, Current
140-AVO-020-00	Analog 4 Channel Output, Voltage
140-ATI-030-00	Analog 8 Channel Thermocouple Input
▪ 140-ARI-030-00	Analog 8 Channel RTD Input
140-AMM-090-00	Analog 4 Channel Input, 2 Channel Output
140-CPS-124-xx	8A Redundant Power supply
140-CPS-114-xx	10A Power supply
140-CPS-111-xx	3A Power supply

Table 4 Supportet Quantum I/O Modules

GATEWAY 16000 Modicon® 800 Series I/O Slaves

General

Configuring a "S908 800 Series I/O Slave Module" into the Management Slave directs the GATEWAY 16000 to create a Profibus slave and map it to the corresponding Modicon® 800 Series RIO hardware. The actual Profibus I/O slave must then be created and configured into the control system. For each Modicon® 800 Series RIO rack, a Profibus S908 800 Series I/O Slave must be created and configured in the control system. Once the slave has been created, the slave parameters (Drop Holdup Time) are set. Each module in the rack, starting in slot 1, is inserted and configured. Each module's configuration parameters are then set.

Supported Modicon 800 Series I/O Modules

Module Number	Function
B802	8 Channel Discrete Output
B803	8 Channel Discrete Input Module
B804	16 Channel Discrete Output Module
B805	16 Channel Discrete Input Module
B806	32 Channel Discrete Output Module
B807	32 Channel Discrete Input Module
B808	16 Channel Discrete Output Module
B809	16 Channel Discrete Input Module
B810	8 Channel Discrete Output Module
B814	8 Channel Discrete Output Module
B816	16 Channel Discrete Output Module
B817	16 Channel Discrete Input Module
B818	32 Channel Discrete Output Module
B819	32 Channel Discrete Input Module
B820	8 Channel Discrete Output Module
B821	8 Channel Discrete Input Module
B824	16 Channel Discrete Output Module

Module Number	Function
B825	16 Channel Discrete Input Module
B826	32 Channel Discrete Output Module
B827	32 Channel Discrete Input Module
B828	16 Channel Discrete Output Module
B829	16Channel Discrete Input Module
B832	16 Channel Discrete Output Module
B833	16 Channel Discrete Input Module
B834	8 Channel Discrete Output Module
B835	8 Channel Discrete Input Module
B836	16 Channel Discrete Output Module
B837	16 Channel Discrete Input Module
B838	32 Channel Discrete Output Module
B840	8 Channel Discrete Output Module
B842	8 Channel Discrete Output Module
B846	16 Register I/O Module
B849	16 Channel Discrete Input Module
B853	16 Channel Discrete Input Module
B855	16 Channel Discrete Input Module
B872	4 Channel Analog Output Module
B873	4 Channel Analog Input Module
B875	8 Channel Analog Input Module
B877	6 Channel Analog Input Module
B881	1 Input, 1 Output Register I/O Module
B882	2 Input, 2 Output Register I/O Module
B883	3 Input, 3 Output Register I/O Module
B884	4 Input, 4 Output Register I/O Module
B885	6 Input, 6 Output Register I/O Module
B886	8 Input, 8 Output Register I/O Module
B887	12 Input, 12 Output Register I/O Module
B888	16 Input, 16 Output Register I/O Module
B883-200	10-channel Thermocouple input module. This module is currently supported only as an 883 Register I/O Module. Advanced module-specific support is planned in a future release.
P810	Power Supply Module
J890	S908 RIO communication Module

Table 5 Supported Modicon 800 Series I/O Modules

GATEWAY 16000 Operation

Startup

During startup, the GATEWAY 16000 performs the following:

1. The GATEWAY 16000 unit performs self tests on the CPU, RAM, Profibus interface, 16000 Series I/O interface, and S908 interface. If any of these self-tests fail, the unit will not go online.
2. The 16000 I/O and S908 RIO configuration and mappings to Profibus are downloaded from the control system via Profibus. This step eliminates all off-line configuration for the GATEWAY 16000.
3. Once the complete configuration is downloaded, the GATEWAY 16000 starts Profibus communications with the host. The GATEWAY 16000 will not start scanning the 16000 I/O or RIO hardware until good output data has been received and verified. During this state, the GATEWAY 16000 will perform a "Keep Alive" function to 16000 I/O and communicate with the RIO network in "standby" mode to ensure network integrity.
4. Once all output data has been received, the GATEWAY 16000 starts normal I/O scanning.

Profibus Diagnostics

All 16000 I/O and S908 module diagnostics are either handled internally by the GATEWAY 16000 or are translated into standard or vendor-specific Profibus diagnostics for presentation to the use via the standard control system mechanisms. Diagnostic capabilities vary by family and module type within the family. For more information on diagnostics for a particular module, refer to the documentation supplied with the module.

Indicators, Switches and Connectors

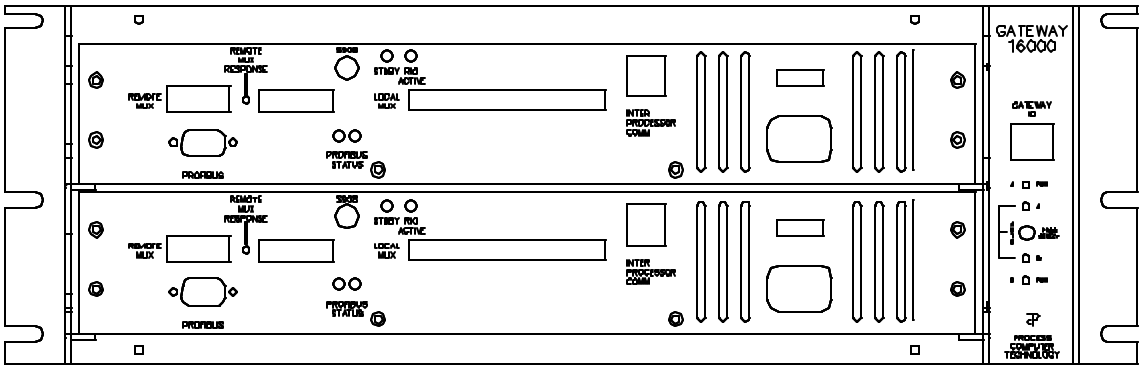

Figure 2 GATEWAY 16000 Front Panel

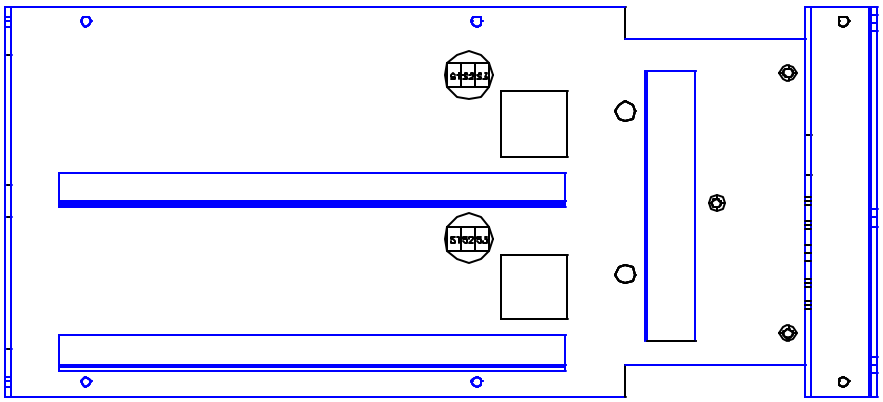

Figure 3 GATEWAY 16000 Side Panel

Profibus Interface Indicators

The two indicator LEDs to the right of the Profibus connector (Fig. 2) are indicators for the Profibus interface are as follows:

▪ Upper LED	▪ I c V e	▪ Description

▪ Green	▪	▪ Normal operation, communicating with host for all slaves.
▪ Orange	▪	▪ Normal internal operation. Not communicating with Host(s) on one or more slaves. This is also normal operation for standby unit in single Profibus cabling configuration.
▪ Red	▪	▪ The GATEWAY 16000 unit is starting.
▪ Green/ Red Flickering	▪	▪ The GATEWAY 16000 unit is initializing and synchronizing with the host.

Table 5 Profibus Interface Indicators

S908 Interface Indicators

The two indicator LEDs to the right of the S908 network connector (Fig. 2) are indicators for the S908 interface are as follows:

▪ Standby LED	▪ Remote I/O Activity LED	▪ Description
▪ Off	▪ Off	▪ The GATEWAY 16000 is starting or has failed.
▪ Green	▪ Off	▪ The GATEWAY 16000 is initializing configuration information. No scanning of S908 I/O is taking place.

▪ Standby LED	▪ Remote I/O Activity LED	▪ Description
▪ Green	▪ Red (Dim/Flickering)	▪ The GATEWAY 16000 unit is operating in Standby mode for scanning S908 I/O. This indication is also given when unit has initially configured and is performing consistency checks before scanning I/O.
▪ Off	▪ Red (Dim/Flickering)	▪ The GATEWAY 16000 unit is functioning normally in S908 Primary mode.

Table 6 S908 Interface Indicators

General Indicators

The general indicators shown in **Error! Reference source not found.** are as follows:

- A RUN: When illuminated, indicates the A (upper) GATEWAY 16000 is in running mode.
- B RUN: When illuminated, indicates the B (lower) GATEWAY 16000 is in running mode.
- A: When illuminated indicates A side GATEWAY 16000 is selected Primary.
- B: When illuminated indicates A side GATEWAY 16000 is selected Primary.
- Remote MUX Response: With Remote 16000 I/O Multiplexer(s) connected to the GATEWAY 16000 via the REMOTE MUX Fiber Optic cable, this led is illuminated if the selected Remote Multiplexer is responding to commands issued to it by the GATEWAY 16000.
- A/AUTO/B Processor Select Locking Toggle Switch: AUTO – In this position an automatic "failover" to the backup (non-selected) side will occur, if the backup is in RUN mode, in the event of a watchdog timeout or a power failure in the Primary (selected) side. A – This position forces the A side to be Primary (selected) and all I/O scanning ceases in the Backup (non-selected) side.
  B – This position forces the B side to be Primary (selected) and all I/O scanning ceases in the Backup (non-selected) side.

Setup Switches

- Gateway ID: This thumbwheel switch sets the Profibus Slave ID for the Management slave in the GATEWAY 16000 unit.
- S1 and S2 (Fig. 3) select the Profibus Baud Rate:
  - **Off = Down**

Baud Rate	S1	S2
500KB	On	On
1.5MB	Off	On
6MB	On	Off
12MB	Off	Off

S3 (Fig.3): When Off (Up) selects Simplex Profibus – A single Profibus is connected to both A and B sides of the GATEWAY 16000. When On (Down) selects Duplex Profibus – A separate cable is connected to each side of the GATEWAY 16000 from separate Profibus Master interfaces.

Connectors

Refer to Figure 2 for location of the connectors described below.

- Profibus: The Profibus cable from the Control System Host connects to this connector. For redundant Simplex installations, a single Profibus cable connects to both sides of the GATEWAY 16000 and to a single Profibus interface in the control system. For redundant Duplex configurations, each side of the GATEWAY 16000 is connected to a separate Profibus cable to separate Profibus interfaces in the control system host. Care must be taken to ensure that the "A" side Profibus cable is connected to the "A" side GATEWAY 16000. Refer to Figure 4, Figure 5 and Figure 6 for typical cabling and installation options.
- S908 Cable: The S908 RIO cable connects to this connector and to the drop modules in each Quantum and 800 Series drop.
- LOCAL MUX: 50-conductor ribbon cable to local 16000 Series I/O Multiplexer's MIO module. Multiplexer's MIO1 cable connects to LOCAL MUX header in A side GATEWAY 16000. MIO2 cable connects to LOCAL MUX header in B side GATEWAY 16000.
- REMOTE MUX: Remote 16000 Series I/O Multiplexer(s) connected via 500MB Fiber Optic cable
- IPC Link: The interprocessor communication link connects both sides of the GATEWAY 16000 together. Status and data is communicated to both sides via this cable.

Typical Installations

Non-Redundant

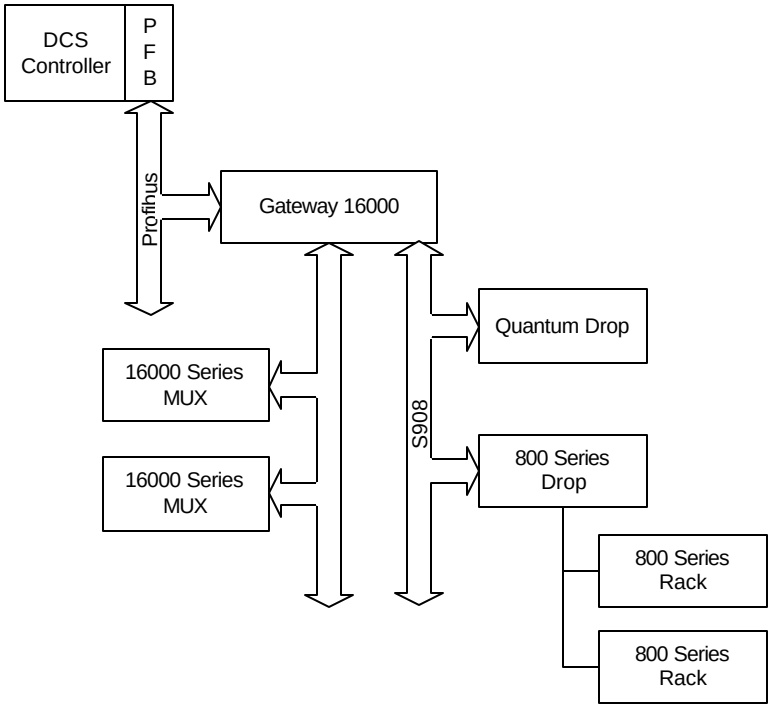

Figure 4 Typical Non-redundant Installation

Redundant/Simplex Profibus

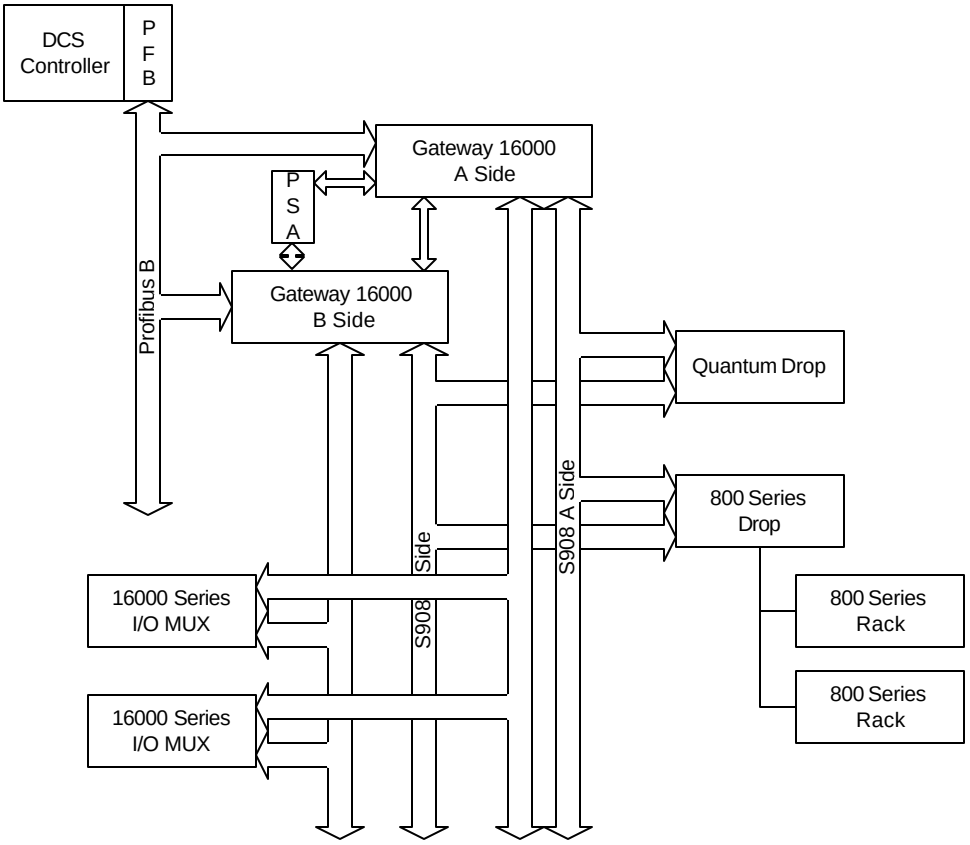

Figure 5 Typical Redundant Installation with Simplex Profibus Cabling

Redundant/Duplex Profibus

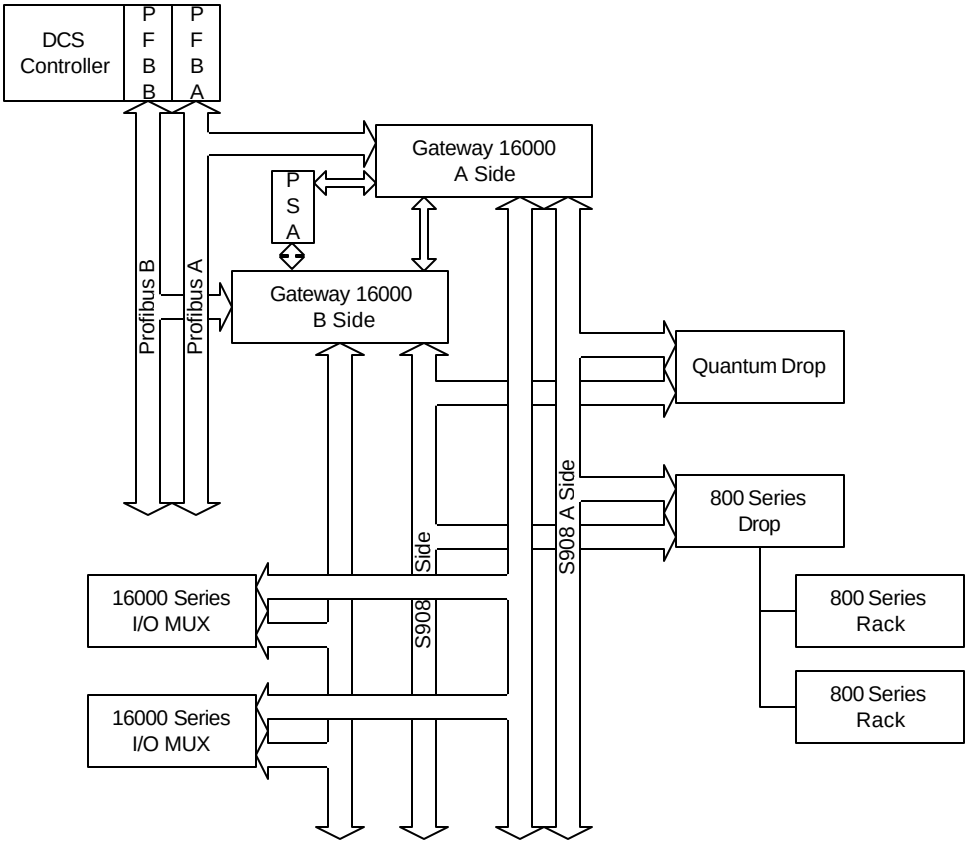

Figure 6 Typical Redundant Installation with Duplex Profibus Cabling