

Product Manual 02826 (Revision A) Original Instructions

LINKnet[™] Option for use with 723 Digital Controls

Operation Manual



Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.



Revisions

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Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.



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Warnings and Notices

Important Definitions



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- **DANGER**—Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**—Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**—Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

WARNING Overspeed / Overtemperature / Overpressure	The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage. The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.
	The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at band. Equipment that should be considered includes but is not

Personal Protective Equipment

- Eye Protection
- Hearing Protection
- Hard Hat
- Gloves

limited to:

- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

WARNING Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.



Applications

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

NOTICE

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

Battery Charging Device

Electrostatic Discharge Awareness

NOTICE	Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:
Electrostatic Precautions	 Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control). Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards. Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices. To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.

Follow these precautions when working with or near the control.

- 1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
- 2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
 - Do not touch any part of the PCB except the edges.
 - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
 - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Chapter 1. LINKnet* I/O Network

Introduction

The LINKnet* option provides distributed I/O capabilities for the 723 control system. The LINKnet I/O modules are well suited for non-time-critical control functions like sequencing and monitoring.

Other manuals that may prove helpful are:

- 02007 DSLC Digital Synchronizer and Load Control
- 02758 723 Hardware Manual
 - 02784 723 Software/DSLC Compatible
- 02785 723 Software/Analog Load Share

Network Architecture

An I/O network consists of a 723 LINKnet channel, which provides independent network trunks of up to 60 I/O modules. The LINKnet I/O modules, or nodes, on each trunk are attached to the 723 via a single twisted pair wire.

Each LINKnet I/O module has two rotary switches that are used to set its network address. On installation, these switches must be dialed so that the I/O module's number (1 to 60) matches the network address defined for this I/O module in the application program. The I/O modules may be placed in any order on the network, and gaps are allowed in the address sequence.

Hardware

Each network consists of one LINKnet channel of a 723 and many I/O modules. The I/O modules include thermocouple, RTD, (4 to 20) mA, and discrete input modules, as well as (4 to 20) mA and relay output modules. All of the analog modules consist of six channels per module. The relay output module contains eight channels, and the discrete input module has 16 channels.

Each I/O module is housed in a plastic, field termination module-type package for DIN rail mounting. The LINKnet I/O modules can be mounted in the control cabinet or in any convenient location in the vicinity of the engine or turbine that meets the temperature and vibration specifications. Each I/O module must be grounded to the DIN rail through a grounding block (Woodward part number 1604-813).

All LINKnet I/O modules communicate with the 723 through shielded twisted pair wiring. The specifications for the LINKnet system require that listed level V type cable be used. The network may be wired directly from I/O module to I/O module, as shown in Figure 1-1, or the I/O modules may be connected to the network via stubs, as in Figure 1-2. A termination network (Woodward part number 9905-760) must be installed at the last LINKnet I/O module on the network. There is no polarity associated with the network wiring. For optimum EMC performance, the network cable shield should be landed at each I/O module, and the exposed wire length limited to 25 mm (1 inch). At the 723, the outer insulation should be stripped and the bare shield landed to the chassis.

*-Trademark of Woodward, Inc.

LINKnet Option

All field wiring should be shielded. The shield should be landed in the terminal block provided, and the exposed wiring, after the shield is separated, should be limited to 25 mm.

IMPORTANT

The LINKnet modules should always be installed in an enclosure provided by the user, or be otherwise operator inaccessible. The modules should be accessed only for maintenance purposes, in which case, the ESD procedures on page ii should be followed.

For Lloyd's Register of Shipping applications, the power to each I/O module must be transient-protected through the use of Termitab-UK 5/24 AC suppressors (from Phoenix Contact). Up to six I/O modules can be protected by one set (1 pair) of suppressors. Also, the power for the Discrete Inputs must be transientprotected. When the power is provided by a power source external to the Discrete Input module, the power requires the same suppressors (Phoenix Contact UK 5/24 AC) required for input power for all I/O modules (see Figure 1-1).



Use only recommended shielded twisted pair data cable, provided by the user, for the LINKnet network. Correct cable is available from Woodward, Belden, or other suppliers providing an equivalent cable.

Woodward part number 2008-349

Belden PO Box 1980 Richmond IN 47375 (317) 983-5200

Belden Part

Number	Description
9207	PVC 20 AWG (0.5 mm ²) shielded. NEC Type CL2, CSA cert. PCC FT
	1.
89207	Teflon 20 AWG (0.5 mm ²) shielded, Plenum version. NEC Type CMP,
	CSA cert. FT 4.
YR28867	PVC 22 AWG (0.3 mm ²) shielded
YQ28863	Plenum 22 AWG (0.3 mm ²) shielded







Figure 1-2. Network Wired Via Stubs

Class I, Division 2, Groups A, B, C, D Hazardous Locations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D, or non-hazardous locations only.

Peripheral equipment must be suitable for the location in which used.



I/O Module Specifications

Accuracy

1 % at 25 °C without field calibration

Power Supply Input

(18 to 32) V (dc)

Isolation

Network to I/O channel: 277 V (ac) Power supply input to network: 277 V (ac) I/O channel to I/O channel: 0 V Power supply input to I/O channel: 500 V (dc)

Power supply input to I/O channel: 500 V (dc) except for discrete inputs, discrete input power comes directly from power supply input

Throughput Times

The following are the formulas used to calculate the scan time of the LINKnet system. The scan time is defined as the period, in milliseconds, in which all nodes will send a message to the master node containing information about its external stimulus. The input values are gathered, and the output values are updated, by the nodes at the start of the scan period.

The scan time (ST) calculations are based on the quantity and types of Input/Output node (ION) used. The types considered here are the output type nodes (OTN) and the input type nodes (ITN). The GAP allows us to set up the quantity of OTNs that will send readback data during the scan cycle by setting the OUT_UPDATE field. Due to the method that is used within the software, the tolerance for these figures is +15–10 ms.

If the quantity of OTN is less than or equal to 2, the formula to use is: typical ST =(ION*5) + 95 (ms) maximum ST =(ION*5) + 130 (ms)

If the quantity of OTN is greater than 2, the formula to u	ise is:
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typical ST	=(ITN*5) + (OUT_UPDATE*5) + (OTN*10) + 65	(ms)
maximum ST	=(ITN*5) + (OUT_UPDATE*5) + (OTN*10) + 100	(ms)

This scan time is how often the messages are sent, but the time from a stimulus to detection by the master's rate groups can be very much different, as can be seen below.

quickest time for throughput	=scan time	(ms)
longest time for throughput	=(scan time*2) – 15	
	+ rate group the LN_GROUP is set to	(ms)

For example—Assume that the LN_GROUP is in RG1 and this is set to run every 80 ms, and that we also have one (4 to 20) mA input node connected to the network.

typical scan time	=(1*5) + 95	=100 ms
quickest throughput	=typical scan time	=100 ms
longest throughput	=(100*2) + 80 - 15	=265 ms

When the network is of a smaller size, the rate group setting of the LN_GROUP can have an impact on the longest throughput value, but note that by increasing the rate group setting, you are loading the processor more.

Field Wiring

2 mm² (14 AWG) maximum wire size

Temperature Range

(–40 to +55) °C

UL Listed Component

Class I, Division 2, Groups A, B, C, and D, when wired in accordance with NEC Class I, Division 2 wiring methods

Shock and Vibration

US Mil-Std-810, 30 Gs sine wave at 11 ms US Mil-Std-167, (18 to 50) Hz

EMC

Emissions: EN 55011, Class A, Group 1 Immunity: EN 50082-2

Discrete Input Current

13.1 mÅ per channel when "on" (@ 24 V)

Relay Contacts

Ratings: 5.0 A @ 28 V (dc) resistive 0.5 A @ 115 V (ac) resistive



Figure 1-3. LINKnet Relay Contacts

Individual I/O Module Specifications

I/O Module Type	Number of Channels	Resolution (bits)	Temp Coefficient (ppm/°C)	Input Impedance	Power Required at 24 V input
Discrete Input	16	N/A	N/A	N/A	6.5 W
Relay Output	8	N/A	N/A	N/A	5.0 W
(4 to 20) mA Input with 24 V	6	12	235	250 Ω	5.3 W
(4 to 20) mA Input	6	12	235	250 Ω	2.4 W
(4 to 20) mA Out	6	12	250	N/A	6.0 W
RTD Input	6	12	290	2.2 MΩ	3.1 W
Thermocouple Input (J or K type +1 AD592)	6 +1 cold junction	12	235	2 ΜΩ	2.4 W

Cable Length and Number of LINKnet I/O Modules

Specification	(0 to 55) °C	(–20 to +55) °C	(–40 to +55) °C
Maximum network cable length	150 m	150 m	50 m
Maximum number of I/O modules	60	32	20
Maximum stub length	300 mm	300 mm	300 mm

LINKnet I/O Module Descriptions

The FAULT LED denotes the status of the module processor, and will be off during normal operation. If the FAULT LED is on or is blinking, and cycling power to the module does not change it, then the I/O module should be replaced.

The module address circuit reads the selected module address from the rotary switches on each node. This address should correspond to the address of the I/O module hardware in the application program. If these rotary switches are set incorrectly, the node will not communicate with the 723, and a "no message" fault will be annunciated through the application program. If two nodes are set to the same address, an "address" fault will be annunciated through the application program, and both nodes will not function. If the node address switches are changed, power to the module must be cycled before it will read the new module address and change its communication accordingly.

A "type" fault is annunciated through the application program when the wrong module type is installed at a given address. For example, installing a thermocouple module in place of an RTD module generates a type fault. If an output node receives data intended for a different module type, it will not update its outputs, and will set them to the "off" state when its watchdog timer times out.

No-message faults, address faults, and type faults can be latching or nonlatching (selectable within the 723 control). When these faults occur for an input module, the application program can give default values for each channel.

Output modules contain readback circuits to verify proper operation of each output channel. Analog input modules monitor a reference voltage to verify proper operation of the A/D converter. Appropriate faults are annunciated through the application program.

The LINKnet system accommodates hot-replacement of faulty nodes. When replacing a node, the network cable connections must remain intact. A faulty node can be removed from the network by pulling both terminal blocks out of their headers, and removing the node from the DIN rail. The address switches of the replacement node should be set to match those of the faulty node. The replacement node can then be mounted on the DIN rail, and the terminal blocks pushed into the headers. It may be necessary to reset the node through the application program to reinitiate communications with the 723 and to clear the "no message" fault.

Discrete Input Module

Figure 1-4 is a block diagram of the Discrete Input module. The module receives information from field switches and relays. Power is provided for these contacts, on four terminal blocks, TB-5 through TB-8. The input power on TB-2 may also be used, but does not have the benefit of an internal fuse and some filtering, therefore external fusing should be provided. The state of each discrete input is passed through an optoisolator and an LED to the shift register. In this manner, the LEDs will light when a contact is closed. The module processor receives this information and transmits it through the transceiver to the 723.



Figure 1-4. Discrete Input Module Block Diagram

(4 to 20) mA Input Module

Figure 1-5 is a block diagram of the (4 to 20) mA input module. The module receives information from (4 to 20) mA sources, such as transducers. Power is provided for these transducers on one version of the module, but all module inputs must use the power provided. No inputs may use a separate power source, as all of the negatives are tied together and to 24 V common. The advantage of this module version is that it simplifies wiring to devices such as transducers that require external power. Each input is converted to a (0 to 5) V signal, and then multiplexed to a voltage-to-frequency converter. The module processor reads the period of this signal and converts it to a count, which it transmits through the transceiver to the 723.



Figure 1-5. (4 to 20) mA Input Module Block Diagram

Thermocouple Input Module

Figure 1-6 is a block diagram of the thermocouple input module. The module receives information from thermocouples, which can be either J or K type. The type is selected in the application program. It also has an AD592 ambient temperature sensor mounted on the module for cold junction temperature sensing. The cold junction compensation is performed in software. There is a fail high and a fail low version of the module, selected by jumpers on the board, which allow the input channels to be pulled high or low on an open input. Each input is multiplexed to a voltage-to-frequency converter. The module processor reads the period of this signal and converts it to a count, which it transmits through the transceiver to the 723.



Figure 1-6. Thermocouple Input Module Block Diagram

RTD Input Module

Figure 1-7 is a block diagram of the RTD input module. A 1 mA or 2 mA source is provided for each input. The module receives voltages from six 100 Ω or 200 Ω , 3-wire RTDs. Each voltage is compensated for line resistance, and then is multiplexed to a voltage-to-frequency converter. The module processor reads the period of this signal and converts it to a count, which it transmits through the transceiver to the 723.



Figure 1-7. RTD Input Module Block Diagram

Relay Output Module

Figure 1-8 is a block diagram of the Relay Output module. The module outputs information through eight 5 A form C relays. The relay output module processor receives information through the transceiver, from the 723. The node then updates the status of the shift register which updates the relays and a status LED. The second set of relay contacts is input back into the module processor through a shift register, for readback status. The readbacks are compared with the desired outputs, and a status annunciated for each relay in the application program. The relay output module has a watchdog that monitors the communications from the module processor to the shift register, and disables the relay drivers upon a loss of communications of more than 1.2 seconds. The node will not function after a watchdog timeout, until its power is cycled or until the 723 is reset.



Figure 1-8. Relay Output Module Block Diagram

(4 to 20) mA Output Module

Figure 1-9 is a block diagram of the (4 to 20) mA Output module. The (4 to 20) mA output module processor receives information through the transceiver, from the 723. The (4 to 20) mA output module then updates the status of the D/A converter which outputs voltages to the current drivers. The output current is monitored by the module processor through an A/D converter. The readback value and status are available through the application program. The (4 to 20) mA output module has a watchdog that monitors the communications from the module processor to the D/A converter, and disables the current drivers upon a loss of communications of more than 1.2 seconds. The module will not function after a watchdog timeout until its power is cycled or the 723 is reset.



Figure 1-9. (4 to 20) mA Output Module Block Diagram

Troubleshooting Flowchart

If a problem occurs with the LINKnet network, use Figure 1-10 (Troubleshooting Flowchart) as a guide to find and repair the problem.

Follow the flowchart down from the title block to the next block. This block may be a rectangular suggestion block, or a diamond shaped decision block. When a suggestion block is entered, do the check suggested. A suggestion block may refer you to the control wiring diagram, the application program, or the module field wiring.

If this check does no find the problem, continue down the flowchart.

When a decision block is entered, the question asked inside it must be answered. This answer then determines the proper exit from that block. The exit taken will lead you to another point on the flowchart.

By following the flowchart in this manner, you should be able to determine a course of action for most problems.



Figure 1-10a. Troubleshooting Flowchart (1 of 2)



Figure 1-10b. Troubleshooting Flowchart (2 of 2)



Figure 1-11. Discrete In Module Wiring Diagram



Figure 1-12. Analog In Module Wiring Diagram







Figure 1-14. RTD Module Wiring Diagram



Figure 1-15. Discrete Out Module Wiring Diagram



Figure 1-16. Analog Out Module Wiring Diagram

Chapter 2. Product Support and Service Options

Product Support Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

- 1. Consult the troubleshooting guide in the manual.
- 2. Contact the **OE Manufacturer or Packager** of your system.
- 3. Contact the **Woodward Business Partner** serving your area.
- 4. Contact Woodward technical assistance via email (EngineHelpDesk@Woodward.com) with detailed information on the product, application, and symptoms. Your email will be forwarded to an appropriate expert on the product and application to respond by telephone or return email.
- 5. If the issue cannot be resolved, you can select a further course of action to pursue based on the available services listed in this chapter.

OEM or Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full-Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An **Authorized Independent Service Facility (AISF)** provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Engine Retrofitter (RER)** is an independent company that does retrofits and upgrades on reciprocating gas engines and dual-fuel conversions, and can provide the full line of Woodward systems and components for the retrofits and overhauls, emission compliance upgrades, long term service contracts, emergency repairs, etc.

A current list of Woodward Business Partners is available at www.woodward.com/directory.

Product Service Options

Depending on the type of product, the following options for servicing Woodward products may be available through your local Full-Service Distributor or the OEM or Packager of the equipment system.

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime.

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Flat Rate Repair: Flat Rate Repair is available for many of the standard mechanical products and some of the electronic products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option, with the exception that the unit will be returned to you in "like-new" condition. This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- return number;
- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.

Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.

Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

NOTICE

Engineering Services

Woodward's Full-Service Distributors offer various Engineering Services for our products. For these services, you can contact the Distributor by telephone or by email.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact.

Product Training is available as standard classes at many Distributor locations. Customized classes are also available, which can be tailored to your needs and held at one of our Distributor locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact one of the Full-Service Distributors listed at <u>www.woodward.com/directory</u>.

Contacting Woodward's Support Organization

For the name of your nearest Woodward Full-Service Distributor or service facility, please consult our worldwide directory published at www.woodward.com/directory.

You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

Products Used In Electrical Power Systems	Products Used In Engine Systems	Products Used In Industrial Turbomachinery Systems
FacilityPhone Number	FacilityPhone Number	FacilityPhone Number
Brazil+55 (19) 3708 4800	Brazil+55 (19) 3708 4800	Brazil+55 (19) 3708 4800
China +86 (512) 6762 6727	China +86 (512) 6762 6727	China +86 (512) 6762 6727
Germany:	Germany +49 (711) 78954-510	India+91 (129) 4097100
Kempen+49 (0) 21 52 14 51	India+91 (129) 4097100	Japan +81 (43) 213-2191
Stuttgart +49 (711) 78954-510	Japan +81 (43) 213-2191	Korea +82 (51) 636-7080
India+91 (129) 4097100	Korea +82 (51) 636-7080	The Netherlands- +31 (23) 5661111
Japan +81 (43) 213-2191	The Netherlands- +31 (23) 5661111	Poland+48 12 295 13 00
Korea +82 (51) 636-7080	United States +1 (970) 482-5811	United States +1 (970) 482-5811
Poland+48 12 295 13 00		
United States +1 (970) 482-5811		

For the most current product support and contact information, please visit our website directory at <u>www.woodward.com/directory</u>.

Technical Assistance

If you need to contact technical assistance, you will need to provide the following information. Please write it down here before contacting the Engine OEM, the Packager, a Woodward Business Partner, or the Woodward factory:

General	
Your Name	
Site Location	
Phone Number	
Fax Number	
Prime Mover Information	
Manufacturer	
Engine Model Number	
Number of Cylinders	
Type of Fuel (gas, gaseous, diesel,	
Power Output Rating	
Application (power generation, marine,	
Control/Governor Information	
Control/Governor #1	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #2	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #3	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Symptoms	
Description	

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call. We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 02826A.





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