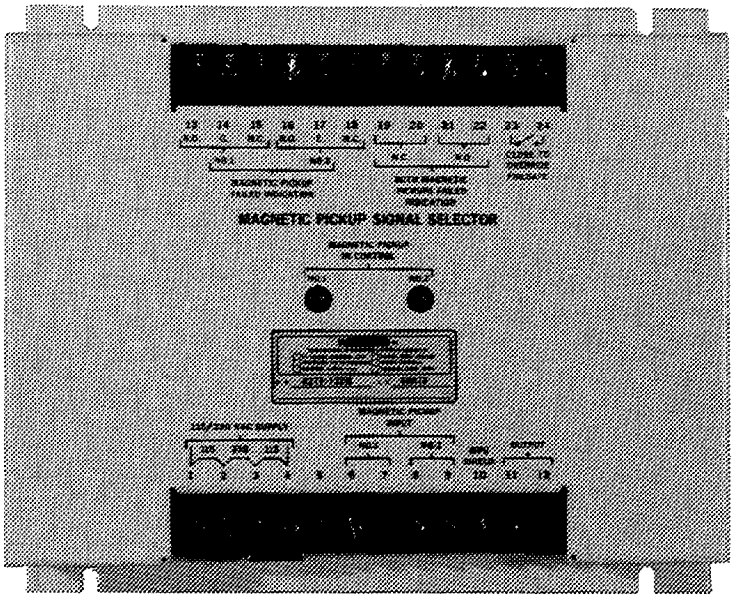
WOODWARD

Product Manual 82301
(Revision C)
Original Instructions



MPU High Signal Selector

8272-132/-164/-310/-311

Installation and Operation Manual

General Precautions

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

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, on the *publications page* of the Woodward website:

www.woodward.com/publications

The latest version of most publications is available on the *publications page*. If your publication is not there, please contact your customer service representative to get the latest copy.

Proper Use

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.

Translated Publications

If the cover of this publication states "Translation of the Original Instructions" please note:

The original source of this publication may have been updated since this translation was made. Be sure to check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, to verify whether this translation is up to date. Out-of-date translations are marked with ⚠. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Contents

Illustrations and Tables

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.

⚠WARNING

Personal Protective Equipment

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 hand. Equipment that should be considered includes but is not limited to:

- **Eye Protection**
- **Hearing Protection**
- **Hard Hat**
- **Gloves**
- **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.

⚠WARNING

Automotive 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

Battery Charging Device

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.

Electrostatic Discharge Awareness

NOTICE

Electrostatic Precautions

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- **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.
General Information

Description

The MPU High Signal Selector is used with any Woodward electric governor. Figure 1-1 shows a typical system. The 8272-132 and 8272-164 MPU High Signal Selectors select the highest frequency signal from one of two MPUs and send that signal to the MPU input of an electronic control. The 8272-310 and 8272-311 High Signal Selectors select the signal with the highest amplitude and send that signal to the MPU input of electronic control.

The High Signal Selector is available in four models. One type selects the MPU signal with the highest frequency, and the other type selects the MPU signal with the highest amplitude. Each of these types is available in a model that operates on 115/230 Vac or a model that operates on 18–28 Vdc.

The MPU High Signal Selector compares the frequency (amplitude) of the two MPU signals. As long as the MPU #1 signal is higher in frequency (amplitude) than (or the same as) the MPU #2 signal, the MPU #1 signal will be fed through the MPU High Signal Selector and will appear at the output of the unit. If the MPU #2 signal becomes higher in frequency (amplitude) than the MPU #1 signal, then the MPU #2 signal will become the signal that is output. Two LEDs on the front of the unit indicate whether MPU #1 or MPU #2 is providing the output signal.

The MPU High Signal Selector has a set of relay contact outputs to indicate each of the following conditions: MPU #1 failed, MPU #2 failed, and both MPUs failed. These contacts transfer if the amplitude or frequency of the MPU signal(s) is below a predetermined value. These contacts may be used for external indication or other functions.

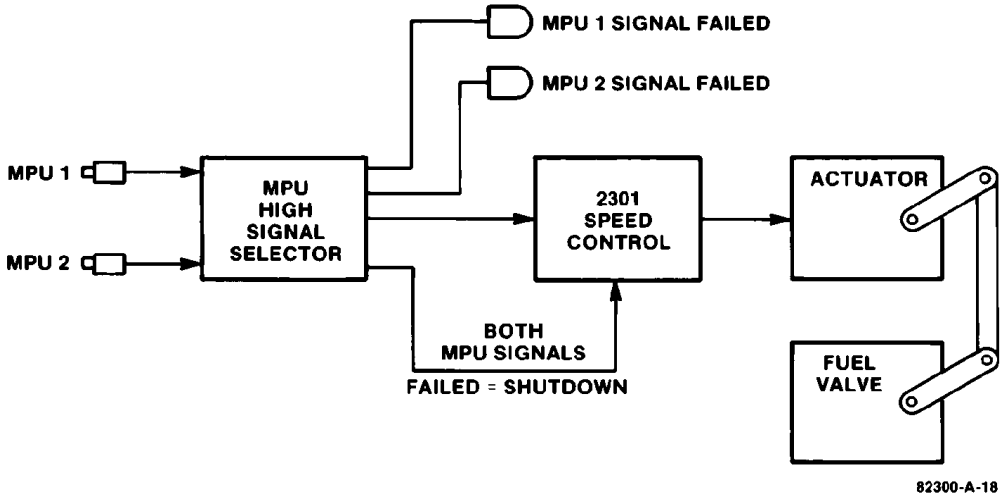


Figure 1-1. Typical System

Chapter 2.
Theory of Operation

Power Supply

The MPU High Signal Selector is available as either an 18 to 28 Vdc model (8272-164 and -311), or a 115 or 230 Vac model (8272-132 and -310). The ac model includes an internal ac-to-dc power supply. The plant wiring diagram (Figure 2-1) shows the power input and jumper connections needed for the different power inputs.

Frequency Comparator

(for 8272-132 and -164)

The frequency comparator compares the frequency of the two MPU signals and, if the MPU #1 signal is higher in frequency than the MPU #2 signal, or if the two signals are the same frequency, the frequency comparator sends a logic-low signal to the Output Selector Circuit. if the MPU #2 signal is higher in frequency than the MPU #1 signal, the frequency comparator sends a logic-high signal to the Output Selector Circuit.

Amplitude Comparator

(for 8272-310 and -311)

The amplitude comparator compares the amplitude of the two MPU signals and, if the MPU #1 signal is higher in amplitude than the MPU #2 signal, or if the two signals are the same amplitude, the amplitude comparator sends a logic-low signal to the Output Selector Circuit. If the MPU #2 signal is higher in amplitude than the MPU #1 signal, the amplitude comparator sends a logic-high signal to the Output Selector Circuit.

Output Selector Circuit

The Output Selector Circuit controls relay K1. Under normal conditions (with both MPUs working properly) the frequencies or amplitude of the MPU #1 signal and the MPU #2 signal will be the same.

The signal from the frequency or amplitude comparator will be low and K1 will be de-energized. At this time, the MPU #1 IN CONTROL LED is illuminated and the MPU #2 IN CONTROL LED is extinguished. If the frequency or amplitude of the signal from MPU #1 becomes higher in frequency than the signal from MPU #2, the signal from the frequency or amplitude comparator will stay low and K1 will remain de-energized.

If the frequency or amplitude of the MPU #2 signal becomes higher than the frequency or amplitude of the MPU #1 signal, the output of the Frequency or Amplitude Comparator will go high and the Output Selector Circuit will energize relay K1. Also at this time, the MPU #1 IN CONTROL LED will extinguish and the MPU #2 IN CONTROL LED will illuminate.

Relay K1

This relay is driven by the Output Selector circuit and selects which of the two MPU Input signals will be output by the MPU High Signal Selector. If the signal from the Frequency or Amplitude Comparator is low (MPU #1 frequency or amplitude is higher than, or the same as, MPU #2), relay K1 will be de-energized and the signal from MPU #1 will be the output. If the signal from the Frequency or Amplitude Comparator is high (MPU #2 frequency or amplitude is higher than MPU #1), relay K1 will be energized and the signal from MPU #2 will be the output.

Failed Signal Detector

There are two Failed Signal Detector circuits; each circuit checks one incoming MPU signal. As long as the frequency and amplitude of an MPU signal are above predetermined points, the associated Failed Signal Detector will keep its relay energized. If either the frequency, or the amplitude, of an MPU signal is below a safe value, the Failed Signal Detector for that MPU signal will de-energize its associated relay. The relay will also de-energize if the input power is lost.

Relays K2 and K3

The contacts of these two relays provide the following three external failed signal indications.

MPU #1 signal failed	K2 contacts transfer
MPU #2 signal failed	K3 contacts transfer
Both MPU signals fail	K2 and K3 contacts transfer and the interconnected contacts of both provide the external Indication

Failsafe Override

When the set of contacts connected to the Failsafe Override terminals of the MPU High Signal Selector is closed, K2 and K3 will be energized all the time, whether the MPU signals are sensed or not. This feature allows the Failsafe to be overridden during starting.

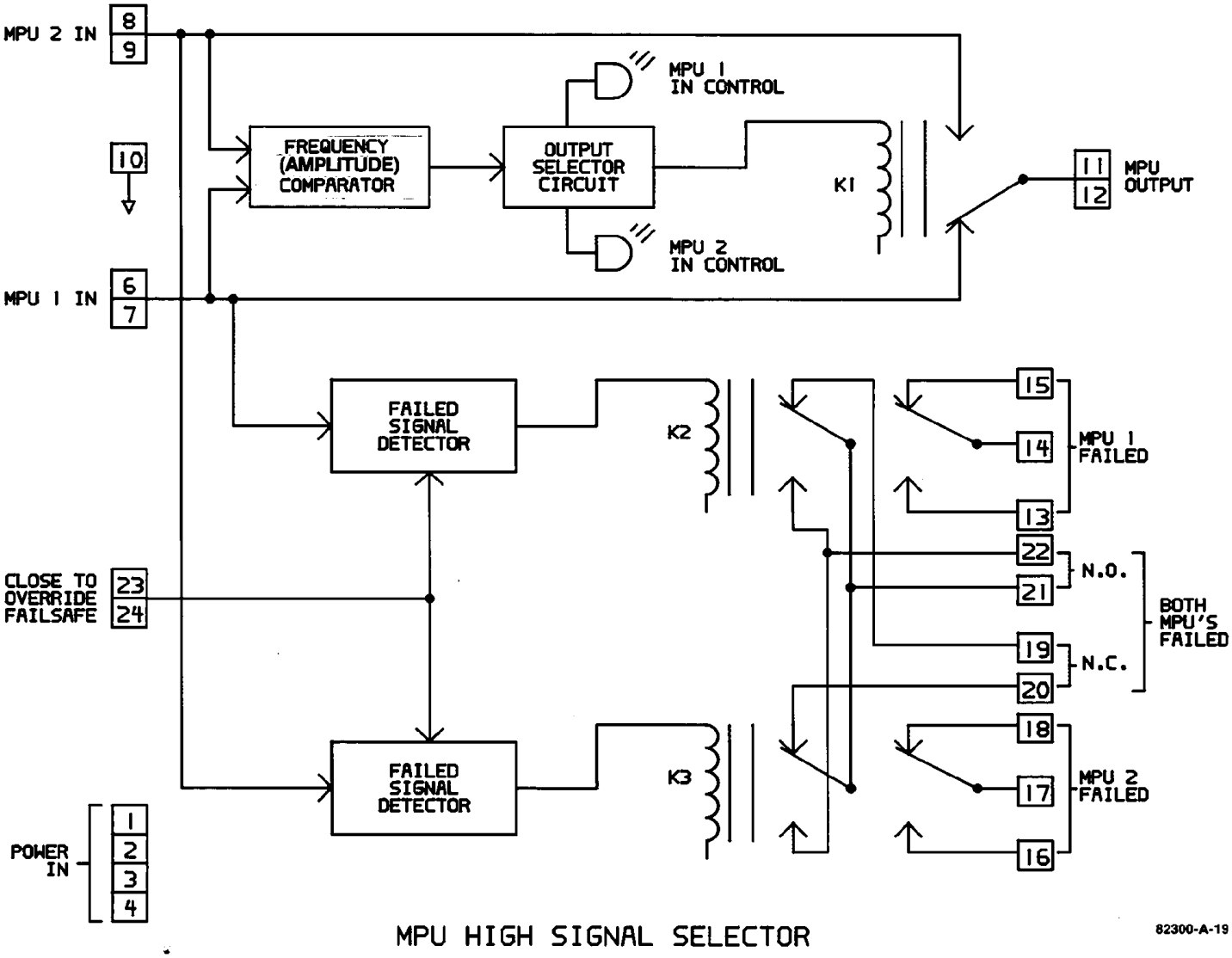


Figure 2-1. Block Diagram

Chapter 3. Installation

Introduction

Figure 4-1 is an outline drawing of the MPU High Signal Selector. Mount the unit near the electronic speed control. It may be mounted in any position. Provide adequate ventilation for cooling, and space for installation and servicing. Ambient temperature must be between –40 and +85 °C (–40 and +185 °F).

⚠WARNING

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.

Electrical Wiring

Figure 4-2 is the plant wiring diagram for the MPU High Signal Selector. This diagram shows the wiring connections that must be made to this unit but does not show the actual wiring for a particular system. For this information, see the plant wiring diagram for your specific system. Woodward Manual 25070, *Electronic Control Installation Guide*, also contains general information on wiring for electronic controls.

Some wiring to the MPU High Signal Selector must be shielded; these wires are shown in Figure 4-2. This shielding prevents the wires from picking up stray signals which could cause erratic control operation. Ground all shields at terminal 10 as shown. The shield on a length of shielded wire must be connected to ground at one end only; do not ground the shields on both ends of a wire. Do not run a shielded wire inside a conduit with a wire which is carrying high current. Do not attempt to tin the braided shields.

NOTICE

Make all wiring connections with insulated terminals.

Power Supply

Connect the power input wires to the MPU High Signal Selector as shown in the plant wiring diagram. Note that the input connections for a dc supply are made to terminals 1 and 2 while the input connections for an ac supply are made to terminals 1 and 4, with jumpers installed as shown in the plant wiring diagram.

MPU Failed Indication

Connect any wires that the system includes for MPU Failed Indication.

Failsafe Override

Connect the wires to the CLOSE TO OVERRIDE FAILSAFE terminals, if used.

MPU Inputs

Connect the wiring from the two MPUs to the proper terminals. Use twisted-pair shielded wire.

Output

Connect the wiring from the output of the MPU High Signal Selector to the input of the Speed Control, or the Load Sharing and Speed Control.

Installation Check

Before initial operation of the MPU High Signal Selector, make the following visual and electrical checks.

Visual Checks

1. Check that the control is securely mounted.
2. Check that all electrical connections are correctly made and that all terminal screws are tight.
3. Check that shielded wire is installed where indicated on the plant wiring diagram and that all shields are grounded on one end only.

Electrical Checks

IMPORTANT **Do not start the engine until the following two checks are completed.**

1. Measure for correct supply voltage at terminals 1 and 2 (18 to 28 Vdc) or at terminals 1 and 4 (115 or 230 Vac).
2. Measure the voltage at terminals 23 (+) and 10 (–). This voltage must be 24 ±6 Vdc. If this measurement is higher or lower, the control is faulty.

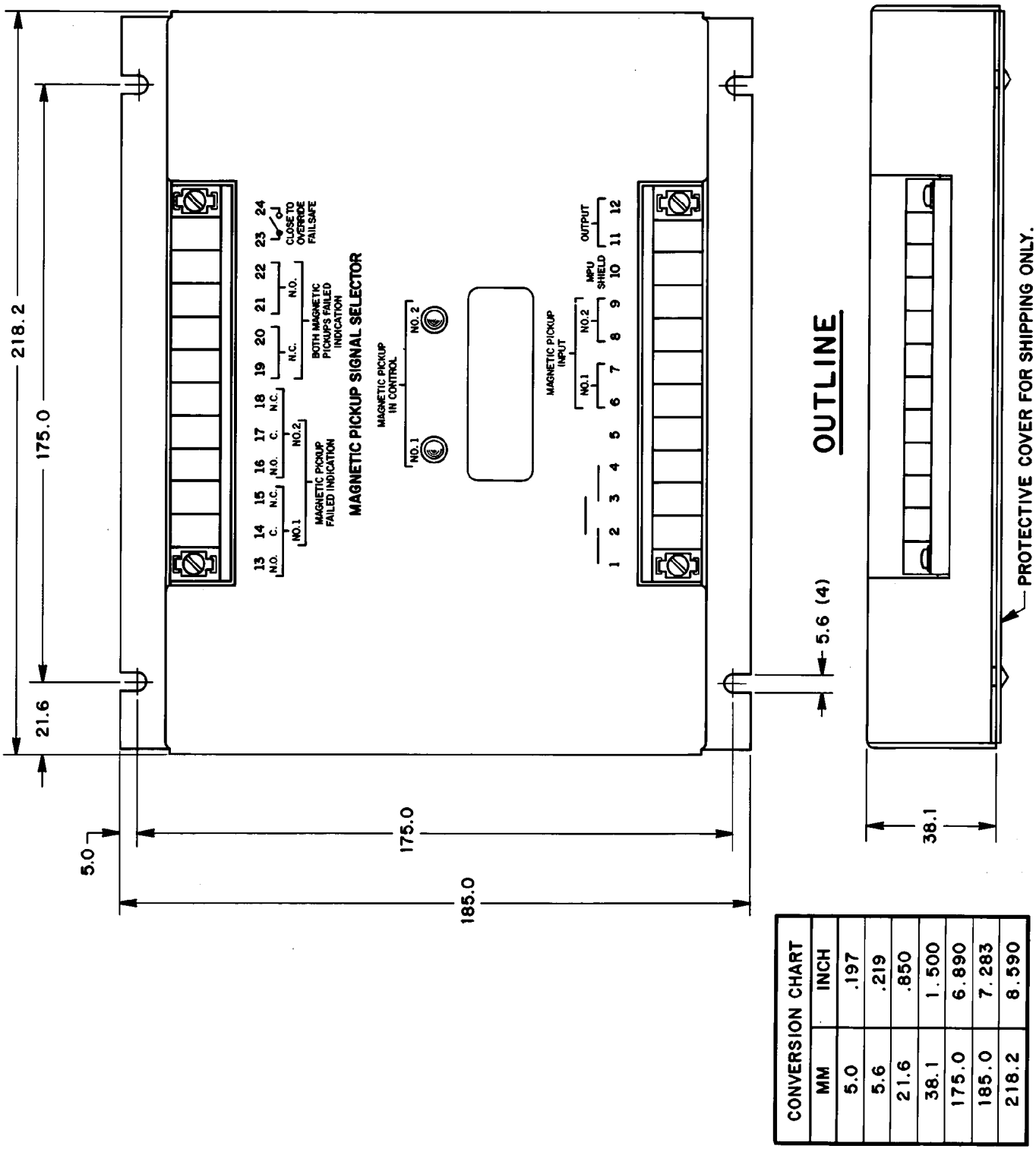
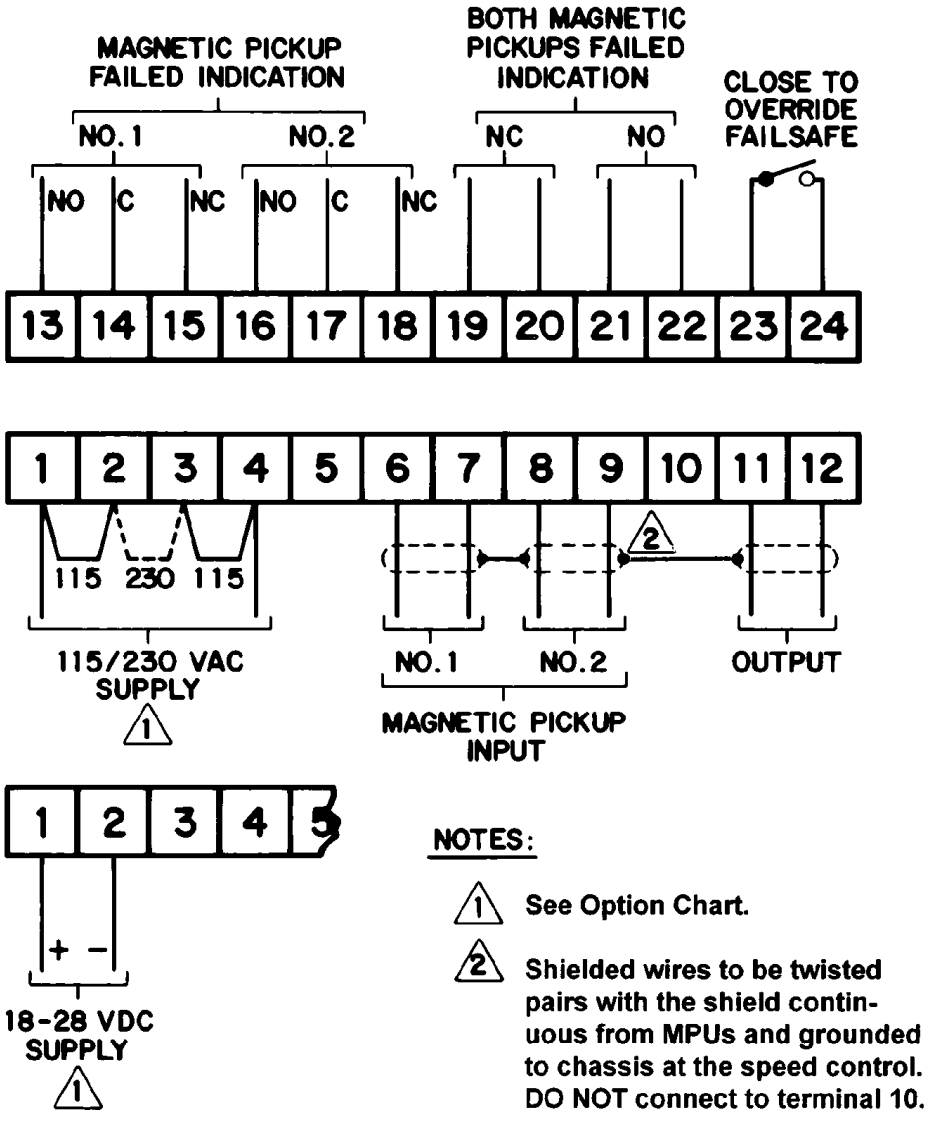


Figure 4-1. Outline Drawing

NOTE

THIS DRAWING REFLECTS THE LATEST ENGINEERING CHANGE AT THE TIME OF PUBLICATION. CONTACT WOODWARD GOVERNOR COMPANY FOR POSSIBLE LATER CHANGES.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	NEW	E/C 87572-1		
	NW1	TSP NO. WAS 4269 ON 8272-164. SRJ	93-5-27	B



NOTES:

1. See Option Chart.
2. Shielded wires to be twisted pairs with the shield continuous from MPUs and grounded to chassis at the speed control. DO NOT connect to terminal 10.

Figure 4-2. Plant Wiring Diagram

Chapter 4.
Operational Check

Introduction

The following procedure checks the MPU High Signal Selector for proper operation. There are no adjustments on the unit. Perform this check procedure whenever it is necessary to determine if the unit is operating correctly.

⚠WARNING

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.

1. Apply power to the MPU High Signal Selector and the Electronic Speed Control or Load Sharing and Speed Control. Check that the MPU #2 IN CONTROL LED on the MPU High Signal Selector illuminates. (On Amplitude Selector models either LED may be on.)

2. Check that the CLOSE TO OVERRIDE FAILSAFE terminals (23 to 24) are open (remove a wire from one if necessary).

3. Check that an MPU #1 FAILED, an MPU #2 FAILED, and a BOTH MPUs FAILED indication all occur as shown by the following conditions:

- Continuity between terminals 14 and 15, 17 and 18, and 19and 20.
- No continuity between terminals 13 and 14, 16 and 17, and 20 and 21.

IMPORTANT

If there is an indicator lamp or device connected to these failure indication terminals, that lamp or device can be used to indicate the state of the contacts rather than checking for continuity.

4. If there is a switch connected across the CLOSE TO OVERRIDE FAILSAFE terminals (23 and 24), close this switch. If there is no switch connected, connect these two terminals with a jumper wire (if a wire was removed in step 2, replace it at this time).

5. Check that an MPU #1 FAILED, an MPU #2 FAILED, or a BOTH MPUs FAILED indication does not occur as shown by the following conditions:

- Continuity between terminals 13 and 14, 16 and 17, and 21 and 22.
- No continuity between terminals 14 and 15, 17 and 18, and 19 and 20.

6. Start the engine or turbine, following the manufacturer's starting instructions.

⚠WARNING

Be prepared to control the engine or turbine manually.

7. Once the engine or turbine is operating and is being controlled at a set speed, remove the MPU wire from terminal 8.

8. Check that the engine or turbine speed does not change, that the MPU #1 IN CONTROL LED illuminates, and that the MPU #2 FAILED indication occurs as shown by the following conditions:
- Continuity between terminals 17 and 18.
- No continuity between terminals 16 and 17.

9. Replace the wire that was removed from terminal 8 and remove the wire from terminal 6.

10. Check that the engine or turbine speed does not change, that the MPU #1 IN CONTROL LED extinguishes, the MPU #2 IN CONTROL LED illuminates, and that the MPU #1 FAILED indication occurs as shown by the following conditions:
- Continuity between terminals 14 and 15.
- No continuity between terminals 13 and 14.

This completes the operational test of the MPU High Signal Selector.

Chapter 5. Troubleshooting

If the MPU High Signal Selector seems to be malfunctioning, use the operating checks given in Chapter 3 to determine whether or not it is operating correctly.

If the unit is determined not to be operating correctly, use the following troubleshooting chart to find the problem. The causes for each symptom are given with the most likely cause first.

IMPORTANT

This troubleshooting section is intended only as a guide. There may be other causes for a symptom than those given, and there may be repairs not given which may be more suited to the particular situation.

Symptoms	Cause	Remedy
When power is applied to the unit, neither the MPU #1 IN CONTROL LED nor the MPU #2 IN CONTROL LED illuminates.	The power source is not active or is not wired correctly. The MPU High Signal Selector unit is faulty.	Check and repair as necessary. Return unit to Woodward for repair.
The unit will not select MPU #2, even if MPU #1 is disconnected.	The power source is not active or is not wired correctly. The MPU High Signal Selector unit is faulty.	Check and repair as necessary. Return unit to Woodward for repair.
With power applied to the unit and the engine or turbine not running, the MPU Failure Indicators show no failure.	The CLOSE TO OVERRIDE FAILSAFE terminals (23 and 24) are connected together, either because the switch connected to them is closed or because the wires connected to them are shorted.	Check and repair as necessary (these two terminals may be connected together through external relay contacts).
MPU #n Failed indicator constantly indicates MPU Failure (engine is running) (n = MPU number).	MPU #n is faulty or out of adjustment. Wiring to MPU #n is faulty.	Check MPU #n for correct clearance and adjust or replace. Check and repair as necessary.
MPU #1 IN CONTROL LED is illuminated during engine operation. (MPU #2 IN CONTROL LED is extinguished.)	This is normal. If both MPU signals are OK, MPU #1 is in control. (On Amplitude Selector models, either LED may be on.)	None required.
MPU #2 IN CONTROL LED is illuminated during engine operation (MPU #1 IN CONTROL LED is extinguished and MPU #1 Failed indicator is not indicating a failure).	MPU #1 clearance is out of adjustment.	Check adjustment of MPU #1 and adjust If necessary
MPU #2 IN CONTROL LED is illuminated during engine operation. (MPU#1 IN CONTROL LED is extinguished and MPU #1 Failed indicator is indicating an MPU failure.)	MPU#1 is faulty. Wiring from MPU #1 is faulty. MPU #1 is out of adjustment.	Replace MPU #1. Check the wiring and repair if necessary. Check adjustment of MPU and adjust if necessary.
MPU #1 IN CONTROL LED and MPU #2 LED are both illuminated.	MPU High Signal Selector unit is faulty.	Return unit to Woodward for repair.

Chapter 6.
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.

NOTICE

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.

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 **www.woodward.com/directory**.

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

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany:	
Kempen	+49 (0) 21 52 14 51
Stuttgart	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

Products Used In Engine Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-5811

Products Used In Industrial Turbomachinery Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
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 **www.woodward.com/directory**.

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, dual-fuel, etc.) _____

Power Output Rating _____

Application (power generation, marine, etc.)

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 82301C.

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