WOODWARD

Product Manual 85205
(Revision G)
Original Instructions

ProTech® 203
Overspeed Protection System

8200-200, -201, -202, -203, -204, -205, 9907-344, -345

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:

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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 Out-of-date translations are marked with ⚠.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.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Contents

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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.

Regulatory Compliance

The ProTech 203 is suitable for use in European Zone 2, Group II environments per compliance with EN60079-15, Electrical apparatus for explosive atmospheres – Type of protection 'n'.

Wiring must be in accordance with European Zone 2 wiring methods as applicable, and in accordance with the authority having jurisdiction.

European Compliance for CE Marking

These listings are limited only to those units bearing the CE Marking.

EMC Directive:	Declared to 89/336/EEC COUNCIL DIRECTIVE of 03 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
Low Voltage Directive:	Declared to 73/23/EEC COUNCIL DIRECTIVE of 10 February 1973 on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
ATEX – Potentially Explosive Atmospheres Directive:	Declared to 94/9/EEC COUNCIL DIRECTIVE of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres. EEx nA II T4

⚠WARNING

EXPLOSION HAZARD—Do not remove covers or connect/disconnect electrical connectors unless power has been switched off or the area is known to be non-hazardous.

Substitution of components may impair suitability for Class I, Division 2.

⚠AVERTISSEMENT

RISQUE D'EXPLOSION—Ne pas enlever les couvercles, ni raccorder / débrancher les prises électriques, sans vous en assurez auparavant que le système a bien été mis hors tension; ou que vous vous situez bien dans une zone non explosive.

La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2.

Chapter 1.
General Information

Introduction

This manual describes the ProTech® 203 electronic two-out-of-three Overspeed Protection System. The manual explains the operation and gives the configuration procedures for the system. This manual does not contain instructions for the operation of the complete turbine system. For turbine- or plant-operating instructions, contact the plant-equipment manufacturer.

Before doing any installation, maintenance, adjustments, or configuration on the ProTech 203 system, read Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Description

The ProTech 203 Overspeed Protection System is a digital overspeed trip device that senses prime mover speed through three magnetic pickups (MPUs). It consists of three identical, independent, speed-sensing units which continuously monitor prime mover speed and activate a trip relay when an overspeed condition is detected. The trip relays of the three units are connected in a two-out-of-three voting configuration so that if any single unit fails, the ProTech system will still provide the correct output. The units' functions include the ability to display the actual speed from each speed probe, display the highest speed signal, on-line testing, and modular design that allows a single failed unit to be replaced while the device is running. Light emitting diodes (LEDs) and digital displays on the unit's front panel indicate the functional status.

Applications

The ProTech system can be ordered in either a de-energize-to-trip model or an energize-to-trip model.

Woodward strongly recommends use of the de-energize-to-trip model for reasons of general safety. With an energize-to-trip model, the prime mover may not trip on loss of power. That failure to trip could result in property damage or personal injury and loss of life. However, Woodward recognizes that some applications will require the energize-to-trip option.

The ProTech system can also be configured to be compatible with various combinations of power sources. Tables 1-1, 1-2, and 1-3 show the available ProTech models, the corresponding part numbers, and the voltage ranges.

Table 1-1. De-energize-to-Trip ProTech Models

Part Number	Unit A	Unit B	Unit C
9907-345 8200-201	24 Vdc	24 Vdc	24 Vdc
8200-203	120 Vac/dc	120 Vac/dc	120 Vac/dc
8200-205	220 Vac	220 Vac	220 Vac

Table 1-2. Energize-to-Trip ProTech Models

Part Number	Unit A	Unit B	Unit C
9907-344 8200-200	24 Vdc	24 Vdc	24 Vdc
8200-202	120 Vac/dc	120 Vac/dc	120 Vac/dc
8200-204	220 Vac	220 Vac	220 Vac

Table 1-3. Voltage Ranges

Input Power Requirements Per Kernel
24 Vdc = 18–32 Vdc, 5.12 W 120 Vac/dc = 88–132 Vac, 12.5 VA 90–150 Vdc, 4.77 W 220 Vac = 180–264 Vac, 16.4 VA

References

The following Woodward publications contain additional product or installation information on overspeed protection systems and related components.

	Manual Title
82715	*Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards and Modules*
82510	*Magnetic Pickups and Proximity Switches for Electronic Governors*
50532	*EMI Control for Electronic Governing Systems*