

**ECP Engine Control Panel 470-0640
for Perkins 4000 Series In-Line Gas Engines**

See Manual 35053 for complete installation, operation, maintenance, and certification information.
Publications can be found on our website at www.woodward.com/publications.

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

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.



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.



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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.

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.

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*.

Regulatory Compliance & Declarations

European Compliance for CE Marking

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

EMC Directive:

Declared to Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)

Low Voltage Directive:

Declared to Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

Restriction of the hazardous substances (RoHS):

Declared to 2011/65/EC COUNCIL DIRECTIVE of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Exemption in use: 7(c)-I, 6(c)-I

EU DECLARATION OF CONFORMITY

EU DoC No.: 00527A_PERKINS-EU-02-01
Manufacturer's Name: WOODWARD INC.

Manufacturer's Contact Address: Skarbowa 32
32-005 Niepolomice, Poland

Model Name(s)/Number(s): 4700640

The object of the declaration described above is in conformity with the following relevant Union harmonization legislation: Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (EMC)

Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Exemption in use: 7(c)-I, 6(c)-I
Applicable Standards: EN61000-6-4, (2011): EMC Part 6-4: Generic Standards - Emissions for Industrial Environments

EN61000-6-2, (2005): EMC Part 6-2: Generic Standards - Immunity for Industrial Environments

EN61010-1, (2010): Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General Requirements

EN61010-2-201, (2013): Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment

Last two digits of the year in which the CE marking was affixed for the first time: 16

This declaration of conformity is issued under the sole responsibility of the manufacturer
We, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

MANUFACTURER

Signature

Dave Petruska

Full Name

Engineering Manager

Position

Woodward, Fort Collins, CO, USA

Place

12/13/2016

Date

**DECLARATION OF INCORPORATION
Of Partly Completed Machinery
2006/42/EC**

File name: 00527A_PERKINS-EU-02-02
Manufacturer's Name: WOODWARD INC.
Manufacturer's Address: Skarbowa 32
32-005 Niepolomice, Poland
Model Names: 4700640

**This product complies, where
applicable, with the following
Essential Requirements of Annex I:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7

The relevant technical documentation is compiled in accordance with part B of Annex VII. Woodward shall transmit relevant information if required by a reasoned request by the national authorities. The method of transmittal shall be agreed upon by the applicable parties.

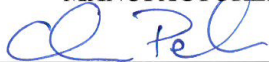
The person authorized to compile the technical documentation:

Name: Dominik Kania, Managing Director
Address: Woodward Poland Sp. z o.o., ul. Skarbowa 32, 32-005 Niepolomice, Poland

This product must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

The undersigned hereby declares, on behalf of Woodward Governor Company of Loveland and Fort Collins, Colorado that the above referenced product is in conformity with Directive 2006/42/EC as partly completed machinery:

MANUFACTURER



Signature	
Full Name	Christopher Perkins
Position	Engineering Manager
Place	Woodward Inc., Fort Collins, CO, USA
Date	21-JUN-2016

Installation Procedure

ECP Specifications

Dimensions	1100mm x 600mm x 250mm [HxWxD]
Weight	Approximately 60 kg (net) 80 kg (gross - including packaging)
Control voltage	24 VDC (18-32 VDC)
Nominal power	1200 W
Nominal current	50 A
Ambient temperature	0 °C to 55 °C
Storage temperature	–20 °C to 70 °C
Ingress protection	IP 55
Relative humidity	IEC 60068-2-30



WARNING

The power supply to the cabinet can come from more than one source. Isolate all power supplies before you work inside the cabinet.

NOTICE

To prevent damage to the control system or the external devices, do a loop-check of all wires connected to the control system before power is applied to the system.

Grounding the Cabinet

The cabinet should have a solid connection to an earth ground. For the grounding scheme please refer to the control wiring diagram. Connections to earth ground is made by using four pins (cavity #12 / 12-14AWG / 2-3mm² each), which are part of the –X10 receptacle located beneath the unit. A ground connection should be durable, have low DC resistance and low AC impedance, and have adequate current carrying capability

Grounding Procedures

The following procedures must be followed to ensure correct grounding of the unit:

- Connect the dedicated matting connector to the –X10 receptacle ground according to the control wiring diagrams (WWD PN# 9971-1828). Use four copper conductors of 2.5mm².
- Do a bonding test between the central grounding point (located on the bottom of the mounting plate) and the electrical ground. The resistance must be less than 0.10 Ohms.
- Door, mounting plate, and flange plate are already connected to the central ground point by braid of 12 AWG or larger, PE grounding conductors 2.5mm² min. and grounding accessories (WWD PN# 1644-1004).

Electrical Connections Procedures

Whole electrical interface between the unit and auxiliary signals is realized by the connectors located beneath the cabinet. Full list of used connectors with their allocation is given in Table A.

Table A. ECP Cabinet Interface Connectors

Connector Designation	Connector Function	WWD Part Number	Deutsch Part Number	Sample Mating Connectors (Deutsch)
-X10	Power supply, starter motor	1635-2528	HDP24-24-16PN	HDP26-24-16SN
-X20	Gas shut-off valves	1635-2485	HD10-5-16P	HD16-5-16S
-X30	On-engine actuators and sensors 1	1635-2494	HDP24-24-31SE	HDP26-24-31PE
-X40	On-engine actuators and sensors 2	1635-2493	HDP24-18-14PE	HDP26-18-14SE
-X50	Ignition primary	1635-2543	HD34-24-21SN	HD36-24-21PN
-X60-1	Generator interface – CAN control	1635-2490	HD34-24-18SE	HD36-24-18PE
-X60-2	Generator interface – Fuel control	1635-2491	HD34-24-19SE	HD36-24-19PE
-X60-3	Generator interface – analog control	1635-2492	HD34-24-23SE	HD36-24-23PE
-X70	TecJet valve	1635-2487	HD10-6-96P	HD16-6-96S
-X80	Knock sensors and exhaust T/C sensors	1635-2494	HDP24-24-31SE	HDP26-24-31PE

NOTICE

For detailed wiring connections refer to the ECP control wiring diagrams and cabinet layouts. (WWD PN# 9971-1828).

NOTICE

For different options concerning mating connectors contact your local Deutsch representative.



WARNING

Hazardous voltage is present on the particular sockets inside the receptacle -X50 (ignition coils power supply). There is a boost supply internal to the LECM that boosts the 24 VDC input voltage to 125 VDC for the output drivers.

Contacting Woodward

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.

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	
<u>Facility</u> -----	<u>Phone Number</u>	<u>Facility</u> -----	<u>Phone Number</u>	<u>Facility</u> -----	<u>Phone Number</u>
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				

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WOODWARD

PO Box 1519, Fort Collins CO 80522-1519, USA
1041 Woodward Way, Fort Collins CO 80524, USA
Phone +1 (970) 482-5811 • Fax +1 (970) 498-3058

Email and Website—www.woodward.com