



# INVERTEK DRIVES

www.invertek.co.uk

## OPTIDRIVE P2 / HVAC EXTENDED I/O MODULE

### User Guide



#### DECLARATION

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The manufacturer accepts no liability for any consequences resulting from inappropriate, negligent or incorrect installation.

The contents of this User Guide are believed to be correct at the time of printing. In the interests of a commitment to a policy of continuous improvement, the manufacturer reserves the right to change the specification of the product or its performance or the contents of the User Guide without notice.

#### SAFETY

This option is specifically designed to be used with the Optidrive P2 and HVAC variable speed drive product ranges and is intended for professional incorporation into complete equipment or systems. If installed incorrectly it may present a safety hazard. The Optidrive P2 / HVAC use high voltages and currents, carry a high level of stored electrical energy, and are used to control mechanical plant that may cause injury. Close attention is required to system design and electrical installation to avoid hazards in either normal operation or in the event of equipment malfunction.

System design, installation, commissioning and maintenance must be carried out only by personnel who have the necessary training and experience. They must read carefully this safety information and the instructions in this Guide and follow all information regarding transport, storage, installation and use of the Option module, including the specified environmental limitations.

Please read the SAFETY NOTICE carefully, and all Warning and Caution boxes elsewhere.

#### WARRANTY

All Invertek Drives Ltd (IDL) products carry a 2-year warranty, valid from the date of manufacture.

Complete Warranty Terms and Conditions are available upon request from your IDL Authorized Distributor.

Part No. 82-OPT-2-EXTIO-IN  
Version 1.00 / January 2011

#### SAFETY NOTICES

**WARNING** is given where there is a hazard that could lead to injury or death of personnel.

**CAUTION** is given where there is a hazard that could lead to damage to equipment.

It is the responsibility of the installer to ensure that the equipment or system into which the product is incorporated complies with the EMC legislation of the country of use. Within the European Union, equipment into which this product is incorporated must comply with 89/336/EEC, Electromagnetic Compatibility.

#### WARNING

Within the European Union, all machinery in which this product is used must comply with the Directive 89/392/EEC, Safety of Machinery. In particular, the equipment should comply with EN60204-1.

#### CAUTION

- Store the Optidrive Option Module in its box until required. It should be stored in a clean and dry environment. Temperature range  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .
- Install the Option Module into the Optidrive by inserting the module into the option module port of the Optidrive as shown in the mechanical installation section. Do not use undue force in inserting the option module into the port.

#### WARNING

- Optidrives and the Option Modules should be installed only by qualified electrical persons and in accordance with local and national regulations and codes of practice.
- **Electric shock hazard!** Disconnect and **ISOLATE** the Optidrive before attempting any work on it. High voltages are present at the terminals and within the drive for up to 10 minutes after disconnection of the electrical supply.
- Where the electrical supply to the drive is through a plug and socket connector, do not disconnect until 10 minutes have elapsed after turning off the supply.

#### STANDARDS CONFORMITY

An Optidrive fitted with this Option complies with the following standards:

- CE-marked for Low Voltage Directive.
- IEC 664-1 Insulation Coordination within Low Voltage Systems.
- UL 840 Insulation Coordination for electrical equipment.
- EN50081-2 EMC Generic Emissions Standard, Industrial Level.
- EN50082-2 EMC Generic Immunity Standard, Industrial Level.
- Enclosure ingress protection, EN60529 IP00, NEMA 250.
- Flammability rating according to UL 94.

#### SPECIFICATIONS

Model Number:	OPT-2-EXTIO-IN
Compatibility:	Optidrive P2 / HVAC (ODP-2 / ODV-2)
Digital Input x 3:	8-30V DC Input
Digital Input Response Time:	< 8ms
Max Relay switching voltage:	250V AC / 30V DC
Max Relay switching current:	6A (250V AC) / 5A (30V DC)
Environmental :	$-10^{\circ}\text{C}$ ... $+50^{\circ}\text{C}$
Conformity:	IP20, UL94V-0
Terminal Torque:	0.5Nm (4.5 lb-in)

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### MECHANICAL INSTALLATION

- Option Module inserted into Optidrive Option Module Port
- DO NOT use undue force in inserting the option module into the options port.
- Ensure the option module is fitted securely before powering on the Optidrive.
- Remove terminal block header from option module prior to tightening connections. Replace when wiring is completed. Tighten to Torque setting provided in Specifications.

Option Module Slot

Option Module

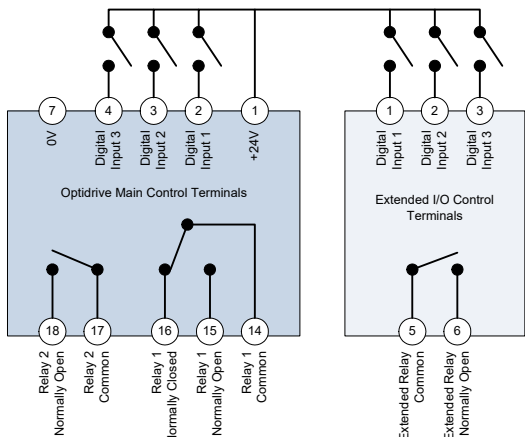


### OPTION MODULE CONNECTION TERMINALS

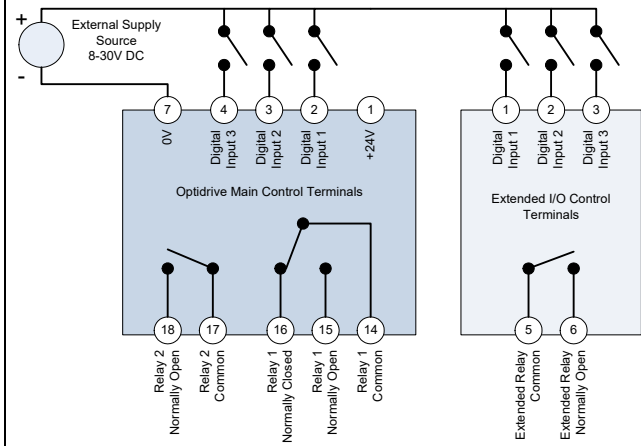
Pin	Function
1	Extended Digital Input 1 (DI6)
2	Extended Digital Input 2 (DI7)
3	Extended Digital Input 3 (DI8)
4	NC
5	Extended Relay Common
6	Extended Relay Normally Open Contact



### Connection Example – Internal Supply Connection



### Connection Example – External Supply Connection



### CONFIGURATION

#### Extended Digital Inputs:

Functionality for the additional digital inputs on the extended I/O option module is configured through parameter group 9 of the drive standard parameter set.

Menu group 9 parameters cannot be set until the Digital input function select parameter (P1-13) has been set to 0 (used defined I/O set-up). Access to Menu group 9 parameters is gained by first setting the advanced parameter security code into parameter P1-14. By default the advanced parameter security code is set to '201' (P1-14 = 201).

Digital inputs are assigned to drive functions using menu group 9. The following functions can be assigned to the extended I/O module digital inputs. The listed parameters (functions) should be set to **d in-6**, **d in-7**, or **d in-8** for configuration to the extended I/O option module digital inputs.

Parameter Number	Description
P9-01	Enable input source
P9-02	Fast stop input source
P9-03	Run (FWD) input source
P9-04	Run (REV) input source
P9-05	Latch function enable
P9-06	Reverse enable
P9-07	Reset input source
P9-08	External Trip input source
P9-09	Terminal ctrl override source
P9-18	Speed select input 0
P9-19	Speed select input 1
P9-20	Speed select input 2
P9-21	Preset speed select input 0
P9-22	Preset speed select input 0
P9-23	Preset speed select input 0
P9-24	Acc ramp select input 0
P9-25	Acc ramp select input 1
P9-26	Dec ramp select input 0
P9-27	Dec ramp select input 1
P9-28	Remote up input source
P9-29	Remote down input source
P9-30	Speed limit switch FWD
P9-31	Speed limit switch REV
P9-32	Fire mode input source

#### Extended Relay Output:

Functionality for the extended relay output is a fixed configuration set to 'drive Healthy' function on both the P2 and HVAC drive.

Alternative functionality for the relay can only be configured through the PLC programming functionality in the OptiTools Studio software. The PLC functionality is a bolt-on software module available from your local Inverter distributor. Parameter 9-41 must be set to 1 (user defined PLC) for PLC functionality programming.

Please refer to the OptiTools studio software for detail on configuring the relay functionality through the PLC programming function.

**For the Optidrive HVAC drive only**, the extended output relay can be used as part of the DOL cascade function and is automatically configured as such whenever the cascade function is enabled (P8-14 = 1). The default (drive healthy) function is automatically disabled once the cascade function is enabled.

For a single pump DOL cascade the extended output relay is automatically configured for control of the DOL pump and the function of the standard drive relay 2 should not be set for DOL control (ensure P2-18 is not set to 8).

For a dual pump DOL cascade the extended output relay is automatically configured for control of the DOL pump 2 when the standard drive relay 2 is set to control DOL pump 1 (P2-18 is set to 8).

For Cascade control of more than two pumps (up to max 4) the Cascade option model (OPT-2-CASCD-IN) should be used in place of the extended I/O module.

### LED STATUS INDICATION

The Extended I/O module has a Status LED – LED A (Green).

- LED A: Constant Green Indication - Modular is OK
- LED A: Flashing Green Indication – No Communication with drive
- LED A: LED Off Indication – No power to module

LED A (Green)



LED B is not used.



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