Optidrive Applications Support Library

Application Note	**AN-ODV-2-010**
Title	**Additional Relay Output Modules**
Related Products	**Optidrive HVAC**
Level **1**	1 – Fundamental - No previous experience necessary 2 – Basic – Some Basic drives knowledge recommended 3 – Advanced – Some Basic drives knowledge required 4 – Expert – Good experience in topic of subject matter recommended

Overview

The Optidrive HVAC is designed with two standard user relay outputs. Where additional relays are required, the Optidrive HVAC can be fitted with an option to extend the drives relay count. The part numbers for options modules with extended relay functionality that are designed for the Optidrive HVAC are given below:

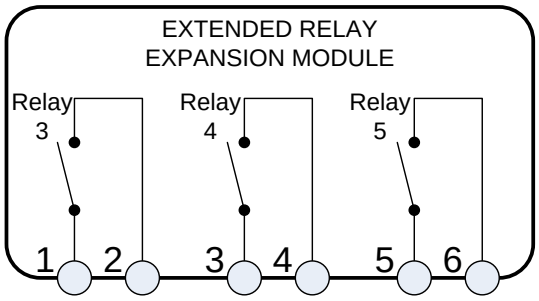
Option Part Number	Additional Relays Provided	Notes
82-OPT-2-CASCD-IN	3	Fitted to Optidrive HVAC option module slot
82-OPT-2-EXTIO-IN	1	Additional Digital Inputs (3) also provided Fitted to Optidrive HVAC option module slot
82-OPT-2-CANIO-IN	3	Additional Digital Inputs (3) also provided Fitted to Optidrive HVAC RJ45 Communications Port

This application note details the use and configuration of the additional relays for each of the option module mentioned above. If additional I/O is provided in the same option module then this is detailed in the option module user guide.

Extended Relay Option (82-OPT-2-CASCD-IN)

Pin Out Configuration

Terminal	Short Name	Long Name	Contact Rating
1	RL3-C	Relay 3 Output Common	Relay contacts, 250V AC, 30V DC, 5A
2	RL3-NO	Relay 3 Output NO	Relay contacts, 250V AC, 30V DC, 5A
3	RL4-C	Relay 4 Output Common	Relay contacts, 250V AC, 30V DC, 5A
4	RL4-NO	Relay 4 Output NO	Relay contacts, 250V AC, 30V DC, 5A
5	RL5-C	Relay 5 Output Common	Relay contacts, 250V AC, 30V DC, 5A
6	RL5-NO	Relay 5 Output NO	Relay contacts, 250V AC, 30V DC, 5A



The Option module is slotted into the option module slot on the Optidrive HVAC.

Parameter Configuration

For Optidrive HVAC the extended relay module can be configured to run with some default settings applied to the relay functionality, or they can be programmed via the (Optional) drive PLC programming functionality and the drive programming software.

When the Optidrive HVAC direct on line (DOL) pump cascade function (see user guide) is enabled then the relays of the extended relay module are automatically assigned to control the pump sets within the pump cascade. No other functionality is permitted in this mode. The DOL pump cascade function is selected by setting P8-14 to 1).

Parameter P9-41 (Relay 3, 4, 5 function select) is used to configure the operation of the relays when P8-14 is set to 0 (DOL pump cascade is disabled). The table below shows the relay configuration summary for the different settings of P8-14 and P9-41.

P8-14	P9-41	Function Selected
0	0	Default Operation
1	0	DOL Pump Cascade Control
0	1	PLC logic defined operation
1	1	DOL Pump Cascade Control

When P9-41 and P8-41 are set to 0 (default) then relay functionality is pre-defined by the drive with the following functions.

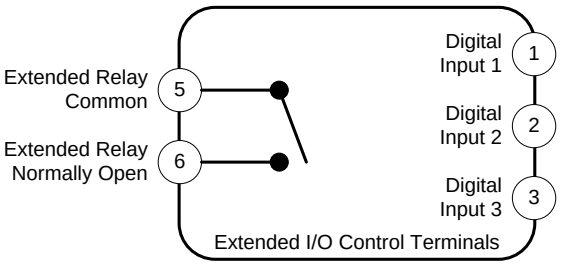
Relay No.	Function
Relay 3	Drive Healthy Indication (close on Healthy)
Relay 4	Drive Fault Indication (close on fault)
Relay 5	Drive Running Indication (close on enable)

Note that the drive standard relays (relays 1 and 2) are still fully configurable via parameters P2-15 and P2-18 for additional flexibility / functionality.

Extended Input / Output Option (82-OPT-2-EXTIO-IN)

Pin Out Configuration

Terminal	Short Name	Long Name	Terminal Rating
1	DI6	Digital Input 6	Refer to User Guide
2	DI7	Digital Input 7	Refer to User Guide
3	DI8	Digital Input 8	Refer to User Guide
4	-	NC	Relay contacts, 250V AC, 30V DC, 5A
5	RL3-C	Relay 3 Output Common	Relay contacts, 250V AC, 30V DC, 5A
6	RL3-NO	Relay 3 Output NO	Relay contacts, 250V AC, 30V DC, 5A



The Option module is slotted into the option module slot on the Optidrive HVAC.

Parameter Configuration

For Optidrive HVAC the extended I/O module can be configured to run with a default 'Drive Healthy' settings applied to the relay functionality or it can be programmed via the (Optional) drive PLC programming functionality and the drive programming software.

When the Optidrive HVAC direct on line (DOL) pump cascade function (see user guide) is enabled then the relay of the extended I/O module is automatically assigned to control a pump set within the pump cascade. No other functionality is permitted in this mode. The DOL pump cascade function is selected by setting P8-14 to 1).

Parameter P9-41 (Relay 3 function select) is used to configure the operation of the relay when P8-14 is set to 0 (DOL pump cascade is disabled). The table below shows the relay configuration summary for the different settings of P8-14 and P9-41.

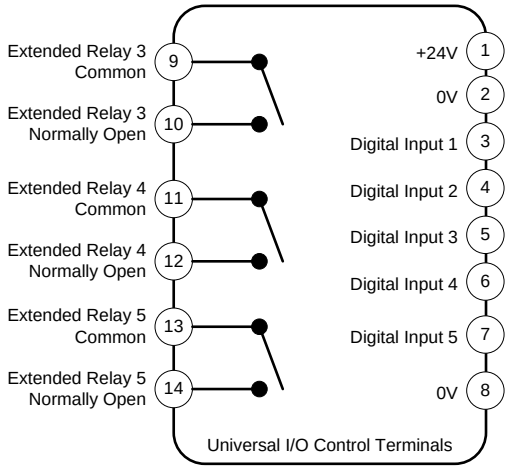
P8-14	P9-41	Function Selected
0	0	Default Operation
1	0	DOL Pump Cascade Control
0	1	PLC logic defined operation
1	1	DOL Pump Cascade Control

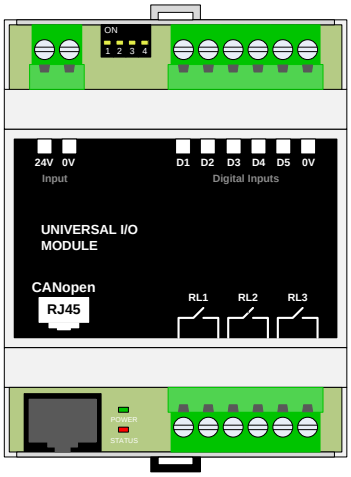
When P9-41 and P8-41 are set to 0 (default) the relay functionality is pre-defined as the Drive Healthy Indication (closed on Healthy).
Note that the drive standard relays (relays 1 and 2) are still fully configurable via parameters P2-15 and P2-18 for additional flexibility / functionality.

Universal I/O Module (82-OPT-2-CANIO-IN)

Pin Out Configuration

Terminal	Short Name	Long Name	Terminal Rating
1	+24V	+24V Input	Refer to User Guide
2	0V	0V Input	Refer to User Guide
3	DI1	Extended Digital Input 1	Refer to User Guide
4	DI2	Extended Digital Input 2	Refer to User Guide
5	DI3	Extended Digital Input 3	Refer to User Guide
6	DI4	Extended Digital Input 4	Refer to User Guide
7	DI5	Extended Digital Input 5	Refer to User Guide
8	0V	0V Input	Refer to User Guide
9	RL3-C	Relay 3 Output Common	Relay contacts, 250V AC, 30V DC, 5A
10	RL3-NO	Relay 3 Output NO	Relay contacts, 250V AC, 30V DC, 5A
11	RL4-C	Relay 4 Output Common	Relay contacts, 250V AC, 30V DC, 5A
12	RL4-NO	Relay 4 Output NO	Relay contacts, 250V AC, 30V DC, 5A
13	RL5-C	Relay 5 Output Common	Relay contacts, 250V AC, 30V DC, 5A
14	RL5-NO	Relay 5 Output NO	Relay contacts, 250V AC, 30V DC, 5A





The Option module is connected to the RJ45 communication port on the drive. The option module interfaces with the BacNet communication pins on the drive such that the option module and BacNet communication to other devices cannot be used simultaneously. The drive Modbus communication Pins on the RJ45 connector can still be used to interface to a Modbus master.

Parameter Configuration

For Optidrive HVAC the universal I/O module can be configured to run with some default settings applied to the relay functionality, or they can be programmed via the (Optional) drive PLC programming functionality and the drive programming software.
When the Optidrive HVAC direct on line (DOL) pump cascade function (see user guide) is enabled then the relays of the universal I/O module are automatically assigned to control the pump sets within the pump cascade. No other functionality is permitted in this mode. The DOL pump cascade function is selected by setting P8-14 to 1).

Parameter P9-41 (Relay 3, 4, 5 function select) is used to configure the operation of the relays when P8-14 is set to 0 (DOL pump cascade is disabled). The table below shows the relay configuration summary for the different settings of P8-14 and P9-41.

P8-14	P9-41	Function Selected
0	0	Default Operation
1	0	DOL Pump Cascade Control
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1	1	DOL Pump Cascade Control

When P9-41 and P8-41 are set to 0 (default) then relay functionality is pre-defined by the drive with the following functions.

Relay No.	Function
Relay 3	Drive Healthy Indication (close on Healthy)
Relay 4	Drive Fault Indication (close on fault)
Relay 5	Drive Running Indication (close on enable)

Note that the drive standard relays (relays 1 and 2) are still fully configurable via parameters P2-15 and P2-18 for additional flexibility / functionality.

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	JP	08/02/12
02	Updated to new format	KB	25/04/14