



Optidrive Applications Support Library

Application Note	AN-ODV-3-010
Title	Additional Relay Output Modules
Related Products	Optidrive Eco
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 Eco is designed with two standard user relay outputs. Where additional relays are required, an option module may be added to increase this to up to 5 relays. The part numbers for options modules with extended relay functionality that are designed for the Optidrive Eco are given below:

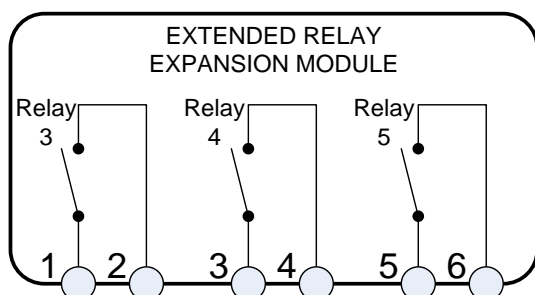
Option Part Number	Additional Relays Provided	Notes
82-OPT-2-CASCD-IN	3	Fitted to Optidrive Eco option module slot
82-OPT-2-EXTIO-IN	1	Additional Digital Inputs (3) also provided Fitted to Optidrive Eco option module slot
82-OPT-2-CANIO-IN	3	Additional Digital Inputs (3) also provided Fitted to Optidrive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

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 fits into the option module slot on the Optidrive Eco.

Parameter Configuration

For Optidrive Eco 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) Optitools Studio Function Block Editor software.

When the Optidrive Eco Pump Booster Pump Set Cascade for fixed speed assist pumps function (See Application Note AN-ODV-3-073 for further details) is enabled by setting P8-14 = 1, the relays are automatically assigned to control the fixed speed assist pump starting and stopping within the pump cascade system. No other functionality is permitted in this mode.

When P8-14 is set to 0, Parameter P9-41 (Relay 3, 4, 5 function select) is used to select whether the relays operate with their default functions, or are to be controlled by an internal function block program. The table below shows the relay configuration summary for the different settings of P8-14 and P9-41. Note that P9-41 may not be adjusted unless P1-13 = 0.

P8-14	P9-41	Function Selected
0	0	Default Operation
1	0	DOL Pump Cascade Control
0	1	Defined in Function Block Editor
1	1	Defined in Function Block Editor

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

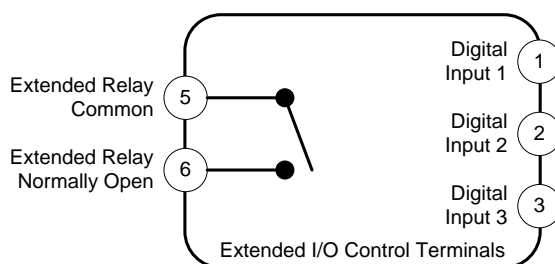
Relay No.	Function
Relay 3	Drive Healthy Indication (close on Healthy)
Relay 4	Drive Fault Indication (close on fault)
Relay 5	Drive Running Indication (close on enable)

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 Eco.

Parameter Configuration

For Optidrive Eco the extended I/O module can be configured to run with a default 'Drive Healthy' setting applied to the relay functionality or it can be programmed via the (Optional) Optitools Studio Function Block Editor software.

When the Optidrive Eco Pump Booster Pump Set Cascade for fixed speed assist pumps function (See Application Note AN-ODV-3-073 for further details) is enabled by setting P8-14 = 1, the relays are automatically assigned to control the fixed speed assist pump starting and stopping within the pump cascade system. No other functionality is permitted in this mode.

When P8-14 is set to 0, Parameter P9-41 (Relay 3, 4, 5 function select) is used to select whether the relays operate with their default functions, or are to be controlled by an internal function block program. The table below shows the relay configuration summary for the different settings of P8-14 and P9-41. Note that P9-41 may not be adjusted unless P1-13 = 0.

P8-14	P9-41	Function Selected
0	0	Default Operation
1	0	DOL Pump Cascade Control
0	1	Defined in Function Block Editor
1	1	Cascade Assist Pump 1 Control

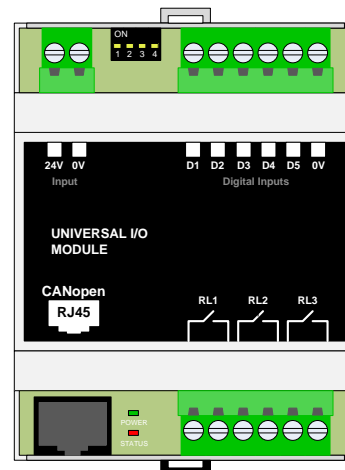
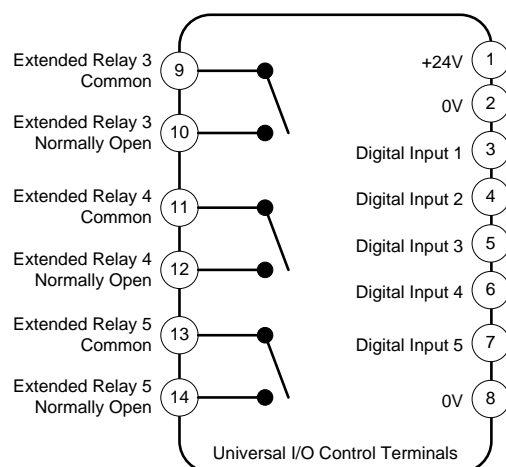
When P9-41 and P8-41 are set to 0 (default) the relay functionality is pre-defined as the Drive Healthy Indication (closed on Healthy).

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 Eco 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) Optitools Studio Function Block Editor software.

When the Optidrive Eco Pump Booster Pump Set Cascade for fixed speed assist pumps function (See Application Note AN-ODV-3-073 for further details) is enabled by setting P8-14 = 1, the relays are automatically assigned to control the fixed speed assist pump starting and stopping within the pump cascade system. No other functionality is permitted in this mode.

When P8-14 is set to 0, Parameter P9-41 (Relay 3, 4, 5 function select) is used to select whether the relays operate with their default functions, or are to be controlled by an internal function block program. The table below shows the relay configuration summary for the different settings of P8-14 and P9-41. Note that P9-41 may not be adjusted unless P1-13 = 0.

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.

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	KB	13/05/15