



Optidrive Applications Support Library

Application Note AN-ODV-2-051

Title Using the External Extended IO Module

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

This application guide details the configuration and use of the External Extended I/O module. The module is connected to the drive using a standard RJ45 cable and uses the CANopen communication link on the Optidrive HVAC to transfer information to and from the drive. The CANopen communication link can ONLY be used of the Optidrive HVAC for connection of this module.

The module is intended for use when the internal option module slot is occupied by another communications module and additional I/O functionality is required, or where the maximum amount of extended inputs and relays is required.

The option module cannot be used in conjunction with additional internal I/O expansion modules. Only one I/O expansion module can be used per drive.

Power is provided via the RJ45 connector, or by connecting an external 24V dc supply to the power input terminals.

Operation

After plugging the Extended I/O module into the drive, the LED indication should show a single green LED, provided that the drive is powered up and the address of the drive corresponds to the address set up on the Extended I/O module DIP switches (see Address setup below)

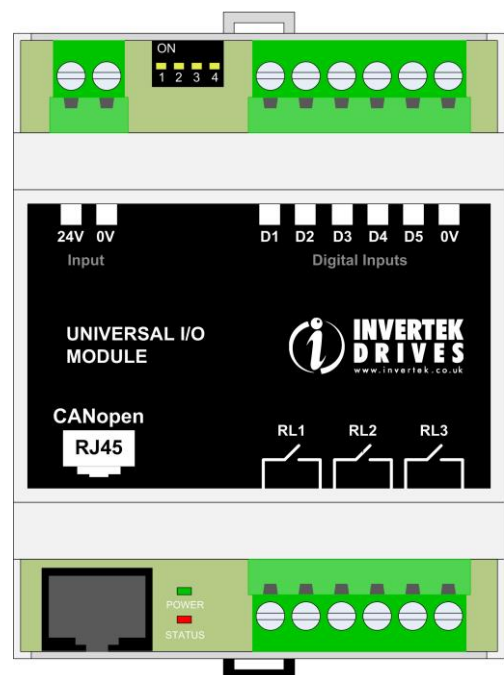
LED indication:

Power LED:

- Off – No power
- Solid Green – Power OK

Status LED:

- Off – Normal
- Flashing Red – No CANopen communications



Drive Address setup:

4 DIP switches are used for the drive address selection (drive address 1~16). This must match the address of the drive as set in P5-01.

DIP Switch Number				Drive Address
1	2	3	4	
OFF	OFF	OFF	OFF	1
ON	OFF	OFF	OFF	2
OFF	ON	OFF	OFF	3
ON	ON	OFF	OFF	4
OFF	OFF	ON	OFF	5
ON	OFF	ON	OFF	6
OFF	ON	ON	OFF	7
ON	ON	ON	OFF	8
OFF	OFF	OFF	ON	9
ON	OFF	OFF	ON	10
OFF	ON	OFF	ON	11
ON	ON	OFF	ON	12
OFF	OFF	ON	ON	13
ON	OFF	ON	ON	14
OFF	ON	ON	ON	15
ON	ON	ON	ON	16

Digital (Relay) Outputs:

The Extended I/O module has 3 relay outputs which have an identical operation to the Cascade option module which plugs directly into the drive.

The 3 relay outputs are configured as follows by default:

- Relay output 1 - Drive healthy.
- Relay output 2 - Drive tripped.
- Relay output 3 - Drive running.

When the DOL cascade function is enable in the Optidrive HVAC these relays automatically become the control relays for the DOL pumps. See the DOL cascade function in the product user guide for further information.

If a different functionality of the relay outputs to the above default settings is required, this can be configured by the user using the PLC programming functionality in the drive commissioning and configuration software (by setting P9-41 = 1).

Digital inputs:

The status of each of the digital inputs will be transferred to the drive in "User Register 1", as defined in the table below. "User register 1" can be accessed using the PLC programming functionality in the drive commissioning and configuration software.

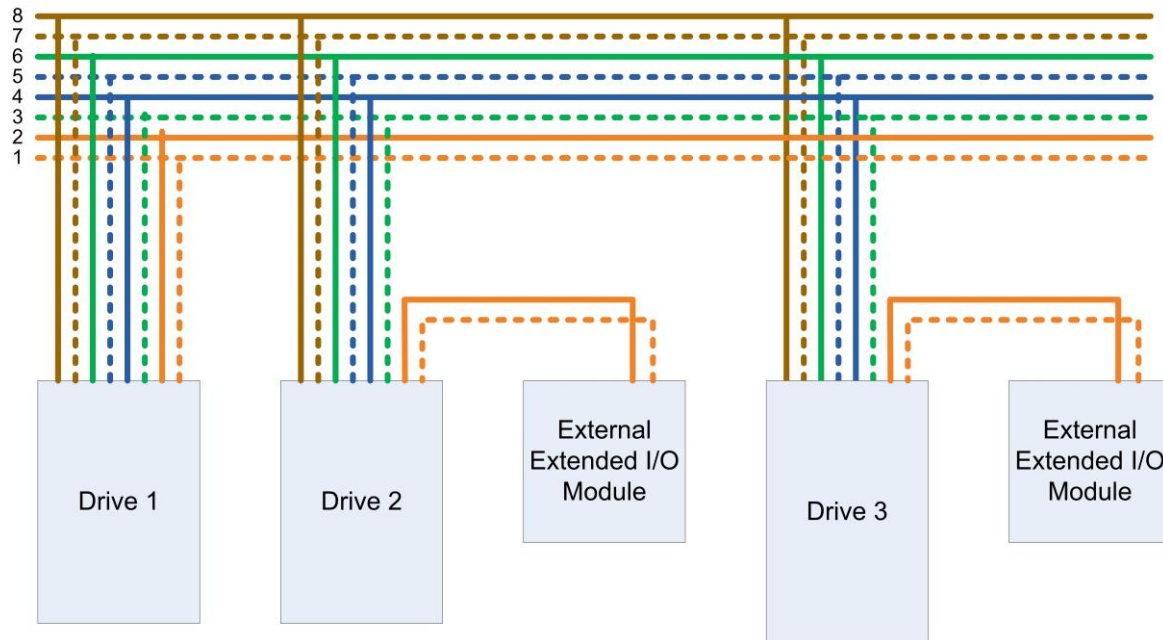
User register 1					
Bit 5 ~ Bit 15	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input 5	Input 4	Input 3	Input 2	Input 1

When a digital input is closed, its corresponding bit in "User register 1" will be set to 1.

Multiple External Extended I/O Modules in a Network

It might be that the External Extended I/O module is required to be used in a network of drives with other External Extended I/O modules. In this case the modules will be required to be isolated from each other or from the network (as each operates effectively as a Can Master).

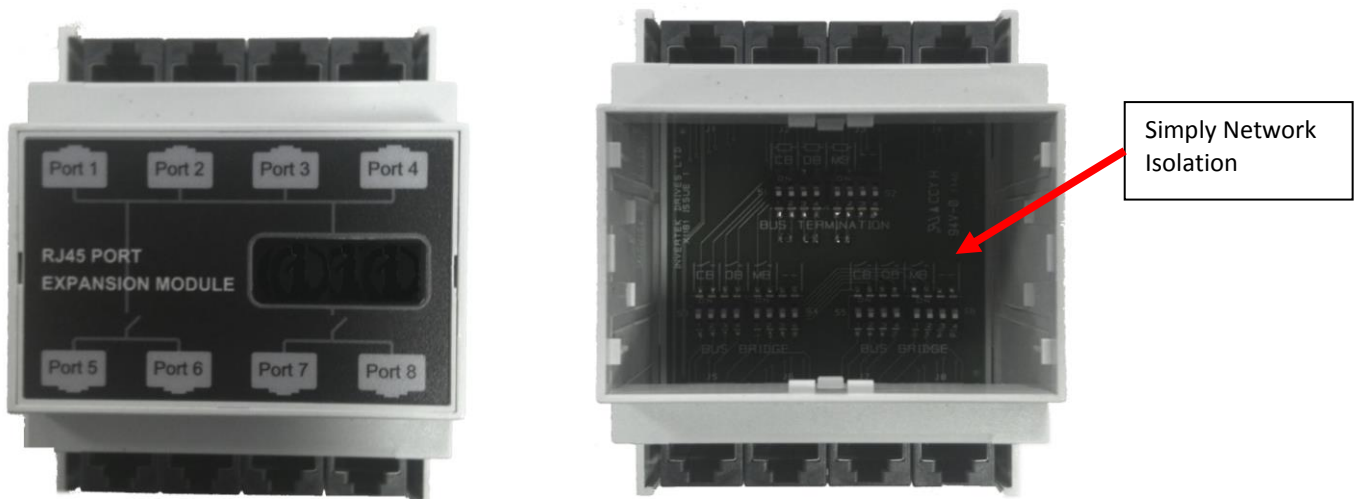
This can be done by isolating pins 1 and 2 between the drive and the External Extended I/O module from the rest of the network whilst maintaining the connection to each other. This is shown in the illustration below.



In this configuration other communication devices that use the drive Internal Bus or Modbus (for example; a remote keypad option or HMI device) will still be able to reference all of the drives in the network.

A RJ45 network expansion module is available from you local drive supplier that allows the use of Standard RJ45 patch leads for connecting External Extended I/O Modules but provides switches to isolate specific wire connections local/ from the rest of the network. These RJ45 network expansion modules are easily set-up to provide the network configuration shown in the diagram above.

Image showing the network expansion module:



Revision History			
Issue	Comments	Author	Date
01	First release	DMJ	14/10/11
02	Amended with Digital Input 5 addition	JP	18/01/12
03	Minor Edits	JP	05/04/12
04	Updated to new format	KB	28/04/14