

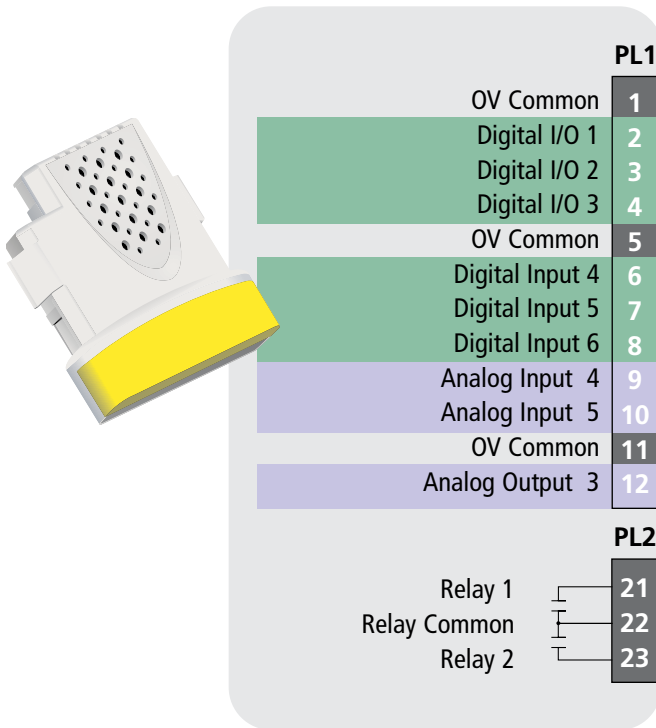
AC Drive Options & Accessories

Input/Output Modules

SM-I/O PLUS

This module provides expanded digital and analog I/O.

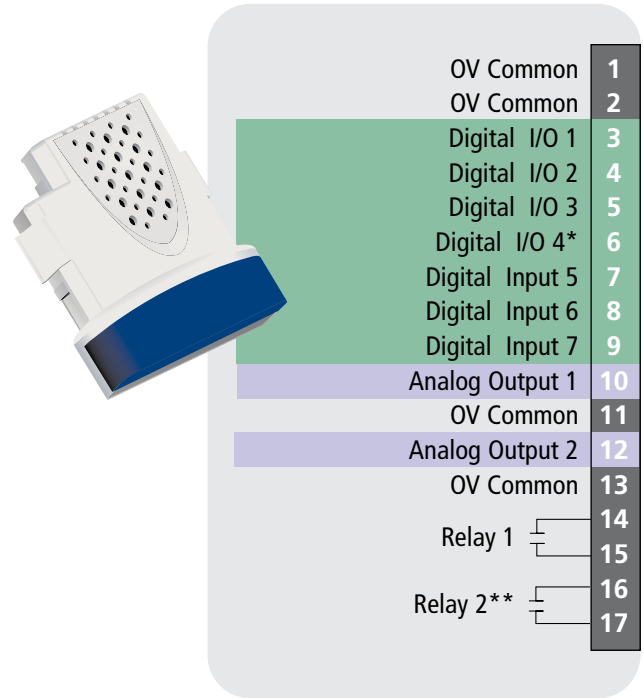
- 2 Analog Inputs (10-bit plus sign, ±10V)
- 1 Analog Output (10-bit plus sign, ±10V)
- 3 Digital Input/Outputs
- 3 Digital Inputs
- 2 Relays (2A @ 240 VAC, 4A @ 30 VDC)



SM-I/O 24V

The SM-I/O 24V is designed as an over voltage protected I/O Solution Module. The Solutions Module is able to withstand a +48V input voltage being applied to the +24V rated Digital I/O terminals.

- 2 x Analog Current Outputs
- 4 x Digital Input/Outputs
- 3 x Digital Inputs
- 2 x Relays** (30 VDC contact rating)



* Digital Input only with Commander SK

** Not available on Commander SK



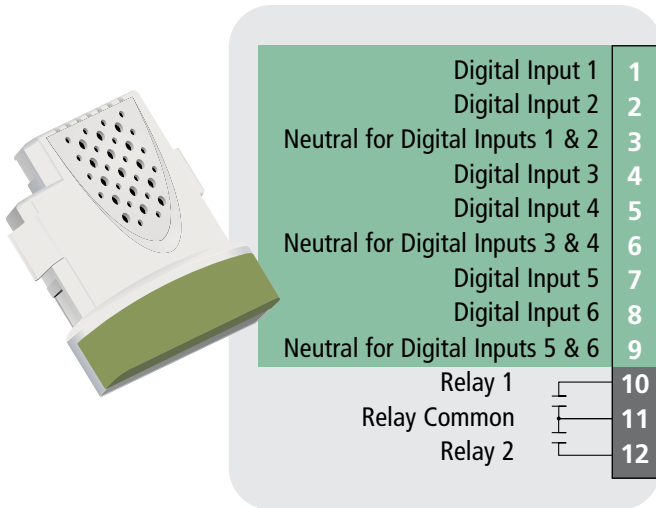
LEGEND

- Programmable Analog
- Programmable Digital
- Non-Programmable

SM-I/O 120V

This module provides digital I/O rated for 120 or 240 VAC. These I/O conform to IEC 61131-2 120 VAC standard.

- 6 Digital Inputs (120 VAC or 3 Digital Inputs @ 240 VAC)
- 2 Relays (2A @ 120 VAC, 4A @ 30 VDC)

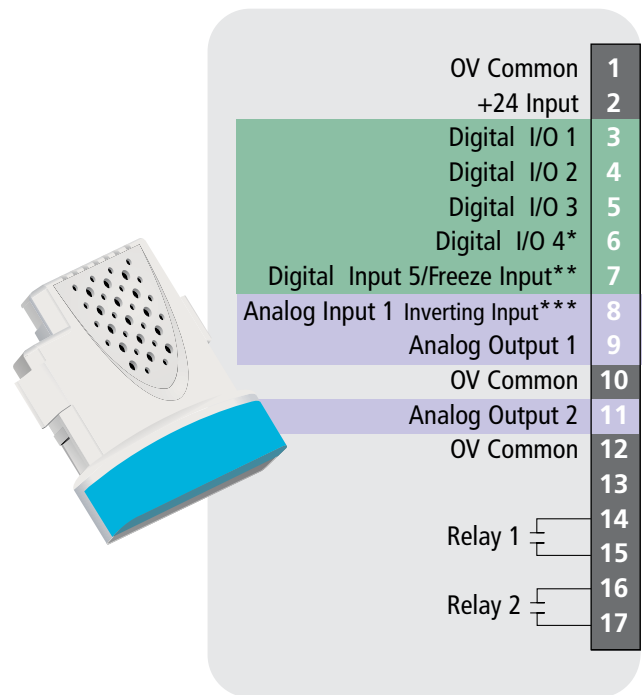


SM-I/O PELV

This module provides PELV (Protective Extra Low Voltage) double insulated digital and analog I/O to meet IEC 61131-2, Clause 3.3.1 Type as well as NAMUR NE37 specifications for chemical industry applications.

- 1 Analog Input (bipolar 0-10V, 4-20 mA or 0-20 mA)
- 2 Analog Outputs (4-20 mA or 0-20 mA)
- 1 Digital Input with freeze function
- 4 Digital Input/Outputs
- 2 Relays (2A @ 240 VAC, 4A @ 30 VDC)

Note: SM-I/O PELV module requires an external 24Vdc power supply rated at 150mA when all outputs are loaded. See the Options & Accessories section under 'Logic and I/O Power Supplies' for 24V dc power supply listings.



Installing Solution Modules is a SNAP!



* Digital Input only with Commander SK
 ** Freeze Input not available with Commander SK
 *** Current mode only

LEGEND

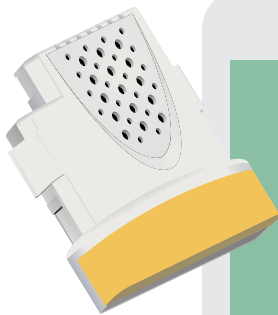
- Programmable Analog
- Programmable Digital
- Non-Programmable

SM-I/O 32



This module provides expanded digital I/O.

- 32 Digital Inputs/Outputs
- Includes Breakout Board and Cable
- Access to all I/O requires the use of SyPTLite or SyPTPro software



SM-I/O 32 digital outputs

Each group of 4 outputs can supply a total of 16mA, so each output is able to supply at least 4mA. A digital output can supply up to a maximum of 16mA as long as the total output current for the group does not exceed 16mA, (for example, one digital I/O set as an output and the other three digital I/O in the group set to inputs).

Recommended relay
TYCO Electronics Schrack ST3P2LC4

| | PL1 |
|-------------------------|-----|
| Digital Input/Output 1 | 1 |
| Digital Input/Output 2 | 2 |
| Digital Input/Output 3 | 3 |
| Digital Input/Output 4 | 4 |
| Digital Input/Output 5 | 5 |
| Digital Input/Output 6 | 6 |
| Digital Input/Output 7 | 7 |
| Digital Input/Output 8 | 8 |
| Digital Input/Output 9 | 9 |
| Digital Input/Output 10 | 10 |
| Digital Input/Output 11 | 11 |
| Digital Input/Output 12 | 12 |
| Digital Input/Output 13 | 13 |
| Digital Input/Output 14 | 14 |
| Digital Input/Output 15 | 15 |
| Digital Input/Output 16 | 16 |
| Digital Input/Output 17 | 17 |
| Digital Input/Output 18 | 18 |
| Digital Input/Output 19 | 19 |
| Digital Input/Output 20 | 20 |
| Digital Input/Output 21 | 21 |
| Digital Input/Output 22 | 22 |
| Digital Input/Output 23 | 23 |
| Digital Input/Output 24 | 24 |
| Digital Input/Output 25 | 25 |
| Digital Input/Output 26 | 26 |
| Digital Input/Output 27 | 27 |
| Digital Input/Output 28 | 28 |
| Digital Input/Output 29 | 29 |
| Digital Input/Output 30 | 30 |
| Digital Input/Output 31 | 31 |
| Digital Input/Output 32 | 32 |
| +24V Out | 33 |
| OV | 34 |
| OV | 35 |
| OV | 36 |
| OV | 37 |

[= output group

SM-I/O LITE

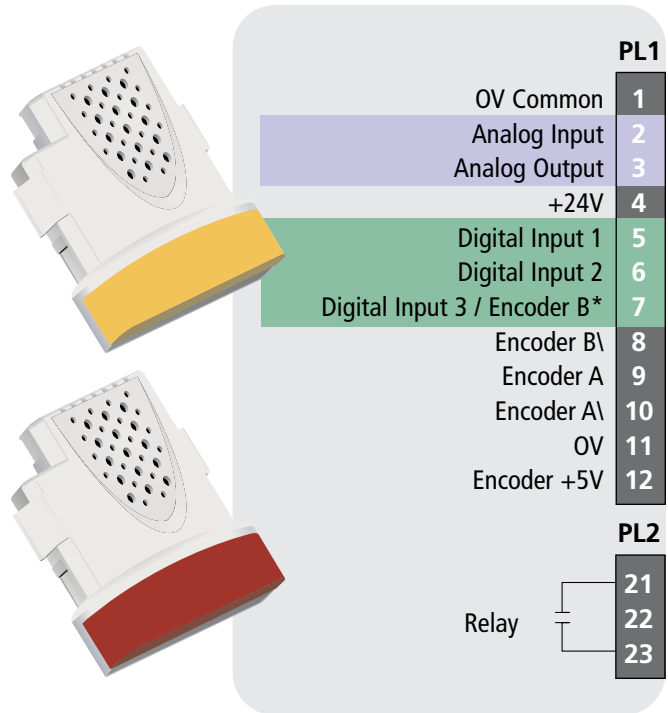
This module provides expanded digital and analog I/O plus encoder reference.

- 1 Analog Input (11-bit plus sign, ±10V, 4-20 mA, or 0-20 mA)
- 1 Analog Output (13-bit, 0-10V, 4-20 mA, or 0-20 mA)
- 3 Digital Inputs
- 1 Relay (2A @ 240 VAC, 4A @ 30 VDC)
- Quadrature encoder reference input

SM-I/O TIMER

As per SM-I/O LITE above, but with the addition of a Real Time Clock and Calendar for scheduling drive events.

- Access to Year, Month, Day, Hour, Minute, Second, and Daylight Savings Mode



LEGEND

- Programmable Analog
- Programmable Digital
- Non-Programmable

* When terminal 7 is used as an encoder input, digital input 3 is not available

COMMUNICATION CABLES

Use our RS232 or USB to RS485 cable connectors to connect a PC to the RJ45 serial port on the front of the drive. The same cable is used with other Control Techniques products that use a RS485 RJ45 connector such as the Commander SX, GP20 and SK.



| Description | Order Code |
|-------------------------|----------------|
| PC-to-drive Comms Cable | CT-COMMS-CABLE |
| PC-to-drive Comms Cable | CT-USB-CABLE |

IP54 AND IP55 FAN OPTIONS

For those applications using through-panel mounting, and located in demanding environments, Unidrive SP, Commander SK and Commander GP20 can be fitted with optional fans providing either IP54 or IP55 Ingress Protection Ratings. The chart below lists the available fan options.



| Drive Frame Size | IP54 Fan Option Order Code | IP55 Fan Option Order Code |
|------------------|----------------------------|----------------------------|
| 1 | 3251-4824 | 3251-3824 |
| 2 | 3251-4824 | 3251-3824 |
| 3 | N/A | 3251-1224 |
| 4 | 3251-7824 | N/A |
| 5 | Standard | N/A |
| 6 | Standard | N/A |

Drives fitted with fan options require field wiring.

EXTERNAL EMC FILTERS

EMC filters are used to minimize high frequency power supply line disturbances caused by PWM AC drives that may interfere with proper operation of sensitive electronic equipment. These specific filters have been assessed for conformance with the EMC directive by testing with the appropriate Control Techniques drives. The filters used with Unidrive SP, Commander SL, SK and GP20 have been designed to mount in either footprint or bookend dimensions, allowing the user to optimize panel space.



See the Options & Accessories section for details.

CONDUIT BOXES

Conduit plates for Commander SK, SL, GP20 and Unidrive SP (sizes 1-6) panel-mount drives.

| Frame Size | Order Code | Overall Dimensions |
|------------|----------------------------|--------------------|
| Size A | SK-NEMA1-KIT-A* | 2.09w x 2.4h |
| Size B | SK-NEMA1-KIT-B* | 2.17w x 2.4h |
| Size C | SK-NEMA1-KIT-C* | 2.78w x 2.4h |
| Size D | SK-NEMA1-KIT-D* | 4.29w x 2.4h |
| Size 1 | C-BOX-S1 | 3.94w x 17.8h |
| Size 2 | C-BOX-S2 | 6.1w x 17.8h |
| Size 3 | C-BOX-S3B** C-BOX-S3T** | 9.9w x 21.7h |
| Size 4 | C-BOX-S4 | 12.2w x 32h |
| Size 5 | C-BOX-S5 | 12.2w x 44.2h |
| Size 6 | C-BOX-S6 | 12.2w x 56.4h |

* Includes plastic top and side covers

** C-BOX-S3T (Top) is only necessary when a DC input power or dynamic braking resistor is required.

Sizes A-D

Commander SK (A-D)
Commander SL (A-C)



Size 1



Size 2



Size 3



Size 6



Size 5



Size 4



Power Accessories

INTERNAL DYNAMIC BRAKING RESISTORS

During deceleration, the mechanical energy stored in the spinning mass of the motor and load is converted to electrical energy, which recharges the drive's DC bus. Dynamic braking resistors provide a means of rapidly dissipating that energy so that the drive does not fault from overcharging the DC bus. The ohmic value and power rating of the braking resistor is a function of the drive type and size.



Size 1 Unidrive SP heatsink shown

A Zero-space braking resistor is available for heatsink mounting on Unidrive SP frame sizes 0-2. These resistors are designed for low-inertia loads commonly used in servo type applications. For higher-inertia loads, the heatsink mounted resistor may not have enough braking capacity, and a larger external resistor may be required. No additional thermal protection device is required with these heatsink mounted resistor packages.

| Frame Size | DC Resistance | Power Rating | Order Code |
|------------|---------------|--------------|------------------|
| 0 | 75 Ω | 50W | SM-HEATSINK-DBR0 |
| 1 | 75 Ω | 50W | SM-HEATSINK-DBR1 |
| 2 | 37.5 Ω | 100W | SM-HEATSINK-DBR2 |

(Drives Larger than Size 2 do not have this option)

DYNAMIC BRAKING RESISTORS

E-STOP DUTY

E-Stop duty DB resistors are designed for non-cyclic use where energy dissipation from an active drive is required.



CYCLIC DUTY

These heavy-duty kits have been designed to provide dynamic braking for cyclic and continuous braking applications.



See the Options and Accessories section for details

HUMAN MACHINE INTERFACE (HMI)

These operator interface units complement the product line by offering an impressive way of accessing parameters and adding more programming power to your application. The following features make these screens a simple and impressive solution for you... and your customers:

- Graphical full color or monochrome touchscreens
- Menus, submenus, alarms, fault conditions
- Realtime trends and graphs
- Scheduling and background programs
- Modbus RTU and Modbus TCP/IP
- Import pictures and graphics
- Advanced Recipe capabilities



For more information, refer to the Accessories Section.

When you need it FAST!

See the RapidPak pages in the Packaged Drives and Engineered Systems section for details.