



## SAFETY, WARNINGS

This product is intended for use in industrial compressed air or hydraulic system only. Do not use this product where pressures and temperatures can exceed those under "Technical Data".

Before using this product with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren. Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided. System designers and end users are cautioned to review specification warnings found in instruction sheets packed and shipped with this product.

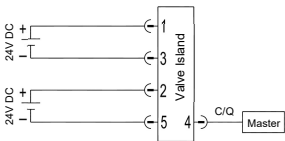
**IMI**

## PIN ALLOCATING OF IO-LINK PORT



| M12 x 1.5 mm / Male connector / A-coded / Class B |                                       |
|---|---------------------------------------|
| Pin No.   | Function                              |
| 1   | L+ (VB+) 24V electronics power supply |
| 2   | ZL+ (VA+) 24V valves power supply     |
| 3   | L- (VB-) 0V electronics power supply  |
| 4   | C/Q (COM) IO-Link communication       |
| 5   | ZM (VA-) 0V valves power supply       |

## WIRING OF IO-LINK CONNECTOR



### Notes:

- Make sure electronics power, valves power and their polarities are connected to correct pins respectively before switching on.
- Select the appropriate cables to mate with the connectors mounted on the IO-Link control module.

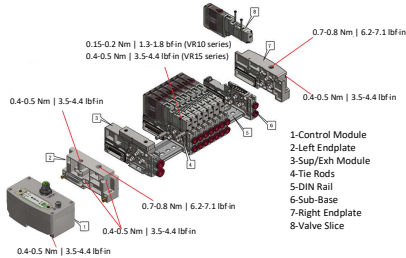
**IMI**

### Specific warnings:

- Check that the specification of the Valve Island and marking on the item of the equipment are suitable for the application being used on.
- Check technical data, such as operating pressure, voltage level, current type and temperature, on the product label or in the data sheets for compliance with the existing operating conditions.
- After removing the packaging, ensure that no contamination enters into the system.
- Check before the installation of the system that no contamination exists in the piping and valve island.
- Check during installation of the system that gaskets have not become damaged.
- Take measures to avoid unintentional or improper activation.
- Prior to the first electrical operation, ensure no danger would result from the medium exhausting from any open ports.
- Consider in case of pressurized systems that lines, valves and other components should not be removed.
- To avoid damaging the product, please make sure that the maximum torque values are not exceeded.
- IMPORTANT:** Always switch off the air supply, exhaust the residual pressure and unplug all electrical connections before performing any maintenance.
- Ensure the machine is in a safe condition before operating manual overrides.
- Pay due course and attention to the different polarity types available - PNP/NPN.
- A polarity protection diode is built in: Incorrect polarity does not cause a short circuit and does not require replacement valve slices. In this case only LED indicator works, but not valve slices.

**IMI**

## INSTALLATION



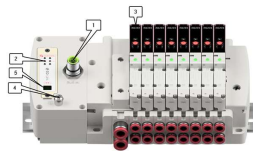
### Notes:

- Lubrication:** Valves will function reliably when they are supplied with clean dry air either lubricated or non-lubricated. If the air supply is lubricated, then lubrication must be supplied for the life of the product.
- Vibration:** In applications where there is significant vibration, the axis of the spool (longitudinal axis of the valve) should be at 90° to the direction of the motion.
- Tightening torque:**
  - M2: 0.15~0.2 Nm (1.3~1.8 lbf-in)
  - M3: 0.4~0.5 Nm (3.5~4.4 lbf-in)
  - M4: 0.7~0.8 Nm (6.2~7.1 lbf-in)
- Port Identification:**

| Function                            | Port / Identification |
|-------------------------------------|-----------------------|
| Main/internal pilot air supply      | P / 1                 |
| Exhaust                             | E / 3 / 5             |
| Outlet                              | A / 4 & B / 2         |
| External pilot air supply (if used) | 12 / 14               |
| Collected exhaust of pilot valves   | 82 / 84               |

**IMI**

## ELECTRICAL INTERFACE



| Item No. | Description              | Remark   |
|----------|--------------------------|--|
| 1        | IO-Link PORT Class B     | M12 x 1 Male / 5-pin I/A-coded                       |
| 2        | Status LEDs              | IO-Link control module status LEDs                   |
| 3        | Valve status LEDs        | Solenoid A (14 Solenoid)<br>Solenoid B (12 Solenoid) |
| 4        | Earth screw              | Terminal for functional earth (M4)                   |
| 5        | Baud rate setting switch | Data rate with COM2 or COM3                          |

**IMI**

## SOLENOID NUMBER, OUTPUT POINT & VALVE STATION MAPPING

- If valve stations ≤ 12, 2 solenoid numbers are always reserved for each valve station. \* Detailed allocation is shown as below:

| Station              | #1       | #2       | #3       | ... | #10       | #11       | #12       |
|----------------------|----------|----------|----------|-----|-----------|-----------|-----------|
| <b>Solenoid A</b>    | Sol.01   | Sol.03   | Sol.05   |     | Sol.19    | Sol.21    | Sol.23    |
| <b>(14 Solenoid)</b> | Output 0 | Output 2 | Output 4 |     | Output 18 | Output 20 | Output 22 |
| <b>Solenoid B</b>    | Sol.02   | Sol.04   | Sol.06   | ... | Sol.20    | Sol.22    | Sol.24    |
| <b>(12 Solenoid)</b> | Output 1 | Output 3 | Output 5 |     | Output 19 | Output 21 | Output 23 |
- Notes:
  - \* For valve station with single solenoid, only Solenoid A (14 Solenoid) is connected. Consider the one which is closest to IO-Link control module as 1st station (Station #1).
- If 12 < valve stations ≤ 24, special rules are required since only 1 solenoid number is reserved to valve station with single solenoid:
  - Sequence all solenoids following the rules below by starting from 1st station which is the station closest to control module:
    - 1) If 1st station is with double solenoids, sequence solenoid A as Sol.01, solenoid B as Sol.02, following 2nd station solenoid A as Sol.03, solenoid B as Sol.04,.....
    - 2) If 1st station is with single solenoid, sequence solenoid A as Sol.01, following 2nd station solenoid A as Sol.02, solenoid B as Sol.03,.....
    - 3) If a station is originally configured as blank, always 2 solenoid numbers are allocated.
    - 4) The rest of stations should also adhere to the sequence rules above.
  - A 14-station 24 solenoids valve island example is shown below:

| Station       | Double Solenoids |          | Double Solenoids |          | Single Solenoid |           | Single Solenoid |           | Double Solenoids |           | Double Solenoids |     | Single Solenoid |     | Double Solenoids |     |
|---------------|------------------|----------|------------------|----------|-----------------|-----------|-----------------|-----------|------------------|-----------|------------------|-----|-----------------|-----|------------------|-----|
|               | #1               | #2       | #3               | #4       | ...             | #10       | #11             | #12       | #13              | #14       | #15              | #16 | #17             | #18 | #19              | #20 |
| <b>Sol. A</b> | Sol. 01          | Sol. 03  | Sol. 05          | Sol. 06  |                 | Sol. 17   | Sol. 19         | Sol. 20   | Sol. 22          | Sol. 23   |                  |     |                 |     |                  |     |
|               | Output 0         | Output 2 | Output 4         | Output 5 |                 | Output 16 | Output 18       | Output 19 | Output 21        | Output 22 |                  |     |                 |     |                  |     |
| <b>Sol. B</b> | Sol. 02          | Sol. 04  | -                | -        |                 | Sol. 18   | Sol. 21         | Sol. 23   | -                | Sol. 24   |                  |     |                 |     |                  |     |
|               | Output 1         | Output 3 |                  |          |                 | Output 17 | Output 20       | Output 21 |                  | Output 23 |                  |     |                 |     |                  |     |

Notes: \* For valve station with single solenoid, only Solenoid A (14 Solenoid) is allocated & connected.

**IMI**

## LED STATUS DESCRIPTION

| Symbol                               | LED Status     | Description                   |
|--------------------------------------|----------------|-------------------------------|
| <b>COM</b>                           | Off            | No Power                      |
|                                      | Green on       | Communication not established |
|                                      | Flashing Green | Communication established     |
| <b>VA (Valve Power Supply)</b>       | Green on       | Voltage OK                    |
|                                      | Flashing red   | Undervoltage                  |
|                                      | Red            | Overvoltage                   |
| <b>VB (Electronics Power Supply)</b> | Green on       | Voltage OK                    |
|                                      | Flashing red   | Undervoltage                  |
|                                      | Red            | Overvoltage                   |

## BAUD RATE SETTING

- VR10/VR15 IO-Link device supports switching data rate between COM2 and COM3. Factory setting is COM3 (when DIP switch is at "ON" position).

- Remove LED window and adjust the DIP switch when power off.

- Put the window back before power on.

**IMI**

## SETTING

- Configuration**  
IODD file is used to configure VR10/VR15 valve island. Two IODD files are available depending on the baud rate. IODD file names as:  
"NORGREN-VR1X-IL-COM2-JJJJMMDD-IODDy.z.xml"  
"NORGREN-VR1X-IL-COM3-JJJJMMDD-IODDy.z.xml"

Notes:  
1. "-COM2/-COM3" are for two baud rates. COM2: 38.4 kbps, COM3: 230.4 kbps.  
2. "JJJJMMDD" (JJJJ-year, MM-month, DD-day) is date of release, "y,z" is version number.

The IODD files are available from the following web link:  
<https://www.norgren.com/uk/en/technical-support/software>

### Output mapping

|               |        | Output Byte 0 |        |        |        |        |        |        |        |        |        |        |        |        |        |
|---------------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|               |        | Sol.06        | Sol.07 | Sol.08 | Sol.09 | Sol.10 | Sol.11 | Sol.12 | Sol.13 | Sol.14 | Sol.15 | Sol.16 | Sol.17 | Sol.18 | Sol.19 |
| <b>Sol.01</b> | Bit 7  | Bit 6         | Bit 5  | Bit 4  | Bit 3  | Bit 2  | Bit 1  | Bit 0  |        |        |        |        |        |        |        |
|               | Bit 7  | Bit 6         | Bit 5  | Bit 4  | Bit 3  | Bit 2  | Bit 1  | Bit 0  |        |        |        |        |        |        |        |
| <b>Sol.02</b> | Sol.16 | Sol.15        | Sol.14 | Sol.13 | Sol.12 | Sol.11 | Sol.10 | Sol.09 |        |        |        |        |        |        |        |
|               | Bit 7  | Bit 6         | Bit 5  | Bit 4  | Bit 3  | Bit 2  | Bit 1  | Bit 0  |        |        |        |        |        |        |        |
| <b>Sol.03</b> | Sol.24 | Sol.23        | Sol.22 | Sol.21 | Sol.20 | Sol.19 | Sol.18 | Sol.17 |        |        |        |        |        |        |        |
|               | Bit 6  | Bit 5         | Bit 4  | Bit 3  | Bit 2  | Bit 1  | Bit 0  |        |        |        |        |        |        |        |        |

Detailed solenoid number, output point & valve station mapping information is listed in operation & service manual.

### Parameterization and Diagnostic

Detailed parameterization settings and diagnostics information is listed in operation & service manual.

Operation & service manual is available on website:  
<https://www.norgren.com/uk/en/technical-support/installation-maintenance-instructions/valves>



Norgren operates four global centres of technical assistance and a sales and service network in 90 countries, as well as manufacturing capability in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil. For information on all Norgren companies visit <https://www.norgren.com>. Supported by distributors worldwide.

**IMI**