## 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.



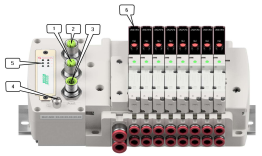


Specific warnings:
- Check that the specification of the Valve Island and marking on the item of the equipment are suitable for the application being used on.
- Check technical data, such as operating pressure, voltage level, current type and temperature, on the product label or in the data sheets for 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 pressurised 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 exceed.
- **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.





## ELECTRICAL INTERFACE



| Item No. | Description | Remark |
|---|---|---|
| 1 | Port 1 | PROFINET Network Port 1<br>M12 x 1 \| Female \| 4 – pin \| D – coded |
| 2 | Port 2 | PROFINET Network Port 2<br>M12 x 1 \| Female \| 4 – pin \| D – coded |
| 3 | PWR | Power Supply to Control Module and Valves<br>M12 x 1 \| Male \| 5 – pin \| A – coded |
| 4 | Earth Screw | Terminal for Functional Earth (M4) |
| 5 | Status LEDS | PROFINET Control Module Status LEDS |
| 6 | Valve Status LEDS | Solenoid A (14 Solenoid)<br>Solenoid B (12 Solenoid) |

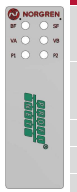




## PIN ALLOCATING OF PORT 1 / PORT 2

| M12 / 4 pins / Female Connector / D-coded | |
|---|---|
| Pin No. | Function |
| 1 | Transmission Data + (TD +) |
| 2 | Receive Data + (RD +) |
| 3 | Transmission Data - (TD -) |
| 4 | Receive Data - (RD -) |

## LED STATUS DESCRIPTION



| Symbol | LED Status | Description |
|---|---|---|
| BF | Off | PROFINET Software is not initialized |
| | Red on | Device is offline |
| | Flashing red | Hardware configuration and parameterization is not plausible |
| | Triple flashing red | IOPS = BAD (PLC stopped) |
| | Green on | No error |
| SF | Off | Device is not initialized |
| | Red on | Hardware confirmation is not plausible |
| | Flashing red | Short circuit fault or open load fault |
| | Double flashing red | Error, internal communication |
| | Triple flashing red | Fatal error |
| | Green on | No error |
| P1 | Off | Link connection not established |
| | Flashing green / yellow | Link connection established |
| | Yellow / green on | Link communication active |
| P2 | Off | Link connection not established |
| | Flashing green / yellow | Link connection established |
| | Yellow / green on | Link communication active |
| VA (Valve Power Supply) | Green on | Voltage OK |
| | Flashing red | Undervoltage |
| | Red | Overvoltage |
| VB (Electronics Power Supply) | Green on | Voltage OK |
| | Flashing red | Undervoltage |
| | Red | Overvoltage |

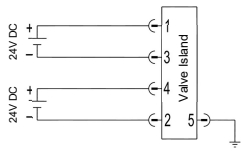




## PIN ALLOCATING OF POWER SUPPLY CONNECTOR

| M12 / 5 pins / Male Connector / A-coded | |
|---|---|
| Pin No. | Function |
| 1 | L1 (VB +) 24V electronics power supply |
| 2 | N2 (VA -) 0V valves power supply |
| 3 | N1 (VB -) 0V electronics power supply |
| 4 | L2 (VA +) 24V valves power supply |
| 5 | FE (functional earth) |

## WIRING OF POWER SUPPLY CONNECTOR

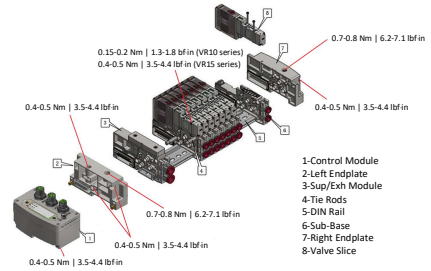



Notes:
- Make sure electronics power, valves power and their polarities are connected to correct pins respectively before switching on.
- Select the appropriate cables to mate with the connectors mounted on the control module.
- Connect the earth screw to ground.





## 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 |





## 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 |
|---|---|---|---|---|---|---|---|
| Solenoid A | Sol.01 | Sol.03 | Sol.05 | ... | Sol.19 | Sol.21 | Sol.23 |
| (14 Solenoid) | Output 0 | Output 2 | Output 4 | ... | Output 18 | Output 20 | Output 22 |
| Solenoid B | Sol.02 | Sol.04 | Sol.06 | ... | Sol.20 | Sol.22 | Sol.24 |
| (12 Solenoid) | 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 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:

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

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





## SETTING

- **Configuration**
The GSDML file is used to configure VR10/VR15:

GSDML file name: "GSDML-Vxx-NORGREN-VR1X-JJJJMMDD.xml"

Note: "JJJJMMDD" (JJJJ-year, MM-month, DD-day) is date of release, "Vxx" is file version.

The GSDML file is available on website:
https://www.norgren.com/uk/en/technical-support/software

- **Output Mapping**

| Output Byte 0 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Solenoid | Sol.08 | Sol.07 | Sol.06 | Sol.05 | Sol.04 | Sol.03 | Sol.02 | Sol.01 |
| Bit | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| **Output Byte 1** | | | | | | | | |
| Solenoid | Sol.16 | Sol.15 | Sol.14 | Sol.13 | Sol.12 | Sol.11 | Sol.10 | Sol.09 |
| Bit | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| **Output Byte 2** | | | | | | | | |
| Solenoid | Sol.24 | Sol.23 | Sol.22 | Sol.21 | Sol.20 | Sol.19 | Sol.18 | Sol.17 |
| Bit | Bit 7 | 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

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