PNEUMATIC SPOOL VALVE ISLANDS
VDMA 24563 ISO 02 - ISO 01 (G1/8 - G1/4)
designed for connection to a PLC by field bus and
the following protocols:
PROFIBUS-DP, INTERBUS-S, DEVICE NET,
WORLDFIP / FIPIO and MODBUS
BUSLINK - VDMA

Installation manual
CAUTION

To avoid malfunction of the bus system, please check on any valve island
- for correct addressing and speed parameters;
- for correct wiring or connection of the terminating resistor for the bus at each end of the network when using Profibus-DP, Device Net, FIPIO and Modbus.

All installation, adjustment and maintenance operations must be carried out by qualified personnel.

NOTICE

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1. **The BUSLINK - VDMA system**

Pneumatic islands of 4 to 16 monostable or bistable spool valves to VDMA, ISO 02 (G1/8) - ISO 01 (G1/4), with integrated connections for data exchange with a control system (PLC) by means of a field bus and standardized protocol. Versions adapted to the following standardized communication protocols:

![Diagram of BUSLINK - VDMA system](image)

1. Spool valves (16 monostable or bistable spool valves at maximum)
2. Module for bus connection
3. Module with 8 inputs
4. Module with 16 inputs

**ADVANTAGES**

With the many advantages it offers, the Buslink system meets modern needs for automated installations.

- No bulky and difficult wiring.
- Time and money saved due to direct electric cabling and common air supply.
- Unit tested and equipped with spool valves at delivery.
- Easy maintenance.

**COMBINATIONS**

Buslink units can be grouped as follows:

- Islands of 4, 6, 8, 10, 12, 14 or 16 monostable or bistable 5/2 or 5/3 spool valves. It is possible to mix monostable and bistable spool valves (max. configuration: 32 outputs).
- Differently sized islands for spool valve series 538 (ISO 02) - 539 (ISO 01) (**only one valve size per island**).
- Each island can be equipped with modules with 8 or 16 inputs (4 modules at maximum) which must be connected on the left side.
- Monostable and bistable spool valves with integrated push/pull pilot valves (E), all functions available on one island.
- Any configuration possible upon request.

The pilot valves size 15 (E) with pad mounting to CNOMO, E06.36.120N, are placed on the same side as the spool valves (D). The bistable spool valves are controlled by a new type of miniature solenoid valve with **integrated push/pull pilot** offering a compact solution as shown below.
1.1 PROFIBUS-DP
Pneumatic valve island for data exchange via field bus and standardized Profibus-DP protocol.

The connection between a control system (PLC) and pneumatic spool valve islands by means of a field bus with RS485 interface allows the transmission of data with a 2-wire cable:

• control signals to the spool valves and additional outputs
• information signals from the sensor inputs.

ADVANTAGES
With the many advantages it offers, the Buslink system meets modern needs for automated installations:

• No bulky and difficult wiring.
• Time and money saved due to direct electric cabling and common air supply.
• Visual display and quick disconnection for easy maintenance.
• Unit tested and equipped with spool valves at delivery.

COMBINATIONS
Buslink units can be grouped as follows:

• Modules for VDMA-type monostable or bistable spool valves, 5/2 or 5/3, ISO 02 (series 538 - G1/8) - ISO 01 (series 539 - G1/4).
• Modules with 8 or 16 inputs.

Any configuration possible upon request (only one valve size per island).

OPTIONS (consult us)
• Island with air supplied at two different pressure rates.
• Island with external air supply for pilot pressure.

COMMUNICATION CHARACTERISTICS
Communication protocol: PROFIBUS-DP (DIN 19245 - part 3 - EN 50170)
Transmission: shielded twisted pair, RS 485 interface
Bus structure: line or tree structure with repeaters
Max. number of spool valve islands: 97 islands (121 participants)
Number of valves per island: 4 to 16 spool valves
Max. number of inputs/outputs: 32 inputs and 32 outputs per island (including valve outputs)
Max. bus cable length: 100 m - 1200 m, depending on the transmission speed
Transmission speed: automatic selection from 9.6 KBaud to 12 MBaud
Island addressing (participants): integrated rotary-type switches
Compatibility with control system: no modification of current programs
Compatible equipment: SIEMENS, BOSCH, etc.

ELECTRICAL CHARACTERISTICS
Supply voltage: 24 V DC, ±10%. The outputs (valves) and the bus electronics/sensor inputs can be supplied separately.
Max. ripple ratio: 10 %
Consumption per pilot valve: 50 mA (monostable spool valve), 79 mA (bistable spool valve)
Consumption per input: 9 mA
Coil insulation class: F
Protection: IP65
Electrical insulation: optocouplers
Peak voltage suppression: integrated in the island for each coil
24 V supply connection: 4-pin male panel connector M18
Bus connection (IN/OUT): 5-pin male panel connector M12 (IP65)
Option 01: protection to IP40 with 9-pin female SUB-D panel connector
Input connection: 5-pin female panel connector M12 or screw terminals
Earth connection: at supply connector
Electromagnetic compatibility: in accordance with EU directive EMC 89/336/EEC
CE identification

PNEUMATIC CHARACTERISTICS
Fluid: air or neutral gas, filtered at 30 µm, lubricated or not
Operating pressure: 1.5 to 8 bar
Flow rate (Qv at 6 bar) series 538: 500 l/min
series 539: 950 l/min
Allowable temperature: +5°C to +50°C

For details on spool valves see P468
1.2 INTERBUS-S
Pneumatic spool valve island for data exchange via field bus and standardized INTERBUS-S protocol.

The connection between a control system (PLC) and several spool valve islands by means of a field bus with RS485 interface allows the transmission of the following data with a single 9-wire cable:
- control signals to the spool valves and additional outputs
- information signals from the sensor inputs.

ADVANTAGES
With the many advantages it offers, the Buslink system meets modern needs for automated installations:
- No bulky and difficult wiring.
- Time and money saved due to direct electric cabling and common air supply.
- Visual display and quick disconnection for easy maintenance.
- Unit tested and equipped with spool valves at delivery.

COMBINATIONS
Buslink units can be grouped as follows:
- Modules for VDMA-type monostable or bistable spool valves, 5/2 or 5/3, ISO 02 (series 538 - G1/8) - ISO 01 (series 539 - G1/4).
- Modules with 8 or 16 inputs.
  Any configuration possible upon request (only one valve size per island).

OPTIONS (consult us)
- Island with air supplied at two different pressure rates.
- Island with external air supply for pilot pressure.

COMMUNICATION CHARACTERISTICS
- Communication protocol: INTERBUS-S
- Transmission: shielded 3 x 2-wire cable, twisted in pairs, + 3 wires (2 forward, 2 return, 2 ground + 3 power supply wires), RS 485 interface
- Bus structure: loop
- Max. number of spool valve islands: 256 (with max. 2048 inputs and 2048 outputs)
- Number of valves per island: 4 to 16 spool valves
- Max. number of inputs/outputs: 32 inputs and 32 outputs per island (including valve outputs)
- Max. bus cable length: 400 m per segment, max. 13 km
- Transmission speed: 500 Kbaud (fixed)
- Island addressing (participants): automatic
- Compatibility with control system: no modification of current programs
- Compatible equipment: SIEMENS, BOSCH, KLOECKER MOELLER, AEG, ALLEN BRADLEY, GE FANUC etc.

VME system

ELECTRICAL CHARACTERISTICS
- Supply voltage: 24 V DC, ±10%. The outputs (valves) and the bus electronics/sensor inputs can be supplied separately.
- Max. ripple ratio: 10 %
- Consumption per pilot valve: 50 mA (monostable spool valve), 79 mA (bistable spool valve)
- Consumption per input: 9 mA
- Coil insulation class: F
- Protection: IP65
- Electrical insulation: optocouplers
- Peak voltage suppression: integrated in the island for each coil
- 24 V supply connection: 6-pin male panel connector M23
- Bus connection (IN/OUT): 9-pin male panel connector M23 (IN) and 9-pin female panel connector M23 (OUT)
- Input connection: 5-pin female panel connector M12 or screw terminals
- Earth connection: at supply connector
- Electromagnetic compatibility: in accordance with EU directive EMC 89/336/EEC

CE identification

PNEUMATIC CHARACTERISTICS
- Fluid: air or neutral gas, filtered at 50 µm, lubricated or not
- Operating pressure: 1.5 to 8 bar
- Flow rate (Qv at 6 bar) series 538: 500 l/min
  series 539: 550 l/min
- Allowable temperature: +5°C to +50°C

For details on spool valves see P468
1.3 DEVICE NET

Pneumatic spool valve island for data exchange via field bus and standardized DEVICE NET protocol.

The connection between a control system (PLC) and several spool valve islands by means of a field bus with DEVICE NET interface allows the transmission of the following data with a 2 x 2-wire cable:

- control signals to the spool valves and additional outputs
- information signals from the sensor inputs.

ADVANTAGES

With the many advantages it offers, the Buslink system meets modern needs for automated installations:

- No bulky and difficult wiring.
- Time and money saved due to direct electric cabling and common air supply.
- Visual display and quick disconnection for easy maintenance.
- Unit tested and equipped with spool valves at delivery.

COMBINATIONS

Buslink units can be grouped as follows:

- Modules for VDMA-type monostable or bistable spool valves, 5/2 or 5/3, ISO 02 (series 538 - G1/8) - ISO 01 (series 539 - G1/4).
- Modules with 8 or 16 inputs.

Any configuration possible upon request (only one valve size per island).

OPTIONS (consult us)

- Island with air supplied at two different pressure rates.
- Island with external air supply for pilot pressure.

COMMUNICATION CHARACTERISTICS

Communication protocol: DEVICE NET (Allen Bradley)
Transmission: shielded 2 x 2-wire cable, twisted in pairs (2 power supply, 2 signal wires)
Bus structure: line or tree structure
Max. number of spool valve islands: 63
Number of valves per island: 4 to 16 spool valves
Max. number of inputs/outputs: 32 inputs and 32 outputs per island (including valve outputs)
Max. bus cable length: 500 m at a transmission speed of 125 KBAud
200 m at a transmission speed of 250 KBAud
100 m at a transmission speed of 500 KBAud
Transmission speed: 125, 250 or 500 KBAud, adjustable with integrated DIP switches
Island addressing (participants): 8 DIP switches integrated in the connector housing
Compatibility with control system: no modification of current programs
Compatible equipment: ALLEN BRADLEY etc.

ELECTRICAL CHARACTERISTICS

Supply voltage: 24 V DC, ±10%. The outputs (valves) and the bus electronics/sensor inputs can be supplied separately.
Max. ripple ratio: 10 %
Consumption per pilot valve: 50 mA (monostable spool valve), 79 mA (bistable spool valve)
Consumption per input: 9 mA
Coil insulation class: F
Protection: IP65
Electrical insulation: optocouplers
Peak voltage suppression: integrated for each coil
24 V supply connection: 4-pin male panel connector M18
Bus connection (IN/OUT): 5-pin male panel connector 7/8" UN
Input connection: 5-pin female panel connector M12 or screw terminals
Earth connection: at supply connector
Electromagnetic compatibility: in accordance with EU directive EMC 89/336/EEC
CE identification

PNEUMATIC CHARACTERISTICS

Fluid: air or neutral gas, filtered at 30 µm, lubricated or not
Operating pressure: 1.5 to 8 bar
Flow rate (Qv at 6 bar) series 538: 500 l/min
series 539: 950 l/min
Allowable temperature: +5°C to +50°C
1.4 FIPIO

Pneumatic spool valve island for data exchange via field bus and standardized FIPIO protocol.

The connection between a control system (PLC or PC) and several spool valve islands by means of a field bus with FIPIO interface allows the transmission of the following data with a 2 x 2-wire cable:

- control signals to the spool valves and additional outputs
- information signals from the sensor inputs.

ADVANTAGES

With the many advantages it offers, the Buslink system meets modern needs for automated installations.

- No bulky and difficult wiring.
- Time and money saved due to direct electric cabling and common air supply.
- Visual display and quick disconnection for easy maintenance.
- Unit tested and equipped with spool valves at delivery.

COMBINATIONS

Buslink units can be grouped as follows:

- Modules for VDMA-type monostable or bistable spool valves, 5/2 or 5/3, ISO 02 (series 538 - G1/8) - ISO 01 (series 539 - G1/4).
- Modules with 8 or 16 additional inputs.
  Any configuration possible upon request (only one valve size per island).

OPTIONS

- Island with air supplied at two different pressure rates.
- Island with external air supply for pilot pressure.

COMMUNICATION CHARACTERISTICS

Communication protocol : FIPIO / World FIP
Transmission : shielded twisted pair
Bus structure : line or tree structure with repeaters
Max. number of spool valve islands : 62 islands, 32 per segment
  with TSX FP ACC4 connector
  housings or T-connectors
Number of valves per island : 4 to 16 spool valves
Max. number of inputs/outputs : 32 inputs and 32 output per island (including valve outputs)
Max. bus cable length : 1000 m per segment
  max. 5000 m
Transmission speed : 1 MBaud
Island addressing : 8 DIP switches integrated in the connector housing
Compatible equipment : TSX Model 7 (⇒ 47) or APRIL 5000, Schneider Automation

ELECTRICAL CHARACTERISTICS

Supply voltage : 24 VDC, ±10%. The outputs (valves) and the bus electronics/sensor inputs can be supplied separately.
Max. ripple ratio : 10 %
Consumption per pilot valve : 50 mA (monostable spool valve), 79 mA (bistable spool valve)
Consumption per input : 9 mA
Coil insulation class : F
Protection : IP65
Electrical insulation : optocouplers
Peak voltage suppression : integrated in the island for each coil
24 V supply connection : 4-pin male panel connector M18
Bus connection (IN/OUT) : 5-pin male panel connector M12
Input connection : 5-pin female panel connector M12 or screw terminals
Earth connection : at supply connector
Electromagnetic compatibility : in accordance with EU directive EMC 89/336/EEC
  CE identification

PNEUMATIC CHARACTERISTICS

Fluid : air or neutral gas, filtered at 30 μm, lubricated or not
Operating pressure : 1.5 to 8 bar
Flow rate (Qv at 6 bar) : 500 l/min
  series 538
  series 539
Allowable temperature : +5 °C to +50 °C

For details on spool valves see P468
1.5 MODBUS

Pneumatic valve island for data exchange by means of a field bus and standardized MODBUS protocol.

The connection between a control system (PLC) and several spool valve islands by means of a field bus with MODBUS interface allows the transmission of the following data with a 2-wire cable:
- control signals to the spool valves and additional outputs
- information signals from the sensor inputs.

ADVANTAGES

With the many advantages it offers, the Buslink system meets modern needs for automated installations.
- No bulky and difficult wiring.
- Time and money saved due to direct electric cabling and common air supply.
- Visual display and quick disconnection for easy maintenance.
- Unit tested and equipped with spool valves at delivery.

COMBINATIONS

Buslink units can be grouped as follows:
- Modules for VDMA-type monostable or bistable spool valves, 5/2 or 5/3, ISO 02 (series 538 - G1/8) - ISO 01 (series 539 - G1/4).
- Modules with 8 or 16 additional inputs.
Any configuration possible upon request (only one valve size per island).

OPTIONS

- Island with air supplied at two different pressure rates.
- Island with external air supply for pilot pressure.

COMMUNICATION CHARACTERISTICS

Communication protocol: Modbus in RTU format, 8 bits with parity
Transmission: shielded 2-wire cable, twisted in pairs, conforming to RS 485 interface
Max. number of spool valve islands: 255
Number of valves per island: 4 to 16 spool valves
Max. number of inputs/outputs: 32 inputs and 32 outputs per island (including valve outputs)
Max. bus cable length: 1200 m
Transmission speed: 4800, 9600 or 19200 baud, adjustable with integrated DIP switches
Island addressing (participants): 8 DIP switches integrated in the connector housing
Compatibility with control system: no modification of current programs
Compatible equipment: Crouzet, AEG-Schneider, OMRON etc.

ELECTRICAL CHARACTERISTICS

Supply voltage: 24 VDC, ±10%. The outputs (valves) and the bus electronics/sensor inputs can be supplied separately.
Max. ripple ratio: 10 %
Consumption per pilot valve: 50 mA (monostable spool valve, 79 mA (bistable spool valve)
Consumption per input: 9 mA
Coil insulation class: F
Protection: IP65
Electrical insulation: optocouplers
Peak voltage suppression: integrated in the island for each coil
24 V supply connection: 4-pin male panel connector M18
Bus connection (IN/OUT): 5-pin male panel connector M12
Input connection: at supply connector
Earth connection: at supply connector
Electromagnetic compatibility: in accordance with the EU directive EMC 89/336/EEC
CE identification: 

PNEUMATIC CHARACTERISTICS

Fluid: air or neutral gas, filtered at 30 µm, lubricated or not
Operating pressure: 1.5 to 8 bar
Flow rate (Qv at 6 bar) series 538: 500 l/min
Flow rate (Qv at 6 bar) series 539: 950 l/min
Allowable temperature: +5 °C to +50 °C

For details on spool valves see P468
2. SYSTEM COMPONENTS

2.1 FUNCTIONAL DESCRIPTION

BUSLINK spool valve islands are connected to a PLC with a bus cable to pilot the spool valves and detect the sensor status. An additional male connector is used to supply the islands with power. It is recommended to use two separate 24 V DC power supplies and safety fuses for the electrically operated spool valves and the bus electronics in order to prevent bus system failure in case of a short-circuit at the outputs. This also makes it possible to continue detecting the sensor status. The spool valves are piloted electrically via the electronic bus interface.

The pressure supply and exhaust are collected in the pneumatic subbase. The spool valves ensure the pressure supply and exhaust of the pneumatic actuators. The pneumatic connection of the actuators is made on the top side of the spool valves. The island can be equipped with additional input and/or outputs. The electrical sensors are connected to the additional optional input modules with male connectors M12 or screw terminals.

MAXIMUM CAPACITY OF A BUSLINK SPOOL VALVE ISLAND

The spool valve islands can be equipped with 32 inputs and 32 outputs. The outputs are occupied with spool valves (see below). You can also extend an island with modules with 8 or 16 inputs (for the sensors). Only 4 input modules may be connected to one island.

Example for maximum configuration:

<table>
<thead>
<tr>
<th>input modules</th>
<th>BUS connection module</th>
<th>Number of spool valves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

I : 8 inputs module (I1 or I2)
I5 : 16 inputs module

NOTE: - An island with 10 spool valves can be equipped with 4 input modules.
- The maximum configuration is 16 spool valves (32 outputs) and 4 modules with 8 inputs or 2 modules with 16 inputs (32 inputs).
### 2.2 BUSLINK DESCRIPTION

#### PROFIBUS-DP

- PROFIBUS-DP input and output with 5-pin male connector Ø12
- Device Net input and output with 9-pin male/female panel connector ØM23
- MODBUS input and output with 5-pin male connector Ø12
- Blanking plate for unused valve place ISO 02 - ISO 01
- Blanking plates for electrical and pneumatic mating surface (see accessories)

#### INTERBUS-S

- LED visual indicator for additional inputs
- Island addressing, speed, ...

#### DEVICE NET

- 24 V DC supply connection with 4-pin male panel connector ØM18, or 6-pin male panel connector M23 (Interbus-S only)

#### WORLDFIP

- Input connection with female panel connector ØM12 or screw terminals

#### FIPIO

- External pilot pressure supply

#### MODBUS

- Connectable pilot exhaust

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<thead>
<tr>
<th>No.</th>
<th>Description</th>
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<td>Subbase for pneumatic connection of the Buslink island</td>
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<td>2</td>
<td>Bus connection module</td>
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<td>3</td>
<td>Module with 8 or 16 inputs (max. 4 modules)</td>
</tr>
<tr>
<td>4</td>
<td>Monostable or bistable 5/2 or 5/3 spool valves (max. 16)</td>
</tr>
<tr>
<td>5</td>
<td>2 x 3/2 pilot valves size 15 (1 push/pull pilot for one bistable spool valve) or 1 x 3/2 (for one monostable spool valve)</td>
</tr>
<tr>
<td>6</td>
<td>Pressure supply &quot;1&quot; and exhausts &quot;3-5&quot; with threaded connection</td>
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<td>Operating ports &quot;2-4&quot; with threaded connection or instant fitting (lateral ports)</td>
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<tr>
<td>8</td>
<td>External pilot pressure supply</td>
</tr>
<tr>
<td>9</td>
<td>Connectable pilot exhaust</td>
</tr>
<tr>
<td>10</td>
<td>24 V DC supply connection with 4-pin male panel connector ØM18, or 6-pin male panel connector M23 (Interbus-S only)</td>
</tr>
<tr>
<td>11</td>
<td>Input connection with female panel connector ØM12 or screw terminals</td>
</tr>
<tr>
<td>12</td>
<td>LED visual indicator for pilot valves</td>
</tr>
<tr>
<td>13</td>
<td>LED visual indicator for additional inputs</td>
</tr>
<tr>
<td>14</td>
<td>Island addressing, speed, ...</td>
</tr>
<tr>
<td>15</td>
<td>Profibus-DP input and output with 5-pin male panel connector ØM12</td>
</tr>
<tr>
<td>16</td>
<td>Interbus-S input and output with 9-pin male/female panel connector ØM23</td>
</tr>
<tr>
<td>17</td>
<td>Device Net input and output with 5-pin male connector 7/8-16 UN</td>
</tr>
<tr>
<td>18</td>
<td>FIPIO input and output with 5-pin male connector ØM12</td>
</tr>
<tr>
<td>19</td>
<td>MODBUS input and output with 5-pin male connector Ø12</td>
</tr>
<tr>
<td>20</td>
<td>Blanking plate for unused valve place ISO 02 - ISO 01</td>
</tr>
<tr>
<td>21</td>
<td>Blanking plates for electrical and pneumatic mating surface (see accessories)</td>
</tr>
</tbody>
</table>
2.3 DIMENSIONS - MOUNTING

The island is provided with four mounting holes in the spool valve subbase and two mounting holes on the left side for the input/output modules. The centre distances L1 and L2 are dependent on the number and size of the spool valves (L2) and on the number of additional input/output modules (L1); see table below.

Make sure to provide for enough room on the right side for pressure supply and optional exhaust silencers.

Overall length BUSLINK/VDMA

- 538 (ISO 02) : L1 + L2 + 20.5
- 539 (ISO 01) : L1 + L2 + 30

1. Mounting: 2xØ5,3 counterbored Ø9; depth 5
2. Mounting: exØ5,3 counterbored Ø9; depth 5

<table>
<thead>
<tr>
<th>Valve series</th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n1 : number of input modules</td>
<td>n2 : number of spool valves</td>
</tr>
<tr>
<td></td>
<td>without</td>
<td>1</td>
</tr>
<tr>
<td>538 (ISO 02)</td>
<td>73.5</td>
<td>119.5</td>
</tr>
<tr>
<td>539 (ISO 01)</td>
<td>74</td>
<td>120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valve series</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>K1</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P1</th>
<th>P2</th>
<th>P3(1)</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>538 (ISO 02)</td>
<td>212</td>
<td>110</td>
<td>35.5</td>
<td>60.4</td>
<td>17.7</td>
<td>23.5</td>
<td>7.3</td>
<td>6</td>
<td>35</td>
<td>190</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>539 (ISO 01)</td>
<td>228</td>
<td>125</td>
<td>36</td>
<td>60.4</td>
<td>22</td>
<td>32.5</td>
<td>11</td>
<td>16</td>
<td>45</td>
<td>190</td>
<td>30</td>
<td>33.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valve series</th>
<th>S</th>
<th>T</th>
<th>U</th>
<th>ØV</th>
<th>W</th>
<th>X</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>538 (ISO 02)</td>
<td>38.5</td>
<td>43</td>
<td>19</td>
<td>G1/4</td>
<td>38</td>
<td>15.5</td>
<td>G1/8</td>
</tr>
<tr>
<td>539 (ISO 01)</td>
<td>46.5</td>
<td>51.5</td>
<td>27</td>
<td>G3/8</td>
<td>43.5</td>
<td>25</td>
<td>G1/4</td>
</tr>
</tbody>
</table>

(1) Height P3 is the minimum dimension required for connector and cable mounting.

WEIGHTS

<table>
<thead>
<tr>
<th>Valve series</th>
<th>Weight of a BUSLINK - VDMA island without bus input module (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight of one bus connection module: 0.550 kg</td>
</tr>
<tr>
<td></td>
<td>Weight of one input module: 0.545 kg</td>
</tr>
<tr>
<td>538 (ISO 02)</td>
<td>n2 : number of spool valves</td>
</tr>
<tr>
<td>539 (ISO 01)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2.2</td>
<td>2.9</td>
</tr>
<tr>
<td>3.1</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Total weight of a BUSLINK - VDMA spool valve island: Define the weight of the pneumatic components from the spool valve series and number of valves required (see above table) + the weight of the bus connection module + the weight of the input modules (0.545 kg x n1 modules).
2.4 ORDERING INFORMATION FOR A BUSLINK VDMA ISLAND ISO 02 - ISO 01

2.4.1 DEFINITION OF A BUSLINK VDMA ISLAND ISO 02 - ISO 01 (except for AS-Interface)

When ordering please specify the electrical components 1, the pneumatic components 2, and the optional accessories separately.

1 Electrical components

<table>
<thead>
<tr>
<th>TYPE</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>E</td>
</tr>
</tbody>
</table>

Electrical modules (max. 4):

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate the type of module required:

Type | Function of the input/output modules
--- | ---
E1 | 8 PNP inputs, screw terminals (max. 4 modules)
E2 | 8 PNP inputs, female panel connector M12 (max. 4 modules)
E5 | 16 PNP inputs, female panel connector M12 (max. 2 modules)

OPTIONS

- 00: without option
- 13: inactivation of diagnosis power 24V DC OFF (version Interbus-S/BS)
- 25: + M23 connector for supply (version Interbus-S)
- 99: other options

2 Pneumatic components

<table>
<thead>
<tr>
<th>GR</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>P</td>
</tr>
</tbody>
</table>

Spool valve series and size

GR 7: 538 (ISO 02)
GR 8: 539 (ISO 01)

OPTIONS

- 00: without option
- 35: external supply of pilot valves
- 99: other options

Connection

- G: Gaz thread
- N: NPT thread

Position

PORTS: 2 - 4

PORTS: 1 - 3 - 5

Type | Spool valve functions
--- | ---
A | Blanking plates for pneumatic mating surface
M | 5/2 - Solenoid air operated pilot Differeial return
J | 5/2 - Solenoid air operated pilot and return
G | 5/3 - Pressure held (W1) Solenoid air operated pilot
B | 5/3 - Pressure applied (W2) Solenoid air operated pilot
E | 5/3 - Exhaust released (W3) Solenoid air operated pilot

ORDERING EXAMPLE - Reference: CEBP00-E2E2

BUSLINK - VDMA island, PROFIBUS-DP protocol, two PNP input modules with female M12 panel connectors, for 8 spool valves series 539 equipped as follows:

- 4 5/2 spool valves, type M in positions 1, 2, 4, and 7
- 1 5/3 spool valve (W2), type B, in position 5
- 1 5/3 spool valve (W1), type G, in position 3
- 1 5/2 spool valve, type J, in position 6
- 1 free place (A) in position 8 for further extension equipped with a blanking plate for the pneumatic mating surface (please also provide for one set of blanking plates for electrical and pneumatic mating surface of pilots, see accessories).

ACCESSORIES (see end of chapter of each protocol)
### 2.5 VDMA ISO 02 - ISO 01 SPOOL VALVES SERIES 538 (G1/8) - 539 (G1/4) AND PILOT VALVES

<table>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
<th>Operators</th>
<th>VDMA size</th>
<th>CODE SPOOL VALVE ALONE (air operated)</th>
<th>CODE PILOT VALVE quantity x code (24V =)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Function : 5/2 solenoid air differential</td>
<td>ISO 02</td>
<td>538 00 001 + 1 x 30211178--P ▼</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Function : 5/2 solenoid air solenoid air</td>
<td>ISO 02</td>
<td>538 00 002 + 1 x 302 00 050 ▼</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Function : 5/3 pressure held W1 solenoid air</td>
<td>ISO 02</td>
<td>538 00 003 + 1 x 302 00 050 ▼</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Function : 5/3 pressure applied W2 solenoid air</td>
<td>ISO 02</td>
<td>538 00 004 + 1 x 302 00 050 ▼</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Function : 5/3 exhaust released W3 solenoid air</td>
<td>ISO 02</td>
<td>538 00 005 + 1 x 302 00 050 ▼</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TECHNICAL CHARACTERISTICS OF PILOT SOLENOID VALVES**

**30211178--P (3/2 NC)**
for monostable spool valve

**302 00 050 (2 x 3/2 NC)**
for bistable spool valve

**SPECIFICATIONS**

| FLUID CONTROLLED | : air or neutral gas, filtered 50µm, lubricated or not |
| OPERATING PRESSURE | : 0 to 8 bar |
| MAXIMUM ALLOWABLE PRESSURE | : air or neutral gas, filtered 30µm, lubricated or not |
| AMBIENT TEMPERATURE | : 0 to 8 bar |
| ORIFICE SIZE | : +25°C, +60°C |
| : 0.8 mm |

**CONSTRUCTION**

| Body | : Polyarylamide (IXEF) |
| Internal parts | : POM, PET, Stainless steel and brass |
| Sealing | : NBR, FPM |
| Coil | : Thermoplastic PET |
| Electrical safety | : EN 60730 |
| | : Ixef polyamide |
| | : Steel and plastic |
| | : Nitrile seals (NBR) |
| | : Moulded monolithic magnetic circuit and coil |
| | : NF C79300 |

**ELECTRICAL CHARACTERISTICS**

| SUPPLY VOLTAGE | : 24V DC |
| POWER CONSUMPTION | : 1 W |
| INSULATION CLASS | : F |
| PROTECTION | : IP65 |
| Solenoid valve with integrated led (code : 30215187--P), on request | 24V DC ±10% (max. ripple 10%) |
| | 1.5 W (per coil) |
| | F |
| | IP65 |
3 ASSEMBLY OF BUSLINK - VDMA

3.1 MOUNTING
Mount the island as described in chapter 2.3. Make sure to provide for enough room for the cables, connectors and optional exhaust silencers. Proceed with pneumatic and electrical connection.

3.2 PNEUMATIC CONNECTION

3.2.1 GENERAL

■ To subbase
The lines for the following common pneumatic signals are collected in the subbase: supply pressure (1), exhausts (3) and (5), and pilot valve exhaust. The connecting ports are either on the right side or - in some versions - on the left side of the subbase (see opposite).

■ Connecting instructions
- Remove all protective plastic caps.
- Insert the gasket which generally comes with the cylindrical connectors or banjo-type screw-fittings.
- Screw down the connectors and screw-fittings correctly.
- Screw in the exhaust silencers.
- Connect the pneumatic piping. Gather the tubes in order to have neat and accessible piping.

■ Recommendation for pressure supply connection (see following page)

■ Connections

<table>
<thead>
<tr>
<th>Series</th>
<th>Pressure supply</th>
<th>Exhausts</th>
<th>Pilot valve exhausts</th>
<th>Operating ports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(3) (5)</td>
<td>(82/84)</td>
<td>(2) (4)</td>
</tr>
<tr>
<td>538 (ISO 02)</td>
<td>G 1/4</td>
<td>G 1/4</td>
<td>G1/8</td>
<td>G1/8</td>
</tr>
<tr>
<td>539 (ISO 01)</td>
<td>G 3/8</td>
<td>G 3/8</td>
<td>G1/8</td>
<td>G1/4</td>
</tr>
</tbody>
</table>

The pilot valve exhausts can be collected in the G 1/8 port on the right side (no. 82/84).
3.2.2 CONNECTION OF PNEUMATIC SUPPLY

■ SUPPLY WITH 1 PRESSURE (P1)
  - Island with 4 to 6 spool valves: pressure supply on right side.

Mounting recommendations:
A maximum of five (5) spool valves can be operated at the same time without pneumatic malfunction.

- Island with 8 to 16 spool valves (AS-Interface: max. 8 spool valves)
The pressure on an island with more than 6 spool valves must be supplied from both sides. For this purpose, islands with 8 to 16 spool valves are provided with 3 additional connection ports to the left of the spool valves.

■ Supply with 2 different pressures (P1 - P2)
Possibility of supplying modules of 4 or 6 spool valves with pressure P2 (consult us).

■ External pressure supply of pilot valves (consult us).
### 3.3 MANUAL OVERRIDE

Pilot valves series 302 are equipped with manual override by impulse (A).

- **Pilot valve** for **monostable** spool valve
- **Pilot valve (push/pull pilot)** for **bistable** spool valve

![Diagram showing manual override and pilot valves](image)

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Procedure</th>
<th>Valve function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3/2 - 5/2</strong></td>
<td></td>
<td>The valve is activated as long as the manual override is pressed in (+)</td>
</tr>
<tr>
<td><strong>monostable</strong></td>
<td></td>
<td>Reset when the manual override is released</td>
</tr>
<tr>
<td><strong>5/2</strong></td>
<td>5/2</td>
<td>The valve is activated (+) (identical to pilot 14)</td>
</tr>
<tr>
<td></td>
<td>5/3</td>
<td>Permanently activated position is maintained</td>
</tr>
<tr>
<td><strong>bistable</strong> or</td>
<td>5/2</td>
<td>Reset to central neutral position</td>
</tr>
<tr>
<td><strong>5/3</strong></td>
<td>5/3</td>
<td>Reset (+) (identical to return 12)</td>
</tr>
<tr>
<td></td>
<td>5/2</td>
<td>Reset position is maintained</td>
</tr>
<tr>
<td></td>
<td>5/3</td>
<td>Reset to central neutral position</td>
</tr>
</tbody>
</table>

(+*) These changes can only be made if the valve is under pressure.
Supply pressure at port 1 (min. 1.5 bar).
4 ELECTRICAL CONNECTION

4.1 GENERAL

The islands are equipped with multipolar panel connectors for the connection of all exterior electrical lines. Cables and connectors must be supplied separately (see corresponding accessories for each version).

The connectors are protected to IP 65.

Input/output strip are protected to IP20.

Integrated protection circuit for each coil.

Connection of the cable
• Unscrew the cap at the back of the connector.
• Feed the cable through the cable gland.
• Strip the conductor ends and screw or solder them onto the wire guide insert.
• Screw the cap back onto the connector.
• Tighten the cable gland to seal off and fasten the cable.

4.2 VOLTAGE SUPPLY

The 24V DC power supply of the Buslink island feeds three separate circuits:
- bus electronics
- solenoid coils and outputs.
- inputs (optional).

These three circuits can be connected in order to be able to use only one common supply source, or to have two or three external power supplies so that the bus electronics, the inputs and the solenoid coils can each be supplied separately with 24V (common ground).

The islands are provided with two power supplies at delivery: one for the bus interface and the inputs, the other for the valves and the outputs (see wiring diagram below).

Advantage: Since the bus electronics is supplied with a separate 24V DC power supply, it can detect a fault and send a corresponding signal to the PLC (defective safety fuses, voltage drop etc.).

• Island with inputs:
In this configuration, the power supply of the inputs is coupled to the bus electronics (24V DC common power supply, common ground).

NOTE: In this configuration, the input optocouplers are connected to the common ground of the separate power supplies.

For other types of power supply connection consult us.
4.3 CONNECTION OF SUPPLY VOLTAGE

4.3.1 POWER SUPPLY OVER CONNECTOR M18 OR M23

The connection for the operating voltage is on the top of the island. The bus electronics/inputs and the spool valves/outputs are supplied separately.

The bus electronics of Interbus-S and Device-Net can be supplied with power over the network connector (see chap. 6 or 7). In this case, the power supply of the bus electronics/inputs must not be connected to the supply connector (pin 1 of the M18 connector or pin 4 of the M23 connector - see chap. 4.3.1). The Interbus-S or Device-Net network supply the two following elements with 24V DC: bus electronics and inputs.

4.3.2 SUPPLY BY NETWORK CABLE

The bus electronics of Interbus-S and Device-Net can be supplied with power over the network connector (see chap. 6 or 7). In this case, the power supply of the bus electronics/inputs must not be connected to the supply connector (pin 1 of the M18 connector or pin 4 of the M23 connector - see chap. 4.3.1). The Interbus-S or Device-Net network supply the two following elements with 24V DC: bus electronics and inputs.

4.3.3 CALCULATION OF CURRENT CONSUMPTION

The island's current consumption depends on its configuration. Calculating this current consumption will allow the user to provide for optimal 24 V power supply.

Consumption of the different elements:
- Consumption of bus electronics = 200 mA
- Consumption of one input = 9 mA
- Consumption of one pilot + LED = 50 mA (monostable version) or 79 mA (bistable version)
- Consumption of one 24V output M12 = max. 0.2 A

The islands are equipped for separate power supply of:
- the electronics and the inputs
- the spool valves and the M12 outputs
4.4 SUPPLY PRINCIPLES
The three circuits may be coupled/decoupled in accordance with the specific configurations as described below.
Once the supply diagram is defined, proceed as follows:
1 - Remove the cover of the input module.
2 - **Configure the internal coupling/decoupling shunts as described below.**
3 - Mount the cover back onto the module. Make sure not to lose the 4 seals (1) which must be placed on the female panel connectors.
4 - Proceed with outside wiring.

4.5 COUPLING OR DECOUPLING SHUNT CONFIGURATION OF 24V DC POWER SUPPLIES

4.5.1 COUPLING
• The supply of the inputs is coupled to the bus electronics over pins 1 and 3 of the M18 supply connector at delivery.

4.5.2 DECOUPLING
• In order to decouple the supply of the inputs from the bus electronics, the position of the shunts must be changed. In this case, the sensors (to detect the end of stroke allocated to the inputs) must be supplied over pins 1 and 3 of one of the M12 connectors on each input module (see following page).

4.6 CONNECTION OF INPUTS
• The two following types of connection are recommended:
  - with detachable M12 connectors with protection to IP65;
  - with detachable screw terminals with protection to IP20.
• Possibility of connecting sensors with 2 or 3 wires.
• The two following types of M12 connectors are recommended for the connection with connectors:
  - Straight duo connector (A) for the connection of 2 separate cables (one for each sensor or output).
  - Straight mono connector (B) for the connection of a sensor/output or cable bundle.

For connection details see following pages.
### INSTALLATION

#### 4.6.1 CONNECTION WITH M12 CONNECTOR

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24V DC IN</td>
<td>Supply of inputs</td>
</tr>
<tr>
<td>2</td>
<td>IN x +1</td>
<td>Input: positive logic (x + 1)</td>
</tr>
<tr>
<td>3</td>
<td>GROUND</td>
<td>Common ground (sensor with 3 wires)</td>
</tr>
<tr>
<td>4</td>
<td>IN x</td>
<td>Input: positive logic (x)</td>
</tr>
<tr>
<td>5</td>
<td>PE</td>
<td>Protection earth</td>
</tr>
</tbody>
</table>

**Wiring diagram of inputs**

View from screw side of male connector

- **2-wire sensor**
- **3-wire sensor** (magnetoresistive example)

**Male connectors to be supplied separately for the inputs:**

- **Straight duo** connector (for 2 cables)
  - Thread: M 12 - with 5 male pins
  - Cable feed-through: 3 to 5 mm
  - Code: **881 00 253**

- **Straight mono** connector (for 1 cable)
  - Thread: M 12 - with 5 male pins
  - Cable feed-through: 4 to 6 mm
  - Code: **881 00 330**

#### 4.6.2 CONNECTION WITH DETACHABLE SCREW TERMINALS (IP20)

**Wiring diagram of inputs**

- **2-wire sensors**
- **3-wire sensors**

**NOTE:**

The status of the connected sensors can be sampled over the inputs. The inputs have positive logic, they can be operated together with sensors with pnp outputs. The inputs are "LOW" and must be switched to \(+24\) V (HIGH) in order to be activated.

Typical input current: 9 mA at 24 VDC.

- Logical status "LOW" : \(< 8\) V
- Logical status "HIGH" : \(> 14\) V

Max. input voltage for external power supply of inputs: 40 V.
When 2-wires sensors are connected, the max. residual current must be \(< 1\) mA.
In "LOW" status, the max. residual current at the input must be \(< 1\) mA.
4.7 FUSES
The power supplies (bus module/sensor inputs and spool valves/outputs) are protected with fuses enclosed in the bus module housing. Replace the fuses by unscrewing the lid of the module housing. Remove the fuses with a thin pair of tweezers.

Only fuses of the same type and value may be used for replacement.

(A) Fuse type OMF63V/6.3A, set of 10 spare fuses (for outputs), code: 881 61 949

(B) Fuse type OMF63V/2A, set of 10 spare fuses (for bus interface and inputs), code: 978 01 726

4.8 INPUT ADDRESSING
The addressing priority for the spool valves is from top to bottom and from left to right.

Example BYTE 3:
If in the user configuration the first address byte of the island is 8, the address byte of the module in question is 8 + 3 = 11.
**ADDRESSING OF PILOT VALVES, ADDITIONAL INPUTS**

<table>
<thead>
<tr>
<th>Number and type of modules</th>
<th>1I / -</th>
<th>2I / - or 1I5 / -</th>
<th>3I / - or 1I5 / -</th>
<th>4I / - or 2I5 / -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. number of spool valves</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Spool valves</td>
<td>V 0.0</td>
<td>V 0.0</td>
<td>V 0.0</td>
<td>V 0.0</td>
</tr>
<tr>
<td></td>
<td>V 3.7</td>
<td>V 3.7</td>
<td>V 3.7</td>
<td>V 3.7</td>
</tr>
<tr>
<td>Inputs</td>
<td>IN 0.0</td>
<td>IN 0.0</td>
<td>IN 0.0</td>
<td>IN 0.0</td>
</tr>
<tr>
<td></td>
<td>IN 0.7</td>
<td>IN 1.7</td>
<td>IN 2.7</td>
<td>IN 3.7</td>
</tr>
</tbody>
</table>

⚠️ For FPIIO, the input/output addressing with a Telemecanique PLC is made by word.

**General principle**

Input : IN 0.0 = RIW x, 0, 0, 0

x : island number (01 to 62)

address on the network set by dip switch

**Application for BUSLINK-FIPIO with a Telemecanique PLC**

\[ \text{IN0.0} = \text{RIW x, 0, 0, 0} \]
\[ \text{IN1.7} = \text{RIW x, 0, 0, F} \]
\[ \text{IN2.0} = \text{RIW x, 0, 1, 0} \]
\[ \text{IN3.7} = \text{RIW x, 0, 1, F} \]
5 PROFIBUS-DP

5.1 CONNECTION OF THE BUS TO IP 65

The front panel of the pneumatic spool valve island for Profibus-DP is equipped with a 5-pin male panel connector M12 (E). The modules on either side of the system must be provided with terminating resistors (H).

The following accessories must be supplied separately for wiring purposes:

- T-connector M12 (F), with 5 male/female/male pins, code: 881 00 251
- 5-pin female connectors M12 for Profibus-DP (G) (for cable Ø4 to 6 mm), code: 881 00 304
- 5-pin female connectors M12 for Profibus-DP (G) (for cable Ø6 to 8 mm), code: 881 00 256
- 5-pin female terminating resistor M12 for Profibus-DP (H) (max. 3 MBaud), code: 881 00 262
- 5-pin female terminating resistor M12 for Profibus-DP (H) (3 to 12 MBaud), code: 881 00 332
- Cable for Profibus-DP (K), shielded twisted pair, 2 wires x 0,22 mm² (cable to be ordered separately).

Connection with M12 connectors (G)

![Diagram of M12 connector](image)

- Strip the cable as shown opposite.
- Prepare an additional isolated piece of wire (S).
- Solder the shield (P) onto the end of the additional wire; make sure that it does not come into contact with ends 1 and 3.
- Connection 5 allows for continuous shielding via the T-connector.

Connection of the shielded bus cable (K) to the M12 connector (G):

- View on screw side of female connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R x D/T x D - P</td>
<td>Data line B/B</td>
</tr>
<tr>
<td>2</td>
<td>5V - Bus (*)</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>R x D/T x D - N</td>
<td>Data line A/A</td>
</tr>
<tr>
<td>4</td>
<td>GND - BUS (**)</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>PE (**)</td>
<td>Protection earth</td>
</tr>
</tbody>
</table>

(*) These terminating signals are for the terminating shunt only. They must not be wired.
(**) Supply a shielded cable to wire pin 5 of the connector.
5.2 PROGRAMMING INSTRUCTIONS

For detailed information see the installation manuals for the PLC and the controllers. The pneumatic spool valve island is addressed over 4 input bytes and 4 output bytes. The data from the diskette supplied by JOUCOMATIC must be copied into the directory containing the slave islands in order to be able to configure the bus system of the JOUCOMATIC spool valve island.

For islands to DIN 19245 - part 3 use the files in the directory "NORM":
- for a Siemens master PLC: file JM000STX.200
- for all other master PLCs: file BPGENC01.GSD

For detailed information edit file BPGENC.GSD on the diskette.

5.2.1 ADDRESS SELECTION

Select the address of the pneumatic spool valve island as follows:

![Diagram showing address selection](image)

Example for spool valve with address # 03

NOTE:
The default address of the module is "03" at delivery.
Only addresses "03" to "99" are allowed for the pneumatic spool valve islands.

5.2.2 SETTING OF THE TRANSMISSION SPEED

The baud value is set automatically in accordance with the Profibus controller (master).
5.2.3 CONFIGURATION OF THE CONTROLLER CARD WITH THE JOUCOMATIC ISLANDS

CONFIGURATION OF PROFIBUS-DP WITH PLC SERIES S5 AND COM PROFIBUS FOR WINDOWS

(for detailed information on the program COM PROFIBUS see the Siemens COM PROFIBUS manual).

- Start the program COM PROFIBUS windows.

1) Copy the JOUCOMATIC file JM0005TX.200 into the subdirectory: \COMWINXX\TYPDAT5X.
2) Start the program COM PROFIBUS.
3) After having entered the configuration parameters for the master, add a new slave by clicking on the OTHER button.
4) Select the address.

5) Select the island type: "BP GEN C".

P.S. : Do not change the parameters in the menu "PARAMETERS"

6) Configure the slave and define the input and output addresses (see window below), click on the "Configuration" and enter the address under the format "P..." example: "P064"
CONFIGURATION OF PROFIBUS-DP WITH PLCs SERIES S7
(for detailed information on the program see the Siemens manual)
- Start the program STEP 7

1) Copy the JOUCOMATIC file BPGENC01.GSD or JOUC1107.GSD into the subdirectory: Installation directory\S7data\gsd or S7data\nsnet

2) Open the Station S300 window by double-clicking on the line “Station S300”.

3) Define the network parameters: master address, transmission speed, protocol.

4) Choose the slave type in the menu “Catalogue” and choose the JOUCOMATIC islands “BP-GEN-C” in the directory \other field devices\BP-GEN-C. Drag and drop the file into the master DP network (1).
5) Double-click on “DP-Slave” to modify the island's properties and double-click on the icon “PROFIBUS” to modify its address.

6) Configure the address of the inputs/outputs in the PLC's memory under the format "P..." by double-clicking on "Slave I/O".
5.3 STARTUP OF THE PROFIBUS-DP NETWORK

Connect all the islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller card must be in STOP position. Start as follows:

1) Make sure the configuration has been loaded into the PLC's EEPROM.
2) Connect the power supply of the islands (slaves).
3) Set the PLC's RUN/STOP switch to RUN.

To disconnect the system from the power supply, follow the above steps in reverse order.

5.4 DIAGNOSTICS

5.4.1 LED INDICATIONS

■ ON THE BUSLINK MODULE:
The Buslink module is provided with 4 diagnostic LEDs above the BUSLINK coupling (see 2.2)
  • ERR/NET (red) lights up as soon as data exchange from the bus is interrupted.
  • RUN/MOD (green) is constantly illuminated during regular operation as soon as signals can be received from the bus.
  • + 24V (green) is constantly illuminated as soon as the power supply to the valves is connected.
  • + 5V (green) is constantly illuminated as soon as the power supply for the electronics and the electrical inputs are connected.

■ ON THE PLC:
Several indicators on the front panel of the PLC allow to locate errors in the PROFIBUS-DP system, sensors, relays, valves, LEDs etc. An error can be deleted with the RUN/STOP button on the controller. See also the PROFIBUS-DP controller manual.

5.4.2 DIAGNOSTICS REGISTER

The diagnostics register gives the error status of the PROFIBUS-DP system in bit information. An appropriate software evaluation and/or error reaction is possible by bit comparison. For detailed information see the manual for the PROFIBUS-DP controller.

5.4.3 RESET POSITION

PROFIBUS-DP islands are provided with a reset into zero position.
The reset button next to the rotary switches (see chapter 5.2.1) serves to set the outputs to zero. This can become necessary during startup.

5.4.4 FUSES

See chapter 4.8.
## 5.5 ACCESSORIES FOR PROFIBUS-DP

<table>
<thead>
<tr>
<th>Description</th>
<th>Spool valve</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic blanking plate for unused spool valve place</td>
<td>ISO 02</td>
<td>881 00 358</td>
</tr>
<tr>
<td></td>
<td>ISO 01</td>
<td>881 00 357</td>
</tr>
<tr>
<td>Electrical and pneumatic blanking plates for unused pilot valve place</td>
<td></td>
<td>881 00 356</td>
</tr>
<tr>
<td>Straight 4-pin female connector M18 for 24 V DC power supply</td>
<td></td>
<td>881 61 903</td>
</tr>
<tr>
<td>Straight 5-pin male duo connector M12 for 2 inputs Ø3 - 5 mm</td>
<td></td>
<td>881 00 253</td>
</tr>
<tr>
<td>Straight 5-pin male mono connector M12 (1 cable) for inputs</td>
<td></td>
<td>881 00 330</td>
</tr>
<tr>
<td>F  T-connector for Profi  bus-DP</td>
<td></td>
<td>881 00 251</td>
</tr>
<tr>
<td>G  5-pin female connector M12 for Profibus-DP for 4 - 6 mm cable</td>
<td></td>
<td>881 00 304</td>
</tr>
<tr>
<td>G  5-pin female connector M12 for Profibus-DP for 6 - 8 mm cable</td>
<td></td>
<td>881 00 256</td>
</tr>
<tr>
<td>H  Female terminating resistor for Profibus-DP</td>
<td></td>
<td>881 00 262</td>
</tr>
<tr>
<td>(max 3MBaud)</td>
<td></td>
<td>881 00 332</td>
</tr>
<tr>
<td>(from 3 to 12 MBaud)</td>
<td></td>
<td>881 61 925</td>
</tr>
<tr>
<td>J  3 1/2&quot; floppy disk JM-VB-JOUCOMATIC for the configuration of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLC controller card intended for Buslink Profibus-DP islands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(K)  Cable to be ordered separately
5.6 DIMENSIONS OF ACCESSORIES FOR PROFIBUS-DP

POWER SUPPLY (Ø M18)
881 61 903

INPUTS (ØM12 - straight)
DUO connector: 881 00 253
(for 2 cable entries)

INPUTS (ØM12 - straight)
MONO connector: 881 00 330
(for 1 cable entry)

Connector for PROFIBUS-DP (Ø M12)
881 00 304

Connector for PROFIBUS-DP (Ø M12)
881 00 256

TERMINATING RESISTOR
PROFIBUS-DP, female
881 00 262 (max. 3MBaud)
881 00 332 (3 to 12 MBaud)

T-connector for PROFIBUS-DP
881 00 251

1: 5 male pins
2: 5 female pins
3: Thickness: 17 mm
6 INTERBUS-S

6.1 BUS CONNECTION

The front panel of the pneumatic spool valve island for Interbus-S is equipped with a 9-pin male panel connector M23 (BUS-IN) and a 9-pin female panel connector M23 (BUS-OUT). The bus cable from the PLC must be connected to the bus input on the first spool valve island. The bus cable from the first to the second spool valve island must be connected as follows:

- from the bus output on the first island
- to the bus input on the second island.

Connect the following spool valves islands in the same way (see chapter 1.2).

256 pneumatic spool valve islands can be connected to one Interbus-S branch with a shielded cable with 6 or 9 wires twisted in pairs. Use the 9-wire cable to supply the valve islands with power.

6.1.1 CONNECTION OF THE BUS CABLE TO THE INTERBUS-S CARD OR THE PHOENIX CONTACT BUS TERMINAL

Two connecting possibilities:

- directly to the Interbus-S card
- or to the Phoenix Contact bus terminal (*)

### Pin Assignment Table

<table>
<thead>
<tr>
<th>Interbus-S card or Phoenix Contact bus terminal</th>
<th>JOUCOMATIC island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin no. 25-pin SUB-D</td>
<td>Pin no. 9-pin SUB-D</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Check the pin assignment in the documentation provided with the Interbus-S card or Phoenix Contact bus terminal and observe the corresponding instructions.

Do not forget to set the above mentioned bridges on the corresponding SUB-D connector.
### 6.1.2 CONNECTION OF THE INTERBUS-S INPUT

View on soldered side of female connector

24V DC power supply:
- external (with 6 pin M23 connector)
- with the bus cable (see table below)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal name</th>
<th>Buslink Interbus-S cable (colour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DO</td>
<td>yellow</td>
</tr>
<tr>
<td>2</td>
<td>/DO</td>
<td>green</td>
</tr>
<tr>
<td>3</td>
<td>DI</td>
<td>grey</td>
</tr>
<tr>
<td>4</td>
<td>/DI</td>
<td>pink</td>
</tr>
<tr>
<td>5</td>
<td>GND signal</td>
<td>brown</td>
</tr>
<tr>
<td>6</td>
<td>PE</td>
<td>green/yellow</td>
</tr>
<tr>
<td>7</td>
<td>+ 24 V (+)</td>
<td>red</td>
</tr>
<tr>
<td>8</td>
<td>GND power</td>
<td>blue</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Shield terminal: - braiding

(*) to connect with cable for internal BUS supply (see chapter 4.3.2).

**Female connector to be supplied:**
- Straight 9-pin female connector
- Thread: M23 (250V~/7.5A)
- Cable feed-through: 5 - 8 mm
- Code: 881 61 951 (see accessories/Interbus-S)

### 6.1.3 CONNECTION OF INTERBUS-S OUTPUT

View on soldered side of male connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal name</th>
<th>Buslink / Interbus-S cable (colour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DO</td>
<td>yellow</td>
</tr>
<tr>
<td>2</td>
<td>/DO</td>
<td>green</td>
</tr>
<tr>
<td>3</td>
<td>DI</td>
<td>grey</td>
</tr>
<tr>
<td>4</td>
<td>/DI</td>
<td>pink</td>
</tr>
<tr>
<td>5</td>
<td>GND signal</td>
<td>brown</td>
</tr>
<tr>
<td>6</td>
<td>PE</td>
<td>green/yellow</td>
</tr>
<tr>
<td>7</td>
<td>+ 24 V</td>
<td>red</td>
</tr>
<tr>
<td>8</td>
<td>GND power</td>
<td>blue</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Shield terminal: - braiding

| Soldered bridge | Do not forget the soldered bridge between 5 and 9 |

**Male connector to be supplied:**
- Straight 9-pin male connector
- Thread: M23 (250 V~/7.5 A)
- Cable feed-through: 5 - 8 mm
- Code: 881 61 952 (see accessories/Interbus-S)

The BUS-OUT connection on the last island in the system must not be made. The bridge (5 - 9) must remain open.

It is not necessary to install a terminating resistor. Plug the panel connector on the last island with a protective plug ØM23 (IP 65).
6.2 PROGRAMMING INSTRUCTIONS

For detailed programming instructions see the PLC and Interbus-S controller manuals.

The addresses for the Buslink module are configured on the Interbus-S controller. Set the basic address (BA) and the window size with the dip switches. The addresses are not set on the spool valve island.

Automatic addressing: The address assignment is exclusively linked to the spool valve island’s position in the bus system.

Standard software is available and provided with the Phoenix Contact controller module.

PHYSICAL ADDRESSING:

OFFLINE CONFIGURATION (PC not connected to the controller card):

Software: IBS CMD.SWT

1 - After startup, the window "SETTING" is displayed:
   - Select your Interbus-S controller card.
   - Select "Extended" in the field "scope of function" to access the configuration mode.

2 - Select BUS TOPOLOGY in the menu "configuration".

3 - Select "Insert with identification code ..." in the menu "edit".

4 - A window "Insert with ID code" is displayed:
   - Enter the following for a JOUCOMATIC island:
     - ID code: 3. The identification numbers for the connected INTERBUS-S modules are important for the logical addressing (internal number). Each module type has its own identification number (pneumatic, speed variator, analog input/output, etc.). The ID number of the BUSLINK modules is 03. This corresponds to a pneumatic interface addressed with 2 words in logical addressing.
     - Process data channel: 32

5 - The window "New Device Description" is displayed:
   - Enter a number for the island in the field "Device number".
   - Click on "Device Icon ..." and select the icon for the JOUCOMATIC island in your network (icon no. 5 for example).
   - Click on "Process Data Addresses" and enter the memory area the PLC allocates to the JOUCOMATIC island you are configuring (this area can vary according to the PLC used, see the Phoenix-Contact manual).

ONLINE CONFIGURATION (PC connected to the network and islands in operation):

1 - After startup, the window "SETTING" is displayed:
   - Select "Extended" in the field "scope of function" (configuration mode).

2 - Click ONLINE

3 - The software displays the network topology (PLC + recognised connected islands)

4 - The JOUCOMATIC island is recognised (C-ad "ID code" and "Process data channel" are displayed) and identified as Phoenix-Contact I module.

5 - Double-click on the right to display the inputs.

6 - Double-click on the left to display the island's characteristics.
6.2.1 ADDRESS SELECTION
Address selection is not necessary.

6.2.2 SETTING OF THE TRANSMISSION SPEED
The transmission speed is defined by the controller (no adjustment possible). It is set at a constant 500 kbd.

6.2.3 CONTROLLER CARD CONFIGURATION WITH THE JOUCOMATIC ISLANDS

For detailed information see the corresponding controller manual.

6.3 STARTUP OF THE INTERBUS-S NETWORK
Connect all islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller cards must be in STOP position. Start as follows:
1) Make sure the configuration has been loaded into the PLC's EEPROM.
2) Connect the power supply of the islands (slaves).
3) Set the PLC's RUN/STOP switch to RUN.

Note:
To disconnect the system from the power supply, follow the above steps in reverse order.
6.4 DIAGNOSTICS

6.4.1 LED INDICATIONS

■ ON THE BUSLINK MODULE:
The Buslink module is provided with 4 diagnostic LEDs.
- ERR/NET (red) lights up as soon as data exchange from the bus is interrupted.
- RUN/MOD (green) is constantly illuminated during regular operation as soon as signals can be received from the bus.
- + 24V (green) is constantly illuminated as soon as the 24V power supply to the valves is connected.
- + 5V (green) is constantly illuminated as soon as the 24V power supply for the bus electronics (and to the sensor inputs) is connected.

■ ON THE INTERBUS-S CONTROLLER:
Several indicators on the front panel of the controller allow to locate errors in the INTERBUS-S system, sensors / relays, valves, LEDs etc. An error can be deleted with the RUN/STOP button on the controller. See also the INTERBUS-S controller manual.

Module error:
The power supply for the spool valve coils is monitored on the BUSLINK module. An error is signalised as soon as the voltage drops below 18 Volts. This error is indicated together with the segment number on the front panel of the controller. A module error does not cause the system to be stopped. The module error must be processed by the software. Take the option 13 or 25 to inhibit the 24 VDC detection (see chapter 2.4.1)

6.4.2 DIAGNOSTICS REGISTER

The diagnostics register gives the error status of the INTERBUS-S system in bit information. An appropriate software evaluation and/or error reaction is possible by bit comparison.

The following information is stored:
- Module error (voltage loss for the spool valve supply)
- Bus error (Remote Bus Error)
- Controller error
- Number of the bus segment at fault

For further information see the manual for the INTERBUS-S controller.

6.4.3 RESET POSITION

INTERBUS-S islands are provided with a reset into zero position.

6.4.4 FUSES

See chapter 4.8.
## 6.5 ACCESSORIES FOR INTERBUS-S

<table>
<thead>
<tr>
<th>Description</th>
<th>Spool valves</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic blanking plate for unused spool valve place</td>
<td>ISO 02</td>
<td>881 00 358</td>
</tr>
<tr>
<td></td>
<td>ISO 01</td>
<td>881 00 357</td>
</tr>
<tr>
<td>Electrical and pneumatic blanking plates for unused pilot valve place</td>
<td></td>
<td>881 00 356</td>
</tr>
<tr>
<td>Straight 6-pin female connector M23 for 24 V DC power supply</td>
<td></td>
<td>881 61 960</td>
</tr>
<tr>
<td>Straight 5-pin male duo connector M12 for 2 inputs Ø3 - 5 mm</td>
<td></td>
<td>881 00 253</td>
</tr>
<tr>
<td>Straight 5-pin male mono connector M12 (1 cable) for inputs</td>
<td></td>
<td>881 00 330</td>
</tr>
<tr>
<td>9-pin female connector M23 for Interbus-S input (BUS-IN)</td>
<td></td>
<td>881 61 951</td>
</tr>
<tr>
<td>9-pin male connector M23 for Interbus-S output (BUS-OUT)</td>
<td></td>
<td>881 61 952</td>
</tr>
</tbody>
</table>

## 6.6 DIMENSIONS OF ACCESSORIES FOR INTERBUS-S

**POWER SUPPLY (Ø M23)**  
881 61 960

**INPUTS (ØM12 - straight)**  
DUO connector: 881 00 253  
(for 2 cable entries)

**FEMALE CONNECTOR - INTERBUS-S INPUT**  
881 61 951

**MALE CONNECTOR - INTERBUS-S OUTPUT**  
881 61 952
7 DEVICE NET

7.1 BUS CONNECTION

The front panel of the pneumatic spool valve island for DEVICE NET is equipped with a 5-pin male panel connector 7/8 - 16 UN (E).

The bus can be connected in the two following ways:

• directly to the island with the T-connector.
• with a straight connector, cable (max. length: 3 m) and the Device Net distributor box.

The modules on either side of the system must be provided with terminating resistors (L1 or L2).

7.1.1 DIRECT CONNECTION WITH T-CONNECTOR

For installation purposes the T-connector for the bus and the 2 connectors are placed at a slant angle (see diagram below).

The following accessories are required for wiring:

■ 5-pin male/female/female T-connector 7/8 - 16 UN (F), code: 881 61 932.
■ 5-pin female connector 7/8 - 16 UN for Device Net input (G), code: 881 61 930.
■ 5-pin male connector 7/8 - 16 UN for Device Net output (H), code: 881 61 931.
■ Male terminating resistor for Device Net (L1), code: 881 61 934.

NOTE: If the user connects the bus in the opposite way as described above, i.e. input over 5-pin male connector (H), a female terminating resistor (L2) must be used, code: 881 61 933.

■ Shielded cable for Device Net (K) 2 wires x 1,53 mm² + 2 wires x 0,95 mm², (cable to be ordered separately).

Connection of connectors 7/8 - 16 UN (G and H)

24V DC power supply:
- either from an external source
- or by the bus cable (see table below)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal name</th>
<th>Description</th>
<th>Device-Net cable (colours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DRAIN</td>
<td>shield, capacitive ground</td>
<td>(shield)</td>
</tr>
<tr>
<td>2</td>
<td>+24V-CAN</td>
<td>power supply by the bus</td>
<td>red</td>
</tr>
<tr>
<td>3</td>
<td>GND-CAN</td>
<td>ground</td>
<td>black</td>
</tr>
<tr>
<td>4</td>
<td>CAN-H</td>
<td>data - high active</td>
<td>white</td>
</tr>
<tr>
<td>5</td>
<td>CAN-L</td>
<td>data - low active</td>
<td>blue</td>
</tr>
</tbody>
</table>
7.1.2 CONNECTION WITH STRAIGHT 5-PIN FEMALE CONNECTOR

The following accessories are required for wiring:
- 5-pin female connector 7/8 - 16 UN (G), code: 881 61 930.
- Shielded cable for Device Net (K) 2 wires x 1,53 mm² + 2 wires x 0,95 mm², (cable to be ordered separately).

Connection of the connector 7/8 - 16 UN (G)
Identical to chapter 7.1.1 (see previous page).
7.2 PROGRAMMING INSTRUCTIONS

Configure the controller card (DEVICE NET network card) with the "Device Net Manager" software.

To include pneumatic spool valve islands (slaves) in the configuration, you must change the scanner's scanlist. For detailed information on the scanner and the software tool "DeviceNet Manager" see the corresponding manuals.

7.2.1 ADDRESS SELECTION

NOTE: The default address of the module is "03" at delivery. You can change the island's address with the dip switches in the bus coupling module. Only addresses greater than "03" are allowed for the pneumatic spool valve islands.

7.2.2 SETTING OF THE TRANSMISSION SPEED

NOTE: The transmission speed is set at 500 kbd at delivery (dip switch in the position shown above).
7.2.3 CONFIGURATION OF THE CONTROLLER CARD WITH THE JOUCOMATIC ISLANDS

To change the scanlist, open the „scanlist setup“ window (see below) in the “DeviceNet Manager” and choose the default values as indicated below:

Click the “Save to SDN...” button to save the modifications in the scanner’s scanlist.

7.3 STARTUP OF THE DEVICE NET NETWORK

Connect all islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller cards must be in STOP position. Start as follows:
1) Make sure the configuration has been loaded into the PLC’s EEPROM.
2) Connect the power supply of the islands (slaves).
3) Set the PLC’s RUN/STOP switch to RUN.

Note:
To disconnect the system from the power supply, follow the above steps in reverse order.

OFFLINE CONFIGURATION (PC not connected to the controller card)
Software: DEVICE-NET manager
1 - To integrate a JOUCOMATIC island in the network click on “ADD Device” and confirm the “asco:joucomatic” Buslink by clicking OK.
2 - Click on “ADD Device from” and select “Proj”
   The island is displayed in the “Scan list” window
3 - Double-click on the island and enter the following:
   - I/O type : Polled
   - I/O setup : Poll Rx Size : 4 bytes
     Poll Tx Size : 4 bytes

ONLINE CONFIGURATION (PC connected to the networks and islands in operation)
All data is initialised automatically in case of an ONLINE configuration connected to the controller card.

To obtain the following window, click on “Edit scan List” in "Module and Channel Configuration".

To modify the parameters, click the “Edit I/O Parameters” button.
Configure the window as indicated below and confirm by clicking OK.

Come back to the "Scan list Editor" window, click on "Auto Map" and enter the "Input Block Xfer" and "Output Block Xfer" parameters as indicated below. The 2 "Start Word" parameters must correspond to those parametered in the Datatable Map window.

Connect all islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller cards must be in STOP position. Start as follows:

1) Make sure the configuration has been loaded into the PLC's EEPROM.
2) Connect the power supply of the islands (slaves).
3) Set the PLC's RUN/STOP switch to RUN.

Note:
To disconnect the system from the power supply, follow the above steps in reverse order.
7.4 DIAGNOSTICS

7.4.1 LED INDICATIONS

ON THE BUSLINK MODULE:

The buslink module is provided with 4 diagnostic LEDs.

- **ERR/NET**
  - green flashing: the controller is ONLINE, but has no connection to the master.
  - green: connection to the master has been established.
  - red: no communication possible.
  - This means, e.g. that two different islands have been provided with the same island number.

- **RUN/MOD**
  - green flashing: the island was disconnected during operation (idle).
  - green: regular operation.
  - red flashing: recoverable error, overvoltage, undervoltage, power supply to the spool valves/outputs is interrupted.
  - red: irrecoverable error, internal error.

- **+24V (green)**: lights up as soon as the power supply for the spool valves/outputs is connected.

- **+5V (green)**: lights up as soon as the power supply for the bus electronics/inputs is connected.

7.4.2 DIAGNOSTICS REGISTER

The diagnostics register gives the error status of the Device Net system in bit information. An appropriate software evaluation and/or error reaction is possible by bit comparison.

7.4.3 RESET POSITION

DEVICE NET islands are provided with a reset into zero position.

7.4.3 FUSES

See chapter 4.8.
### 7.5 ACCESSORIES FOR DEVICE-NET (for dimensions see following page)

<table>
<thead>
<tr>
<th>Description</th>
<th>Spool valves</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic blanking plate for unused spool valve place</td>
<td></td>
<td>ISO 02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISO 01</td>
</tr>
<tr>
<td>Electrical and pneumatic blanking plates for unused pilot valve place</td>
<td></td>
<td>881 00 356</td>
</tr>
<tr>
<td>Straight 4-pin female connector M18 for 24 V DC power supply</td>
<td></td>
<td>881 61 903</td>
</tr>
<tr>
<td>Straight 5-pin male duo connector M12 for 2 inputs Ø3 - 5 mm</td>
<td></td>
<td>881 00 253</td>
</tr>
<tr>
<td>Straight 5-pin male mono connector M12 (1 cable) for inputs</td>
<td></td>
<td>881 00 330</td>
</tr>
<tr>
<td>G Straight 5-pin female connector 7/8-16 UN for DEVICE NET</td>
<td></td>
<td>881 61 930</td>
</tr>
<tr>
<td>H Straight 5-pin male connector 7/8-16 UN for DEVICE NET</td>
<td></td>
<td>881 61 931</td>
</tr>
<tr>
<td>F 5-pin male / female / female T-connector 7/8-16 UN for DEVICE NET</td>
<td></td>
<td>881 61 932</td>
</tr>
<tr>
<td>L1 120 ohms male terminating resistor for DEVICE NET</td>
<td></td>
<td>881 61 934</td>
</tr>
<tr>
<td>L2 120 ohms female terminating resistor for DEVICE NET</td>
<td></td>
<td>881 61 933</td>
</tr>
<tr>
<td>3 1/2&quot; floppy disk for the configuration of the PLC controller card</td>
<td></td>
<td>881 66 909</td>
</tr>
<tr>
<td>intended for Buslink Device-Net islands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(K) Cable to be supplied separately
7.6 DIMENSIONS OF ACCESSORIES FOR DEVICE NET

POWER SUPPLY (Ø M18)
881 61 903

INPUTS (ØM12 - straight)
Duo connector: 881 00 253
(for 2 cable entries)

INPUTS (ØM12 - straight)
Mono connector: 881 00 330
(for 1 cable entry)

BUS CONNECTOR
Female connector for Device Net
881 61 930

Male connector for Device Net
881 61 931

Male terminating resistor for Device Net
881 61 934

Female terminating resistor for Device Net
881 61 933

1 : 5 male pins
2 : 5 female pins
3 : Thickness : max. 34 mm.
8 FIPIO NETWORK

8.1 CONNECTION OF THE FIPIO BUS

The front panel of the pneumatic spool valve island for FIPIO is equipped with a 5-pin male panel connector ØM12 (E).

The bus can be connected in the following two ways:
- with a TSX FP ACC4 connector housing;
- with a T-connector directly plugged into the M12 outlet on the island.

8.1.1 CONNECTION WITH CONNECTOR HOUSING (type TSX FP ACC4)

With an ACC4 connector housing the max. number of islands on each segment is 32.

NOTE - The TSX FP ACC4 connector housing must be ordered separately.

The following accessories are required for wiring:
- Straight 5-pin female connector M12 for FIPIO (G), (cable dia. 6 to 8 mm), code: 881 00 256.
- Main cable for FIPIO (K), shielded twisted pair (cable to be ordered separately).
- Stub cable for (H), 2 shielded twisted pairs (cable to be ordered separately).

The terminating resistors must be ordered separately.

Connection of the stub cable (H) to the straight connector (G)
- Strip the cable as shown in opposite diagram.
- Open the connector.
- Feed the cable into the cable gland.
- Connect the wires to the terminals (see below) and fix the cable onto the shield with the metal clamp.

Connection to the straight M12 connector (G)

<table>
<thead>
<tr>
<th>Pins</th>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>FIPIO network</td>
</tr>
<tr>
<td>2</td>
<td>not connected</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>FIPIO network</td>
</tr>
<tr>
<td>4</td>
<td>not connected</td>
<td>/</td>
</tr>
<tr>
<td>5</td>
<td>not connected</td>
<td>/</td>
</tr>
</tbody>
</table>

Housing  shield
8.1.2 DIRECT CONNECTION WITH T-CONNECTOR

With a T-connection the max. number of islands on each segment is 24.

For installation purposes the T-connector for the bus and the 2 connectors are placed at a slant angle (see diagram below).

The following accessories are required for wiring:
- 5-pin female/female/female T-connector M12 for FIPIO (F), code: 881 00 252.
- Straight, 5-pin male connector M12 (J), code: 881 00 279 (provide for 2 for each island).
- Male Terminating resistors for FIPIO network equipped with T-connectors (L), code: 881 00 333.
- Shielded cable for FIPIO (K), twisted in pairs (to be ordered separately).

Cable connection
- Strip the cable as shown in the diagram below.
- Open the connector.
- Feed the cable into the cable gland.
- Connect the wires to the terminals and fix the cable onto the shield with the metal clamp.

<table>
<thead>
<tr>
<th>ISO 02</th>
<th>ISO 01</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>4</td>
</tr>
<tr>
<td>H2</td>
<td>38</td>
</tr>
</tbody>
</table>

Connection of the straight M12 connectors (J)

<table>
<thead>
<tr>
<th>Pins</th>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>FIPIO network</td>
</tr>
<tr>
<td>2</td>
<td>not connected</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>FIPIO network</td>
</tr>
<tr>
<td>4</td>
<td>not connected</td>
<td>/</td>
</tr>
<tr>
<td>5</td>
<td>not connected</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Housing</td>
<td>shield</td>
</tr>
</tbody>
</table>
8.2 PROGRAMMING INSTRUCTIONS

INTEGRATION UNDER XTEL
Limitations:
The configuration, programming and diagnostics of the BUSLINK on a FIPIO network with the XTEL-CONF tool is possible under the following conditions:
- with XTEL V52 if the catalog diskette TXT R CTG V52 is installed;
- with XTEL V6 (and PL7-3 V6).
The island can only be put into operation from version V5.3 of the processor series 7, TSX model 40.

INTEGRATION UNDER ORPHEE
Limitations:
- The configuration editor of ORPHEE allows to connect and configure components on the FIPIO bus.
- ORPHEE versions ≥V6.2 are required for configuration.

The operating mode to be able to use the island on a FIPIO bus controlled by APRIL 5000 is described in the following paragraphs. For detailed information on the connecting principles and configuration of the components on the FIPIO bus, see the documentation "Additive ORPHEE/ORPHEE-DIAG for using the FIPIO bus on APRIL 5000" no. TEM10000/10800F.
The island can only be put into operation with a CPU5030 or CPU5130 version ≥ 2.

8.2.1 ADDRESS SELECTION
In the FIPIO network the address 00 is reserved for the PLC (TSX model 40 or APRIL 5000) which is the bus manager. Address no. 63 is reserved for the programming terminal.

Select the address number for the pneumatic spool valve island as follows:

Example of an island with address # 03

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significative value</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>32</td>
<td>64</td>
<td>-</td>
</tr>
<tr>
<td>Address 00</td>
<td>reserved</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADR 01</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>ADR 02</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>ADR 03</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADR 62</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>ADR 63</td>
<td>reserved</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
The default address of the module is "03" at delivery.
You can change the island's address with the dip switches in the bus coupling module.
Only addresses greater than "01" are allowed for the pneumatic spool valve islands.

8.2.2 SETTING OF THE TRANSMISSION SPEED
The transmission speed does not need to be adjusted, it is fixed at 1 MBaud.
8.2.3 CONFIGURATION OF THE CONTROLLER CARD WITH THE JOUCOMATIC ISLANDS

INTEGRATION UNDER XTEL:
To configure the FIPIO network see the documentation TXT DM FSDP V6F provided by TELEMECANIQUE. The configuration, programming and diagnostics of an island on a FIPIO network with the XTEL-CONF tool is possible under the following conditions:
- with XTEL V52 if the catalog diskette TXT R CTG V52 is installed;
- with XTEL V6 (and PL7-3 V6).
The island can only be put into operation from version V5.3 of the processor series 7, TSX model 40.

Selecting the BUSLINK:
Click on Conf in the window Station Tool to display the Station Tool-conf. window. Select Config. distant I/O in the menu Definition to display the Configuration of remote devices window in which you can choose the connections.

Select the field corresponding to the Buslink island address you are configuring and press RETURN. A window to define the profile is displayed. Select STD-P (= standard profile).

The following window is displayed:

BUSLINK islands correspond to the profile family FSD-C8. Select FSD C8 and confirm your choice by pressing RETURN.

If you click on "Parameters", you can configure the data generated by the PLC. For further details on this mode of operation see the corresponding manual.

Confirm your configuration by clicking OK. The Configuration of remote devices window is displayed once again with FSD-C8 next to the configured address number. As soon as the configuration of the spool valve island is finished you can change the address number of the next BUSLINK and configure it.
INTEGRATION UNDER ORPHEE
To run an application when putting a spool valve island on a FIPIO bus into operation you must enter all components using the configuration editor from ORPHEE.
ORPHEE versions from V6.2 are required for configuration.
The island can only be put into operation with a CPU 5030 or CPU 5130 version 2 or greater.

Selecting the island:
To display the configuration window for the FIPIO bus you must first define a CPU 5030 or CPU 5130 (processors with integrated FIPIO connection).
To connect the BUSLINK to FIPIO, click on the STD_P button in the configuration window for the FIPIO bus, enter the address for the spool valve island (1 - 62) and select FSD C8.

The island is referenced with FSD C8 in the list of connected components. Select this reference with the arrow keys and press ENTER or double-click with your mouse or select the Parameters/Parameter Access window to display the master window with the components corresponding to the standard profile.

Enter the following information:
Comment: line for optional comment.
Input tabulation - fault: Word to confirm the inputs updated by the island in the table with the 8 following words. The variable to be entered is of the %MW type. This word is always set to 0 by the island.
Input tabulation - words: Table with 8 words of the %MW type; representation of the BUSLINK inputs.
Output tabulation - words: Table with 8 words of the %MW type; representation of the BUSLINK outputs.
Default configuration: This field is marked with a check and dimmed (i.e. inactivated) to remind you that no configuration and setting parameters have been entered for the island.
The behaviour of the island in case of error can be configured with the diagnostics button. See ORPHEE documentation for a description of these parameters.
The configuration of the spool valve island is completed.

8.3 STARTUP OF THE FIPIO NETWORK
See the following TELEMECANIQUE documentation for starting up the FIPIO network:
- FIPWAY / FIPIO processor model 40 V5 - user's manual no. TSX DM FPP F
- FIPWAY BUS FIPIO network - reference manual no. V52 TSX DR FPW F
Connect all the islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller cards must be in STOP position. Start as follows:
1) Make sure the configuration has been loaded into the PLC's EEPROM.
2) Connect the power supply of the islands (slaves).
3) Set the PLC's RUN/STOP switch to RUN.

Note:
To disconnect the system from the power supply, follow the above steps in reverse order.
8.4 DIAGNOSTICS

8.4.1 LED INDICATIONS
- ON THE BUSLINK MODULE
The buslink module is provided with 6 diagnostic LEDs to FIPIO standard.
- **RUN** / green: All components connected to power supply
  - No display if not connected to power supply
  - Flashing light if bus communication is interrupted because another component accesses the same address (frequency = approx. 2 Hz).
- **COM** / yellow: Communication is activated.
  - No display when there is no data exchange over the FIPIO bus or when communication is interrupted.
  - Flashing light during autotest, initialisation and connection of new components (Frequency = approx. 2 Hz).
  - Flashing light when the components participate in the data exchange over the FIPIO bus; flashing is at a fixed frequency of approx. 2 MHz.
- **ERR** / red: Major error
  - No display during regular operation.
  - Flashing light during autotest, initialisation and connection of new components and as long as the components are not logically connected to the FIPIO network (frequency = approx. 2 Hz).
  - Lights up in case of error requiring an exchange of component or module (fault in a subassembly, assembly of incompatible modules etc.)
- **I/O** / red: Minor error
  - No display during regular operation.
  - Flashing light during autotest, initialisation and connection of new components (frequency = approx. 2 Hz).
  - Lights up in case of error not caused by one of the components.

As soon as the components are powered-on, these 4 LEDs flash simultaneously during the components' autotest phase. If the LEDs continue to flash after the autotest, this means that the address which was configured is already occupied.

- **+24V** (green) lights up as soon as the power supply for the spool valves/outputs is connected.
- **+5V** (green) lights up as soon as the power supply to the bus electronics/inputs is connected.

**ERRORS**
Errors in series 7 are displayed in the word STATUS A and in the APRIL 5000 under "external Error".

<table>
<thead>
<tr>
<th>STATUS A</th>
<th>External error</th>
<th>Signification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit 3</td>
<td>Bit 1</td>
<td>Problem with 24V power supply to the outputs</td>
</tr>
<tr>
<td>Bit 1</td>
<td>Bit 3</td>
<td>Problem with power supply to the bus interface</td>
</tr>
<tr>
<td>Bit 0</td>
<td>Bit 4</td>
<td>Problem of overload at the outputs</td>
</tr>
</tbody>
</table>

If such an error occurs, the red I/O LED lights up (see above)

- ON THE BUS CONTROLLER OF THE PLC
The front panel of the controller is equipped with several displays which allow to locate errors in the FIPIO system and sensors/actuators. For detailed information see the FIPIO controller manual.

8.4.2 DIAGNOSTICS REGISTER
The diagnostics register gives the error status of the FIPIO system in bit information. An appropriate software evaluation and/or error reaction is possible by bit comparison.

8.4.3 RESET POSITION
FIPIO islands are provided with a reset into zero position (configuration bridge on two pins)

Bridge to configure the reset position
To obtain a self-locking reset position remove the bridge and put it on one pin only so as not to lose it.

8.4.4 FUSES
See chapter 4.8.
## 8.5 FIPIO ACCESSORIES (for dimensions see following page)

<table>
<thead>
<tr>
<th>Description</th>
<th>Spool valves</th>
<th>Codes</th>
</tr>
</thead>
</table>
| Pneumatic blanking plate for unused spool valve place                        |              | ISO 02 881 00 358  
|                                                                             |              | ISO 01 881 00 357  
| Electrical and pneumatic blanking plates for unused pilot valve place       |              | 881 00 356     |
| Straight 4-pin female connector M18 for 24 V DC power supply                |              | 881 61 903     |
| Straight 5-pin male duo connector M12 for 2 inputs Ø3 - 5 mm                |              | 881 00 253     |
| Straight 5-pin male mono connector M12 (1 cable) for inputs                |              | 881 00 330     |
| F 5-pin female / female / female T-connector M12 for FIPIO                  |              | 881 00 252     |
| G Straight 5-pin female connector M12 for FIPIO                             |              | 881 00 256     |
| J Straight 5-pin male connector M12 for cable dia. 6 - 8 mm                 |              | 881 00 279     |
| L Terminating resistor for FIPIO for a T-connector, male M12 plug           |              | 881 00 333     |

(K) (H) Cable to be supplied separately
8.6 DIMENSIONS OF ACCESSORIES FOR FIPIO

POWER SUPPLY (Ø M18)
881 61 903

INPUTS (ØM12 - straight)
DUO connector: 881 00 253
(for 2 cable entries)

INPUTS (ØM12 - straight)
MONO connector: 881 00 330
(for 1 cable entry)

T-CONNECTOR FOR FIPIO
881 00 252

MALE TERMINATING RESISTOR FOR FIPIO
881 00 333

Female connector for FIPIO (Ø M12)
881 00 256

Male connector for FIPIO (ØM12)
881 00 279
9 MODBUS

9.1 CONNECTION OF THE BUS

The front panel of the pneumatic spool valve island for MODBUS is equipped with a 5-pin male panel connector M12 (E). The modules on either side of the system must be provided with terminating resistors (H).

The following accessories are required for wiring:
- 5-pin male/female/male T-connector M12 (F), code: 881 00 251.
- 5-pin female connector M12 for Modbus (G), (for cable dia. 6 to 8 mm), code: 881 00 256.
- 5-pin female terminating resistor M12 for Modbus (H), code: 881 00 262.
- Cable for Modbus (K), shielded twisted pair (cable to be ordered separately).

Connection of the M12 connectors (G)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tx +</td>
<td>RS 485 high</td>
</tr>
<tr>
<td>2</td>
<td>5V - Bus</td>
<td>5V power supply to terminating resistor</td>
</tr>
<tr>
<td>3</td>
<td>Tx -</td>
<td>RS 485 low</td>
</tr>
<tr>
<td>4</td>
<td>GND - BUS (+)</td>
<td>GND - signal</td>
</tr>
<tr>
<td>5</td>
<td>NC</td>
<td>-</td>
</tr>
<tr>
<td>Shield</td>
<td>-</td>
<td>Protection earth</td>
</tr>
</tbody>
</table>

(*) In case of connection with 2-wire cable pin 4 must be connected to ground (connector housing or shield).

9.2 PROGRAMMING INSTRUCTIONS

According to the PLC network cards, please find below all specifications to parameter a JOUCOMATIC island with Modbus.
- Speed: 4800, 9600 or 19200 Baud
- Island profile: "RTU - 8 bit format with parity"
Make sure that the parity you choose corresponds to that defined for the CPU.
- Connection type: RS 485 - 2 wires
9.2.1 ADDRESS SELECTION

Example of an island with address # 03

<table>
<thead>
<tr>
<th>Position</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significative value</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>32</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>Address 00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ADR 02</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ADR 03</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ADR 04</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ADR 254</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ADR 255</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTE:
The default address of the module is "03" at delivery
You can change the island's address with the dip switches in the bus coupling module.

9.2.2 SETTING OF THE TRANSMISSION SPEED AND THE PARITY

<table>
<thead>
<tr>
<th>Position</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission speed</td>
<td>4800 Bd</td>
<td>9600 Bd</td>
<td>19200 Bd</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>none</th>
<th>even</th>
<th>odd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 x</td>
<td>1 1</td>
<td>1 0</td>
</tr>
</tbody>
</table>

x : neutral (0 or 1)

NOTE: the transmission speed is factory set at 19200 Bd and the parity is factory set at "even".
9.2.3 CONFIGURATION OF THE CONTROLLER CARD WITH THE JOUCOMATIC ISLANDS

To enable data exchange between the JOUCOMATIC island and the PLC, you must parameter the rasters as follows:
- Use the write function to assign the outputs (spool valves + additional outputs) (function code 10H)
- Use the read function to read the inputs (additional inputs) (function code 03H or 04H)
- The number of words used in both cases is 2.
- The island is divided up as follows:

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Register 0 : Spool valves/outputs V0.0 to V1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Register 1 : Spool valves/outputs V2.0 to V3.7</td>
</tr>
<tr>
<td>Inputs</td>
<td>Register 2 : Inputs I0.0 to I1.7</td>
</tr>
<tr>
<td></td>
<td>Register 3 : Inputs I2.0 to I3.7</td>
</tr>
</tbody>
</table>

Example: Output register (2 words)

<table>
<thead>
<tr>
<th>Basic</th>
<th>V3.7 . . . . . . . . . V2.0 . . . . . . . . . V1.7 . . . . . . . . . V0.0</th>
</tr>
</thead>
</table>

Register 0

For example, in order to read the inputs, enter in the raster
- the island's address
- the read function (03H or 04H)
- register 2 (basic register)
- the number of words = 2 (you then read register 2 and register 3, i.e. 2 words).

This results in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Code function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>03H/04H</td>
</tr>
<tr>
<td>Number of words</td>
<td>2</td>
</tr>
<tr>
<td>Read address</td>
<td>Register = 2</td>
</tr>
<tr>
<td>Write address</td>
<td>XX</td>
</tr>
<tr>
<td>Inputs</td>
<td>Outputs</td>
</tr>
<tr>
<td>YY : PLC register number allocated to the spool valves/island outputs</td>
<td></td>
</tr>
<tr>
<td>XX : PLC register number allocated to the island inputs</td>
<td></td>
</tr>
</tbody>
</table>

9.3 STARTUP OF THE MODBUS NETWORK

Connect all the islands with the bus cable. All power supplies must be disconnected and all the RUN/STOP switches of the controller cards must be in STOP position. Start as follows.
1) Make sure the PLC's configuration is correct.
2) Connect the power supply of the islands (slaves).
3) Set the PLC’s RUN/STOP switch to RUN.

To disconnect the system from the power supply follow the above steps in reverse order.
9.4 DIAGNOSTICS

9.4.1 LED INDICATIONS

- **ON THE BUSLINK MODULE:**

  The buslink module is provided with 4 diagnostic LEDs (see 2.2).
  - ERR/NET (green) Flashing light signals that the module is connected.
  - RUN/MOD (green) Regular operation.
  - + 24V (green) is constantly illuminated as soon as the power supply to the spool valves is connected.
  - + 5V (green) is constantly illuminated as soon as the power supply for the electronics and the inputs is connected.

9.4.2 DIAGNOSTICS REGISTER

Module error:

The power supply for the spool valve coils is monitored on the BUSLINK module. An error is signalled as soon as the voltage drops below 20 Volts. A module error does not cause the system to be stopped. The module error must be processed by the software. For detailed information see the MODBUS manual.

9.4.3 RESET POSITION

If MODBUS islands are disconnected from the network they maintain their status, i.e. the coils remain in their last position (reset position is maintained).

- A reset into zero position is available upon request (i.e. all coils are reset to zero).

9.4.4 FUSES

See chapter 4.8.
## 9.5 ACCESSORIES FOR MODBUS (for dimensions see following page)

<table>
<thead>
<tr>
<th>Description</th>
<th>Spool valves</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic blanking plate for unused spool valve place</td>
<td>ISO 02</td>
<td>881 00 358</td>
</tr>
<tr>
<td></td>
<td>ISO 01</td>
<td>881 00 357</td>
</tr>
<tr>
<td>Electrical and pneumatic blanking plates for unused pilot valve place</td>
<td></td>
<td>881 00 356</td>
</tr>
<tr>
<td>Straight 4-pin female connector M18 for 24 V DC power supply</td>
<td></td>
<td>881 61 903</td>
</tr>
<tr>
<td>Straight 5-pin male duo connector M12 for 2 inputs Ø3 - 5 mm</td>
<td></td>
<td>881 00 253</td>
</tr>
<tr>
<td>Straight 5-pin male mono connector M12 (1 cable) for inputs</td>
<td></td>
<td>881 00 330</td>
</tr>
<tr>
<td>F 5-pin male / female / male T-connector for Modbus</td>
<td></td>
<td>881 00 251</td>
</tr>
<tr>
<td>G Straight 5-pin female connector M12 for Modbus for cable dia. 6 - 8 mm</td>
<td></td>
<td>881 00 256</td>
</tr>
<tr>
<td>H Female plug - terminating resistor for Modbus</td>
<td></td>
<td>881 00 262</td>
</tr>
</tbody>
</table>

(K) Cable to be supplied separately
9.6 DIMENSIONS OF ACCESSORIES FOR MODBUS

POWER SUPPLY (Ø M18)
881 61 903

INPUTS (ØM12 - straight)
DUO connector: 881 00 253
(for 2 cable entries)

CONNECTOR FOR MODBUS (Ø M12)
881 00 256

Female terminating resistor for MODBUS,
881 00 262

T-connector for MODBUS (ØM12)
881 00 251

1: 5 male pins
2: 5 female pins
3: Thickness: 17 mm
**BUSLINK - VDMA**

Connecteur taille 15 à 4 broches plates mâles avec 4 conducteurs pour alimentation d’un récepteur extérieur à partir d’une sortie d’îlot coté électropneumatique.

(Ce connecteur s’adapte à l’emplacement inoccupé de bobines de distributeur, voir ci-dessous.)

---

**Flat 4-pin male connector size 15 with 4-core cable for supplying an external receiver from a island output.**

(This connector fits into the empty socket of a solenoid coil, see below.)

---

**Code - Bestell-Code**

881 00 258\(^{(3)}\)

---

1. **Raccordement sur récepteur électrique ou électropneumatique extérieur à l’îlot:**
   - Voyant ou relais
   - Electrovanne tous fluides
   - Electro distributeur de taille plus élevée que ceux de l’îlot (exemple : distributeur ISO 1 à ISO 4 ou distributeur à clapets 3/2, 4/2 etc . . .)

   Charge maxi : 100 mA

2. **borne 1 : +24V (coté rappel) = jaune**
   **borne 2 : GND = blanc**
   **borne 3 : +24V(coté commande) = brun**

   **Nota:** pour alimenter un composant monostable, raccorder le fil brun (3) et **isoler** le fil jaune (1).

3. **Longueur en mètres à préciser à la commande, 10m maxi**

---

**Connection to a solenoid-operated or solenoid/air operated receiver outside the island:**

- Lamp or relay
- Solenoid valve suitable for all fluids
- Solenoid-operated spool valve larger than the island spool valves (ex. spool valve ISO 1 to ISO 4 or 3/2, 4/2 poppet-type spool valves etc.)

Max. load : 100 mA

---

**Nota:** pour alimenter un composant monostable, raccorder le fil brun (3) et **isoler** le fil jaune (1).

---

**Length in metres to be specified when ordering: max. 10 m**

---

**Anschluss an ein externes elektrisches oder elektropneumatisches Gerät:**

- Sichtanzeige oder Relais
- Ventil für alle Medien
- Elektrisch betätigtes Wegeventil größter Nennweite (Beispiel : Wegeventile ISO 1 bis ISO 4 oder Sitzventil 3/2, 4/2, etc.)

Max. Last: 100 mA

---

**Pin 1 : +24V (Rückstellung) = gelb**
**Pin 2 : GND = weiß**
**Pin 3 : +24V (Ansteuerung) = braun**

**Anmerkung:** zur Versorgung eines monostabilen Ventils, ist der braune Draht (3) anzuschließen und der gelbe Draht (1) zu **isolieren**.

---

Bei Bestellung gewünschte Länge in m angeben: max. 10 m

---

\(^{(3)}\) Length in metres to be specified when ordering: max. 10 m