**Introduction**

This application note describes the configuration of a master-master communication between a DELTA and a PASE-E as well as an additional remote scan of the PASE-E on remote D32 I/Os. Communication takes place by means of D-INT1 and E-INT5 modules via the JetWay-R fieldbus without affecting the respective CPU.

**Configuration**

### DELTA

<table>
<thead>
<tr>
<th>Slot</th>
<th>Module</th>
<th>Submodule 1</th>
<th>Submodule 2</th>
<th>Submodule 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CPU</td>
<td>D-INT1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PASE - E

<table>
<thead>
<tr>
<th>Slot</th>
<th>Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E-INT5</td>
</tr>
</tbody>
</table>

**Schematic Configuration**

**DELTA**

**PASE-E**

- **D-INT1**
  - Port 2
  - Multimaster
  - Network address 1

- **E-INT5**
  - Port 1 Multimaster
  - Network address 2
  - Port 3 remote scan
  - Network address 1

- **Slave 1**
  - Network address 2

- **Slave n**
  - Network address n+1

Remote D32

Remote D32

115200 baud

19200 baud

19200 baud

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Cable Connections

The following pin assignment applies depending on the port of the D-INT board utilized:

Cable from D-INT1 to E-INT5

<table>
<thead>
<tr>
<th>Port 1</th>
<th>Port 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>JetWay-R Cable</td>
<td>JetWay-R Cable</td>
</tr>
<tr>
<td>SUB-D 25 pin male connector</td>
<td>Sub-D 9 pin female connector</td>
</tr>
<tr>
<td>D-INT1 Signal</td>
<td>E-INT5</td>
</tr>
<tr>
<td>Pin 7 Gnd</td>
<td>Pin 5</td>
</tr>
<tr>
<td>Pin 8 Data+</td>
<td>Pin 1</td>
</tr>
<tr>
<td>Pin 9 Data-</td>
<td>Pin 6</td>
</tr>
</tbody>
</table>

Cable from D-INT1 to E-INT5

<table>
<thead>
<tr>
<th>Port 2</th>
<th>Port 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>JetWay-R Cable</td>
<td>JetWay-R Cable</td>
</tr>
<tr>
<td>Sub-D 25 pin male connector</td>
<td>Sub-D 9 pin female connector</td>
</tr>
<tr>
<td>D-INT1 Signal</td>
<td>E-INT5</td>
</tr>
<tr>
<td>Pin 19 Gnd</td>
<td>Pin 5</td>
</tr>
<tr>
<td>Pin 20 Data+</td>
<td>Pin 1</td>
</tr>
<tr>
<td>Pin 21 Data-</td>
<td>Pin 6</td>
</tr>
</tbody>
</table>

Cable from E-INT5 to D32

<table>
<thead>
<tr>
<th>Port 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>JetWay -R Cable</td>
</tr>
<tr>
<td>Sub-D 9 pin female connector</td>
</tr>
<tr>
<td>E-INT5 Signal</td>
</tr>
<tr>
<td>Pin 5 Gnd</td>
</tr>
<tr>
<td>Pin 1 Data+</td>
</tr>
<tr>
<td>Pin 6 Data-</td>
</tr>
</tbody>
</table>

Cable from D32 to D32

<table>
<thead>
<tr>
<th>Port 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>JetWay -R Cable</td>
</tr>
<tr>
<td>Sub-D 9 pin female connector</td>
</tr>
<tr>
<td>D32 Signal</td>
</tr>
<tr>
<td>Pin 7 Gnd</td>
</tr>
<tr>
<td>Pin 8 Data+</td>
</tr>
<tr>
<td>Pin 9 Data-</td>
</tr>
</tbody>
</table>

All cables must be shielded in conformity with EMC standards. It is important that
- the shielding is clamped under a strain relief with the greatest possible surface area,
- the connection between the housing and the shielding is electrically conducting,
- the distance between unshielded conductor ends is as short as possible.

Important!

- The multimaster protocol is only available on the first port (port 1, upper connector) of the E-INT5.
- If one of the ports of the E-INT5 is set to a transmission rate of 115200 baud, the other port can still be operated with max. 19200 baud.
- This restriction does not apply to the D-INT1
DELTA Program

0: TASK 0
1: ; ***************************************
2: ; * Initializing Multimaster Mode *
3: ; * D-INT on CPU module port 1 *
4: ; * at D-INT port 2 *
5: ; ***************************************
6: ;
7: REGISTER_LOAD [111210 with 5] ;Protocol 5 multimaster
8: REGISTER_LOAD [111207 with 35] ;Interface config. JetWay
9: REGISTER_LOAD [111208 with 11] ;Baud rate 11 (115200Baud)
10: REGISTER_LOAD [111211 with 1] ;Network address 1
11: REGISTER_LOAD [111212 with 2] ;Next master 2
12: ; Slave list (bit-coded)
13: ; Bit0 = slave address 1
14: ; Bit1 = slave address 2
15: ; ......
16: REGISTER_LOAD [111213 with 2] ;Slave list
17: REGISTER_LOAD [111214 with 25] ;Start loc. reg. range
18: REGISTER_LOAD [111215 with 34] ;End loc. reg. range
19: REGISTER_LOAD [111216 with 35] ;Start reg. range slave
20: REGISTER_LOAD [111217 with 50] ;Slave timeout
21: REGISTER_LOAD [111219 with 2] ;Highest network address
22: REGISTER_LOAD [111221 with 12] ;Send register
23: REGISTER_LOAD [111201 with 15] ;Multimaster mode enabled
24: REGISTER_LOAD [111201 with 10] ;Register transfer ON
25: ;
26: LABEL lMainLoop
27: COPY [n=10, from 100 to 111225] ;Write transmit data
28: DELAY 1
29: COPY [n=10, from 111235 to 200] ;Write receive data
30: DELAY 1
31: IF
32: BIT_SET [Reg=111200, Bit=21] ;Network timeout
33: OR
34: BIT_SET [Reg=111200, Bit=22] ;Checksum error
35: OR
36: BIT_SET [Reg=111200, Bit=23] ;Error message from slave
37: THEN
38: GOTO 0 ;Re-initialization
39: ELSE
40: GOTO lMainLoop ;Copy loop

End of program
PASE-E Program

Task Multimaster Mode

0: TASK 0 _______________________________________
1: ;
2: ; ****************************
3: ; * Initializing Multimaster Mode *
4: ; * E-INT5 in slot 8 of E-GRU *
5: ; * at E-INT5 port 1 *
6: ; ****************************
7: ;
8: REGISTER_LOAD [18199 with 5] ;Protocol 5 Multimaster
10: REGISTER_LOAD [18108 with 1020] ;Baud rate 1020 (115200)
11: REGISTER_LOAD [18110 with 2] ;Network address 2
12: REGISTER_LOAD [18111 with 3] ;Master timeout
13: ; Slave list (bit-codiert)
14: ; Bit0 = slave address 1
15: ; Bit1 = slave address 2
16: ; ......
17: REGISTER_LOAD [18112 with 1] ;Slave list
18: REGISTER_LOAD [18113 with 25] ;Start loc. reg. range
19: REGISTER_LOAD [18114 with 34] ;End loc. reg. range
20: REGISTER_LOAD [18115 with 35] ;Start reg. range slave
21: REGISTER_LOAD [18116 with 25] ;Slave timeout
22: REGISTER_LOAD [18101 with 12] ;Send register
23: REGISTER_LOAD [18101 with 15] ;Multimaster mode enabled
24: REGISTER_LOAD [18101 with 10] ;Register transfer ON
25: ;
26: LABEL lPlcNet2Loop
27: COPY [n=10, from 100 to 18125] ;Write transmit data
28: DELAY 1
29: COPY [n=10, from 18135 to 200] ;Write receive data
30: DELAY 1
31: IF
32: BIT_SET [Reg=18100, Bit=17] ;Transmission error
33: THEN
34: GOTO 0 ;Re-initialization
35: ELSE
36: GOTO lPlcNet2Loop ;Copy loop
37: ;
38: ;
PASE-E Program

Task Remote Scan

39: TASK 1
40: ;
41: ; ***************************************
42: ; * Initializing Remote Scan            *
43: ; * E-INT5 in slot 8 of E-GRU           *
44: ; * at E-INT5 port 3                    *
45: ; ***************************************
46: ;
47: REGISTER_LOAD [18399 with 10] ;Protocol 10 Remote Scan
48: REGISTER_LOAD [18308 with 1000] ;Baud rate 1000 (19200)
49: REGISTER_LOAD [18311 with 25] ;Timeout 250ms
50: REGISTER_LOAD [18315 with 2] ;Last remote slave 2
51: REGISTER_LOAD [18316 with -1] ;Read/write config.
52: ; I/O Type (bit-coded)
53: ; Bit0 = 0, Slave 2 -> 16 I/Os
54: ; Bit0 = 1, Slave 2 -> 32 I/Os
55: ; Bit1 = 0, Slave 3 -> 16 I/Os
56: ; ......
57: REGISTER_LOAD [18317 with 0] ;Slave 2 = 16 I/Os
58: REGISTER_LOAD [18319 with 2] ;Number of repetitions
59: REGISTER_LOAD [18301 with 10] ;All slave outputs
60: REGISTER_LOAD [18301 with 14] ;Start remote scan
61: LABEL lRemScanLoop
62: IF
63: BIT_SET [Reg=18300, Bit=16] ;Input data valid
64: THEN
65: COPY [n=16, from 18344 to 300] ;Fetch inputs
66: COPY [n=16, from 300 to 18320] ;Write outputs
67: THEN
68: GOTO lRemScanLoop
End of program