

|                       |  |                      |      |            |
|-----------------------|--|----------------------|------|------------|
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|                       | Dealt with by-Utfördare  | Telephone-Telefon-nr |      |            |
|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

## 1. GENERAL

The **PE1354D** is a converter connected to ABB MasterFieldbus short distance bus (RS485) on one side and on **ABB DDCS** protocol with optofibre communication on the other side. The converter is operating at High or Low communication speed on the MFB and 4 Mbaud to ACxx system.

The PE1354D contains a 2 characters display for status indication.

No change in MasterFieldBus cabling has to be done.

PE1354D is connected on same terminals that the old MasterFieldBus card was connected.

## 2. TECHNICAL DESCRIPTION

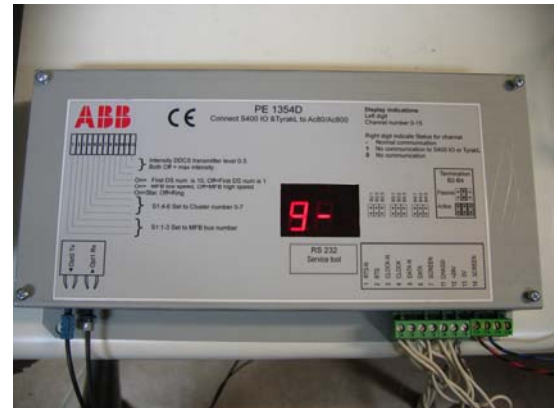
### 2.1 Dimension and mounting

To obtain the best immunity to electric noise the PE1354D must be electrically connected to cubicle through 4 M5 screws in each corner (M5 Screw pos 220mm x135mm).

Dimensions

Size: 240mm x 145mm (w x h)

Required mounting deep: 35mm



### 2.2 Technical data

Auxiliary Power

+24V DC (12-30V DC), typical 120mA(3W), at startup 1A 10ms, Max fuse: 4A

#### Communication MFB

PE1354D is Master on MasterFieldBus RS-485

Transmission speeds 375kbit/s or 2mbit/s

Max cable length :short dist. <=25m

Cable type FLFR 3x2x0.34

#### Communication on ABB DDCS protocol

PE1354D is slave on the DDCS protocol

PE1354D can be connected with 1.0mm plastic fibre POF or 200um Hard Clad Silica HCS fibre.

ModuleBus: Use TB810 adapter in AC80/AC800 when using HCS fibre.

ModuleBus: Use TB810 or TB811 adapter in AC80/AC800 t when using Plastic fibre.

DriveBus channel on AC80 can handel Plastic or HCS fibre.

Enclosure class IP00

Environmental data

Operation +5..+40 degrees C., Storage -40..+70 degrees C.

|                       |  | DESCRIPTION          |      |            |
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**2.3 Function**

PE1354D can serve one MasterFieldBus with up to 16 connected nodes.

Supported nodes are:

S400 I/O units DSAX452, DSDX452, DSDI452, DSDX451 and DSDI451.

TYRAK DC –drives.

DCU30C Operator panel with display and 16 pushbuttons with led indication.

Configuration of Unit type is done with the “Card type” and “CardType” Expansion ( see Mapping of signals)

All configuration of Unit type and Signal parameters is done from AC80/AC800 DDCCS communication. If Unit type or Parameters are change this will take effect next time the MFB node is started or the commomunication is initiated to this node.

DIP switches are used for BUS number and communication speed.

For the Analog unit DSAX452 there are some limitation.

All Analog inputs and Analog outputs values to/from AC80/AC800 are Integer values.

The scaling in DSAX452 is fixed –20000 to +20000 both for AI and AO signals.

Scaling to engineering units has to be done in AC80/AC800 system.

Analog inputs can be Voltage +-10V or current 0..20mA

If 4..20mA are used analog input value for 4mA is 4000 and for 20mA value is 20000.

If +-10V is used input value for –10V is –20000 and for +10V is 20000.

Overflow situation

If overflow occur input value is set to 32767

Bipolar and Unipolar then overflow occur if input >10,24V

For current input overflow will occur if input > 20,48 mA

Underflow situation

If underflow occur input value is set to -32768

Bipolar then underflow occur if input <-10,2V

Unipolar underflow occur if input <-0,8V

Current 4..20mA underflow occur at 3,6mA

|                         |  |                      |      |            |
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**2.4 Strapping**

| DIPSWITCH | POSITION       | FUNCTION   |
|-----------|----------------|--|
| S1:1      | On=1           | MFB bus number 1-7   |
| S1:2      | On=2           | MFB bus number 1-7   |
| S1:3      | On=4           | MFB bus number 1-7   |
| S1:4      | On=1           | Cluster number 0-7   |
| S1:5      | On=2           | Cluster number 0-7   |
| S1:6      | On=4           | Cluster number 0-7   |
| S1:7      | Off=Ring       | Set On=Star if NDBU-95 is used   |
| S1:8      | OFF=High       | MFB high/low speed   |
| S1:9      | OFF=1<br>ON=10 | First Dataset number. Set OFF if Data set number in ACS600 start from 1, Set ON if Dataset number start from 10.   |
| S1:10     |                | Superv. Off=DDCS communication Stop if MFB comm. Stops. If set to ON DDCS communication continue even if MFB comm. Stops.<br>When set to On DS25.2 "MasterFieldbus status" can be used for proper action when MFB not is ok. |
| S1:11     | On=1           | DDCS Transmitter intensity 0-3 0=High 3=Low<br>Set both to off for maximum intensity.  |
| S1:12     | On=2           |  |

**TERMINATION of MFB bus**

MasterFieldBus has 9 strapping in 3 groups for termination of the signal lines  
RTS,CLOCK,DATA.

Only one alternative is possible for PE1354D.

All 9 strapping must be inserted.

| STRAPPING | FUNCTION                           |
|-----------|------------------------------------|
| B2:1      | RTS-N Always Inserted for PE1354D  |
| B2:2      | RST Always Inserted for PE1354D    |
| B2:3      | RTS Always Inserted for PE1354D    |
| B3:1      | CLK -N Always Inserted for PE1354D |
| B3:2      | CLK Always Inserted for PE1354D    |
| B3:3      | CLK Always Inserted for PE1354D    |
| B4:1      | DATA-N Always Inserted for PE1354D |
| B4:2      | DATA Always Inserted for PE1354D   |
| B4:3      | DATA Always Inserted for PE1354D   |

**2.5 Status display 2 digits**

First digit shows actual Modbus node addr 0-F.

| SECOND DIGIT  | STATUS  |
|---------------|---|
| 0             | No contact on Modulebus protocol                        |
| 1             | Contact with mudulebus but no contact on MFB            |
| - (Minus)     | Communication is OK                                     |
| _ (Underline) | Comm ok but Parameters not yet initiated in MFB IO unit |

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|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

## 2.6 Connections

| TERMINAL    | FUNCTION                     |
|-------------|------------------------------|
| P1          | R-N MasterFieldbus RS485     |
| P2          | R MasterFieldbus RS485       |
| P3          | CLOCK-N MasterFieldbus RS485 |
| P4          | CLOCK MasterFieldbus RS485   |
| P5          | DATA-N MasterFieldbus RS485  |
| P6          | DATA MasterFieldbus RS485    |
| P7          | Cable screen                 |
|             |                              |
| P11         | Chassi                       |
| P12         | +24V                         |
| P13         | 0V                           |
| P14         | CABLE SCREEN                 |
|             |                              |
| 9 pole Dsub | Service aid                  |
| 2           | Txd RS232                    |
| 3           | Rxd RS232                    |
| 5           | 0V                           |
|             |                              |
| OPT1        | RxD Modulebus                |
| OPT2        | TxD Modulebus                |

## 2.7 Mapping of nodes MasterFieldbus / AC80, AC800

| MasterFieldbus`<br>Bus+Node addr<br>Bus no DIP S1.1-3 | DDCS bus<br>Node addr<br>CLUSTER on DIP S1.4- 6 |
|---|---|
| 0 + BUS*100   | 1 + CLUSTER*16                                  |
| 1 + BUS*100   | 2 + CLUSTER*16                                  |
| 2 + BUS*100   | 3 + CLUSTER*16                                  |
| 3 + BUS*100   | 4 + CLUSTER*16                                  |
| 4 + BUS*100   | 5 + CLUSTER*16                                  |
| 5 + BUS*100   | 6 + CLUSTER*16                                  |
| 6 + BUS*100   | 7 + CLUSTER*16                                  |
| 7 + BUS*100   | 8 + CLUSTER*16                                  |
| 8 + BUS*100   | 9 + CLUSTER*16                                  |
| 9 + BUS*100   | 10 + CLUSTER*16                                 |
| 10 + BUS*100  | 11 + CLUSTER*16                                 |
| 11 + BUS*100  | 12 + CLUSTER*16                                 |
| 12 + BUS*100  | 13 + CLUSTER*16                                 |
| 13 + BUS*100  | 14 + CLUSTER*16                                 |
| 14 + BUS*100  | 15 + CLUSTER*16                                 |
| 15 + BUS*100  | 16 + CLUSTER*16                                 |

|                         |  |                      |      |            |
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| Sven-Erik Karlsson      |  | 187050               |      |            |
| Intel Ver 7, H8 Ver 5   | <b>MFB-Modulbus converter PE1354D<br/>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

**2.8 Mapping of Signals from DSDX to AC80/AC800**

| <b>DSDX Name</b>      | <b>First dataset=1<br/>S1.9=OFF</b> | <b>First dataset=10<br/>S1.9=ON</b> |
|-----------------------|-------------------------------------|-------------------------------------|
| Status Chan 25-32     | DS2.1 High byte                     | DS11.1 High byte                    |
| Data Chan 25-32       | DS2.1 Low Byte                      | DS11.1 Low Byte                     |
| Status Chan 17-24     | DS2.2 High byte                     | DS11.2 High byte                    |
| Data Chan 17-24       | DS2.2 Low Byte                      | DS11.2 Low Byte                     |
| Status Chan 9-16      | DS2.3 High byte                     | DS11.3 High byte                    |
| Data Chan 9-16        | DS2.3 Low Byte                      | DS11.3 Low Byte                     |
| Status Chan 1-8       | DS4.1 High byte                     | DS13.1 High byte                    |
| Data Chan 1-8         | DS4.1 Low Byte                      | DS13.1 Low Byte                     |
| Status Exp Chan 25-32 | DS4.2 High byte                     | DS13.2 High byte                    |
| Data Exp Chan 25-32   | DS4.2 Low Byte                      | DS13.2 Low Byte                     |
| Status Exp Chan 17-24 | DS4.3 High byte                     | DS13.3 High byte                    |
| Data Exp Chan 17-24   | DS4.3 Low Byte                      | DS13.3 Low Byte                     |
| Status Exp Chan 9-16  | DS6.1 High byte                     | DS15.1 High byte                    |
| Data Exp Chan 9-16    | DS6.1 Low Byte                      | DS15.1 Low Byte                     |
| Status Exp Chan 1-8   | DS6.2 High byte                     | DS15.2 High byte                    |
| Data Exp Chan 1-8     | DS6.2 Low Byte                      | DS15.2 Low Byte                     |
| MFB comm.. timeouts   | DS16.1                              | DS25.1                              |
| DSDX/DSDI Status      | DS16.2 High byte                    | DS25.2 HighByte                     |
| Param set up Counter  | DS16.3                              | DS25.3                              |

MFB comm.. timeouts is a counter in PE1354D counting when no answer is received from the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

Parameter setup counter is a counter in PE1354D counting when Parameters are sent to the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

| <b>DSDX/DSDI Status</b> |  |
|-------------------------|--|
| B8                      | S400 Expansion unit type is correct                      |
| B9                      | S400 Base unit type is correct                           |
| B10                     | S400 unit Initiated                                      |
| B11                     | S400 Exp unit transducer power is ok                     |
| B12                     | S400 Base unit transducer power is ok                    |
| B13                     | S400 Exp power is ok                                     |
| B14                     | S400 Base power is ok                                    |
| B15                     | S400 unit Working (Initiated and Parameters transferred) |

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| Sven-Erik Karlsson      |            | 187050   |      |            |
| Intel Ver 7, H8 Ver 5   |            | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |      |            |

### Mapping of Signals from AC80/AC4XX to DSDX

| DSDI / DSDX Name   |                                  | First dataset=1<br>S1.9=OFF | First dataset=10<br>S1.9=ON |
|--|----------------------------------|-----------------------------|-----------------------------|
| <b>DSDI 452 Base</b>   | <b>DSDX 452 Base</b>             |                             |                             |
| Not used set =0  | Output data Chan 25-32           | DS1.1 High byte             | DS10.1 High byte            |
| Not Used set=0   | Output data Chan 21-24           | DS1.1 Low Byte              | DS10.1 Low Byte             |
| DX Param   | DX Param                         | DS5.1 High byte             | DS14.1 High byte            |
| DX param Exp   | DX param Exp                     | DS5.1 Low Byte              | DS14.1 Low Byte             |
| Filter time D Chan 25-32                                       | Not used set =0                  | DS5.2 High byte             | DS14.2 High byte            |
| Event Mask Ch 25-32  | Change enable Ch 25-32           | DS5.2 Low Byte              | DS14.2 Low Byte             |
| Filter time C Chan 17-24                                       | Filter time C Chan 17-20         | DS5.3 High byte             | DS14.3 High byte            |
| Event Mask Chan 17-24  | Event m./Change enable 21-24     | DS5.3 Low Byte              | DS14.3 Low Byte             |
| Filter time B Chan 9-16  | Filter time B Chan 9-16          | DS7.1 High byte             | DS16.1 High byte            |
| Event Mask Chan 9-16   | Event Mask Chan 9-16             | DS7.1 Low Byte              | DS16.1 Low Byte             |
| Filter time A Chan 1-8   | Filter time A Chan 1-8           | DS7.2 High byte             | DS16.2 High byte            |
| Event Mask Chan 1-8  | Event Mask Chan 1-8              | DS7.2 Low Byte              | DS16.2 Low Byte             |
| Not used set =0  | Output Restart Chan 25-32        | DS7.3 High byte             | DS16.3 High byte            |
| Not used set =0  | StartValue Chan 25-32            | DS7.3 Low Byte              | DS16.3 Low Byte             |
| Not used set =0  | Output Restart Chan 21-24        | DS9.1 High byte             | DS18.1 High byte            |
| Not used set =0  | StartValue Chan 21-24            | DS9.1 Low Byte              | DS18.1 Low Byte             |
| <b>DSDI 451 expansion</b>                                      | <b>DSDX 451 Expansion</b>        |                             |                             |
| Not Used set=0   | Output data Exp Chan 25-32       | DS1.2 High byte             | DS10.2 High byte            |
| Not Used set =0  | Output data Exp Chan 21-24       | DS1.2 Low Byte              | DS10.2 Low Byte             |
| Filter time D Exp Chan 57-64                                   | Not Used set =0                  | DS9.2 High byte             | DS18.2 High byte            |
| Event Mask Exp Chan 57-64                                      | Change enable Exp Chan 57-64     | DS9.2 Low Byte              | DS18.2 Low Byte             |
| Filter time C Exp Chan 49-56                                   | Filter time C Exp Chan 49-52     | DS9.3 High byte             | DS18.3 High byte            |
| Event Mask Exp Chan 49-56                                      | Ev.MaskCh 49-52/ Ch en. Ch 53-56 | DS9.3 Low Byte              | DS18.3 Low Byte             |
| Filter time B Exp Chan 41-48                                   | Filter time B Exp Chan 41-48     | DS11.1 High byte            | DS20.1 High byte            |
| Event Mask Exp Chan 41-48                                      | Event Mask Exp Chan 41-48        | DS11.1 Low Byte             | DS20.1 Low Byte             |
| Filter time A Exp Chan 33-40                                   | Filter time A Exp Chan 33-40     | DS11.2 High byte            | DS20.2 High byte            |
| Event Mask Exp Chan 33-40                                      | Event Mask Exp Chan 33-40        | DS11.2 Low Byte             | DS20.2 Low Byte             |
| Not used set =0  | Output Restart Exp Chan 57-64    | DS11.3 High byte            | DS20.3 High byte            |
| Not used set =0  | StartValue Exp Chan 57-64        | DS11.3 Low Byte             | DS20.3 Low Byte             |
| Not used set =0  | Output Restart Exp Chan 53-56    | DS13.1 High byte            | DS22.1 High byte            |
| Not used set =0  | StartValue Exp Chan 53-56        | DS13.1 Low Byte             | DS22.1 Low Byte             |
| CardType 17 =DSDX452 ,21= DSDI452, 18 =DSDX454, 22= DSDI454    |                                  | DS15.3 High Byte            | DS24.3 High byte            |
| CardTypeExp 17 =DSDX451 ,21= DSDI451, 18 =DSDX453 ,22= DSDI453 |                                  | DS15.3 Low Byte             | DS24.3 Low Byte             |

#### DX Parameter bits (Base and Expansion)

| D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description                           |
|----|----|----|----|----|----|----|----|---------------------------------------|
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | No AC filter,Used when DC inut signal |
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | AC filter, Used when AC input signal  |

#### Filter time A-D

0-63 if AC filter=1 , 0-127 if AC filter=0

#### Description

Filtertime in ms

#### Change enable for one group of 8 outputs

| D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description                           |
|----|----|----|----|----|----|----|----|---------------------------------------|
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | No AC filter,Used when DC inut signal |

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|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

|   |   |   |   |   |   |   |   |   |                                      |
|---|---|---|---|---|---|---|---|---|--------------------------------------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | AC filter, Used when AC input signal |
|---|---|---|---|---|---|---|---|---|--------------------------------------|

| Output Restart, for group of 8 Digital (Active when communication error to DSDX) |    |    |    |    |    |    |    | Description   |
|--|----|----|----|----|----|----|----|---|
| D7   | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description   |
| X  | X  | X  | X  | X  | X  | X  | X  | 0=Output is Set to StartValue, 1=Output do not change |

| Start Value Used only if Output Restart for actual bit is =1 |    |    |    |    |    |    |    | Description                     |
|--|----|----|----|----|----|----|----|---------------------------------|
| D7   | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description                     |
| X  | X  | X  | X  | X  | X  | X  | X  | 0=Output is off, 1=Output is on |

|                         |  |                      |      |            |
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| Sven-Erik Karlsson      |  | 187050               |      |            |
| Intel Ver 7, H8 Ver 5   | <b>MFB-Modulbus converter PE1354D<br/>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

**2.9 Mapping of Signals from DSAX to AC80/AC800**

| DSAX Name            | Fix Scaling              |          | First dataset=1<br>S1.9=OFF | First dataset=10<br>S1.9=ON |
|----------------------|--------------------------|----------|-----------------------------|-----------------------------|
|                      | RangeMin                 | RangeMAX |                             |                             |
| Ai Chan 1            | -20000                   | +20000   | DS2.1                       | DS11.1                      |
| Ai Chan 2            | -20000                   | +20000   | DS2.2                       | DS11.2                      |
| Ai Chan 3            | -20000                   | +20000   | DS2.3                       | DS11.3                      |
| Ai Chan 4            | -20000                   | +20000   | DS4.1                       | DS13.1                      |
| Ai Chan 5            | -20000                   | +20000   | DS4.2                       | DS13.2                      |
| Ai Chan 6            | -20000                   | +20000   | DS4.3                       | DS13.3                      |
| Ai Chan 7            | -20000                   | +20000   | DS6.1                       | DS15.1                      |
| Ai Chan 8            | -20000                   | +20000   | DS6.2                       | DS15.2                      |
| Ai Chan 9            | -20000                   | +20000   | DS6.3                       | DS15.3                      |
| Ai Chan 10           | -20000                   | +20000   | DS8.1                       | DS17.1                      |
| Ai Chan 11           | -20000                   | +20000   | DS8.2                       | DS17.2                      |
| Ai Chan 12           | -20000                   | +20000   | DS8.3                       | DS17.3                      |
| Ai Chan 13           | -20000                   | +20000   | DS10.1                      | DS19.1                      |
| Ai Chan 14           | -20000                   | +20000   | DS10.2                      | DS19.2                      |
| Ref Chan 0           | Theoretical value = 0    |          | DS10.3                      | DS19.3                      |
| Ref Chan 1           | Theoretical value =32000 |          | DS12.1                      | DS21.1                      |
| MFB comm.. timeouts  |                          |          | DS16.1                      | DS25.1                      |
| DSAX Status          |                          |          | DS16.2 High byte            | DS25.2 HighByte             |
| Param set up Counter |                          |          | DS16.3                      | DS25.3                      |

MFB comm.. timeouts is a counter in PE1354D counting when no answer is received from the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

Parameter setup counter is a counter in PE1354D counting when Parameters are sent to the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

| DSAX Status |   |
|-------------|---|
| B8          | Always = 1  |
| B9          | S400 Base unit type is correct                          |
| B10         | S400 unit Initiated                                     |
| B11         | S400 Base unit transducer power is ok                   |
| B12         | Always = 1  |
| B13         | Always = 1  |
| B14         | S400 DSAX ADC ok (Referencew channels working OK)       |
| B15         | S400 unit Working (Initiated and Parameters transfered) |



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| Sven-Erik Karlsson      |            | 187050   |      |            |
| Intel Ver 7, H8 Ver 5   |            | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |      |            |

### Mapping of Signals from AC80/AC4XX to DSAX

| DSDX Name                | Fix Scaling |          | First dataset=1<br>S1.9=OFF | First dataset=10<br>S1.9=ON |
|--------------------------|-------------|----------|-----------------------------|-----------------------------|
|                          | RangeMin    | RangeMax |                             |                             |
| AO Chan 15               | -20000      | +20000   | DS1.1                       | DS10.1                      |
| AO Chan 16               | -20000      | +20000   | DS1.2                       | DS10.2                      |
| AO Chan 17               | -20000      | +20000   | DS1.3                       | DS10.3                      |
| AO Chan 18               | -20000      | +20000   | DS3.1                       | DS12.1                      |
| AO Chan 19               | -20000      | +20000   | DS3.2                       | DS12.2                      |
| AO Chan 20               | -20000      | +20000   | DS3.3                       | DS12.3                      |
|                          |             |          |                             |                             |
| AO Ch15 Start value      |             |          | DS5.1                       | DS14.1                      |
| AO Ch16 Start value      |             |          | DS5.2                       | DS14.2                      |
| AO Ch17 Start value      |             |          | DS5.3                       | DS14.3                      |
| AO Ch18 Start value      |             |          | DS7.1                       | DS16.1                      |
| AO Ch19 Start value      |             |          | DS7.2                       | DS16.2                      |
| AO Ch20 Start value      |             |          | DS7.3                       | DS16.3                      |
|                          |             |          |                             |                             |
| AO Ch 15 Parameter       |             |          | DS9.1 High Byte             | DS18.1 High Byte            |
| AO Ch 16 Parameter       |             |          | DS9.1 Low Byte              | DS18.1 Low Byte             |
| AO Ch 17 Parameter       |             |          | DS9.2 High Byte             | DS18.2 High Byte            |
| AO Ch 18 Parameter       |             |          | DS9.2 Low Byte              | DS18.2 Low Byte             |
| AO Ch 19 Parameter       |             |          | DS9.3 High Byte             | DS18.3 High Byte            |
| AO Ch 20 Parameter       |             |          | DS9.3 Low Byte              | DS18.3 Low Byte             |
| AI Ch 1 Parameter        |             |          | DS11.1 High Byte            | DS20.1 High Byte            |
| AI Ch 2 Parameter        |             |          | DS11.1 Low Byte             | DS20.1 Low Byte             |
| AI Ch 3 Parameter        |             |          | DS11.2 High Byte            | DS20.2 High Byte            |
| AI Ch 4 Parameter        |             |          | DS11.2 Low Byte             | DS20.2 Low Byte             |
| AI Ch 5 Parameter        |             |          | DS11.3 High Byte            | DS20.3 High Byte            |
| AI Ch 6 Parameter        |             |          | DS11.3 Low Byte             | DS20.3 Low Byte             |
| AI Ch 7 Parameter        |             |          | DS13.1 High Byte            | DS22.1 High Byte            |
| AI Ch 8 Parameter        |             |          | DS13.1 Low Byte             | DS22.1 Low Byte             |
| AI Ch 9 Parameter        |             |          | DS13.2 High Byte            | DS22.2 High Byte            |
| AI Ch 10 Parameter       |             |          | DS13.2 Low Byte             | DS22.2 Low Byte             |
| AI Ch 11 Parameter       |             |          | DS13.3 High Byte            | DS22.3 High Byte            |
| AI Ch 12 Parameter       |             |          | DS13.3 Low Byte             | DS22.3 Low Byte             |
| AI Ch 13 Parameter       |             |          | DS15.1 High Byte            | DS24.1 High Byte            |
| AI Ch 14 Parameter       |             |          | DS15.1 Low Byte             | DS24.1 Low Byte             |
|                          |             |          |                             |                             |
| CardType= 01 for DSAX452 |             |          | DS15.3 High byte            | DS24.3 High byte            |

|                         |            |  |      |            |
|-------------------------|------------|--|------|------------|
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| Sven-Erik Karlsson      |            | 187050   |      |            |
| Intel Ver 7, H8 Ver 5   |            | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |      |            |

| AO Parameter bits |    |    |    |    |    |    |    |  |
|-------------------|----|----|----|----|----|----|----|--|
| D7                | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description  |
| :                 | :  | :  | :  | :  | :  | 0  | 0  | Reserved   |
| :                 | :  | :  | :  | 0  | 1  |    |    | Unipol Analog out                                    |
| :                 | :  | :  | :  | 1  | 0  |    |    | Live Zero 4-20mA This option is not Implemented      |
| :                 | :  | :  | 0  |    |    |    |    | Voltage output , This is for Documentation only      |
| :                 | :  | :  | 1  |    |    |    |    | Current output, This is for Documentation only       |
| :                 | :  | 0  |    |    |    |    |    | Reserved   |
| :                 | 1  |    |    |    |    |    |    | Not Output Restart (Old value stay on comm. Error)   |
| :                 | 0  |    |    |    |    |    |    | Output Restart, Start value is output on comm. Error |
| 0                 |    |    |    |    |    |    |    | Output is not enabled                                |
| 1                 |    |    |    |    |    |    |    | Output is enabled                                    |

| AI Parameter bits |    |    |    |    |    |    |    |  |
|-------------------|----|----|----|----|----|----|----|--|
| D7                | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Description                                    |
| :                 | :  | :  | :  | :  | :  | 0  | 0  | Gain=1 Used for Voltage input +/-10V signal    |
| :                 | :  | :  | :  | :  | :  | 0  | 1  | Gain=5 Used for 0-20mA or 4-20mA signal        |
| :                 | :  | :  | :  | 0  | 0  |    |    | Bipolar Analog input +/-10V                    |
| :                 | :  | :  | :  | 0  | 1  |    |    | Unipolar Analog input 0-10V od 0-20mA          |
| :                 | :  | :  | :  | 1  | 0  |    |    | Live Zero 4-20mA                               |
| :                 | :  | :  | 0  |    |    |    |    | Voltage input , This is for Documentation only |
| :                 | :  | :  | 1  |    |    |    |    | Current input , This is for Documentation only |
| :                 | 0  | 0  |    |    |    |    |    | Reserved                                       |
| 0                 |    |    |    |    |    |    |    | Input is not enabled                           |
| 1                 |    |    |    |    |    |    |    | Input is enabled                               |

| CardType | Expansion CardType | Module names base and Expansion unit |
|----------|--------------------|--------------------------------------|
| 01       | 0                  | DSAX452 (exp unit not possible)      |
| 21       | 0                  | base DSDI452                         |
| 17       | 0                  | base DSDX452                         |
| 22       | 0                  | base DSDI454                         |
| 18       | 0                  | base DSDX454                         |
| 21       | 21                 | base DSDI452 + exp DSDI451           |
| 21       | 17                 | base DSDI452 + exp DSDX451           |
| 17       | 21                 | base DSDX452 + exp DSDI451           |
| 17       | 17                 | base DSDX452 + exp DSDX451           |
| 22       | 22                 | base DSDI454 + exp DSDI453           |
| 22       | 18                 | base DSDI454 + exp DSDX453           |
| 18       | 22                 | base DSDX454 + exp DSDI453           |
| 18       | 18                 | base DSDX454 + exp DSDX453           |
| 48       | 0                  | TYRAK L or DCU30C                    |

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## DESCRIPTION

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|                       |  |                      |      |            |
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|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

### AI value if Signal error

| AI STATUS |                     | Value from Analog input                    |
|-----------|---------------------|--|
| No error  | Normal scaling      | Measured value range from -20000 to +20000 |
| Overflow  | >10.23V or >20,4 mA | 32767                                      |
| Underflow | <-10.2V if Bipolar  | -32768                                     |
| Underflow | <- 1 V if Unipolar  | -32768                                     |
| Underflow | <1mA if 4-20mA      | -32768                                     |

**DESCRIPTION**

|                         |  |                      |      |            |
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| Dealt with by-Utfärdare |  | Telephone-Telefon-nr |      | <b>12</b>  |
| Sven-Erik Karlsson      |  | 187050               |      |            |
| Intel Ver 7, H8 Ver 5   | <b>MFB-Modulbus converter PE1354D<br/>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

**2.10 Mapping of Signals from TYRAK to AC80/AC800**

| <b>TYRAK Name</b>    | <b>First dataset=1<br/>S1.9=OFF</b> | <b>First dataset=10<br/>S1.9=ON</b> |
|----------------------|-------------------------------------|-------------------------------------|
| RIND1                | DS2.2                               | DS11.2                              |
| RIND2                | DS2.3                               | DS11.3                              |
| RIND3                | DS4.1                               | DS13.1                              |
| RIND4                | DS4.2                               | DS13.2                              |
| RIND5                | DS4.3                               | DS13.3                              |
| RIND6                | DS6.1                               | DS15.1                              |
| RIND7                | DS6.2                               | DS15.2                              |
| RIND8                | DS6.3                               | DS15.3                              |
| RIND9                | DS8.1                               | DS17.1                              |
| I4IND1               | DS12.1-2                            | DS21.1-2                            |
| PBIND2               | DS2.1                               | DS11.1                              |
| PBIND3               | DS8.3                               | DS17.3                              |
| PBIND4               | DS10.1                              | DS19.1                              |
| PBIND5               | DS10.2                              | DS19.2                              |
| PBIND1               | DS8.2                               | DS17.2                              |
|                      |                                     |                                     |
| MFB comm.. timeouts  | DS16.1                              | DS25.1                              |
| DSDX Status          | DS16.2 High byte                    | DS25.2 HighByte                     |
| Param set up Counter | DS16.3                              | DS25.3                              |

MFB comm.. timeouts is a counter in PE1354D counting when no answer is received from the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

Parameter setup counter is a counter in PE1354D counting when Parameters are sent to the MasterFieldBus unit. The actual value of this counter is not important. If this counter is counting under normal conditions then there is some problem with the MasterFieldBus communication.

| <b>TYRAK L Status</b> |  |
|-----------------------|--|
| B8                    | Always = 1                                     |
| B9                    | TYRAK L unit type is correct                   |
| B10                   | Always = 1                                     |
| B11                   | Always = 1                                     |
| B12                   | Always = 1                                     |
| B13                   | Always = 1                                     |
| B14                   | Always = 1                                     |
| B15                   | Working (Initiated and Parameters transferred) |

# PROCESSELEKTRONIK AB

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## DESCRIPTION

Ref.

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|                       |  |                      |      |            |
|-----------------------|--|----------------------|------|------------|
| To-Till               | From-Från  | Date-Datum           | Reg. | Page-Sidan |
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|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

## 2.11 Mapping of Signals from AC80/AC4XX to TYRAK

| TYRAK Name             | First dataset=1<br>S1.9=OFF | First dataset=10<br>S1.9=ON |
|------------------------|-----------------------------|-----------------------------|
| PBORD1                 | DS1.1                       | DS10.1                      |
| PBORD2                 | DS11.1                      | DS20.1                      |
| I4ORD1                 | DS11.2-3                    | DS20.2-3                    |
| RORD1                  | DS1.2                       | DS10.2                      |
| RORD2                  | DS1.3                       | DS10.3                      |
| RORD3                  | DS3.1                       | DS12.1                      |
| RORD4                  | DS3.2                       | DS12.2                      |
| RORD5                  | DS3.3                       | DS12.3                      |
| RORD6                  | DS5.1                       | DS14.1                      |
| RORD7                  | DS5.2                       | DS14.2                      |
| RORD8                  | DS5.3                       | DS14.3                      |
| RORD9                  | DS7.1                       | DS16.1                      |
| RORD10                 | DS7.2                       | DS16.2                      |
| RORD11                 | DS7.3                       | DS16.3                      |
| RORD12                 | DS7.1                       | DS18.1                      |
| RORD13                 | DS7.2                       | DS18.2                      |
| RORD14                 | DS7.3                       | DS18.3                      |
| I4ORD2                 | DS13.1 -2                   | DS22.1 -2                   |
|                        |                             |                             |
| CardType= 48 for TYRAK | DS15.3 High byte            | DS24.3 High byte            |

|                       |  |                      |      |            |
|-----------------------|--|----------------------|------|------------|
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|                       | Dealt with by-Utfärdare  | Telephone-Telefon-nr |      | <b>14</b>  |
|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D<br/>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

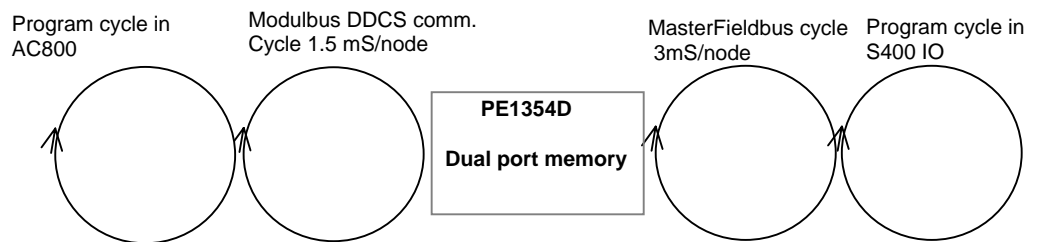
## Error handling

When MFB communication for one S400 IO node failure then the DDCS communication for corresponding node are stopped if Dip SW S1.10 is OFF. If S1.10 is On the DDCS communication will still go on and the AC800 can take proper action depending on Status DS16.2. The PE1354D display will indicate 1 for the actual node.

When DDCS communication for one node failure then MFB communication for corresponding S400 IO node are stopped. The PE1354D display will indicate 0 for the actual node.

## Signal delay

Calculation of signal delay time AC80/AC800 / MFB



Cycle times in AC80/AC800 and S400 IO are not included in following example.

Max delay 16 nodes =  $16 \times 1,5 + 1,0 + 16 \times 3 \text{ ms} = 73\text{ms}$

Max delay 4 nodes =  $4 \times 1,5 + 1,0 + 4 \times 3 \text{ ms} = 19\text{ms}$

|                       |  |                      |      |            |
|-----------------------|--|----------------------|------|------------|
| To-Till               | From-Från  | Date-Datum           | Reg. | Page-Sidan |
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|                       | Sven-Erik Karlsson   | 187050               |      |            |
| Intel Ver 7, H8 Ver 5 | <b>MFB-Modulbus converter PE1354D</b><br><b>Connect S400IO to AC80/AC800/AC4XX</b> |                      |      |            |

### 3. AC800M Configuration

#### 3.1 Using ModuleBus on AC800M

Use unit ABB Engineered Drive to configure the communication.

Position 101 –112 correspond to MFB addr 0-11

Position 201-204 correspond to MFB addr 12-15

Set Cluster to 1 (dip S1.4=On,S1.5=Off,S1.6=Off)

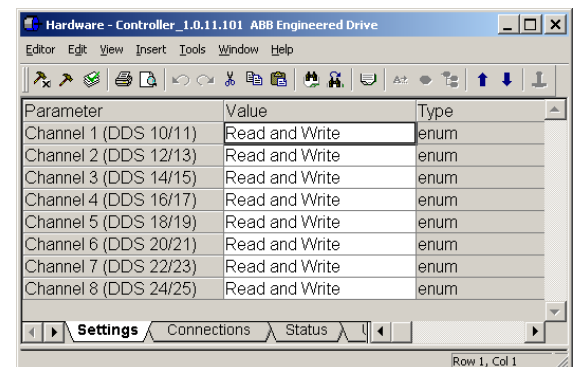
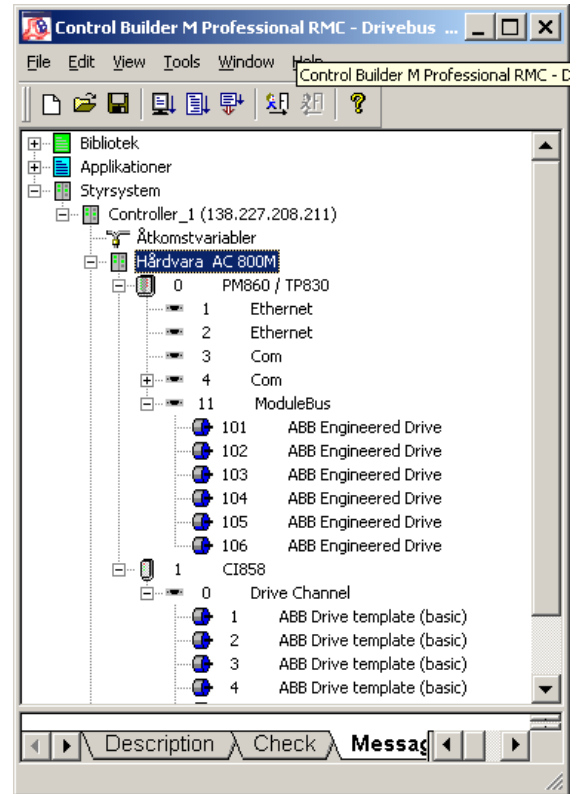
Be sure to set MFB Bus number to 1-7 (Normally to 1)

Bus number is set by Dip S1.1-3

Be sure to set Read and Write in column Value in Settings Tab.

Before dataset communication starts all used channels must be connected to a variable (Select the connect Tab for connecting).

Set Dip S1.9 =On to Make DS10 the first dataset number



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## DESCRIPTION

PE1354Dv4

|                         |            |                      |      |            |
|-------------------------|------------|----------------------|------|------------|
| To-Till                 | From-Från  | Date-Datum           | Reg. | Page-Sidan |
|                         | 2007-03-25 |                      |      |            |
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| Sven-Erik Karlsson      |            | 187050               |      |            |

Intel Ver 7, H8 Ver 5

## MFB-Modulbus converter PE1354D Connect S400IO to AC80/AC800/AC4XX

### 3.2 Use Ci58 Drive channel

Use unit ABB Drive template (basic) to configure the communication.

Position 1 –16 correspond to MFB addr 0-15

Set Cluster to 0 (dip S1.4=Off,S1.5=Off,S1.6=Off)

Be sure to set MFB Bus number to 1-7 (Normally to 1)

Bus number is set by Dip S1.1-3

Be sure to set Read/Write in column Value in Settings Tab.

Configured Application IDdatatype:No Checking

Dataset x ID: 10,12,14.....24

Dataset x config status: ReadWrite

Before dataset communication starts all used channels must be connected to a variable (Select the connect Tab for connecting).

Set Dip S1.9 =On to Make DS10 the first dataset number

| Parameter                         | Value       | Type   | Unit | Min | Max   |
|-----------------------------------|-------------|--------|------|-----|-------|
| Use BusManager                    | true        | bool   |      |     |       |
| Address of Application ID in Driv | 9310        | dint   |      | 1   | 32767 |
| Configured Application ID         | 1           | dint   |      | 1   | 65535 |
| Configured application ID data ty | No Checking | enum   |      |     |       |
| Address of drive type in drive    | 401         | dint   |      | 1   | 32767 |
| Drive Type                        | XXXX1234    | string |      |     |       |
| Drive Type Checking Mask          | ????????    | string |      |     |       |
| Dataset 1 ID                      | 10          | dint   |      | 0   | 200   |
| Dataset 2 ID                      | 12          | dint   |      | 0   | 200   |
| Dataset 3 ID                      | 14          | dint   |      | 0   | 200   |
| Dataset 4 ID                      | 16          | dint   |      | 0   | 200   |
| Dataset 5 ID                      | 18          | dint   |      | 0   | 200   |
| Dataset 6 ID                      | 20          | dint   |      | 0   | 200   |
| Dataset 7 ID                      | 22          | dint   |      | 0   | 200   |
| Dataset 8 ID                      | 24          | dint   |      | 0   | 200   |
| Dataset 1 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 2 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 3 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 4 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 5 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 6 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 7 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 8 config status           | ReadWrite   | enum   |      |     |       |
| Dataset 1 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 2 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 3 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 4 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 5 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 6 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 7 Priority                | Normal Prio | enum   |      |     |       |
| Dataset 8 Priority                | Normal Prio | enum   |      |     |       |

| Channel    | Name                | Type | Variable                          |
|------------|---------------------|------|-----------------------------------|
| IW1.0.1.1  | DS 1, in channel 1  | dint | Application_1.Program1.a_ds11.ch1 |
| IW1.0.1.2  | DS 1, in channel 2  | dint | Application_1.Program1.a_ds11.ch2 |
| IW1.0.1.3  | DS 1, in channel 3  | dint | Application_1.Program1.a_ds11.ch3 |
| IW1.0.1.4  | DS 2, in channel 1  | dint | Application_1.Program1.a_ds13.ch1 |
| IW1.0.1.5  | DS 2, in channel 2  | dint | Application_1.Program1.a_ds13.ch2 |
| IW1.0.1.6  | DS 2, in channel 3  | dint | Application_1.Program1.a_ds13.ch3 |
| IW1.0.1.7  | DS 3, in channel 1  | dint | Application_1.Program1.a_ds15.ch1 |
| IW1.0.1.8  | DS 3, in channel 2  | dint | Application_1.Program1.a_ds15.ch2 |
| IW1.0.1.9  | DS 3, in channel 3  | dint | Application_1.Program1.a_ds15.ch3 |
| IW1.0.1.10 | DS 4, in channel 1  | dint | Application_1.Program1.a_ds17.ch1 |
| IW1.0.1.11 | DS 4, in channel 2  | dint | Application_1.Program1.a_ds17.ch2 |
| IW1.0.1.12 | DS 4, in channel 3  | dint | Application_1.Program1.a_ds17.ch3 |
| IW1.0.1.13 | DS 5, in channel 1  | dint | Application_1.Program1.a_ds19.ch1 |
| IW1.0.1.14 | DS 5, in channel 2  | dint | Application_1.Program1.a_ds19.ch2 |
| IW1.0.1.15 | DS 5, in channel 3  | dint | Application_1.Program1.a_ds19.ch3 |
| IW1.0.1.16 | DS 6, in channel 1  | dint | Application_1.Program1.a_ds21.ch1 |
| IW1.0.1.17 | DS 6, in channel 2  | dint | Application_1.Program1.a_ds21.ch2 |
| IW1.0.1.18 | DS 6, in channel 3  | dint | Application_1.Program1.a_ds21.ch3 |
| IW1.0.1.19 | DS 7, in channel 1  | dint | Application_1.Program1.a_ds23.ch1 |
| IW1.0.1.20 | DS 7, in channel 2  | dint | Application_1.Program1.a_ds23.ch2 |
| IW1.0.1.21 | DS 7, in channel 3  | dint | Application_1.Program1.a_ds23.ch3 |
| IW1.0.1.22 | DS 8, in channel 1  | dint | Application_1.Program1.a_ds25.ch1 |
| IW1.0.1.23 | DS 8, in channel 2  | dint | Application_1.Program1.a_ds25.ch2 |
| IW1.0.1.24 | DS 8, in channel 3  | dint | Application_1.Program1.a_ds25.ch3 |
| QW1.0.1.25 | DS 1, out channel 1 | dint | Application_1.Program1.a_ds10.ch1 |
| QW1.0.1.26 | DS 1, out channel 1 | dint | Application_1.Program1.a_ds10.ch2 |
| QW1.0.1.27 | DS 1, out channel 1 | dint | Application_1.Program1.a_ds10.ch3 |
| QW1.0.1.28 | DS 2, out channel 1 | dint | Application_1.Program1.a_ds12.ch1 |
| QW1.0.1.29 | DS 2, out channel 2 | dint | Application_1.Program1.a_ds12.ch2 |
| QW1.0.1.30 | DS 2, out channel 3 | dint | Application_1.Program1.a_ds12.ch3 |
| QW1.0.1.31 | DS 3, out channel 1 | dint | Application_1.Program1.a_ds14.ch1 |
| QW1.0.1.32 | DS 3, out channel 2 | dint | Application_1.Program1.a_ds14.ch2 |
| QW1.0.1.33 | DS 3, out channel 3 | dint | Application_1.Program1.a_ds14.ch3 |
| QW1.0.1.34 | DS 4, out channel 1 | dint | Application_1.Program1.a_ds16.ch1 |
| QW1.0.1.35 | DS 4, out channel 2 | dint | Application_1.Program1.a_ds16.ch2 |
| QW1.0.1.36 | DS 4, out channel 3 | dint | Application_1.Program1.a_ds16.ch3 |
| QW1.0.1.37 | DS 5, out channel 1 | dint | Application_1.Program1.a_ds18.ch1 |
| QW1.0.1.38 | DS 5, out channel 2 | dint | Application_1.Program1.a_ds18.ch2 |
| QW1.0.1.39 | DS 5, out channel 3 | dint | Application_1.Program1.a_ds18.ch3 |
| QW1.0.1.40 | DS 6, out channel 1 | dint | Application_1.Program1.a_ds20.ch1 |
| QW1.0.1.41 | DS 6, out channel 2 | dint | Application_1.Program1.a_ds20.ch2 |
| QW1.0.1.42 | DS 6, out channel 3 | dint | Application_1.Program1.a_ds20.ch3 |
| QW1.0.1.43 | DS 7, out channel 1 | dint | Application_1.Program1.a_ds22.ch1 |
| QW1.0.1.44 | DS 7, out channel 2 | dint | Application_1.Program1.a_ds22.ch2 |
| QW1.0.1.45 | DS 7, out channel 3 | dint | Application_1.Program1.a_ds22.ch3 |
| QW1.0.1.46 | DS 8, out channel 1 | dint | Application_1.Program1.a_ds24.ch1 |
| QW1.0.1.47 | DS 8, out channel 2 | dint | Application_1.Program1.a_ds24.ch2 |
| QW1.0.1.48 | DS 8, out channel 3 | dint | Application_1.Program1.a_ds24.ch3 |
| IW1.0.1.49 | UnitStatus          | dint |                                   |