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	Sven-Erik Karlsson	187050		
MFB-Modulbus converter PE1354A Connect Tyrak/Veritron to AC80/AC800/AC4XX				

1. GENERAL

The **PE1354A** 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 PE1354A contains a 2 characters display for status indication.

2. TECHNICAL DESCRIPTION

2.1 Dimension and mounting

To obtain the best immunity to electric noise the PE1354A 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

PE1354A 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

PE1354A is slave on the DDCS protocol

PE1354A can be connected with 1.0mm plastic fibre POF or 200um Hard Clad Silica HCS fibre.

ModuleBus: Use TB810 adapter in AC70/80 or FCI unit when using HCS fibre.

ModuleBus: Use TB810 or TB811 adapter in AC70/80 or FCI unit when using Plastic fibre.

DriveBus channel on AC80 can handel Plastic or HCS fibre.

Special I/O channel on AC80 can handel Plastic fibre only.

Enclosure class

IP00

Enviromental data

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

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2.3 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	Off=Ring On=Star configuration
S1:8	OFF=High	MFB high/low speed
S1:9	OFF=1 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		Not used
S1:11	On=1	DDCS Transmitter intensity 0-3 0=High 3=Low
S1:12	On=2	Set both to off for maximum intensity.

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 PE1354A.

All 9 strapping must be inserted.

STRAPPING	FUNCTION
B2:1	RTS-N Always Inserted for PE1354A
B2:2	RST Always Inserted for PE1354A
B2:3	RTS Always Inserted for PE1354A
B3:1	CLK -N Always Inserted for PE1354A
B3:2	CLK Always Inserted for PE1354A
B3:3	CLK Always Inserted for PE1354A
B4:1	DATA-N Always Inserted for PE1354A
B4:2	DATA Always Inserted for PE1354A
B4:3	DATA Always Inserted for PE1354A

2.4 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
-	Communication is OK

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2.5 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

2.6 Mapping of nodes MasterFieldbus / AC80 (Example for MFB Bus number 1 and Cluster 1)

MasterFieldbus Tyrak	DDCS bus
Bus+Node addr Bus no DIP S1.1-3	Node addr 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	1 + (CLUSTER+1)*16
13 + BUS*100	2 + (CLUSTER+1)*16
14 + BUS*100	3 + (CLUSTER+1)*16
15 + BUS*100	4 + (CLUSTER+1)*16

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2.7 Mapping of Signals from AC80/AC4XX to TYRAK

TYRAK Name	First dataset=1 S1.9=OFF	First dataset=10 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

2.8 Mapping of Signals from TYRAK to AC80/AC4XX

TYRAK Name	First dataset=1 S1.9=OFF	First dataset=10 S1.9=ON
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

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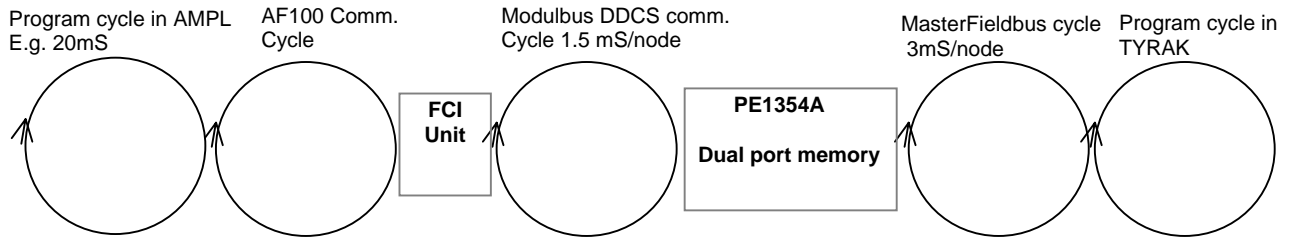
2.9 Error handling

When MFB communication for one TYRAK node failure then the DDCS communication for corresponding node are stopped. The PE1354A display will indicate 1 for the actual node.

When DDCS communication for one node failure then MFB communication for corresponding TYRAK node are stopped. The PE1354 display will indicate 0 for the actual node.

2.10 Signal delay

Calculation of signal delay time AC4XX / TYRAK



Cycle times in ACVXXX AMPL and TYRAK are not included in following example.

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

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

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2.11 Veritron PAD 6 communication

Same Interface card as for ABB MasterPiece must be installed in the Veritron controller.

Interface: BX 5001 with software S 55002

Parameter setting in Veritron

[90]=5 Communication monitoring time

[93]=32-47 Unit address for communication

[94]=3 Mode of operation / communication board (BX 5001 SW S55002)

PE1354A must be set up for Low speed S1:8 =ON and MFB Bus number =1 S1:1=ON

Connection

2 wire RS485 connection between PE1354A and Veritron are used.

P5 connect to Veritron BX5001 X3:5 DATA-N

P6 connect to Veritron BX5001 X3:1 DATA

Mapping of Signals to Veritron from AC80/AC4XX

TYRAK Name	First dataset=1 S1.9=OFF	First dataset=10 S1.9=ON
PBORD2	DS11.1	DS20.1
RORD1	DS1.2	DS10.2
RORD3	DS3.1	DS12.1
RORD6	DS5.1	DS14.1

Mapping of Signals from Veritron to AC80/AC4XX

TYRAK Name	First dataset=1 S1.9=OFF	First dataset=10 S1.9=ON
RIND2	DS2.3	DS11.3
RIND6	DS6.1	DS15.1
I4IND1	DS12.1-2	DS21.1-2

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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)

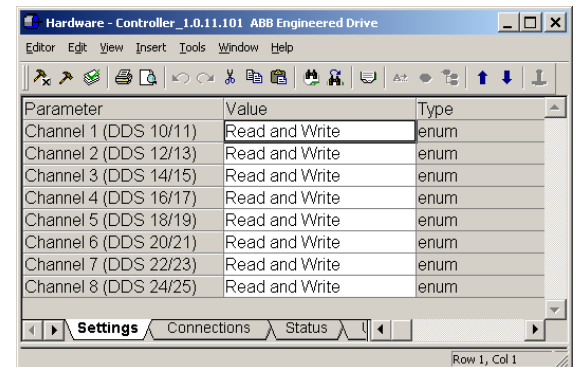
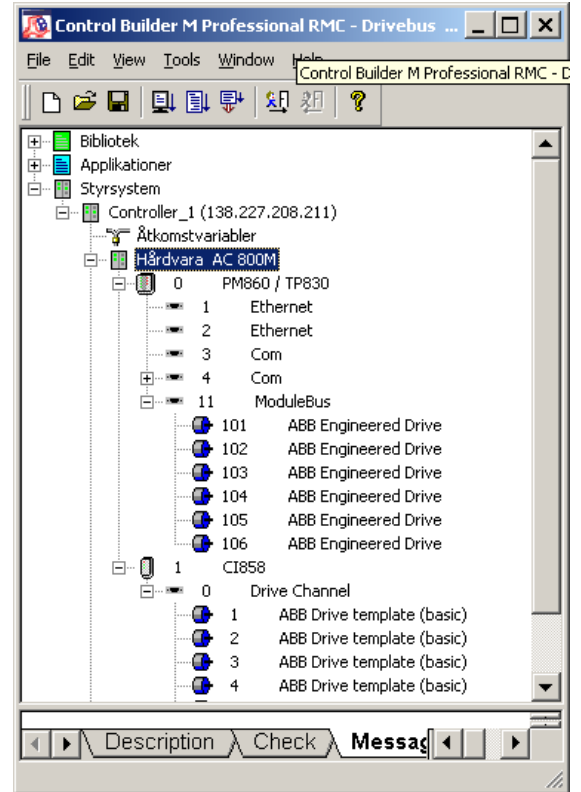
Be sure to set MFB Bus number to 1-7 (Normally to 1)

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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3.2 Use Ci58 Drive channel

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

Position 1 –12 correspond to MFB addr 0-11

Position 101-104 correspond to MFB addr 12-15

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.

UseBusManager: set to False

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	false	bool			
Address of Application ID	9910	dint		1	32767
Configured Application ID	1	dint		1	65535
Configured application ID c	No Checking	enum			
Address of drive type in dri	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	Read/Write	enum			
Dataset 2 config status	Read/Write	enum			
Dataset 3 config status	Read/Write	enum			
Dataset 4 config status	Read/Write	enum			
Dataset 5 config status	Read/Write	enum			
Dataset 6 config status	Read/Write	enum			
Dataset 7 config status	Read/Write	enum			
Dataset 8 config status	Read/Write	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