

PE1354FM/0

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	Sven-Erik Karlsson	187050		

MFB-ProfiBus DP converter PE1354FM Connect MP200 to Profibus drives

1. GENERAL

The **PE1354FM** is a converter connected to ABB MasterFieldbus short distance bus (RS485) on one side and on **ProfibusDP** on the other side. The converter is operating at High or Low communication speed on the MFB.

The PE1354FM contains a 2-character display for status indication.

PE1354FM act as slaves on Masterfieldbus and Master on Profibus DP.

PE1354FM will only occupies the Masterfielbus address if the corresponding Profibus address are connected. This mean that old Tyrak drives can still be working on same Masterfieldbus.

2. TECHNICAL DESCRIPTION

2.1 Dimension and mounting

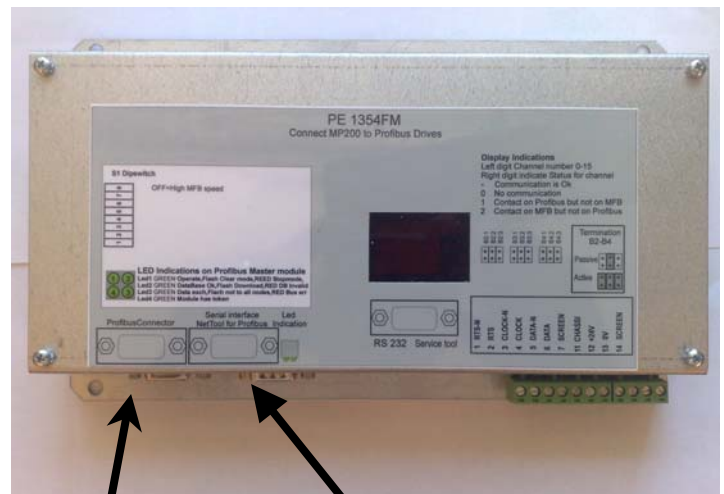
To obtain the best immunity to electric noise the PE1354FM must be electrically connected to cubicle through 4 M5 screws in each corner

(M5 Screw pos 220mm x135mm).

Dimensions

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

Required mounting deep: 35mm



Profibus connector

Anybus Net tool connector

2.2 Technical data

Auxiliary Power

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

Communication MasterFieldbus

RS-485

Transmission speeds 375kbit/s or 2mbit/S selected with DIP switch

Max cable length :short dist. <=25m

Cable type FLFR 3x2x0.34

PE1354FM act as up to 16 Slaves on MasterfieldBus.

Communication ProfiBus DP

RS485

Standard 9 pin D-SUB connector

Transmission speeds 9.6kbit/s to 12mbit/S.

Act as Profibus DP Master

Environmental data

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

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2.3 Strapping

DIPSW	POSITION	DEFAULT	FUNCTION
S1:1		OFF	
S1:2		OFF	
S1:3		OFF	
S1:4		OFF	
S1:5		OFF	
S1:6		OFF	
S1:7		OFF	
S1:8	OFF=High	OFF	MFB low /high speed, Low=375 kbaud, High=2,0 MBaud

2.4 TERMINATION of MFB bus

MasterFieldBus has 9 strapping in 3 groups for termination of the signal lines RTS, CLOCK, DATA. Insert all Strapping B2,B3 and B4 to make an Active Termination

STRAPPING	FUNCTION
B2:1	RTS-N Open
B2:2	RST Insert if PE1354FM is the last unit on the Masterfieldbus
B2:3	RTS Open
B3:1	CLK -N Open
B3:2	CLK Insert if PE1354FM is the last unit on the Masterfieldbus
B3:3	CLK Open
B4:1	DATA-N Open
B4:2	DATA Insert if PE1354FM is the last unit on the Masterfieldbus
B4:3	DATA Open

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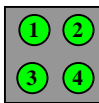
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2.5 Status display 2 digits

First digit shows actual MasterFieldBus node addr 0-F.

SECOND DIGIT	STATUS
0	No contact on Masterfieldbus and No contact on Profibus DP
1	Contact on ProfibusDP but no contact on MFB
2	Contact on Masterfieldbus but no contact on Profibus DP
-	Communication is OK

2.6 Status leds on Profibus DP-V1 module



Led	State	Description
1	Green	Operate mode
	Green, flashing	Clear mode
	Red	Stop mode
	Off	Offline
2	Green	Database OK
	Green, flashing	Database download in progress
	Red	Database invalid
	Off	No database downloaded
3	Green	Data exchange with all existing slaves
	Green, flashing	Data exchange with at least one configured slave
	Red	Bus control error(Short circuit or config error)
	Off	No data exchange
4	Green	The module has the token
	Off	The module does not have the token

2.7 Error handling

When MFB communication for one Drive failure then the Profibus communication will still be running but all values to the drive are forced to 0. The PE1354FM display will indicate 1 for the actual node.

When Profibus DP communication for one node failure then MFB communication for corresponding Drive are stopped. The PE1354FM display will indicate 2 for the actual node.

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2.8 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 Female	Profibus DPV1
3	B-Line
4	RTS
5	GND Bus Used for termination
6	5V Bus Used for bus termination
8	A-Line
9 pole Dsub male	Connector for Anybus Net Tool for PROFIBUS
9 pole Dsub Female	Service aid (Inside the box)
2	Txd RS232
3	Rxd RS232
5	0V

2.9 Mapping of nodes between MP200 masterfieldbus and Profibus

MP200 node addr	Profibus DP node addr
Bus number x100 + 0	3
Bus number x100 + 1	4
Bus number x100 + 2	5
Bus number x100 + 3	6
Bus number x100 + 4	7
Bus number x100 + 5	8
Bus number x100 + 6	9
Bus number x100 + 7	10
Bus number x100 + 8	11
Bus number x100 + 9	12
Bus number x100 + 10	13
Bus number x100 + 11	14
Bus number x100 + 12	15
Bus number x100 + 13	16
Bus number x100 + 14	17
Bus number x100 + 15	18

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2.10 Mapping of Signals Profibus Drives and MP200

The mapping table shows the Profibus Input and Output addresses from the Profibus Master side.

Input signal addr 0-996 from Profibus Drive to MP200 COM-CV11 PC-element																
Node number 0..15 on Masterfieldbus are connected to Node number 3-18 on Profibus side																
MP200	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PBIND1	0	64	128	192	256	320	384	448	512	576	640	704	768	832	896	960
PBIND2	2	66	130	194	258	322	386	450	514	578	642	706	770	834	898	962
PBIND3	4	68	132	196	260	324	388	452	516	580	644	708	772	836	900	964
PBIND4	6	70	134	198	262	326	390	454	518	582	646	710	774	838	902	966
PBIND5	8	72	136	200	264	328	392	456	520	584	648	712	776	840	904	968
I4IND1HI	10	74	138	202	266	330	394	458	522	586	650	714	778	842	906	970
I4IND1LO	12	76	140	204	268	332	396	460	524	588	652	716	780	844	908	972
RIND1	14	78	142	206	270	334	398	462	526	590	654	718	782	846	910	974
RIND2	16	80	144	208	272	336	400	464	528	592	656	720	784	848	912	976
RIND3	18	82	146	210	274	338	402	466	530	594	658	722	786	850	914	978
RIND4	20	84	148	212	276	340	404	468	532	596	660	724	788	852	916	980
RIND5	22	86	150	214	278	342	406	470	534	598	662	726	790	854	918	982
RIND6	24	88	152	216	280	344	408	472	536	600	664	728	792	856	920	984
RIND7	26	90	154	218	282	346	410	474	538	602	666	730	794	858	922	986
RIND8	28	92	156	220	284	348	412	476	540	604	668	732	796	860	924	988
RIND9	30	94	158	222	286	350	414	478	542	606	670	734	798	862	926	990
Spare	32	96	160	224	288	352	416	480	544	608	672	736	800	864	928	992
Spare	34	98	162	226	290	354	418	482	546	610	674	738	802	866	930	994
Spare	36	100	164	228	292	356	420	484	548	612	676	740	804	868	932	996

Output signal addr 0-996 from MP200 COM-CV11 PC-element to Profibus Drive																
Node number 0..15 on Masterfieldbus are connected to Node number 3-18 on Profibus side																
MP200	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PBORD1	0	64	128	192	256	320	384	448	512	576	640	704	768	832	896	960
PBORD2	2	66	130	194	258	322	386	450	514	578	642	706	770	834	898	962
I4ORD1H	4	68	132	196	260	324	388	452	516	580	644	708	772	836	900	964
I4ORD1L	6	70	134	198	262	326	390	454	518	582	646	710	774	838	902	966
RORD1	8	72	136	200	264	328	392	456	520	584	648	712	776	840	904	968
RORD2	10	74	138	202	266	330	394	458	522	586	650	714	778	842	906	970
RORD3	12	76	140	204	268	332	396	460	524	588	652	716	780	844	908	972
RORD4	14	78	142	206	270	334	398	462	526	590	654	718	782	846	910	974
RORD5	16	80	144	208	272	336	400	464	528	592	656	720	784	848	912	976
RORD6	18	82	146	210	274	338	402	466	530	594	658	722	786	850	914	978
RORD7	20	84	148	212	276	340	404	468	532	596	660	724	788	852	916	980
RORD8	22	86	150	214	278	342	406	470	534	598	662	726	790	854	918	982
RORD9	24	88	152	216	280	344	408	472	536	600	664	728	792	856	920	984
RORD10	26	90	154	218	282	346	410	474	538	602	666	730	794	858	922	986
RORD11	28	92	156	220	284	348	412	476	540	604	668	732	796	860	924	988
RORD12	30	94	158	222	286	350	414	478	542	606	670	734	798	862	926	990
RORD13	32	96	160	224	288	352	416	480	544	608	672	736	800	864	928	992
RORD14	34	98	162	226	290	354	418	482	546	610	674	738	802	866	930	994
I4ORD2H	36	100	164	228	292	356	420	484	548	612	676	740	804	868	932	996
I4ORD2L	38	102	166	230	294	358	422	486	550	614	678	742	806	870	934	998

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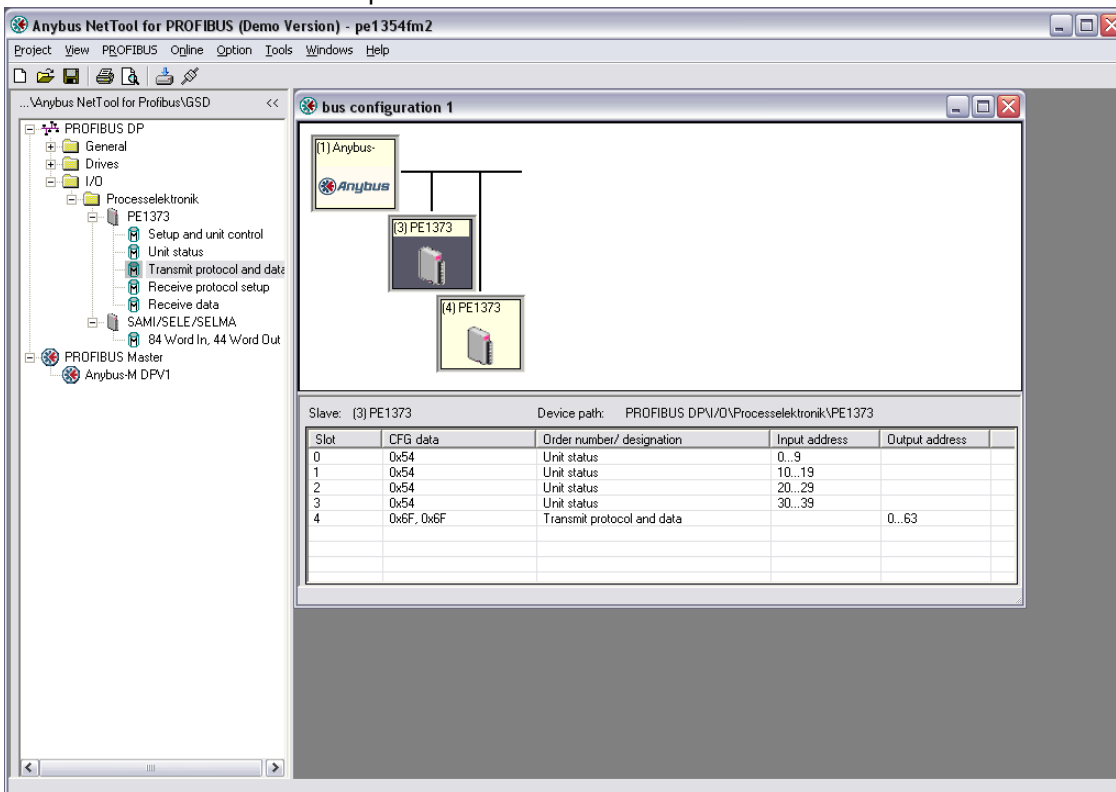
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3. Configuration of Profibus with Anybus Net Tool for Profibus

Start the program AnybusNet Tool for PROFIBUS
 Click on NEW to create a new project
 Drag in the Profibus Master Anybus-M DPV1 into the Bus configuration area.
 Double click on the Anybus in config area and set the wanted speed (e.g. 1500 kbit/sec)

Now you have to Install the GSD file or files for the connected Drives.
 Click on Tools -> Install New GS* file
 Navigate to your GSD file and click on Open.
 Drag in the Drive to the Bus config area.
 Double click on the drive symbol in config area and set Node number (e.g. 3 for the first drive) and click OK.
 If the Drive has more than one Module you have to insert selected modules in the Slot 0....
 It is very important that you do not insert more Integer values than 32 (Only 20 Integers are used)
 If more values are inserted then there will be overwriting of data between the nodes.
 In my example I have 4 slots for Input data with total 20 Words of data and one slot Output data with 32 words.
 For the first slave the data address is started from 0 both for Input and Output address so you do not need to change that.

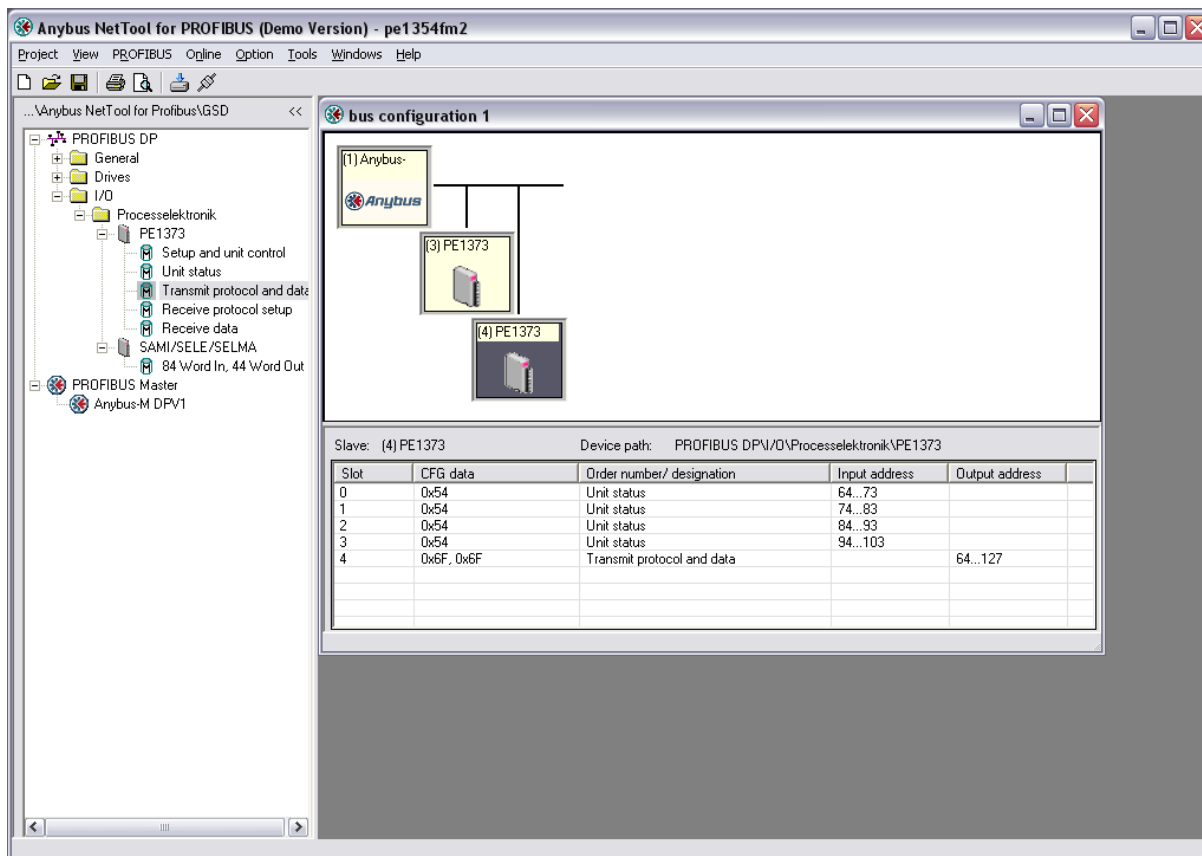
Drag one more Drive into the Bus config area and give it address 4. Give it the Profibus address 4 and drag in the Modules for the Inputs and outputs.
 By default the address just continue from the last used address.
 This we need to change according the PBIND1 and PBORD1 address in Mapping table in section 2.
 The Input and Output address for node 4 must start from 64.
 Double click slot for the Input address and change start address to 64.
 If there is more than one Slot for Input address you have to start with the last slot and calculate the start address for that slot (Start for the first slot Profibus addr 4 must be 64).
 Do the same for the output address.
 This shows the first Drive with prefabs address 3



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This shows the second drive with profibus address 4



Now continue with the rest of the Drives and carefully follow the Mapping address in section 2.

When all Drives are configured it "Save project as PE1354FM.xml

Connect the cable between the PC com port and the Service port for Net Tool on the PE1354FM (9 pole male Dsub Located just to the right of the Profibus connector).

Then click on Online->Download configuration

When this is done you need to recycle the power on the PE1354FM unit.

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Function

Error handling

When ProfiBus communication node failure then the MFB communication for corresponding nodes are stopped. The PE1354FM display will indicate 0 for all nodes.

Signal delay estimation

Measuring of signal delay time TYRAK L / ProfiBus Master Configuration with 8 nodes. Total delay is calculated to 20mS for 8 nodes. Cycle time in Drive and Controller is not included.

