

How to use the PNP/5280 BDM Interface

The evaluation board DNP/EVA8 for the DIL/NetPC PNP/5280 offers a BDM (Motorola Background Debug Mode) connector for the use of external debugger interfaces which follows the Motorola BDM specifications for ColdFire MCUs. Make sure that the power supply is off before following the next steps.

• 1. Step: Use a standard BDM interface product for Motorola ColdFire MCUs. Some vendors offers 3,3 V and 5 V BDM interface products for ColdFire platforms. The PNP/5280 needs a 3,3 V version.



Picture 1: The P&E BDM Interface for 3,3 V ColdFire MCUs

Most BDM interface products for Motorola ColdFire MCU comes with a 26-pin connector with a 2,54 mm grid for the BDM interface on one side. Table 1 shows the common pinout.

Pin	Function	Pin	Function
1	NC	14	PST1
2	BKPT	15	PST0
3	GND	16	DDATA3
4	DSCLK	17	DDATA2
5	GND	18	DDATA1
6	NC	19	DDATA0
7	RESET	20	GND
8	DSI	21	NC
9	Vcc	22	NC
10	DSO	23	GND
11	GND	24	CLK
12	PST3	25	Vcc
13	PST2	26	TEA

Table 1: 26-pin P&E BDM Pinout



• 2. Step: The evaluation board DNP/EVA8 offers a 20-pin BDM connector with a 2,00 mm grid. Use the original SSV DNP/5280 BDM interface adapter for converting the 26-pin BDM pin out with the 2,54 mm grind to the 20-pin DNP/EVA8 BDM pin out with 2,00 mm grid.



Picture 2: The SSV DNP/5280 BDM Interface Adapter Converter from 2,54 mm to 2,00 mm

Pin	Name
1	VIO (3.3 VDC I/O Voltage)
2	GND
3	TA#
4	BKPT#
5	Reset#
6	DSCLK#
7	DSI#
8	TCLK
9	PST3
10	DS0
11	PST2
12	DDATA3
13	PST1
14	DDATA2
15	PST0
16	DDATA1
17	PSTCLK
18	DDATA0
19	GND
20	RCM

 Table 2: DNP/EVA8 BDM Connector Pin Out (J10 pin out)



• **3. Step**: Connect the 26-pin BDM interface connector with the SSV DNP/5280 BDM Interface Adapter board.



Picture 3: Connection between P&E BDM Interface and SSV BDM Interface Adapter

• **4. Step**: Remove the RCM jumper if available. Then connect one end of the SSV BDM Interface Adapter to the DNP/EVA8 connector J10.



Picture 4: Connect the other end of the SSV BDM Interface Adapter to the DNP/EVA8

• **5. Step**: Now power-up the PNP/5280. Then run your BDM interface software. The following picture shows the Win32 BDM software *BDMDebug*.

BDMDebug V1.02 - for Project	r Motorola ColdFire	(c) 1998-2000 by Stefan Robi <stefan.robl@tirnet.de></stefan.robl@tirnet.de>					
Debug Access File Upload File Download Memory Manipulator Memory Tester ColdFire Core							
ColdFire-Registerblock		Memory Monitor					
PC Ff848d48	CCR 2784	<pre>\$ff948d32: \$285f >> move.1 (a7)+,a4 \$ff948d34: \$4e5e >> unlk.w a6 \$ff948d36: \$4e75 >> rts</pre>					
D0 cf206080	A0 4000000	\$ff848d38: \$4e56 >> link.w a6,#\$0000					
D1 13b01080	A1 00005b38	\$ff848d42: \$1228 >> move.b \$204(a0),d1 \$ff848d42: \$1228 >> move.b \$204(a0),d1					
D2 00000020	A2 2d450fe4	\$ff848d48: \$1001 >> move.b dl,d0					
D3 72875b37	A3 00010000	\$ff848d4a: \$0280 >> dc.w \$0280 \$ff848d4c: \$0000 >> dc.w \$0000					
D4 0000000	A4 00001592	\$ff848d4e: \$0001 >> dc.w \$0001 \$ff848d50: \$67ea >> beg.b \$ff848d3c					
D5 d17ca6c9	A5 3fbef69f	\$ff848d52: \$1028 >> move.b \$20c(a0),d0					
D6 a70984f2	A6 00005a88	\$ff848d58: \$4e75 >> rts					
D7 e2931788	A7 00005a88	688888888 08888888 88888888 current PC					
<u>U</u> pdate	Reset <u>A</u> ll	Mode Word V Lines 15 Read DisAsm					
Debug-Control							
Image: set PC to Image: set PC to							
Debug mode set to DEBUG.							

Picture 5: Reset the PNP/5280 over the BDM connection

• **6.** Step: *BDMDebug* offers a Run button. If a user press this button the PNP/5280 runs in normal operation under control of the BDM debugger.

🔅 BDMDebug V1.02 - for Motorola Co	oldFire (c) 1998-2000 by Stefan Robl <stefan.robl@tirnet.de></stefan.robl@tirnet.de>	_ 🗆 🗵						
Project								
Debug Access File Upload File Download Memory Manipulator Memory Tester ColdFire Core								
ColdFire-Registerblock	Memory Monitor							
PC Ff848d48 CCR	<pre>2704 # ff648d32: \$285f >> move.l (a7)+,a4 \$ff648d34: \$4e5e >> unlk.w a6 \$ff648d36: \$4e75 >> rts</pre>							
D0 cf206080 A0 4000	\$\$f\$484d38: \$4e56 >> link.w a6,#\$0000 \$ff848d3c: \$4159 >> lea 1 (\$40000000) 1 a0							
D1 13b01080 A1 0000	5b38 \$ff848d42: \$1228 >> move.b \$204(a0),d1							
D2 00000020 A2 2d45	\$ff848d48: \$1001 >> moved.1 #0,d0 \$ff848d48: \$1001 >> move.b d1,d0	- 11						
D3 72875b37 A3 0001	0000 \$ff848d4a: \$0280 >> dc.w \$0280 \$ff848d4c: \$0000 >> dc.w \$0000							
D4 00000000 A4 0000	1592 \$ff848d4e: \$0001 >> dc.w \$0001 \$ff848d50: \$67ea >> beg.b \$ff848d3c							
D5 d17ca6c9 A5 3fbe	F69F \$ff848d52: \$1028 >> move.b \$20c(a0),d0							
D6 a70984f2 A6 0000	5a88 \$ff848d58: \$4e75 >> rts							
D7 e2931788 A7 0000	5a88 00000000 00000000 0000000 current	PC						
Update Res	et All Mode Word T Lines 15 Read DisA	.sm						
Debug-Control								
Image: Set PC to Image: Set PC to<								
Debug mode set to RUN.								

Picture 6: Run the PNP/5280 over the BDM connection

Please note: The DIL/NetPCs PNP/5280 and DNP/5280 are software compatible. Only the mechanical form factor and the pin out is different. The Motorola dBUG ROM monitor and the Linux operating system of these two systems is absolute identical. It is also possible to use the DNP/5280 BDM software for the PNP/5280.

That is all.