Getting Started	Bus Interface Modules M130, M131, M132 and M135 KNX-Processors 184/01, 184/11 and 184/21

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Content of this document:

Document-Version: 1.1

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Technical Manual

page 1

Getting Started	Bus Interface Modules M130, M131, M132 and M135
	KNX-Processors 184/01, 184/11 and 184/21

1 EVB Getting Started

1.1 Install IAR Embedded Workbench

1. Install latest version of "IAR Embedded Workbench for Renesas 78K"
2. Also install the device driver(s) at the end of the setup for the IAR EWB

1.2 Install BIM Tools

1. Run BIM Tools Setup "BIM_Tools_v#.msi" (where # is the latest version)
2. If necessary download and install the .NET Framework 1.1
3. In case of installing the .NET Framework 1.1 reboot your PC and run BIM-Tools Setup again
4. If necessary download and install the "KNX Falcon Runtime" from KNX website (not necessary if KNX ETS is already installed)

1.3 Create a new BIM M13x project

1. Start "BIM Tools"
2. Click on "BIM Wizard"
3. Choose device, folder, project name and click on "next >>"
4. Specify the communication objects for your application and click on "next >>"
5. Specify the size of the address and association table
6. Click on "Save Conf." to save this configuration and then click on "Create" to create the project
7. Press "F1" in "BIM Tools" software will show further documentation

1.4 Connection

1. Connect hardware as it is shown on page 5
2. Connect Renesas E1 to JP3 with Renesas F14T16 adapter
3. Connect KNX-TP to JP1 (connect red terminal to TP+)
4. Ensure that the save jumper JP5 is **not** set
5. Connect Renesas E1 to host PC using an USB cable

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1.5   Set BIM M 13x Debug Operating System

1. Open "IAR Embedded Workbench for Renesas 78K"
2. Open the created BIM M 13x project (accept update of the project file)
3. In IAR EWB menu select "Project" → "Options..."
4. Go to category "Debugger" and choose tab "Images"
5. Activate the "Download extra image" sections
6. Specify the path to
    "BIM_M_#_Debug_v1_08_p**1**.hex" in the **first** "Download extra image" section and
    "BIM_M_#_Debug_v1_08_p**2**.hex" in the **second** "Download extra image" section
    "BIM_M_#_Debug_v1_08_p**3**.hex" in the **third** "Download extra image" section
    (where **#** is the corresponding BIM device chosen for this project in the BIM Wizard)
    and specify 0x0000 as "Offset" in each section:
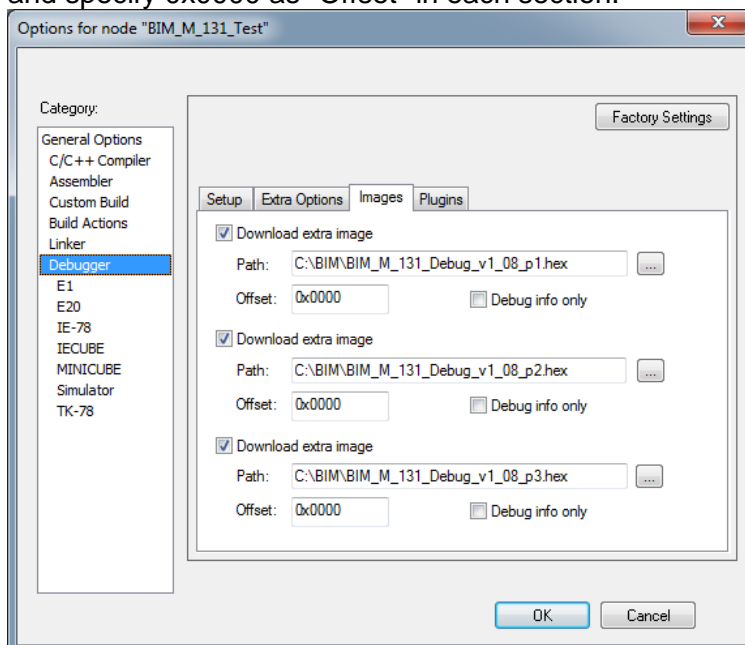
BIM M 13x	**Chipset**	**Debug Operating System parts**
BIM M 130 BIM M 135	184/01	BIM_M_131__M_135_Debug_v1_08_p1.hex
		BIM_M_131__M_135_Debug_v1_08_p2.hex
		BIM_M_131__M_135_Debug_v1_08_p3.hex
BIM M 131	184/11	BIM_M_131_Debug_v1_08_p1.hex
		BIM_M_131_Debug_v1_08_p2.hex
		BIM_M_131_Debug_v1_08_p3.hex
BIM M 132	184/21	BIM_M_132_Debug_v1_08_p1.hex
		BIM_M_132_Debug_v1_08_p2.hex
		BIM_M_132_Debug_v1_08_p3.hex

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Technical Manual

page 3

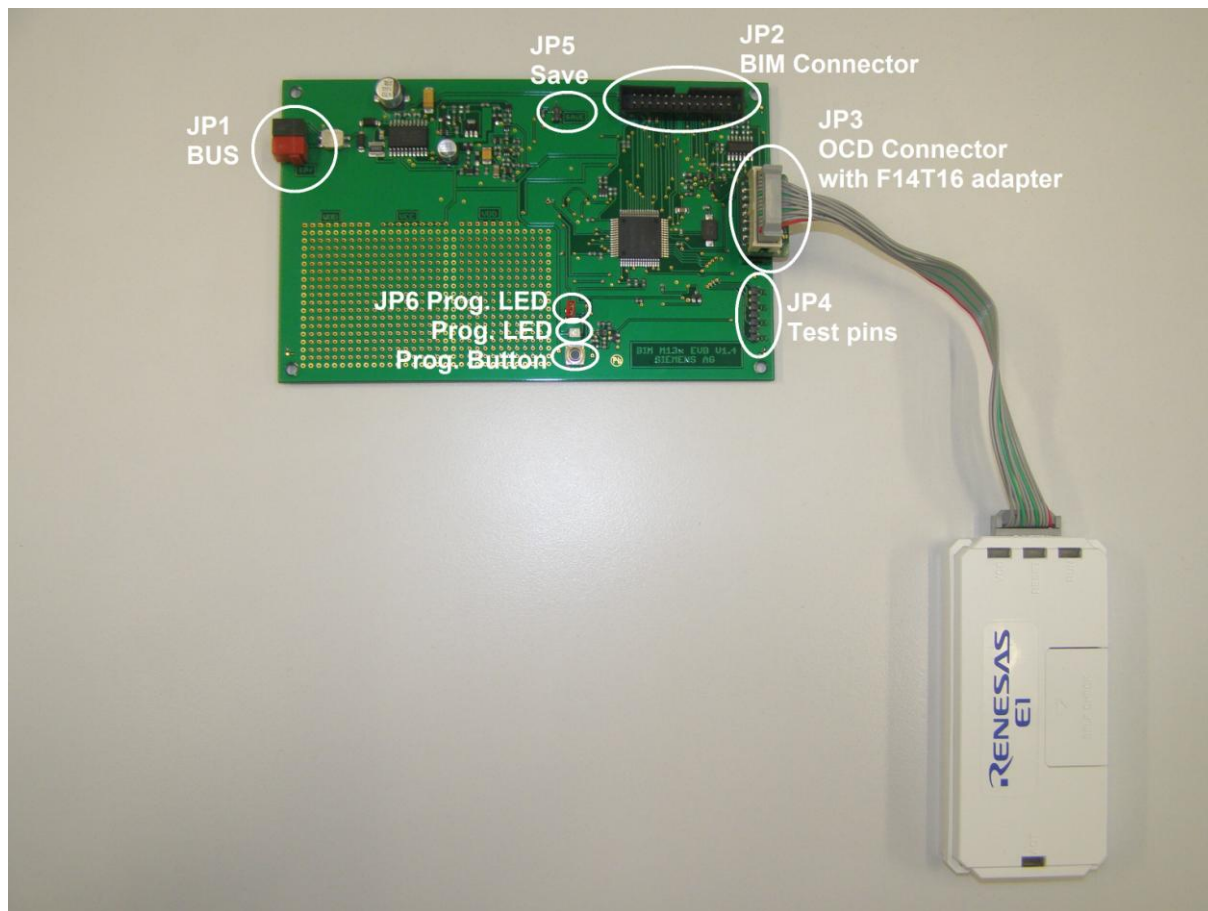| Getting Started	Bus Interface Modules M130, M131, M132 and M135
	KNX-Processors 184/01, 184/11 and 184/21

7. Go to category "Debugger" and change on tab "Setup" the "Driver" from "MINICUBE" to "E1" if you are using the Renesas E1 debugger
8. Click on "OK", build the project and start "Download and Debug" session
9. After the first download the "Download extra image" could be deactivated. The operating system will remain in the microcontroller for the next debug session.
   In case of malfunction or to change the operating system to another target BIM device activate the "Download extra image" sections again.
10. Only for **BIM M 132 or Chipset 184/21**:
    Change in projects options in category "General Options" on tab "Target" the "Code model:" to "Standard allow banking" and check the values of the "Code banking" group according to the following screenshot:
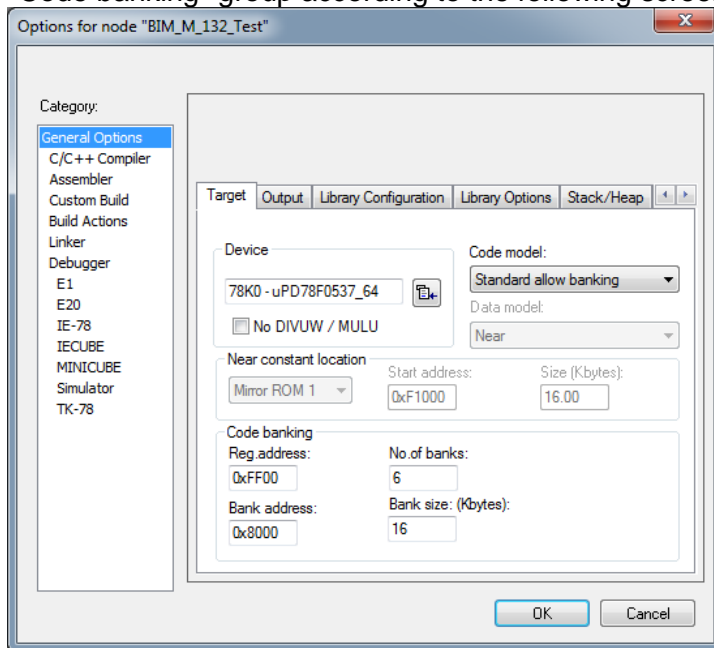
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2   Hardware connection

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Technical Manual

page 5

3   EVB Description

The BIM Evaluation Board is based on the BIM circuit.
It has nearly the same electrical characteristics as the BIM.
Differences to the BIM:

- Larger footprint of the processor enabling the placement of a socket
- A programming button and a programming led
- The led can be disconnected by a jumper
- A jumper to signal a save event to the processor
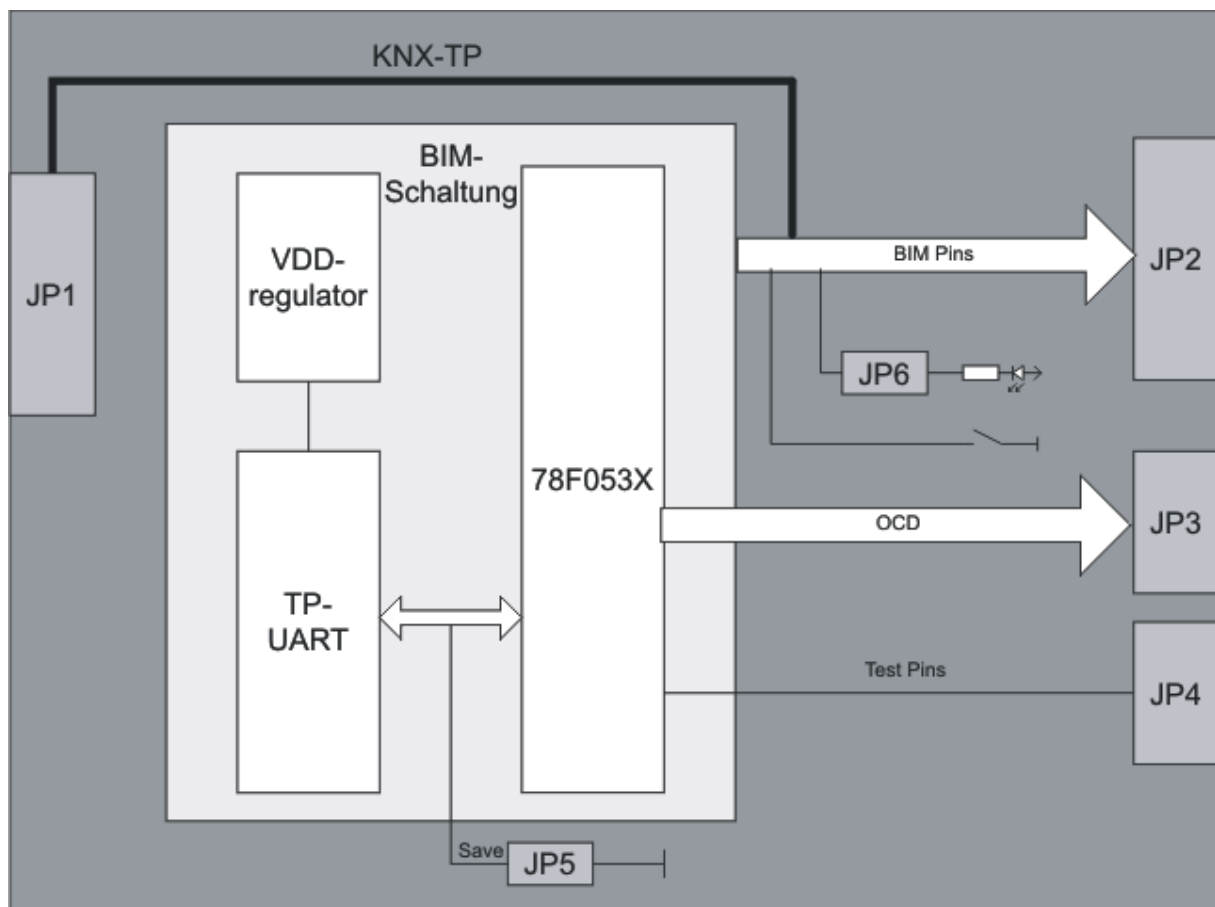
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	KNX-Processors 184/01, 184/11 and 184/21

3.1 PIN assignment

3.1.1 JP1, KNX-TP connection

Connection to KNX-TP (21V - 30V)
Connect red terminal to TP+

3.1.2 JP2, BIM-Connection

A connection to the target hardware is possible via ribbon cable

PIN	BIM-Pin	Name	Function
1	a6	A1	
2	d6	PLMB	
3	b6	C7	
4	c6	LED	Programming LED connection
			Remove JP6 if this connection is used
5	a5	A3	
6	d5	RTS	PEI-RTS Pin
7	b5	A0	
8	c5	Type	Input for type resistor
9	a4	A5	
10	d4	RXD	PEI-RXD pin
11	b4	A2	
12	c4	CTS	PEI-CTS pin
13	a3	A7	
14	d3	TXD	PEI-TXD pin
15	b3	A4	
16	c3	CLK	PEI-CLK pin
17	a2	C35V	
18	d2	VCC	
19	b2	A6	
20	c2	Button	Programming button connection
21	a1	Reset	Reset in/output of BIM
22	d1	VDD	
23	b1	PLMA	
24	c1	GND	
25	e1	BUS+	
26	e2	BUS-	

3.1.3 JP3, OCD-connector

Connect the Renesas E1 here
The adapter Renesas F14T16 is necessary

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Getting Started	Bus Interface Modules M130, M131, M132 and M135 KNX-Processors 184/01, 184/11 and 184/21

3.1.4 JP4, Test pins

No.	Name	Used by	Function
1	T1	System	OS-Cycle (changes state after every cycle)
2	T2	System	High = User, Low = System
3	T3	User	Can be used for debugging
4	T4	User	Can be used for debugging

3.1.5 JP5, Save

If this jumper is connected the BIM will call the save function

3.1.6 JP6, LED

This jumper connects the LED to BIM-Pin c6

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Technical Manual

page 9