PTC04-DB-HALL04

Daughter Board for Melexis PTC devices

Features and Benefits

PTC04 interface board for testing devices:

- MLX90292 for PAS4, PSI5 and 2 wire PWM

Applications

Experimental tool for Lab and Prototyping
Production Equipment for Serial Programming

Ordering Information

Part No.	Description
PTC04-DBHall-04	Daughter Board (PCB + rear panel PTC04)

Accessories

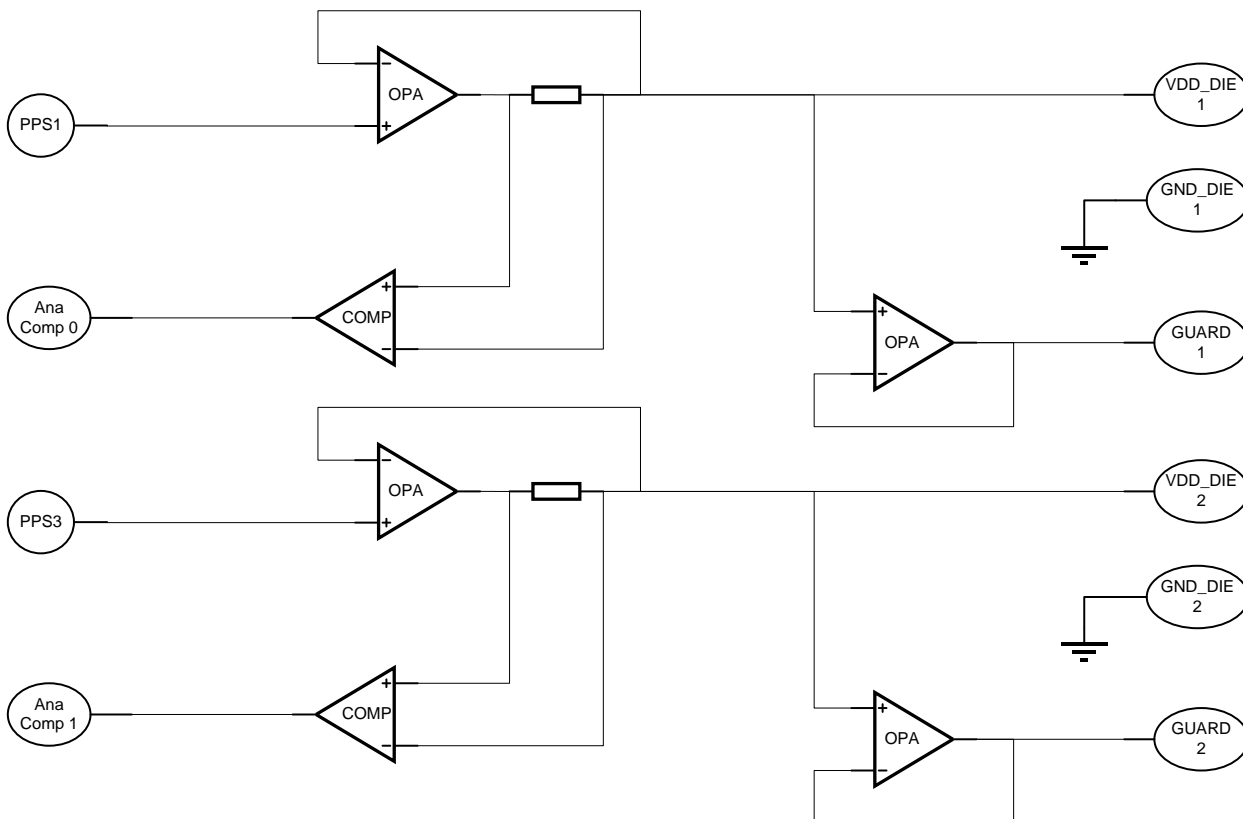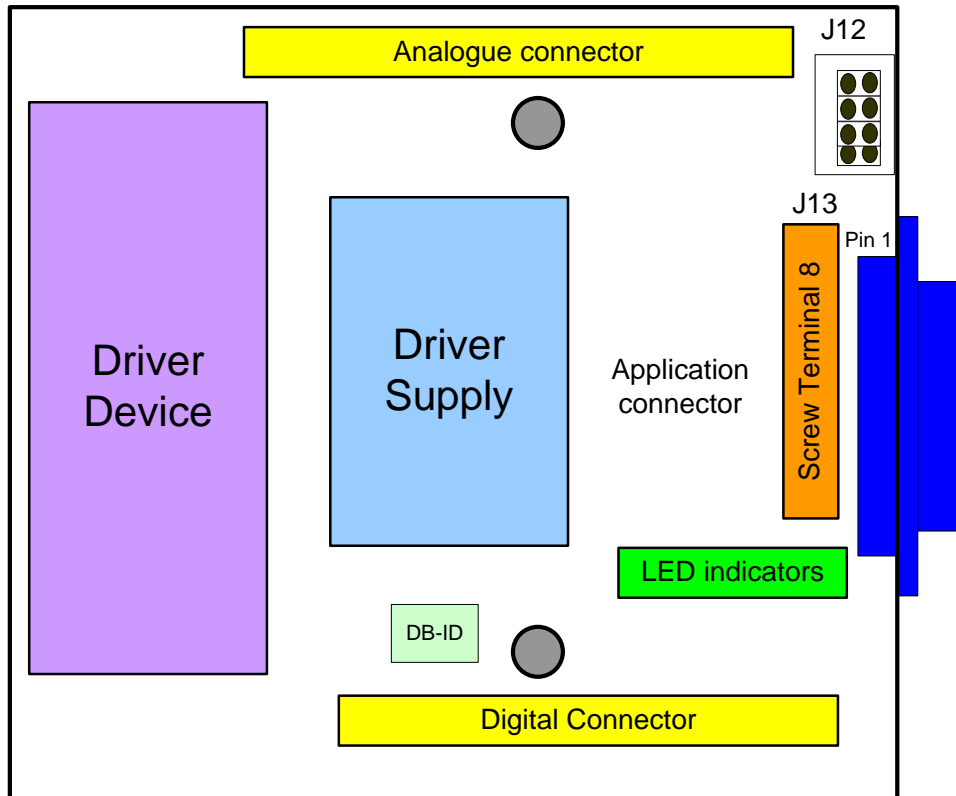| Part No.	Description
DLL's for all supported products	
User Inter Faces for supported products	
Firmware for supported products	

1. Functional Diagram

Contents

2. Board description

2.1. Board Layout

- J12: Jumpers to connect the measurement sense lines immediately to the force lines. These jumpers are needed when no force and sense is used.
- DB-ID: This ID keeps a few initial variables in mind. It allows for example to detect what DB is connected to the programmer and if the DB is not expired.
- J5, J6: Analogue and Digital connector: See below for a detailed description.
- DB Connector: Connector to the application. See below for details.
- LED Indicators: 8 LED Indicators for the DB_IOdrv lines.
- J13: 13 pins Screw Terminal. It provides the same signals as the application connector.

2.2. Board Schematics

Below you can find the complete schematics of the DB:
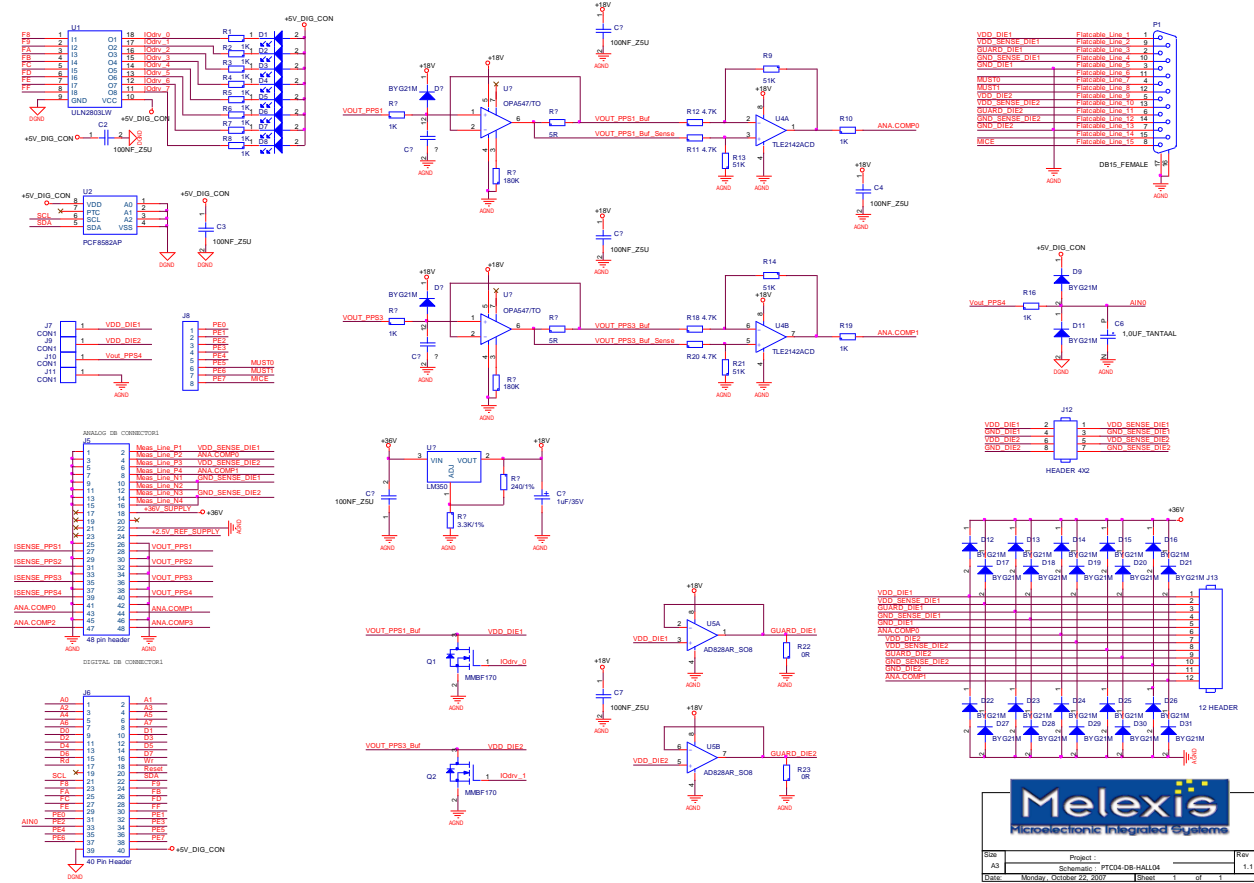
2.3. Daughter board Connectors

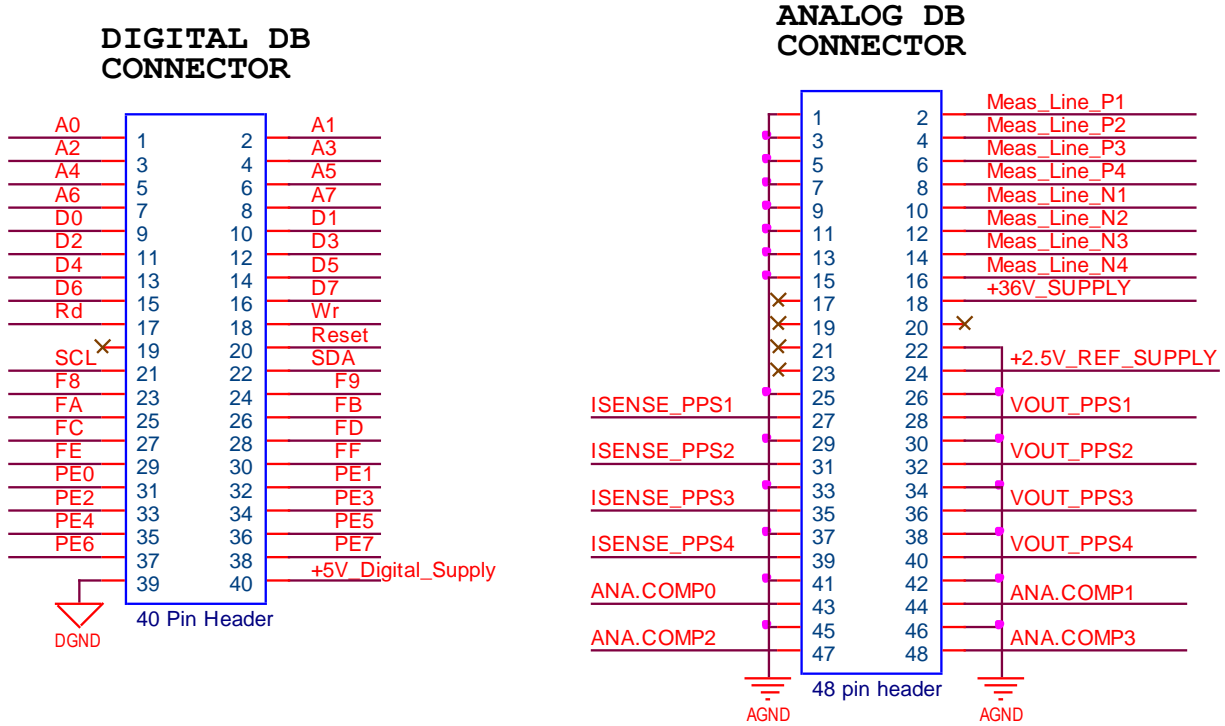The PTC04 main board has two connectors to the interface with the application. The PTC allows adding a full PCB in between (Daughter Board). This daughter board can be mounted on the two connectors. In some exceptional cases, a daughter board contains only a few wires from the Analogue connector to the application connector. The pins on of the connectors are described below.

DIGITAL DB CONNECTOR

A0	1 2	A1
A2	3 4	A3
A4	5 6	A5
A6	7 8	A7
D0	9 10	D1
D2	11 12	D3
D4	13 14	D5
D6	15 16	D7
Rd	17 18	Wr
	19 20	Reset
SCL	21 22	SDA
F8	23 24	F9
FA	25 26	FB
FC	27 28	FD
FE	29 30	FF
PE0	31 32	PE1
PE2	33 34	PE3
PE4	35 36	PE5
PE6	37 38	PE7
	39 40	+5V_Digital_Supply

40 Pin Header

DGND

ANALOG DB CONNECTOR

	1 2	Meas_Line_P1
	3 4	Meas_Line_P2
	5 6	Meas_Line_P3
	7 8	Meas_Line_P4
	9 10	Meas_Line_N1
	11 12	Meas_Line_N2
	13 14	Meas_Line_N3
	15 16	Meas_Line_N4
	17 18	+36V_SUPPLY
	19 20	
	21 22	+2.5V_REF_SUPPLY
	23 24	
ISENSE_PPS1	25 26	VOUT_PPS1
	27 28	
ISENSE_PPS2	29 30	VOUT_PPS2
	31 32	
ISENSE_PPS3	33 34	VOUT_PPS3
	35 36	
ISENSE_PPS4	37 38	VOUT_PPS4
	39 40	
ANA.COMP0	41 42	ANA.COMP1
	43 44	
ANA.COMP2	45 46	ANA.COMP3
	47 48	

48 pin header

AGND   AGND

2.3.1. Digital DB Connector (40 Pins)

Mainly, the digital connector is meant to expand the programmer to extra needs. Address lines A0-A7 together with the Map Select Lines F8-FF allows to direct access an area of 2 K. Examples would be adding a simple addressed I/O register by using the selection lines. If more complexity is needed, a full FPGA can be mounted on the DB board

Pins	Names	Description
1 – 8	A0 – A7	Address lines
9 – 16	D0 – D7	Data Lines active during Rd or Wr signals
17	Rd	Read: A negative pulse will indicate a sampling of the data on the Data Bus
18	Wr	Write: A Negative pulse will indicate when data is available on the Data Bus
20	Reset	This signal goes low by powering the PTC or by pressing the reset button. This line can be pulled low by application. Check firmware documentation for resetting by software.
21-22	SCL / SDA	I^{2}C Bus
23-30	F8,F9,…,FF	CS lines when the address areas are accessed
31-38	Port E	Note: These pins are limited to 5 Volt input/output!!! The full Port E of the Atmega core is mounted to these pins. This allows us to use advanced features like PWM, UARTS, Time Measurements, etc…. By using firmware that supports these, functions, application specific requirements can be fulfilled.
39	DGND	Digital Ground
40	+5V Digital	5 Volt Digital Supply. Maximum current to get out of this supply : 250mA

Note: All the pins are limited to 5 Volt input/output!!! However, there are Protections, please take precautions in order to avoid damage of the main board.

2.3.2. Analog DB Connector (48 Pins)

Mainly, the analog connector provides all the analog signals and measure possibilities.

Pins	Names	Description
28,32,36	PPS 1-3	Output of the high current Programmable Supplies
40	PPS 4	Output of the Fast DAC Programmable Power Supply
27,31,35,39	Isense_PP1-4	Outputs (Driver outputs before Rsens) for current evaluations. These outputs could be used to connect to the analog comparators in order to create fast digital signals based on current.
2,4,6,8	ExtMeas1-4Pos	There are 4 differential inputs for making measurements, these are the positive inputs.
10,12,14,16	ExtMeas1-4Neg	The negative inputs of ExtMeas1- 4Pos
43,44,47,48	AnaComp0-3	See *Note. Input (limited to +5V) Fast Level comparators in order to remove time consuming measurement
18	+35V_Supply	Supply to extend the daughter board with some extra drivers
24	+2.5V_Ref	Output of internal reference
All other	AGND	Analogue Ground

Note: All the pins are limited to 35 Volt input/output!!! However, there are protections, please take precautions in order to avoid damage of the main board.
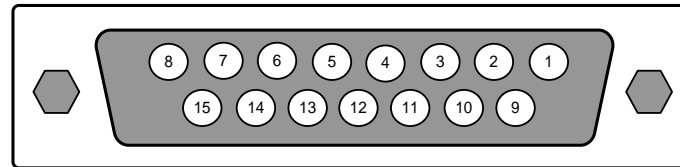
* Note: Some pins are protected and limited to 5 Volt!!! However, there are Protections, please take precautions in order to avoid damage of the main board.

2.4. Application Connector

There are two ways to connect the application to PTC04:

### 2.4.1. Using the DB15_Female connector (application connector)

DB15 Female Connector

Pins	Names	Description
1	VDD_DIE1	DIE1 Supply
2	GUARD_DIE1	Guard line DIE1
3	GND_DIE1	Ground DIE1
4	MUST0	MUST0 - output
5	VDD_DIE2	DIE2 Supply
6	GUARD_DIE2	Guard line DIE2
7	GND_DIE2	Ground DIE2
8	MICE	MICE
9	VDD_SENSE_DIE1	DIE1 Supply sense
10	GND_SENSE_DIE1	Ground DIE1 sense
11	NC	Not Connected
12	MUST1	MUST1 - output
13	VDD_SENSE_DIE2	DIE2 Supply sense
14	GND_SENSE_DIE2	Ground DIE2 sense
15	NC	Not Connected

2.4.2. Using the screw terminal

13 Pin Screw Terminal
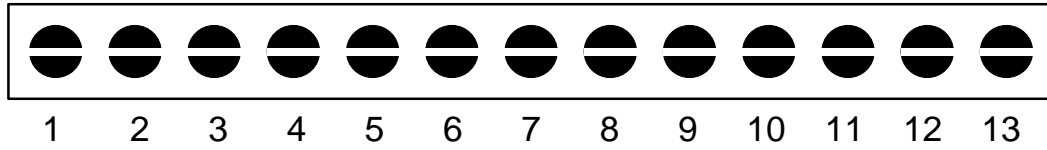
Pins	Names	Description
1	VDD_DIE1	DIE1 Supply
2	VDD_SENSE_DIE1	DIE1 Supply sense
3	GUARD_DIE1	Guard line DIE1
4	GND_SENSE_DIE1	Ground DIE1 sense
5	GND_DIE1	Ground DIE1
6	MUST0	
7	MUST1	
8	VDD_DIE2	DIE2 Supply
9	VDD_SENSE_DIE2	DIE2 Supply sense
10	GUARD_DIE2	Guard line DIE2
11	GND_SENSE_DIE2	Ground DIE2 sense
12	GND_DIE2	Ground DIE2
13	MICE	

3. Contact

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Europe, Africa	Telephone: +32 13 67 04 95
	Email : sales_europe@melexis.com
Americas	Telephone: +1 603 223 2362
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