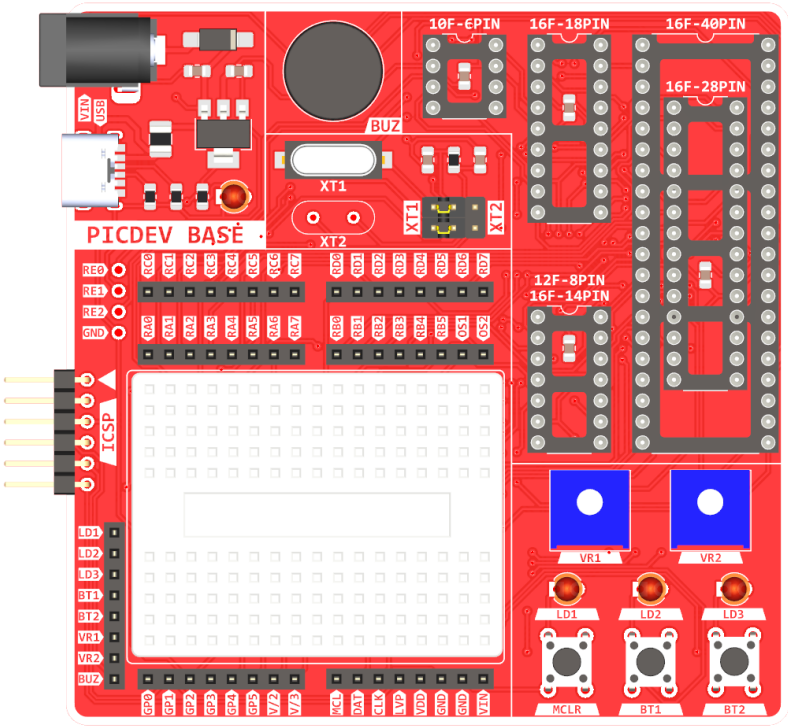
METE HOCA

PICDEV BASE



ULTIMATE PIC EXPERIMENTATION BOARD (Rev.1)

USER MANUAL

(Last update: 27 September 2023)

www.metehoca.com

METE HOCA

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September 2023, Mete K. Atay

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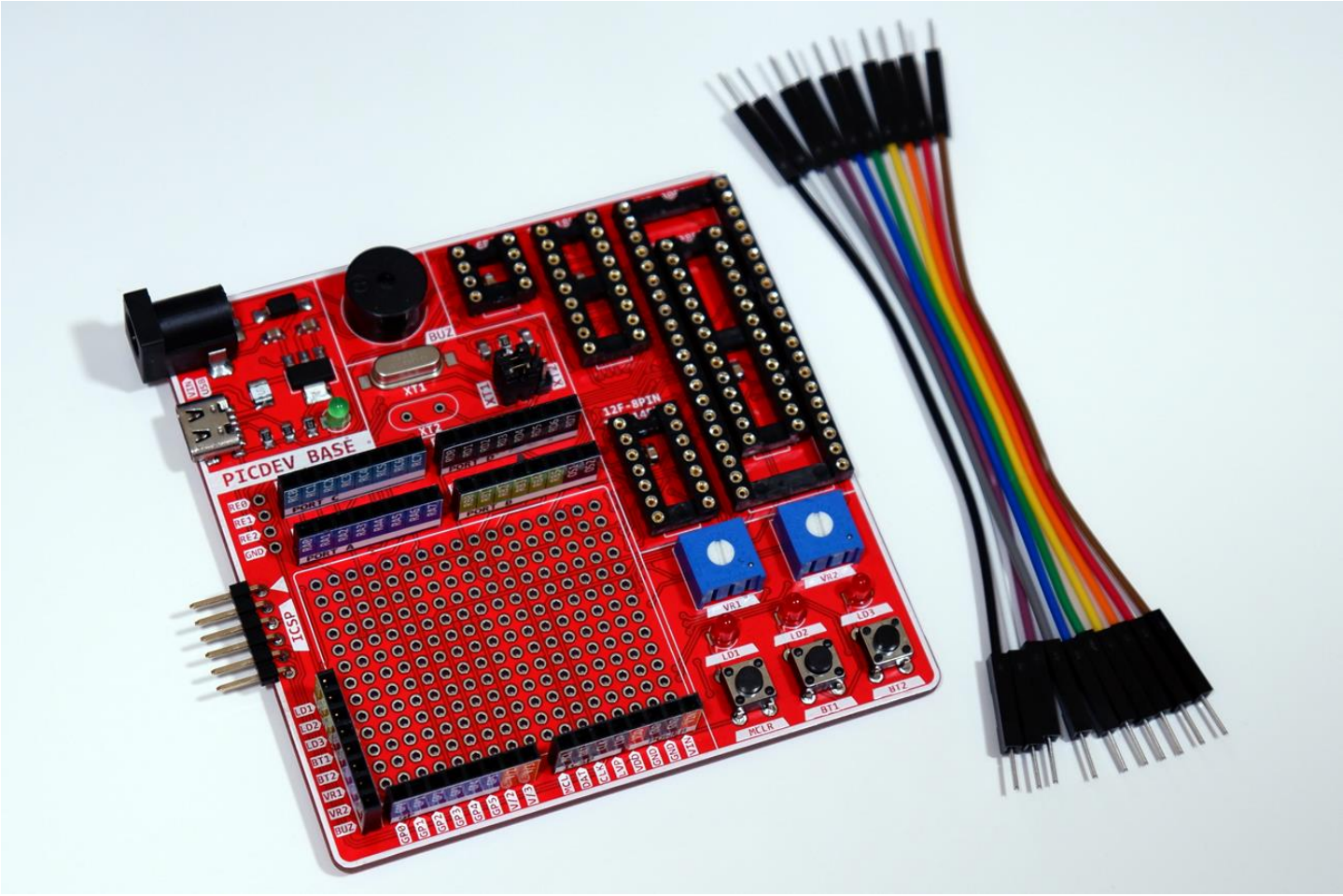
METE HOCA PICDEV BASE | ULTIMATE PIC EXPERIMENTATION BOARD

Start your PIC microcontroller journey with PICDEV BASE – versatile, user-friendly, and feature-packed.



Introducing PICDEV BASE: Your Ultimate PIC Microcontroller Experimentation Platform

Are you an electronics enthusiast, a seasoned embedded systems developer, or a student looking to dive into the fascinating world of PIC microcontrollers? Look no further than PICDEV BASE - the comprehensive and versatile PIC microcontroller development board designed to empower your creativity, simplify your experiments, and accelerate your learning journey. Whether you're a novice or an expert, PICDEV BASE is your ultimate tool for bringing your PIC-based projects to life.

Unleash Your Imagination with Versatility

PICDEV BASE is engineered to be your go-to development board for various Microchip PIC microcontrollers, including the 6-pin PIC10F, 8-pin PIC12F, 14-pin PIC16F, 18-pin PIC16F, 28-pin PIC16F, and 40-pin PIC16F series. This versatility ensures that you have the right platform for any PIC project, from the simplest to the most complex.

User-Friendly Design for Seamless Exploration

We understand that every great project starts with simplicity and ease of use. That's why PICDEV BASE comes with user-friendly features that make experimenting with PIC microcontrollers a breeze:

1. Color-Coded Header Connectors: No more guesswork! Each header connector is equipped with its own color sticker, making it effortless to identify and connect the pins correctly. This feature is perfect for beginners who are just starting their microcontroller journey.

2. Included Jumper Cables: We've included 10 high-quality 10cm male-male jumper cables, so you can jump right into your projects without worrying about sourcing additional components.

3. Prototyping Soldering Area: Explore beyond the microcontroller! PICDEV BASE features a dedicated prototyping soldering area, allowing you to expand your projects, create custom circuits, or attach a mini breadboard for added flexibility.

Power Your Projects Your Way

PICDEV BASE gives you the freedom to choose how you want to power your experiments:

1. PICKIT ICSP: If you prefer in-circuit programming and debugging, simply connect your PICKIT programmer to the dedicated ICSP header.

2. USB Type-C: Conveniently power your board via USB Type-C, ensuring compatibility with a wide range of devices and power sources.

3. Barrel Jack with Voltage Regulation: For external power sources, utilize the barrel jack input, backed by a built-in 5 Volt voltage regulator for stable and reliable performance.

Explore and Experiment with Confidence

To facilitate your learning and experimentation, PICDEV BASE includes a suite of components and features:

1. LEDs: Get visual feedback with three built-in LEDs. Experiment with lighting patterns, status indicators, or simple visual effects.

2. Potentiometers: Fine-tune your projects with two potentiometers that allow you to control various parameters in real-time.

3. Push Buttons: Interact with your projects using three tactile push buttons, opening up possibilities for user input and interactivity.

4. Piezo Buzzer: Add audible alerts or sound effects to your applications with the integrated piezo buzzer.

Crystal and Customization

PICDEV BASE comes equipped with a 4 MHz crystal oscillator soldered in place, ensuring precise timing for your projects. But we know that customization is key. That's why we've provided an option for you to solder and select your own crystal oscillator, giving you full control over your project's timing requirements.

Expand Your Arsenal

Ready to take your experimentation to the next level? PICDEV BASE offers an exciting opportunity to enhance your toolkit. Simply add the optional 12F675 and/or 16F628A microcontrollers to your cart, and dive into the world of these specific PIC devices with ease. Plus, you'll have access to downloadable MPLAB XC8 code examples, helping you kickstart your projects and get the most out of your new microcontrollers.

Your PICDEV BASE Journey Begins Here

We're not just offering yet another PIC development board; we're inviting you on a journey of exploration, learning, and innovation. With PICDEV BASE, you'll have the tools you need to turn your ideas into reality, learn the ins and outs of PIC microcontrollers, and create projects that leave a lasting impact.

Discover endless possibilities, unleash your creativity, and embark on your PIC microcontroller adventure today with PICDEV BASE. Whether you're a hobbyist, student, or professional, this all-in-one development board is your gateway to a world of endless innovation.

Don't miss out on this opportunity to own the ultimate PIC microcontroller experimentation platform. Order your PICDEV BASE now and join the community of makers, tinkerers, and innovators who are shaping the future, one PIC project at a time.

Technical Specifications:

*Microcontroller Compatibility: 6-pin PIC10F, 8-pin PIC12F, 14-pin PIC16F, 18-pin PIC16F, 28-pin PIC16F, and 40-pin PIC16F series.

*Header Connectors: Color-coded for easy identification.

*Included Jumper Cables: 10 pcs of 10cm male-male cables.

*Power Options: PICKIT ICSP, USB Type-C, and Barrel Jack with built-in 5 Volt voltage regulator.

*Components: 3 LEDs, 2 potentiometers, 3 push buttons, and a piezo buzzer.

*Crystal Oscillator: 4 MHz (soldered) with an option to select your own.

*Expandability: Add 12F675 and/or 16F628A microcontrollers to your order with downloadable code examples.

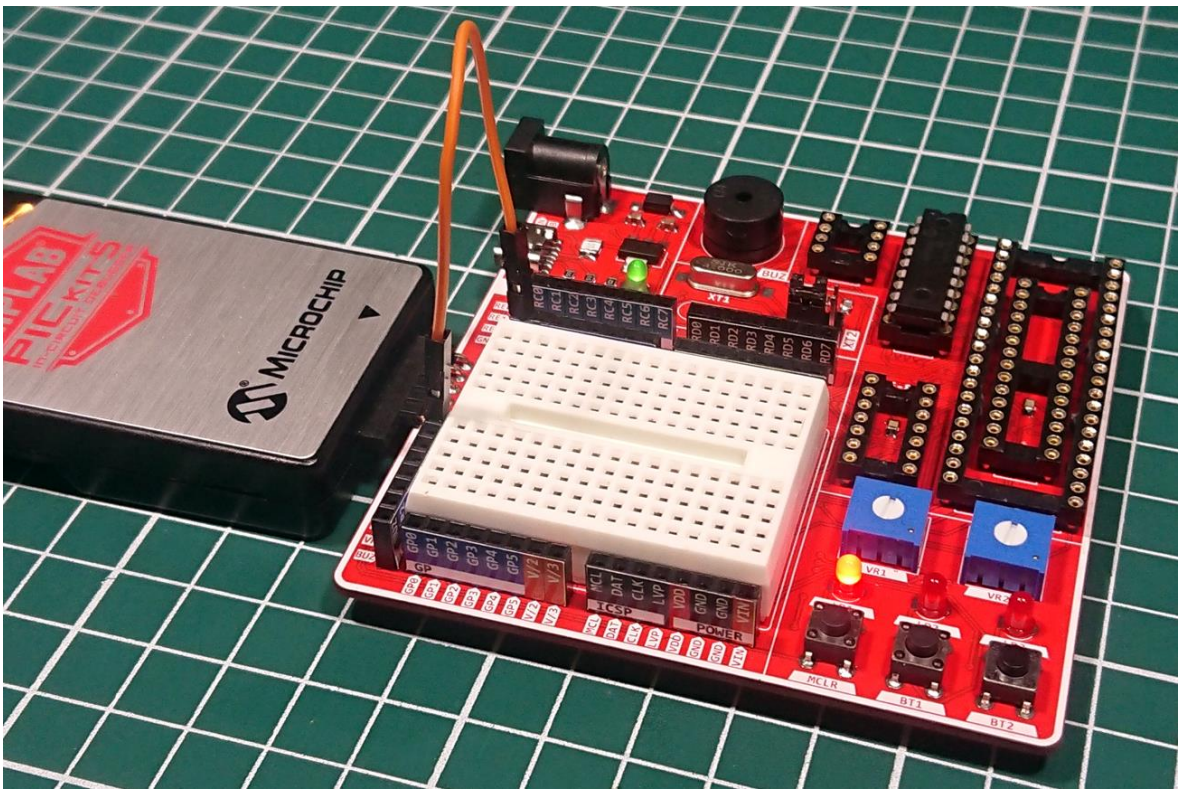
*Prototyping Area: Dedicated soldering area for custom circuits and mini breadboard compatibility.

READ BEFORE USING: PICDEV BASE INSTRUCTIONS

To ensure a safe and successful experience with your development board, please carefully read and follow the instructions below:

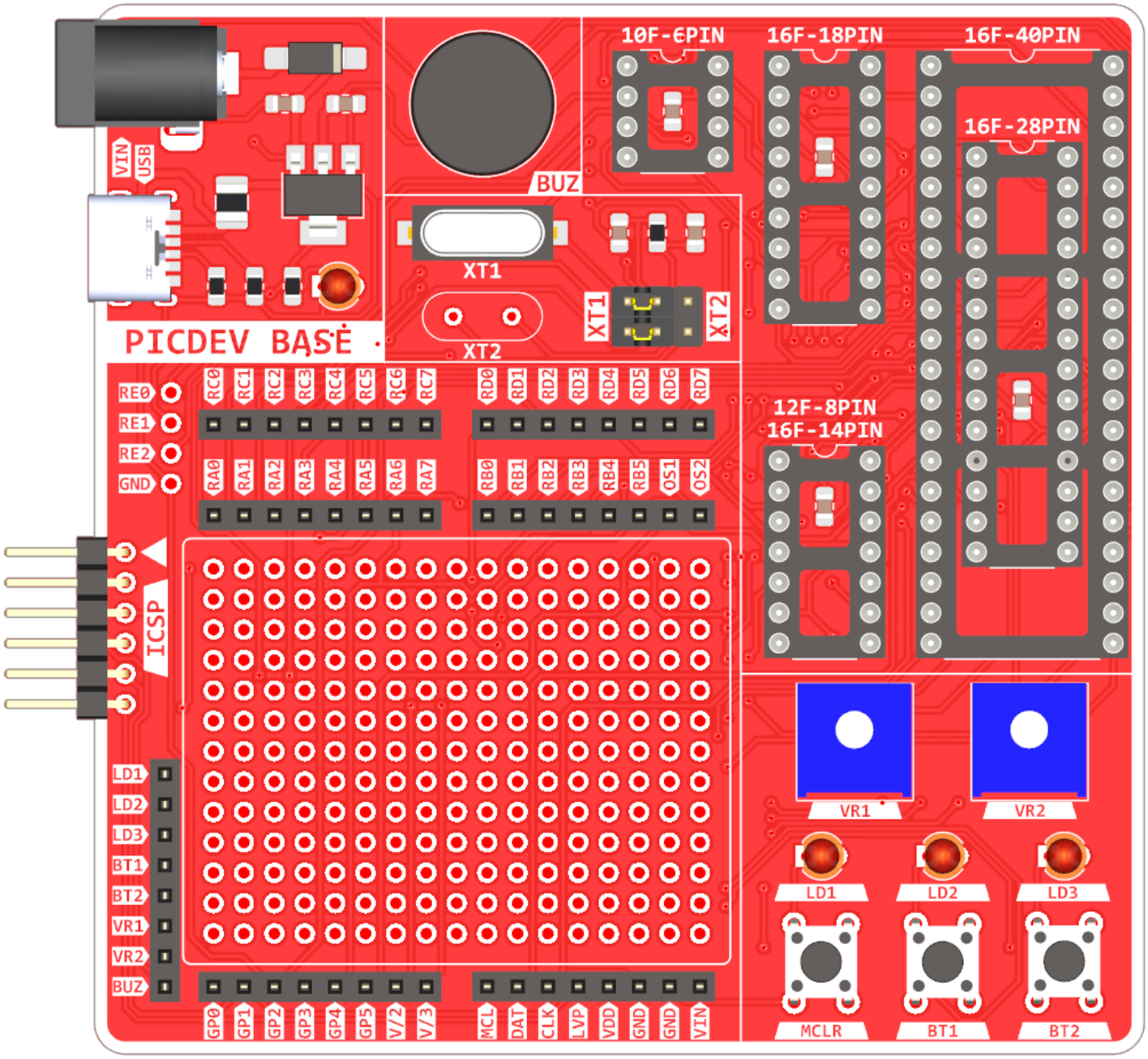
1. Microcontroller Placement:
    - Before connecting the microcontroller, make sure your board is powered off.
    - Align the microcontroller's pins with its socket.
    - Gently press the microcontroller onto the socket, ensuring a secure connection.
    - Double-check the alignment to avoid bending any pins.
2. Environmental Precautions:
    - Keep the shield away from liquids, including water, beverages, or any other moisture source.
    - Do not operate the board in humid or wet environments to prevent damage.
    - Store the board in a dry and clean place when not in use.
    - Avoid exposure to extreme temperatures or direct sunlight.
3. Handling and Transport:
    - Always handle the board with care and avoid excessive force or pressure.
    - Do not drop or strike the board, as it may result in damage to the components.
    - When transporting the board, use an anti-static bag or container to prevent electrostatic discharge (ESD).
    - Avoid storing or placing the board on metal surfaces or objects to prevent short circuits.
4. Additional Safety Measures:
    - Do not attempt to modify or tamper with the board's internal components.
    - Unplug the board from the power source when not in use or during maintenance.
5. Board Maintenance:
    - Periodically check the board for any loose connections, damaged pins, or signs of wear.
    - Clean the board using a soft, dry cloth. Do not use water or any cleaning agents.
    - If you need to clean the board's pins, use a small brush or compressed air to remove dust or debris gently.

By following these instructions, you will maximize the lifespan of your PICDEV BASE and ensure safe and reliable operation. Remember, if you have any questions or concerns, refer to the user manual or contact me for assistance.



LET'S TAKE A CLOSER LOOK AT THE PICDEV BASE

Hi, i'm PICDEV BASE, your ultimate PIC microcontroller experimentation board!



METE HOCA PICDEV BASE combines lots of different components in a small package. It has six different PIC microcontroller series support, three LEDs, three buttons, two potantiometers, a passive buzzer, an onboard 4 MHz crystal oscillator, USB Type-C, barrell jack, ON LED and 5 Volt power regulator.

All eight components has their own pin on the header for easy connection. LED's have their current limitor resistors to ground, buttons has their pull-up resistors and potentiometers has filtering capacitors. If you need more components, you can place them on the prototyping area, or place a mini breadboard there.

There is footprint for second crystal for versatility. You can solder your desired crystal to XT2 (probably a 8 MHz one) and select it via its jumpers. MCLR button is connected to all microprocessors' MCLR pins for easy reset. Board also has basic V/2 (2.5V) and V/3 (1.66V) voltage dividers for reading and comparing.

PICDEV BASE has seven pin headers (REx header is not populated) for easy access to microcontroller ports. You can check every header connection from the table at the next section below.

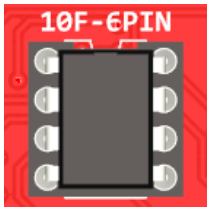
HEADER CONNECTION PINS TABLE

PICDEV BASE's headers are makes all microcontroller pins accessible for user and you can check them from this table.

	10F-6PIN	12F-8PIN	16F-14PIN	16F-18PIN	16F-28PIN	16F-40PIN
RA0				RA0	RA0	RA0
RA1				RA1	RA1	RA1
RA2				RA2	RA2	RA2
RA3				RA3	RA3	RA3
RA4				RA4	RA4	RA4
RA5					RA5	RA5
RA6				OSC2/RA6		
RA7				OSC1/RA7		
RB0			X	RB0	RB0	RB0
RB1			X	RB1	RB1	RB1
RB2			RB2	RB2	RB2	RB2
RB3			X	RB3	RB3	RB3
RB4			X	RB4	RB4	RB4
RB5			X	RB5	RB5	RB5
OSC1	GP5	GP5	OSC1/RB5	OSC1/RA7	OSC1	
OSC2	GP4	GP4	OSC2/RB4	OSC2/RA6	OSC2	
RC0			RC0		RC0	RC0
RC1			RC1		RC1	RC1
RC2			RC2		RC2	RC2
RC3			RC3		RC3	RC3
RC4			RC4		RC4	RC4
RC5			RC5		RC5	RC5
RC6					RC6	RC6
RC7					RC7	RC7
GP0	GP0/PGD	GP0/PGD				
GP1	GP1/PGC	GP1/PGC				
GP2	GP2	GP2				
GP3	GP3/MCLR	GP3/MCLR				
GP4	OSC2	GP4/OSC2				
GP5	OSC1	GP5/OSC1				
MCL	GP3	GP3	RB3	RA5	MCLR	MCLR
DAT	GP0	GP0	RB0	RB7	RB7	RB7
CLK	GP1	GP1	RB1	RB6	RB6	RB6
LVP						
RD0						RD0
RD1						RD1
RD2						RD2
RD3						RD3
RD4						RD4
RD5						RD5
RD6						RD6
RD7						RD7
RE0						RE0
RE1						RE1
RE2						RE2

SUPPORTED MICROCONTROLLERS IN PICDEV BASE

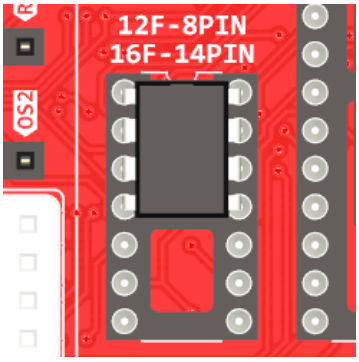
10F-6PIN SOCKET*:



PIC10F200, PIC10F202, PIC10F204, PIC10F206, **PIC10F220**, PIC10F222, PIC10F320, PIC10F322

**PIC10F series microcontrollers are actually 6-pin devices. But available in DIP8 pin packages with two N/C pins. This is why board has 8-pin socket for 10F-6PIN section.*

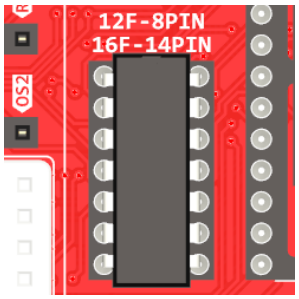
12F-8PIN SOCKET*:



PIC12F508, PIC12F509, PIC12F510, PIC12F519, PIC12F609, PIC12F615, PIC12F617, PIC12F629, PIC12F635, **PIC12F675**, PIC12F683, PIC12F752, PIC12F1501, PIC12F1571, PIC12F1572, PIC12F1612, PIC12F1822, PIC12F1840, PIC12F18313, PIC16F15313

**PIC12F series microcontrollers usually have two package: DIP8 and DIP14. These two series has compatible pins and introduced in the same socket in PICDEV BASE. For installing 8-PIN PIC12F microcontroller, use top 8 pin of the 14 pin socket.*

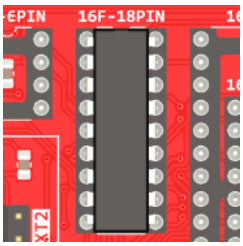
16F-14PIN SOCKET*:



PIC16F505, **PIC16F506**, PIC16F610, PIC16F616, PIC16F630, PIC16F636, PIC16F676, PIC16F684, PIC16F688, PIC16F1503, PIC16F1613, PIC16F1703, PIC16F1704, PIC16F1705, PIC16F1823, PIC16F1824, PIC16F1825, PIC16F15323, PIC16F15324, PIC16F18323, PIC16F18324

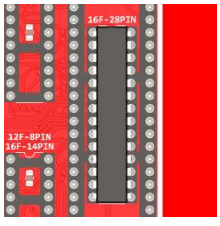
**Due to changes in architectures, pin names on some microcontrollers differ from others. For example B port of PIC16F506 is named A port in PIC16F18324. Please check datasheets before experimenting.*

16F-18PIN SOCKET:



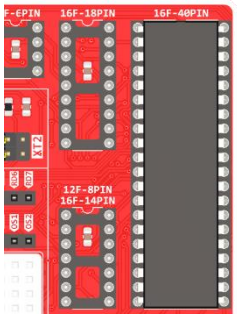
PIC16F54, PIC16F84A, PIC16F88, PIC16F627A, **PIC16F628A**, PIC16F648A, PIC16F716, PIC16F818, PIC16F819, PIC16F1826, PIC16F1827

16F-28PIN SOCKET:



PIC16F870, PIC16F873A, **PIC16F876A**, PIC16F882, PIC16F883, PIC16F886, PIC16F18854, PIC16F18855, PIC16F18856, PIC16F18857

16F-40PIN SOCKET:



PIC16F871, PIC16F874A, **PIC16F877A**, PIC16F884, PIC16F887, PIC16F18875, PIC16F18876, PIC16F18877

METE HOCA

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