

# Sifting thousands of options to find the right MCU? Help is available

## **An online search engine lets you set a slew of parameters defining your ideal MCU**

It can be mind-boggling. There are a dozen or more major manufacturers of microcontrollers (MCUs). Each of them has a multitude of device families. Each family has scores of variations in memory size, peripheral mix, clock speed, and package type, among other attributes. So how does one find the best available match for a new design?

To some extent, the problem can be constrained by non-technical considerations. For many developers, their investment in development tools, coding libraries, inventory, and the like will tend to limit the choices to a few vendors or families. Similarly, the need for legacy software compatibility or the advantages of already being familiar with a processor series will favor re-use of earlier choices. But that still leaves a host of alternatives from which to choose, leaving developers with the chore of finding the best match, typically by manual means.

I have recently learned of an alternative, however, that looks like it can save developers a lot of time searching and will yield an optimal match. It's from an outfit called GruntWare and it's their Gopher WebPlus cross-vendor MCU search engine. It boasts a database of nearly 28,000 MCUs from 18 major MCU vendors that it will search to find an ideal match.

The brainchild of long-time embedded developer Rick Hully, the search engine provides developers with more than 100 parameters against which to search, organized into sections. The first section is the vendor, so if you have some reason that you need to only consider Atmel parts, you can specify that right up front. Other sections include core type and bus support, memory type and size, GPIO resources, timers, analog components, and other on-chip resources. Physical parameters such as operating voltage and temperature rating can also be specified.

GrantWare Inc. **GOPHER Web Plus**  
 THE ULTIMATE CROSS-VENDOR MCU SEARCH ENGINE  
 with direct web links to the Support Products  
 that match your "Best Fit" MCU!

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**TURN ON Simulated Searches here →**  
**Don't have your own parametric data?**  
**No problem - use ours!**

**(Sec. 1) MCU Manufacturers**

Check All MCU Manufacturers of Interest Click on manufacturers name to see part status by product line

<input type="checkbox"/> Analog Devices	<input type="checkbox"/> Maxim	<input type="checkbox"/> Silicon Labs
<input type="checkbox"/> Applied Micro Circuits	<input type="checkbox"/> Microchip/Atmel	<input type="checkbox"/> STMicroelectronics
<input type="checkbox"/> Cirrus Logic	<input type="checkbox"/> Nuvoton Tech	<input type="checkbox"/> Texas Instruments
<input type="checkbox"/> Cypress (Spansion)	<input type="checkbox"/> NXP (Freescale)	<input type="checkbox"/> Toshiba America
<input type="checkbox"/> Digi International	<input type="checkbox"/> ON Semiconductor	<input type="checkbox"/> Western Design Ctr
<input type="checkbox"/> Infineon Tech	<input checked="" type="checkbox"/> Renesas	<input type="checkbox"/> Zilog

[CLEAR](#)

( If none checked, all manufacturers are searched )

**(Sec. 2) Core MCU, Bus & Status**

P/L = <input type="text"/>	CPU Size = <input type="text"/>	<input type="checkbox"/> On Chip Osc	<input type="checkbox"/> Mply Instr	<input type="checkbox"/> Encrypt
Status = Production	CPU2 Size = <input type="text"/>	<input type="checkbox"/> Clk PLL	<input type="checkbox"/> MAC Instr	<input type="checkbox"/> IEbus
MCU Type = <input type="text"/>	Bus Size = <input type="text"/>	<input type="checkbox"/> Sub Clk	<input type="checkbox"/> FPU	<input type="checkbox"/> PCI
MCU Freq >= <input type="text"/>	Bus Freq >= <input type="text"/>	<input type="checkbox"/> Graphics	<input type="checkbox"/> Barrel Shifter	<input type="checkbox"/> PCI Express
CPU Nbrs >= <input type="text"/>		<input type="checkbox"/> Graphics Acc	<input type="checkbox"/> XY Cnvtr	<input type="checkbox"/> ISA

**(Sec. 3) Memory Type and Size**

RAM >= <input type="text"/>	FRAM >= <input type="text"/>	FROM >= <input type="text"/>	PROM >= <input type="text"/>	EROM >= <input type="text"/>
MRAM >= <input type="text"/>				

**(Sec. 4) Optional Memory Features**

DMA Chans >= <input type="text"/>	<input type="checkbox"/> MMU	<input type="checkbox"/> MPU	<input type="checkbox"/> EMIF	<input type="checkbox"/> Ext Bus Ctrl
	<input type="checkbox"/> Ext Mem Card			

The engine is quick and easy to use. You select parameters using a pull-down list. Anything left blank will not be included in the search filter. In most cases, this may mean that a wild card is used for that parameter (i.e., anything will do), but Hully told me in an interview that some of the parameters have the additional option of entering a zero rather than a blank. Using this option actively excludes any entries having that particular feature. So if you want an MCU with no analog components whatsoever (to save cost, perhaps), you can eliminate them from your results. It's an option that Hully calls "zero feature creep."

A nice feature of the search engine is that your choices remain intact until you deliberately clear the fields (one-click option) to start again. So you can easily try different parametric combinations, adding or removing individual filter items rather than entering the whole list each time you want to change the search criteria slightly. There's also a one-button click to restore your previous search settings in case you forget what you changed.

As you might expect, the table of results includes a listing of all the parameters that you expressed interest in and gives a link to follow to get more information about any specific MCU that interests you. But there is more information available than just the MCU specs. When you click on a candidate MCU, the search engine provides you with access to a host of supporting information. This includes links to find the price and availability of devices from various sources, operating systems and IDE tools that support that particular MCU, drivers and debuggers, and more. So if your ideal choice is totally new to you, it's easy to find all the other things that you will need to move forward.

Gopher WebPlus is a huge time-saver when searching those product lines that it does cover. With only a few clicks, I was able to reduce potential candidates from thousands to only 15 matching a particular set of needs without having to open a single catalog. If you're looking for a processor exactly matching your needs, this may just be the fastest way to find it.

By [Richard Quinnell](#)