



Microcontrollers Group- COP8™ Flash Tools

1.0 Tools Ordering Numbers For The COP8™ Flash Family Devices

This section provides specific tools ordering information for the devices in this datasheet, followed by a summary of the tools and development kits available at print time. Up-to-date information, device selection guides, demos, updates, and purchase information can be obtained at our web site at: www.national.com/cop8.

Unless otherwise noted, tools can be purchased for worldwide delivery from National's e-store:

<http://www.national.com/store/>

Tool	Order Number	Cost*	Notes/Includes
Evaluation Software and Reference Designs			
Software and Utilities	Web Downloads: www.national.com/cop8	Free	Assembler/ Linker/ Simulators/ Library Manager/ Compiler Demos/ Flash ISP and NiceMon Debugger Utilities/ Example Code/ etc. (Flash Emulator support requires licensed COP8-NSDEV CD-ROM).
Hardware Reference Designs	COP8-REF-FL1	VL	For COP8Flash Sx/Cx – Demo Board and Software; 44PLCC Socket; Stand-alone, or use as development target board with Flash ISP and/or COP8Flash Emulator. Does not include COP8 development software.
	COP8-REF-AM	VL	For COP8Flash Ax – Demo Board and Software; 28DIP Socket. Stand alone, or use as development target board with Flash ISP and/or COP8Flash Emulator. Does not include COP8 development software.
Starter Kits and Hardware Target Boards			
Starter Development Kits	COP8-SKFLASH-00	VL	Supports COP8Sx/Cx ; (COP8AM/AN support has limitations: See Summary below); Target board with 68pin PLCC COP8CDR9, RS232 I/O, and Test Points. Includes Development CD, ISP Cable, Debug Software and Source Code. No p/s. Also supports COP8Flash Emulators.
	COP8-SKFLASH-01 (Available 6/2002)	VL	Supports COP8Sx/Cx/Ax – Target board with 68PLCC COP8CDR9, 44PLCC and 28DIP sockets, LEDs, Test Points, and Breadboard Area. Development CD, ISP Cable, Debug Software and Source Code. No p/s. Also supports COP8Flash Emulators and Kanda ISP Tool.
	COP8-REF-FL1 or –AM	VL	COP8Flash Hardware Reference Design boards can also be used as Development Target boards, with ISP and Emulator support.
Software Development Languages, and Integrated Development Environments			
National's WCOP8 IDE and Assembler on CD	COP8-NSDEV	\$10	Fully Licensed IDE with Assembler and Emulator Debugger Support. Assembler/ Linker/ Simulator/ Utilities/ Documentation. Updates from web. Included with SKFlash, COP8 Emulators, COP8-PM.
COP8 Library Manager from KKD	www.kkd.dk/libman.htm	Eval	The ultimate information source for COP8 developers – Integrates with WCOP8 IDE.
WEBENCH™ Online Graphical Application Builder With Unis Processor Expert™	www.national.com/webench	Free	Online Graphical IDE, featuring UNIS Processor Expert™ Code Development Tool with Simulator – Develop applications, simulate and debug, download working code. Online project manager.
	COP8-SW-PE2	L	Graphical IDE and Code Development Tool with Simulator – Stand-alone PC version of our WEBENCH™ tools on CD.
Byte Craft C Compiler	COP8-SW-COP8C	M	DOS/16bit Version – No IDE.
	COP8-SW-COP8CW	H	Win 32 Version with IDE.
IAR Embedded Workbench™ Tool Set	COP8-SW-EWCOP8	H	Complete tool set, with COP8 Emulator/Debugger support.
	EWCOP8-BL	M	Baseline version – Purchase from IAR only.
	Assembler-Only Version	Free	Assembler only; No COP8 Emulator/Debugger support. From web.
Hardware Emulation and Debug Tools			
Hardware Emulators	COP8-EMFlash-00	L	Includes 110v/220v p/s, target cable with 2x7 connector, 68pin COP8CDR9 Null Target, manuals and software on CD. -COP8AME/ANE9 uses optional 28pin Null Target (COP8-EMFA-28N); Add SMD Target Package Adapter if needed.
	COP8-DMFlash-00	M	
	COP8-IMFlash-00	H	
Emulator Null Target	COP8-EMFA-68N	VL	68pin PLCC COP8CDR9; Included in COP8-EM/DM/IM Flash. 28pin DIP COP8AME9; Must order seperately.
	COP8-EMFA-28N	VL	
Emulator Target Package Adapters	COP8-EMFA-44P	VL	44 pin PLCC target package adapter.
	COP8-EMFA-68P	VL	68 pin PLCC target package adapter.
NiceMon Debug Monitor Utility	COP8-SW-NMON	Free	Develop code and download for single-step debugging via Microwire. Includes PC control software and debugger.
Development and Production Programming Tools			
National's Engineering Programmer	COP8-PM-00	L	Board with 40DIP ZIF base socket for optional COP8FLASH programming adapters; Includes 110v/220v p/s, manuals and software on CD; (Requires optional COP8–PGMA programming adapters for flash)
Flash Programming Adapters (For any programmer)	COP8-PGMA-28DF1	L	For programming 28DIP COP8AM/AN only.
	COP8-PGMA-28SF1	L	For programming 28SOIC COP8AM/AN only.
	COP8-PGMA-44PF1	L	For programming all 44PLCC COP8FLASH.
	COP8-PGMA-44CSF	L	For programming all 44LLP COP8FLASH.

supporting flash adapter base pinout)	COP8-PGMA-48TF1	L	For programming all 48TSSOP COP8 FLASH.
	COP8-PGMA-68PF1	L	For programming all 68PLCC COP8FLASH
	COP8-PGMA-56TF1	L	For programming all 56TSSOP COP8FLASH.
KANDA's Flash ISP Programmer	COP8ISP (From KANDA)	L	Parallel/Serial connected Dongle, with target cable and Control Software; Updateable from the web; Purchase from www.kanda.com
National's ISP Software Utility	COP8-SW-ISP1	Free	Flash ISP via Microwire and your PC parallel port. PC control software only. Includes instructions on building an ISP cable.
Development Devices	COP8CBR9/CCR9/CDR9 COP8BE9/CCE9/CDE9 COP8SBR/SCR9/SDR9 COP8SBE/SCE/SDE9 COP8AME9/ANE9	Free	All packages. Obtain samples from: www.national.com
*Cost: Free; VL=<\$100; L=\$100-\$300; M=\$300-\$1k; H=\$1k-\$3k; VH=\$3k-\$5k			

2.0 COP8FLASH Tools Summary (for tools available as of this printing).

COP8 Evaluation Software and Reference Designs -		
Software and Hardware for: Evaluation of COP8 Development Environments; Learning about COP8 Architecture and Features; Demonstrating Application Specific Capabilities.		
Product	Description	Source
WCOP8 IDE and Software Downloads	Software Evaluation downloads for Windows. Includes WCOP8 IDE evaluation version, Full COP8 Assembler/Linker, COP8-SIM Instruction Level Simulator or Unis Simulator, Byte Craft COP8C Compiler Demo, IAR Embedded Workbench (Assembler version), Manuals, Applications Software, and other COP8 technical information.	www.cop8.com FREE Downloads,
COP8 Hardware Reference Designs	Reference Designs for COP8 Families. Realtime hardware environments with a variety of functions for demonstrating the various capabilities and features of specific COP8 device families. Run Windows demo reference software, and exercise specific device capabilities. Also can be used as a realtime target board for code development, with our flash development tools. (Add our COP8Flash Emulator, or our COP8-NSDEV CD with your ISP cable for a complete low-cost development system.)	NSC Distributor, or Order from: www.cop8.com

COP8 Starter Kits and Hardware Target Solutions -		
Hardware Kits for: In-depth Evaluation and Testing of COP8 capabilities; Developing and Testing Code; Implementing Target Designs.		
Product	Description	Source
COP8 Flash Starter Kits	Flash Starter Kit – A complete Code Development Tool for COP8Flash Families. A Windows IDE with Assembler, Simulator, and Debug Monitor, combined with a simple realtime target environment. Quickly design and simulate your code, then download to the target COP8flash device for execution and simple debugging. Includes a library of software routines, and source code. No power supply. (Add a COP8-EMFlash Emulator for advanced emulation and debugging)	NSC Distributor, or Order from: www.cop8.com
COP8 Hardware Reference Designs	Preconfigured realtime hardware environments with a variety of onboard I/O and display functions. Modify the reference software, or develop your own code. Boards support our COP8 ISP Utility, NiceMon Flash Debug Monitor, and our COP8Flash Emulator.	NSC Distributor, or Order from: www.cop8.com

COP8 Software Development Languages and Integrated Environments -		
Integrated Software for: Project Management; Code Development; Simulation and Debug;		
Product	Description	Source
COP8 IDE from National on CD-ROM	National's COP8 Software Development package for Windows on CD. Fully licensed versions of our WCOP8 IDE and Emulator Debugger, with Assembler/ Linker/ Simulators/ Library Manager/ Compiler Demos/ Flash ISP and NiceMon Debugger Utilities/ Example Code/ etc. Includes all COP8 datasheets and documentation. Included with most tools from National.	NSC Distributor, or Order from: www.cop8.com

Unis Processor Expert™	Processor Expert™ from Unis Corporation - COP8 Code Generation and Simulation tool with Graphical and Traditional user interfaces. Automatically generates customized source code "Beans" (modules) containing working code for all on-chip features and peripherals, then integrates them into a fully functional application code design, with all documentation.	Unis, or Order from: www.cop8.com
Byte Craft COP8C Compiler	ByteCraft COP8C- C Cross-Compiler and Code Development System. Includes BCLIDE (Integrated Development Environment) for Win32, editor, optimizing C Cross-Compiler, macro cross assembler, BC-Linker, and MetaLinktools support. (DOS/SUN versions available; Compiler is linkable under WCOP8 IDE)	ByteCraft Distributor, or Order from: www.cop8.com
IAR Embedded Workbench™	IAR EWCOP8 - ANSI C-Compiler and Embedded Workbench. A fully integrated Win32 IDE, ANSI C-Compiler, macro assembler, editor, linker, librarian, and C-Spy high-level simulator/debugger. (EWCOP8-M version includes COP8Flash Emulator support) (EWCOP8-BL version is limited to 4k code limit; no FP).	IAR Distributor,or Order from: www.cop8.com

COP8 Hardware Emulation/Debug Tools -

Hardware Tools for: **Real-time Emulation; Target Hardware Debug; Target Design Test.**

Product	Description	Source
COP8Flash Emulators – COP8-EMFlash COP8-DMFlash COP8-IMFlash	COP8 In-Circuit Emulator for Flash Families. Windows based development and real-time in-circuit emulation tool, with trace (EM=None; DM/IM=32k), s/w breakpoints (DM=16, EM/IM=32K), source/symbolic debugger, and device programming. Includes COP8-NDEV CD, 68pin Null Target, emulation cable with 2x7 connector, and power supply.	NSC Distributor, or Order from: www.cop8.com
NiceMon Debug Monitor Utility		

Development and Production Programming Tools -

Programmers for: **Design Development; Hardware Test; Pre-Production; Full Production**

Product	Description	Source
COP8 Flash Emulators	COP8 Flash Emulators include in-circuit device programming capability during development.	NSC Distributor, or Order from web.
NiceMon Debugger, or COP8-ISP	National's software Utilities "COP8-ISP" and "NiceMon" provide development In-System-Programming for our Flash Starter Kits, or any other target board with appropriate connectors.	Download from: www.cop8.com
KANDA COP8-ISP	The COP8-ISP programmer from KANDA is available for engineering, and small volume production use. PC parallel or serial interface.	www.kanda.com
SofTec Micro inDart COP8	The inDart COP8 programmer from KANDA is available for engineering and small volume production use. PC serial interface only.	www.softecmicro.com
COP8 Programming Module	COP8-PM Development Programming Module. Windows programming tool for COP8 OTP and Flash Families. Includes on-board 40 DIP programming socket, control software, RS232 cable, and power supply. (Requires optional COP8-PGMA programming adapters for COP8FLASH devices)	NSC Distributor, or Order from web.
Third-Party Programmers	A variety of third-party programmers and automatic handling equipment are approved for non-ISP engineering and production use.	Various Vendors
Factory Programming	Factory programming available for high-volume requirements.	National Representative

3.0 Where To Get Tools

Tools can be ordered directly from National, National's e-store (Worldwide delivery: <http://www.national.com/store/>), a National Distributor, or from the tool vendor. Go to the vendor's web site for current listings of distributors.

Vendor	Home Office	Electronic Sites	Other Main Offices
Byte Craft Limited	421 King Street North Waterloo, Ontario Canada N2J 4E4 1-(519) 888-6911 fax:(519) 746-6751	www.bytecraft.com info@bytecraft.com	Distributors Worldwide
IAR Systems AB	PO Box 23051 S-750 23 Uppsala Sweden Tel: +46 18 16 78 00 Fax: +46 18 16 78 38	www.iar.se info@iar.se info@iar.com info@iarsys.co.uk info@iar.de	USA: San Francisco Tel: +1-415-765-5500 Fax: +1-415-765-5503 UK: London Tel: +44 171 924 33 34 Fax: +44 171 924 53 41 Germany: Munich Tel: +49 89 470 6022 Fax: +49 89 470 956
Kanda Systems Ltd.	Unit 17/18 Glanyrafon Enterprise Park Aberystwyth, Ceredigion SY23 3JQ, UK Tel: +44 1970 621041 Fax: +44 1970 621040	www.kanda.com sales@kanda.com	USA: Arvada, CO. Tel: 303-456-2060 Fax: 303-456-2404 sales@logicaldevices.net www.logicaldevices.net
K&K Development ApS	Kaergaardsvej 42 DK-8355 Solbjerg Denmark Fax: +45-8692-8500	www.kkd.dk kkd@kkd.dk	
National Semiconductor	2900 Semiconductor Dr. Santa Clara, CA 95051 USA 1-800-272-9959 fax: 1-800-737-7018	www.national.com/cop8 support@nsc.com europe.support@nsc.com	Europe: 49(0)180 530 8585 fax: 49(0)180 530 8586 Hongkong: Distributors Worldwide
SofTec Microsystems®	Via Roma, 1 33082 Azzano Decimo (PN) Italy Tel: +39 0434 640113 Fax: +39 0434 631598	info@softecmicro.com www.softecmicro.com support@softecmicro.com	Germany: Tel.:+49 (0) 8761 63705 France: Tel: +33 (0) 562 072 954 UK: Tel: +44 (0) 1970 621033

The following companies have COP8 programmers in a variety of configurations. **Contact your vendor's local office or distributor and request a COP8FLASH update.** You can link to their web sites and get the latest listing of approved programmers at: www.national.com/cop8.

Advantech; BP Microsystems; Data I/O; Dataman; Hi-Lo Systems; KANDA, Lloyd Research; MQP; Needhams; Phytion; SofTec Microsystems; System General; Tribal Microsystems;