

GLEICHMANN Newsletter

Empowered by Innovation



Gleichmann Electronics at Hannover Fair

The demand for plants and equipment, which can be connected via a network, has increased in recent years. In addition to transparency and availability of data, networks offer the advantage that planning, installation, management and maintenance of complex systems can be carried out simply and easily. For this reason, in the past months Gleichmann Electronics has broadened its product portfolio and now offers you standard devices specifically for networking in the industrial automation sector. This is in addition to our customer specific ASIC or FPGA solutions.

HMS – Anybus-CC modules

Anybus CompactCom (Anybus-CC) modules are de-

signed for integration into industrial devices that need to communicate with other automation equipment. Each module, independent thereof which industrial bus system will be used through to the network, is always connected at the applications side via the so-called Anybus. Anybus-CC modules support Profibus, DeviceNet, CANopen, CC-Link, Modbus-RTU, Profinet IO, Ethernet/IP, Modbus-TCP, Powerlink, EtherCAT, RS232/485, USB and Bluetooth.

NEC / SIEMENS – ERTEC devices

Profinet IRT solutions can be quickly and comfortably implemented with the help of the ARM9-based architecture, ERTEC200 and ERTEC400 32-bit

controllers. For this, the ERTEC200 offers two Ethernet interfaces, including Switch und PHY. The ERTEC400, offers four Ethernet interfaces, but without integrated PHYs.

IO Link

The serial IO link communication, for instance implemented based on a UART, offers new, interesting possibilities with regard to planning, installation, data communication and maintenance of sensors and actuators. We are glad to support you by the choice of the optimal microcontroller for your individual IO link solution. This includes a selection of particularly small packages (4 x 4 respectively 5 x 5 mm²) right up to the 32-bit controller with up to eight integrated UARTs.

Spotlights

New MCU Scout

Now available – the new issue of the MCU Scout containing the latest information regarding NEC Electronics' microcontroller products. Contact us to receive the new issue!



EPOS & PC Peripheral expert solutions team

A new team has been established aimed to exclusively support the EPOS & PC Peripheral electronics market through its dedicated solutions & innovative technologies. The introduction of this team complements the existing expert solution teams (Building Management, Motor Control, Industrial Automation & Healthcare) within the Industrial & Distribution Business unit (IDBU).



Do you want to know more? Please visit us and our partner PROFIBUS Nutzerorganisation in Hall 11, Booth A41 at Hannover Fair



+49 711 78336-149
NECMicro@msc-ge.com

Response number 118

Semiconductor solutions for Building Management

The Building Management market is increasingly becoming a greater portion of the overall semiconductor market with significant growth expected worldwide. NEC Electronics recognizes that within this market there are multiple applications and many different forces affecting development trends. Gleichmann Electronics and NEC can support you today to deliver the lowest cost and highest performance solutions, limited only by your imagination.



Highlights

- Semiconductor solutions for Building Management
- Lx3 - see More and Do More
- Motor control - time to think in new dimensions
- Groundbreaking Control
- 8-bit MCU's - the Series concept evolves
- Intelligent power devices for automotive applications
- 32-bit MCU's - new devices with CAN
- NEC's new uPG2250T5N Power Amplifier delivers more than +19dBm output power
- Come and touch it!
- DIS-285P High-End Interface Card enables TFT Displays in Studio quality
- Latest TFT-LCD technologies
- Fit for purpose our new optocoupler families
- Gleichmann presents Harvatek
- ASIC & ARM System Solution

Semiconductor solutions for Building Management (Continued from page 1)

What is BM?

Building Management is the grouping of all electronic products designed to monitor, control and optimize various functions and services provided in a building. Covers a variety of key systems & applications:

- Heating, Ventilation, Air Conditioning (HVAC)
- Fire and Security (F&S)
- Utility Metering
- Lighting
- Home / Building Automation

Today's buildings have the most advanced systems, monitoring and controlling all of the essential services providing round the clock comfort and security.

Approximately 50 to 60 percent of the expenditure for a modern Building Management System is determined purely by the installation costs. It is, therefore, important that the necessary cabling between the central controller and various sensors/actuators is reduced by optimized system architecture.

The local installation of each sensor or actuator with its own small, suitable controller normally guarantees a much simpler networking and consequently, in most cases, a direct cost reduction.

For this purpose, NEC offers highly interesting products, particularly in the area of 78K0s Low Pin Count (LPC) 8-bit microcontrollers. Sensor applications benefit from the worldwide smallest microcontroller in a 2 x 2 mm Chip Scale Package (CSP), actuators with a maximum of scalability within NEC's broad 8-bit / 16-bit / 32-bit MCU product portfolio.

The future is wireless

Wireless technologies are gaining importance in the rapidly growing sector of Building Management. In most cases, a single low-cost wireless sensor is already more economical than a hardwired version. However, the cost reduction rises exponentially as the number of wireless sensors in the same system increases. A special situation arises in the market referred to as retrofit or modernization. For this, the use of wireless technologies is almost unavoidable. With the new ZigBee starter

In their class, NEC's 16-bit microcontrollers of the 78K0R/Kx3 family offer an unmatched performance combination of high computing power and low electric power consumption. These microcontrollers help to significantly reduce the power consumption and therefore, extend the battery lifetime in such applications.

Energy saving Building Management?

In addition to newly gained comfort and safety features, modern Building Management Systems also offer a further major benefit: The

Tomorrow's buildings will be "connected" - accessible via Internet or the mobile phone - every aspect from managing the heating and security systems to lighting and leisure systems will be at your fingertips - wherever you are.

NEC Advantage: Application Support

NEC's focus is not only on semiconductor product development, but also on developing the applications technology to enable future new product features to be incorporated. To make this work for you, Gleichmann Electronics & NEC have also

invested in the technical product support team, who can assist you to make your product happen on time.

No matter what your application, NEC has the right product.

- A wide range of microcontrollers
- 8-bit, 16-bit, 32-bit
- The most advanced ASIC technology
- fast turn-around, low-cost gate arrays



kits, NEC presents the answer to these new requirements. Kits with NEC's 8-bit 78K0, 16-bit 78K0R or 32-bit V850ES as controller platform and UBEC's UZ2400 transceiver device are available since the beginning of 2007.

Typical, as a rule battery powered, wireless applications are:

- Heat Cost Allocator
- Water Meters
- Security Systems
- Lighting Controls and
- Sensors

controlled utilization of lighting, window, climate and heating systems contributes significantly to the reduction of the amount of energy required in a modern building. The homeowner not only saves money, but the environment also profits from it. Whether for an office or a residential house, all settings are made and displayed on a central control unit. Equipped with NEC's TFT displays, a simple and simultaneous adjustment of all components is guaranteed.

- high-end, high-performance cell-based technology
- NEC's own unique ISSP
- Power MOSFETs to pack a punch
- Optocouplers to be ahead
- Microwave to communicate with RF
- TFT Displays

 +49 89 945532-63
NECMicro@msc-ge.com
Response number 119

Lx3 – See More and Do More

Today as humans we are increasingly seeking more information about everything we use. Whether it is a utility meter, a power tool or healthcare diagnostic monitor - gone are the days when we accept that things just work. We crave more information, for example we want our electricity meter interface to show the power usage trends, allowing us to see when is the optimum time to use the washing machine, or in our handheld rechargeable electric drill, we want to see the battery charge status with potential available torque allowing us to know if we can start and finish our Do It-Yourself jobs, and even in the

78K0/Lx 3 Product Line-up

Flash Size	8 ch x 10-bit SAR ADC		8 ch x 10-bit SAR ADC		6 ch x 10-bit SAR ADC		3 ch x 16-bit $\Delta\Sigma$ + 6 ch x 10-bit SAR ADC's		6 ch x 10-bit SAR ADC		3 ch x 16-bit $\Delta\Sigma$ + 6 ch x 10-bit SAR ADC's	
	No ADC	8 ch x 10-bit SAR ADC	No ADC	8 ch x 10-bit SAR ADC	No ADC	6 ch x 10-bit SAR ADC	No ADC	3 ch x 16-bit $\Delta\Sigma$ + 6 ch x 10-bit SAR ADC's	No ADC	6 ch x 10-bit SAR ADC	No ADC	3 ch x 16-bit $\Delta\Sigma$ + 6 ch x 10-bit SAR ADC's
60K					2K	2K	2K	2K	2K	2K	2K	2K
48K					2K	2K	2K	2K	2K	2K	2K	2K
32K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K
24K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K
16K	768	768	768	768	768	768	768	768	768	768	768	768
8K	512	512	512	512								
	48-pin	48-pin	52-pin	52-pin	64-pin	64-pin	64-pin	80-pin	80-pin	80-pin	80-pin	80-pin
	LC3 Package: GA		LD3 Package: GB		LE3 Packages: GB, GK			LF3 Packages: GC, GK				
LCD Segm. Sizes	88 – 4 x 22		96 – 4 x 24		128 – 4 x 32			160 – 4 x 40				
	144 – 8 x 18		160 – 8 x 20		224 – 8 x 28			288 – 8 x 36				

2K Flash Size

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Applications

Appliances	Building Controls	Healthcare	EPOS
White goods HMI	Meters	Digital thermometers	Card readers
Small kitchen appliance	Thermostats	Blood glucose monitor	Handheld terminals
Power tools	HVAC control panels	Blood pressure monitor	Gaming machines
Personal grooming	Security control panels	Pregnancy testers	Vending machines

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simplest pregnancy tester, we want the removal of any potential confusion by seeing either „Pregnant“ or „Not Pregnant“. LCD's are the ideal way to display this form of information.

Added value to an application

With an LCD you can add value to an application and in many cases even demonstrate the products benefits in a better way. Clearly the trend for end products with LCD is increasing, and with the need to display more and more information this in turn is driving the need for larger amounts of LCD segments.

NEC Electronics has now launched a new range of monolithic 8-bit micro-controllers with embedded LCD controller that offers drive capabilities from 88 up to 288 segments, Flash memory sizes from 8 k up to 60 KB and many excellent features such as Calendar RTC, 10-bit SAR & 16-bit $\Delta\Sigma$ ADC's. 78K0/Lx3 has been developed to compliment the existing Lx2 family to smaller packages and memory sizes and a higher number of LCD segments. 78K0/Lx3 is using the same state of the art 0,15 μ m SST flash technology as 78K0/Lx2. This and the monolithic dice enables them to deliver excellent performance at low voltage with leading power consumption, making

them ideal for battery and handheld applications. NEC Electronics' Lx3 devices are supported by high quality development tools that can significantly reduce time-to-market. A range of solutions are available from low cost starter kits, on-chip debug, Flash programmers to fully featured integrated emulators all supported by IAR's efficient class leading compiler.

Key features

- Single voltage Flash memory: 8 K to 60 KB with RAM: 512 B to 2 KB
- On-chip LCD controller/driver (88 to 288 segments)
- Three ADC options:
 - No ADC, 10-bit SAR ADC, 16-bit $\Delta\Sigma$ ADC + 10-bit SAR ADC

- 8 MHz internal high speed oscillator
- RTC having counters for year, month, week, day, hour, minute, second
- On-chip debug function
- Watchdog timer (operating from internal low speed oscillator clock)
- On-chip power on clear (POC)
- Secure self programming (with boot swap function)
- On-chip clock and buzzer output functions
- On-chip key interrupt function
- Remote controller receiver
- Supply voltage: Vdd = 1.8 to 5.5 V
- Operating ambient temperature: Ta = -40 to +85° C
- samples will be available at end of 2007

NEC Electronics invites you to take advantage of this extensive new range with its abundance of features thus empowering your application to „See More and Do More“.



+49 89 945532-63
NECMicro@msc-ge.com
Response number 344

Motor Control - Time to think in new dimensions



In 2005, NEC Electronics and Gleichmann launched the first of many initiatives

dedicated to complete focus on major industrial market segments. One particular team is focused on what both companies recognize as one of the largest and most important application areas in Europe – motor control.

Of course, motors are used in a diverse range of products, from toothbrushes to high-power drives. Motor types themselves, as well as the methods used to control them, are just as diverse. However, from the simplest PWM-based DC motor application through to complex 3-phase techniques, NEC Electronics has a proven track record, and combined with the applications expertise of Gleichmann, is ideally positioned to support the many different needs of this market.

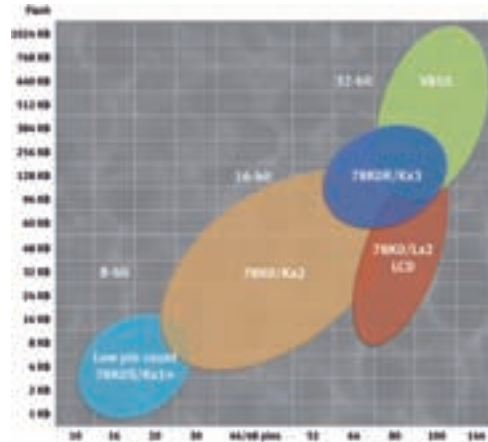
In each segment there are many technologies at play and

to attract the consumer. All of these are driving the demand for more intelligent and integrated solutions. And there's a lot more to this than just motors – NEC Electronics and Gleichmann are committed to supporting all elements of a motor-based system, whatever the motor type, including user-interface, communications and networking, system control...

This commitment results in a lot more than just products – state of the art tools, extensive middleware and software libraries, application notes, reference platforms, regulation compliance... all backed by first class applications expertise and product support available at your door. All of this combines to let our customers focus on what is important to them



ling the motor are backed by market-leading power devices, optoelectronics, ASIC's, com-



munications controllers and TFT-LCD's.

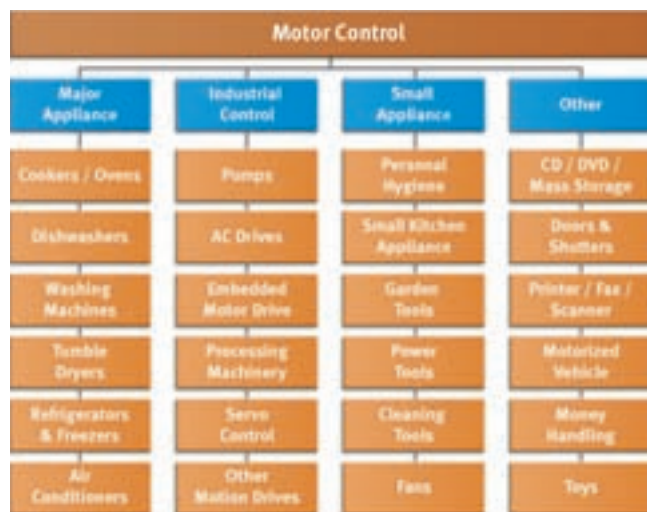
From the world's smallest microcontroller to the world's number one selling 32-bit family, NEC Electronics provides one of the broadest 8-, 16- and 32-bit microcontroller ranges available. These begin with 10-pin devices, including a family without A/D's for low-cost mechanical replacement, through to high performance, high memory devices capable of the most complex system control and communications as well as handling standard PWM-based motor control.

As trends for more performance and greater control, less energy usage and less noise / vibration become more important, 3-phase motors are more and more becoming the de-facto standard. From cost-optimized 8-bit devices through to some of the highest perform-

ing 32-bit devices available, NEC Electronics' motor ASSP's all share dedicated peripherals for getting the most out of 3-phase motors whilst removing external cost items such as sensors, analog and safety IC's through high-level integration and market-leading software solutions. To get you to market quickly, these microcontrollers are backed by dedicated tools such as the new Low Voltage Motor Control Development Kit – an ideal platform for starting a 3-phase motor project – as well as state-of-the-art emulation tools such as IECUBE full emulator and the new MINICUBE2, offering on-chip debug and Flash programming for 8-, 16- and 32-bit microcontrollers in a single 4.8cm² tool.

We want to offer as much from a single source as possible, so microcontrollers are only a starting point to a number of system components also available.

Motor control is one of the most dynamic and exciting applications areas around today, and NEC Electronics and Gleichmann are totally focused on ensuring that your application gets the most out of it as easily and as quickly as possible.



numerous forces that affect development trends. Some are general trends, for example energy efficiency, others from government legislation, and others are simply based on the need to add more features

– getting the most out of their design, and not wasting time on acquiring technology. When it comes to technology, a wide choice of general purpose microcontrollers and dedicated 3-phase devices for control-

+49 711 78336-115
NECMicro@msc-ge.com
Response number 120

Groundbreaking control

There is no doubt that the use of 3-phase motors is now growing very fast, and in many applications they are becoming the de-facto standard. And there are so many great reasons why, but three key points highlight their obvious importance to diverse applications ranging from home appliances to AC drives:

- More performance and control
- Less noise and vibration
- Less energy usage

NEC Electronics has a long history in 3-phase control, and with our latest generation of dedicated 32-bit devices, we are opening up all kinds of new possibilities, including the ability to control multiple motors from a single device, as well as reducing overall system cost by removing the need for many external cost items, such as sensors, analog components and safety IC's.

Two new device families, V850E/IF3 and V850E/IG3,

are now on offer, based on the high performance 32-bit V850E1 core built in the very latest 0.15 µm UX4 Flash process.

Delivering on 86 MIPS at 64 MHz, both families include either 128 K Flash memory



The V850E/IG3 comes in a 100-pin LQFP package

with 8 K RAM or 256 K Flash with 12 K Ram. They also include two powerful 16-bit accuracy 3-phase inverter timers with a 6-phase PWM output function, capable of controlling two 3-phase

motors simultaneously and independently. These timers also incorporate other key features for optimised motor control, such as dead timers for high-side and low-side transistor protection, timer tuning, cycle setting,

compare register re-writing, interrupt culling, A/D triggering, availability of 0% and 100% output and forced output stop. Up to 9 channels of additional 16-bit timers are also available,

including 2 encoder timer channels.

There are also three A/D converters on board – two separate high-speed buffered 12-bit A/D's with 3 – 5 channels for simultaneous sample and hold, and an 8-channel 10-bit A/D. The 12-bit A/D's also include up to 3 analog op-amps and 6 comparators.

Also included are DMA controller, external memory bus (on larger devices), multiple serial interfaces, including standard and FIFO UART, CSI and I²C which are user configurable, plus watchdog timer, clock monitor, power on clear and low voltage interrupt.

The V850E/IF3 family is available in an 80-pin LQFP package, and the V850E/IG3 family comes in a 100-pin LQFP package, both operating from 4.5 to 5.5 V and -40 to +85° C.

+49 711 78336-115
NECMicro@msc-ge.com
Response number 346

8-bit MCU's – the Series concept evolves

Series, L Series, F Series – they all incorporate state-of-the-art 8-bit microcontrollers designed to meet even the most advanced application requirements. And they're all on view at the NEC Electronics booth at the Embedded World 2007. For standard applications, take a closer look at the K Series (78K0S/Kx1+, 78K0/Kx2 and 78K0R/Kx3). Here you will find devices with 10 to 144 pins and up to 512 Kbytes on-chip Flash memory. To reduce your costs to a minimum, these



devices integrate a 10-bit ADC, a wealth of 8- and 16-bit timers, (LIN-capable) UARTs, CSIs, I²C, up to 2 on-chip oscillators and more!

If you have an LCD application, you should definitely also talk to us about the L Series (78K0/Lx2 and 78K0/Lx3).

These micro-controllers integrate all the features of the K Series plus an on-chip LCD controller/driver. This can control up to 288 LCD



segments (36 x 8) and provides an optional internal voltage booster for driving the LCD glass. This

Series even features an optional 16-bit ADC. Last but not least, there is the F Series (78K0/Fx2). These devices are derivatives of the K Series with

an on-chip CAN controller. This CAN controller has 16 message buffers and can communicate at up to 1 Mbps. All devices comply with ISO 11898 and are tested to ISO 16845.



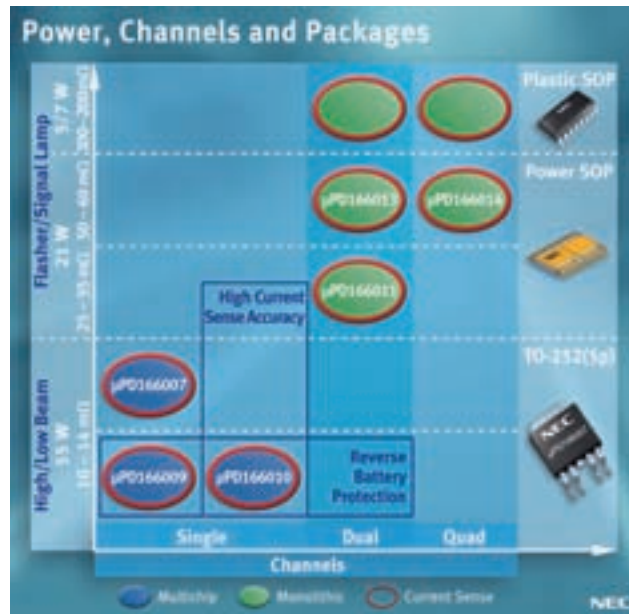
All three Series are supported by the latest addition to the NEC Electronics tool chain: the 4.8 x 4.8 cm² MINICUBE2 on-chip debugger!

Thanks to its versatility, unique design and low price this tool is a must-have and certainly a must-see! The Series concept evolves... make the most of it!

+49 7249 910-437
NECMicro@msc-ge.com
Response number 339

Intelligent power devices for automotive applications

Adding to an established discrete power device portfolio with products like PowerMOSFET, the launch of our new μ PD166xxx intelligent power device (IPD) family further strengthens our automotive semiconductor offering. The new product family is designed for use in on-board electronic control units (ECU's) in support of applications such as headlights, anti-lock braking systems and air conditioners. In these new devices, the mechanical switches or relays conventionally used to control these units have been replaced by



semiconductors to enable smaller and lighter ECU's

with improved on/off control and high reliability. The

control logic function limits rapid fluctuations of the output current to reduce electromagnetic noise and improve ECU performance. A current-sensing function monitors current flow during normal operation, and a diagnosis function detects overcurrent and overheating. These features can be used to good effect to form an accurate picture of the output status and to detect any irregularities.

 +49 211 92593-13
NECMicro@msc-ge.com
Response number 340

Addendum to our last Gleichmann Electronics & Bmz Event

Gardening tools, power tools, e-bikes, golf caddies, e-scooters or motor boat drives - the lithium-ion technology has conquered the market of mobile phones and notebooks. But who wonders what's next? The lithium-ion technology offers many advantages compared to nickel-cadmium or nickel-metal-hydrate like a higher energy density, no memory effect, twice the capacity and three times the voltage compared to the nickel-technologies.

Today's market increases its focus on the different lithium-ion technologies like cobalt, manganese and phosphate. This is why BMZ have already set their focus on manufacturing lithium-ion battery packs and they are today's leading European battery experts in design and manufacturing of intelligent battery solutions. To penetrate the market

for portable products, BMZ offer several events to train their existing and potential customers or individuals wanting to further their battery knowledge.

The last event was organised together with Gleichmann Electronics over a 2 day period at the BMZ headquarter:

28th of February 2007

Attendees mastered the basics of lithium-ion batteries and went on to learn about the principles and comparison of the different lithium-ion technologies, security and safety, charging rules and the new regulations facing everyone regarding transportation.

1st of March 2007

Additionally, the attendees got the chance to get in direct contact with premier

lithium-ion manufacturers like Panasonic, Sony, Saft and A123Systems. This year again, BMZ have organised a developer forum where they invite their main suppliers to present their point of view and future thoughts for portable applications.

Another main topic on these two days was the ban of nickel-cadmium. Some of the main battery manufacturers announced that they would like to stop the production of these batteries and focus more on lithium-ion. Whilst the products are ever decreasing in size their power requirements are not, so this is an ideal time for many manufactures to focus on the production of lithium-ion cells and develop their technologies further.

Summarised, BMZ were thrilled to have such a good response and attendance

from our last event and wish to thank everyone who attended and who was involved. Additionally Gleichmann Electronics are proud to be the leading European BMZ distributor and we are looking forward to organize many more exciting events together to build-up and intensify our partnership.

The forum for developers has been organised now for the 5th time. Over the years all events have been fully booked and have received fantastic reviews from attendees and suppliers alike. For any information about future events you are welcome to get in contact with our product marketing department.

 +49 711 78336-173
NECMicro@msc-ge.com
Response number 121

32-bit MCU's – new devices with CAN

NEC Electronics' latest V850ES/FX3 series MCU's are now incorporated in the V850FX3-CANIT starter kit for immediate evaluation and program development. The kit is based on the 100-pin μ PD70F3377 with 512 K flash memory. Use this huge capacity to run your own application programs or to download one of the many application examples prepared by our software development engineers in Europe. Hardware communication support is provided by a USB interface

and an NWire connector for on-chip debugging. For CAN networking there are two on-board CAN transceivers. Both the software development tool chains from IAR and Greenhills are supported. IAR offers the kit with a size-limited full version of its development platform.



+49 7249 910-437
NECMicro@msc-ge.com
Response number 337

IC output and Transistor optocouplers

With a wide product range of transistor and IC output optocouplers, NEC offers over 400 different devices to provide optimal performance, reliability and quality to meet the requirements in a variety of applications such as in motor control, building management, industrial automation, healthcare, communication and consumer.

Our transistor optocouplers are available in a variety of package types, including DIP, SOP5, SOP8, SSOP and Flat-Lead. NEC was the first supplier to offer SSOP (PS28-series) worldwide and introduced the smallest

photocoupler in flat-lead package (PS29-series).

For IC output optocouplers, our range of 1 Mbps, 10 Mbps and 25 Mbps devices are available in 8-pin DIP, 5-pin SOP and SO-8 packages and are compatible with industry standard.

For high performance Motor Control applications we have launched our first high-speed 2A output current optocoupler for IGBT gate drives.

The complete line-up is available lead free in compliance to RoHS directive. All optocouplers have UL approval, many of them



meet additionally the international safety standards VDE, CSA, BSI, SEMKO, NEMKO, FIMKO, DEMKO.

+49 211 92593-13
NECMicro@msc-ge.com
Response number 122

NEC's new μ PG2250T5N Power Amplifier delivers more than +19dBm output power

Many RF transceivers in the 2.4 GHz range have an output power of only 0...+4 dBm. The ISM specification allows, however, up to +20 dBm in frequency hopping process. With this, a range of greater than one thousand meters in an open area can be

achieved. NEC Electronics has developed a small, high efficiency power amplifier for 2.4 GHz, which delivers more than +19dBm @ 5dBm PIN, 1,8 VDD. With this output power and voltage, the μ PG2250T5N device typically consumes only 100

mA. This is equivalent to 60% efficiency. Its 6-pin plastic TSON (Thin Small Out-line Non-leaded) package (1.5 x 1.5 x 0.37 mm) and a supply voltage from 1.5 to 3.5 V (1.8 V typ.) makes its particularly suitable for battery-operated radio applications

such as ZigBee, Bluetooth and Wireless USB. Evaluation boards and samples are available immediately from Gleichmann.

+49 89 945532-43
NECMicro@msc-ge.com
Response number 123

Come and touch it!

Snobs, switches and dials – they're useful, they're everywhere, but they're so limiting! Like most mechanical systems, they are designed to do one thing very well, but what can we do about this limitation? And what about reliability, ease of use, performance, aesthetics, differentiation...?

It is no surprise then that graphical user interfaces (GUI's) based on touch-controlled TFT's are seen as the ideal solution, inspiring next generation designs for all kinds of applications, from ovens to security systems to industrial drives, patient monitors, photocopiers and ATM's.

So now your Marketing Department is telling you that you have to introduce this into your next design, and not just to replace your existing user interface, but to add all kinds of „value“ on top of it! So where do you start?

A perfect place to start is NEC Electronics' new Touch-it! Starter Kit, designed to make your touch-controlled TFT

project development as easy as possible. In the box you get everything you need to get going immediately – 32-bit V850 All Flash microcontroller with big embedded Flash memory, TFT-LCD controller / driver, the 3.5" colour TFT itself, including built-in touch-screen, plus RTOS, graphics libraries and software examples. To enable future expansion and upgrades, the kit has also been designed in a modular way so that additional boards may be connected for extra

functionality.

At the heart of the system is a V850ES/JG2 All Flash 32-bit microcontroller, offering 20 MHz performance, 640 K Flash, 48 K RAM and an abundance of general purpose peripherals. Memory sizes from 64 K Flash with 6 K RAM up to a huge 1 M Flash with 60 K of RAM are available in the V850 All Flash family, so the actual device used in the final design can easily be tailored exactly



to your application's functionality and graphics output requirements. An external bus interface is also provided, enabling additional external memory or graphic controller IC's to be connected.

The kit is supplied with our new NL2432HC22-41K 3.5" transfective Quarter VGA colour LCD-TFT module, which includes driver LSI's for the TFT array, touch screen and backlight and is qualified to industrial specifications. As well as

offering low power, high luminance, and high contrast,

the display is based on our unique Super-Reflective Natural Light Technology (SR-NLT) for optimum performance in any light environment. Connectors are also provided on the board for you to easily switch to larger displays if desired.

The system software is based on our partner Segger's popular emBOS Real Time Operating System (RTOS), managing graphics, touch screen/

user input and any communications to other boards, and their emWIN graphics library to handle character and graphic display routines, fast drawing of circles and polygons, string/ value output routines, management of multiple windows, optional widgets for a PC-style look and feel, and touch screen support. Demonstration versions are supplied, as well as an appetiser version of the IAR Workbench 'C' compiler suite, and application as well as function-based program examples. Our semiconductor and TFT-LCD portfolio provides NEC Electronics with a unique single source solution, with expertise spanning across products and technologies to provide a complete platform offering, including software, from just one supplier.



DIS-285P High-End Interface Card enables TFT Displays in Studio Quality

The DIS-285P board supports high resolution displays of up to 1920 x 1440 pixels. At the same, by means of the 3rd Generation Motion Adaptive De-Interlace an excellent HDTV (480i, 576i, 1080i) picture quality can also be achieved.

In addition to the color components inputs, HD/SD-SDI signals and other signal sources can be processed

via auxiliary input modules. The DIS-285P also has two parallel channels for image processing, which makes it possible to display Picture-in-Picture (PiP) as well as Picture-by-Picture (PbP). It is therefore possible, for example, to superimpose a window in the RGB picture, which shows the HDTV/color components input. This window can be positioned and its size changed as required.

In addition to the six regular signal sources (two each RGB/YPbPr and FBAS as well as DVI and Y/C) seven video inputs are available, if required to the user, via a connector. The DIS-285P TFT Interface Card is a board without jumpers. This means that all settings take place via the OnScreenManager (OSM). An optical or mechanical JogDial, which allows an intuitive operation,

as well as a keyboard with dynamic autorepeat, can be used as control element. As an alternative, the board can also be controlled via an infrared remote control.

Particularly useful and time-saving for designers is that the firmware contains the timing of all ever adapted panels. Additionally, the DIS-285P board allows a variable and independent horizontal

as well as vertical scaling. A Long Distance DVI solution up to a distance of 50 meters is offered as an option. The flexibility and performance of the interface card is underlined by the integrated Wide Range Controller, which generates 3.3V, 5V and 12V panel power supply voltages. Therefore, only a single 8 to 28 VDC power supply is required. An extensive windows tool as advanced RS232 support provides the simplest possible protocol integration in customer systems.

The board is an ideal addition for large-area high-resolution TFTs from AUO, LG.Philips LCD (LPL) or also Samsung. The support of



portrait mode presentation makes the card an ideal choice for so-called Public Displays LC420WX5-SLB1 and LC320W01-SL13 from LG.Philips LCD (LPL).

Because of their mechanics, backlight system and the internal structure of the LC molecules, these are suitable for vertical and horizontal mounting.

+49 7249 910-152
NECMicro@msc-ge.com
Response number 124

Latest TFT-LCD technologies

Main Specifications of the 6.5" LCD Module	
Part Number	NL10276BC13-01C
Drive system	Amorphous silicon TFT active matrix
Display area	132.0 mm x 99.0 mm, diagonal screen size of 6.5" (17 cm)
Pixel	1024 (H) x 768 (V) pixels
Pixel arrangement	RGB vertical stripe
Display colours	16.77 M/ 256 K
Luminance	600 cd/m ²
Contrast ratio	600 : 1 (typ.)
Viewing angle (U/D/L/R)	80°/60°/80°/80°
Response time	25 ms (typ.) (T _{on} + T _{off} : from 10% to 90%)
Interface	8-bit/6-bit digital (single-link LVDS)
Backlight type	LED edge light
Operating temperature	-20° C to +70° C
Storage temperature	-30° C to +80° C
Surface treatment	Anti-reflection
Module size	153.0 mm x 118.0 mm x 9.0 mm
Weight	170 g
Power supply voltage	3.3 V/5.0V
Power consumption	170 mW (typ.)

This year the focus is on new, exciting technologies. We'll be demonstrating LED backlights for industrial and medical applications, our unique Natural Light

Technology for brilliant image quality under all ambient light conditions and, in combination, displays for portable devices with very low power con-

sumption. We'll also be showing an ultra-highbright 12.1" SVGA module that boasts 1100 cd/m², the highest luminance level in the class of colour LCD modules for industrial use.

The 12.1" ultra-highbright model has a high-intensity backlight

panel. Moreover, it has a wide operating temperature range of -10 to +70 °C. With these enhanced features, the panel is ideal for use in ATMs, vending machines, point-of-sale systems, gasoline pumps and GPS navigators.

Key features NL10276BC13-01C

- LED backlight
- Sunlight readable
- High luminance: 600 cd/m²
- Wide viewing angles: 160° horizontal, 140° vertical
- High contrast ratio: 600 : 1
- Wide operating temperature: -20 to +70 °C

+49 7249 910-152
NECMicro@msc-ge.com
Response number 345

Fit for purpose – our new optocoupler family

NEC Electronics is introducing a new family of high-speed optocouplers in a new white DIP package that provides enhanced isolation and shielding:

- 5000 Vrms isolation voltage
- 0.4 mm internal isolation distance
- 8 mm outer creepage distance
- Minimum CMR of 15 kV/μs

The new PS85/95 optocoupler series is available in different outlines, addressing multiple industrial applications that require a high level of isolation. The PS85xx series are 1 Mbps analog output type optocouplers with high output voltage of 35 V (max.).

The PS9587 series is a

digital IC optocoupler with open collector output. With a maximum propagation delay time (t_{plh}, t_{phl}) of 75 ns and pulse width distortion (PWD) as low as 10 ns, it enables the transfer of data at 10 Mbps speed. The PS9587 series is ideal for industrial high-speed communication lines that require a high level of isolation.

Dedicated to motor drive applications, the PS9513 and PS9552 series are designed for IPM and IGBT drives respectively. The PS9513 series delivers 1 Mbps speed and 35 V output voltage and is suitable for IPM drives and general-purpose inverters.



The optocoupler in its new white DIP package

The PS9552 series is the first type of optocoupler dedicated for IGBT gate drives. It provides up to 2.5 A output current, has a wide range of V_{cc} from 15 to 30 V and operating temperatures from -40 to +100° C. It is suitable for driving IGBT and

MOSFET gates. All new PS85/95 series optocouplers are available in different lead bending options either for through hole or surface mount.

All PS85/95 series optocouplers are fully RoHS compliant and use nickel-palladium-gold as lead-free pin-plating material. International safety certificates are available, eg, UL and DIN EN60747-5-2.

All these optocouplers are available now. For prices and delivery details please contact Gleichmann Electronics.

PS85/PS95 Features				
	Surface Mount (Gull Wing Type)	Through Hole	Minimum CMR	Special Features
1 Mbps, analog output	PS8501L2	PS8501L1	-	RoHS pin
	PS8502L2	PS8502L1	15 kV/μs	-
1.0 Mbps, digital output	PS9587L2	PS9587L1	15 kV/μs	High speed, low PWD
1 Mbps, digital output	PS9513L2	PS9513L1	15 kV/μs	35 V output voltage
IGBT gate driver	PS9552L3 (8 mm)	PS9552L1 (8 mm)	15 kV/μs	2.5 A output current
	PS9552L3 (7.4 mm)			

 +49 211 92593-13
NECMicro@msc-ge.com

Response number 343

Gleichmann presents Harvatek

In summer 2006 Gleichmann added Harvatek to its list of suppliers. Harvatek is one of the world's leading manufacturers of surface mount LEDs. Its solid state lighting solutions are utilized in numerous applications including mobile phones, handheld media systems, LCD displays and appliances. Harvatek manufactures billions of LEDs annually.

Gleichmann has established internal structures, which offer customers a broad range of applications support and services for these

new products. SMD LEDs from Harvatek offer customers more flexibility when designing ultra-compact, portable products such as backlighting keypads and pushbuttons in the latest cell phone and handheld products. Gleichmann carried out tests of Harvatek's products and were very pleased with the quality and reliability. The feedback from our European customers has also been extremely positive. Gleichmann will continue to expand its lighting product portfolio.

LEDs

- High Power
- Through Hole
- SMD Lead Frame
- SMD PCB
- Ceramic

Displays

- Seven Segment
- Alphanumeric
- Light Bars
- Dot Matrix

Camera Module

Harvatek is an ISO 9002, QS 9000 and ISO 14001 certified company.



 +49 6233 347-125
NECMicro@msc-ge.com

Response number 125

ASIC & ARM® System Solutions

NEC Electronics' expertise is designing, developing and manufacturing sophisticated customized chips based on a wide range of ARM® CPU cores.

Local European design expertise

A huge expertise in designing high-performance ARM-based System-on-Chip (SoC) devices is actually located at NEC Electronics Europe. Various teams within NEC Electronics' European Technology Centre (ETC) support the design process through all stages of the development. Besides providing local customer design support, also various development platforms are supported. For example, NEC Electronics has newly developed the multi-platform ARM9E™ Development Board as a design platform for ARM926EJ-S™ and ARM946ES™ based systems. The board that will be shown at the booth, allows for the verification of actual chip level functions prior to actual chip manufacturing. Using this design platform for prototype development facilitates easy checking of

both hardware and software functions in order to speed up the quality improvement process. At the same it also helps cutting additional development costs and shortening development lead time.

Versatile development platforms

Besides its versatility, one of the outstanding features of the multi-platform ARM9E™ Development Board is the integration of both CPU cores, ARM926EJ-S™ and ARM946E-S™ within only one single prototype chip. Depending on the target system, customer can thus easily select which CPU core is actually required. In fact, there is only one board required to cover almost the whole range of ARM9E™-based system design. Another topic is the variety of analogue macro blocks that can be implemented with NEC Electronics cell-based ASIC solutions. A large number of analogue-



Multi-platform ARM9E™ development board

to-digital and digital-to-analogue converters are readily available for integration within digital cell-based ASICs. In line with NEC Electronics „first-time right“ approach these analogue function blocks have already been implemented and thoroughly tested in silicon. The same holds true for other analogue function blocks like analogue PLLs and high-speed serial interfaces with up to 6 Gbps data rate.

EMI reduction

As a means to suppress electro-magnetical interference (EMI) effects NEC Electronics is also offering spread-spectrum clock generation (SSCG)

PLLs. EMI emission is thus significantly reduced by dithering the clock frequency. Important to mention here is, that NEC Electronics in addition supports customers in optimum EMI-compliant PCB design by a dedicated team located within the ETC. Last but not least, NEC Electronics as the world-wide leader in Gate Array ASICs, will present recent product news. This includes especially new packaging solutions (eg. QFN) and new design approaches that lead to reduced EMI emissions.

+49 7249 910-437
NECMicro@msc-ge.com
Response number 338



1984 - 1988
studies of electrical engineering

Personal Profile of Martin Gruber – Gleichmann Electronics GmbH

1989 - 1990
military service
since June 1990
Gleichmann, Stuttgart
FAE NEC Microcontroller
since 2002
Gleichmann, Stuttgart
FAE Manager Europe, since 2006 additional task Initiative Motor Control

Gleichmann

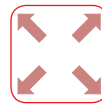
- show Gleichmann as competent partner in Germany and throughout Europe
- strengthen technical support for our costumers europe-wide
- push Motor Control Initiative

Personal

- Age: 43
- married, 1 daughter 10 yrs, 1 son 14 yrs

Hobbies

- home improvements around the house
- customize my car



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Our Commitment to Support

Please send me more information about:

- 8/32-bit Microcontroller and Tools
- SOC Light + (ARM based ASSPs)
- TFTs/LCDs
- Power Mosfet
- Optocoupler
- Discrete Products
- ASICs
- RF (Radio Frequency)
- Gleichmann Linecard

Please send me detailed information about the following microcontroller topics:

- Low Pin Count
- Building Management
- Motor Control
- Industrial Automation
- Health Care
- _____



Please copy and fax to +49 7249 910-328

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Company	
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Address	
ZIP/City	
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Gleichmann Sales Offices
Headoffice Frankenthal
 Tel. +49 6233 347-0
 Frankenthal@msc-ge.com

Düsseldorf
 Tel. +49 211 92594-0
 Duesseeldorf@msc-ge.com

Eching
 Tel. +49 8165 9995-600
 GADE@msc-ge.com

Munich
 Tel. +49 89 945532-60
 GE.Muenchen@msc-ge.com

Stutensee
 Tel. +49 7249 910-0
 Stutensee@msc-ge.com

Stuttgart
 Tel. +49 711 78336-0
 Stuttgart@msc-ge.com

Gleichmann Electronics UK Limited
 Tel. +44 1908 399770
 Miltonkeynes@msc-ge.com

Gleichmann Belgium
 Tel. +32 2 452 64 51
 Belgium@msc-ge.com

Gleichmann Ultratec AG
 Tel. +41 43 355 33 66
 info@ge-ultratec.ch

Gleichmann Electronics Turkey
 Tel. +90 216 411-2333
 Turkey@msc-ge.com

Gleichmann Electronics CZ s.r.o.
 Tel. +420 516 411 494-15
 Blansko@msc-ge.com

Our products are also available through our sister company MSC

Berlin
 Tel. +49 30 720089-0
 Berlin@msc-ge.com

Hamburg
 Tel. +49 4106 7764-0
 Hamburg@msc-ge.com

Hannover
 Tel. +49 511 616847-0
 Hannover@msc-ge.com

Jena
 Tel. +49 3641 6825-0
 Jena@msc-ge.com

Wiesbaden
 Tel. +49 611 97320-0
 Wiesbaden@msc-ge.com

Nuremberg
 Tel. +49 911 43970-0
 Nuernberg@msc-ge.com

MSC Vertriebs GmbH Wiener Neudorf
 Tel. +43 2236 205066-0
 Wien@msc-ge.com

MSC Schweiz AG
 Tel. +41 21 965 3500
 Montreux@msc-ge.com

MSC-Vertriebs-CZ s.r.o.
 Tel. +420 296 580260
 Praha@msc-ge.com

MSC Iberia S.L.
 Tel. +34 93 582 44 45
 Barcelona@msc-ge.com

Tel. +34 91 721 69 51
 Madrid@msc-ge.com

MSC (France) S.A.R.L.
 Tel. +33 16480 5555
 Paris@msc-ge.com

MSC Budapest Kft.
 Tel. +36 1250 90-40
 Budapest@msc-ge.com

MSC Nederland BV
 Tel. +31 78 6920-150
 Netherlands@msc-ge.com

MSC Polska Sp. z o.o.
 Tel. +48 323 3054-50
 Gliwice@msc-ge.com

MSC-Mibatron s.r.l.
 Tel. +40 31 102 34 66
 +40 21 230 25 30
 Bucaresti@msc-ge.com



Contact your regional sales office