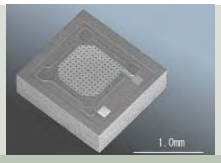
European Newsletter
Issue 11
Autumn/Winter '07

Horizon

NEW BI-DIRECTIONAL FLOW SENSOR
PG.4



WORLD'S SMALLEST MICROPHONE CHIP
PG.5

FACE RECOGNITION FOR MOBILE PHONES
PG.7

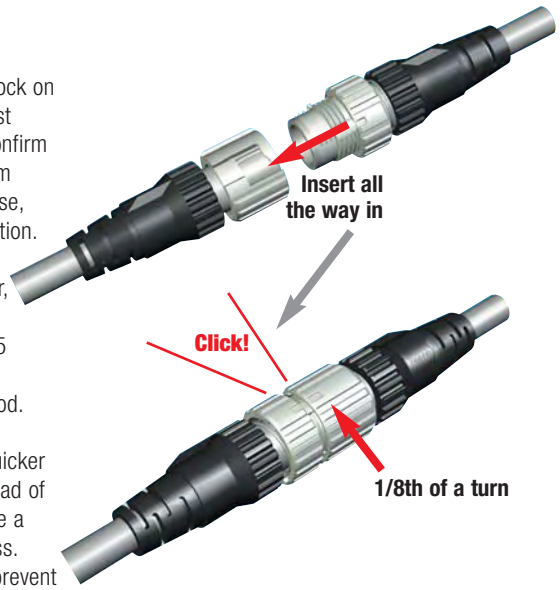
LED LIT TACTILE SWITCHES
PG.11

'Smart click' for reliable connection with new Omron M12

Our industrial M12 connectors feature a simple, secure, 'smart click' locking mechanism, yet retain full compatibility with the traditional screw lock styles. M12 connectors are widely used throughout industrial and process control installations, in particular to connect sensor I/O, and for field bus and industrial Ethernet installations.

The new XS5 series of M12 connectors lock on just 1/8th of a turn, the industry's shortest rotation, and feature a positive click to confirm secure locking. A bayonet lock mechanism helps prevent the connection working loose, even when exposed to considerable vibration. XS5 connectors offer the same IP67 protection as the screw locking connector, and remain compatible with the industry standard style. Both XS5 sockets and XS5 plugs can be connected to a standard connectors using the normal screw method.

Our XS5 addresses the concerns of industrial electrical installers. They are quicker to install, requiring only a short turn instead of multiple turns and there is no need to use a torque wrench to confirm correct tightness. This not only saves time, but also helps prevent reliability and maintenance issues caused by over- or under-tightening of the connector. The locking mechanism itself is internal so is protected against contamination by spattered fluids or dust.



We are initially releasing the XS5 in four-pole form, attached to a cable-assembly of 1, 2, 3, 5 or 10m with standard or vibration proof robot cable. However, the plan is for a full range of connectors, as well as an M8 version.

Our new Global Management Team

Omron has established a new Global Management Structure with Regional Chief Operating Officers under Masashi Nakano, Chief Executive Officer, Global Business Development and Soichi Yukawa, ECB President.

Mark Jones has been newly promoted OCB-EU Chief Operating Officer (COO), with full responsibility for the business in Europe, the Middle East, Africa and Russia. Nigel Blakeway will now focus exclusively on North and South America as COO Americas. Both positions report to Masashi Nakano, CEO for Global Business Development, who reports to Soichi Yukawa.

Soichi Yukawa said, "As our business and customers become more global, it is important we have an infrastructure which allows us to serve a customer at any location in the world. The new business structure satisfies this growing trend, thus allowing us to focus on customer satisfaction and deliver best practice across all business zones."

Omron continues to focus on the changing trends of cutting-edge technology

It was unclear where the electronic components industry was heading during the first half of fiscal 2007. In the first half of fiscal 2006, events like the Football World Cup stimulated active investment in industries such as automobiles, semiconductors and LCD screens. However, following the second half of 2006, much of the investment was held back, making the path to recovery unclear, a situation that continues right up to the present. The financial crisis in August caused by subprime mortgage loans to high-risk borrowers in the US leaves the economic trend in some doubt, even though the worst was evaded by the swift financial aid provided by the European Central Bank.

The ECB's quarterly results, from April to June, show that mobile phone backlights and the amusement business within Japan are both struggling. However, both business segments predict a recovery in performance following the second half of the fiscal year, forecasting that before-tax profits will return to normal estimates.

There are three products that are showing high performance results from areas that are currently drawing attention. The first is the Combination Jog Switch that is used in mobile phones and digital cameras. Current mobile devices require a large memory capacity and input devices that enable rapid searching. Omron's extremely thin yet highly functional Jog Switches are very popular. By simplifying the construction and producing parts in units, the time required to customise the product has been significantly reduced.

The second product is OKAO Vision, which is facial recognition software. Until now, it has been used in digital cameras for face detection in auto focusing functions, and as a skin tone correction function for printers. From now on, it is anticipated that it will also find uses in the development of security functions for mobile phones, and face detection functions using DVDs.

There is a detailed article on all Omron's mobile communications solutions in this issue of Horizon (page 7).

The third is optical communication products. In North America, Verizon is central to the expansion of FTTH (Fibre to the Home), where various splitters are being used. It is anticipated that the use of FTTH will also now start spreading in Europe, emanating from the major cities. The increasing consumer use of high-definition TV has also prompted the use of optical fibres, because normal communication cables with conventional copper wires can no longer cope with the demands of HDMI (High Definition Multimedia Interface).

Omron has a top-class development facility for optical transceivers on the west coast of the US, where optical transceivers are being developed and produced for a variety of purposes. The positive aspect of optical communications is that it can be used for high-speed, high-volume communication through thin fibres without being affected by external surges. Therefore the use of optical fibres for communication between devices and for internal wiring will continue to expand.

Omron continues to focus on the changing trends of cutting-edge technologies, while implementing existing technologies such as microfabrication, nanomaterials and light wave control to promote further social advances.

Steve Yukawa
Company President
Omron ECB Company

Mark Jones, our new COO, embraces changes that are taking place in the industry

Mark Jones
OCB-EU Chief Operating Officer (COO)

> "The past six months have been a real learning experience and I feel as though I have jumped aboard a fast moving train. I have travelled right across Europe and have met with many customers, distributors and Omron employees whose feedback has been invaluable. The achievements of OCB-EU under Nigel Blakeway's leadership are quite apparent and commendable, and have provided me with a platform to take the company to the next phase of development."

My role is to establish a future direction for OCB-EU and the best way to do this is by listening to what is actually happening within the business and the industry as a whole. The electronics industry is seeing a massive change but it is not as visible as people think. If you have read or listened to media commentators recently there is a picture of doom and gloom surrounding the electronics industry in Europe, but I see a rather different scene. There is an obvious production transfer of high volume repetitive applications through CEMs and subcontractors in low labour cost countries, such as China and Vietnam, but the reference technology remains very much in Europe and Omron has an important role to play in this field.

> "This is an exciting time to join Omron ECB"

Many of our customers today are what we term 'multi-site customers', where design engineering, manufacturing, value added services, subcontracting and contract negotiation are all conducted in different locations. Addressing their individual requirements in different locations demands high levels of flexibility on our part, with the ability to move quickly and follow the customer all the way through the chain to the local sales level.

The implementation of a new Global Management Team for Electronic Components Business (ECB) demonstrates that we are very much a global 'borderless' organisation with the infrastructure in place to manage quantum change in the marketplace. It also proves our capability to serve customers at any location in the world and deliver the same level of commitment. This doesn't mean we are in the process of centralising everything. On the contrary, Omron is focused on being more specialised locally because we recognise the different cultural and communications needs of our customers, and share their challenges in conducting business at a local level.

My message for ECB in Europe, the Middle East, Africa and Russia is to positively embrace the changes taking place in the market and pay attention to delivering real customer satisfaction through best practice.

To facilitate this objective we are undertaking a serious evaluation of ECB to see what value added services we need to be offering in the area of customer service and support, and in the area of technology and product development. In the latter area, we are expanding our Electromechanical (EM) offerings, with new relay and switch developments expected soon. We are also continuing investment in our Microelectronics (ME) product range, especially our photonics product line in light of exciting advances in the telecom and datacom markets. We are a supplier to some of the major mobile brands in the world and have already had great success in LED backlights, so you can expect to see some new technologies for the handheld market in the near future. New investment in our connector portfolio makes this another area to keep an eye on. Our new Connector Specialist for Europe (Pg 15) is now on board and new technology is in development that will greatly enhance our connector offerings.

As we move into the final quarter of 2007, our strategy is to accelerate Omron's sales profile and prepare the organisation for future changes. We are in the process of finalising the third stage of Grand Design (GD) 2010 which involves a focus on certain key technologies and products, investing in specialists in specific market areas and generally striving to make the process of dealing with Omron a 'pleasant experience'.

We are integrating web based tools, Electronic Data Interchange (EDI) and value added extras into customer service activities. We are also working closely with distributors to involve them in the early stages of customer liaison. Distribution currently represents 30% of Omron's business and this will continue to grow as we learn new ways to complement each other's business resources.

This is an exciting time to join Omron ECB and I look forward to working with you all in a market that is so inspiring and dynamic.

> “I bring you the exciting news that Omron has started to establish a microelectronics (ME) engineering team in Europe, specifically focussed on working with our growing base of customers here to make the most of the solutions that we offer. This move is not before time, as our portfolio of ME technologies is growing apace.”

Michael Sturm
General Manager Microelectronic Marketing

As of July 1, Mr Masashige Fukumoto has joined the Omron ME team in Munich (pg 15). His direct experience of MEMS sensor development will add a new dimension to the support that we are able to bring to our European customers. This will include greater ability to adapt products to suit specific applications.

Omron is continuing to expand its existing ranges of products as well as to move into completely new technologies. The Yasu semiconductor fab we acquired from Seiko Epson has been core to some of these introductions, such as the world’s smallest MEMS chip microphone introduced in this issue of Horizon. This product will, we believe, add value for different kinds of acoustic functions in portable devices.

One of the most successful microelectronics growth areas for Omron is our portfolio of fibre optic products. Fibre deployment in Europe is accelerating, and it is good to see an increasing number of our customers not only taking advantage of the opportunities that this represents, but also pushing for a share of the global fibre infrastructure market. Our new ultra compact and highly reliable bi-directional PLC splitter modules for FTTx Passive Optical Networks, DWDM and CWDM systems, optical cable TV and other outside equipment applications is particularly timely.

A new radio-frequency switch design using RF MEMS technology to dramatically improve reliability and product lifetime represents a breakthrough particularly for customers in the electronic test equipment industry (ATE). Omron RF MEMS technology provides an operational life of 100 million operations, low insertion loss and fast switching – a great improvement on the currently available alternatives.

Finally, our MEMS flow sensors (D6F series) have not been ignored, with the introduction of new D6F-P versions that offer the advantages of bi-directional sensing with amplified output and bi-directional Dust Segregation System (DSS) at an attractive price. The sensor could ideally be used in a pitot tube arrangement.

In short, I believe that we now have an exceptional portfolio of products supported by a growing specialist ME team that has never been stronger. Contact us to discover how we can take your current design project into a different league.

New bi-directional flow sensor offers reliable output performance

A new addition to our range of air and gas flow sensors is designed for medical, analytical and HVAC/VAV (Variable Air Volume) equipment. The new MEMS-based D6F-P air flow sensor delivers uni- or bi-directional sensing with amplified output in a highly compact package.

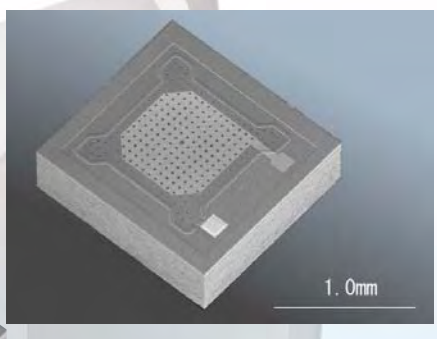
The D6F-P is an ideal solution for flow rate monitoring and dumper control in HVAC/VAV applications. It also acts as a replacement for differential pressure sensors in HVAC systems as well as medical equipment such as respirators, ventilators, Continuous Positive Airway Pressure (CPAP) and sleep apnea monitors.

The highly compact flow sensor measures just 7 x 35 x 17.2mm (L x W x H) offering increased flexibility of the system design. To offer more freedom in locating the sensor, the D6F-P comes with lead terminals for PCB mounting or a connector version. In a bypass configuration, the D6F-P can measure flow higher than its own capability and can also maintain differential pressure sensing with high sensitivity and repeatability even in very low flow conditions. It comes with a uni- or bi-directional flow range of 1.0 LPM at an output voltage of 0.5 to 2.5V with an accuracy of +/-5% full-scale deflection.

A key feature is its integrated, patent pending Dust Segregation System (DSS) which separates up to 99.5% (simulation test result) of dry airborne particulates from contaminated air,

helping to maintain performance characteristics of the sensor over its lifetime. In the D6F-P the DSS is bi-directional, protecting against particles whatever the direction of flow.

World's smallest microphone chip!



Omron has unveiled concept designs for the world's smallest surface-mount microphone chip based on its leadership in MEMS (Micro Electro Mechanical Systems) technology Research and Development.

MEMS microphones are widely used in mobile phones and other portable applications where they help enable the ultra-thin profiles desired by consumers today. Our new microphone is just 1.2mm high, which is no higher than the surrounding chips. It means a bottom port microphone can be fitted to the top of the PCB, the most convenient position for the user, without adding to the profile of the board. Other advantages of MEMS microphones include the fact that they are reflow solderable, and that they are less influenced by temperature changes. Valuable in the mobile phone industry, these benefits are equally desirable in automotive and even industrial applications.

The 1.2mm high Omron MEMS microphone design is ultra-compact, with a footprint of just 3.2 x 3.6mm. Operating from sub-3V supplies, it is aimed at next-generation mobile phones, and is ideal for a range of size-reduced applications. These include digital still and video cameras, pocket voice recorders, PCs and PDAs, together with automotive systems (car alarm sensors, hands-free equipment and voice-recognition, for example), and surveillance systems. Volume production is scheduled for 4Q 2008.

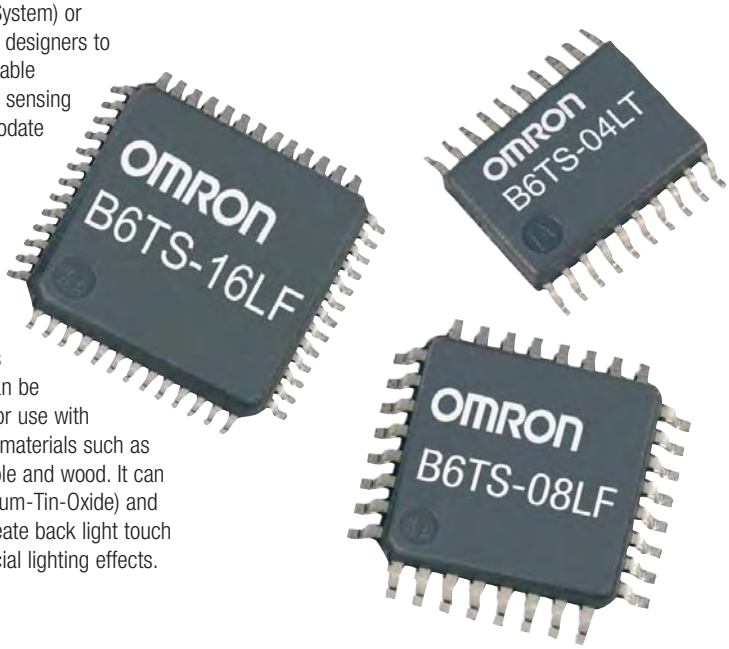
New additions to B6TS touch sensors

Omron has added new 8- and 16-channel versions to its B6TS range of touch sensor ICs. The new B6TS-16LF is able to manage 16 different input buttons from one chip and complements the existing 4- and 8- channel versions. The new B6TS-08LF is a lower cost, higher performing version of the existing 8-channel touch IC offering increased sensitivity and additional programmable features.

B6TS touch sensor ICs allow a non-conducting surface of any shape to be used as a control surface giving a new dimension to the styling of consumer brown and white goods and AV equipment, as well as vending machines, lift controls and security access. The devices are easy to integrate and highly tolerant of their working environment. Features such as self-teaching, auto threshold and intelligent filtering simplify system design and improve performance. B6TS compensates continuously for long term drift, to help ensure a long service life, and is designed to be tolerant of electro-magnetic interference.

In consumer electrical goods, the controls are normally designed to match the cosmetic appearance of the unit. The B6TS offers customers a great deal of freedom to build their own circuits around the sensor chip using their own defined electrode configuration. Omron offers an Evaluation Kit called the T-SIS (Touch Sensor Smart Installation System) or "B6TWorkbench", allowing designers to experiment with user-definable settings to achieve desired sensing performance and accommodate anticipated environmental changes in the custom specific touch panel (Man-Machine-Interface MMI).

To minimise the cost of the finished system, cost-effective commercial single-sided PCB materials such as FR-2 or CEM-1 can be applied. B6TS is suitable for use with almost all non-conducting materials such as plastic, rubber, glass, marble and wood. It can also be used with ITO (Indium-Tin-Oxide) and other clear materials to create back light touch keys for graphics and special lighting effects.



Optical multiplexing adds bandwidth for telecoms, transport and security

IFOTEC, a leading French broadband equipment vendor, used Omron CWDM fibre-optic multiplexers in its remote DSL over fibre solutions to allow 144 subscribers to be handled in the same space as 24, using a conventional electronic multiplexer. Based on patented Omron Micro Lens Array (MLA) technology, the multiplexers allow IFOTEC customers to make the most of their costly rented fibre links – and gives them the benefit of a system that is smaller and uses less power than alternatives.

CWDM

Coarse wavelength division multiplexing (CWDM) carries multiple signals over the same optical fibre, separating the channels by transmitting them at different laser wavelengths. Up to 18 wavelengths can be sent using some schemes of CWDM. It has broader spacing between frequencies than the alternative standard - Dense-WDM, and uses a far wider photonic band spectrum compared to other forms of WDM, which are often confined to one or two bands.

IFOTEC, which offers systems based on xDSL or CATV technologies for high bit rate multimedia services, recognised that the emerging optical technologies of wavelength-division multiplexing would deliver more channels per fibre, as well as smaller, less power-hungry systems, than conventional electronic multiplexing techniques. CWDM can be used over multi-mode and single-mode fibres and, although signal distances are generally shorter than DWDM, the CWDM-based equipment is capable of transmitting bandwidths above 3GHz on each wavelength over distances in excess of 100km. The key advantage for IFOTEC is that costs of deploying CWDM are significantly lower than other types of multiplexing. It also makes better use of the available capacity, an important advantage since IFOTEC customers normally rent their fibre.

Coarse wavelength division multiplexing (CWDM) from Omron offers particular benefits in the IFOTEC target applications, which range from video, music, Internet services and video on demand to intelligent systems and security equipment used in transport networks and high-risk areas such as motorways, railways, airports, tunnels, parking and storage areas. For example, a major applications sector for IFOTEC is DSL access for point-to-point and Fibre To The Home (FTTH) deployment. A 2.5Gbit/s link using Omron CWDM multiplexers can carry 144 broadband subscribers, compared with the typical 24 subscribers achievable with time division multiplexing.

There is a similar gain in using CWDM for transportation applications, such as surveillance and automatic incident detection on Europe's motorways. Here, IFOTEC and Omron technologies are able to transmit data at more than 100Mbit/s with an eight-channel

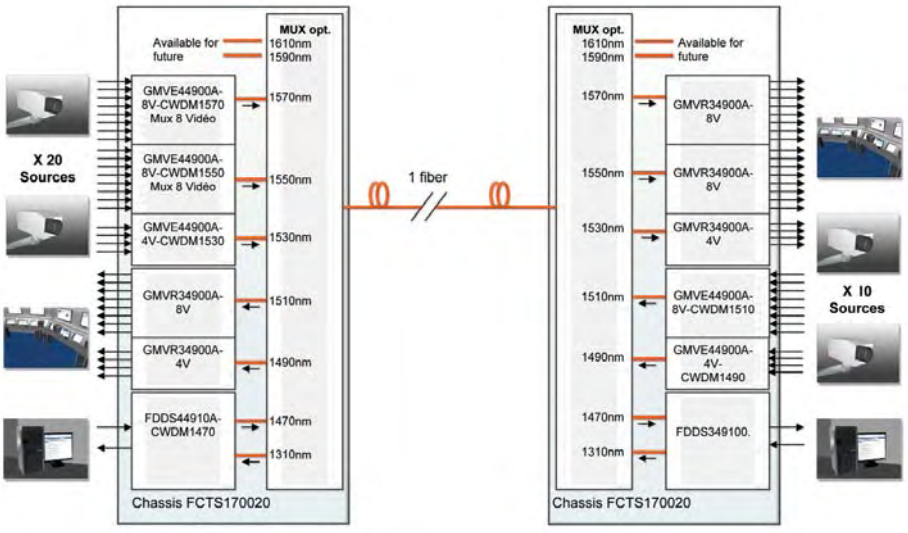
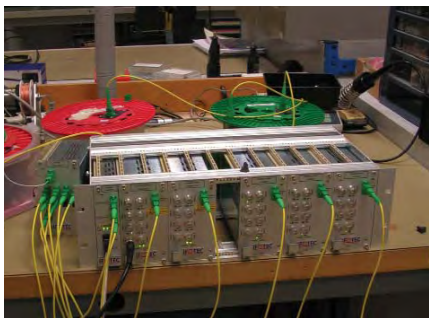


Figure 1: Architecture able to deliver 56 channels of analog video and a channel of Fast Ethernet over only one fibre.



multiplexer. The ability to deliver high-quality uncompressed video is especially valuable in these critical safety and security applications (fig 1).

Optical performance

Performance was a key issue in the choice of optical multiplexer. Of particular importance is the isolation between wavelengths, which makes CWDM a clear winner over the dense alternative. The shape of the filters on Omron's P1X4A and P1X8A met IFOTEC's strict performance requirements (see figure 2). Their special thin-film filters are precisely sandwiched between two glass layers, which, in conjunction with an integral mirror, ensures low cross talk.

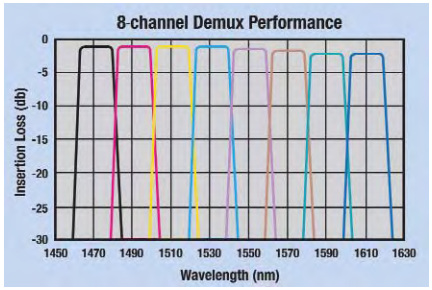


Figure 2: Eight-channel Optical Wavelength Performance for Omron Single-Mode CWDM Mux/Demux.

By using only seven internal parts, compared with typically 29 parts used in legacy products, Omron has achieved insertion losses specified typically as 1.7dB for 4 channel and 2.5dB for 8-channel models and the world's smallest size of 14.5 (L) x 7.2 (W) x 4.7 (H)mm. Omron achieves its size and part count reduction through a simplified architecture that combines its micro lens array (MLA) technology with thin film filters in a proprietary structure. Lens and other optical elements are manufactured through replication, utilising arrayed parts to reduce the number of components, and achieving self-alignment by arraying parts together. The bottom line is not only the world's smallest size, but also low production costs.

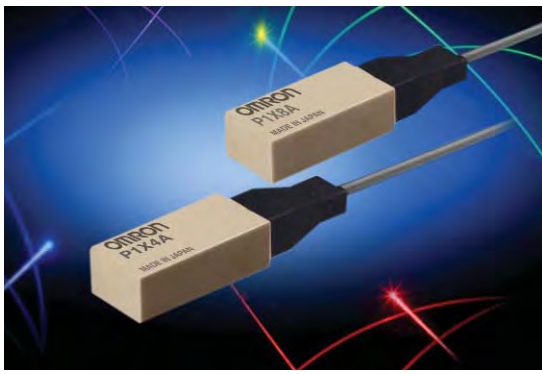
Space is a major consideration for IFOTEC. Its customers are demanding equipment that we can easily install in small enclosures – 3U is a typical requirement. Omron's multiplexers and demuxes are the smallest on the market. They take up less room than electronic TDM modules, and since they are passive devices require no power. That in itself saves further space (eliminating the need for a power line) and reduces heat dissipation so that they can be mounted closer together.

Cost of ownership played a significant role in IFOTEC's selection of Omron devices. IFOTEC needs to be competitive in a global market and won't use a supplier if it makes the bill of materials too large. Nevertheless they are conscious of the reliability factor, and will not consider a solution without good technical support.

IFOTEC has sourced components from BFI Optilas frequently over the years, including a number of Omron parts. In addition to supplying the products and providing comprehensive technical support (in collaboration with Omron Europe), the distributor operates a QS 9000 quality system, which demands a much tighter and more stringent quality assurance programme than the ISO 9001 scheme.

Conclusion

Omron multiplexers represented only a part of the solution engineered by IFOTEC –



nevertheless, its innovative, patented MLA technology, delivered in the form of the world's smallest CWDM multiplexers, played a key part in allowing IFOTEC to differentiate its solution in a vibrant fibre optic market sector.

Omron enables the next mobile phone generation

What functions will the next generation of phones offer you? How easy will it be to access and use those functions, and how reliable will the device be in service?

World leading mobile phone manufacturers are finding the answers to some of these questions at Omron. Our solutions are being designed into the RF electronics, mechanical interface, user interface, imaging features and the display.

Vision and sound

A phone that recognises its user's face clearly has a valuable advantage on the security front, and it would be exceptionally convenient if the same phone could photograph and capture a piece of text for use later. Face recognition software was originated in digital cameras, but is becoming increasingly attractive for camera phones. Omron OKAO Vision Sensor software allows camera-equipped phones to include such features without adding hardware. OKAO can identify the owner from a picture taken on the camera in less than one second with a 99% success rate – an exceptionally powerful tool.

The microphone is often a large component in the phone design, by comparison with the other devices that are used, and as a result, in today's phones, there are often compromises in terms of locating this device. A new MEMS microphone chip from Omron is just 1.2mm high, which is no higher than the surrounding chips, allowing it to be fitted to the front of the board, close to the ideal position from a user convenience perspective (see Pg 5).

In the display, backlights represent a significant drain on the phone battery. While a typical backlight unit uses three or more light sources, Omron has achieved nearly two times the brightness using just a single light source for a backlight. Micro lens arrays (MLAs) to control light wave directivity, and a flat light source are the two core technologies that Omron can apply to this challenge.

continued >>>

'OKAO Vision Face Recognition Sensor', a world first in face recognition technology.

GAM team

Having the right technologies is only one dimension of Omron's commitment to the mobile phone space – the other is providing the right customer service. Mobile phone OEMs have lead the world in globalising the design, manufacture and marketing of their products, to bring the right products to market at the right price and the right time. Omron's Global Account Manager (GAM) team is structured specifically to support these OEMs, ensuring a co-ordinated support response to a project that may be conceived in one region, designed in a second and manufactured in a third for shipment globally.

We are particularly excited about the relationships our European GAM team has with mobile phone OEMs here in the European region. These relationships are already bearing demonstrable fruit. A visit to consumer electronics outlets anywhere in the region will yield examples of portable product designs with Omron inside.

Control panel

The mobile phone not only includes a growing number of features, but is increasingly being used as a storage platform for photos and data. These new uses present designers with new challenges in terms of maintaining ease of use and accessibility. One answer is Omron's ultra-slim five-way jog switch, custom designed around a core technology platform to suit each application. Features such as the integrated LEDs and key top can be styled and manufactured to the customer's specification in terms of appearance and material.

Touch control is also moving into mobile applications and again Omron has an exceptional solution. Using the B6TS touch sensor chip, any non-conducting part of the mobile phone case can be turned into a control surface.

RF Design

In the area of the RF interface of the phone, Omron has further creative solutions to offer. The new radio-frequency switch design uses MEMS technology to provide an operational life of 100 million operations, which is orders-of-magnitude better reliability than conventional mechanical switches or relays.

New generations of phones are likely to incorporate UWB as well as Bluetooth. The launch by Omron of the world's first mass-produceable UWB antenna will help speed the adoption of this technology by mobile phone manufacturers, especially since we offer a compact, high performance and low cost solution which can be designed to fit the available space in a phone design.

Other solutions

Omron's electromechanical (EM) portfolio is well established as a reliable, competitive range of connector and switch solutions. Our hinge connectors, micro switches and FPC connectors are known worldwide for reliability in service, compact size and high performance.

Examples include our B3U tactile switches, the industry's smallest, with a rated service life of at least 100,000 operations. On the connector front, our FPC range has recently been extended with the ultra-low profile, version that is only 0.5mm thick, as well as the XF2U that has a much smaller board footprint.

Omron sales organisation is committed to supporting its customers

As Mark Jones identified in the introduction to this issue of Horizon, most of Omron's customers in Europe are multi-site customers. For all of our customers, large and small, design and manufacturing increasingly takes place not only on different sites but also on different continents.

As a global manufacturer of advanced control components, the Omron sales organisation is committed to supporting its customers wherever they choose to design, and to build their products. This means that we provide the right support here in Europe to the teams conceiving and designing products, and stable pricing and logistics to support production can be anywhere in the world.

For both our traditional Electromechanical products and our newer Microelectronics Products, we are bringing the expertise that we have in Japan close to our customers in Europe. Our Switch Engineering Centre is the most evolved example of this thinking. The new appointment of a Connector Specialist and a MEMS Field Application Engineer (FAE) to the European region show that we are taking further steps in this direction.

Alongside, Omron is providing outstanding production support in the customer's chosen manufacturing location. China is a preferred destination for many customers. Here Omron has not only 12 sales offices but also two factories responsible for electromechanical component production. Similar strong support is available throughout the Asia Pacific region, in the US, South America – anywhere in fact where electronics manufacturing might take place.

Your Omron representative in Europe is your way into Omron's worldwide organisation. My message to all our customers is - please expect worldwide support from Omron in Europe. Our global organisation is much closer to you than you might think.

Yoshiyuki Okada
General Manager,
European Electromechanical Marketing

Low profile relay for industrial, HVAC applications

Omron is addressing the industrial automation and HVAC markets with a new power relay offering an exceptionally low profile solution whilst conforming to an industry standard footprint.

The new G6RL has an overall height of just 12.3mm, nearly 20% lower than existing solutions and is capable of switching 8A at 250VAC. Aimed at boiler control applications in the HVAC market, or PLC, timer and temperature controller applications in industrial automation, the relay can withstand at least 100 thousand operations at the rated load, and has a mechanical life of 10 million operations.

It is offered in two contact configurations, SPDT, and SPST-NO. The G6RL is fully RoHS compliant, unlike some alternatives which use a Cadmium contact. G6RL contacts are based on Nickel and Tin.

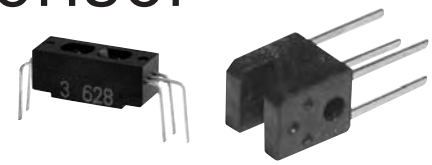
Product range: G6K-2F Series

Extended family of superior characteristic High Frequency Relays

We are pleased to announce the addition of a small footprint version to the existing G6K-2F-RF high frequency relay range. The small footprint version (G6K-2F-FR-S) requires less board space than the standard type, therefore saving space or allowing for the use of smaller PCBs.

The High Frequency relay has superior characteristics (at 1GHz) such as isolation of 20dB between contacts of the same polarity or 30dB between contacts of different polarity and an insertion loss of 0.2dB. The relay has power consumption of 100mW with high sensitivity.

Shedding light on new photomicrosensor applications



Omron's Surface Mount Transmissive Photomicrosensors

Over the past few years, photomicrosensors have evolved to address changing industry requirements for smaller and smaller devices, operating at faster speeds with greater inherent reliability. Although office automation is the largest single market, it by no means defines the limit of possibilities for photomicrosensors and the last few years has seen a shift towards these products in a number of new industries. Vending and gaming machine manufacturers are specifying photomicrosensors due to high reliability and accuracy, using them to control high volume repetitive actions such as reel alignment in fruit machines and magnetic stripe or smart card detection. As a result, the contemporary photomicrosensors have received a greater focus in recent times, and Omron is now designing application-specific models to directly address identified manufacturers' requirements.

Why Specify Photomicrosensors?

Non-contact sensing is one vital advantage photomicrosensors have over electromechanical devices. In OACP equipment, for example, this feature was quickly identified as one capable of addressing complex problems associated with detecting paper, the low weight of which often wouldn't provide sufficient force to operate a microswitch. In printers, typewriters and copiers, photomicrosensors are now used to sense paper size, toner and whether paper is present. Fax machines also make use of photomicrosensors for black end mark sensing and computer mice rely on them for movement direction sensing and movement value sensing.

In addition, photomicrosensors offer long life operation, as with the absence of physical contacts, there are no mechanical parts to wear out. In fact, lifetime is governed by the performance of the LED, which is measured in tens of thousands of hours rather than numbers of physical operations, a feature ideally suited to the repetitive nature of photocopiers, which can easily exceed more than 100,000 operations in a lifetime. Furthermore, the response speed of photomicrosensors is inherently faster than that of electromechanical devices, measured in microseconds as opposed to milliseconds and giving rise to performances of 3000 operations per second if required. A range of mounting options and arrangements, including PCB mounting, quick connect mounting and new surface mounting, offer maximum flexibility.

Photomicrosensor Types

Photomicrosensors are broadly categorised into two types, transmissive and reflective (Figure 1) with transmissive sensors also known as slotted sensors or photo-interrupt sensors. Omron offers both types.

The latest dual-channel photo-interrupter provides a straightforward solution for detecting the speed and direction of rotation in mice and tracker balls as well as a host of linear and rotary encoder applications ranging from fruit machines and industrial equipment, to digital still cameras and Man Machine Interfaces (MMI). Designated the EE-SX1131, the new dual-channel transmissive-type photo-interrupter features two transistor outputs, allowing speed and direction to be monitored by looking at the time interval between responses on the two channels (differential position sensing). This ultra-compact device is just 5 (L) x 4 (W) x 4 (H) mm, with a 2mm wide slot, and offers a high resolution of 0.24mm thanks to 0.3mm apertures with 0.8mm spacing.

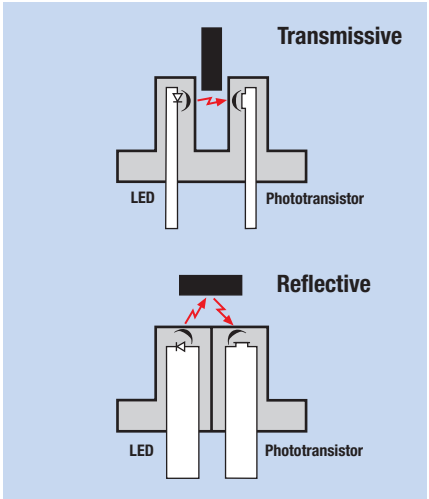


Figure 1. Configuration of transmissive and reflected photomicrosensors.

EE-SX1107, -1108 and -1109 surface mount photo-interrupters feature 3.4, 5 and 6mm widths respectively and 1, 2 and 3mm slots. High resolution is achieved using 0.15, 0.3 and 0.5mm apertures. A surface mount version with photo-IC (digital) output including a Schmitt-trigger function is also available, (EE-SX4134).

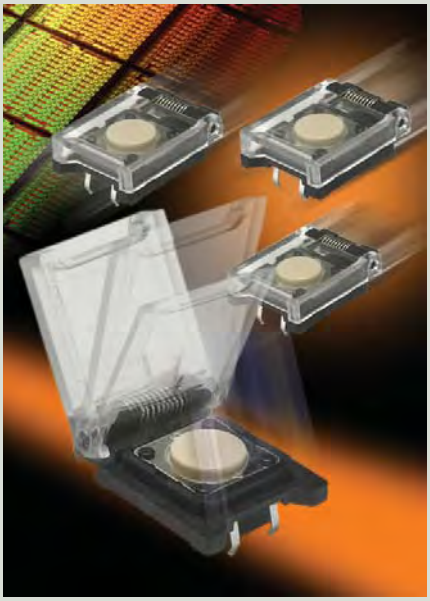
The lead-free Omron EE-SX1103 and EE-SX4134 are close replacements of earlier models and feature a 2mm wide slot in a package just 5.0mm wide. The EE-SX4134 features a photo-IC output, offering a switching rate of at least 3kHz. The EE-SX1103 offers a conventional transistor output, for an ultra-fast response.

Leading-edge devices

Photomicrosensors are leading-edge devices capable of delivering high speed, high frequency, non-contact operation with near infinite operational lifespans, and in the hands of forward thinking manufacturers, can continue to provide an effective and reliable solution in both existing and new industries.

New protective switch cover prevents accidental operation

We have extended our tactile switch range with a new version featuring a protective cover to help prevent accidental operation. The new B3F-8000 is ideal for use as a reset button in arcade games, a configuration button in industrial control systems and in other applications where operation brings about a permanent change of machine settings. The protective cover on the device shuts automatically after use, and needs to be removed to allow a new operation of the switch.



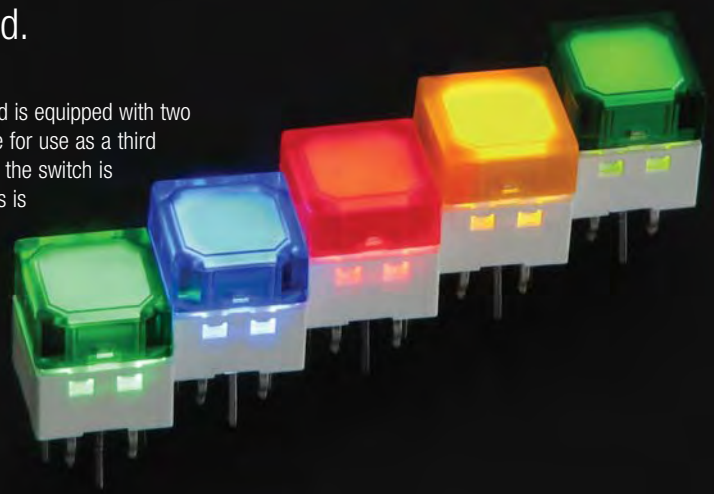
The B3F-8000 is a robust device. The cover is designed to withstand 5000 operations, whilst the switch mechanism has a life of 3 million operations. Operating force is 1.27N. Overall size of the switch is 21 x 15 x 6mm.

The B3F series of tactile switches includes 6 x 6mm and 12 x 12mm square models in through-hole form. The range includes vertical styles, versions with a high operating force and a long-life version, designed for 10,000,000 operations. A switch with gold plated contacts, suitable for long-term use in corrosive environments, has recently been added. All B3F tactile switches feature a positive click action, and are supplied in SPST-NO form.

Our newly opened European Switch Engineering Centre in Munich can adapt B3F switches to suit individual customer requirements for high volume applications.

New tactile switches with optimised optics for bright and uniform illumination

A new addition to our range of tactile switches comes with the launch of a new illuminated series designed for medical device and industrial applications where small size and bright LED illumination are required.



The B3W-9 series has a compact construction (10 x 10 x 11 mm height) and is equipped with two LEDs, red and green, which when illuminated simultaneously become orange for use as a third colour. With the transparent or milky white cap and three-colour illumination, the switch is able to show four colour variations of status in one package. A flat brightness is achieved using a uniquely constructed diffusion panel.

Based on the mature B3W structure, the switch has a dust proof construction for high contact reliability and its snap-action provides a positive “click” action when pushed.

The B3W-9 has a recommended operating current of 12 mA for the red LED and 20 mA for the green LED for applications with three-colour illumination. It is RoHS compliant with an operating force of 1.57 N (standard force) and 2.26 (high-force force), a contact rating of 24 VDC at 50 mA and an ambient operating temperature range of -25°C to +70°C.

TTI and Omron - the formula for a successful partnership in Europe

The Omron and TTI partnership has come a long way in the past two years. Following a successful roll out in France, one of the world's leading passive connector and electromechanical (EM) specialists was appointed as franchised distributor for Omron Electronic Components, Pan-European in 2005. Glyn Dennehy, Vice President and Managing Director of TTI Europe, explains the importance of 'getting to know each other' and how this has led to a smooth, successful expansion with positive expectations looking ahead.

Glyn Dennehy
Vice President and Managing Director
TTI Europe

"The key ingredient as any business relationship develops is to gain a more intimate understanding of the intricacies of both companies, how they operate and future strategy", says Dennehy. "The last few years have really been a learning curve and have provided us with a new foundation for developing close business co-operation both at a pan-European and a country level."

TTI has gained an increased understanding of the broad range of products available from Omron and the exciting potential for TTI's European customers. "Historically, TTI's approach was to focus more on commodity products such as relays but as the company has matured the emphasis has been on expanding our technical expertise so that we can actively respond to new design and development trends in the industry. We are now ready to focus not only on relay parts but switch and sensor products as well," says Dennehy.

According to Dennehy, Omron's new switch and sensor components match TTI's technical sales strategy. Since it last featured in Horizon, the distributor has put enhanced and dedicated specialists in place for its EM component set so that the organisation is equipped with sufficient technical capabilities to support Omron products. In addition to establishing a European Product Management team for EM products, TTI has recruited additional experts for its "EM Centre of Excellence" to support the needs of Omron's customers on a country by country basis.

For example, TTI is responding to the year on year increase in component consumption in emerging markets such as Eastern Europe. The distributor already has sales resources in Hungary, Czech Republic, Poland, Slovakia and Romania and is continuing to invest in this region.

TTI is achieving fast growth in the passive and connector markets with a compound average growth rate of 28% over a four year period. In August 2005, TTI moved into a new custom built, 13,000 sq metre facility in Maisach-Gerlinden, near Munich, Germany. By the end of 2007, the distributor will have reached 80% of its total capacity and by 2009 will be looking to expand again to enable further growth.

Omron continues to provide ongoing support for TTI in Europe. "The support we have received from Omron has been top class and as a commitment to TTI moving forward there is going to be a dedicated Omron resource in Germany assigned specifically to TTI," says Dennehy.

Kyoto Head Office opens annex.

Building a global CSR management system

As a responsible and dynamic member of society, Omron is committed to generating higher quality and value throughout society via business operations and corporate citizenship activities. An integral element of Omron's Grand Design (GD) 2010 long-term corporate vision is the creation of a global CSR management system to promote and implement activities relating to corporate governance, compliance, corporate ethics, internal control, environmental management and corporate citizenship.

Science, technology and the environment

Omron strives to foster harmony between humans and machines and engages in the provision of technology and resources to help achieve this. One example of this principle is the establishment of a modern, innovatively designed, multi-function annex next to our Kyoto head office. The new facility, named Keishinka, meaning "the development of intelligence and quest for truth", is built of glass and is based on the shape of a paper lantern. It was officially opened on 2nd July by President Hisao Sakuta, Chairman Yoshio Tateisi and Motonari Fujikawa, head of the Kyoto branch of Omron's labour union.

The Keishinka combines an historical and technological museum, showcasing Omron's corporate background and products/ technologies, with an employee training centre, a Waigaya relaxation space and a Kirara Kyoto day-care centre for the children of employees. Its objective is to serve as a centre for nurturing next-generation leaders, who will play a key role in preserving Omron's corporate DNA and putting its corporate principles into practice. The facility will also strengthen Omron's relations with stakeholders.

A second example demonstrating how Omron is applying its technology for the good of society is the organisation of employee lectures at local schools. In June, employees from Omron Corporation's Quality and Environment Department and Omron Healthcare (OHQ)'s Product Strategy HQ gave presentations on technology and the environment to fifth and sixth grade students at Kyoto Elementary School. Employees introduced Omron's environmental efforts and environmentally friendly products and encouraged students to take an interest in environmental conservation activities.

Social welfare

Omron employs the physically challenged and supports sporting events that contribute to integrating them into society. For example, Omron (China) Co., Ltd (OMCC) recently set two objectives; firstly to increase numbers of employees with disabilities by the end of FY08 and secondly, to donate rehabilitation equipment to support the societal participation of people with disabilities in China.

Also, Omron's Credit Service Co., Ltd, (KIP) recently received a certificate of appreciation from the Osaka Prefectural Government in recognition of the company's continuing donations, which benefit people with disabilities and children who are orphaned by traffic accidents.

Community support

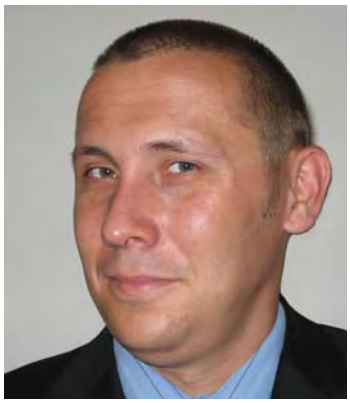
In South East Asia, Omron Management Centre of Asia Pacific (OMCP) recently launched an 'Omron Outreach' initiative aimed at improving the living standards of poor communities. Under the initiative, OMCP will provide basic support in the form of food, clothing and monetary donations to those in need.

An elementary school in Indonesia was the first to benefit from a 10-month nutrition programme and distribution of school supply packages, which began in July. OMCP plans to roll out 'Omron Outreach' to other parts of South East Asia in the future, enlisting the support of Omron employees in the region who are keen to be involved in social responsibilities.

Eirene Headmistress Julien Massie
"We would like to say thank you to PT Omron that has paid attention and supported our students through the Nutrition Program, Study Tour to the Zoo and school packages distribution. These kinds of things have given a new spirit to the children so they become diligent attending school. We hope this partnership can continue".

Eirene Teacher Vifien Mandagi
"The presence of PT Omron at our school has created a new atmosphere for our students and teachers. All support given, gave rise to spirited and cheerfull students, who have experienced unforgettable moments. The Nutrition Program given daily is really helpful for the process of increasing the students physical and mental condition".

Omron's strategy for growth in Hungarian market



Gabor Matrai

Market analysis

As one of the newest member countries of the European Union, Hungary continues to demonstrate economic growth receiving around a third of all foreign direct investment flowing into Central Europe. Although no longer the leader of the Eastern European electronics market, a title it held in the nineties and early 2000, the country is still renowned for its high mix low volume businesses and accommodates almost all of the big CEMs, including Flextronics, Jabil, Sanmina-SCI, Solectron and Elcoteq.

The main industries in the region include white goods, automotive, electronics, food, building automation, chemicals, plastics, pharmaceuticals and biotechnology. All the top white goods manufacturers, such as Whirlpool, Indesit and Electrolux have established production in Hungary. The telecom market is not as big but it is important nonetheless since Nokia, Ericsson and Alcatel have a presence there.

Omron in Hungary

Based in Budapest, Gabor Matrai is responsible for field sales activities in Hungary. Gabor is part of OCB-EU's Emerging Markets Operation (EMO) sales team and he is supported by the customer service and technical support teams in Bratislava. He also maintains close liaison with colleagues located at headquarters in Hoofddorp, The Netherlands, as well as in the local engineering centres and factories.

According to Gabor, maintaining strong relationships with the key CEMs in Hungary is a major objective. Other priorities include generating more local business, growing company presence, increasing visibility through marketing activities and developing the local partner and distribution network.

Gabor's background is in the industrial automation business and he has quickly stepped into his role of developing OCB-EU business in Hungary. "My goal is to continually develop our distribution network as well as direct business. Co-operating with our industrial colleagues in Omron Hungary and distributors such as Arrow, TTI and Rutronik, as well as local business partner Componex, is high on my list of priority actions for local business development," he said.

He continued, "I have many global partners and customers, so intense collaboration with the Global Account Management (GAM) team is essential. According to our Customer Satisfaction Survey conducted in 2006, Omron is regarded as being very responsive, and customers like us. We try to be as flexible as possible and continually strive to use all resources to deliver more local support to Hungarian customers such as arranging regular training and consultations, organising seminars, events and so on."

In terms of product strategy, Gabor's aim is to promote Omron's portfolio as cost competitive as well as high quality. Key product areas are power and signal relays followed by tactile switches and microswitches. "Our air and gas flow sensors and optical devices are very exciting new areas for customers and we have many opportunities in the design-in phase," he said.

Plans for the future

After a year in OCB-EU, Gabor is ready to grow the business. "I would like to provide a faster, more enhanced service to existing business partners. Continued close collaboration with the GAMs and customer service team is a must in order to give premium service to our global partners in Hungary. It's also very important to maintain and build on our current relationships with distributors as winning new businesses is our mutual goal. Moreover, I would like to focus on local CEM and OEM businesses as I believe we have many new business opportunities in Hungary."

Emerging Markets Operations

We are pleased to introduce Gabriel Sikorjak as a valuable and experienced member of the Emerging Markets Operations sales team (responsible for Eastern Europe, countries of former Soviet Union, Middle East and Africa).

Gabriel Sikorjak

Since joining us in 2005, Gabriel's role has involved a combination of customer service, technical support and technical product marketing (TPM) activities for the region. As of April 2007, he has been working full time in TPM with three key responsibilities: technical support, product marketing management (PMM) and coordination of marcom activities in the Emerging Markets.

In his technical support role Gabriel answers any questions directed from the sales team, distributors and customers and acts as an interface between the European PMMs and EMO sales office on all technical issues.

His PMM responsibilities include delivering New Product Information (NPI) training to the sales team and distributors with joint visits to customer sites, and interfacing with Electromechanical (EM) and Microelectronic (ME) marketing teams.

Gabriel is married with one child and, once a former professional football player, he still plays part time in the lower league. He graduated from the Automatic Control department of Technical University in Kosice.

Stronger MEMS engineering support in Europe

Masashige Fukumoto has been appointed MEMS Field Application Engineer (FAE), further demonstrating Omron's commitment to specialist local customer support and the continued investment in ME business expansion across Europe.

Masashige Fukumoto
MEMS Field Application Engineer

Masashige has been relocated from Japan to Munich in Germany where he will be a strategic part of the European Microelectronics team reporting to Michael Sturm, General Manager. He will be responsible for MEMS application support and development in close cooperation with Omron's sales engineers, marketing managers, and customers.

Masashige is a highly skilled FAE having worked for Omron since 1999 in various engineering roles in Japan. From 2004, he was part of the Product Engineering Group for MEMS sensors where he gathered hands-on design experience and engineering expertise. In his first three months as a BU engineer he will receive an induction programme on key MEMS projects and the OCB-EU organisation guided and organised by Jens Vogt, Market Development Manager for Sensor Products. Following the induction phase, Mr Fukumoto will actively support the European sales force and customers with best-in-class FAE support.

New Connector Specialist for Europe

A new connector marketing and technical support specialist has arrived from Japan to enable a quicker, more efficient response to European customers on their connector enquiries.

Kazuhiro Ikura
Marketing and Technical Support Specialist

Previously in international marketing at the Connector Business Unit (BU) in Japan, Kazuhiro Ikura now joins the European Connector BU at headquarters in Hoofddorp, The Netherlands. As connector marketing and technical support specialist, Kazuhiro's roles will involve projecting connector sales in Europe, including planning of new sales routes to European OEM customers; providing marketing support for FPC and PCB connector promotion in Europe, led by Neil Winstone, Product Marketing Manager (PMM) – Connectors; and coordination of FPC connector promotion with the Global Account Management (GAM) Mobile Solutions team.

Omron Electronic Components were recently presented a Supplier Recognition Award by Solectron at a meeting in Tokyo. The award recognises the outstanding customer service standards set by Omron over the previous year and merits the longstanding relationship between the two companies.

The award was presented to Omron (ECB) by Annie Lee, Senior Director of Global Sourcing at Solectron.

From left to right: Yeoh Hock Wat, Snr Manager, Global Sourcing & Logistics, Sean Eley, Omron Components Europe (OCB-EU), Annie Lee, Snr Director, Global Sourcing, Koichi Tada, Omron Corporation (OC), Masashi Nakano, Omron (Global Business Division), Che-Cheng Neo, Omron Asia Pacific (OCB-AP) Koichiro Nishiuchi, Omron (Global Business Division)

Omron exhibited innovative optical device portfolio at ECOC

Omron Electronic Components Business Europe (OCB-EU) exhibited its broad range of optical communications devices at ECOC 2007 in Berlin in September. Visitors to the stand saw the world's smallest CWDM Multiplexer/ Demultiplexer devices, Optical Switches, Micro Lens Array (MLA) technology and PLC Splitter Modules.

The move by the exhibition this year to Berlin saw an increase in visitors and quality enquiries. ECOC 2008 will be held in Brussels between 23rd & 24th September.

... a better world for all

Omron is proud to sponsor the new Elektra Clean Design Award, to celebrate our industry's achievements in environmentally aware design.

We have always believed that business success should be achieved for the benefit of, not at the expense of, society.

That's why Omron reports annually on its environmental and social performance as well as its financial performance.

This thinking is inspired by the corporate motto Omron adopted in 1959: "At work for a better life, a better world for all". This commitment has been central to our activities over the past half century, and has recently been renewed by the Omron Principles centred on the value: "working for the benefit of society".

The new 2008 Omron Components Catalogue will be available in December 2007.

For your copy – please contact your local Omron Sales Office or www.omroncomponents.com.

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