Quarterly Newsletter
Fall 2016

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Introduction

As the 10-year anniversary of PMBus approaches, SMIF has made an exciting change regarding membership criteria. After months of review and discussion, we have created a new membership category. The "Tools Membership" is available to test & measurement manufacturers who are not themselves component manufacturers.

Unlike our Regular Members of component manufacturers, who annually sell thousands and millions of components, test & measurement companies are typically much smaller and sell 100's of devices annually. Test & measurement products are considered capital equipment, and play an important role in expanding the PMBus ecosystem with tools and software to support component and system development.

SMIF wants to encourage the burgeoning 3rd party tools development, so beginning in 2017, qualified companies will be able to sign up for the new Tools Membership with an annual fee of $500.

The Tools Membership offers limited, but still important, benefits such as use of the PMBus name and logos to promote their tools. Tool members company name and product offerings will be displayed in the *Tools* section of the website. Refer to the Adopters section of the website for a list of benefits for Tools Membership, as well the full list of benefits for Regular Membership.

SMIF retains sole discretion to determine if a company is eligible to join as a Tools Member. Any questions regarding membership should be sent to admin@smiforum.org.

Membership Updates

As we alluded to in our last newsletter in September, there were a number of companies giving serious consideration to joining the PMBus consortium. Well…positive decisions were made, and we would like to welcome 4 new adopters, which increases our total membership to 40 companies,

Bellnix is a Japanese power supply company offering a full range of custom and standard DC-DC converters and AC-DC power supplies, including non-isolated digitally controlled POL converters. Bellnix is already a big supporter of PMBus, and will soon be updating their products page to include compliant offerings.

Efore (whose power supply business was formerly known as Roal) is based in Finland. Starting in 1975, Efore has grown into a global organization which designs and manufactures custom and standard DC power systems and AC/DC power supplies for a wide range of demanding industry

applications including telecom, industrial, medical, lighting, utility and military.

Rohde & Schwarz, with headquarters in Germany, is the first non-component supplier to join PMBus. As a manufacturer of test and instrumentation equipment, the R&S®Scope Rider products support the design and development of PMBus-compliant semiconductors and power supplies.

Solu-M, who is based in Korea, is the recent spin-off power supply division of Samsung. They manufacture complete power solutions for display, information technology, networking and LED lighting applications.

We would like to refer other potentially interested parties to download and review the PMBus Organization Overview for a detailed description of the System Management Interface Forum and the many benefits. Or, if you have questions send an email to admin@smiforum.org to get an immediate response.

New Product Announcements

Last quarter was again a very active period for our member companies, with 6 members announcing the market release of 10 new products. Following is brief description of the PMBus-compliant products which were recently announced.

Artesyn launched two new digitally-controlled, single output DOSA compliant dc-dc converters which provides flexible and comprehensive communications via PMBus. The ADO300 300W eighth-brick offers a 36 to 75Vdc input voltage with up to 26A output current at 11.7Vdc output voltage at 95.2% full load efficiency. The ADQ700 700W quarter-brick operates from 40 to 60Vdc, delivering up to 58A output current at 12Vdc while offering 96% typical half-load efficiency.

Artesyn's new ac-dc CNS650-MU series 4"x6", BF-rated medical power supplies are rated for 650W with forced-air cooling and 400W natural convection. Output voltage variants are 12V, 24V and 48V, with standard 12V fan and 5V standby outputs and PMBus interface. At less than 1U high, available package options include U-channel, open-frame and enclosed end-fan.

The Excelsys CoolX600 NFF fanless modular ac-dc power supply delivers 600W with natural convection cooling for medical and industrial applications. Housed in an 8.5 x 4.5 x 1U package with standard 24W auxiliary and PMBus communications, the unit can be configured with up to 4 isolated DC ranging from 2.5 to 58V.

Intersil's ISL68137 and ISL68134 digital multiphase controllers provide up to seven phases assignable in any combination across two outputs, and combine with smart power stages to provide a scalable solution from 10 to 450A. Utilizing the AVSBus™, the controllers can power and communicate with ARM-based processors in network routers, switches, servers, storage, and wireless telecom equipment.

Murata has introduced the OKDL-T/60-W12, a 60-Amp, 95% efficient addition to the OKD family of digitally-controlled point of load (PoL) dc-dc converters. Operating over a Vin range of 4.5Vdc to 14Vdc, it provides a user

adjustable output range from 0.6Vdc to 1.8Vdc. The SMT/LGA module measures just 25.1 x 14.1 x 7.0mm and has a PMBus™ compliant interface.

TDK-Lambda's RFE series 1600W and 2500W 1U industrial ac-dc power supplies feature screw terminal and bus-bar connections. They are available with single 12V, 24V, 32V or 48V outputs, internal ORing FETS, current share and I^2C with PMBus communications. The new TPS3000 series 3200W industrial ac-dc power supplies offer 400/440/480VAC three-phase Delta or Wye inputs with 24V or 48V output.

TI's new TPS53667 high-current, up to 6-phase buck controller offers built-in non-volatile memory (NVM) and PMBus interface. It provides 8-bit BOOT voltage selection covering output voltages from 0.5 V to 2.5 V, with steps as small as 5 mV, and advanced control features such as D-CAP+ architecture with undershoot reduction (USR) and overshoot reduction (OSR)

If your company has new products that you would like to be included in our next newsletter, just send an email with the subject line "new product(s)" and the details to admin@smiforum.org. Then watch this space for updates.

Website Updates

Our members continue their diligence in making additions of PMBus-compliant products to their dedicated Products page. At the end of November there were 225 compliant products and/or associated support items. We now have 20 member companies showing products in the *Products* section of the website.

Remember to utilize the "Featured Product" and graphics display function on your company's product page. For reference, you can click here to view the new Rohde & Schwarz product page. All members are encouraged to contact us if you would like to designate or add a Featured Product to your page. Please send your requests to admin@simforum.org.

Promotional Activities

Raffle Update

The two random winners have been drawn for SMIF's raffle giveaway of Full Conference Attendance badges for next year's APEC 2017. With their permission, we have posted the announcement on the website and repeat here.

One of the badges goes to an employee of a member company, Diarmuid Hogan, R&D Manager with Excelsys Technologies, Ltd. in Cork, Ireland. The other badge goes to Garry Tomlins, Commercial Director with iCergi, a start-up company based in Dublin Ireland. So, there must be some truth in the expression "luck of the Irish". Congratulations to the winners---Erin Go Bragh!

SMIF would like to thank all the other persons, PMBus members and non-members alike, for your participation in the raffle. Your answers to our questions regarding present and planned adoption of the PMBus protocol was enlightening. The names and contact information have been added to our data base to receive future PMBus-related updates.

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Upcoming Events

APEC 2017. PMBus is a Silver Level Sponsor of next March 26-30 exhibition in Tampa, Florida. Visit us at Booth 1832 to see system demonstrations of PMBus enabled products. Included will be an ac-dc Front End for data center power, a medical certified ac-dc power supply, a high-power density dc-dc converter for telecom applications as well as PMBus-compatible portable oscilloscope.

SMIF has also organized an **Industry Session** dedicated to PMBus. It will feature 20 minute technical presentations on interesting topics by 7 representatives from PMBus member companies. Watch for more details in future press releases and the next quarterly newsletter.

2017 PMBus Customer Day & Expo.
No date has yet been selected, but we remain committed to hosting the event during the second half of next year. The two-day, invitation-only exposition in Dallas will include PMBus-enabled system presentations, system and product demonstrations, reviews and 'how to' sessions, along with displays by suppliers of universal PMBus support tools.

FAQ

The newsletter's *Frequently Asked Question* section includes a selected question which has been received along with the detailed answer.

Question: *How can a system master determine the capabilities and supported PMBus commands for a slave device?*

Answer: Two commands are provided that allow a master or system host to determine the capabilities of PMBus devices on the bus: CAPABILITY and QUERY.

The CAPABILITY command provides basic information about the PMBus. The CAPABILITY command returns information such as:

- Does the device support Packet Error Checking?
- Maximum bus speed supported by the device?
- Does the device have an SMBALERT# signal output?
- Which numeric format is used for general purpose data?
- Does the device support the AVSBus?

The QUERY command allows a master or system host to ask a PMBus device about support for a specific command. The QUERY command returns information such as:

- Is the command supported or not?
- If the command is supported, does the device allow writes to this command?
- Does the device allow reads of the data associated with the command?
- What is the data format the device uses with this command?

The combination of these two commands, CAPABILTY and QUERY, allows a master or system host to determine how to configure itself to work with a PMBus device on the bus.

Have a question about the PMBus or SMBus specifications? The System Management Forum provides free support. Send your question to techquestions@smiforum.org and a PMBus or SMBus consultant will respond.

Other Items

The PMBus logo is a registered trademark of SMIF. PMBus adopters who are SMIF members in good standing are allowed free, unlimited commercial use of the PMBus name and logo. Proper usage of the name and logo is important in order to retain our rights. Please encourage your company's marketing communications department to collaborate with SMIF whenever there are publications or questions.

Please remember to use the ™ symbol when referencing PMBus and AVSBus in data sheets, press releases or other written material. It does not have to be done for every occurrence, but should be included in any title or blurb and with the first usage in the main text for articles. The logo graphics for web postings and hi-res print can be downloaded from the resources section of the PMBus website.

Contacts:

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