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Introduction

Our first newsletter of the new year comes to you “hot on the heels” from the first in-person APEC exhibition in three years; the last being APEC 2019 in Anaheim, CA. Even though somewhat smaller than prior years, the event was still well-attended, and for the most part MASK WERE OFF! Hopefully, just as we are seeing signs of spring, the show was a sign that the world is returning to normalcy from the last two years of COVID lockdown.



Keeping up the tradition, our collectable giveaway this year was a travel domino set (shown above). As usual, the PMBus booth

was well visited. Both member company’s representatives and interested parties alike dropped by the booth to catch up on all things PMBus as well as learn about our consortium and its function. The specification Working Group held their first face-to-face meeting in three years! Read on for more news on the WG front.

Working Group Updates

Power Management Bus (PMBus) Revision 1.4 and System Management Bus (SMBus) Revision 3.2. specifications were released back in January. They are available in the usual ways.

<https://pmbus.org/current-specifications/>

PMBus Specification Part III, Revision 1.4.1 update. A graphic error in the PMBus Specification Part III revision 1.4 was identified where the graphic for Figure 10: Write Frame Structure was mistakenly replaced with the graphic for Figure 11 Read Frame Structure. The PMBus Specification Part III, Revision 1.4.1 corrects this error and replaces Figure 10: Write Frame Structure graphic from revision 1.4 with the correct graphic for the AVSBus Write Frame Structure.

As mentioned earlier, many members of the Working Group met in-person on the afternoon of Tuesday, March 22, and were joined on video conference by those who could not make the trip to Houston. In addition to general discussions about future applications and specifications—to be announced soon—there was an extensive exchange regarding security within the PMBus protocol.

Representatives of a few, significant OEM systems manufacturers were present to express their views on security features and how to improve the robustness of the PMBus protocol. It is expected that these security features will be added to the specifications post-haste, and be released in the coming months in PMBus Revision 1.5.

Documents with analyses and proposals for PMBus security have been shared. These documents are not public, but are available to PMBus adopters in the adopters area of the PMBus website.

The specification WG encourages other member representatives, as well as special invitees from OEM's, to voluntarily participate in the semi-weekly meetings. If you, or someone in your organization is interested, contact the Workgroup Chairman at wgchair@smiforum.org

Membership Updates

Since the start of the year, a new PMBus adopter, Cisco, and a new tools member, ProGrAnalog, joined the PMBus consortium. Please join us in welcoming them, and read on for a brief overview of our new members. Total membership is now 49 companies, consisting of 46 Full and 3 Tools members.

Cisco (NASDAQ: CSCO) is the worldwide leader in IT that helps companies seize the opportunities of tomorrow by proving that amazing things can happen when you connect the previously unconnected.

<https://www.cisco.com/>

ProGrAnalog, the home of the LoadSlammer, designs, manufactures, and

markets electronic Load Tools. AC and DC load tools specially designed for testing and validating ASIC, CPU, FPGA and GPUs. The primary end markets for the company's products are server, client-side computing, communications and information processing markets, including data communication and information processing systems; aerospace and military electronics; and automotive, rail and other transportation and industrial applications.

<http://www.progranalog.net/>

Interested in joining PMBus? Please refer to the *Adopt PMBus* page of our website for the full details and benefits of membership. Get a detailed description of the System Management Interface Forum and membership benefits by clicking PMBus Organization Overview. Or, just send an email to admin@smiforum.org to get immediate answers to specific questions.

New Product Announcements

Monolithic Power Systems (MPS) announced the MP2855 dual-loop, digital, multi-phase controller that provides power for the core of the AMD SVI2 2.0 platform. The device can work with MPS's IntelliPhase[™] products to complete the multi-phase voltage regulator (VR) solution with minimal external components. The MP2855 can be configured with up to 9-phase operation for rail 1 and up to 4-phase operation for rail 2.

The MP2855 provides an on-chip non-volatile memory (NVM) to store and restore device configurations. Device configurations and fault parameters can be easily configured or monitored via the PMBus/I2C interface.

The device can monitor and report the output current (IOOUT) through the CS output from Intelli-Phase products. [MP2855](#)

MaxLinear released the MxL76xxP family of 6A to 3A Intelligent Point-of-Load Step-down Regulators with PMBus Interface. The MxL7606P, MxL7612P, MxL7620P, and MxL7630P are compact, high-current step-down intelligent point-of-load (iPOL) buck regulators with current ratings of 6A, 12A, 20A, and 30A, respectively. The MxL76xxP family features a wide input voltage range from 2.7V to 16V, which allows for single supply operation from industry standard 3.3V, 5V, and 12V rails.

High frequency operation (up to 2MHz) minimizes inductor and output capacitance, and no external compensation circuitry is required. A selectable power saving mode allows you to operate in discontinuous mode (DCM) at light current loads. A host of protection features, including overcurrent, output overvoltage, over temperature, short-circuit, high-side short, and undervoltage lockout (UVLO) help achieve safe operation under abnormal operating conditions. [MxL7630P](#)

Richtek released the RTQ8826 Single Rail 6-Phase PWM Controller with PMBus. A 6/5/4/3/2/1 phase synchronous buck controller, the RTQ8826 adopts G-NAVPTM (Green Native AVP), which is Richtek's proprietary topology derived from finite DC gain of EA amplifier with current mode control, making it easy to set the droop to support all CPU/Microprocessor requirements of AVP (Adaptive Voltage Positioning). Based on the G-NAVPTM

topology, the RTQ8826 features a new generation of quick response mechanism (Adaptive Quick Response, AQR) to optimize AVP performance during load transient and reduce output capacitors.

The RTQ8826 supports VID on-the-fly function with four different slew rates via PMBus command setting. The DAC converts the VOUT_COMMAND code ranging from 0.25V to 1.516V with 1.953mV per step. The RTQ8826 integrates a high accuracy ADC for platform and function settings, such as SPS type, PMBus address, boot voltage and load-line. The RTQ8826 provides reset Vout function, Vout to be set to the VBOOT value while the RESET# pin is asserted low. The RTQ8826 provides VR_Ready and thermal indicators. It also features complete fault protection functions including over-voltage (OV), under-voltage (UV), slow over-current (SLOW_OC), fast over-current (Fast_OC), over-temperature (OT) and under-voltage lockout (UVLO). [RTQ8826](#)

TDK-Lambda introduced 12V and 48V models of its 504W conduction-cooled PFH500F series of ac-dc power modules measuring 102 x 61 x 13.5mm (4 x 2.4in). Operating from 85 to 265Vac, the 12V PSU can deliver 42A and be trimmed across 9.6 – 14.4V using the trim pin or PMBus, and the 48V 10.5A version can be trimmed across 38.4 – 52.8V. Droop mode current sharing is included, as is a 12V auxiliary stand-by output.

STMicroelectronics announced the PSA60 high performance digital controller featuring the innovative and patented resonant / non-resonant ST VCOT™ control loop that

allows to implement a high efficiency DC-DC converter in single-stage conversion directly from the 60 V bus. In combination with PSA satellites, the device is able to implement a scalable power supply with output power in excess of 1 kW featuring Auto Cell Shedding and PFM to optimize the overall efficiency maintaining a >90% baseline over the whole current range without compromising the load transient and DVID response.

The PSA60 can be fully configured through PMBus to minimize external component count. Full set of telemetry is provided including BBR, CFP and primary / secondary side telemetry. The device assures fast and independent protection against overcurrent, over/under-voltage and FB disconnection.
[PSA60](#)

Website Updates

Product Page Listings

More than a dozen new PMBus products were added to our members' dedicated *Products* pages over the last 3 months. Listing now exceed 700, which include semiconductors, power supplies, application notes, eval boards, articles, reference designs, videos and more.

The dedicated *Products* pages are one of the benefits of PMBus membership. They enable our members to identify and promote all of their PMBus-compliant products. We encourage you to contact us when you are ready to include or update your company's product listings.

You can click here to see an example of the [MEAN WELL Products](#) page. Be sure to

utilize the "Featured Product", option which includes graphics on your company's page. Please send any request for changes to admin@simforum.org

Upcoming Events

Watch this section for information on **APEC 2023 Conference & Expo**, which is scheduled for next March 19-23 in Orlando, Florida.

FAQ

The *Frequently Asked Question* section addresses recent technical inquiries to our PMBus expert(s). Due to the recent release of SMBS Revision3. 2, there have been several questions regarding SMBus operation; one of which we share here.

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Question: Regarding the SMBus byte writing process, if the SMBus master wants to abort the byte writing operation because of some exception handling requirements, can the master send the stop condition to the slave device at the middle of the byte instead of the end of the byte? So far, I have not found the description about this in SMBus Spec 3.2.

Answer: As you note, the SMBus specification does not address how a Controller (new term that replaces Master) can abnormally terminate a transaction in progress. The specification does say that a STOP condition ends a transaction/transfer (definition of STOP condition in table in Section 2.4 and in Section 5.1.2). One could perhaps consult with the manufacturers of any particular SMBus devices of concern



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and ask how they behave in response to an abnormal termination of a transaction.

Section 4.2.3 does give a hint about ending a transaction with a STOP condition at the end of a byte. This does not mean that the transaction must be complete. For example, sending a STOP in the middle of a BLOCK transaction should still signal to the Target device that the Controller is ending the transaction. The Target device should then reset its SMBus interface, flush any received data, and await a new START condition. Note the word “should” as this is not explicitly described in the specification.

Section 5.2 discusses the Controller using a STOP after a NACK by a Target even during a transaction in progress.

For SMBus, a timeout (holding the clock low for longer than $t_{\text{timeout_min}}$) can be used by a Controller to force the reset of Target devices (if they are truly compliant to the specification). See Note 2 of Table 2.

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Have a question about the PMBus or SMBus specifications? SMIF technical consultants provide free answers. Send your question to

techquestions@smiforum.org and a PMBus or SMBus consultant will respond.

Other Items

The PMBus name and logo are registered trademarks 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 the ™ symbol with AVSBus in data sheets, press releases or other written material. It 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.

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