



Newsletter 3/2011 from Selectron

Dear customer,

We at Selectron Systems are pleased to present you with third edition of our Newsletter in 2011. We hope that these selected reports will provide you with some interesting news from our company. We hope you find this a pleasant and enjoyable read!

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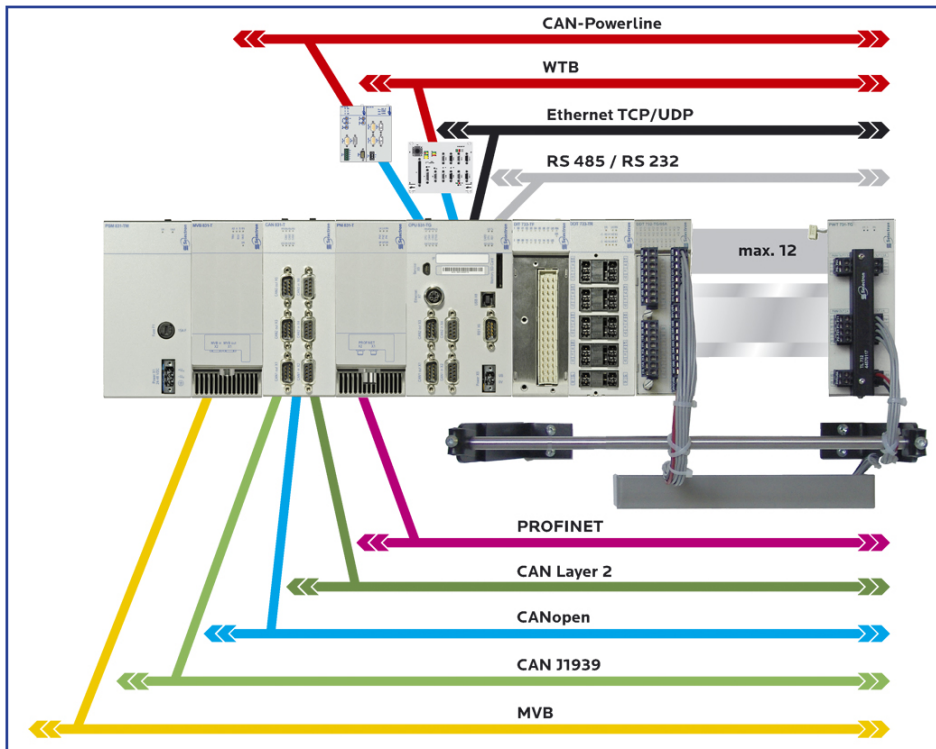
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Selectron Systems AG

"Flexible vehicle networks" strategy

Selectron repositioned itself in 2008 with regard to control and monitoring strategy. Up to that date, the company had largely concentrated on CAN(open) as a network in rail vehicles, thereby establishing CANopen worldwide in the rail vehicle segment. Nowadays, we offer much more in terms of rail vehicle control and monitoring technology. From the WTB (Wire Train Bus) to the MVB (Multifunction Vehicle Bus) and Ethernet TCP/IP, there is a range of solutions which are mutually complementary. The cross-system approach takes precedence. The tooling, i.e. software tools for setting parameters, programming and startup, ensures interoperability. This is an important functional feature in order to cut users' costs with regard to engineering, startup and vehicle operation. For example, the choice of which concept is the most efficient depends today on the application itself as well as on users' general conditions and requirements.

Significant investments are being channeled into MVB technology at present, as well as PROFINET. New products can be expected in the near future. However, the "classical" CAN technology has enjoyed significant support at Selectron, and will continue to do so. The revised TCN 61375 standard will be published soon. In the new IEC 61375-3-3 standard – CANopen Consist Network, CANopen is a central component of the new body of standards. Selectron cooperated actively in the standardization work.



In future, further network technologies are planned such as the IPTCom protocol from Bombardier Transportation.

Network technologies that are supported by Selectron



Safety Applications

Wheel slide report for KISS submitted on schedule

At the start of September, TÜV Nord wrote and delivered a safety report for our WSP 800 wheel slide protection system. This report is an important component of vehicle registration for the Stadler Rail double deck railcar, type KISS (Komfortabler Innovativer Spurtstarker S-Bahn-Zug / a comfortable and innovative light urban railway train with rapid acceleration). The report is needed for registration by the Westbahn in Austria, as well as the DOSTO RV operated by the Zurich light urban railway (SBB). This represents yet another milestone for our WSP wheel slide protection system. We are extremely grateful for the good cooperation between the experts of Stadler Rail, DB AG, TÜV Nord and our wheel slide protection team, and we wish the Stadler KISS every success in future operations.



The first KISS has been handed over to SBB for training and vehicle registration.



Our customers' successes in rapidly growing markets

Selectron train control on Trenes de Buenos Aires, Argentina



Picture: EMFER railcar - TBA

TBA incorporates new double deck trains – Innovations on the Sarmiento line

In March 2011, the train operating company Trenes de Buenos Aires (TBA) officially presented the new electric double deck metropolitan train being engineered and constructed by EMFER, Emprendimientos Ferroviarios SA in Argentina. These new double deck trains represent a significant step in quality improvement of operation and service for the railway system in Argentina, and Selectron controllers are on board. They incorporate important technological components that are currently unique in Latin America, and should prove that it is possible to achieve highest levels of passengers comfort and improve the safety conditions in urban railway transportation.

The double deck train allows an increase of the overall transport capacity by 40% compared to the single floor trains previously operating on the Sarmiento line in Buenos Aires.

EMFER is in charge of providing 25 train formations which represents a total of 225 coaches. Currently, 9 million passengers per month need this transportation service for this metropolitan area. Therefore TBA committed to respond to the demanding service in cooperation with the national authorities' railway modernization plan, and EMFER realized the double deck as the most efficient solution.

The first EMFER double deck train prototype was already constructed in 2006. This made it possible to perform all pertinent safety relevant tests and homologations. Based on experience with the first prototype, EMFER engineered and built a second series of trains with a total of 9 coaches, which have already been in service on the Sarmiento Line since 2007. The Instituto Nacional de Tecnología Industrial (INTI) contributed to the construction for ISO 9000 standards certification and the design and validation of train production tools. This continuously enhanced construction has now been refined by adding technology value in the areas of traction control, safety, passenger information and entertainment systems.

Double deck trains

Each of the trains consists of 9 coaches. Four of, without traction, them have two floors with a transport capacity of 320 passengers (94 seats) in each coach. Five coaches, with traction, are single floor and have a transport capacity of 220 passengers (61 seats).

The driver cabins allow optimum visualization about the complete train status. Modern control panels make it possible to steer and monitor the train operation and centrally visualize information about each coach, including individual air conditioning.



Double deck TBA Buenos Aires

Train control

The whole train control and monitoring system is based on the modular Selectron MAS® Automation System connected to a CAN-Powerline TCN network.

Through this data network all basic control information is passed from one extreme of the train to the other for processing by the Selectron vehicle control units in the driver desk. These control and monitor air condition (heating and cooling), lights, compressors, brake systems, doors access, and other board equipment whose status is constantly reported to the driver desk.

Each coach offers digital TV screens for passenger entertainment and video cameras for passenger safety. Passenger information systems are provided by a series of panels. Dedicated passengers displays inside and outside of the coaches contain information transmitted via a wireless GPS system.

In 2011 three complete new trains with 9 coaches each were launched for successful operation.

Pictures: Courtesy of Rieles Multimedia Argentina, www.rieles.com

Success in the locomotive area

Selectron is an experienced partner for control applications in freight locomotives. Various manufacturers of locomotives have installed Selectron automation solutions when designing new vehicles, and are enjoying great success. In addition, over recent years various train operating companies and engineering partners have modernized old locomotives as part of retrofit projects conducted with Selectron.

Recently, Selectron also received an order to supply control and monitoring devices for special locomotives in large growth markets such as Brazil.

The following examples illustrate some of the named applications and projects in Europe and Latin America:

Vossloh Kiel, Germany

New locomotive generation G6, DH12/18, DE12/18

Vossloh Locomotives is setting new standards for technology, investment and consulting with the totally redesigned locomotive family. The diesel-electric drive will allow the company to apply forward-looking innovations such as electric accumulator technology, twin-power drive technology, automatic start/stop as well as an improved cruise control function in the very low speed range. The DE variants offer a redundant architecture with high failsafe properties.



Photos: Copyright by Vossloh

The application range for the new locomotive family has been designed for shunting and line operation.

The power range of the DE12/18 and DH12/18 family of vehicles extends up to max. 1800 kW, with a speed range up to 100 km/h, optionally 120 km/h.

The G6 vehicle family achieves a max. drive power of 650 kW and a top speed of 80 km/h, optionally 100 km/h.

Selectron supplies the entire train control and monitoring system (TCMS), including safety vehicle controller. This includes components from the MAS 72x-T and MAS 83x-T controller families as well MAS 835-TG/SIL modules. In addition, the vehicles are equipped with an innovative and high-performance Selectron wheel slide protection system.

All important subsystems and drive components communicate with the vehicle control unit via CAN interfaces.

Registration of the vehicle is planned for mid-2012.

Schalken Eisenhütte, Germany

TCMS for SDE 1800

With the SDE 1800, a totally new series of mainline locomotives with centrally-mounted driver cab is being established. The diesel-electric locomotive with a Bo'Bo' wheelset arrangement and a power of 1,800 kW delivers an impressive tractive force of 297 kN. Another characteristic and a real innovation in series locomotive production is an electrodynamic brake which can decelerate the vehicle to a standstill without reduction in braking effort. Max. speed 120 km/h.



The entire vehicle is controlled using modern control and monitoring technology supplied by Selectron.

All important sub-controller components and Selectron MAS 73x I/O stations are connected to the Selectron central computer, CPU 831-TG, via CANopen.

The MVB gateway, CPU 733-TG/ESD is used for communication with the drive inverter.

Cattron Theimeg, Germany

Radio control retrofit

The M47, MAV series locomotives operated by Hungarian state railways have been converted for modern operation with radio control. This control with redundant CAN interface is supplied by Cattron Theimeg, and

communicates with the Selectron control system which is also new and has been installed in addition. The brake, which has operated purely pneumatically in the past, has been replaced by an electrically operated Knorr RHZE3-4 brake.



The task facing the Selectron modules was to convert the pulse control for the power signals of the radio control into an analog 4-20 mA power signal. In addition, speed monitoring has been implemented. For this purpose, the pulse inputs of two CPU systems have been used, and are in each case converted into the signals for standstill, Vmax and Vmax+x. Furthermore, it is possible to set parameters for the wheel diameter as well as the permitted maximum speed.

Two controllers from the MAS 72x-T family are used for this. Both CPU systems monitor one another and compare their data continuously. If one CPU system detects a fault, mandatory braking is triggered by the remote control.

Vossloh Valencia, Spain

EUROLIGHT – The new weight class

EUROLIGHT is the name of the new Vossloh diesel-electric locomotive for niche markets in which low wheel axle loads have to be combined with high tractive force. Thanks to its reduced weight, the EUROLIGHT is able to run on secondary lines with less traffic than primary, allowing operators to save time and money by avoiding the constraints imposed by primary line operation.

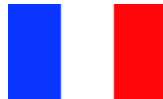


The EUROLIGHT meets all relevant environmental standards acc. to UIC and EU, section IIIA, and is updated to section IIIB. It is also fully compliant with regard to crash behavior and other safety requirements. The modular construction offers versions for passenger vehicles with 140 km/h or a freight version with 120 km/h. The vehicle is designed with energy efficiency in mind. The driver is assisted in maximizing energy efficiency and reducing emissions. All operators can expect improved operational serviceability with regard to maintenance, driver assistance, wireless communication as well as locomotive tracking by GPS. Selectron supplies the entire control and monitoring technology, while the engineering is entirely handled by Vossloh. The TCMS system used includes the vehicle controller, the WTB train bus system, the connection to the diesel drive system, remote diagnosis including the displays as well as driver cab automation. The networks used are CANopen, WTB and Ethernet.

SNCF, France

Alstom refurbishment of CC72000 locomotives

Selectron provided a specific solution for the refit of Alstom diesel-electric locomotives, according to SNCF standards and special voltage requirements.



The main objectives achieved were an increase of power performance and a reduction of environmental pollution from the modernized locomotive fleet. In this way, the amount of pollution in the exhaust gases has been reduced. The application engineering was provided by Selectron with the responsibility of training the operator's teams for achieving the highest possible level of autonomy by the customer in terms of application software and the use of software tools.

Stadler Rail

The strongest rack locomotives worldwide – for Brazil

Stadler Rail is constructing the largest and strongest electric rack locomotives in the world. Their mission is to transport mainly iron ore freight wagons on the steep track between São Paulo and the Santos coastal line that consists of a 104‰ ramp, partly equipped with a triple rack bar system. The specially designed new locomotives have the enormous



power of 5 MW at 3 kV DC catenary tension. They recuperate the produced energy while braking down the heavy trains. Several of these 8 meter long machines can be operated in multiple-traction and can be coupled together flexibly. The rack gears and braking systems are built in a brand new design and are unique in the world. The Selectron modules in the MAS 83x-T / MAS 73x-T family control and monitor the traction control, wheel slide protection, coupling and data transfer between various locomotives. At the same time, the modern electronic control and diagnostic system offers significant advantages in maintenance and energy saving.

What's new?

Optimized solutions for every architecture - new electrical power supply units

There has been an addition to the range of electrical power supply units from Selectron. The PSM 833-TW module is the first step in supplying the specific power requirements of even a medium expansion of the MAS 83x control system.

The Selectron power supply modules are used if the vehicle electrical system voltage is different from the input voltage of a device, when electrical isolation is required or if more than the minimum number of additional modules is to be supplied.

The DC/DC converters can be divided into the following applications now that the new PSM 833-TW has arrived:

- PSM 731-Tx: Use for the MAS 73x system up to 50 W
- PSM 732-Tx: Use for third-party equipment up to 100 W
- PSM 831-Tx: Use for the MAS 83x complete system
- PSM 833-TW Use for a medium expansion of an MAS 83x system as well as for typical wheel slide protection applications

It goes without saying that the different vehicle electrical system voltages have been taken into account in the various application areas. A broad voltage range from 24 to 110 VDC is provided for the lower power levels. 2 voltage areas have been implemented in the upper power range, in order to achieve advantageous price conditions.

The following supply modules are available:

Module	Characteristic
• PSM 731-TV	72...110 VDC -> 24 VDC, 2.1 A, 50 W
• PSM 731-TM	24... 48 VDC -> 24 VDC, 2.1 A, 50 W
• PSM 732-TV	72...110 VDC -> 24 VDC, 4.2 A, 100 W
• PSM 732-TM	24... 48 VDC -> 24 VDC, 4.2 A, 100 W
• PSM 831-TV	72...110 VDC -> 12 VDC, 4.2 A, 50 W
• PSM 831-TM	24... 48 VDC -> 12 VDC, 4.2 A, 50 W
• PSM 833-TW	24...110 VDC -> 12 VDC, 1.67 A, 20 W

PSM 731-Tx: Use for the MAS 73x system

The PSM 731-TV and PSM 731-TM power supply modules are designed for use when there is a different on-board electrical system voltage for powering a CPU 73x-TG or a DDC 73x-TG with up to 12 expansion modules.

The output current of the two PSM modules has been designed to take account of the high inrush current of the CPU 73x-TG or DDC 73x-TG.

Alternatively, the PSM 731-Tx modules can also be used for powering third-party units. The maximum dynamic output current of the two PSM modules is 10 A with a voltage dip to 16.8 V. The switch-on behavior of the connected external devices must be designed to take this into account.

If the vehicle electrical system voltage is 24 VDC or 36 VDC then no PSM module is required.

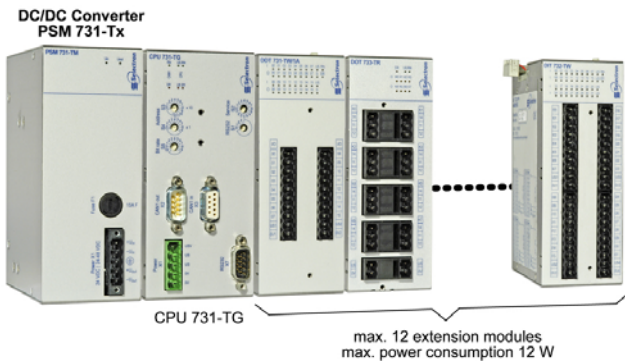


Fig.: Use of the PSM 731-Tx for the MAS 73x complete system

PSM 732-Tx: Use for third-party equipment up to 100 W

The PSM 732-TV and PSM 732-TM power supply modules are designed for supplying external devices with 24 VDC input voltage and a maximum power consumption of 100 W.

Here too, the maximum dynamic output current of these PSM modules is 10 A with a voltage dip to 16.8 V. The switch-on behavior of the connected external devices must be designed to take this into account.

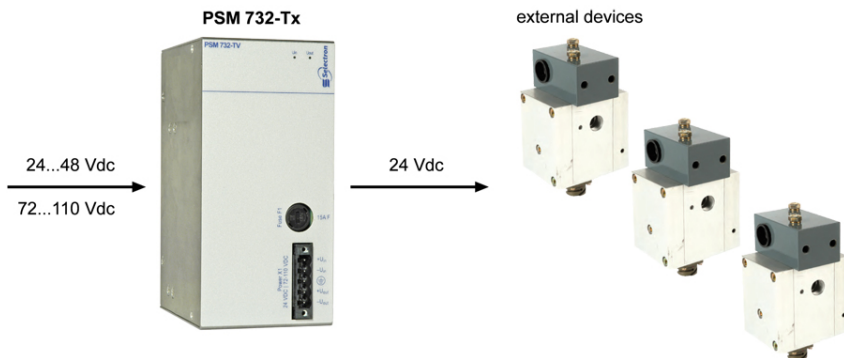


Fig.: Use of the PSM 732-Tx for powering third-party devices up to 100 W

PSM 831-Tx: Use for the MAS 83x complete system

The PSM 831-TV and PSM 831-TM power supply modules are exclusively designed for supplying a CPU 831-TG with up to 3 communication modules and expansion modules, having a maximum power consumption of 12 W on the expansion bus. The output current of the two PSM modules in this case has been designed to take account of the high inrush current of the connected CPU 831-TG and the communication modules.

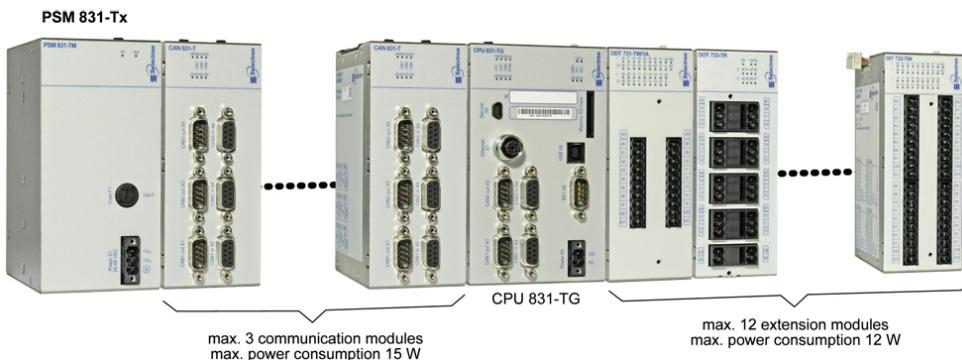


Fig.: Use of the PSM 831-Tx for the MAS 83x complete system

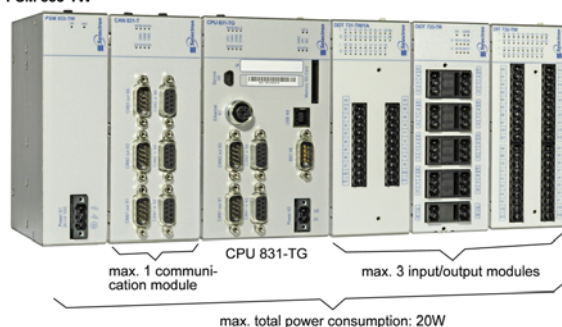
PSM 833-TW: Use for a medium expansion of an MAS 83x system as well as for typical wheel slide protection applications

The PSM 833-TW power supply module is designed for supplying one CPU 831-TG in one of the following configuration variants:

1. One communication module, one CPU and up to three expansion modules
2. No communication module, one CPU and up to six expansion modules

The total power consumption of all modules connected to the PSM 833-TW is max. 20 W

**DC/DC Converter
PSM 833-TW**



Selectron two years after the management buyout

The TSR (Télévision Suisse Romande) TV broadcaster based in western Switzerland decided to take a look at the motivation for Selectron becoming independent, and produced a film report which was broadcast in its TTC (Toutes Taxes Comprises) program on 6 June 2011.

This is the link to the broadcast in French:



The Selectron team keeps growing

Since the start of the year, Selectron has succeeded in creating a total of 20 new jobs, meaning that 95 employees currently work for our company. We have taken on new staff members above all in software development and application engineering in which there are 7 new jobs, as well as hardware development (1 job), validation and testing (4 jobs) and customer care (3 jobs).

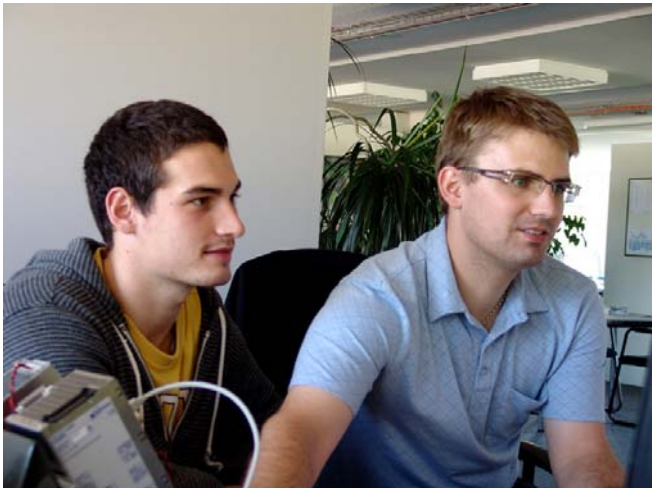
We are delighted that we are able to continue growing, and we will have more than 100 employees by the end of the year. Therefore, we are always on the lookout for motivated engineers and professionals from various disciplines. Applications – including general applications – are always gratefully received.

We would like to give you a brief introduction to some of our new employees who work "at the coal face":

Customer Support & Training: Fernando Kummer and Eric Burri

Fernando Kummer completed his Bachelor of Science qualification in systems technology at the University of Applied Sciences Western Switzerland (HES-SO) in July. The course focused on infotonics, and on graduating he joined our support and training team. He has very good linguistic abilities and is looking forward to assisting our customers with their support questions and in training courses.

Eric Burri is an experienced electronics engineer, and has a qualification in technical business administration. After completing his training and spending a relatively long time in the USA in order to boost his language skills, he started working for us on 1 September. He is responsible for the repair process, so that our customers will be served quickly and to their complete satisfaction in this field.

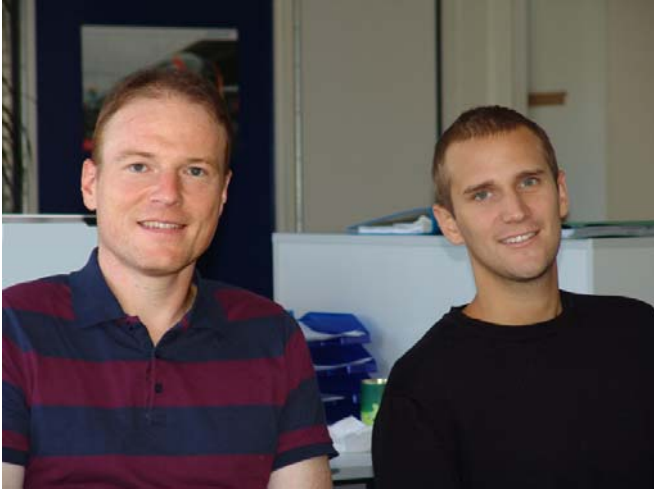


Eric Burri and Fernando Kummer

Application Engineering: Daniel Kaderli and Sandro Walker

Daniel Kaderli started his duties in the application engineering team on 1 June. As a diploma graduate from a higher technical college in electrical engineering, he has many years of experience in development, commissioning and test engineering in the fields of mechanical engineering and automation.

Sandro Walker completed his bachelor course in systems technology this summer at the University of Applied Sciences Western Switzerland (HES-SO), concentrating on power and control. During his training, he took part in several placements totaling 13 months at the Matterhorn-Gotthard railway, during which he gathered experience in rail vehicle technology.



Daniel Kaderli and Sandro Walker

Kind regards
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Subject to technical changes and amendments to technical specifications at any time.

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