



13 IEEE802.15.4 k to Sigfox Bridge Communication HORIBA STEC D500 (page 31)

DEPARTMENTS

	AEI NEWS	08
	IN VIEW THIS MONTH	10
	COMPANY ON THE MOVE	53
	BUSINESS STRATEGY	54
	PRODUCT NEWS	65

ASIA ELECTRONICS INDUSTRY (ISSN 1342-422X) is published monthly by Dempa Publications, Inc., 1-11-15 Higashi Gotanda, Shinagawa-ku, Tokyo 141-8715, Japan Tel: +81-3-3445-6111 Fax: +81-3-3445-6890. Editorial e-mail: may@dempa.co.jp; Subscription e-mail: circulationmanila@dempa.co.jp. The magazine is distributed free to qualified subscribers in ASEAN countries (Thailand, Indonesia, The Philippines, Malaysia, Singapore, Brunei, Vietnam, Myanmar, Cambodia and Laos), as well as Korea, Taiwan and Hong Kong.

Paid air mail subscription is available to non-qualified subscribers in the Asian and Pacific regions for US\$150 per year and US\$260 for two years. For other areas, air mail subscription fees are US\$160 per year and US\$280 for two years. Paid subscription is accepted at <https://www.dempa.co.jp/en/pdfs/orderform.pdf>

Send address corrections to Dempa Publications, Inc., c/o Quantum Solutions (HK) Ltd. Unit 3-6, G/F Pacific Trade Centre, 2 Kai Hing Road, Kowloon Bay, Kowloon, Hong Kong

TAIWAN: International Dempa Trade Co. Ltd., 7F, No. 34, Sec. 1, Nanjing East Road., Taipei, Taiwan 104 Tel: +886-2-2563 4595 Fax: +886-2-2567-5559 **KOREA:** Dempa Publications, Room 1019, Punglim VIP Tel, 404, Gongdeuk-dong, Mapo, Seoul, Korea 04144, Tel: +82-2-714-2983 Fax: +82-2-714-2984 **PHILIPPINES:** Dempa Publications, Inc. - Regional Headquarters, Herrera Tower, Room 2510, 98 V.A. Rufino Street, Salcedo Village, Makati City, Philippines, Tel: +63-2-845-0906 Fax: +63-2-845-1829

President & Publisher: Tsutomu Hirayama
Copyright © 2019 by Dempa Publications, Inc.

All rights reserved. The contents of this magazine may not be reproduced in whole or in part without the prior permission of the copyright owner. Printed in China.

SPECIAL REPORT

2+1-Capable LPWA Wireless Communication LSI Ideal for IoT Network	12
Edge Computing Lifts Industrial IoT to New Heights	14
Korea Shapes up as Test Bed for LoRa-Based IIoT Solutions	17
Circuit Protection, Anti-Noise Parts Rally as Technologies Advance	19
Solder Manufacturers Diversify Product Offerings	20
Resistors Thrive as Automotive, Manufacturing Drive Growth	22

TECH FOCUS

Metal Oxide Photoresists Emerge for EUV Lithography	24
Current Detection Resistors Promote Fine Motion Control of Vehicles	28
Fluid Control Supports Leading-Edge Semiconductor Processing	31
Humanoid Robot Prototype Carries Out Heavy Work	34

COMPONENT MATERIALS 38

SMT's: IN REVIEW 40

TEST AND MEASUREMENT 42

TECHNOLOGY HIGHLIGHT

Study Attains All-Solid-State Battery with Low-Resistance Electrode Interface	43
---	----

PRODUCT HIGHLIGHT 44

INDUSTRY REPORT

New Aluminum Electrolytic Capacitors Rise up for Automotives' Safety	50
Factory Automation Boosts Prospects for Industrial Robots	51
Metal Power Inductors Gather Momentum	52

MANUFACTURING FRONT

Panasonic's Recycling Plant Efficiently Uses Renewable Energy	55
---	----

ZOOM-IN 57

SHOW HIGHLIGHT	
electronica 2018	61

SHOW REPORT	
SEMICON Japan 2018	62