S40 Series

LANTRONIX® CONNECT SMART. DO MORE."



Ruggedised, low-power radio nodes

S40 Series covers most of the needs for metering or environmental monitoring applications



A probe for every need

Multiple radios



Pulse counting, light pulse counting, temperature, relative humidity, and more to come... LoRaWAN[™], Wireless M-Bus, and more to come...





Rugged

IP68-rated, tropicalised, non-potted design lets the user properly dispose of, or replace, the battery Ultra-long battery life



Single C battery-operated for field operation up to 15 years



Irrigation

Smart

S40 SERIES SPECIFICATIONS

DADTO TVDEC

	HARDWARL					
MATERIAL	(f1) UV-resistant per UL 746C, HB non-flammable per UL 94, polycarbonate plus polybutylene terephthalate ("PBT+PC")	LONG RANGE	 ✓ Either LoRa® modulation (factory setting) or standard FSK mod- ulation (user-reconfigurable to, then compliant with the Open 			
DIMENSIONS (MM)	44 x 73 ^{.3} x 44 without connectors	(LORA®) OR	Metering System specification <u>http://oms-group.org/</u>			
WEIGHT AND SPQ	Approx. 180 g; commercial flight-friendly 15-piece SPQ (< 5 kg)	WIRELESS M-BUS	✓ Very fine granularity, perfectly suited to the business of Energy			
Temperature RANGE	 ✓ Operating: -20 °C ~ +70 °C ✓ Storage: -40 °C ~ +85 °C 		consumption optimisation Class A, with a -140 dBm receiving sensitivity and a max. FIRP of:			
Power	30.6 Wh, non-rechargeable, lithium thionyl chloride C battery		\checkmark 12 ^{.15} dBm in 'EU433' and China @779 \sim 787 MHz			
мси	 ✓ 32-bit ARM® Cortex[™]-M3 architecture; running at 40 MHz ✓ Built-in 128 KB *Flash memory* and 32 KB RAM ✓ Built-in cryptographic engine supporting (i) AES 128- and 256- bit keys; and (ii) ECC B/K163, B/K233, P192, P224, P256; and (iii) SHA-1 and SHA-2 (SHA-224 and SHA-256) 	LORAWAN®	 ✓ 14 dBm ¹ in South Korea and Indonesia ✓ 16 dBm in 'EU868', Russia, 'AS923' ✓ 19^{.15} dBm in China @470 ~ 510 MHz ✓ 22 dBm in 'US915', 'AU915' and India 			
	Immersion at up to, per IEC 60529 standard:		A PROBE FOR EVERY NEED			
TUV-CERTIFIED IP68 RATING	\checkmark 1° metre for up to forty minutes (external antenna models); or \checkmark 1° metre for up to one hour (internal antenna models) PCB/A conformally coated against condensation, if the case arises	Pulse COUNTING	Three AWG24 stripped wires - cf. 1st picture below - with: \checkmark 219 µA current \checkmark 0.2 mW max. power \checkmark 670 µF capacitance \checkmark 330 mH inductance \checkmark 25 ms max. pulse duration \checkmark 15 Hz max. frequency			
	SOFTWARE	LIGHT PULSE	cf 2 nd nicture below			
TIME STAMPING	Yes, courtesy of a network-adjustable RTC with a less than three (3) seconds per month drift	COUNTING	 ✓ via a stainless-steel, 10 mm-wide, waterproof probe – cf. 3rd pic- 			
DATA HISTORY	4 [resp. 48] records, in case of S41 [resp. S47]		ture below $\sqrt{-50}$ °C $\sim \pm 150$ °C range: ± 0.3 °C accuracy from ± 10 °C to			
ENCRYPTION	Hardware-assisted AES128, in case of S41 only	MEASUREMENT	+90 °C, ±0.6 °C from -20 °C to +110 °C, ±1. ² °C otherwise ✓ Please consult us for higher accuracies (yet narrower ranges)			
	OPERATION AND CONTROLS	RELATIVE	 ✓ via a stainless-steel, 10 mm-wide probe - cf. 4th picture below ✓ HUMIDITY: 0 % RH ~ 100 % RH range; ±2 % RH accuracy ✓ TEMPERATURE: -40 °C ~ +125 °C range; ±0.5 °C accuracy from +5 °C to +50 °C ✓ Please consult us for any other I²C sensor 			
ESTIMATED LIFE SPAN	 S41: fifteen (15) years with a 15-minute transmission cycle S47: twelve (12) years with a 30- (models 03, 04; 08; 01, 07, 10, 11) or 60-minute (models 06; 02, 05, 09) transmission cycle 	HUMIDITY / AMBIENT TEMPERATURE MEASUREMENT				
MAGNETIC SWITCH	ON / OFF: Reset		✓ Two AWG24 stripped wires to connect to any current loop (aka			
OPERATING STATUS LED	One, white	SENSOR READING	4 mA \sim 20 mA) sensor \checkmark Please consult us for any 0 V \sim 10 V or 0 V \sim 5 V sensor (RTD?			
TRANSMISSION CYCLE	Adjustable over the air in one-minute increments, from 2 mn to 1,440 mn; factory-set at 15 [resp. 30] mn in case of S41 [resp. S47]		*FACTORY OPTIONS* (subject to MOQ and other considerations)			
S47'S ACTIVATION	✓ Over-the-air activation (OTAA)	FLASH MEMORY	Doubled to 256 KB			
METHOD	✓ Activation by personalisation (ABP)					
	All and a second se		ACCESSORIES			
		EXTERNAL ANTENNAS	High radiation efficiency, straight dipole terminal antennas ✓ A48H0 for S41xxUS, S47xx1S, S47xx9S, S47xxAS models ✓ A49H0 for S47xx2S, S47xx5S, S47xx7S, S47xx8S models			
		R IGHT ANGLE ADAPTOR	For either A48H0 or A49H0, when and if an S40 unit is mounted horizontally			
C40	unit with its optional DIN Bail din / Mounting bracket	DIN RAIL CLIP	$2\frac{1}{2}$ U width; doubling as a 2-hole mounting bracket			
540						
-1						

Termination of the wire harness of the Pulse counter (three stripped wires)

Light pulse counting probe





Relative humidity / Ambient temperature probe

MODEL NAME	'ZONE'	RADIO TYPE	Encournetre	PLANNED / <u>OBTAINED</u> CERTIFICATIONS ²	FCS ³	ORDER CODE				
			(MHZ)			PULSE COUNTER	LIGHT PULSE COUNTER	THERMOMETER	HYGROMETER	ANY CURRENT LOOP SENSOR ⁴
S41	Europe	Wire- less M- Bus	169 ^{.4} ~ 169 ^{.475}	CE ⁸		S4101VS	S4102VS	S4103VS	S4104VS	S4105VS
			868			S4101US	S4102US	S4103US	S4104US	S4105US
S47	`EU433' 5	LoRaWAN® (certified by TÜV)	433		May '19	S47014S	S47024S	S47034S	S47044S	S47054S
	`EU868' ⁶		863 ~ 870	CE°, ICASA		S47011S	S47021S	S47031S	S47041S	S47051S
	Russia		864 ~ 870	EAC		S4701AS	S4702AS	S4703AS	S4704AS	S4705AS
	`US915′		902 ~ 928	FCC	TBD	S47012S	S47022S	S47032S	S47042S	S47052S
	`AU915′		915 ~ 928	RCM		S47015S	S47025S	S47035S	S47045S	S47055S
	`AS923' ⁷		923	JRF; NBTC; IMDA	May '19	S47017S	S47027S	S47037S	S47047S	S47057S
	South Korea; Indonesia		920 ~ 923	KC; Postel		S47018S	S47028S	S47038S	S47048S	S47058S
	China		470 ~ 510			S47016S	S47026S	S47036S	S47046S	S47056S
			779 ~ 787	IBD	TBD	S47013S	S47023S	S47033S	S47043S	S47053S
	India		865 ~ 867	ETA, TEC	Γ	S47019S	S47029S	\$47039\$	S47049S	S47059S

Please consult us regarding the models or features shown in grey, which are subject to MOQ and other considerations

10 dBm only in the lower half of the band

- IO doin only in the lower han of the band
 IO doin only in the lower han of the band
 SGS and, upon request, AtEx, IEC Ex, etc. for use in explosive atmospheres
 First customer shipment [date of]
- ³ First customer snipment [date of]
 ⁴ aka 4 mA ~ 20 mA sensors; if you preferred 0 V ~ 10 V [resp. 0 V ~ 5 V] analogue sensors, please substitute in the order code 06 [resp. 07] for 05
 ⁵ i.e. ...

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⁶ i.e. Bahrain and Nigeria, where no other 'zone' is i.e. Bahrain and Nigeria, where no other 'zone' is suitable; also suited to Albania, Armenia, Bangladesh, Belarus, Bosnia and Herzegovina, Cambodia, Egypt, the European Union, Iceland, Iran, Laos, Lebanon, Liechten-stein, Macedonia, Moldova, Montenegro, Morocco, Myanmar, New Zealand, Norway, Oman, Pakistan, the Philippines, Qatar, Saudi Arabia, Serbia, Singapore, South Africa, Switzerland, Tunisia, Turkey, Ukraine, the United Arab Emirater Vietnam United Arab Emirates, Vietnam

⁷ i.e. Costa Rica, Japan, Taiwan and Venezuela, where no other 'zone' is suitable; also suited to Australia, Bolivia, Brunei Darussalam, Cambodia, Chile, Ecuador, El Sal-vador, Guatemala, Hong Kong, Laos, Malaysia, New Zealand, Pakistan, Panama, Paraguay, Peru, Singapore, Thailand, Uganda, Uruguay ⁸ Based on compliance with RED, etc.

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e. MPB-00069 Re



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