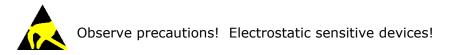


EWSSB / EWSDB

EASYFIT Bluetooth® Single / Double Rocker Wall Switch



Patent protected: WO98/36395, DE 100 25 561, DE 101 50 128, WO 2004/051591, DE 103 01 678 A1, DE 10309334, WO 04/109236, WO 05/096482, WO 02/095707, US 6,747,573, US 7,019,241



REVISION HISTORY

The following major modifications and improvements have been made to this document:

Version	Author	Reviewer	Date	Major Changes
1.0	MKA	МКА	22.02.2017	Initial Release
1.1	MKA	МКА	30.03.2017	Added step by step payload parsing example
1.2	MKA	МКА	30.06.2017	Added product label information
1.3	MKA	МКА	09.01.2018	Added Australia approval
1.4	MKA	МКА	30.05.2018	PTM 215B DB-05 update
1.5	MKA	МКА	20.12.2018	Separated EWSxB and PTM 215B product documentation
1.6	MKA	МКА	25.05.2019	Added reference to PTM 215B User Manual
1.7	MKA	МКА	08.12.2020	Improved description of device label

Published by EnOcean GmbH, Kolpingring 18a, 82041 Oberhaching, Germany www.enocean.com, info@enocean.com, phone +49 (89) 6734 6890

© EnOcean GmbH, All Rights Reserved

Important!

This information describes the type of component and shall not be considered as assured characteristics. No responsibility is assumed for possible omissions or inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications, refer to the EnOcean website: <u>http://www.enocean.com</u>.

As far as patents or other rights of third parties are concerned, liability is only assumed for modules, not for the described applications, processes and circuits.

EnOcean does not assume responsibility for use of modules described and limits its liability to the replacement of modules determined to be defective due to workmanship. Devices or systems containing RF components must meet the essential requirements of the local legal authorities.

The modules must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

Components of the modules are considered and should be disposed of as hazardous waste. Local government regulations are to be observed.

Disposal

Product

Dispose of the used components at an official collection point for electronic waste or at your local dealer.

Packing

Please use the recycling operators known to you.





TABLE OF CONTENT

1	GENERAL DESCRIPTION	4
1.1	Basic functionality	4
1.2	Ordering information	4
1.3	Technical data	5
1.4	Physical dimensions and mounting options	5
1.5	Environmental conditions	5
1.6	Packaging information	5
2	FUNCTIONAL INFORMATION	6
2.1	Product overview	6
2.2	Compatible frames	7
2.3	User interface	8
3	PRODUCT LABEL	9
3.1	QR code format	C
3.2	QR code example10	C
4	APPLICATION INFORMATION12	2
4.1	Transmission range12	2
4.2	External magnets12	2
5	REGULATORY INFORMATION1	3
5.1	CE / RE-D for Europe Union1	3
5.2	FCC (United States) Certificate14	
	5.2.1 FCC (United States) Regulatory Statement1	
5.3	IC (Industry Canada) Certificate	
- 4	5.3.1 IC (Industry Canada) Regulatory Statement	
5.4	ACMA (Australia) Declaration of Conformity	
5.5	ARIB (Japan) Construction Type Conformity Certification	J



1 GENERAL DESCRIPTION

1.1 Basic functionality

EnOcean Easyfit Bluetooth® Single / Double Rocker Wall Switch (EWSSB / EWSDB, jointly referred to as EWSxB) are energy harvesting Bluetooth Low Energy (BLE) switches in the European 55 x 55 wall switch form factor.

EWSSB and EWSDB are based on the maintenance free, self-powered Bluetooth push button transmitter module PTM 215B. This User Manual describes of specifics of EWSSB and EWSDB finished products.

The energy harvesting BLE switch functionality of EWSSB and EWSDB products is provided by the integrated PTM 215B module. For a description of this functionality, please refer to the PTM 215B User Manual available at: <u>https://www.enocean.com/en/enocean-modules-</u> 24ghz-ble/details/ptm-215b/user-manual-pdf/

The PTM 215B module within EWSxB contains an electro-dynamic energy transducer which is actuated by the EWSxB rocker movement. Whenever a rocker is pushed down or released, electrical energy is created and a set of Bluetooth advertising frames is transmitted by the PTM 215B radio transmitter which identifies the rocker status (pushed or released). Radio telegrams are protected with AES-128 security based on a device-unique private key.

"Long" or "Short" rocker press (the time between pushing and releasing the rocker) can be calculated by the receiver. This enables switching, dimming control or jalousie control including slat action

Figure 1 below shows the single rocker (EWSSB) and double rocker (EWSDB) product variants.



Figure 1 – EWSSB (single rocker) and EWSDB (double rocker) variants

1.2 Ordering information

Туре	Ordering Code
EWSSB	E8221-A270
EWSDB	E8221-A280



1.3 Technical data

Integrated PCB antenna
0 dBm
75 m ideal line of sight / 10 m indoor environment
Bluetooth Low Energy (Advertising)
2402 MHz / 2480 MHz
BLE CH 37 / 38 / 39 (2402 MHz / 2426 MHz / 2480 MHz)
2 / 3
1 Mbit/s GFSK
NFC Forum Type 2 Tag (ISO/IEC 14443 Part 2 and 3)
Unique 48 Bit Device ID (factory programmed)
AES128 (CBC Mode) with Sequence Code
Integrated Kinetic Energy Harvester
Single (EWSSB) or Double Rocker (EWSDB)

1.4 Physical dimensions and mounting options

Dimensions of Single Rocker (EWSSB)	50 x 50 mm
Dimensions of Double Rocker (EWSDB)	25 x 50 mm (for each of the two rockers)
Dimensions of Frame Insert	55 x 55 mm
Dimensions of Central Plate	71 x 71 mm
Dimensions of Frame	81 x 81 mm

1.5 Environmental conditions

Operating Temperature	-25°C 65°C
Storage Temperature	-25°C 65°C
Humidity	0% to 95% r.h. (non-condensing)

1.6 Packaging information

Packaging Unit	10 units
Packaging Method	Each unit packed in a bag, 10 units packed in a box



2 FUNCTIONAL INFORMATION

2.1 **Product overview**

The different components of EWSSB are shown in Figure 2 below.

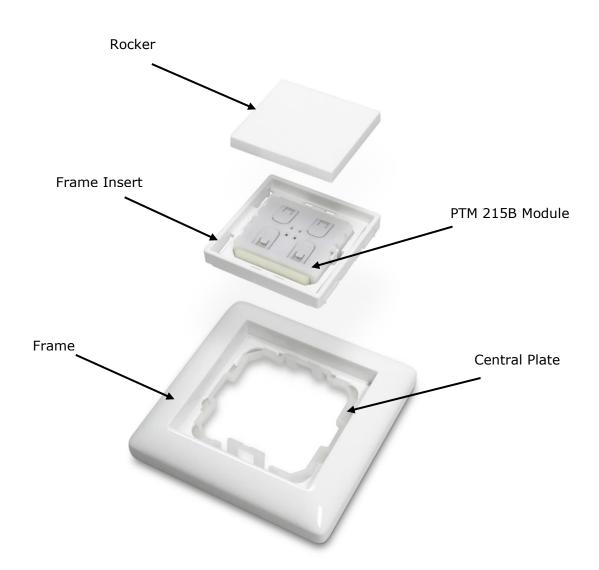


Figure 2 – Components of Easyfit Single Rocker Wall Switch EWSSB



2.2 Compatible frames

Single and double rocker wall switch are shipped with a Gira Standard55 frame. The switch frame can be replaced by frames of the design programs listed in Table 1 below.

Manufacturer	Product Program
BERKER	S1, B1, B3, B7 Glas
GIRA	Standard55, E2, Event, Esprit
JUNG	A500, Aplus
MERTEN	M-Smart, M-Arc, M-Plan

Table 1 – EWSSB / EWSDB compatible switch frames



2.3 User interface

EWSSB and EWSDB are implemented based on the EnOcean PTM 215B module which is shown in Figure 3 below.





Figure 3 – PTM 215B module (shown with and without rocker)

The PTM 215B module provides four button contacts. These button contacts re grouped into two channels (Channel A and Channel B) with each channel containing two button contacts (State O and State I).

The button contacts of the PTM 215 module are either actuated by one (single) rocker (EWSSB) or two (double) rockers (EWSDB). For the case of the single rocker variant EWSSB, only channel B is actuated by the single rocker (actuating either B0 or BI). For the case of the double rocker variant EWSDB, each channel (A or B) is actuated by one of the two rockers so that one rocker actuates A0 or AI while the other actuates B0 or BI.

The state of all four button contacts (pressed or not pressed) is transmitted together with a unique device identification (48-bit source address) whenever a rocker is pushed or released.

Figure 4 below shows the arrangement of the four button contacts on the PTM 215B module and their designation.

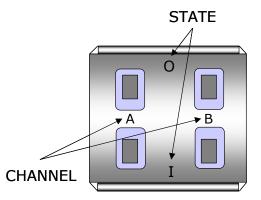


Figure 4 – Button contact designation of the PTM 215B module

Please refer to the PTM 215B user manual for detailed technical information about the PTM 215B module.



3 PRODUCT LABEL

Each EWSSB or EWSDB product contains a device label as shown in Figure 5 below. This example label identifies the following parameters in writing:

- Product name (EWSSB)
- Order number (E8221-A270)
- Product revision (DA-01)
- Manufacturing date (week 10, 2017)
- Static Source Address (E21501234567)
- Serial Number (07123456)

The device label also encodes certain parameters within an automatically readable QR code in the lower right corner as described in chapter 3.1.

Figure 5 below shows the device label and highlights (green rectangle) the location of the QR code.



Figure 5 – Location of the commissioning QR code



3.1 QR code format

The QR code used on the EWSSB / EWSDB product label encodes the product parameters according to the ANSI/MH10.8.2-2013 standard with the structure shown in Table 2 below.

Data Identifier	Data Length (excluding identifier)	Data Content		
30S	12 characters	Source Address (hexadecimal)		
Z	32 characters	Security Key (hexadecimal)		
30P	Up to 10 characters	Ordering Code		
2P	4 characters	Step Code and Revision		
S	8 characters (including leading zero)	Serial Number (always starts with 07)		

Table 2 - EWSxB product QR code structure

3.2 QR code example

Figure 6 below shows the QR code from an EWSSB product.



Figure 6 – Example QR code from an EWSSB product



The content of this QR code is as follows:

30SE21501234567+Z0123456789ABCDEF0123456789ABCDEF+30PE8221-A270+2PDA01+S07123456

This content encodes the EWSSB product parameters listed in Table 3 below.

Data Identifier	Data Content	Value in this example		
30S	Source Address (hexadecimal)	0xE21501234567		
Z	Security Key (hexadecimal)	0x0123456789ABCDEF0123456789ABCDEF		
30P	Ordering Code (alphanumeric)	E8221-A270		
2P	Step Code - Revision (alphanumeric)	DA-01		
S	Serial Number (numeric)	07123456		

Table 3 – Example QR code content



4 APPLICATION INFORMATION

4.1 Transmission range

The main factors that influence the system transmission range are:

- Type and location of the antennas of receiver and transmitter
- Type of terrain and degree of obstruction of the link path
- Sources of interference affecting the receiver
- "Dead spots" caused by signal reflections from nearby conductive objects.

Since the expected transmission range strongly depends on this system conditions, range tests should always be performed to determine the reliably achievable range under the given conditions.

The following figures should be treated as a rough guide only:

- Line-of-sight connections
 Typically 10 m range in corridors, up to 30 m in halls
- Plasterboard walls / dry wood
 Typically 10 m range, through max. 2 walls
- Ferro concrete walls / ceilings
 Typically 5 m range, through max. 1 ceiling (depending on thickness)
- Fire-safety walls, elevator shafts, staircases and similar areas should be considered as shielded

The angle at which the transmitted signal hits the wall is very important. The effective wall thickness – and with it the signal attenuation – varies according to this angle. Signals should be transmitted as directly as possible through the wall. Wall niches should be avoided.

Other factors restricting transmission range include:

- Switch mounting on metal surfaces (up to 30% loss of transmission range)
- Hollow lightweight walls filled with insulating wool on metal foil
- False ceilings with panels of metal or carbon fibre
- Lead glass or glass with metal coating, steel furniture

The distance between the receiver and other transmitting devices such as computers, audio and video equipment that also emit high-frequency signals should be at least 0.5 m.

4.2 External magnets

EWSxB is powered by an electromagnetic harvester. Using magnets (e.g. for mounting) in close proximity to EWSxB therefore has to be avoided.



5 REGULATORY INFORMATION

The PTM 215B module within EWSSB and EWSDB has been certified according to FCC, IC and CE regulations. Changes or modifications not expressly approved by EnOcean could void the user's authority to operate the equipment.

5.1 CE / RE-D for Europe Union

The Radio Equipment Directive (2014/53/EU, typically referred to as RED) has replaced the old R&TTE directive from 1999 as regulatory framework for radio products in the European Union. All products sold to final customers after 12th of June, 2017 have to be compliant to RED.

At the time of writing, the text of the RED legislation was available from this link: <u>http://eur-lex.europa.eu/eli/dir/2014/53/oj</u>

It is the responsibility of the OEM manufacturer to demonstrate compliance to all applicable EU directives and standards. The attestation of conformity for PTM 215B serves as input to the declaration of conformity for the full product.

At the time of writing, guidance on the implementation of EU product rules – the so called "Blue Guide" – was available from this link: http://ec.europa.eu/DocsRoom/documents/18027/

Specifically within the new RED framework, all OEM manufacturers have for instance to fulfill the following additional requirements:

- Provide product branding (on the product) clearly identifying company name or brand and product name as well as type, charge or serial number for market surveillance
- Include (with the product) documentation containing full postal address of the manufacturer as well as radio frequency band and max. transmitting power
- Include (with the product) user manual, safety information and a declaration of conformity for the final product in local language
- Provide product development and test documentation upon request

Please contact an accredited test house for detailed guidance.



TCB

EWSSB / EWSDB EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER WALL SWITCH

5.2 FCC (United States) Certificate

тсв

GRANT OF EQUIPMENT AUTHORIZATION

Certification Issued Under the Authority of the Federal Communications Commission By:

> EMCCert Dr. Rasek GmbH Stoernhofer Berg 15 91364 Unterleinleiter, Germany

Date of Grant: 09/26/2016

Application Dated: 09/26/2016

EnOcean GmbH Kolpingring 18a Oberhaching, 82041 Germany

Attention: Armin Anders , Director Product Marketing

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.





5.2.1 FCC (United States) Regulatory Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

5.3



EWSSB / EWSDB EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER WALL SWITCH

IC (Industry Canada) Certificate

	RAŠEK				Ne	TCB un RFCAB un Notified Body R&T otified Body RED I otified Body EMC I	r the Canada-EC MRA nder the USA-EC MRA der the Japan-EC MRA TTE Directive 99/5/EC Directive 2014/53/EU Directive 2014/30/EU CA001711G
CE	CAL ACCEPTAN RTIFICATE CANADA	ICE		CERT	TEC	d'acceptai Hnique Mada	BLITÉ
No. DE CERTIFICATION	 5713A-PTM215E EnOcean GmbH 	3					
Street Address Numéro et rue	Kolpingring 18 a					erhaching	
Province or State Province ou Etat	Germany			Postal C Code po		041	
TYPE OF EQUIPMENT GENRE DE MATERIEL	Low Power Devic	e (2400-2483.5 MHz)		P	MN 🕨 PTI	M 215B	
	 Integrated Incorporé 	ANTENNA GAIN GAIN D'ANTENNE	•		VIN 🕨 PT/ VIN 🕨	M 215B	
FREQUENCY RANGE BANDE DE FRÉQUENCES		EMISSION TYPE GENRE D'ÉMISSION	RF POWER PUISSANCE H.F.		-	PECIFICATION / PÉCIFICATION /	
2402 - 2480 MHz		947KG1D	96.6 dBµV/m		R	SS-210 / 9 / Augu	st 2016
TEST LABORATORY LABORATOIRE D'ESSAY	EMCCons DR. RA	SEK GmbH & Co. KG		CN	3464C	OA	TS 3464C-1
Street Address Numéro et rue	Stoernhofer Berg	15		City Ville	Unterlein	leiter	
Province or State Province ou Etat	Germany			stal Code de Postal	91364		
Name Nom	Ludwig Kraft			Tel		47263-301	
E-mail	l.kraft@emcc.de			Fax	+49 9194	47263-309	

Certification of equipment means only that the equipment has met the requirements of the above-noted specification. Licence applications, where applicable to use certified equipment, are acted on accordingly by the ISED issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by ISED. The equipment for which this certificate is issued shall not be manufactured, imported, distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by ISED.

I hereby attest that the subject equipment was tested and found in compliance with the above-noted specification.

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'ISDE et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'ISDE. Le matériel à l'égard duquel le présent certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicables publiées par ISDE.

J'atteste par la présente que le matériel a fait l'objet d'essai et jugé conforme à laspécification ci-dessus.

Certification Officer

DATE

26 September 2016



5.3.1 IC (Industry Canada) Regulatory Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."



5.4 ACMA (Australia) Declaration of Conformity

Supplier's Declaration of Conformity



As required by the following Notices:

- > Radiocommunications (Compliance Labelling Devices) Notice 2014 made under section 182 of the Radiocommunications Act 1992;
- > Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008 made under section 182 of the Radiocommunications Act 1992
- > Radiocommunications (Compliance Labelling Electromagnetic Radiation) Notice 2014 made under section 182 of the Radiocommunications Act 1992 and
- > Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015 made under section 407 of the Telecommunications Act 1997.

Instructions for completion

Do not return this form to the ACMA. This completed form must be retained by the supplier as part of the documentation required for the compliance records and must be made available for inspection by the ACMA when requested.

ACN/ARBN

ABN 75 082 447 194

Supplier's details	manufacturer i	importer or auth	oriced agent)
aupplier a details	manulacturer, i	importer or autri	onised agenty

Company Name (OR INDIVIDUAL)

Compliance Folder Management Pty Ltd

On behalf of: EnOcean GmbH

Street Address (AUSTRALIAN)

Unit 1, 570 City Road

South Melbourne

Victoria, 3205

Product details and date of manufacture

Product description - brand name, type, current model, lot, batch or serial number (if available), software/firmware version (if applicable)

Brand:	Dolphin	
Model:	PTM 215B	
Description:	Bluetooth (LE) Pushbutton Transmitter Module	
Manufacturer:	EnOcean GmbH	
	Kolpingring 18a, 82041 Oberhaching, Germany	
Date of manufacture or importation of the original/modified item		



Compliance – applicable standards and other supporting documents

Evidence of compliance with applicable standards may be demonstrated by test reports, endorsed/accredited test reports, certification/competent body statements.

Having had regard to these documents, I am satisfied the above mentioned product complies with the requirements of the relevant ACMA Standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997.

List the details of the documents the above statement was made, including the standard title, number and, if applicable, number of the test report/endorsed test report or certification/competent body statement

Radiocommunications (Short Range Devices) Standard 2014 (Amnt 1 : 2015) Radiocommunications (Low Interference Potential Devices) Class Licence 2015		
AS/NZS 4268: 2017		
WLAN 2.4GHz :		
EN 300 328 V1.9.1		
Bluetooth (LE) - Report No.: 16/06-0033, Dated: 18 August 2016, PKM electronic GmbH		
Radiocommunications (Electromagnetic Compatibility) Standard 2008		
EN 55022: 2010		
Report No.: 16/06-0033 Dated: 16 August 2016, PKM electronic GmbH		
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2014		
Maximum Exposure Levels to Radio Frequency Fields - 3 kHz to 300 GHz (2002) RPS 3, ARPANSA		
Exemption- Fixed Station Exemption, ARPANSA Schedule 5, General Public Exposure, <20mW Mean Power.		

OEM products that this module may be installed may also be required to show compliance with Radiocommunications (Short Range Devices) Standard 2014 (Amnt 1: 2015), Radiocommunications (Electromagnetic Compatibility) Standard 2008, the Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2014 and the requirements of the Telecommunications Labelling Notice.

Declaration

- I hereby declare that:
 - 1. I am authorised to make this declaration on behalf of the Company mentioned above
 - 2. the contents of this form are true and correct, and
 - the product mentioned above complies with the applicable above mentioned standards and all products supplied under this declaration will be identical to the product identified above.

Note: Under section 137.1 of the Criminal Code Act 1995, it is an offence to knowingly provide faise or misleading information to a Commonwealth entity. Penalty: 12 months imprisonment

General Manager Position in Organisation 28th November 2017 Date

Signature of Supplier or Agen

Robert Norris

Print Name

The Privacy Act 1988 (Cth) (the Privacy Act) imposes obligations on the ACMA in relation to the collection, security, quality, access, use and disclosure of personal information. These obligations are detailed in the Australian Privacy Principles.

The ACMA may only collect personal information if it is reasonably necessary for, or directly related to, one or more of the ACMA's functions or activities.

The purpose of collecting the personal information in this form is to ensure the supplier is identified in the 'Declaration of conformity'. If this Declaration of Conformity is not completed and the requested information is not provided, a compliance label cannot be applied.

Further information on the Privacy Act and the ACMA's Privacy Policy is available at <u>www.acma.gov.au/privacypolicy</u>. The Privacy Policy contains details about how you may access personal information about you that is held by the ACMA, and seek the correction of such information. It also explains how you may complain about a breach of the Privacy Act and how we will deal with such a complaint.

Should you have any questions in this regard, please contact the ACMA's privacy contact officer on telephone on 1800 226 667 or by email at privacy@acma.gov.au.



5.5 ARIB (Japan) Construction Type Conformity Certification



Notified Body EMC Directive 2014/30/EU Notified Body Directive 2014/53/EU RF CAB under the Japan-EC MRA FCB under the Canada-EC MRA TCB under the USA-EC MRA

RF CAB ID No. 206

Designated by the German Regulator Bundesnetzagentur to act as a Recognised Foreign Conformity Assessment Body in accordance with the Japan-EC MRA

CONSTRUCTION TYPE CONFORMITY CERTIFICATE for Specified Radio Equipment

specifica Radio Equipilient			
Registration No.	JU000585K		
Certificate Holder	EnOcean GmbH Kolpingring 18a 82041 Oberhaching Germany		
Product Category	Article 2, Paragraph 1, Item 19 (WW)		
Product Designation	PTM 215B, ESRPB, EDRPB, EWSSB, EWSDB		
Product Description	Bluetooth Low Energy Transmitter		
Software Release No.	1.1.0.0		
Manufacturer	Katek GmbH Bahnhofstraße 108 83224 Grassau Germany		
When the product is placed on the Japanese market, it must carry the Specified Radio Equipment marking as shown on the right R 206-000585			
The scope of evaluation relates to the submitted documents only.			
This Certificate confirms that the listed product has demonstrated conformity with the relevant technical regulations defined in the attached Annex. It is only valid in conjunction with the Annex.			

Unterleinleiter, 2018-03-15

Günther Pro

Recognised Foreign Conformity Assessment Body

© 2020 EnOcean | www.enocean.com