

# User's Manual

Product Name: 24GHz Pulse Radar for Vehicular Use  
(KDSE100)

Model Number: 24GMMR1A

Please print this document in A4 size.

**KOMATSU**

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## 1 PREFACE

### 1.1 DISCLAIMER

Komatsu Ltd. reserves the right to make modifications, additions, and deletions to this document due to typographical errors, inaccurate information, or improvements to programs and/or equipment at any time and without notice. Such changes will, nevertheless, be incorporated into new editions of this document.

### 1.2 INTENDED USAGE

This manual is intended for anyone who owns or intends to operate the 24GHz Pulse Radar "24GMMR1A" in the first place and provides appropriate procedures for those engaged in safe handling.

For details on how to operate, please refer to the user manual of the machine.

### 1.3 COMPLIANCE INFORMATION

Please read the section "Compliance Notice" for locale-specific information regarding labelling, safety related statements.

## 2 Document Information

### Revision History

Revision	Date	Author(s)	Description/comment
1	August 8, 2023	E. Masutani	Publication of the First Edition
2	October 19, 2023	E. Masutani	Ghana, Argentina, and Taiwan added
3	January 17, 2024	E. Masutani	Mauritania added
4	February 29, 2024	E. Masutani	South Africa added
5	March 29, 2024	E. Masutani	FCC, ISED, Israel, UAE, Vietnam, China, Brazil, S.Korea, Singapore, and Pakistan added
6	June 18, 2024	Y. Abe	China requirement removed
7	August 19, 2024	Y. Abe	Thailand and Gabon added.

## 3 Specification of Hardware

### 3.1 Outline Dimensions and Mass

(1) Dimensions of Outline (Dimensions are in millimeters)

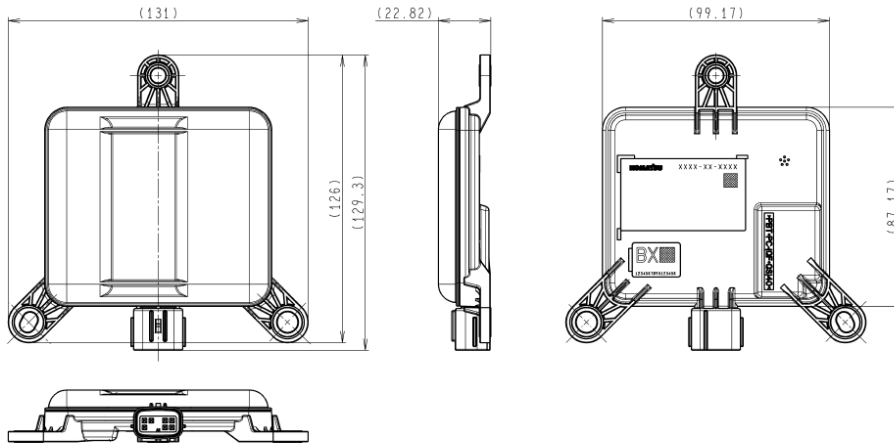


Figure 1. 24GMMR1A

(2) Mass: 0.19 [kilograms]

### 3.2 Maximum radio-frequency power

Frequency [MHz]	Max Power [dBm]
24050 – 24250	2.8

## 4 Compliance Notice

### 4.1 European Union



#### - Manufacturer/Importer

Hereby, the Manufacturer/Importer:

The Manufacturer	The Importer
FURUKAWA AUTOMOTIVE SYSTEMS INC. 1000 Amago, Koura-cho, Inukami-gun 522-0242, Shiga, Japan	KOMATSU EUROPE INT. Mechelsesteenweg 586 B-1800 Vilvoorde, Belgium  <b>KOMATSU</b>

#### - Safety

Please refer to the vehicle manual for information on safety.

#### - Simplified Declaration of Conformity

[EN] English	Hereby, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> declares that the radio equipment type <b>24GMMR1A</b> is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[BG] Bulgarian	С настоящото <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> декларира, че този тип радиосъоръжение <b>24GMMR1A</b> е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[CS] Czech	Tímto <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> prohlašuje, že typ rádiového zařízení <b>24GMMR1A</b> je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[DA] Danish	Hermed erklærer <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , at radioudstyrstypen <b>24GMMR1A</b> er overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[DE] German	Hiermit erkläre <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , dass der Funkanlagentyp <b>24GMMR1A</b> der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[ET] Estonian	Käesolevaga deklareerib <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , et käesolev raadioseadme tüüp <b>24GMMR1A</b> vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>

[EL] Greek	Με την παρούσα ο/η <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , δηλώνει ότι ο ραδιοεξοπλισμός <b>24GMMR1A</b> πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[ES] Spanish	Por la presente, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> declara que el tipo de equipo radioeléctrico <b>24GMMR1A</b> es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[FR] French	Le soussigné, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , déclare que l'équipement radioélectrique du type <b>24GMMR1A</b> est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[IT] Italian	Il fabbricante, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , dichiara che il tipo di apparecchiatura radio <b>24GMMR1A</b> è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[LV] Latvian	Ar šo <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> deklarē, ka radioiekārta <b>24GMMR1A</b> atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[LT] Lithuanian	Aš, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , patvirtinu, kad radijo įrenginių tipas <b>24GMMR1A</b> atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[HR] Croatian	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> ovime izjavljuje da je radijska oprema tipa <b>24GMMR1A</b> u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[HU] Hungarian	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> igazolja, hogy a <b>24GMMR1A</b> típusú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[MT] Maltese	B'dan, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , niddikjara li dan it-tip ta' tagħmir tar-radju <b>24GMMR1A</b> huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[NL] Dutch	Hierbij verklaar ik, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> , dat het type radioapparatuur <b>24GMMR1A</b> conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[PL] Polish	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> niniejszym oświadcza, że typ urządzenia radiowego <b>24GMMR1A</b> jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[PT] Portuguese	O(a) abaixo assinado(a) <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> declara que o presente tipo de equipamento de rádio <b>24GMMR1A</b> está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>

[RO] Romanian	Prin prezenta, <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> declară că tipul de echipamente radio <b>24GMMR1A</b> este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[SK] Slovak	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> týmto vyhlasuje, že rádiové zariadenie typu <b>24GMMR1A</b> je v súlade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[SL] Slovenian	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> potrjuje, da je tip radijske opreme <b>24GMMR1A</b> skladen z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[FI] Finnish	<b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> vakuuttaa, että radiolaitetyyppi <b>24GMMR1A</b> on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>
[SV] Swedish	Härmed försäkrar <b>FURUKAWA AUTOMOTIVE SYSTEMS INC.</b> att denna typ av radioutrustning <b>24GMMR1A</b> överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: <a href="https://www.komatsu.eu/komtrax-radio-equipment-directive">https://www.komatsu.eu/komtrax-radio-equipment-directive</a>

## 4.2 Great Britain



### - Manufacturer/Importer

Hereby, the Manufacturer/Importer:

The Manufacturer	The Importer
FURUKAWA AUTOMOTIVE SYSTEMS INC. 1000 Amago, Koura-cho, Inukami-gun 522-0242, Shiga Japan	KOMATSU UK Ltd. Durham Road, Birtley, Chester-le-Street, Co. Durham DH3 2QX, UK  <b>KOMATSU</b>

### - Safety

Please refer to the vehicle manual for information on safety.

### - Simplified Declaration of Conformity

Hereby, **FURUKAWA AUTOMOTIVE SYSTEMS INC.** declares that the radio equipment type **24GMMR1A** is in compliance with Radio Equipment Regulations 2017. The full text of the declaration of conformity is also available at the following internet address: <https://www.komatsu.eu/komtrax-radio-equipment-directive>

### 4.3 Serbia



### 4.4 The Federal Communications Commission

FCC ID : 2AHE9-24GMMR1A

#### FCC CAUTION

Changes or modifications made to this equipment not expressly approved by (FURUKAWA AUTOMOTIVE SYSTEMS INC) may void the FCC authorization to operate this equipment.

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.

#### Radiofrequency radiation exposure Information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



## 4.5 Canada (ISED)

IC: 21140-24GMMR1A

### - English

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the ISED radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.


### - French

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le Fonctionnement.

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'ISDE. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le radiateur et le corps humain.

## 4.6 Argentina

 H-26798

## 4.7 Brazil

- Modelo: 24GMMR1A



- Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.
- Este produto está homologado pela Anatel, de acordo com os procedimentos regulamentados pela Resolução nº 715/2019 e atende aos requisitos técnicos aplicados.
- Site da ANATEL: <https://www.gov.br/anatel/pt-br>

## 4.8 Ghana

**NCA APPROVED 7E5-BH-154-RDR**

### - Importer Information

Name of importer: Panafrican Mining Services (Ghana) Ltd

Address: Akyempim-Tarkwa, P. O. Box NS 61, Nsuta Wassa, Tarkwa, Western Region, Ghana

TradeMark: **PANAFRICAN**  
Equipment Group

### - Purpose of use

For details on the intended use, please refer to the user manual of the machine.

### - Simplified Declaration of Conformity

Hereby, **FURUKAWA AUTOMOTIVE SYSTEMS INC.** declares that the radio equipment type **24GMMR1A** is in compliance with SECTION3(a) OF THE NATIONAL COMMUNICATIONS AUTHORITY ACT, 2008, ACT769.

The full text of the declaration of conformity is also available at the following internet address: <https://www.komatsu.eu/komtrax-radio-equipment-directive>

## 4.9 Mauritania

AGRÉÉ PAR L'ARE MAURITANIE  
Numéro d'agrément : 1383/ARE/2023  
Date d'agrément : 29/11/2023

#### 4.10 South Africa



#### 4.11 Republic of Korea

- Model : 24GMMR1A
- Equipment Name: 24 GHz pulse radar system



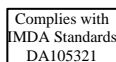
- Registration No. : R-R-Fas-24GMMR1A
- Trade Name: Furukawa Automotive Systems INC
- Manufacturing date: See product.
- Manufacturer: Furukawa Automotive Systems INC.
- Country of Origin: Japan

#### 4.12 Israel

מספר אישור התאמה מטעם משרד התקשורת: 51-89762

חל איסור לבצע פעולות במכשיר שיש בהן כדי לשנות את תכונותיו האלחוטיות של המכשיר, ובכלל זה שינויי תוכנה, החלפת אנטנה מקוריית או הוספת אפשרות לחיבור לאנטנה חיצונית, בלא קבלת אישור משרד התקשורת, בשל החשש להפרעות אלחוטיות.

#### 4.13 Singapore



#### 4.14 Taiwan (R.O.C.)



取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；

經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。

低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者。

## 4.15 Vietnam



## 4.16 Pakistan

- TAC No: 9.310/2023
- Approved by PTA

## 4.17 United Arab Emirates



#### 4.18 Gabon

Please attach  
the Gabon's label here.

#### 4.19 ประเทศไทย (Thailand)

เครื่องโทรคมนาคมและอุปกรณ์นี้มีความสอดคล้องตามมาตรฐานหรือข้อกำหนดทางเทคนิคของ กสทช.

เครื่องวิทยุคมนาคมนี้มีการแผ่คลื่นแม่เหล็กไฟฟ้าสอดคล้องตามมาตรฐานความปลอดภัยต่อสุขภาพของมนุษย์จากการใช้เครื่องวิทยุคมนาคมที่คณะกรรมการกิจการโทรคมนาคมแห่งชาติประกาศกำหนด



Please attach  
the label