

R600V.DAE0-11209335

Radarsensor für Boden- und Pflanzenabstand (für Sprayeranwendungen)

Radar sensor for ground & crop distance (for sprayer applications)

DéTECTEURS radar approprié à la mesure de la distance du sol et des plantes (pour des pulvérisateurs)



11209335
Baumer
Baumer Electric AG · CH-8501 Frauenfeld
Phone +41 (0)52 728 1122 · Fax +41 (0)52 728 1144

- Canada**
Baumer Inc.
CA-Burlington, ON L7M 4B9
Phone +1 (1)905 335-8444

China
Baumer (China) Co., Ltd.
CN-201612 Shanghai
Phone +86 (0)21 6768 7095

Denmark
Baumer A/S
DK-8210 Aarhus V
Phone +45 (0)8931 7611

France
Baumer SAS
FR-74250 Fillinges
Phone +33 (0)450 392 466

Germany
Baumer GmbH
DE-61169 Friedberg
Phone +49 (0)6031 60 07 0

India
Baumer India Private Limited
IN-411038 Pune
Phone +91 20 2528 6833/34
- Italy**
Baumer Italia S.r.l.
IT-20090 Assago, MI
Phone +39 (0)2 45 70 60 65

Singapore
Baumer (Singapore) Pte. Ltd.
SG-339412 Singapore
Phone +65 6396 4131

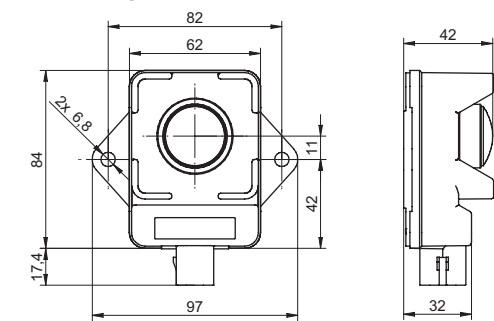
Sweden
Baumer A/S
SE-56133 Huskvara
Phone +46 (0)36 13 94 30

Switzerland
Baumer Electric AG
CH-8501 Frauenfeld
Phone +41 (0)52 728 1313

United Kingdom
Baumer Ltd.
GB-Watchfield, Swindon, SN6 8TZ
Phone +44 (0)1793 783 839

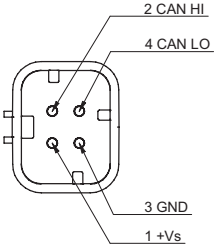
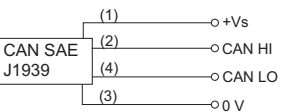
USA
Baumer Ltd.
US-Southington, CT 06489
Phone +1 (1)860 621-2121

Abmessungen Dimensions Dimensions



- Alle Masse in mm
- All dimensions in mm
- Toutes les dimensions en mm

Elektrischer Anschluss Connection diagram Schéma de raccordement



- Vor dem Anschliessen des Sensors die Anlage spannungsfrei schalten.
- Disconnect power before connecting the sensor.
- Mettre l'installation hors tension avant le raccordement du détecteur.

Technische Daten

Erfassungsbereich Sd	0,3 ... 5 m
Öffnungswinkel	6° (3dB)
Betriebsspannungsbereich +Vs	9 ... 32 VDC
Stromaufnahme max. (ohne Last)	160 mA
Ausgangsschaltung	CAN (5V)
logische Schnittstelle	CAN SAE J1939
Baud Rate	250 kBaud
kurzschlussfest	ja
verpolungsfest	ja, Vs zu GND
Arbeitstemperatur	-40 ... +70 °C
Lagertemperatur	-40 ... +85 °C
Schutzart	IP 68/69K

Technical data

sensing distance Sd	0,3 ... 5 m
aperture angle	6° (3dB)
voltage supply range +Vs	9 ... 32 VDC
current consumption max. (no load)	160 mA
output circuit	CAN (5V)
logical interface	CAN SAE J1939
baud rate	250 kBaud
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
operating temperature	-40 ... +70 °C
storage temperature	-40 ... +85 °C
protection class	IP 68/69K

Données techniques

Portée de détection Sd	0,3 ... 5 m
Angle d'ouverture	6° (3dB)
Plage de tension +Vs	9 ... 32 VDC
Consommation max. (sans charge)	160 mA
circuit de sortie	CAN (5V)
interface logique	CAN SAE J1939
vitesse de transmission	250 kBaud
Protégé contre courts-circuits	oui
Protégé contre inversion polarité	oui, Vs vers GND
Température de fonctionnement	-40 ... +70 °C
Température de stockage	-40 ... +85 °C
Classe de protection	IP 68/69K

Technische Änderungen vorbehalten

Tecnical specifications subject to change

Sous réserve de modifications techniques

FCC Compliance 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.

NOTICE: Changes or modifications made to this equipment not expressly approved by Baumer may void the FCC authorization to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

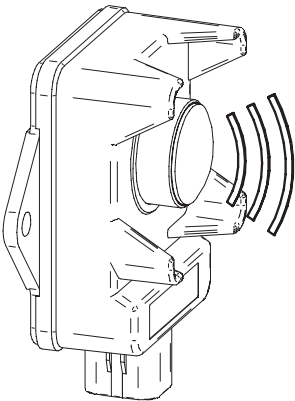
Radiofrequency radiation exposure Information: This equipment complies with FCC exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating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

Canada Compliance 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 harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment complies with IC 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.

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'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 IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps. Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

Status / Status / Condition	Code
Sensor voll funktionfähig (Objekt detektiert)	100 ms grüne LED an / green LED on / LED verte alluminée
Sensor fully operational (object detected)	900 ms LED aus / off / éteinte
Capteur complètement opérationnel (object détecté)	
Sensor voll funktionfähig (kein Objekt detektiert)	wie oben / as above / comme ci-dessus
Sensor fully operational (no object detected)	zusätzlich / with additional / avec supplémentaire
Capteur complètement opérationnel (anun object détecté)	100 ms gelbe LED an / yellow LED on / LED jaune alluminée
Elektronikfehler	50 ms rote LED an / red LED on / LED rouge alluminée
Hardware fault	50 ms LED aus / off / éteinte
Défaut de matériel	
CAN Abwurf (Fehlfunktion)	50 ms magenta LED an / on / alluminée
CAN bus off (malfunction)	150 ms LED aus / off / éteinte
Arrêt du bus CAN (dysfonctionnement)	
Adresszuweisung fehlgeschlagen	50 ms magenta LED an / on / alluminée
Address claim failed	50 ms LED aus / off / éteinte
Assigment d' adresse failli	
Warten auf Adresszuweisung	500 ms magenta LED an / on / alluminée
Waiting for Master ECU adress claim	500 ms LED aus / off / éteinte
En attendre il assignment d' adresse du maître ECU	
Andere / other / autre	blaue LED / blue LED / LED bleue



CAN Kommunikation - CAN communication - communication CAN

Grundinformation CAN - basic information CAN - informations de base CAN

ISO Name	Manufacturer code:	343 (Baumer Group)
ISO name	ECU instance:	0
Nom ISO	Function instance:	1
	Function:	0
	System:	0
	System instance:	0
	Industry group:	2
	Arbitration capable:	1
Geräteadresse	Unterstützt / supports „commanded address“ /	
Device address	supporte adresse commandée (PGN 0xFED8)	
Adresse de l'appareil	im Bereich / in range / dans l' interval:	
	0x80 ... 0xCF (Standard / default / défaut 0x80)	

Boden- und Pflanzenabstand CAN Nachricht - ground and crop CAN message - Message CAN, distance du sol es des plantes

PGN CAN Nachricht / CAN message / Message CAN : 0xC000				
Start bit	Bits	Abstand offset décaillage	Skalierung scaling écaillage	Beschreibung / description / description
1	2	0	1	Sensorstatus / Sensor status / état de capteur 0 = Kein Fehler / no error / Pas d' erreur 1 = Reversibler Fehler / reversible error / erreur reversible 2 = Irreversibler Fehler / irreversible error / erreur irréversible
3	7	0	1%	Konfidenz Pflanzenabstand / canopy confidence / confiance en la distance par raportaux plantes 0% ... 100%
10	7	0	1%	Konfidenz Bodenabstand / ground confidence / confiance en la distance par rapport au sol 0% ... 100%
17	16	0	1mm	Pflanzenabstand / canopy distance / distance des plantes
33	16	0	1mm	Bodenabstand / ground distance / distance du sol
49	16	32768	1	Reserviert / reserved / reserve (Ausgabe / fixed to / fixé à: 0xffff)

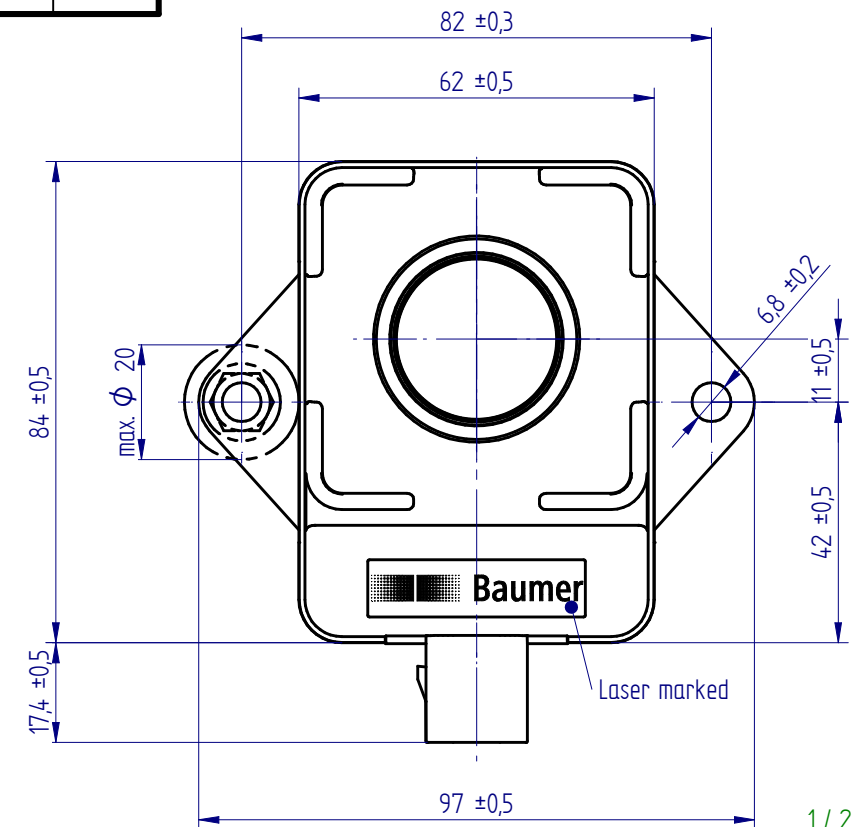
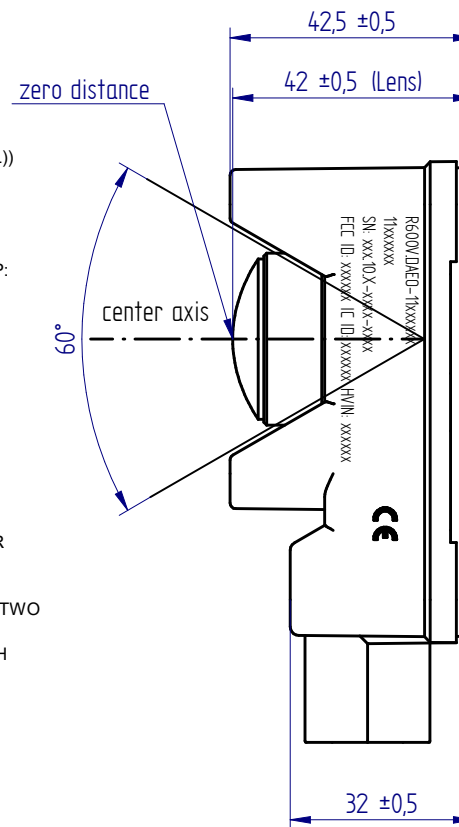
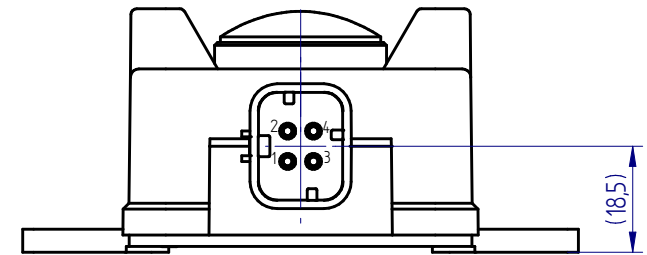
Für weitere Informationen lesen Sie bitte die Bedienungsanleitung - For further information please refer to the user manual - Pour plus d' informations, veuillez vous référer au manuel d' utilisation

13. Jun 2021 10:27

NOTES:

1. ELECTRICAL SPECIFICATION:
 - a. VOLTAGE SUPPLY RANGE: 9V...32V (12VDC/24VDC VEHICLE POWER)
 - b. CURRENT CONSUMPTION: <160mA (averaged)
 - c. RADAR FREQUENCY: 122GHz...123GHz
2. OUTPUT FUNCTION:
 - a. CAN SAE J1939
 - b. BAUD RATE: 250kbaud (11209395) / 500kbaud (11228779)
 - c. OUTPUT CIRCUIT: CAN 5V without internal 120Ω terminator
 - d. CAN UPDATE RATE: $\geq 1 \dots \leq 100$ Hz
 - e. SENSING RANGE, DYNAMIC FIELD DATA: 300mm...5000mm (center axis)
 - f. SENSING RANGE, STATIC TARGET: 390mm...5000mm (center axis)
 - g. BLIND RANGE: 300mm (object detection limited)
3. MECHANICAL DATA:
 - a. RECTANGULAR HOUSING: 97 x 84 x 42.5mm (without connector)
 - b. DIAMETER MOUNTING HOLES: 6.8mm±0.2mm
 - c. RECOMMENDED SCREWS: M6 ACC. MBM 10105
 - d. INSTALLATION TORQUE: Screw with property class 10.9: max torque of screw 12Nm...15Nm, Screw with property class 8.8: max torque of screw 10Nm...12Nm
 - e. ENCLOSURE MATERIAL: POLYAMID (GLASS FIBER REINFORCED)
 - f. MOUNTING PLATE: ALUMINUM (COATED WITH CATAPHORETIC PAINTING (KTL))
 - g. LENS MATERIAL: Polyetherimid (PEI)
4. AMBIENT CONDITIONS:
 - a. STORAGE TEMPERATURE: -40°C...+85°C
 - b. OPERATING TEMPERATURE: -40°C...+70°C
5. SENSOR MEETS FOLLOWING REQUIREMENTS OF EMC AND ENVIRONMENT ACC. FSP:
 - a. EMC AGRICULTURAL MACHINERY EN ISO 14982 (12V/24V-SYSTEM)
 - b. EMC CONSTRUCTION MACHINERY EN 13309 (12V/24V-SYSTEM)
 - c. EMC EARTH MOVING MACHINERY ISO 13766 (12V/24V-SYSTEM)
 - d. EUROPE: RADIO EQUIPMENT AND REPEALING DIRECTIVE (RED) 2014/53/EU
 - e. USA / CDN: COMPLIANCE STATEMENTS SEE PAGE 2, CHAPTER 11 OF THIS DRAWING
 - f. EMC (Industrial) ACC. TO EN 61000-6-2 / EN 61000-6-3
 - g. PROTECTION CLASS ISO 20653: IP69K
 - h. PARTICLE IMPACT EN ISO 20567-1 (GRAVEL ACC. TO EN111242)
 - i. RANDOM VIBRATION IEC 60068-2-64 (5Hz...2000Hz, 11.55 Grms)
 - j. OPERATING MECHANICAL SHOCK IEC 60068-2-27 (50g)
6. PART IS MARKED WITH BAUMER LOGO; PART NUMBER; DATE CODE, SERIAL NUMBER
7. MOUNTING RECOMMENDATION:
 - a. REQUIRED FLATNESS OF THE SENSOR MOUNTING SURFACE $\leq 0.2\text{mm}/100\text{mm}$
 - b. DIRECT MOUNTING ONTO A STEEL PLATE WITH A THICKNESS OF 6mm WITH TWO M6 SCREWS
 - c. INDIRECT MOUNTING ONTO A STEEL PLATE WITH A THICKNESS OF 3mm WITH TWO M6 SCREWS AND TWO FLANGE NUTS
8. LED FUNCTIONS (LED INSIDE LENS)
 - a. SENSOR FULLY OPERATIONAL: GREEN LED blinking
 - b. NO OBJECT DETECTED: GREEN / YELLOW blinking
 - c. CAN BUS WAITING ON MASTER OR ERRORS: MAGENTA LED blinking
 - d. HW FAULT: RED LED blinking
9. Intended use / application policy:
 - a. The suitability and functionality of a Baumer product and its performance under different applications and / or end-use cases can only be verified by testing, and shall ultimately be the responsibility of the customer.
 - b. The product shall not be used:
 - For functional safety applications and in potentially explosive atmospheres.
 - In the direct control and modification of the state of function of the machine.
 - c. Possible malfunctions and failed measurements of the sensor must be intercepted at the system level and shall not lead to unsafe situations in the system.
 - d. The customer shall perform its own safety assessment to account for sensor behavior in particular situations (e.g. distance fluctuations in static situations, operator caused distance manipulation by hand or other objects).
 - e. Safety relevant information must be communicated to the end-user.
10. Recommended free space around radar lens
Rotational cone with an angle of $\pm 30^\circ$ around sensor center axis
Sensitivity and detection of objects near the blind range can be influenced by disturbing objects (e.g. metal boom structures or water hose) within this free space. Moving objects up to 60° outside of free space should be avoided. Further testing is recommended to define a smaller free space.

Mating Connector AMPSEAL 16	
776524-1	
PIN 1	+Vs
PIN 2	CAN HI
PIN 3	GND
PIN 4	CAN LO



This drawing is OUR PROPERTY and may not be copied, recreated or made available to any third party without prior permission

Qty	Item				Pos.	Material				Remarks				
Mod	Rev	Drawn		Approved		Mod	Rev	Drawn	Approved	deleted	Project		10714028 Off Highway Radar	
	a	13.01.2021	cg	13.01.2021	rma		Replaced by							
							Replacement for							
R600V.DAE0-11209335 /-11228779										Scale	Drawn	28.03.2019	cg	
Ground & Crop (Spray drift suppression)										1:1	Checked	28.03.2019	rma	
											Approved	15.04.2019	wemi	

10/17

13. Jun 2021

A

B

C

D

E

F

11. Compliance Statements:

a. FCC Compliance 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.
NOTICE: Changes or modifications made to this equipment not expressly approved by Baumer may void the FCC authorization to operate this equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cau se harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Radiofrequency radiation exposure Information:
This equipment complies with FCC 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.

b. Canada Compliance 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 harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
This equipment complies with IC 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.

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'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 IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.
Ce transmetteur ne doit pas être place au même endroit ou utilise simultanément avec un autre transmetteur ou antenne.

2 / 2

This drawing is OUR PROPERTY and may not be copied, recreated or made available to any third party without prior permission	Qty	Item				Pos.	Material			Remarks			
	Mod	Rev	Drawn	Approved		Mod	Rev	Drawn	Approved	debarred	Project 10714028 Off Highway Radar		
		a	13.01.2021	cg	13.01.2021		rma	Replaced by					
					Replacement for								
	R600V.DAE0-11209335 /-11228779									Scale 1:1	Drawn	28.03.2019	cg
	Ground & Crop (Spray drift suppression)										Checked	28.03.2019	rma
											Approved	15.04.2019	wemi
	Baumer Baumer Electric AG Postfach · Hummelstrasse 17 · CH-8501 Frauenfeld Phone +41 (0)52 728 11 22 · Fax +41 (0)52 728 11 44									11209335 RZ.00016		A	