Radar Sensoren
Radar sensors
Détecteurs à radar

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

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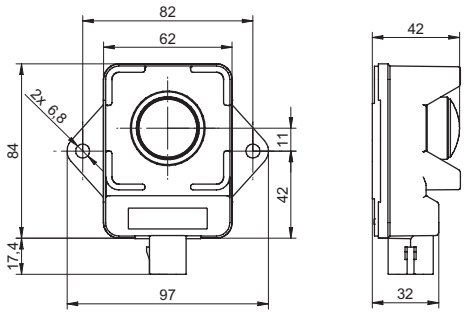
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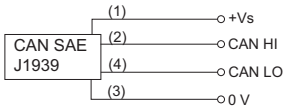
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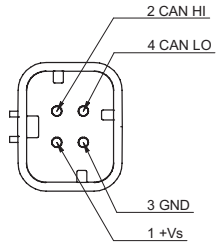
Abmessungen *Dimensions* *Dimensions*



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

Elektrischer Anschluss *Connection diagram* *Schéma de raccordement*





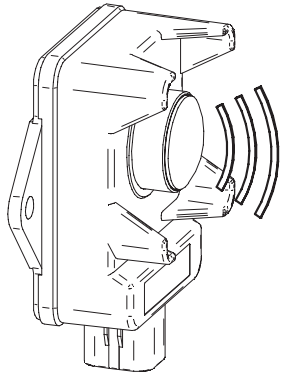
- **Vor dem Anschliessen des Sensors die Anlage spannungsfrei schalten.**
- **Disconnect power before connecting the sensor.**
- **Mettre l`installation hors tension avant le raccordement du détecteur.**

Technische Daten		*Technical data*		*Données techniques*	
Erfassungsbereich Sd	0,3 ... 5 m	sensing distance Sd	0,3 ... 5 m	Portée de détection Sd	0,3 ... 5 m
Öffnungswinkel	6° (3dB)	aperture angle	6° (3dB)	Angle d'ouverture	6° (3dB)
Linearitätsfehler	± 0,3 % Sd (± 15mm)	linearity error	± 0,3 % Sd (± 15mm)	Erreur de linéarité	± 0,3 % Sd (± 15mm)
Wiederholgenauigkeit	± 6,5 mm	repeat accuracy	± 6,5 mm	Reproductibilité	± 6,5 mm
Temperaturdrift	± 0,3 % Sd (± 15mm)	temperature drift	± 0,3 % Sd (± 15mm)	Dérive en température	± 0,3 % Sd (± 15mm)
Betriebsspannungsbereich +Vs	9 ... 32 VDC	voltage supply range +Vs	9 ... 32 VDC	Plage de tension +Vs	9 ... 32 VDC
Stromaufnahme max. (ohne Last)	160 mA	current consumption max. (no load)	160 mA	Consommation max. (sans charge)	160 mA
Ausgangsschaltung	CAN (5V)	output circuit	CAN (5V)	circuit de sortie	CAN (5V)
logische Schnittstelle	CAN SAE J1939	logical interface	CAN SAE J1939	interface logique	CAN SAE J1939
Baud Rate	250 kBaud	baud rate	250 kBaud	vitesse de transmission	250 kBaud
kurzschlussfest	ja	short circuit protection	yes	Protégé contre courts-circuits	oui
verpolungsfest	ja, Vs zu GND	reverse polarity protection	yes, Vs to GND	Protégé contre inversion polarité	oui, Vs vers GND
Arbeitstemperatur	-40 ... +70 °C	operating temperature	-40 ... +70 °C	Température de fonctionnement	-40 ... +70 °C
Lagertemperatur	-40 ... +85 °C	storage temperature	-40 ... +85 °C	Température de stockage	-40 ... +85 °C
Schutzart	IP 68/69K	protection class	IP 68/69K	Classe de protection	IP 68/69K

Technische Änderungen vorbehalten ***Tecnical specifications subject to change*** ***Sous réserve de modifications techniques***

Visuelle Diagnose — *Visual diagnostic* — *Diagnostic visuel*

Status / Status / Condition	Code
Sensor voll funktionfähig (Objekt detektiert) Sensor fully operational (object detected) Capteur complètement opérational (object détecté)	100 ms grüne LED an / green LED on / LED verte alluminée 400 ms LED aus / off / éteinte
Sensor voll funktionfähig (kein Objekt detektiert) Sensor fully operational (no object detected) Capteur complètement opérational (anun object détecté)	wie oben / as above / comme ci-dessus zusätzlich / with additional / avec supplémentaire 100 ms gelbe LED an / yellow LED on / LED jaune alluminée
Elektronikfehler Hardware fault Défaut de matériel	50 ms rote LED an / red LED on / LED rouge alluminée 50 ms LED aus / off / éteinte
CAN Abwurf (Fehlfunktion) CAN bus off (malfunction) Arrêt du bus CAN (dysfonctionnement)	50 ms magenta LED an / on / alluminée 150 ms LED aus / off / éteinte
Adresszuweisung fehlgeschlagen Address claim failed Assigment d‘ addresse failli	50 ms magenta LED an / on / alluminée 50 ms LED aus / off / éteinte
Warten auf Adresszuweisung Waiting for Master ECU adress claim En attendre il assignment d‘ adresse du maître ECU	500 ms magenta LED an / on / alluminée 500 ms LED aus / off / éteinte
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 ISO name Nom ISO	Manufacturer code: ECU instance: Function instance: Function: System: System instance: Industry group: Arbitration capable:	343 (Baumer Group) 0 1 0 0 0 2 1
Geräteadresse Device address Adresse de l‘appareil	Unterstützt / supports „commanded address“ / supporte adresse commandée (PGN 0xFED8) im Bereich / in range / dans l‘ interval: 0x80 ... 0xCF (Standard / default / défault 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

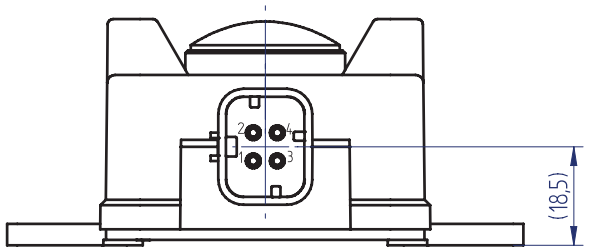
Start bit	Bits	Abstand offset décaillage	Skalierung scaling écaillage	Beschreibung / description / description
1	2	0	1	Sensorstatus / Sensor status / état de capteur 0 = Kein Fehler / no error / Pas d‘ erreur 1 = Reversibler Fehler / reversible error / erreur reversible 2 = Irreversibler Fehler / irreversible error / erreur irréversible
3	7	0	1%	Konfidenz Pflanzenabstand / canopy confidence / confidance en la distance par raportaux plantes 0% ... 100%
10	7	0	1%	Konfidenz Bodenabstand / ground confidence / confidance 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)

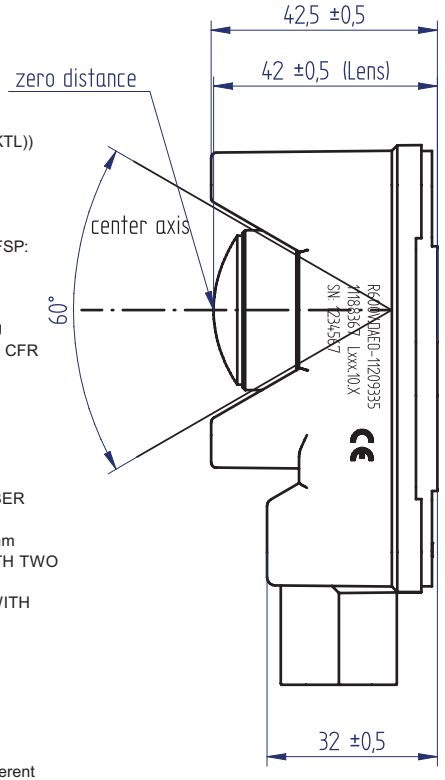
Für weitere Informationen lesen Sie bitte die Bedienungsanleitung - For further information please refer to the user manual - Pour plus d‘ informations, veuillez vous référer au manuel d‘ utilisation

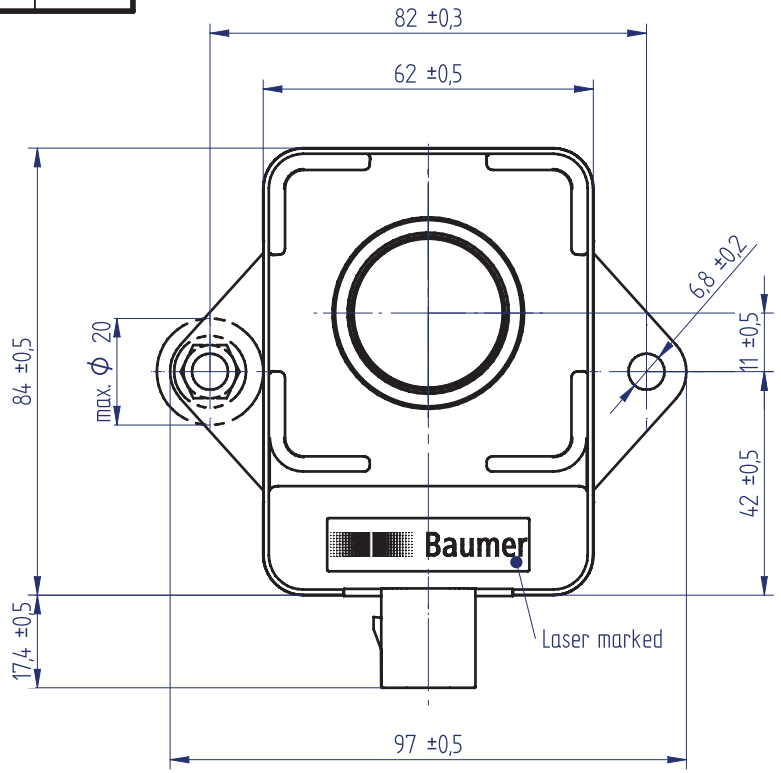
NOTES:

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
   c. OUTPUT CIRCUIT: CAN 5V without internal 120Ω terminator
   d. CAN UPDATE RATE: ≥ 1 … ≤ 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: GRIVORY XE 4027 black 9916
   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: ELECTRONIC CODE OF FEDERAL REGULATION ACC. TO FCC 47 CFR Part 18 “This device complies with part 18 of the FCC Rules”
   f. EMC (CE) ACC. TO EN 61000-6-2 / EN 61000-6-3
   g. PROTECTION CLASS ISO 20653_2013: 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 ≤0.2mm/100mm
   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 ± 30° around sensor center axis
    Sensitivity and detection of objects near the dead band 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







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Qty	Item			Pos.	Material			Remarks
	Rev	Drawn	Approved		Rev	Drawn	Approved	deburred
Mod				Mod				

Project: 10714028 Off Highway Radar
Replaced by
Replacement for

R600V.DAE0-11209335
Ground & Crop (Spray drift suppression)

Scale 1:1

Drawn	28.03.2019	cg
Checked	28.03.2019	rma
Approved	15.04.2019	wemi

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