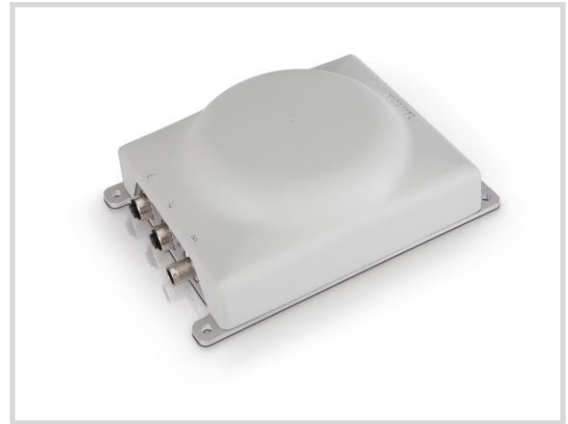


GMA

Programmable GNSS RTK receiver with LTE modem

The compact GNSS receiver with LTE modem GMA is also ideal for small machines. Using a RTK correction service via NTRIP client, position determination of 2-3 cm accuracy is possible.

The GMA makes a machine accessible via the Internet. It communicates with the Völkel cloud server via 4G and 2G mobile radio network and with the machine controller via Ethernet, USB, CAN or RS232. The bidirectional communication enables the transfer of user and machine data, as well as remote diagnosis and secure remote maintenance (update).



Due to the integrated antennas, the GMA is easy to integrate into a mobile machine and can be flexibly furnished with customer-specific software-applications.

Characteristics

GNSS	▶ Satellite navigation systems: GPS, GLONASS, Galileo, BeiDou ▶ integrated antenna, capable of dual-frequency ▶ Interfaces: CAN (NMEA2000) RS232 (NMEA0183) or by arrangement
MODEM	▶ 4G (LTE) and 2G (GSM) ▶ integrated mobile antenna ▶ Interfaces: Ethernet and USB ▶ Völkel SIM card with national roaming (a third-party provider can also be used)
SYSTEM	▶ flexibly expandable through customer-specific software-applications ▶ Microcontroller ARM Cortex - A5 ▶ Data memory: 4 GB ▶ integrated inclination sensor

Applications

- ▶ Precise, georeferenced user data acquisition
- ▶ Support of machine controller
- ▶ Operating data logging
- ▶ Server-based data logger
- ▶ Remote diagnosis
- ▶ Remote maintenance

• **Technical data:**

GNSS Accuracy	with RTK: 0.03 m + 1 ppm CEP95 or 0.01 m + 1 ppm CEP uncorrected: 4.5 m CEP95 (or 1.5 m CEP)
GNSS Systems / Signals	GPS: L1, L2 GLONASS: L1, L2 GALILEO: E1, E5 BEIDOU: B1, B2
GNSS receiver channels	184
GNSS Position refresh rate	up to 20 Hz
GNSS Time to First Fix	Cold Starts: 24 s Aided start: 2 s
Mobile data connection	LTE Cat1 with 2G fallback (EU, other regions on request)
Microcontroller	ARM Cortex - A5, 536 MHz
Mass storage	4 GB
Main memory	256 MB
Inputs	1 activation input with 4.7 kΩ pull-down
Interfaces	1 RS232, maximum baud rate: 115 kBaud 1 CAN 2.0B, maximum baud rate: 1 Mbit/s 1 Ethernet, maximum data rate: 100 Mbps 1 USB 2.0 Host High Speed 480 Mbps
Time recording	Real time clock, battery buffered
Diagnostic-LED	RGB LED
Supply	UB = 8 ... 32V
Power consumption	approx. 0.23A at 12V standby: 4mA and 13mA (red LED on)
Interfaces	M12 8-pole for power supply and interfaces M12 5-pin for USB M12 4-pin D-coded, Industrial Ethernet
Degree of ingress protection	IP69k
Operating temperature range	-40 ... 85°C (housing temperature)

EMC	Road vehicles: Directive 2014/30/EU, UN/ECE-R10 ISO 10605, ISO 7637-1, ISO 7637-2, ISO 7637-3 Construction machinery: DIN EN 13309 Agricultural and forestry machinery: Directive 167/2013/EU, DIN EN ISO 14982 Industrial use: DIN EN 61000-6-2, DIN EN 61000-6-4
EMC, industrial environments	Cold: DIN EN 60068-2-1 Dry heat: DIN EN 60068-2-2 Vibration: DIN EN 60068-2-6 Temperature change: DIN EN 60068-2-14 Shocks: DIN EN 60068-2-27 Permanent repeat shocks: DIN EN 60068-2-27 Damp heat: DIN EN 60068-2-30 Rough handling shocks: DIN EN 60068-2-31
Safety	Microcontroller watchdog, reverse polarity protected, pressure compensation element
MTTFd	109 years
Housing	Plastic housing with pressure compensation element on aluminium base plate
Overall dimensions	(L/W/H) 176 mm x 125 mm x 56 mm
Weight	~0.6 kg

Assignment of port "M" (machine interface: Supply / CAN / RS232):

Socket connector 8-pin. M12		
Pin No.	Designation	Description
1	UB	Supply
2	DG	Mass
3	ACT	Switch-on signal
4	CH	CAN line H
5	CL	CAN line L
6	TXD	RS232 transmission line
7	RXD	RS232 receiving line
8	-	-

Assignment of port "U" (USB interface):

5-pin socket connector. M12		
Pin No.	Designation	Description
1	ID	USB cable ID
2	VCC	USB cable VCC
3	GND	USB cable GND
4	DP	USB cable DP
5	DM	USB cable DM

The USB port may only be plugged or unplugged when the device is switched off!

Assignment of port "E" (Ethernet interface):

4-pin socket connector. M12 D-coded		
Pin No.	Designation	Description
1	TXD+	Transmission line +
2	RXD+	Receiving line +
3	TXD-	Transmission line -
4	RXD-	Receiving line

GMA housing dimensions

