

# AGS-2 Receiver and Steering Controller



## Future Proof Autosteering

Designed to suit virtually any agricultural machine type, make and model, the Topcon AGS-2 receiver and steering controller combines field proven steering with leading network tracking capability in a refined, compact and durable form.

### FEATURES

- Unique Universal Tracking Channels™ Technology
- Expanded satellite constellation tracking – GPS, GLONASS, GALILEO, QZSS, BeiDou, SBAS
- Scalable accuracy – SBAS, DGPS, PPP, RTK – including access through authorization codes and subscriptions (PPP and RTK only)
- SkyBridge™ – RTK assist technology which uses TopNET Global Positioning to supplement RTK positioning during temporary radio or cellular link outage
- External communication devices (e.g. Topcon Cloudlynk connectivity devices) – Provide support for UHF, FH915 radio options, cellular, Wi-Fi and Bluetooth®
- Interface flexibility – Compatible with proven Topcon X Family displays (X25, X35, XD, XD+), ISO-UT capable displays\*, NMEA 0183 and NMEA 2000
- High durability – IP69K

### PHYSICAL

Housing	Base – Aluminum; Radome – Xenoy
Dimensions (h x w x d)	53 x 130.5 x 136.5 mm
Weight	0.75 kg
LEDs	1 Tri-color: STAT satellite status
Mounting	4 * M5, range of brackets available
Connectors	12pin DT Deutsch M12

### ENVIRONMENTAL

Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Ingress Protection	IP69K
Vibration	ISO 15003/DIN 10046 PART 8
Shock	ISO 15003/DIN 40046
Salt Spray Test	ISO 15003
Humidity	95%, non-condensing
Jerk	3 g/sec
Acceleration	20 g

### POWER

Input Voltage	9 - 28 VDC
Consumption	11 W maximum
Supply Current	650 mA typical operating current at 12 Vdc 2 A maximum

### COMMUNICATION INTERFACES

RS-232 Interface	Number of interfaces	2
	Electrical and mechanical	Conforms to EIA RS-232
	Connection method	Point-to-point
	Transmission mode	Full duplex
	Baud rate	4800, 9600, 19200, 38400, 57600, 115200 (default), 230400 and 460800
	Data length	7 or 8 (default)
	Stop bit	1 bit (default) or 2 bits
	Parity	No parity (default), even, or odd
	Flow control	RTS/CTS (hardware handshaking) on serial port A
	Data output format	NMEA0183, proprietary
CAN Interface	Compliance	J1939 and ISO 11783
	Number of interfaces	2
	Electrical and mechanical	Conforms to CAN 2.0 A/B
	Data output format	NMEA 2000, OEM proprietary
Automotive Ethernet Interface	Data rate	250 kbs
	100BASE-T1 IEEE 802.3bw (compatible with BroadR-Reach Automotive spec 3.2)	
	Number of interfaces	1
	Electrical and mechanical	ISO 15118, single twisted pair
	Transmission method	TCP/UDP
	Data rate	100 Mbps
	Communication protocol	ISO 15118
	Supported services	FTP, proprietary

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TRACKING SPECIFICATIONS	
Channels	226 Universal Tracking Channels™
Tracked Signals	GPS: L1C/A, L1P, L1C*, L2P, L2C, L5 GLONASS: L1C/A, L1P, L2C/A, L2P, L3* GALILEO: E1, E5AltBOC, E5a, E5b BeiDou: B1, B2 QZSS: L1C/A, L1C, L1-SAIF, L2C, L5 SBAS: WAAS, EGNOS, MSAS, GAGAN, AUSBAS*, SDCM* L Band
Time to First Fix (50%)	Hot (almanac and recent ephemeris and approx. position) < 10 sec Warm (almanac, approx. position and time, no recent ephemeris) < 35 sec Cold (no almanac or ephemeris, no approx. position or time) < 60 sec
Reacquisition	< 1 sec
TRACKING FUNCTIONS	
Multi-path Reduction	Code and Carrier
PLL/DLL/QLL Setting	User-configurable
Pseudorange Smoothing	Adjustable, Trupass™ technology
DATA FEATURES	
Data Format	Proprietary (TPS) data format RTCM SC104 versions 2.x and 3.x CMR and CMR+ (public version)1, BINEX NMEA 2000 over CAN: 129029, 129025
ASCII Output	NMEA 0183 version v2.x, v3.x, v4.x
POSITION AND VELOCITY FEATURES	
DION™	Active filter reduces disturbances in positional results, leading to smoother, more consistent output in static and dynamic applications; also allows seamless transition between positioning modes
Multipath Mitigation	A proprietary signal-processing algorithm mitigates multipath effect on satellite measurements
Quartz-Lock Loop™ (QLL)	Patented technology eliminates satellite tracking failures and positioning degradation caused by vibration and shock
Ion Shield™	Continuously monitors ionospheric conditions and rapidly switches to iono-free combination if ionospheric disturbances have been detected
Geometric Attitude Filter	A novel algorithm robustly combines GNSS, inertial and odometer measurements to provide accurate 3D orientation in all conditions
Velocity Filter	Adaptively reduces noise errors while correcting dynamic errors in raw velocity estimates

HORIZONTAL POSITION ACCURACY** (RMS)		
	Absolute	Pass-to-pass (15 min)
Standalone	1.2 m	35 cm
SBAS	50 cm	20 cm
TopNETlive PPP services		
TopNETlive StarPoint	40 cm	15 cm
TopNETlive StarPoint Pro	2.5 cm	
SkyBridge	Supplements RTK positioning during temporary radio or cellular link outage	
		Up to 20 minutes
		Unlimited correction outage
RTK	1 cm + 1 ppm	
Velocity Accuracy	0.02 m/sec	
Time Accuracy	30 nsec	
SENSOR FUSION		
Integrated Inertial Unit with Thermo Control	Three axis accelerometer, three axis gyro, three axis magnetometer (compass)	
ISOBUS Sensors Support	Wheel angle sensor, odometer	
Accuracy (RMS)	Pitch & roll: 0.2 deg, heading: 0.5 deg	
STEERING CONTROL		
Hydraulic	Danfoss PVED-CL, PVED-CLs (ISO25119 AgPI-d), EHi valve ACU-1 (PWM & others) and a wide range of other supported steer ready controllers	
Electric	AES-25, AES-35	
Vehicle Platforms (Steering)*	Front-Steered, Rear-Steered, Tracked, Articulated, Windrower, 4 Wheel-Steered	
SPRAYER		
Mounting	Front, Rear	
PATH PLANNING		
Waylines	Parallel AB, Parallel A+heading, Center Pivot, Identical Curve, Headland turns, Guidelock, Steer to Boundary, Multiple AB lines, Controlled Traffic***	

<sup>1</sup> CMR/CMR+ is a third-party proprietary format. Use of this format is not recommended and performance cannot be guaranteed. Use of industry standard RTCM 3.x is always recommended for optimal performance.

\* HW ready, signals, services and features will be available for usage after system release/ FW update, etc.

\*\* These specifications will vary depending on the number of satellites used, obstructions, satellite geometry (PDOP), occupation time, multipath effects, and atmospheric conditions. Performance may be degraded in conditions with high ionospheric activity, extreme multipath, or under dense foliage. For maximum system accuracy, always follow best practices for GNSS data collections.

\*\*\* Not all available in ISO UT