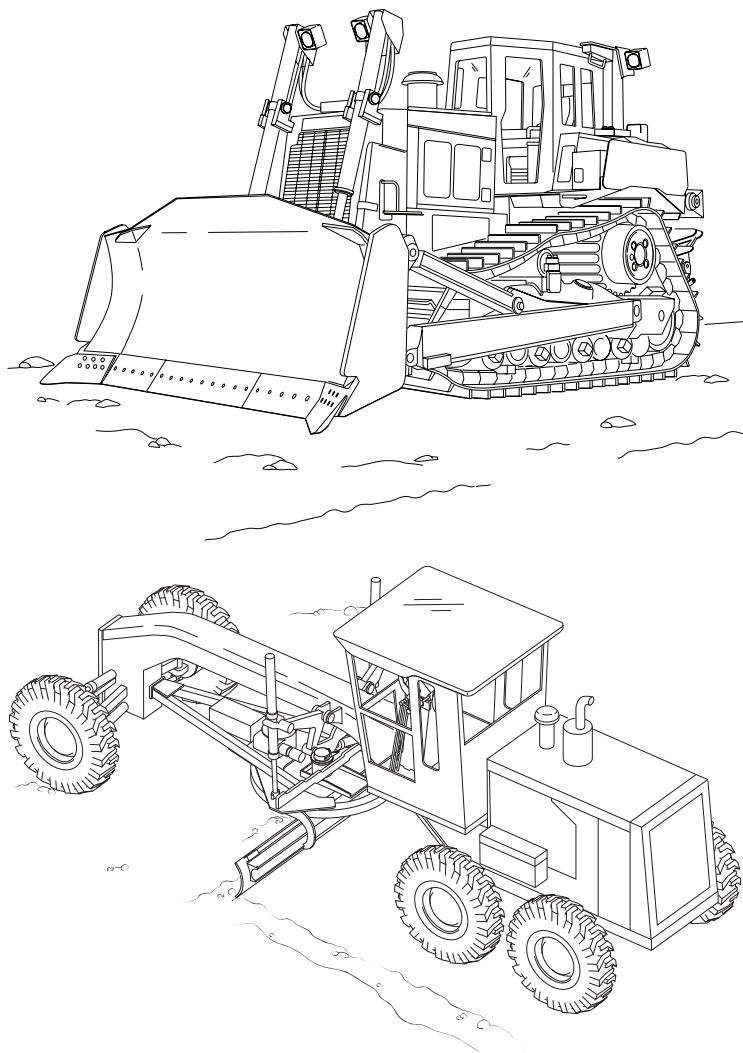


DESCRIPTION

Developed specifically for machine control applications, the MC-R3 Controller combines the latest GNSS receiver technology, wireless modems, several communication port options, and System Five valve controller into one robust unit.

FEATURES

- Most advanced GLONASS and GPS dual frequency RTK satellite tracking system
- Advance Multipath Reduction (AMR)
- In-band Interference Rejection (IBIR) option
- Compliance with CMR and RTCM industry standard
- Flash download capability (application code revisions in the field)
- Seven bi-color LED indications for satellite tracking and status
- System Five Controller
- Ethernet and RS-232 and RS-485 serial connection to GPS receivers and valve controller board
- Valve Drivers
- SIM card slot for use with optional GSM radio modem
- Rugged housing form OEM and aftermarket applications



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SPECIFICATIONS

ELECTRICAL

SUPPLY VOLTAGE	10-30 VDC
SUPPLY CURRENT	3A typical operating current 18.5A Max 3mA at 24V typical leakage current 1.5mA at 12V
EMMISSIONS	Applicable regulation: EN55022: 2006 30-230MHz 40.0dB (mV/m) Max at 10m 230-1000MHz 47.0dB (mV/m) Max at 10m
IMMUNITY	Applicable regulation: EN55024: 1998 A1: 2001/A2: 2003 ESD: +/-8KV RF: 80-1000MHz 3 V/m Fast transient: +/- .5KV capacitively coupled RF common mode: 3V 150kHz to 8MHz (80% 1kHz AM)
OUTPUT POWER	10A max for sensors 8A max for valves 12V/500mA max for external radio modem
PORTS	1 ea. Topcon proprietary RS-485 port for sensors 1 ea. RS-232 dedicated port for Graphic Management Unit (GMU) 2 ea. RS-232 dedicated ports for Main and Aux GPS receivers 2 ea. RS-232 dedicated ports for mmGPS 1 ea. RS-232 dedicated port for external modem 2 ea. CAN ports 2 ea. Ethernet ports 1 ea. I ² C port for Smart Knob™ 1 ea. SIM card (optional) - EDGE compatible

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SPECIFICATIONS

PHYSICAL

HOUSING Powder-coated, cast aluminum
Note: See Envelope Dimensions section

CONNECTORS 2 ea. DRC23-40P Deutsch high density connector, gold plated contacts, plastic housing, unique keyed
2 ea. Type N for GPS (optional)
1 ea. RP-TNC for radio (optional)
1 ea. TNC for LPS (optional)

SWITCHES Logic control: Hi = On, Low = Off

LEDs 1 ea. CAN
1 ea. Sensor
1 ea. Controller
1 ea. Auto
1 ea. Radio Modem
1 ea. Main GPS Receiver
1 ea. Aux GPS Receiver
Note: See LED Status section

COOLING 1 ea. internal fan

WEIGHT 7.5 lbs

ENVIRONMENTAL

OPERATING TEMPERATURE -20°C to +60°C

INGRESS PROTECTION IP-66

SHOCK TEST 50G 11ms 1/2 sine wave each axis

SALT SPRAY TEST MIL-STD 810F

VIBRATION TEST 10-400Hz sweep 5G RMS

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SPECIFICATIONS

VALVE OUTPUTS

Four valve outputs (2 bidirectional hydraulic cylinders)

PROPORTIONAL CURRENT Programmable dither, 0-112Hz, 0-25%
0-5A in 16 scale settings
Sink or source operation

PROPORTIONAL PULSE WIDTH MODULATED 244-1700 Hz programmable
Programmable dither, 0-112Hz, 0-25%
Programmable current limit
Sink or source operation

SERVO VALVE MODE Programmable current limit
Sink or source operation

SOLENOID (ON/OFF) MODE 2-14Hz Programmable current limit
Sink or source operation

DANFOSS™ 50% available voltage as neutral
> 50%=Raise, < 50%=Lower
Programmable dither, 0-112Hz, 0-25%
External reference option



LED STATUS

The CAN, Sensor, Control, and Auto LED's on the chart below have a heartbeat to indicate proper operation of the processor.

7 EA BI-COLOR RED/GREEN STATUS			
CAN			
	STATUS	RED	GREEN
	CAN Communication OK	Off	On
	No CAN Communication	On	Off
	No CAN Required	Off	Off
SENSOR			
	STATUS	RED	GREEN
	Sensor Communication OK	Off	On
	No Sensor Communication	On	Off
	Firmware Loading	Alternate Flashing Red/Green (LED flashes alternately with Control LED)	
CONTROL			
	STATUS	RED	GREEN
	GUI Communication OK; Current	Off	On
	GUI Communication Established; Not Current	Off	Blinking
	No GUI Communication	On	Off
	Firmware Loading	Alternate Flashing Red/Green (LED flashes alternately with Sensor LED)	
AUTO			
	STATUS	RED	GREEN
	Not in Automatic	On	Off
	One Side in Automatic	Off	Blinking
	Both Sides in Automatic	Off	On



LED STATUS Cont.

7 EA BI-COLOR RED/GREEN STATUS			
RADIO RX			
	STATUS	RED	GREEN
	Power	Off	On
	Receiving Radio Signal	1 Blink per Second for Each Reception of Data	On
MAIN and AUX (GPS ANTENNAS)			
	STATUS	RED	GREEN
	Tracking GPS	Off	1 Blink for Each Satellite Tracked
	Tracking Glonass	1 Orange Blink for Each Satellite Tracked - Red and Green Blink Together	
	Firmware Download	Alternate Flashing Red/Green	



MC-R3 Controller

9903/9905/9906

Doc. #7011-0157 Rev. A ECO#3396

MODELS

Single GPS Versions		Dual GPS Versions		Modem
P/N	Description	P/N	Description	Type
9903-0001	ASSY, MC-R3 NO GPS W/ FUTABA	-	-	FUTABA
9905-0001	ASSY, MC-R3 SGL 915 + NO-OAF	9906-0001	ASSY, MC-R3 DUAL 915 NO-OAF	TOPCON 915+
9905-0002	ASSY, MC-R3 SGL DIG NO-OAF	9906-0002	ASSY, MC-R3 DUAL DIG NO-OAF	DIGITAL
9905-0003	ASSY, MC-R3 SGL NO RADIO NO-OAF	9906-0003	ASSY, MC-R3 DUAL NO RADIO NO-OAF	-
9905-0004	ASSY, MC-R3 SGL 915+ GSM US NO-OAF	9906-0004	ASSY, MC-R3 DUAL 915+ GSM US NO-OAF	TOPCON 915+ GSM US
9905-0005	ASSY, MC-R3 SGL 915+ GSM EU NO-OAF	9906-0005	ASSY, MC-R3 DUAL 915+ GSM EU NO-OAF	TOPCON 915+ GSM EU
9905-0006	ASSY, MC-R3 SGL DIG GSM US NO-OAF	9906-0006	ASSY, MC-R3 DUAL DIG GSM US NO-OAF	DIGITAL GSM US
9905-0007	ASSY, MC-R3 SGL DIG GSM EU NO-OAF	9906-0007	ASSY, MC-R3 DUAL DIG GSM EU NO-OAF	DIGITAL GSM EU
9905-0008	ASSY, MC-R3 SGL DIG CDMA SPRINT NO-OAF	9906-0008	ASSY, MC-R3 DUAL DIG CDMA SPRINT NO-OAF	DIGITAL CDMA SPRINT®
9905-0009	ASSY, MC-R3 SGL DIG CDMA VERIZON NO-OAF	9906-0009	ASSY, MC-R3 DUAL DIG CDMA VERIZON NO-OAF	DIGITAL CDMA VERIZON®
9905-0010	ASSY, MC-R3 SGL SATEL 430-450 NO-OAF	9906-0010	ASSY, MC-R3 DUAL SATEL 430-450 NO-OAF	SATEL 430-450
9905-0011	ASSY, MC-R3 SGL SATEL 410-430 NO-OAF	9906-0011	ASSY, MC-R3 DUAL SATEL 410-430 NO-OAF	SATEL 410-430
9905-0012	ASSY, MC-R3 SGL SATEL 450-470 NO-OAF	9906-0012	ASSY, MC-R3 DUAL SATEL 450-470 NO-OAF	SATEL 450-470

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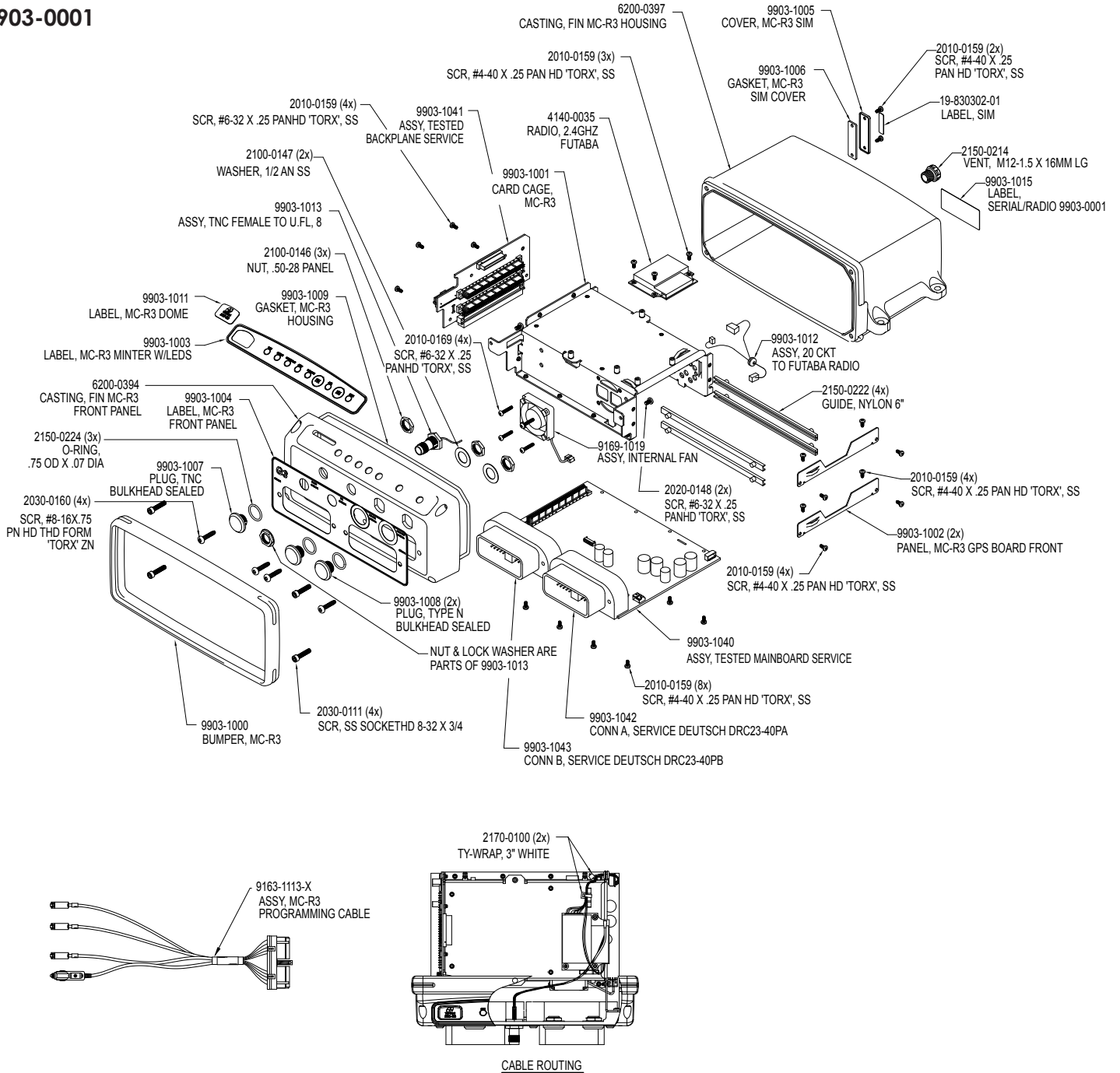
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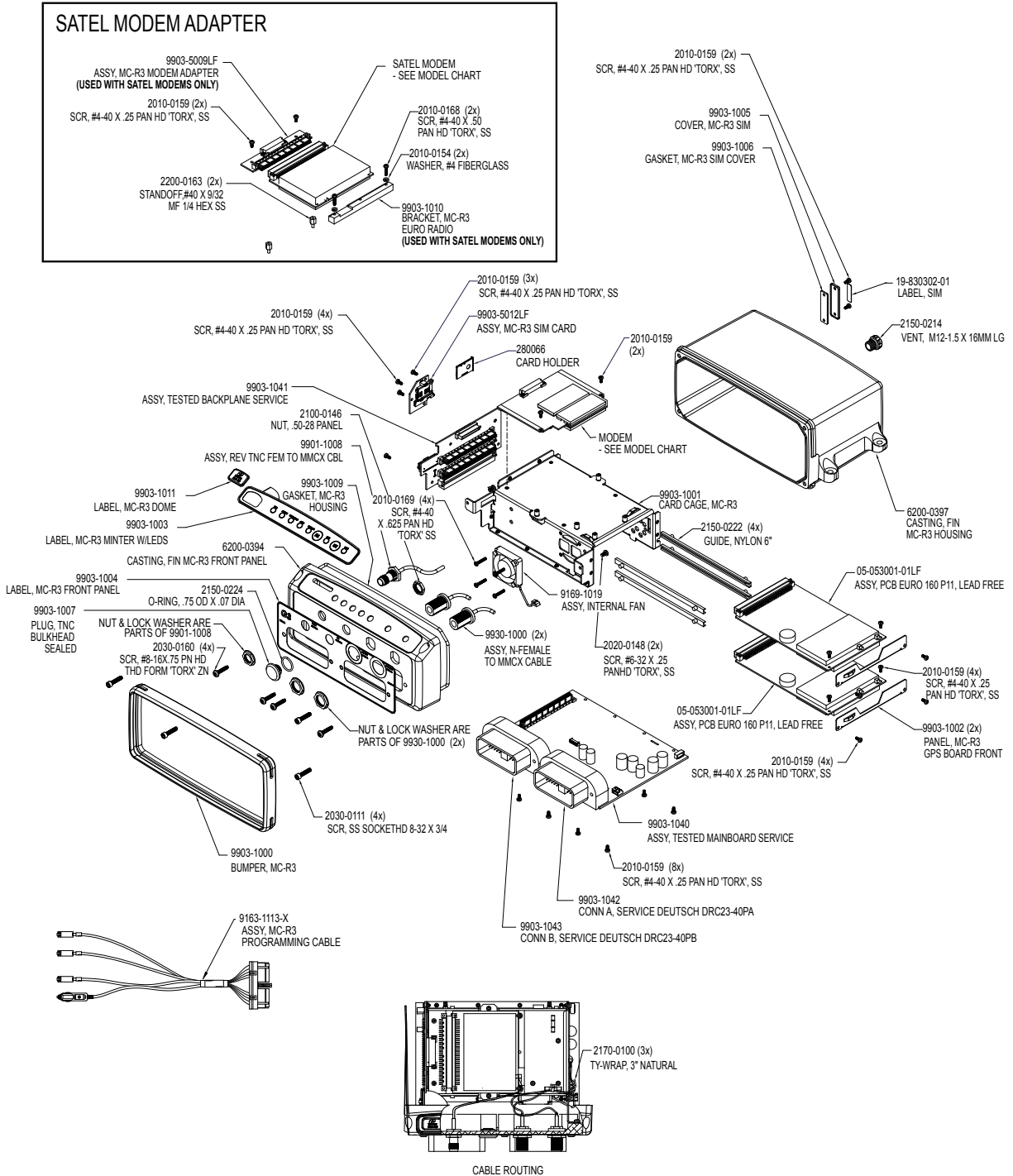
SERVICE PARTS

9903-0001



SERVICE PARTS

9905/9906



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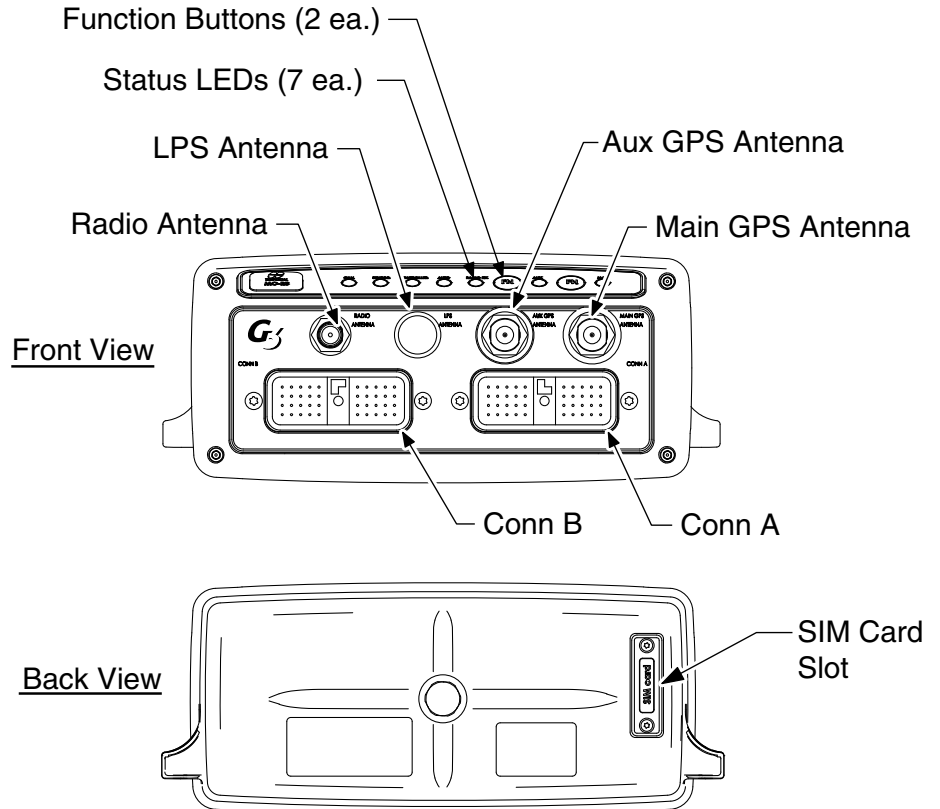
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CONNECTOR PINOUTS

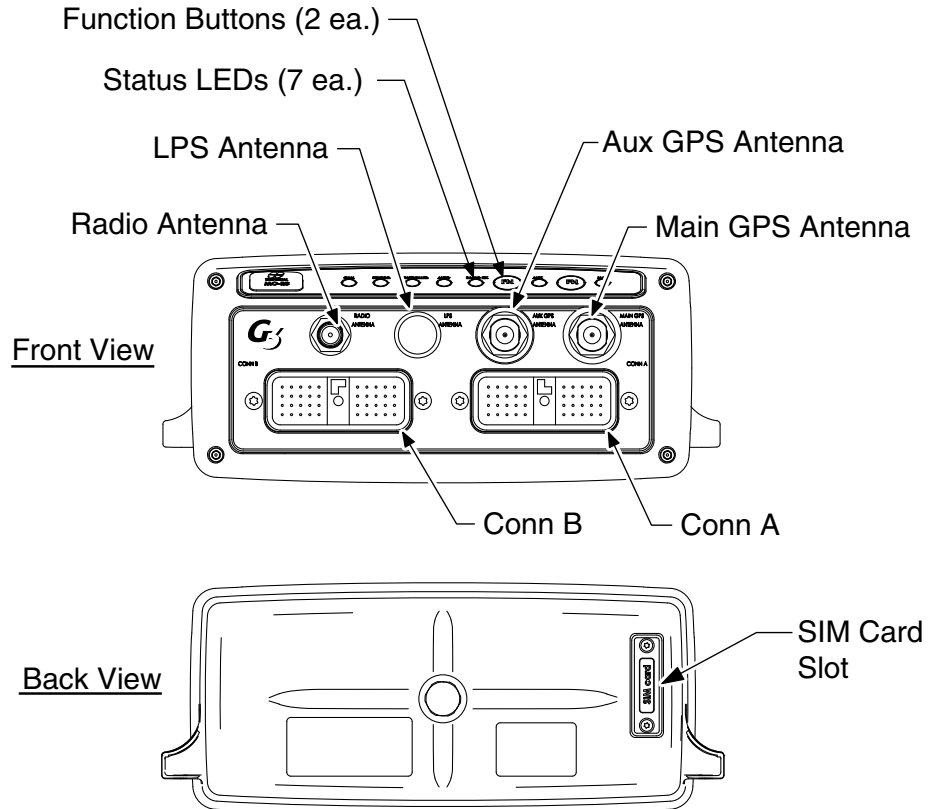
Conn A - Deutsch DRC23-40PA	
15	PWR IN
25	PWR IN
35	PWR IN
16	SYS GND
26	SYS GND
36	SYS GND
24	SWITCH ON
8	VALVE PWR
9	VALVE PWR
37	VSUPPLY
38	VSUPPLY
2	GROUND
12	GROUND
19	GROUND
29	GROUND
39	GROUND
32	+12V
4	CAN 0 H
14	CAN 0 L
5	MAIN A TX
34	MAIN A RX
17	AUX A TX
27	AUX A RX
6	GMU TX
7	GMU RX
1	MAIN B TX
21	MAIN B RX
11	MAIN B RTS
31	MAIN B CTS
18	BUF CLK
28	BUF DATA

20	RATIO METRIC OUTPUT 1
30	RATIO METRIC OUTPUT 2
10	RATIO METRIC INPUT PWR REF
40	RATIO METRIC GND REF
3	ETHERNET 0RX+
13	ETHERNET 0RX-
23	ETHERNET 0TX+
33	ETHERNET 0TX-
22	GROUND



CONNECTOR PINOUTS

Conn B - Deutsch DRC23-40PB	
1	VALVE PWR
7	VALVE PWR
11	VALVE PWR
17	VALVE PWR
24	VSUPPLY
25	VSUPPLY
27	VSUPPLY
37	VSUPPLY
8	GROUND
9	GROUND
13	GROUND
22	GROUND
19	GROUND
29	GROUND
38	GROUND
39	GROUND
2	CAN 1 H
12	CAN 1 L
18	COMM A
28	COMM B
4	MAIN C TX
14	MAIN C RX
5	MAIN C RTS
15	MAIN C CTS
3	EVENT A
23	AUX C TX
34	AUX C RX
33	AUX RTS
35	AUX CTS
32	EVENT B
10	LEFT RAISE
20	RIGHT RAISE
30	LEFT LOWER
40	RIGHT LOWER



RF Connector Type			
Receiver Box	Radio Antenna	LPS Antenna	GPS Antenna
9903/9905/9906	Reverse TNC Female	TNC Female	N Female

6	ETHERNET 1 RX+
16	ETHERNET 1 RX-
26	ETHERNET 1 TX+
36	ETHERNET 1 TX-
21	-PPSA
31	+PPSA

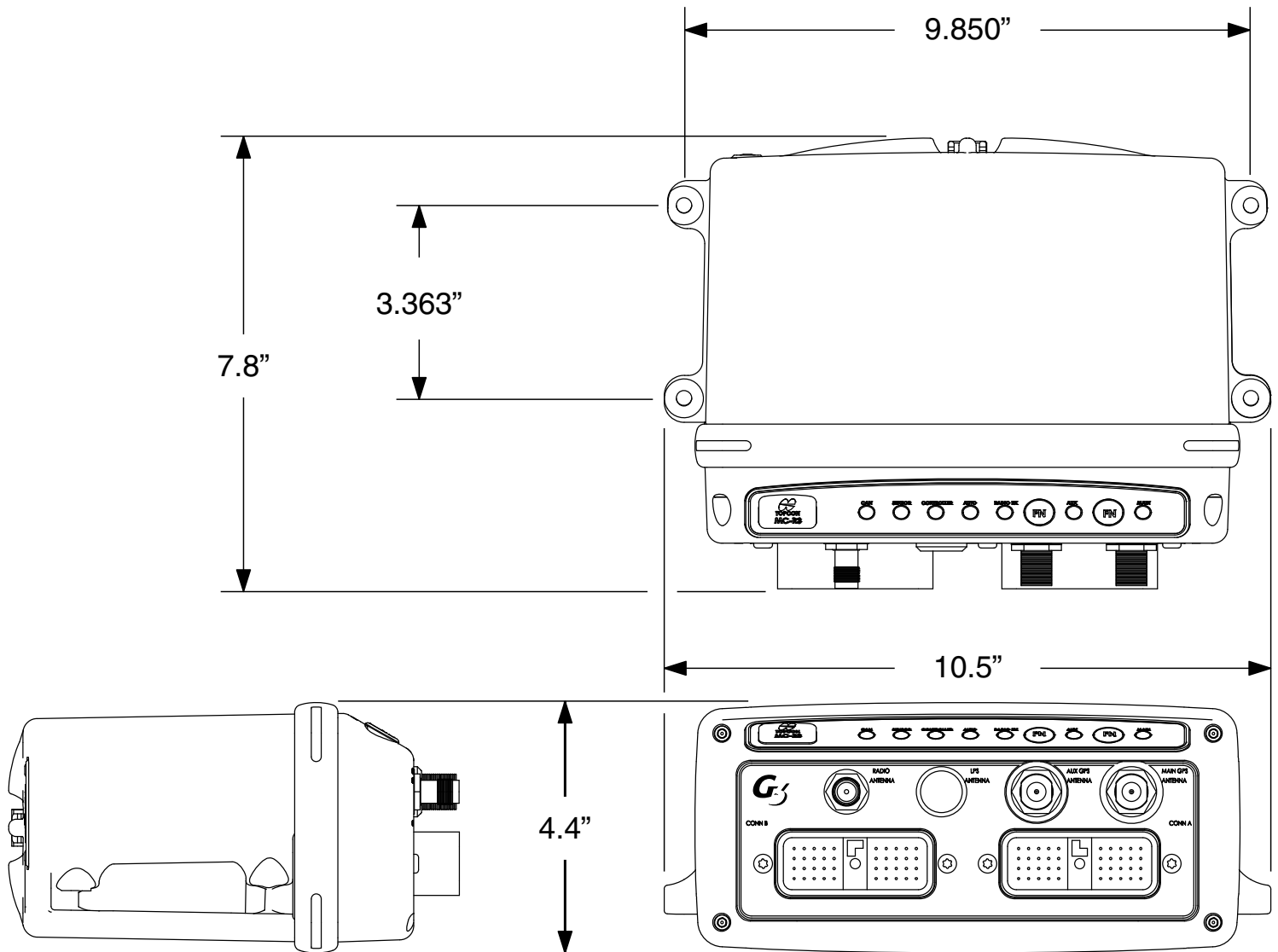
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ENVELOPE DIMENSIONS



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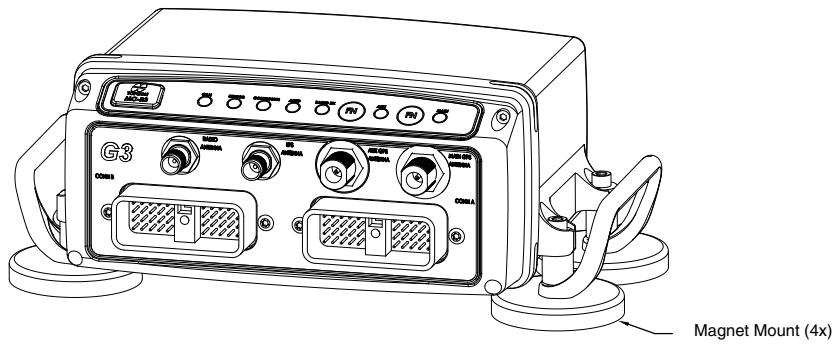
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MOUNTING OPTIONS

9504-01 - Removable Magnet Mount Kit



9903-1020 - Permanent Mount Kit

