

# CAS-GPS Light Vehicle System

## LH for high-temperature environment

Industrial grade Proximity Detection System that provides real-time 360-degree situational awareness to Light Vehicle operators. Suited to fixed Light Vehicle installations. Also available in a portable configuration (refer CAS-GPS Portable Light Vehicle System Technical Specification).

The Light Vehicle System comprises the following key components:

- Display** Operator interface with colour graphics touchscreen, processor unit, audio system, inbuilt Wi-Fi and optional cellular<sup>4</sup> for CAS-WEB reporting.
- Node** Includes high performance GPS receiver, Vehicle to Vehicle (V2V) radio transceiver, optional high accuracy Time-of-Flight (ToF) RF proximity, Personal Area Network, RS-232 communications and Digital Inputs/Outputs. The Node is powered remotely from the vehicle battery. The Node also contains an optional battery to ensure that the GPS receiver, V2V radio and ToF RF continue to operate during the loss of primary power.
- Interface** Provides interconnection to Node, Display, and vehicle signals, as well as providing short-term battery back-up to the Display when vehicle power is off.

### ***The system also has optional self-test capability***

An additional Node that enables automatic real-time functional health monitoring of a primary CAS-GPS/RF system on a vehicle without the requirement for a remote Test Station and operator interaction.

### **System Features**

- Industrial Grade Intelligent Display with 4.3" touchscreen & mounting accessories
- Common user interface with 7" version used for Heavy and Medium vehicles
- Supports Wi-Fi and/or Cellular communications for CAS-WEB reporting
- Supports voice alerts to programmable proximity alarm logic & geofence rules
- Supports self-test system for real-time health monitoring & reporting
- High-performance multi-constellation GNSS receiver, V2V digital radio, optional high accuracy ToF RF & IEEE 802.15.1 link and four configurable inputs (e.g. ignition, reverse)
- Universal mounting arrangement
- Certified Short-Range Device (SRD) V2V radio (ordered for specific region)
- Intelligent power management minimizes battery drain for periods of park up/inactivity<sup>1</sup>
- 12/24 V<sub>DC</sub> operation
- Suitable for installations where display surface temperature exceeds 36°

# 1 Power Management/States

The system transitions to its lowest possible power state when the vehicle ignition is off, but will continue to beacon at a lower rate, making its location known to surrounding vehicles. Prolonged operation in this mode will eventually deplete the vehicle battery, and isolation should be considered in these cases.

Battery holdup time (and ability to start the vehicle after a prolonged park up) will vary greatly as it depends on:

- Battery state/age
- Battery State of Charge (SoC)
- Battery temperature
- Other low drain devices permanently connected to the battery
- Starting current and wiring volt drop of the vehicle concerned, etc

Wabtec testing on a new, fully charge 4x4 Diesel lead acid battery will tolerate more than 3 weeks of Standby operation without losing the ability to crank the vehicle on demand.

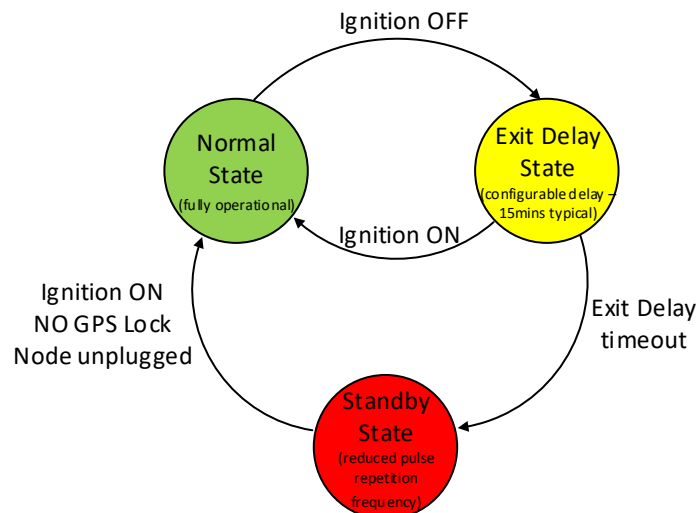


Figure 1 - LV System States

Operating Condition (13V nominal)	PROD1150 Display	PROD1116-S Type Single/Dual	PROD1151 Interface	Complete System
<b>Normal Mode</b>				
Average <sup>2</sup>	215 mA	85/155 mA	20 mA	320/390 mA
Peak <sup>3</sup>	300 mA	715/1415 mA	650 mA	1665/2365 mA
<b>Standby Mode</b>				
Average <sup>2</sup>	0 mA	35/45 mA	20 mA	55/65 mA
Peak <sup>3</sup>	0 mA	665/1305 mA	650 mA	1315/1955 mA
<b>Peak Charging Current</b>	N/A	630/1260 mA	630 mA	1260/1890 mA

<sup>2</sup> Average current draw measured when internal batteries were fully charged. Averages will differ when using batteries of different states of charge.

<sup>3</sup> Peak current draw measured when internal CAS-GPS batteries are fully discharged, and connected to a vehicle battery with ignition off.

Specifications	PROD1150 Display	PROD1116-S Type S Node	PROD1151 Interface
<b>System</b>	Internal audio system Internal ambient light sensor Linux O/S 4.3" size Resolution: 480 x 800 Brightness: 400 (typ.) Capacitive touchscreen	GPS, GLONASS, Galileo, QZSS, SBAS compatible Horizontal accuracy <sup>7</sup> up to CEP <sub>50</sub> 2.5m (24 hours static, -130 dBm, > 6 Satellites Visible) 5Hz refresh rate	
<b>Internal Interfaces</b>	RS232	CAN	RS232/CAN
<b>External Interfaces</b>			4 D/I (12/24 V <sub>DC</sub> )
<b>Power Supply Input Voltage</b>	Powered from Interface unit	12/24 Vdc system voltage 15W max ISO 7637-2 Level III compliant for 12/24 V systems	12/24 Vdc system voltage 15W max ISO 7637-2 Level III compliant for 12/24 V systems
<b>Optional RF Sub Systems</b>	Wi-Fi 802.11 b/g/n	Time of Flight ranging 10 mW, +2 dBi peak gain antenna 2.4 GHz based IEEE802.15.4a Range limited to 250m line of sight (environment-dependent) Accuracy up to ±2m (depends on mode) Mode 22MHz or 80MHz B/W	N/A
<b>Cellular<sup>4</sup></b>	GSM/GPRS/EDGE, UMTS/HSPA+		
<b>IEEE 802.15.1</b>	2.4 GHz PAN Up to +11 dBm EIRP	2.4 GHz PAN Up to +14 dBm EIRP	N/A
<b>Non-ranging telemetry between systems</b>	N/A	Refer also to Region Variants table Spectrum Opportunity Detection 'listen-before-talk' mode of operation	N/A
<b>Charge Time</b>	N/A	5.5 hours <sup>5</sup>	5.5 hours <sup>5</sup>
<b>Holdup Time</b>	N/A	24 hours <sup>6</sup>	15 min timer
<b>Operating Temp</b>	-10 to +60°C	-10 to 60°C	-10 to 60°C
<b>Storage Temp</b>	-20 to +60°C	-20 to 60°C	-20 to 60°C
<b>Operating Humidity</b>	5% to 95% RH	5% to 95% RH	5% to 95% RH
<b>Weight</b>	0.5 kg (including basic mount)	1.7 kg	0.9 kg (including mount)
<b>Size (HxWxD)</b>	141x85x82 mm (including basic mount)	214x133x145 mm (excluding cables)	63x180x204 mm (including mount)
<b>IP Rating</b>		IP66	IP67
<b>Vibration rating</b>		IEC Mechanical Class 5M3	
<b>Shock rating</b>		IEC Mechanical Class 5M2	
<b>Compliance</b>	System certified for use in Australia, RSA, USA, Canada, Brazil, Chile, Colombia, PNG & Mozambique. PENDING certification for use in Ghana, Mexico, Peru, India, Russia, Indonesia & Europe – confirm at time of order		

<sup>4</sup> Dependent upon availability of end-user-provided cellular network coverage and SIM card, data charges may apply

<sup>5</sup> Maximum charge time from 0% to 90% state of charge over 0°C to 35°C external ambient temperature, longer charge times apply outside this temperature range

<sup>6</sup> At 0°C to 60°C external ambient temperature, reduces to 18 hours between -10°C and 0°C

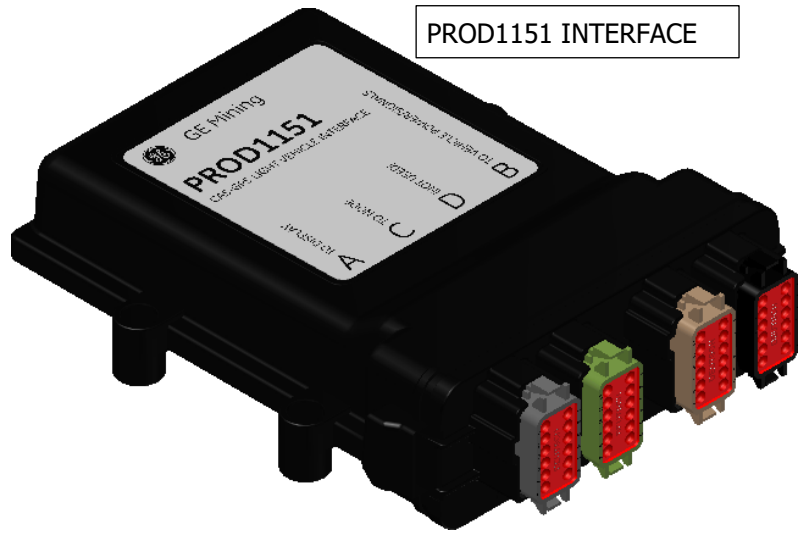
<sup>7</sup> CEP50 2.5m indicates that 50% of the GNSS readings will be within 2.5m of the true location

Region Variants	Region 1	Region 2	Region 4	Region 5	Region 7
<b>Countries</b>	RSA, Europe Ghana, Mozambique	Brazil, USA, PNG, Canada, Australia Mexico, Peru, Chile Colombia	India	Russia	Indonesia, Mongolia
<b>Digital Radio Centre Freq.</b>	869.525 MHz	920 MHz	866 MHz	864.5 MHz	921/922 MHz
<b>Transmit Power</b>	100 mW	100 mW	100 mW	25 mW	100 mW

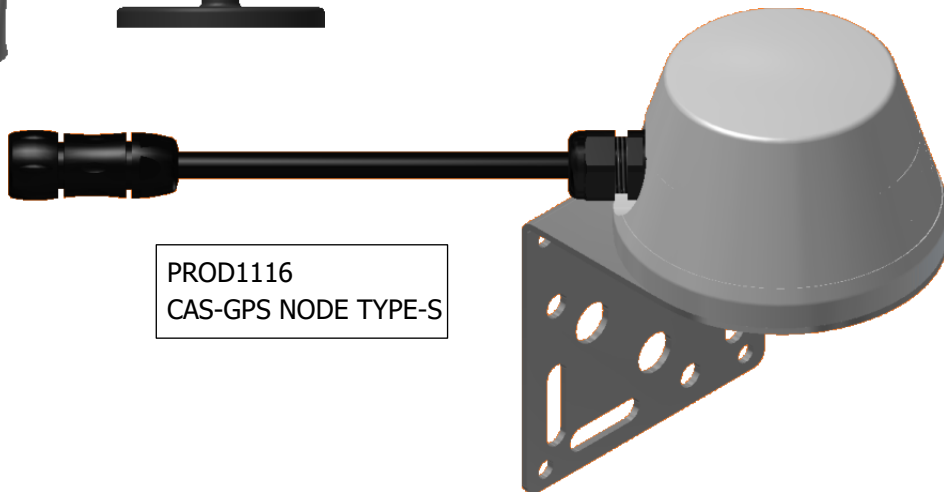
PROD1150 DISPLAY  
 (shown with PROD1149  
 MOUNT and MOUNTING  
 ACCESSORIES)



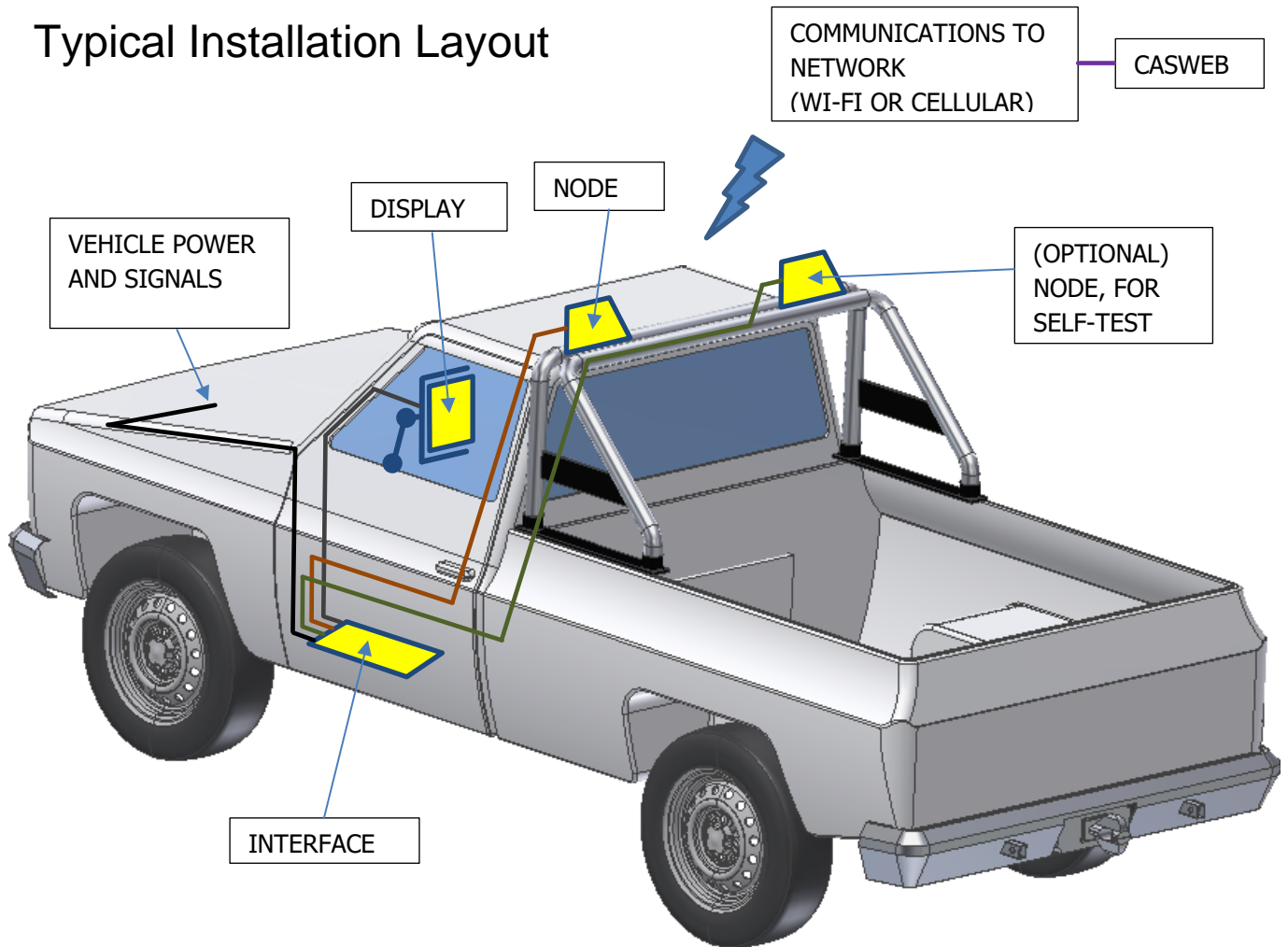
PROD1151 INTERFACE



PROD1116  
 CAS-GPS NODE TYPE-S



## Typical Installation Layout



Refer installation manual for wiring details and precautions

### System Part Number Reference

Item #	Description
CG-WRLH-XXKXX	CAS GPS + WIFI REGION R FOR LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE WITH INSTALLATION KIT TO SUIT
CG-BRLH-XXKXX	CAS GPS + WIFI + GSM REGION R FOR LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE WITH INSTALLATION KIT TO SUIT
CG-XRLH-XXKXT	CAS GPS SELF TEST UNIT REGION R WITH INSTALLATION KIT TO SUIT LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE
CG-WRLH-XXKXX-NT	CAS GPS + WIFI REGION R FOR LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE WITH INSTALLATION KIT TO SUIT NO ToF
CG-BRLH-XXKXX-NT	CAS GPS + WIFI + GSM REGION R FOR LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE WITH INSTALLATION KIT TO SUIT NO ToF
CG-XRLH-XXKXT-NT	CAS GPS SELF TEST UNIT REGION R WITH INSTALLATION KIT TO SUIT LIGHT VEHICLE ECONOMICAL HIGH TEMPERATURE NO ToF

Note: "R" in System Part Number denotes Region Code

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