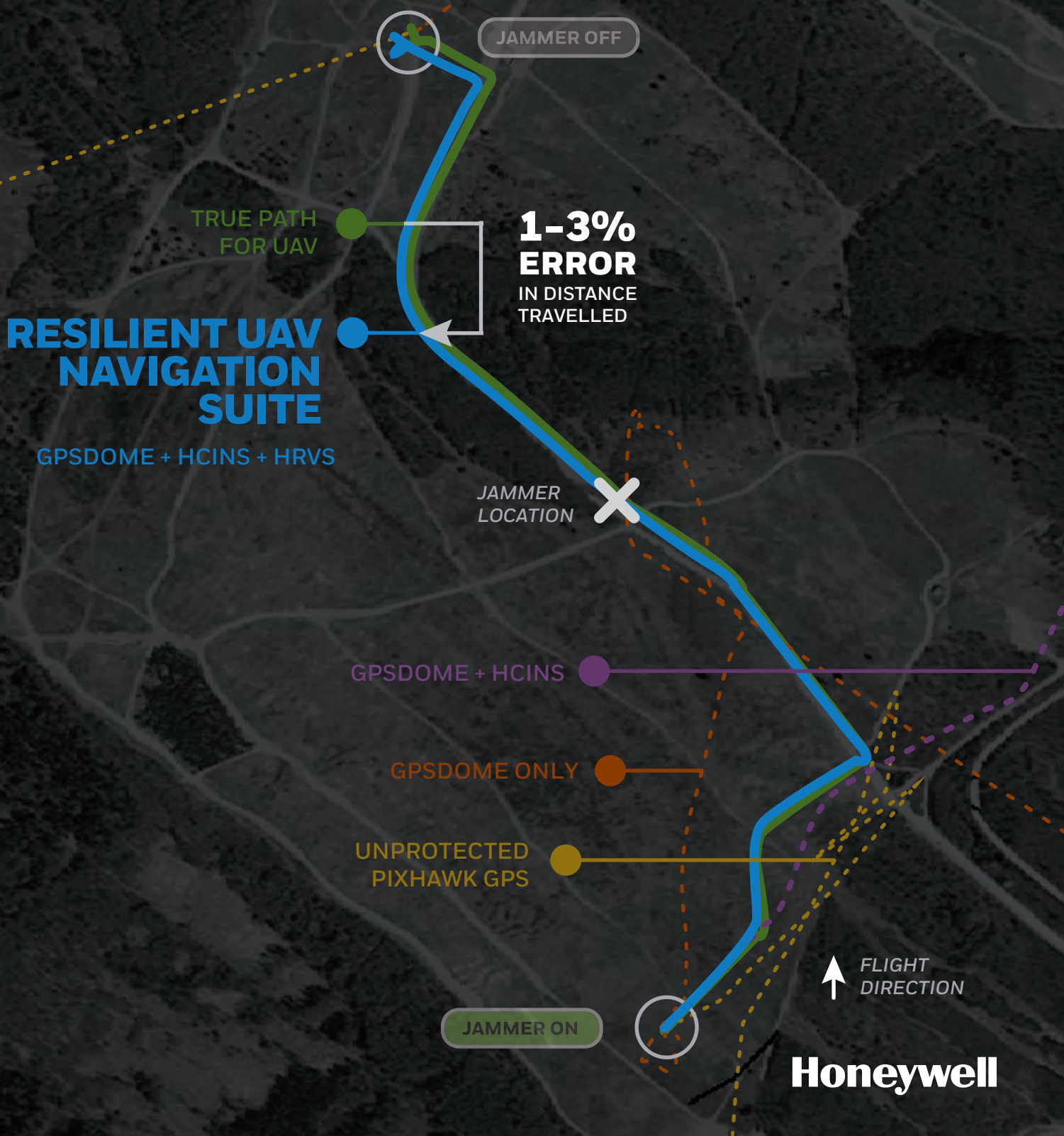


RESILIENT UAV NAVIGATION SUITE

Safe and secure navigation for UAV in GNSS denied environments



RESILIENT UAV NAVIGATION SUITE

Safe and secure navigation for UAV in GNSS denied environments

The Resilient UAV Navigation Suite is a low size, weight and power navigation system that combines GNSS, INS, anti-jammer and alternative navigation technologies to provide **three layers of resilience for safe navigation**.



Safe and reliable navigation in challenging environments is essential for BVLOS* missions

Mission failure results in not just loss of the asset but the information on asset becomes a liability

Multi-Layer Resiliency

GNSS + anti-jammer
+ INS + Alternative
Navigation

Enables
**GNSS-Denied
BVLOS*
Missions**

Arducopter PX4

Integrated with
commonly used UAV
flight controls

Works in
**Degraded
Visual
Environments**

1-3 %
Distance Traveled CEP
< 800 g
Total system weight
including accessories

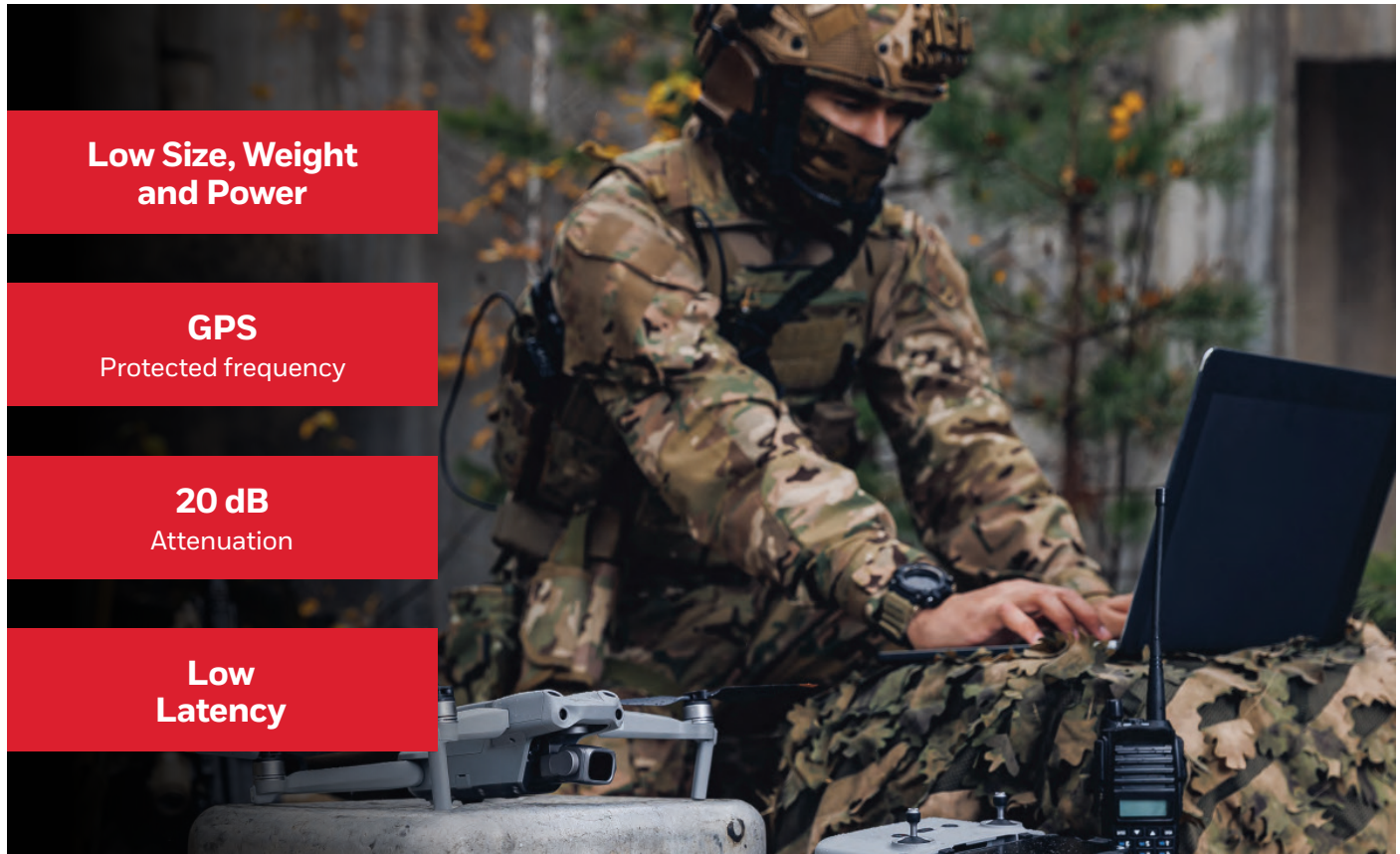
**No
Dependency**
on maps or
environment

*Beyond Visual Line of Sight

LAYER 1

GPSDOME-SUNSTONE

Industry's only non-ITAR GPS anti-jammer



**Low Size, Weight
and Power**

GPS
Protected frequency

20 dB
Attenuation

**Low
Latency**

SunStone is a small-sized, add-on device that provides protection against GPS jamming, ensuring continuity of autonomous navigation and operation during jamming conditions. No other solution that offers the same protection is as small, light, affordable or as easily installed as SunStone.

FEATURES



- GPS anti-jammer
- Protected frequency: GPS L1 (C/A Code)
- Nominal 20dB attenuation of hostile signal
- Protection from 1 jamming signal



- IP67, -40°C to +85°C (enclosed)
- Minimal latency: 100ns ±15ns (constant)
- Compatible with most off-the-shelf active GNSS antennas



- Null steering technology in tiny form factor
- Dual use (non-ITAR) (ECCN: 7A005.b)

Size: 74x47x25 mm

Weight: 150g

Maximum power consumption: <1W

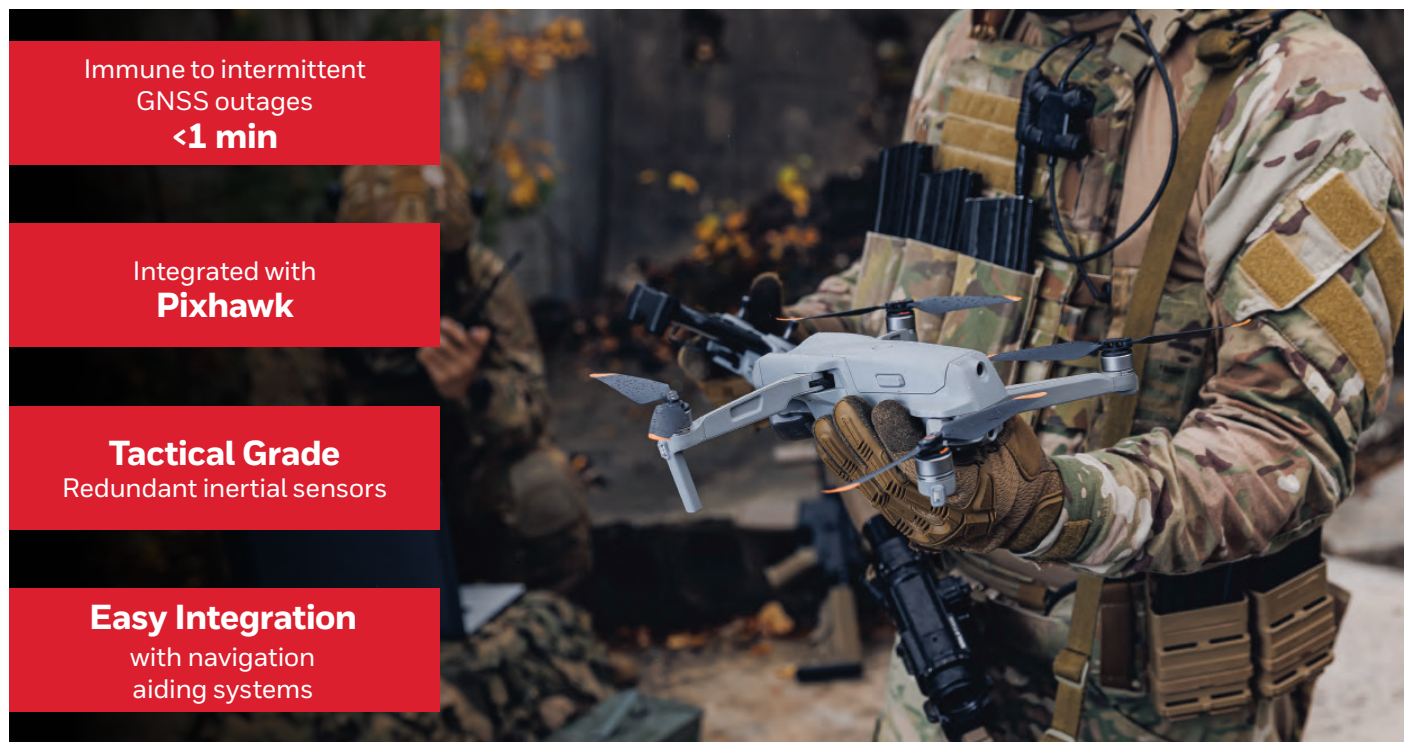


Commercially available

LAYER 2

HONEYWELL COMPACT INERTIAL NAVIGATION SYSTEM

Combined GNSS and inertial navigation system for UAVs



Immune to intermittent
GNSS outages
<1 min

Integrated with
Pixhawk

Tactical Grade
Redundant inertial sensors

Easy Integration
with navigation
aiding systems

The Honeywell compact inertial navigation system (HCINS) for UAVs is a low size, weight and power (SWaP) inertial navigation system that is suitable for all types of UAVs. It enables safe navigation for UAVs during intermittent GNSS disruptions.

FEATURES



- Small inertial navigation system with dual GNSS receivers
- Tactical grade redundant inertial sensors
- Integrated with Pixhawk (Arducopter, PX4, and Mission Planner)
- Horizontal drift after 30s GNSS outage with no aiding ~ 5m



- SD card for data storage
- Navigation health monitor
- Ethernet interface



- Easy integration with aiding systems (radar, vision)
- Not export controlled (ECCN: 7A994)

Size: 104x60x28 mm

Weight: 140g

Maximum power consumption: <3W



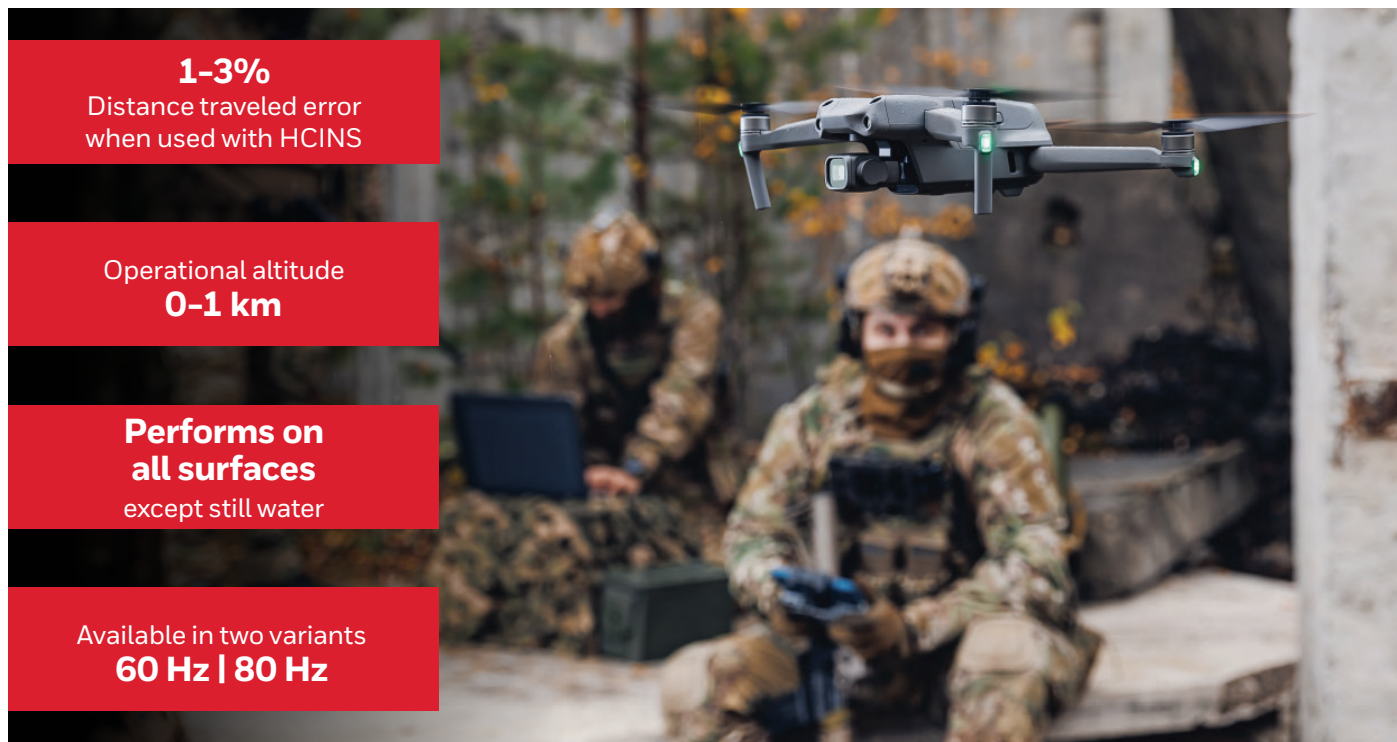
Available in Q2 2023

LAYER 3

HONEYWELL RADAR

VELOCITY SYSTEM

Range and velocity without GNSS



1-3%

Distance traveled error
when used with HCINS

Operational altitude
0-1 km

**Performs on
all surfaces**
except still water

Available in two variants
60 Hz | 80 Hz

The Honeywell Radar Velocity System (HRVS) is a low size, weight and power (SWaP) millimeter radar-based navigation aiding system.

FEATURES



- 3D velocity aiding system
- 4 radars and 1 interconnection board for UAV applications
- Only 1 radar for surface applications
- CEP error of 1-3% distance traveled when integrated with HCINS
- Two variants - 60GHz and 80GHz
- Altitude < 400m (60GHz), <1000m (80GHz) at speed <20m/s



- Indefinite precise hover
- Works over all surfaces (except still water)
- Impervious to environmental conditions



- Not export controlled (ECCN: 6A998.a)
- Needs FCC waiver for US

Size: 113x65x31 mm

Weight: 63g (1 Radar), 290g (4Radars and 1 ICB)

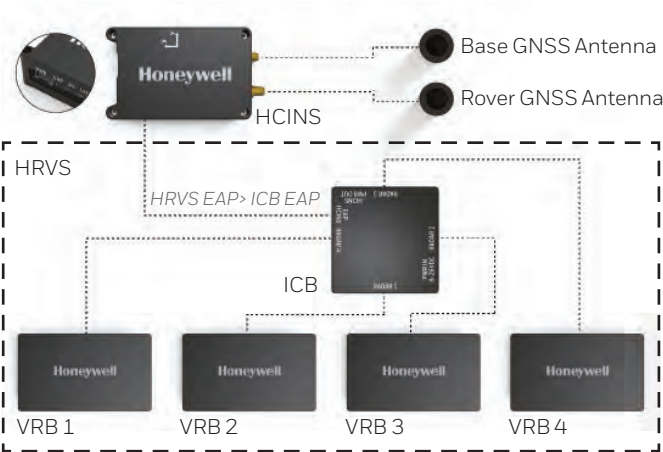
Maximum power consumption: <2W per Radar



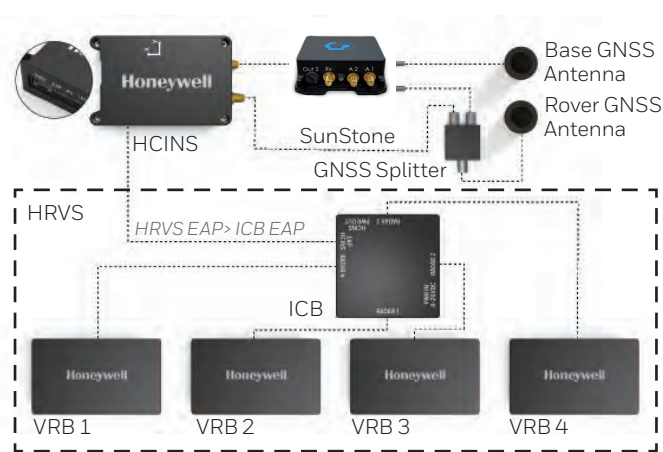
Available in Q2 2023

INTERCONNECTIONS DIAGRAM

WITHOUT SUNSTONE



WITH SUNSTONE



RESILIENT UAV NAVIGATION SUITE

PART NUMBER	QUANTITY	DESCRIPTION
68013252-1	01	SunStone
88003168	01	Honeywell Compact Inertial Navigation System (HCINS) 2.4
88004275 88004276 88004277	01	Damping Platform for HCINS
53700092-2	01	SD card - inserted in HCINS
88003160	01	Power Cable for HCINS
88003161 - 1	01	Ethernet Cable for HCINS
88003162	01	External Aiding Port (EAP) Cable for HCINS
88003163	01	Pixhawk Cable for HCINS
88003442	04	Velocity Radar Board (VRB) 3.3
88003436	01	Interconnection Board (ICB)
88003432	04	VRB-ICB Cable flat 15 cm cable
88003445	04	VRB-ICB Cable rounded 25 cm cable (Optional)
88003445-001	04	VRB-ICB Cable rounded 35 cm cable (Optional)
88003445-002	04	VRB-ICB Cable rounded 40 cm cable (Optional)
88003445-003	04	VRB-ICB Cable rounded 50 cm cable (Optional)
88003445-004	04	VRB-ICB Cable rounded 100 cm cable (Optional)
53700060 - 2	02	GNSS Antenna (Optional)
53700144-1	01	GNSS Splitter (Optional)

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THE
FUTURE
IS
WHAT
WE
MAKE IT

Honeywell