

RT-Split
Inertial
and GNSS
Measurement
Systems



Manual Supplement

Confidently. Accurately.

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Revision

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Table of Contents

Introduction	4
Scope of delivery	5
Specification	8
Installation	9
RT-Split wiring	9
Mechanical mounting	10
Software configuration	10
Inputs and outputs	11
Revision history	12
Drawing List	13

Introduction

The following document is a manual supplement for the RT-Split, it explains only the differences between the RT-Split and a standard RT. For a detailed description of the standard RT features, please refer to the RT user manual.

The RT-Split is a two-box solution compared to the normal RT products one-box solution. The processor and GNSS receiver are contained in the RT-Split's CPU module and the inertial measurement unit is contained in the RT-Split's IMU module. Since the RT products always make their measurements at the inertial measurement datum point, the measurement point for the RT-Split will be in the RT-Split IMU module and not in the RT-Split CPU module.

Scope of delivery

The RT-Split is supplied complete with cables, GNSS antenna, software and manuals. In the standard configuration, magnetic mount antennas are provided but other antenna types are available, please enquire for more details.

Table 1 lists all the items that are delivered with each RT-Split. The numbered items are shown in Table 1.

Table 1. Summary of the RT-Split components

Description	RT2500X-Split	RT3100X-Split	RT3002X-Split	Item Number
RT-Split CPU module	✓	✓	✓	1
RT-Split IMU module	✓	✓	✓	2
5m Split IMU linking cable	✓	✓	✓	3
GNSS antenna G5Ant-2AMNS1			✓	-
GNSS antenna AT575-70 & cable	✓	✓		-
User cable (14C0038B)		✓	✓	-
5m power cable (77C0002B)	✓	✓	✓	-
5m GNSS antenna cable			✓	-
2m Ethernet cross-over cable	✓	✓	✓	-
Null Modem Serial Cable	✓	✓	✓	-
CD-ROM (manual and software)	✓	✓	✓	-
RT user manual	✓	✓	✓	-
RT-Split manual supplement	✓	✓	✓	-
Calibration certificate	✓	✓	✓	-

Figure 1. RT-Split specific components



All 2 cm products require the correct differential corrections in order to work to their full specification. Differential corrections can be supplied by an RT-Base, GPS-Base, or other suitable differential correction source.

In addition to the components supplied, the user will require a PC running Windows or another logging system.

Figure 2. Typical RT-Split in transit case



Specification

The performance specifications for the RT-Split are the same as the standard RT3000 or RT2000 models. Additional specifications for the RT-Split CPU and RT-Split IMU module can be found in Table 2 and Table 3 below.

Table 2. RT-Split CPU performance specification.

Parameter	RT2500X-Split	RT3100X-Split	RT3002X-Split
Dimensions (mm)	234 x 120 x 80	209 x 120 x 80	209 x 120 x 80
Mass (kg)	1.8	1.320	1.320
Shock Survival	300 g, 11 ms	300 g, 11 ms	300 g, 11 ms
Environmental Protection	None	IP65	IP65
Dual antenna option	No	No	No
GLONASS option	No	Yes	Yes

Table 3. RT-Split IMU performance specification.

Parameter	RT2500X-Split	RT3100X-Split	RT3002X-Split
Dimensions (mm)	152 x 96 x 80	152 x 96 x 80	152 x 96 x 80
Mass (g)	0.920	0.920	0.920
Shock Survival	300 g, 11 ms	300 g, 11 ms	300 g, 11 ms
Environmental Protection	IP65	IP65	IP65

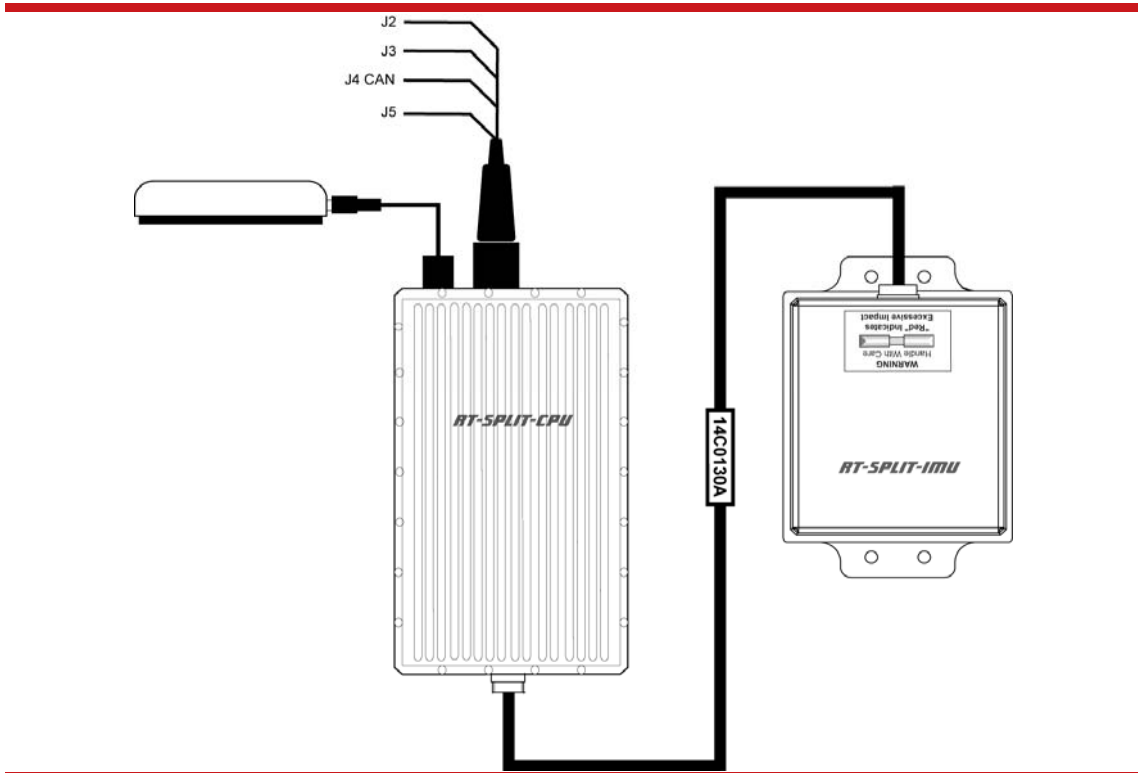
Installation

The RT-Split is designed so that the IMU module can be mounted separately to the CPU module which contains the GNSS receiver and processing unit. The system should be configured using the measurement point on the RT-Split IMU module rather than the RT-Split CPU.

RT-Split wiring

Figure 3, below, shows the RT-Split CPU module connected to the RT-Split IMU module.

Figure 3. RT-Split connection diagram



Please note, the RT-Split CPU and RT-Split IMU modules must have matching serial numbers since they are not interchangeable with other similar units. Connecting an RT-Split CPU to an RT-Split IMU module with a different serial number may result in decreased performance.

Mechanical mounting

The RT-Split CPU should be mounted securely in the vehicle as shocks caused by the RT-Split CPU colliding with other objects can cause the timing crystal in the GNSS receiver to lose lock degrading the GNSS performance.

Once mounted, run the linking cable securely between the RT-Split CPU and the RT-Split IMU taking care that the cable cannot be caught in any of the vehicle's moving parts.

Software configuration

The RT-Split is configured using the NAVconfig software and is covered in the main RT user manual. There are, however, some small visual changes in the software configuration for the RT-Split. This is because the measurement point for the IMU module is shown as a standard RT in the configuration software. The software differences are listed below.

1. On the Orientation page, the XYZ orientation of the RT-Split IMU module should be specified in relation to the vehicle.

The XYZ axis is labelled on the IMU module for your convenience.

2. On the Primary Antenna page, the GNSS antenna location will be with reference to the RT-Split IMU module, not the RT-Split CPU.

The IMU datum point for measuring is marked on the IMU module.

Inputs and outputs

The RT-Split's inputs and outputs are identical to the RT one-box design. Please refer to the main RT user manual for more information.

Revision history

Table 4: Revision history

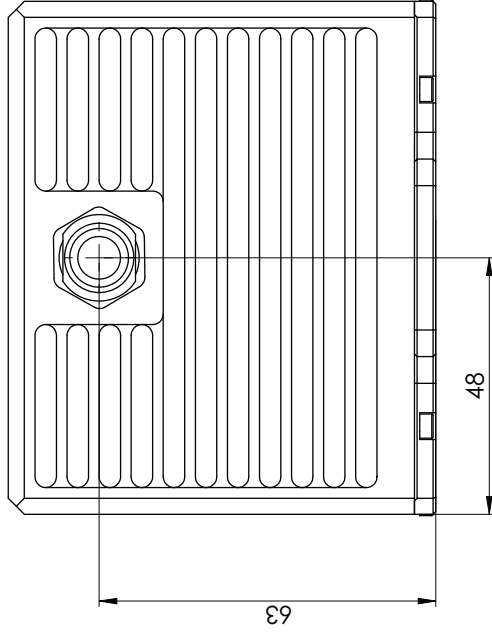
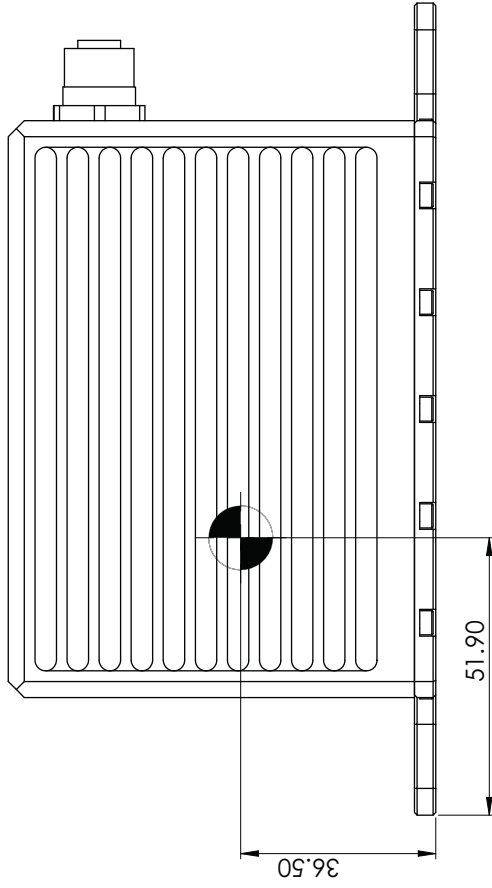
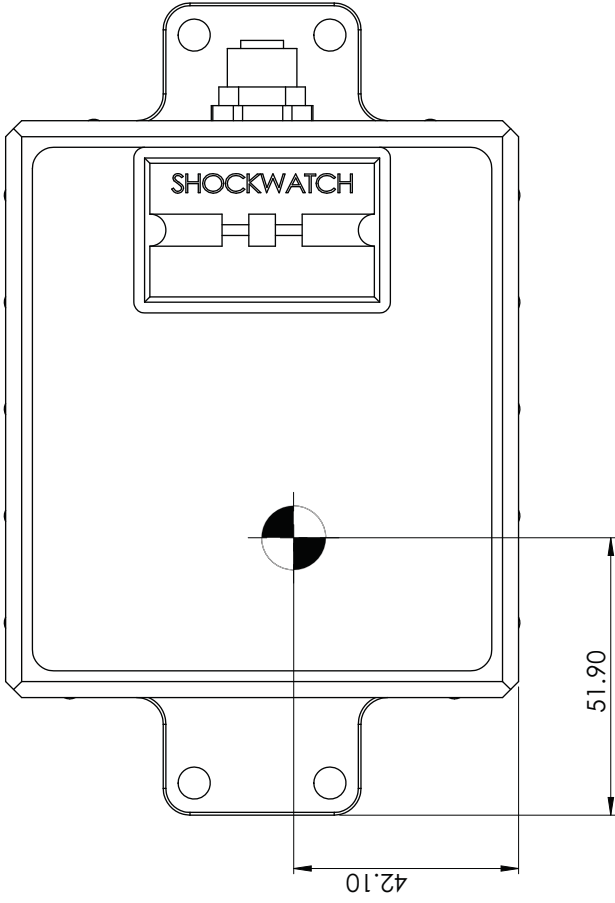
Revision	Comments
090826	Initial version.
140212	Revised for new cosmetic design
140315	Revisions to update errors and formatting

Drawing List

Table 5, below, lists the available drawings that describe components of the RT-Split. These drawings are attached to the back of this manual. Note that the ‘x’ following a drawing number is the revision code for the part. Other relevant drawings are attached to the back of the standard RT manual. If you require a drawing, or different revision of a drawing, that is not here then contact Oxford Technical Solutions.

Table 5. List of Available Drawings

Drawing	Description
14A0059x	RT-Split enclosure assembly drawing
14C0130x	RT-Split external link cable



NOTES:

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN MILLIMETERS
 SURFACE FINISH:
 TOLERANCES: 0.02
 ANGULAR: 0.1°
 DEBUR AND BREAK SHARP EDGES

DRAWN BY: swhegan
 DATE: 10/02/14
 MATERIAL:
 WEIGHT:
 A3 SCALE: 1:1
 DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

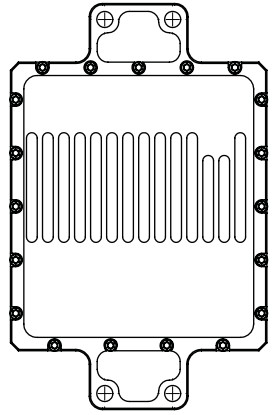
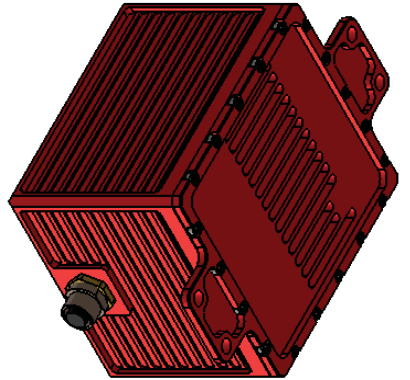
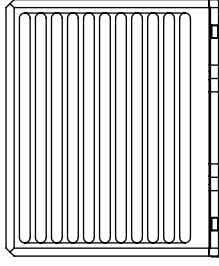
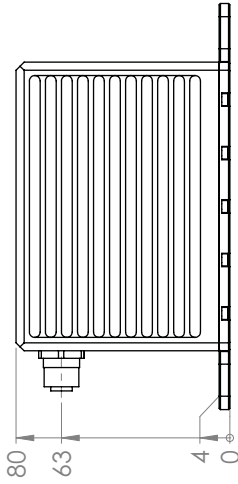
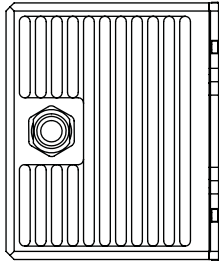
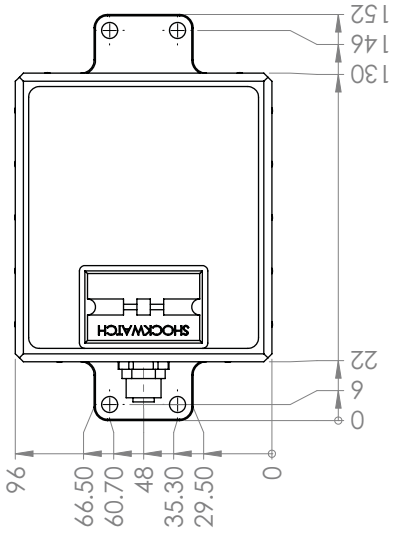
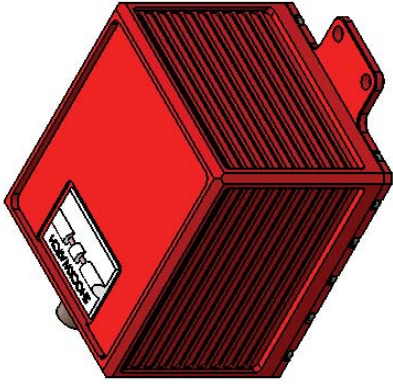
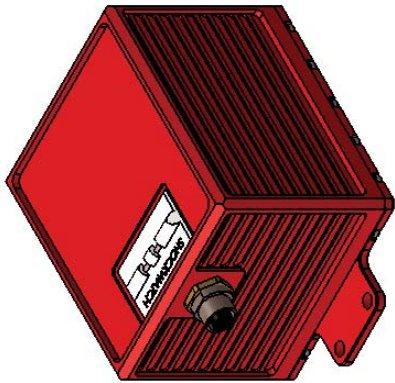
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DRAWING NO: 14A0059C
 REV: SHEET 1 OF 1

TITLE:
RT-Split 2 Datum Point

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 DIMENSIONS ARE IN MILLIMETERS
 SURFACE FINISH:
 TOLERANCES: 0.02
 ANGULAR: 0.1
 DEBUR AND BREAK SHARP EDGES
 DRAWN BY S. Whelan
 DATE 28/01/2014
 MATERIAL
 WEIGHT <1kg
 A3 SCALE:1:2
 DO NOT SCALE DRAWING

DRAWING NO: 14A0059B

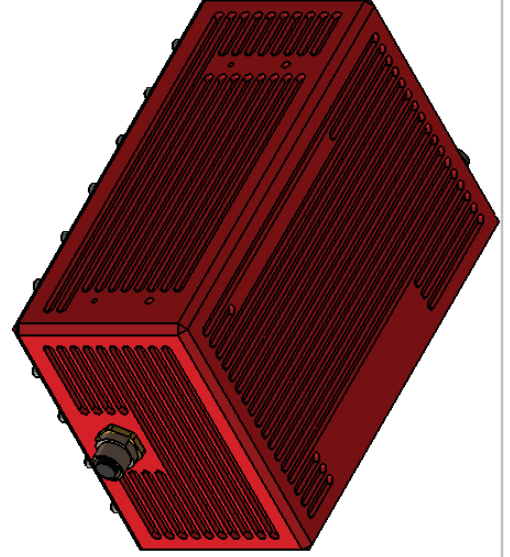
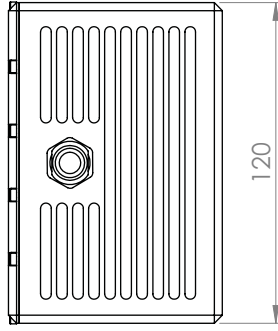
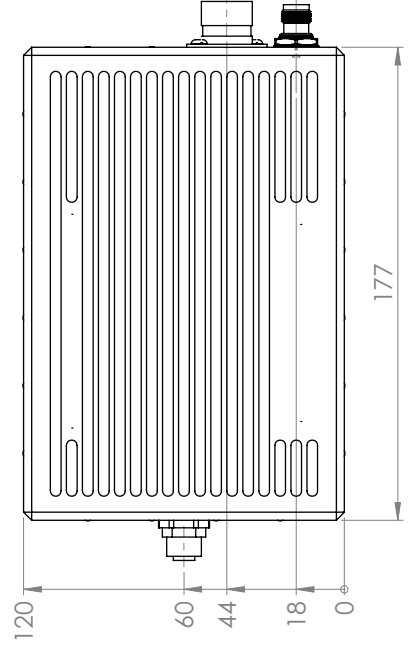
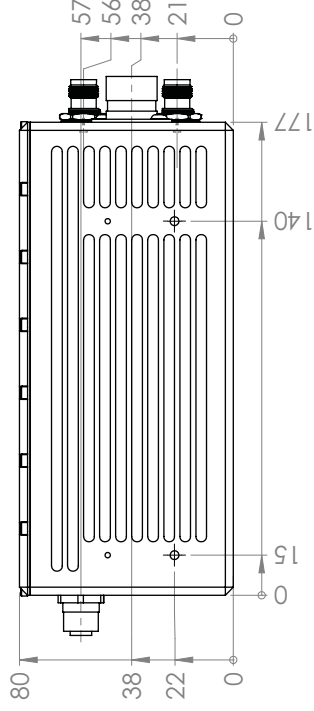
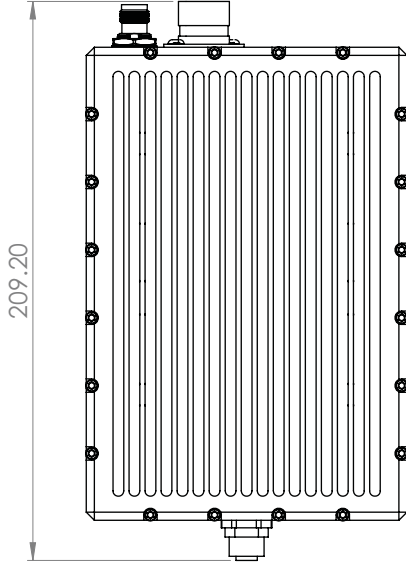
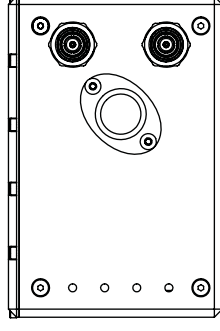
REV: 01
 SHEET 1 OF 1

TITLE:

RT-Split 2 Pod Dimensions



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 DIMENSIONS ARE IN MILLIMETERS
 SURFACE FINISH:
 TOLERANCES: 0.02
 ANGULAR: 0.1
 DEBUR AND BREAK SHARP EDGES
 DRAWN BY: S. Whelan
 DATE: 28/01/2014
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 WEIGHT:
 A3 SCALE: 1:2
 DO NOT SCALE DRAWING

DRAWING NO: 14M0059B
 REV: 01
 SHEET 2 OF 2

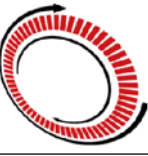
TITLE:

RT-Split 2 Processor Dimensions



Connector/Boot Details

Conn	Description	Part Number
J1	M12 12 Pole Plug	Binder 99 1491 812 12
J2	M12 12 Pole Plug	Binder 99 1491 812 12
FR1	Ferrite	Farnell 163-5658
N/A	Cable	RS 111-8994



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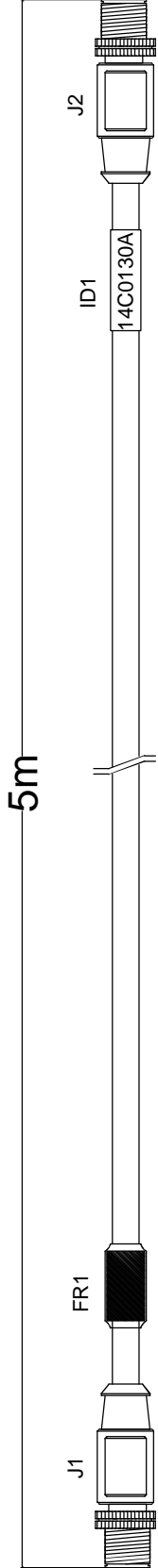
J2		
Pin	Colour	Function
1	Brown	G1PPS+
2	Black	G1PPS-
3	Yellow	ICOM TX+
4	Black	ICOM TX-
5	Blue	IMUSYNC+
6	Black	IMUSYNC-
7	Green	ICOM RX+
8	Black	ICOM RX-
9	White	Ground
10	Black	Ground
11	Black	Supply Return
12	Red	Supply+

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0	10	20	30
Print Size: A4			
Scale: Do Not Scale			
Units: N/A			
Tolerances: 5mm			
Projection: N/A			

Notes:

ID1 Label as Shown



Edit History:
 Revision 1

Date:	140122
Part #:	14C0130A
Document:	RT-Split 2 External link cable
Sheet:	1 of 1