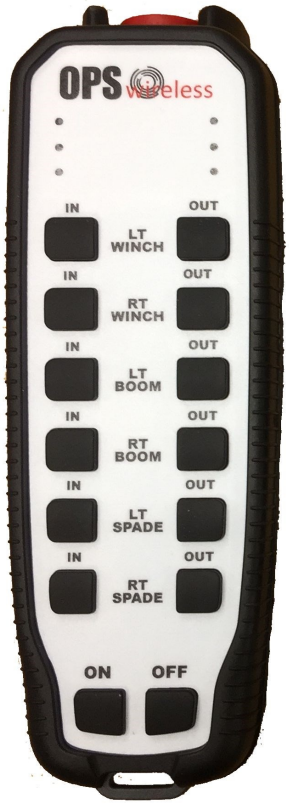
OPS wireless



ROCKET FLEX G5 MANUAL

General information

This instruction manual describes the OPS G5 Rocket system, this instruction manual should be seen as a compliment to the instruction manual for the application which the OPS G5 Rocket is intended to operate with.

The OPS G5 Rocket is a complete remote control system for the mobile and stationary applications where durability and functionality is in high demand, the OPS G5 Rocket offers the system installer a flexible and configurable remote control system with speed, precision, and control under maximum security.

To ensure the safety of the remote control system and the application you should carefully study this instruction manual. This will ensure you are familiar with the system and ready to use it in it's intended application.

Notice to reader:

TO THE SYSTEM INSTALLER:

Pay special attention to the chapters Safety Information, Installation recommendations and Programming.

TO THE OPERATOR:

Pay special attention to the chapters Safety Information, Product description, and Product Care.

TO THE SERVICE TECHNICIAN:

Pay special attention to the chapters Safety Information, Product Care, Trouble Shooting and Spare Parts.

The following labels are used throughout this document to create awareness about important recommendations or warning. It is important that these recommendations or warning are considered by the installer, operator, and service personnel.

IMPORTANT!

This information must be followed, potential hazards for the operator and environment if instructions are not followed.

ATTENTION!

General recommendations that may cause the system not to perform at full capacity if not followed

NOTE!

General Notice.

Safety information

General

READ THE SAFETY INSTRUCTIONS CAREFULLY BEFORE INSTALLING, CONFIGURATING, AND OPERATING THIS PRODUCT!

MAKE SURE THE YOU, THE OPERATOR OR SERVICE TECHNICIAN, HAVE FULLY UNDER-

IMPORTANT!

The system installer is responsible for producing an instruction manual for the application where the OPS G5 Rocket has been installed and intended to control.

The system installer is responsible for producing a product approval, if such is required, for the application where the OPS G5 Rocket has been installed. Prior to operation, the system installer is required to train the operator on all functions available using the OPS G5 Rocket. Prior to operation, the system installer is required to inform the operator of all potential hazardous situations that may appear when operating the application with the OPS G5 Rocket. The system installer must take into account the specific installation instructions declared in this manual.

Due to the unlimited variety of applications (cranes, machines, objects, vehicles, and other equipment) on which the remote control system is used, and the numerous standards which are frequently the subject of varying interpretation, it is impossible for the personnel at OPS to provide expert advice regarding the suitability of a given remote control for a specific application. It is the responsibility of the purchaser and system installer to determine the suitability of any OPS remote control product for an intended application and to ensure that it is installed and guarded in accordance with all country, federal, state, local, and private safety and health regulations, codes, standards and the OPS instructions in this document.

If the OPS G5 Rocket will be used in a safety critical application. The purchaser/system installer must undertake appropriate testing and evaluation for the final application to prevent injury to the ultimate user.

OPS does not take responsibility for any damage or injury.

Unauthorized tampering with any of the products will automatically void the OPS guarantee and product responsibility.

Pre-operational

In order to ensure safety of the operator, bystanders and the machine, the user should study and learn all provided instructions regarding how to use the OPS G5 Rocket as well as all safety instructions and the location of all emergency stop controls. This will enable the user to quickly get familiar with the new remote control system and how to safely utilize it.

The operator must understand and follow the below instructions at all times.

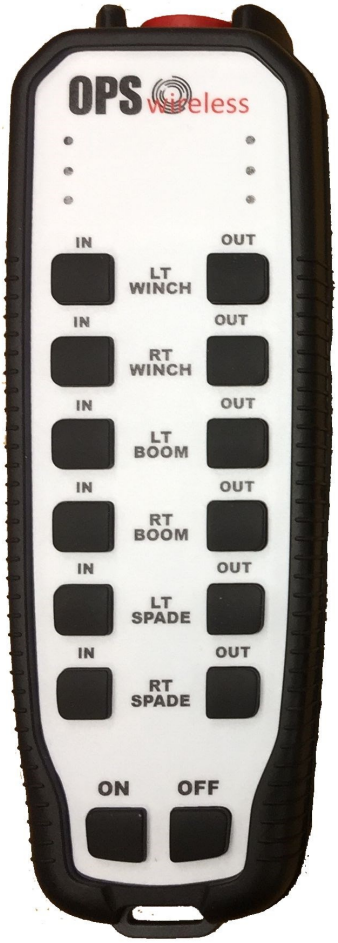
Prior to operation, the operator must ensure that he/she:

- Is fully trained by the system installer in proper use of the application and knows all functions available through the OPS G5 System.
- Is responsible to ensure that non-qualified personnel **never** gain control of the OPS G5 Rocket.
- Has fully understood this instruction manual.
- Has fully understood the instruction manual given by the system installer.
- Is well aware of the positioning of all emergency stop arrangements.
- The correct transmitter is used with correct receiver unit.
- Has at all times full view of the work area where the application is used.
- Always keeps the OPS G5 Rocket deactivated if not used.
- Never leaves the OPS G5 Rocket unsupervised.
- The OPS G5 Rocket is stored in such way that unauthorized personnel cannot gain control of it.
- On a daily basis, or immediately if suspicion of such is defective; ensure that all safety related functions and emergency stop functions works accordingly.
- Always reports faults that may have appeared during operation to the system installer
- Is aware of, and obeying, any local rules applied regarding operation the application the OPS G5 Rocket is operating.

System information

System Overview

The OPS G5 Rocket system has been specially developed for hydraulically driven mobile machinery. The system is a digital remote control system based on advanced microprocessor technology which can cope with the roughest of environments. The system is protected against electromagnetic and radio frequency radiation. The G5 Rocket system is comprised of a Handheld Control Unit (HCU) with ON/OFF buttons. The Central Unit (CU) provides the connection points for connecting to the electro-hydraulic valves as well as through a CANopen bus system to other components of the control system. Each system utilizes two was communication; digitally coded control information is sent in both directions via radio between the HCU and the CU.



Typical system setup:

No	Description	Qty
1	Handheld Rocket Flex Transmitter	1
2	G5 Receiver	1

G5 Pocket Transmitter

Product Description

The G5 Rocket HCU is a light weight, impact and water resistant handheld unit equipped with up to 14 ON/OFF function buttons. The HCU has 6 configurable LED for machine and status feedback. The buttons and the LED's can be configured for a variety of different operations. The unit is powered with 3 standard AA batteries and the backside has a belt clip for convenient attachment on the operator's belt.

- ◊ 14 one or two-step pushbuttons
- ◊ Feedback to 5 light emitting diodes
- ◊ Optional graphic display with feedback
- ◊ Stop function in accordance with EN ISO 13849-1 cat. 3, PL d
- ◊ Supply: 3xAA re-chargeable batteries
- ◊ Operational time: ≤ 120 hours without display, ≤ 40 hours with display
- ◊ External holder and battery charger
- ◊ Frequency band: 2.4 GHz
- ◊ Operating range > 100m / > ~330 ft.
- ◊ Operational temperature: -25°C to +55°C / ~ -15°F to + 130°F
- ◊ Protection category: IP65
- ◊ Dimensions: (WxHxD): 69x213x48 mm / ~2.7x8.4x1.9 in
- ◊ Weight: 400 g / ~0.88 lbs. including batteries

G5 receiver

Product Description

The Central Unit (CU) is manufactured in robust plastic housing and provides contacts for the connection of power supply and electro-hydraulic valves. Several of the outputs can also be used as digital inputs. Depending on the version the G5 Central Unit, it can either be equipped with MOSFET outputs and Deutsch connectors or can have relay outputs with screw terminals.

Since the central unit can be exposed to very tough environments, the box is encapsulated to give protection from damp, heat, cold, dust, vibration, and corrosive environments.

The Central Unit has short circuit protected inputs and outputs and has protections against reverse polarity, over-voltage, large incoming voltage transients and EMC/RF.

IMPORTANT!

The Central Unit ESTOP function is not equipped with internal fuse and therefore an external fuse is required at an appropriate rating (10A or lower).

The G5 Rocket Central unit exists in different versions. The main difference between the version type is the output type which can be either MOSFET or normal relay output. Versions with MOSFET output have two 12 pin Deutsch connectors while versions with relay output have cable glands with internal screw terminals.

Model	Functions
G5-CU M19A	Two 12-pin Deutsch connectors. 19 Digital MOSFET outputs where 14 can be configured as digital inputs.
G5-CU RX	Two cable glands. Relay output where X indicates the number of outputs.

FUNCTIONALITY

The G5 Rocket System is required to be configured prior to operation, refer to programming section in this document for further information.

NOTE!

The system installer is requested to fill out the template in chapter 14 with the final configuration or provide equal description for the end user.

MOSFET Digital Output

The MOSFET digital outputs are designed to drive electro-hydraulic valves but can also be used to load other accessories such as lamps or motors. The maximum load for each channel is described in table below.

Max load:

- 3A/Output
- 5A/Bank
- 10A/System

Bank	1	2	3	4	5	6	7	8	9	10
Output	1	2,3	4,5	6,16	7,9	8,10	11,12	13,17	18,19	14,15

Technical Data Central Unit

Attribute	Information
Housing material	Plastic PC-PBT
IP-class	IP67 (for versions with cable glands IP65)
Ambient temperature	-25˚C to +70˚C
Supply voltage	9-36VDC
Fuse	For Estop digital out. Use appropriate rating (10A or lower)
Current consumption at idle	<30mA
MOSFET Output load	3 A, Max simultaneously load for each CU is 10A. See section that describes the allowed load for each output/bank.
Relay Output load	Max 10 A
Housing screw torque	0,8 Nm
Weight	MOSFET output approx. 0,5Kg Relay output approx. 0,35Kg

Size: approx. ~
127 x 117 x 57 mm / ~ 5,0 x 4,6 x 2,2 in.

Installation recommendation

General Information

This chapter covers general recommendations for assembling of the G5 Rocket System.

ATTENTION: Assembly of the system in ways other than recommended in this chapter may affect the systems performance and life-span and may void any warranties given.

Installation of Central Unit

The Central Unit should be installed using the mounting holes in the edges on the unit.

The Central Unit should be installed vertically or horizontally with cable glands facing downwards or horizontally. The Central Unit should never be assembled with cable glands facing upwards or in any ways where it is exposed to accumulation of water, moisture, and other debris.

Engineering note: CU equipped with Deutsch connectors require M4 screws in the two lower holes. The due to a design fault. It will be fixed in upcoming versions.

Changing Battery

The G5 Rocket transmitter is equipped with 3 standard AA cell batteries; to change batteries follow the instructions below

1. Remove the belt clip by unscrewing the two screws found under the clip.
2. Unscrew the four screws holding the lid.
3. Remove the batteries.
4. Remove all dirt/dust to ensure no water can enter the unit.
5. Insert new batteries, mind the polarity!
6. Reassemble the lid and the belt clip. Hand tighten the screws.

General Description

When a G5 system is delivered, configuration is normally done by OPS after final test. There should not be any need for further programming or pairing. Despite this, if there has been a change to the machine there may be need to reconfigure the system. Follow the steps below to pair the HCU to CU.

Safe Pairing of HCU to CU

Safe pairing is used to get a unique assignment between a single Rocket HCU and a single G5 CU. To exchange the HCU and CU ID's when replacing either the CU or HCU in a system follow the Safe Pairing procedure below:

A. Remove power form CU (unplug the Grey connector for G5 24) and remove the cover.

B. Install the "Pairing" jumper into the position indicated

C. Simultaneously press button #1 and button #3. LED#3 will light indicating the HCU is ready for Safe Pairing

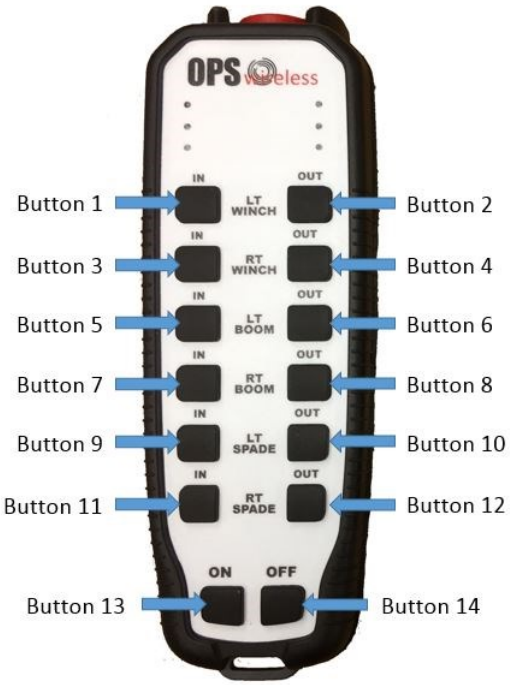
D. Re-apply power to the CU

E. The Cu LED Display will flash

Step D must be done within 10 sec of C

F. The HCU will confirm the download is complete by flashing LED#3 five times

G. Remove the Pairing jumper, return it to a Jumper Rest, cycle power to CU and re-install the CU cover

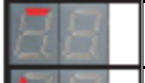


LED Indication

After installation of the Central unit and the batteries have been inserted into the HCU, the system should be fully operational.

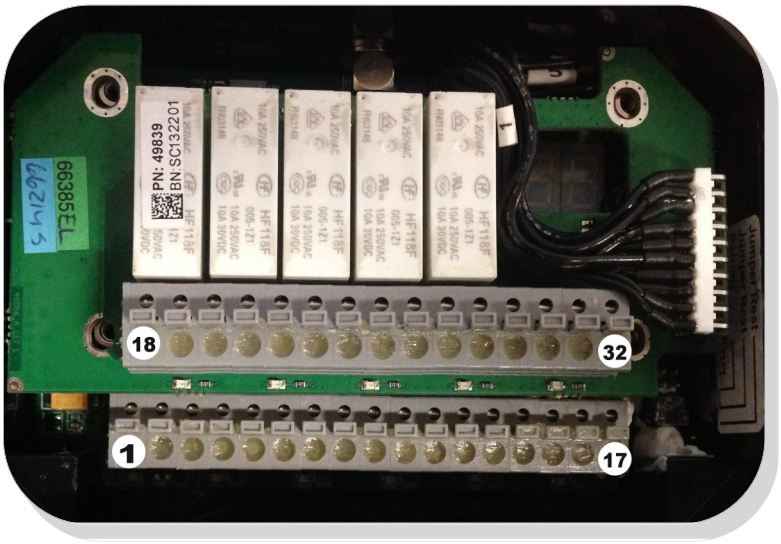
The system can be configured to have an activation button before a radio link can be established. This button is normally Fn/On (button #7). Each buttons should now activate the central unit outputs according to the specification. If unit is configured with activation button there is also a deactivation button. This is the normally the STOP button (button #8).

The LED display on the central unit is used to indicate radio link or output activation. The list below described the different indications.

LED Display	Meaning
	Link is Established
	Standby
	Output 1 Activated
	Output 2 Activated
	Output 3 Activated
	Output 4 Activated
	Output 5 Activated
	Output 6 Activated
	Output 7/15 Activated
	Output 8/16 Activated
	Output 9/17 Activated
	Output 10/18 Activated
	Output 11/19 Activated
	Output 12 Activated
	Output 13 Activated
	Output 14 Activated

G5 RELAY RECEIVER WITH EXPANSION CARD

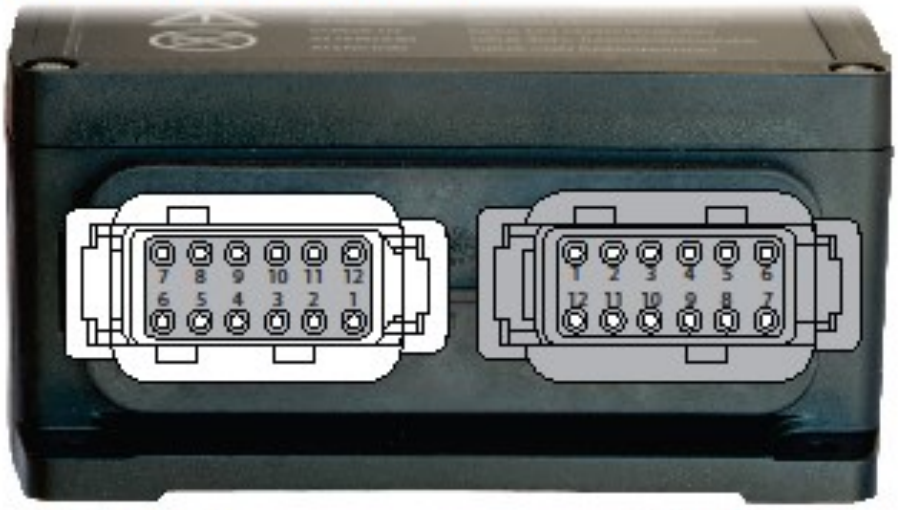
INSTALLATION GUIDE



RELAY 1	
RELAY 2	
RELAY 3	
RELAY 4	
RELAY 5	
RELAY 6	
RELAY 7	
RELAY 8	
RELAY 9	
RELAY 10	

1	GROUND	
2	POWER SUPPLY	
3	RELAY 1 - COMMON	
4	RELAY 1 - NORMALLY CLOSED	
5	RELAY 1 - NORMALLY OPEN	
6	RELAY 2 - COMMON	
7	RELAY 2 - NORMALLY CLOSED	
8	RELAY 2 - NORMALLY OPEN	
9	RELAY 3 - COMMON	
10	RELAY 3 - NORMALLY CLOSED	
11	RELAY 3 - NORMALLY OPEN	
12	RELAY 4 - COMMON	
13	RELAY 4 - NORMALLY CLOSED	
14	RELAY 4 - NORMALLY OPEN	
15	RELAY 5 - COMMON	
16	RELAY 5 - NORMALLY CLOSED	
17	RELAY 5 - NORMALLY OPEN	
18	RELAY 6 - COMMON	
19	RELAY 6 - NORMALLY CLOSED	
20	RELAY 6 - NORMALLY OPEN	
21	RELAY 7 - COMMON	
22	RELAY 7 - NORMALLY CLOSED	
23	RELAY 7 - NORMALLY OPEN	
24	RELAY 8 - COMMON	
25	RELAY 8 - NORMALLY CLOSED	
26	RELAY 8 - NORMALLY OPEN	
27	RELAY 9 - COMMON	
28	RELAY 9 - NORMALLY CLOSED	
29	RELAY 9 - NORMALLY OPEN	
30	RELAY 10 - COMMON	
31	RELAY 10 - NORMALLY CLOSED	
32	RELAY 10 - NORMALLY OPEN	

Terminal Schematic G5



Gray Connector

1 = Output/Input 16

2 = Output/Input 15

3 = GND

4 = Output/Input 14

5 = Estop

6 = Power Supply +

7 = Output 1

8 = Output 2

9 = Output 3

10 = Output 5

11 = Output 4

12 = Output/Input 6

Black Connector

1 = Output/Input 7

2 = Output/Input 8

3 = Output/Input 9

4 = Output/Input 10

5 = Output/Input 11

6 = Output/Input 12

7 = RS232 TX

8 = RS232 RX

9 = Output/Input 13

10 = Output/Input 17

11 = Output/Input 18

12 = Output/Input 19