

IRP®

INTELLIGENT REMOTE PANEL

USER MANUAL



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Revision History

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Scope

This document covers the installation, operation, and maintenance of the Intelligent Remote Panel (IRP®). This information is proposed for engineers, operators and technical staff operating the system.

The IRT Technologies technical information can be found using:

Product information – <http://www.irttechnologies.com/?p=product&c=1>

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IMPORTANT

Important information concerning the operation and care of this product, as well as safety of authorized operators is highlighted throughout this document by one of the following labels:

NOTE

Indicates a reminder, a special consideration, or additional information that is important to know.

CAUTION!

Identifies situations that have the potential to cause equipment damage.

WARNING!!

Identifies hazardous situations that have the potential to cause equipment damage as well as serious personal injury.



IRT Technologies, an acronym for Intelligent RF Telecom Technologies, designs, develops and manufactures advanced satellite RF systems and products for real time voice, data and multimedia delivery anywhere in the world. IRT products are revolutionary innovative, super compact, efficient and reliable, serving both commercial and government sectors. IRT satellite solutions shape the next-generation communication equipment with its breakthrough technology, vanguard research and development, state of the art engineering design, and product innovation.

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1.0 Introduction

The Intelligent Remote Panel (IRP®) provides an efficient way to monitor and control the state of a Block-Up Converter (BUC) from a remote location by the means of multiple interfaces. As shown on Figure 1, the IRP® offers the following:

10/100 Base-T Ethernet Interface: Physical interface with TCP/IP, UDP, HTTP and SNMP protocols.

RS-485 and RS-232 Interfaces: Provide packet and CLI interfaces for the full monitoring and control of a BUC.

Alarms Interface: Physical interface which reports any system alarms present.

Redundancy Protection Interface: Provides a built-in redundancy protection for the use of multiple IRP®s.

Inter-Facility Link (IFL) to BUC: Comprised of two interfaces, RS-485 and Ethernet, provides the link to a BUC in order to perform remote observation of its state and control of its operation, through its M&C Interface.

BUC Ethernet: Provides direct access to the BUC's Ethernet.

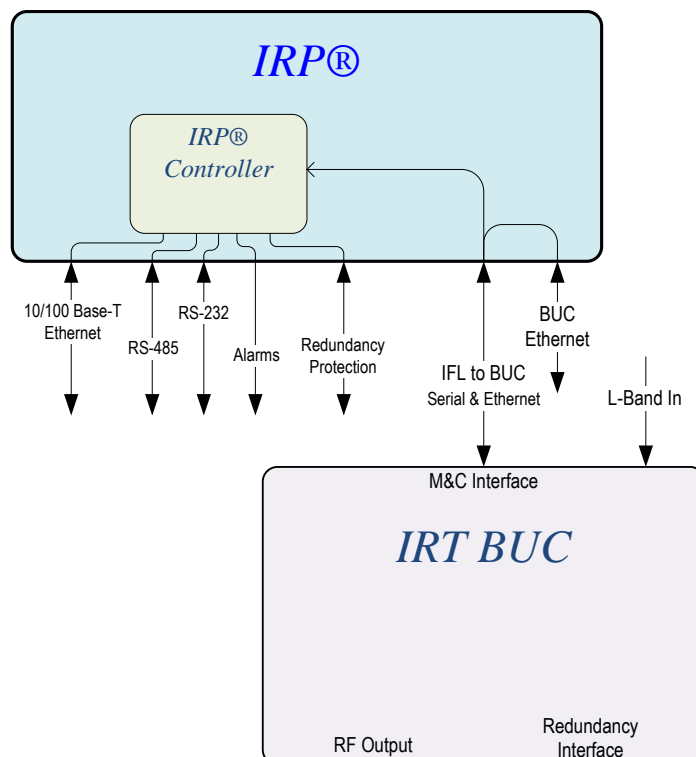


Figure 1. IRP® Block Diagram for Single BUC

1.1 IRP® Operation

This section describes the operation of the IRP®’s controls and indicators. The front view is shown on Figure 2.



Figure 2: IRP® Front View

For user convenience, the IRP® front panel has:

- VFD Display
- Navigation wheel
- LED indicators
- Three tactile switches (buttons)

The menu-driven front panel display provides the full system monitoring and control where the user can navigate through the menus using the navigation wheel and tactile switches. The IRP®’s LEDs provide information on the system status.

1.1.1 IRP® Navigation Wheel

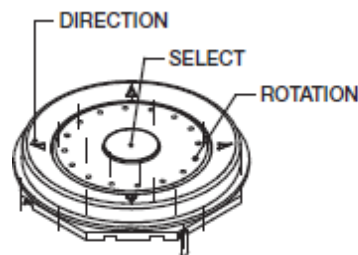


Figure 3: IRP® Navigation Wheel

The navigation wheel enables the user to navigate through the front panel display menu and exercise front panel control functions:

- Four directions of up/down and left-right allow to scroll through the display fields - up/down buttons provide navigation from line to line and left-right buttons provide a shift within the display line (toggle from parameter description to parameter value)
- Central button is to select a parameter
- Rotating central part of the wheel is for user convenience to set numerical values such as frequency, gain, address, etc.

NOTE

The VFD display can only show four lines at a time, the user therefore needs to scroll down using the arrow buttons to access further options

NOTE

When changing any numerical control value, holding the Up/Down control button will give a faster change compared to single pushing

1.1.2 IRP® Front Panel LEDs



Figure 4: IRP® Front Panel LEDs

- **Status** – GREEN when the system has no alarms; RED when the system is in an alarm condition
- **Mute** – OFF when un-muted; YELLOW when muted
- **Alarm** – OFF – no alarm; YELLOW – warning; RED – alarm condition
- **Fault** – OFF – no critical fault; RED – critical fault condition (at least one critical alarm present in the system)
- **LO Lock** – GREEN when locked; otherwise OFF
- **Remote** – GREEN when remote control is available, pre-set remote option is always ON
- **Red Ready** – GREEN when redundancy mode is enabled; OFF when disabled
- **COM Fault** – OFF when the main controller has communication with all sub-modules; RED when there is no communication with one of the unit’s sub-modules

1.1.3 IRP® Front Panel Buttons

Three tactile switches are located on the right side of the front panel to make the navigation through the display menus more user-friendly (see Figure 5)

- **Enter** – duplicates the select functions (same as select button on the navigation wheel)
- **Back** – brings the user one step back in the display menu
- **Escape** – brings the user one step up in the navigation menu

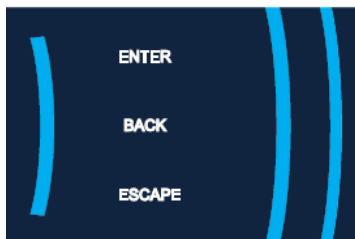


Figure 5: IRP® Front Panel Buttons

1.1.4 Navigation through Front Panel Menus

The front panel display command tree is shown on Figure 6. The top level screen provides the user with the choice of five menu branches: ALARMS, CONFIGURATION, INFORMATION, MONITOR and SETTINGS.

1.1.4.1 Alarms Menu

Once the ALARMS menu branch is selected, the ACTIVE window will open. The next window will give a choice between SYSTEM and DEVICE 1...N. Once the SYSTEM or DEVICE is selected, a list of active alarms of the chosen option will be displayed.

1.1.4.2 Configuration Menu

In the CONFIGURATION menu branch, a choice can be made between CONTROLS, DEVICES, ETHERNET, SERIAL and REDUNDANCY.

The CONTROLS configuration will give a choice between Control 1...Control N.

The DEVICES (1...N) configuration allows controlling the following device parameters:

- Gain/Attenuation Control (*see PwrCtl mode in Settings Menu branch*)
- LO Select (if applicable)
- TX Control on/off (mute/un-mute)

In order to apply any of the above listed controls, set the desired value using the navigation wheel's control buttons and press Enter.

The ETHERNET configuration allows changing the device's address, mask and GW by setting the required parameter and selecting "apply changes".

The SERIAL configuration allows choosing between RS-232 and RS-485 and setting the baudrate.

The REDUNDANCY configuration allows to set-up the BUC units of the redundancy system.

1.1.4.3 Information Menu

The INFORMATION menu will display generic information about the IRP®'s part number, serial number and FW version.

1.1.4.4 Monitor Menu

The MONITOR menu will provide a choice between DEVICES, ETHERNET and REDUNDANCY.

The DEVICES configuration will allow provide the following information:

- IN power (input power) (dBm)
- OUT power (output power) (dBm or W) see section 1.1.4.5.
- PLL status
- TX Status (on/off)
- Temperature

NOTE

The VFD display can only show four lines at a time, the user therefore needs to scroll down using the arrow buttons to access further options

The ETHERNET menu provides the address type (Dynamic or static), address, mask and GW.

The REDUNDANCY menu provides information on the units in the redundancy system such as name, mode and status.

1.1.4.5 Settings Menu

The SETTINGS menu will display the following choices:

- DEVICES – DEVICE 1...N:
 - Attenuation offset – used when a device is operating in a redundant system to equalize two units' gain at a given operating frequency;
 - Power Up Mode – mode at which a unit will be set upon turn-on, *always un-muted, always muted* or keep mute status after the last power down. The default factory setting is *always un-muted*;
- OUTPWR VALUE – sets the units of measure for output power monitoring (dBm or W);
- PWRCTL MODE – sets the *attenuation* value from 0 to maximum (ATTmax) or the *gain* value from maximum (Gmax) down to Gmax-ATTmax (dB);
- RESET M&C – resets the front panel menu in an unlikely event of panel freeze

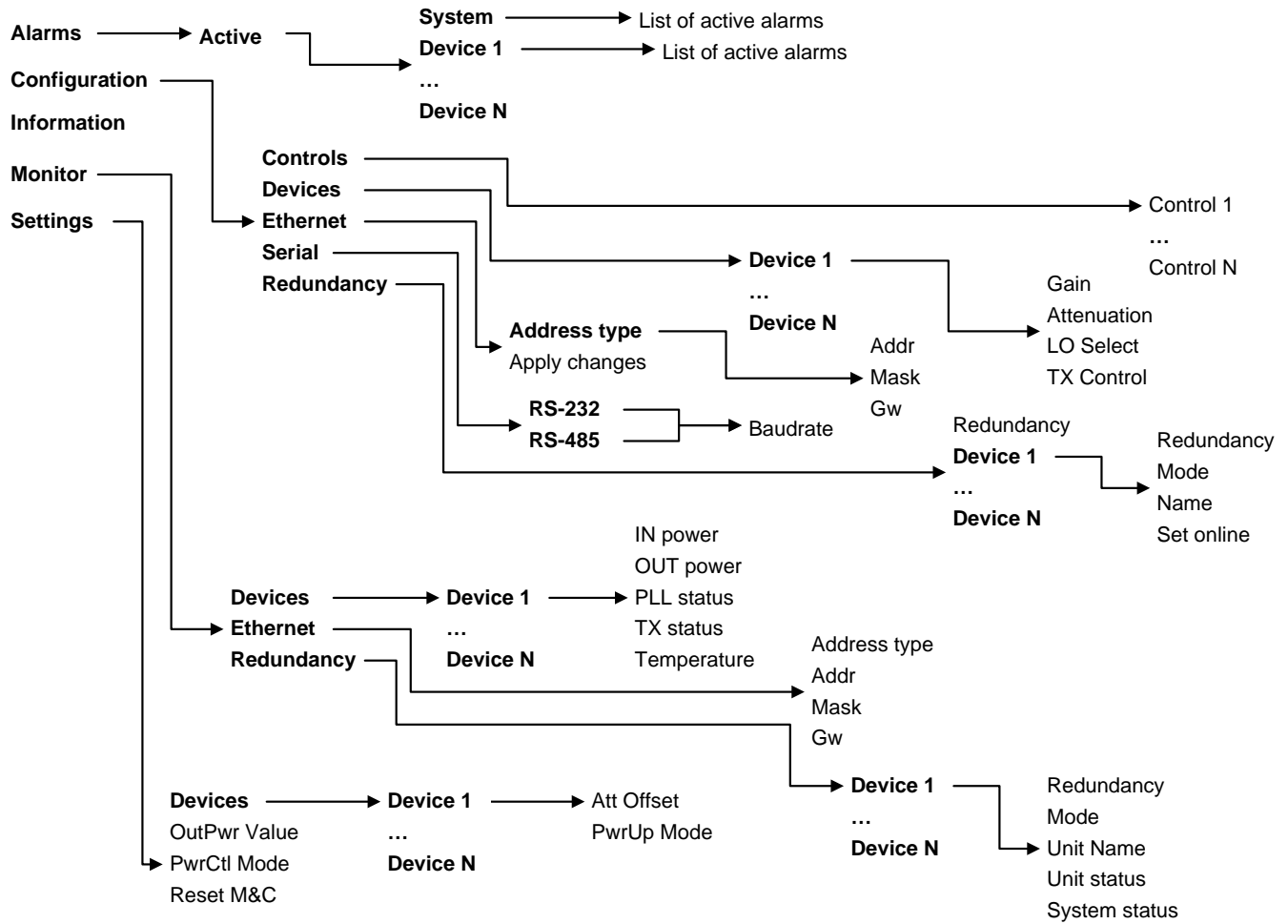


Figure 6. IRP® Front Panel Display Menu Tree

1.1.5 Rear Panel Connectors

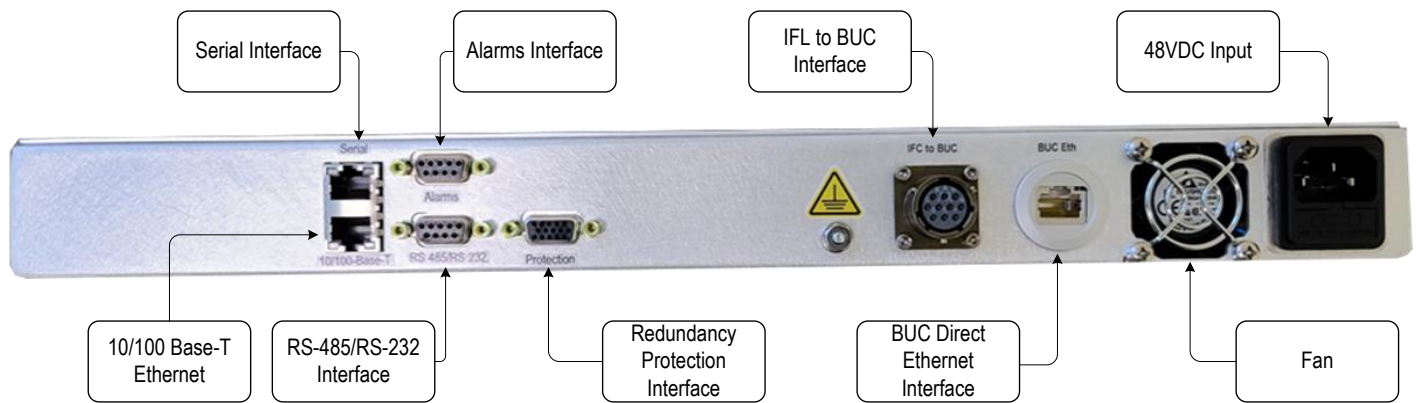


Figure 7: IRP® Rear Panel Connectors

Pin #	Description
1	N/C
2	DTR
3	RS-232 TX Data
4	GND
5	GND
6	RS-232 RX Data
7	CTS
8	RTS

Table 1: RJ45 Serial Interface Connector

Pin #	Description
1	ETH_TX+
2	ETH_TX-
3	ETH_RX+
4	N/C
5	N/C
6	ETH_RX-
7	N/C
8	N/C

Table 2: 10/100 Base-T and BUC Ethernet Interface Connectors



Pin #	Description
1	Summary Alarm Form C Relay Normally Open
2	Summary Alarm Form C Relay Normally Closed
3	Summary Alarm Form C Relay Common
4	Summary Alarm Output (Open Drain)
5	GND
6	External Mute Input 1
7	GND
8	External Mute Input 2
9	GND

Table 3: Alarms Interface Connector

Pin #	Description
1	RS-485 RX A
2	GND
3	RS-232 RX
4	RS-485 Isolated Ground
5	RS-485 TX Y
6	RS-485 RX B
7	RS-232 TX
8	GND
9	RS-485 TX Z

Table 4: RS-485/RS-232 Interface Connector

Pin #	Description
1	Switching Alarm Output
2	Switching Alarm Input
3	Waveguide Switch Control #1 (High Side)
4	Waveguide Switch Control #2 (High Side)
5	GND
6	GND
7	Waveguide Switch Position Common
8	Waveguide Switch Position Input #1
9	Waveguide Switch Position Input #2
10	Neighbor Unit Presence
11	Boot Control Input
12	RS-485 TX Y
13	RS-485 TX Z
14	RS-485 RX B
15	RS-485 RX A

Table 5: Redundancy Protection Interface Connector



Pin #	Description
A	RS-485 TX+
B	RS-485 TX-
C	RS-485 RX+
D	RS-485 RX-
E	ETH_TX+
F	ETH_TX-
G	ETH_RX+
H	ETH_RX-
J	RS485 ISO_GND
K	N/C

Table 6: IFL to BUC Interface Connector

2.0 TCP/IP Ethernet M&C Interface

A full Monitor and Control interface using TCP/IP is displayed in embedded web pages. All IRP® units that leave the factory are configured with the IRT Technologies default static IP address:

- IP address: **192.168.0.100**
- Netmask: **255.255.255.0**
- Gateway: **192.168.0.1**

To have access to the IRP®, configured to its default static IP address, the following steps should be taken:

1. Connect the IRP® to a PC using an Ethernet patch cable. There are no any special requirements for this cable; it could be any conventional Cat5, 5E or 6 straight or cross-over patch cable.
2. Manually configure the IP address on the PC to the following settings:
 - IP address: **192.168.0.101**
 - Netmask: **255.255.255.0**
 - Gateway: **192.168.0.1**
3. Launch the web browser
4. Type in the URL line: `http://192.168.0.100`

3.0 Appendix

3.1 1:1 Redundancy System

The IRP® can accompany a 1:1 redundancy system as shown on Figure 8. In that case, with the use of a waveguide switch connected to each BUC, the 1:1 redundancy system can be controlled and monitored using the IRP®’s IFL to BUC Interface.

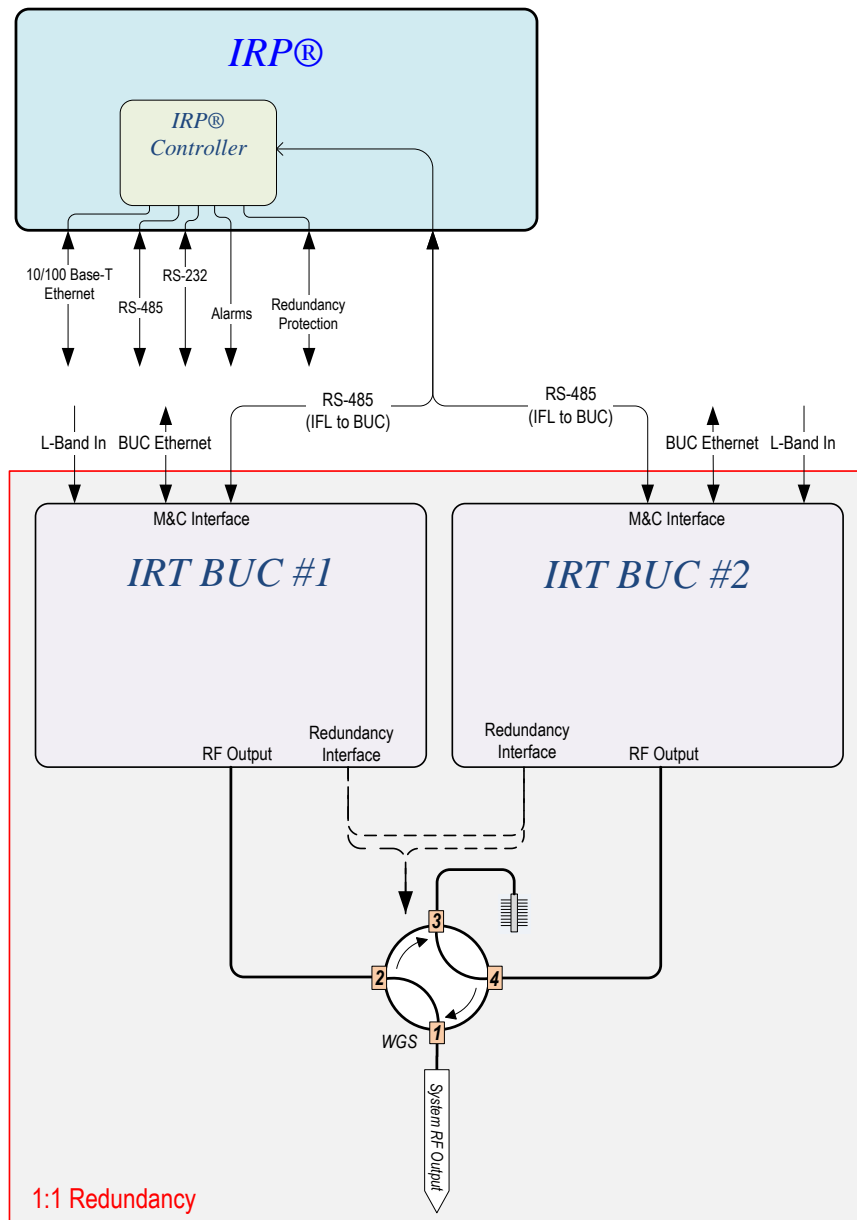


Figure 8. IRP® Block Diagram of a 1:1 Redundancy System

3.2 1:2 Redundancy Systems

The IRP® can accompany 1:2 up-link and down-link redundancy systems, as shown on Figures 9 and 10 below. In the case of a 1:2 up-link system, two dual waveguide/coax switches and a separate controller are used, and the system can be monitored and controlled by connecting the IRP® to the M&C interface of the redundancy controller. In the case of the 1:2 down-link system, monitoring and control can be executed by connecting the IRP® to the M&C interface of the down-link controller unit.

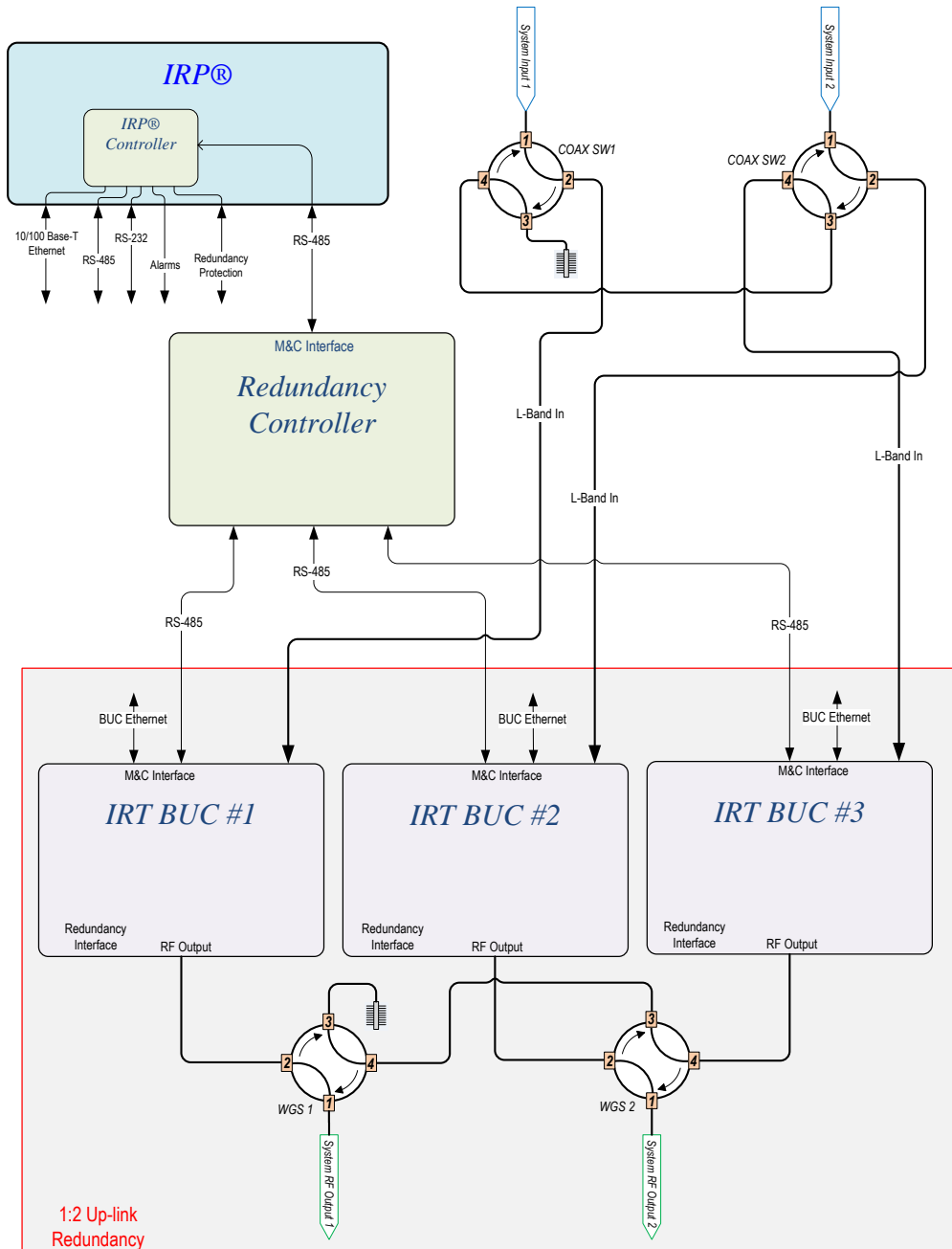


Figure 9. IRP® Block Diagram of a 1:2 Up-link Redundancy System

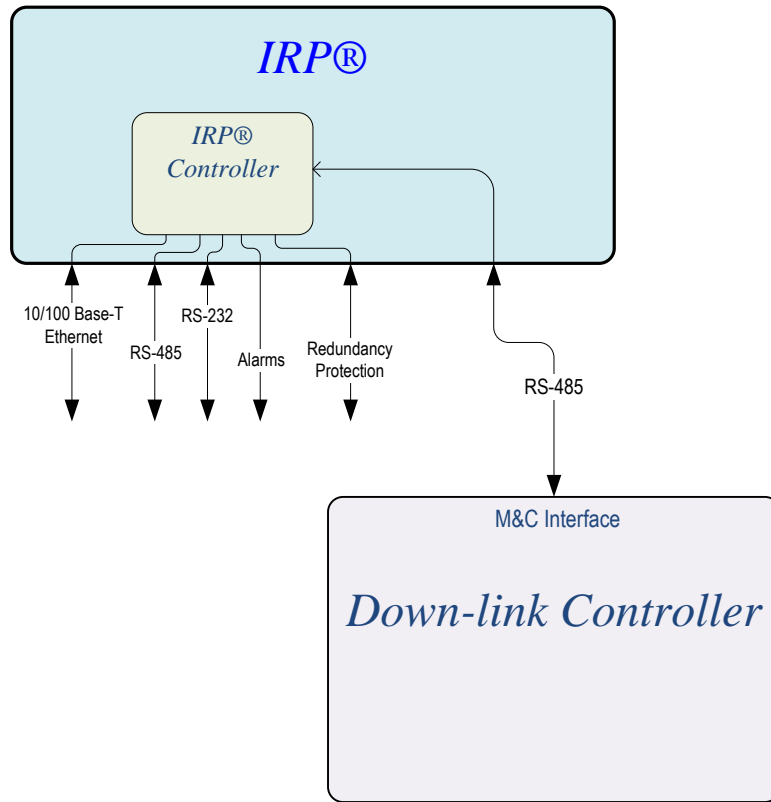


Figure 10. IRP® Block Diagram of a 1:2 Down-link Redundancy System