



# Universal Safety Sub by intellegre™ – Specification

(Subject to change)

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## 1.0 Universal Safety Sub Specifications

### 1.1 Environmental Rating

Description	Rating
<b>Operating Temperature Range</b>	-20 °F (-29 °C) to 350 °F (177 °C)
<b>Non-powered Maximum Temperature</b>	-58 °F (-50 °C) to 392 °F (200 °C)
<b>Max Thermal Change</b>	9°F (5 °C) / Minute
<b>Pressure Rating</b>	20,000 psi
<b>Mechanical Shock Compliance</b>	Compliant to all hollow carrier gun systems
<b>Vibration (3 axis)</b>	50 g RMS @ Sweep Frequency 50-1000 Hz

### 1.2 Mechanical Specification

Description	Rating
<b>Fishing Strength</b>	20,000 lbs

### 1.3 Electrical Specification

Description	Rating
<b>Operating Voltage Range</b>	15 VDC to 800 VDC (Both positive and negative)
<b>Operating Current– Standby</b>	8mA
<b>Communication Current</b>	Per chosen Telemetry

### 1.4 Downhole Electrical Specification

Description	Rating	Time	
<b>Working Voltage (Fuse replacement not reqd)</b>	Forward	850V	15 sec
	Reverse	850V	15 sec
<b>Maximum Firing Current</b>	Forward (Nominal )	1A	60 sec
	Forward (Maximum )	2A	60 sec
<b>Max Safe Voltage (Fuse replacement reqd)</b>	Forward	1280V	NA
	Reverse	1280V	
<b>Maximum Switches in a Gun String</b>	Per chosen Addressable switch system		
All ratings at 177C, All Voltage and current ratings are in DC			
All detonators are fired using negative voltage			

### 1.5 Compatibility

Description	Rating
<b>Detonators – Hot Wire</b>	50 ohms or higher (single or double resistor types)
<b>Igniters – Setting Tools</b>	50 ohms or higher
<b>RF Safe Detonators</b>	PX-1/EBW, RED (all versions), Exploding Foil Initiators.

## 2.0 Universal Safety Sub Features

- Voltage Polarity independent protection
- Compatible with multiple addressable switch systems
- No moving electro-mechanical parts
- Re-usable; cartridge type system eases modules replacement at end of life.
- Safely checks communication, semiconductor device status and wiring integrity before running in hole
- Works with AC and DC tractors rated to the specified voltage.
- Up/Down Communication provides surface with status for every command sequence
- Compatible with all varieties of Gamma Guns and CCL's
- Cartridge replacement recommended every 100 runs.
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### 2.1 Ordering information

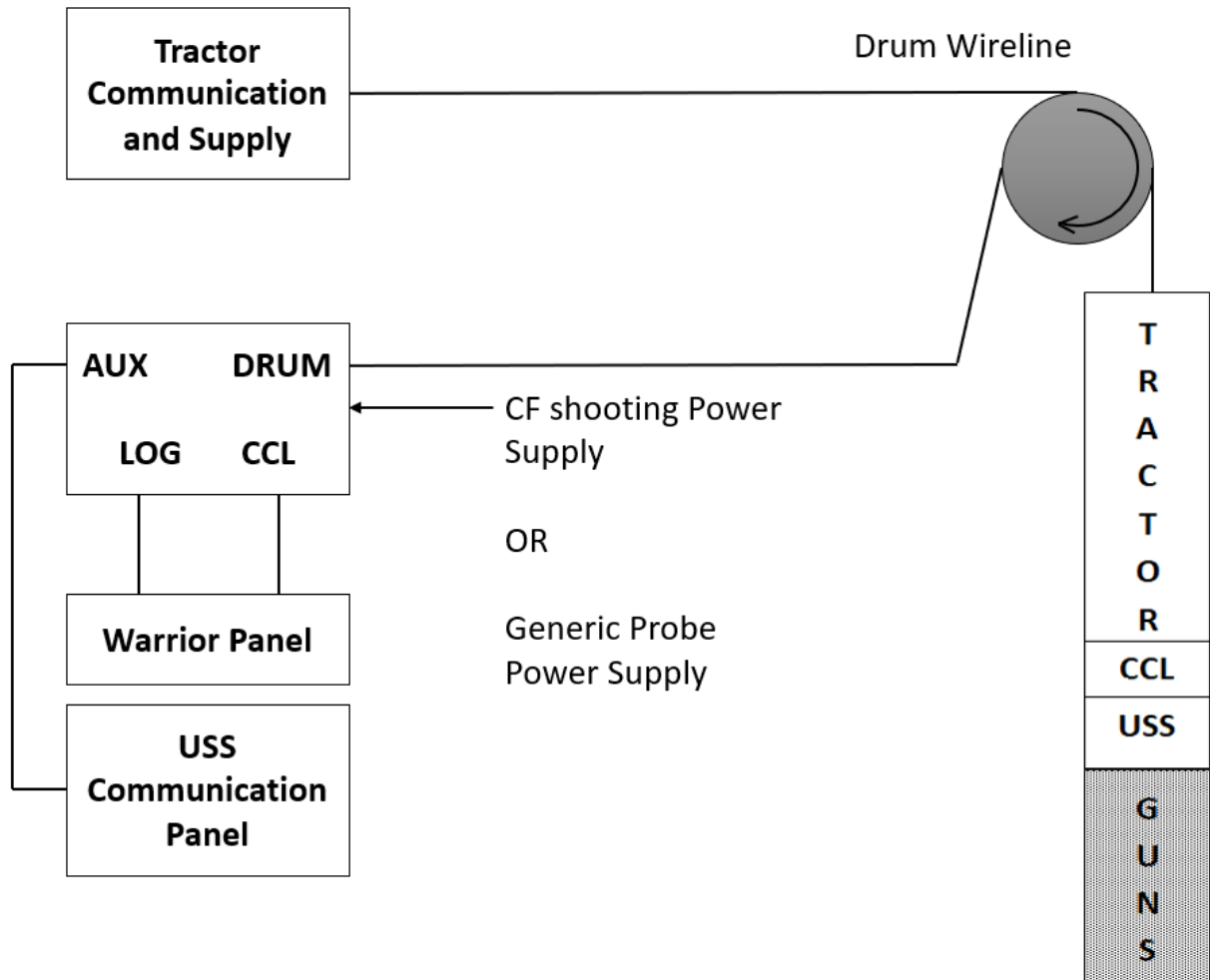
No	Part Number	Description
1)	USS-2125	USS with built in RF filter
2)	USS-2125-NRF	USS with NO RF filter
3)	CRTG-USS-BD4	Complete USS Cartridge with RF filter
4)	CRTG-USS-BD4-NRF	Complete USS Cartridge NO RF filter
5)	PCBA-USS-BD4	Individual USS PCB Assembly
6)	PCBA-USS-BD4-NRF	Individual USS PCB Assembly NO RF Filter

### 3.0 Mechanical Dimensions



FIGURE 1

### 4.0 Field Hookup Diagram



**FIGURE 2**

Shown above is an example of hooking up the Universal Safe Sub below the CCL and above the perforating guns that need to be isolated.

The surface control panel can directly connect to the Auxiliary input provision on any model of shooting power supply used in the field. This enables the user to quickly setup and isolate the gun string.