Product Features

- Designed for use with with Radiall Cryogenic Microwave Switch: **R583423141**
- Dedicated hardware timing control logic on each channel delivers pre-defined current limited actuation pulses to cryostat
- Inductive load protected outputs
- Optimized pulse control and signal conditioning to minimize power dissipation in cryogenic environment
- Typical transient heating <1mK/actuation
- USB 3.0 controlled
- No external power supplies required

Cryogenic Microwave Switch Controller

General Description

The CryoSwitch Control Module is designed specifically for use with Radiall's SP6T Cryogenic Latching Bipolar Actuator (Model R583423141). The controller features a simple to use interface, which allows control of the switch using standard USB serial communication.
In standard operation, each of the 6 RF outputs of the switch can be connected (disconnected) to the common RF input by sending the appropriate command. The connect/disconnect commands trigger a current-limited, time adjustable pulse with positive or negative polarity between the corresponding pair of output signals as shown in Table 2. Dedicated output monitoring circuitry ensures in hardware a maximum pulse width of 100ms.

QphoX B.V.
Lorentzweg 1
2628CJ Delft, NL
qphox.eu— info@qphox.eu
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Rev. 2

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage (USB)	V_s	-	5	-	V
Supply Current (USB)	I_s	-	150	500	mA
Output High Voltage	V_{OL}	5	-	28	V
Output Low Voltage	V_{OL}	0	-	-	V
Operating Temperature	T_{op}		25		$^{\circ}C$

Table 1: Electrical Characteristics

Timing Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
Output Pulse Width	t_s	1	-	100	ms

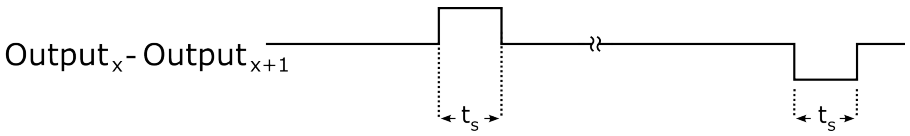
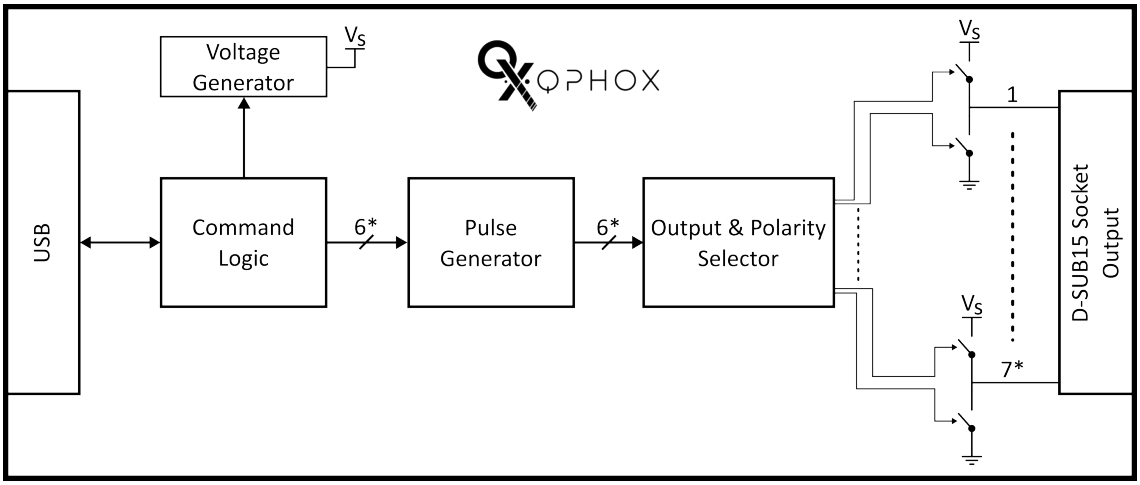


Figure 1: Timing Diagram

Internal Block Diagram



*Model dependant

Dimensions

220mm (L) x 103mm (W) x 30.5mm (H)

Application Information

- Connect USB-B type cable to the USB side.
- Selecting between ports (A, B, C, D), connect output pins 1-7 of the controller D-SUB-15 socket to matching input pins 1-7 of the desired switch. Refer to figure 3 (Switch side).
- Refer to the **CryoSwitch** repository for the support SDK.
- On power up all outputs are set as high impedance.

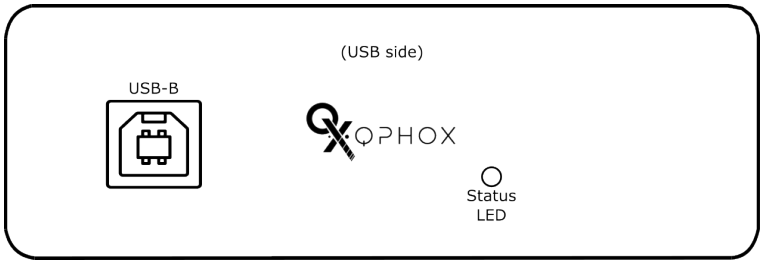


Figure 2: Input side

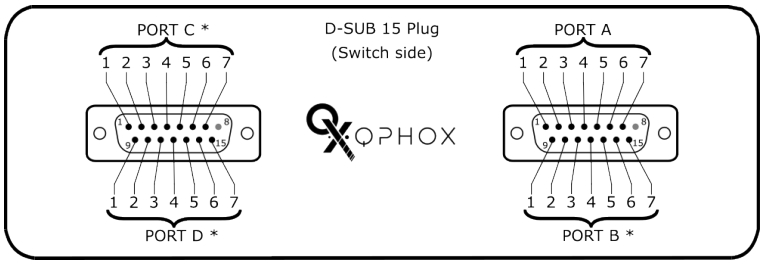


Figure 3: Output side