

Preventing Damage to SDI Outputs

TECHNICAL INFORMATION

Date: February 05, 2020

Introduction

Under certain conditions the SDI outputs of cameras can be damaged through a power surge. This can be avoided by connecting power and BNC cables in a particular order and by using shielded power cables and high quality undamaged BNC cables.

Problem Description

Camera SDI outputs can get damaged when an accessory is connected to the SDI output and is powered through an unshielded cable. All cameras, including all ARRI cameras and other SDI devices, can be affected by this. This is especially critical for cameras with SDI connections capable of SDI 6G or higher (even if set to work at lower bit rates like SDI 1.5G). Cameras with SDI connections capable of SDI 1.5G or SDI 3G can be protected more efficiently without decreasing the SDI signal quality.

This damage to the SDI connection can occur when connecting an unshielded power cable to an accessory that is already connected to the SDI output of the camera. If the plus pin is contacted before the negative pin, the BNC cable will close the current circuit resulting in a fatal damage of the included SDI driver chip which itself is not designed to handle such high currents. This problem can also occur when disconnecting an unshielded power cable of an accessory that is still connected to the SDI output of the camera with a BNC cable. Damaged or low quality BNC cables are more prone to cause this problem.

This problem can occur with all types of power sources including the camera's accessory power outputs, a power splitting box or an external battery. This problem can also occur when the camera or accessory are in the power on or off state.

How to avoid this Problem

To prevent this damage to the SDI outputs, ALWAYS make sure to plug in the power cable first and THEN connect the BNC cable. Once power and BNC cables are connected, it is OK to power the camera or accessory on or off. Also, ALWAYS make sure to disconnect the BNC cable first and THEN disconnect the power cable.

We also recommend using ONLY shielded power cables to power accessories that connect to the camera with a BNC cable. When only the plus pin connects on a shielded power cable, the shield will act as the power return and therefore not damage the SDI output. In addition, it is helpful to use only the highest quality of BNC cables.

To further protect the SDI outputs, an SDI isolator can be used. Please note, that SDI isolators can reduce signal quality and/or maximum cable length.

D-Tap (also called Power-Tap or P-Tap) connectors are made out of plastic and therefore cannot support a shield. Cables with D-Tap connectors should only be used when the above mentioned cable connection sequence is followed.

Shielded ARRI Power Cables

ARRI recommends using ONLY shielded power cables to power accessories that connect to the camera with a BNC cable. All power cables from the list below are shielded and can be used to safely power accessories that connect to the camera with a BNC cable.

Material Number	Product Name
K2.0006759	Cable LBUS - RS (0.8m/2.6ft)
K2.0001637	Cable RS - RS/PWR IN (0.5m/1.6ft)
K2.0014337	Cable Fi (3p) - RS/PWR IN (3p) (0.25m/0.8ft)
K2.0014331	Cable PWR OUT/12V (2p) - RS/PWR IN (3p) (0.5m/1.6ft)
K2.0014336	Cable Hi (4p) - RS/PWR IN (3p) (0.5m/1.6ft)
K2.0014777	Cable PWR OUT/12V (2p) - Le (5p) (0.5m/1.6ft)
K2.0014343	Cable PWR OUT/12V (2p) - MiniXLR (4p) (0.5m/1.6ft)
K2.0014344	Cable PWR OUT/12V (2p) - Hi (4p) (0.5m/1.6ft)
K2.0014776	Cable RS/PWR IN (3p) - PWR OUT/12V (2p) (0.15m/0.5ft)
K2.0006170	EXT-RS Adapter ALEXA Mini

Contact

In case you have questions or recommendations, please contact ARRI Service via e-mail: service@arri.de.