

Application Note AN0108: icon power supply cables

Introduction

A stable and sufficient supply of power is crucial for a seamless operation of electronic devices. This leads to requirements not only to the power supply itself, but also to the wiring used between the power supply and the device.

Our icon actuators come with a standard 8-wire cable with a length of up to 9 meters (5 meters for 12 VDC actuators) and it is important to take the voltage drop of this cable and potential extension cables into consideration when setting up a system, as low voltage can cause the product to malfunction and do harm to the application.

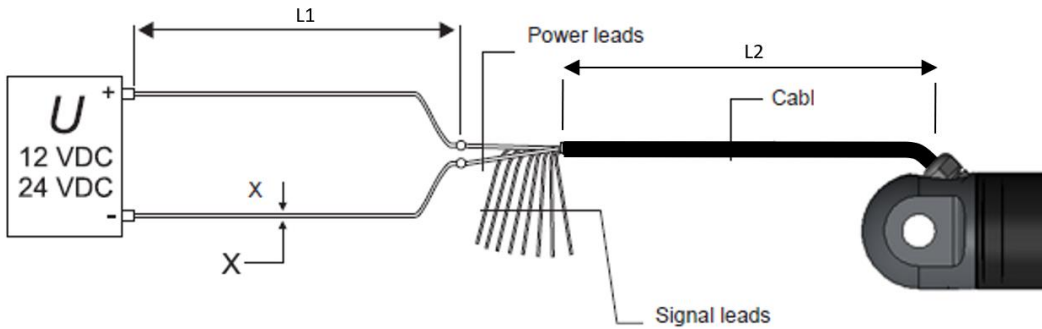
Electrical connections

The icon actuator is supplied with a cable (a), which enters the unit through a gland in the end bracket (b). The cable has flying leads or a connector in one end for external connections.



Wire cross section

To ensure a sufficient power supply to the actuator, the cross section (X) of the wires between the power source and the actuator ($L1+L2$) must be of sufficient size.



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The table below shows the maximum lengths of the cables L1 and L2 respectively.

Actuator type	L2 max length	L1 max length
icon35 - 24 VDC	9 meters X = AWG20	0,5 meters X = AWG16
icon50 - 24 VDC	9 meters X = AWG16	0,5 meters X = AWG16
icon60 - 24 VDC	9 meters X = AWG16	0,5 meters X = AWG16
icon35 - 12 VDC	5 meters X = AWG20	0,5 meters X = AWG16
icon50 - 12 VDC	5 meters X = AWG16	0,5 meters X = AWG16

For longer cables, calculations based on supply voltage, actual current consumption, and ambient temperature must be carried out. It is possible; however, to reduce L2 and increase L1 by increasing the wire cross section, X, for L1.

Example: icon50, 12 VDC => L2 = 1 m and L1 = 6 m X = AWG13.

Inrush current

It is important to take into considerations that the actuator generates a high inrush current during startup. This current can be up to four times the nominal current and will last for 100 to 200 milliseconds.

Concluding remarks

It is recommended to protect the actuator and the application by using a slow blow fuse between the actuator and the power source.

The power source must be capable of handling the inrush current and the same requirement goes for contacts, switches, relays etc.

More guidance on power supplies can be found in AN0106.

Please contact support@concens.com for further technical assistance.

Concens A/S
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