

Application Note AN0107: icon communication cables

Introduction

The Concens icon actuator comes in six different configurations designed to match the demands of a specific application. In addition to the digital inputs and outputs, which constitute the interface to the actuators, all configurations have bus communication (RS485) to allow for centralized control and monitoring.

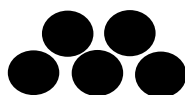
The RS485 line is used for synchronized operation of more actuators in the MDO configuration as well and this application note addresses some important aspects, which must be considered when using this configuration.

The reason for the special requirements related to MDO systems is the relatively high speed of the communication when running more actuators on the same bus. Especially in environments with electrical noise it is extremely important to follow the guidelines.

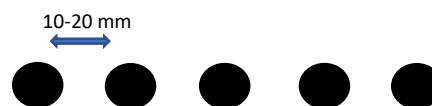
Cabling

All icon actuators come with a standard 8-wire cable with a length of up to 9 meters (5 meters for 12VDC actuators) and when using this cable as the main connection in a setup, it is important to minimize the risk of crosstalk between the wires.

To do this, it is recommended to avoid stacking more actuator cables together and stacking actuator cables together with AC cables or high-voltage DC-cables. In general, it is recommended to keep a minimum of 10 to 20 mm distance to other cables.



When using standard cable, it is not recommended to stack or let cables run in parallel as this will increase the risk of crosstalk.



It is recommended to keep 10 to 20 mm space between the cables.

In addition to this, it is very important to ensure that the system is grounded properly.

All icon actuators are delivered with a build-in load resistor as a part of the physical interface for the RS485 communication. Because of these resistors, a maximum of eight units are allowed on the same bus. Please contact Concens technical support if more units are required.

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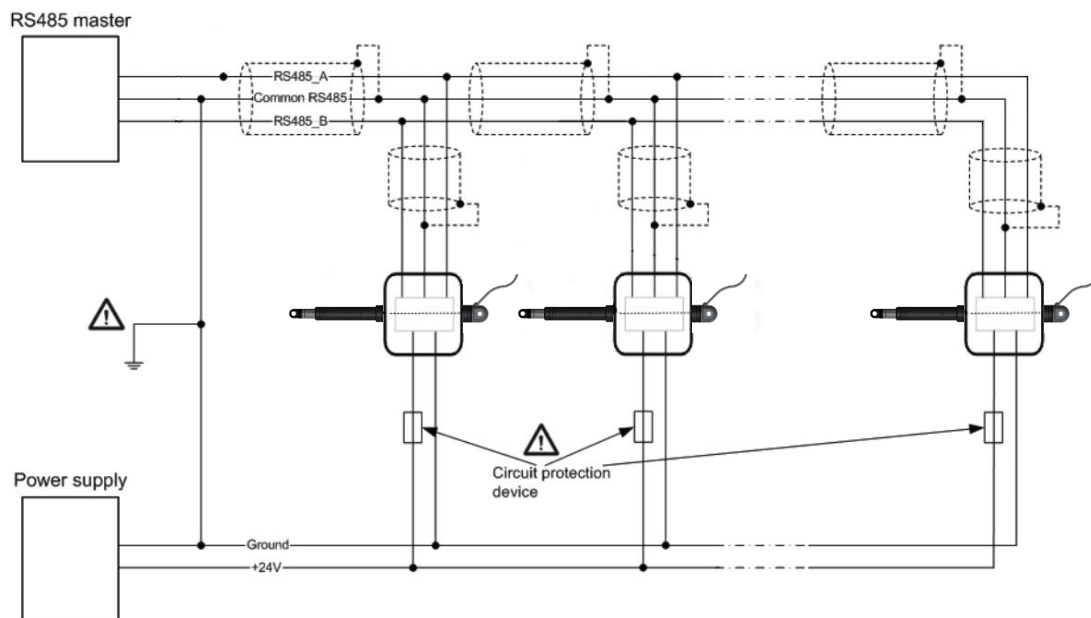
Improved noise immunity for high performance systems

To improve noise immunity in systems with multiple icons running on the same bus it is recommended to divide cables into power and communication, i.e. minimize the length of the standard cable connected to the actuator (1 meter) and use separate wires for +24VDC and ground and shielded cable for RS485 communications as shown in figure 1 below.

For the RS485 cable, it is recommended to follow the electrical requirements according to TSB89, Application Guidelines for TIA-EIA-485-A:

- AWG24 shielded twisted pair
- 120Ω characteristic impedance
- Capacity less than 40 pF/meter
- Drain wire as common signal reference

Figure 1



ⓘ Even though the EIA-485 specification states that A is the inverting signal and B is the noninverting signal, several RS485 transceiver manufacturers specify the opposite, which is a widespread misunderstanding.

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

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29.12.2023 – MTS/RL