easyE-i
Integrated Controller MDO

The MDO is chosen when it is necessary to run multiple actuators synchronously.

The easyE-i-line is a series of actuators, mechanically similar to the easyE-line, with integrated controller which enables the use of Modbus RTU on an RS485 serial communication. The easyE-i-line options provide everything from easy maintenance, user friendly control and installation, to a wide range of customizable settings and feedback that will help tailor the movement solution to your specific needs and applications.

MDO (Multiple / Direction / Override) is the most advanced version of the easyE-line family.
It is recognized by the capital letter F in the part number (e.g. EEL35100H24A1000**F**1MS-11).

The MDO version is for use with bus communication but has got inputs at pin 5 and pin 6 for direction command (these are active „low“). Pin 7 is an „OVERRIDE“ input. When pin 7 on one of the actuators is pulled down it is possible to run this single actuator by pressing the buttons on the handset connected to this specific actuator. Pin 3 is a signal GND connection.

Features

The Modbus addresses for the actuators are 200 through 207 and 200 is the master.

All parameter settings must be identical except for the Modbus address.

The most important feature with the MDO version is that it enables you to run at a minimum two actuators and up to eight actuators synchronously.

Parameter settings are done by connecting to the Bansbach Config-Tool software on your pc with the programming cable and the i-connect-box. Power supply must be connected to the i-connect-box too.

The Bansbach Config-Tool software is free and available on our website.

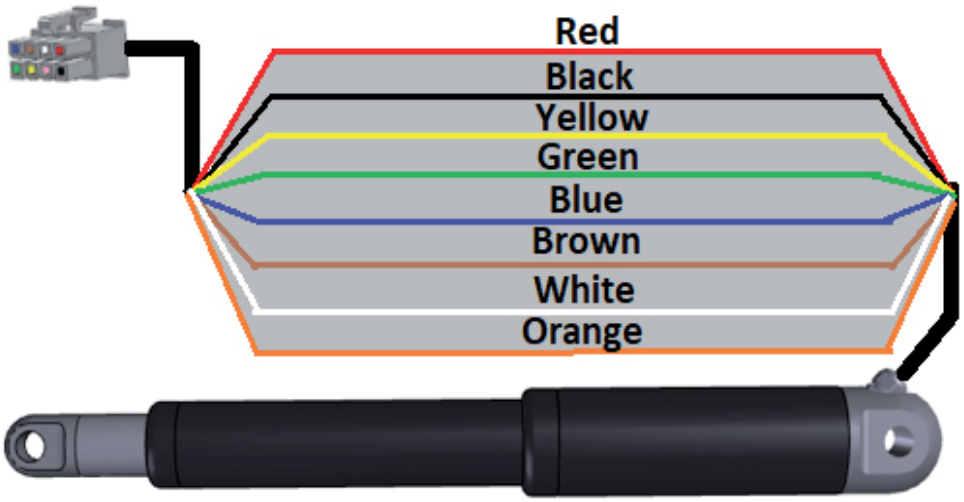
www.bansbach.de/easyE-i/configtool

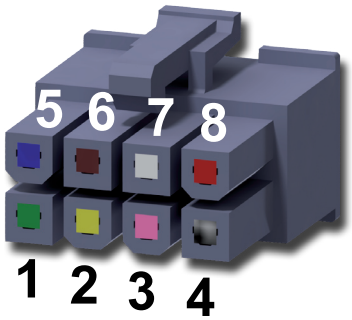
Bansbach Config-Tool

Connection

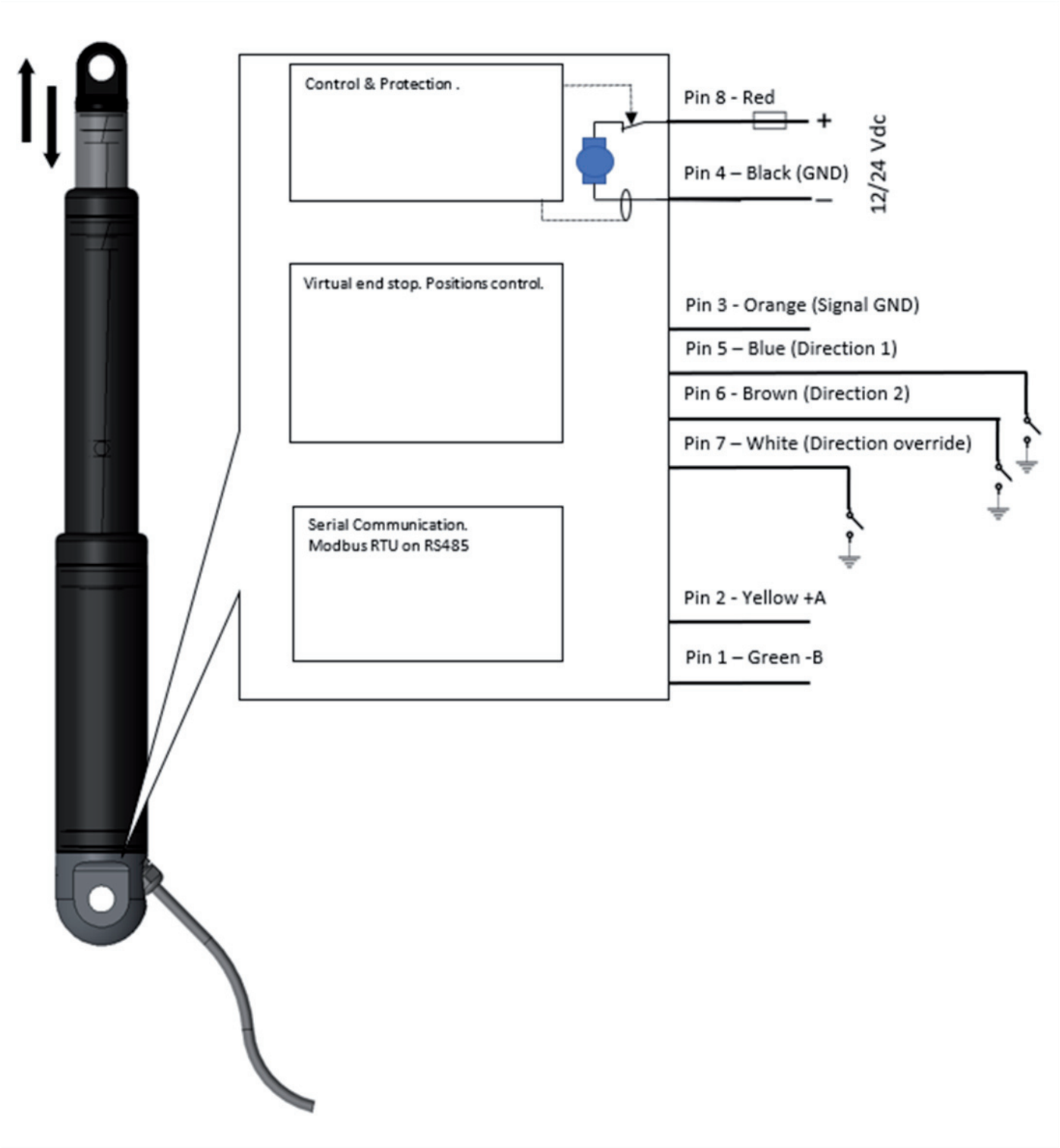
If nothing else is specified, the Bansbach actuator will be fitted with the 8P Molex Mini fit JR connector and will have the connection and wire colors as specified.

MDO Pin Assignment		
Pin No.	Wire color	Function
1	Green	RS485 -B
2	Yellow	RS485 +A
3	Orange	GND Signal
4	Black	GND Power
5	Blue	Direction in (BWD)
6	Brown	Direction out (FWD)
7	White	Override
8	Red	Power [12 or 24 VDC]



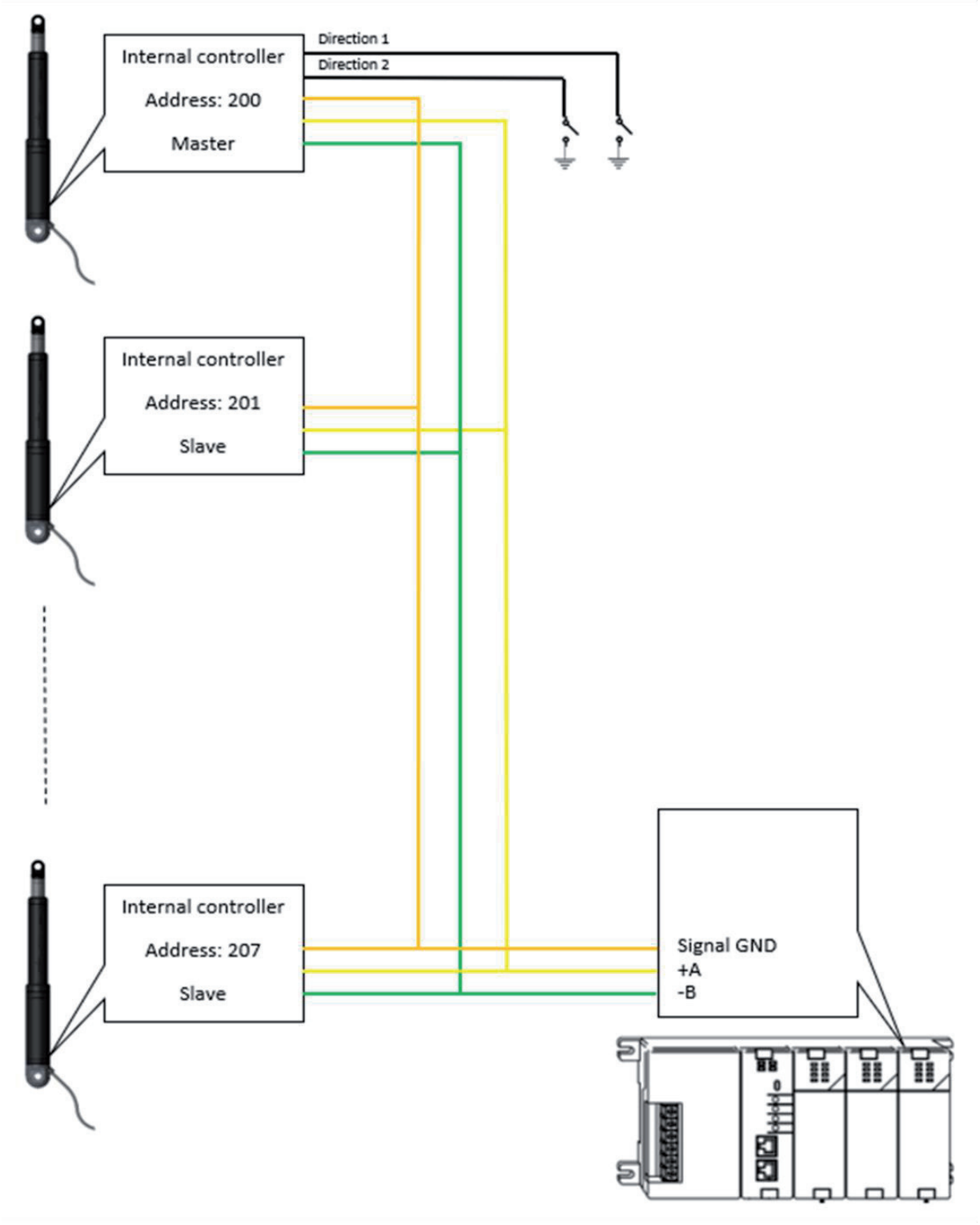


Block diagram



The block diagram is showing the connection on the MDO actuator. It is important that only the „Master“ has direction control. Other actuators are only „movable“ when override switch is enabled.

Block diagram MDO system installation



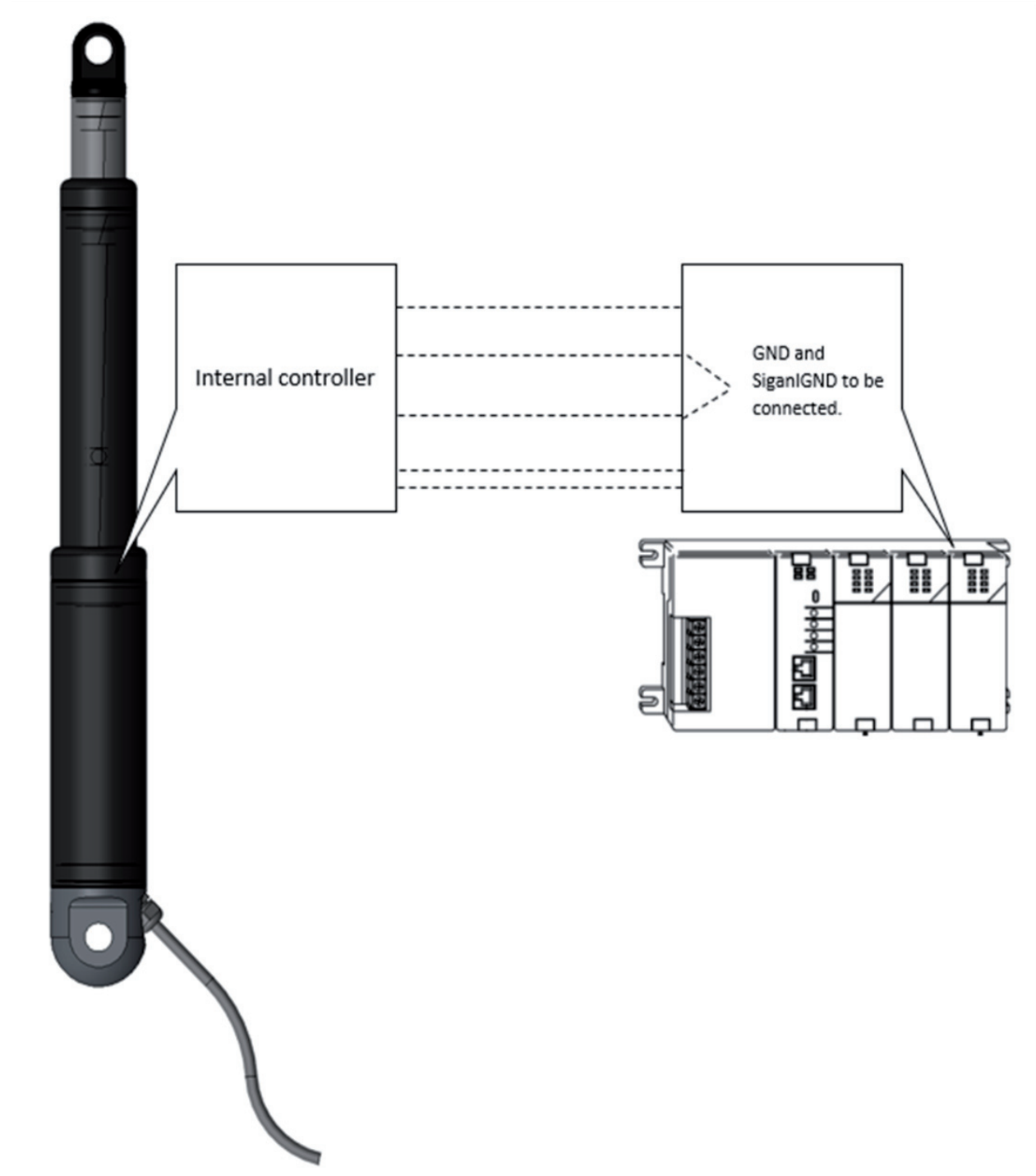
The block diagram is showing the connection necessary for getting the synchronous system to run. It uses the RS485/Modbus RTU network to communicate, and the master is there by keeping track of the other actuators performance.

ⓘ Be aware when setting up the parameters for the MDO function all actuators need to have the exactly same setup. Only addresses need to be continually.

ⓘ Only the specific MDO Modbus commands can be used.

Interconnecting

For obtaining the best result for both measurement and communication the ground and signal ground are to be connected at the end of the line. If using i-connect-box this has already been done. And no extra effort is needed.



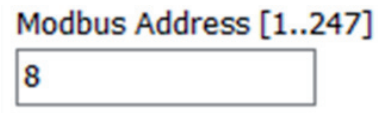
Installation process

To install the MDO actuators correctly please follow this process. If the actuators are ordered pre-installed by Bansbach, some of the steps can be skipped.

1. Setting up address

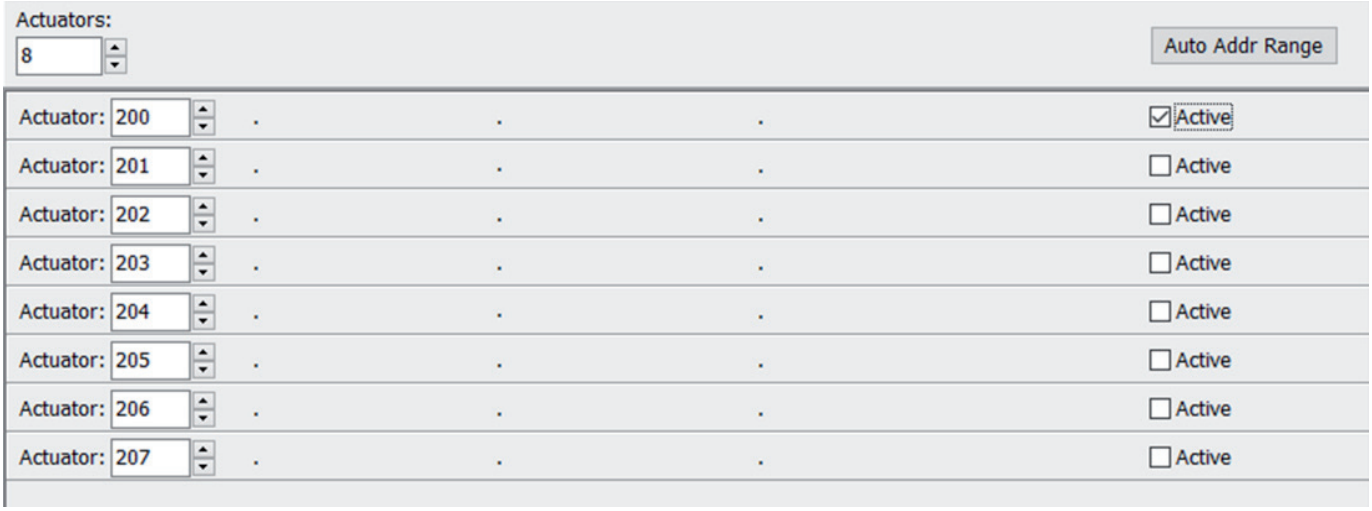
The actuators as a default will come with 8 addresses. The first thing to do is to set up the correct address for an MDO system. This is done in the Bansbach Config Tool.

No. 1 MDO actuator needs to have the address No. 200 this is going to be the MASTER, the next 201,202 and so on.

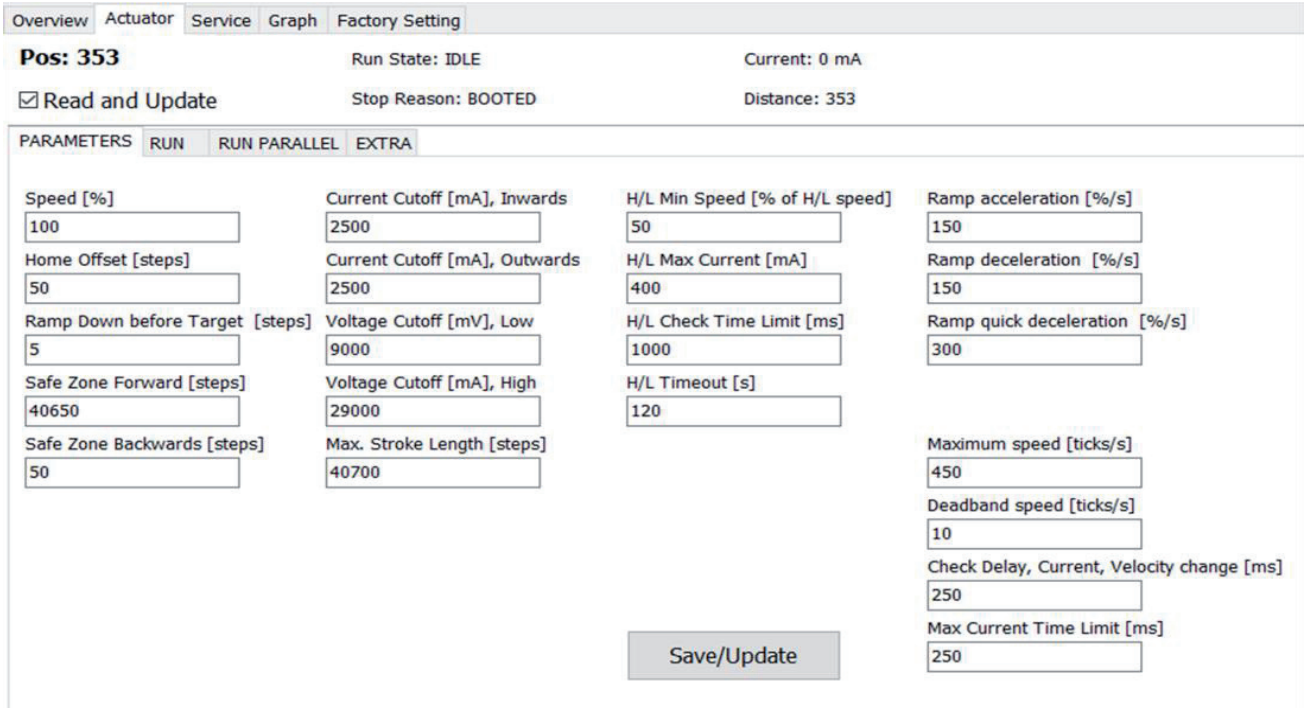


2. Setup and parameters

The actuator with the address no. 200 is the first actuator that will be setup. Chose that actuator in the Bansbach Config Tool actuator list. That is shown on the first page.

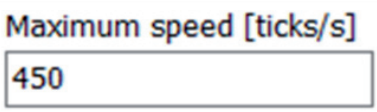


Make sure all parameters are correct!

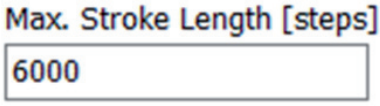


If some parameters need to be changed, do so! but remember that all MDO actuators need to have the same parameters.

One parameter that is very important for the correct operation of the MDO actuator is the Maximum speed parameter. An MDO actuator will run at constant velocity, this need to be setup for loaded velocity. 450 for 24Vdc supply and 225 for 12 Vdc supply.



Check if the stroke length is correct! „It should be correct setup from factory“.

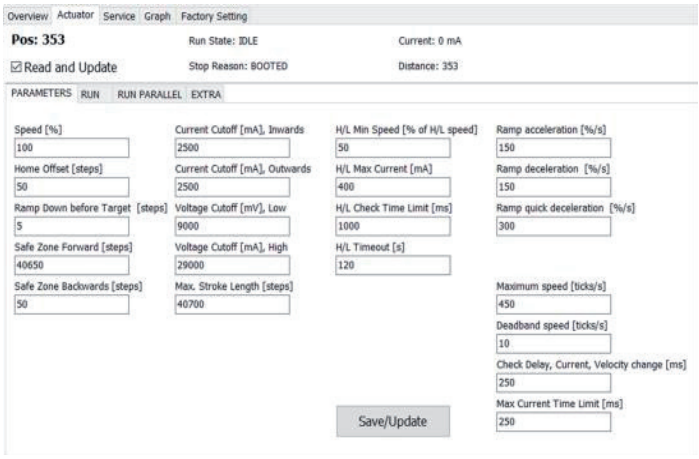


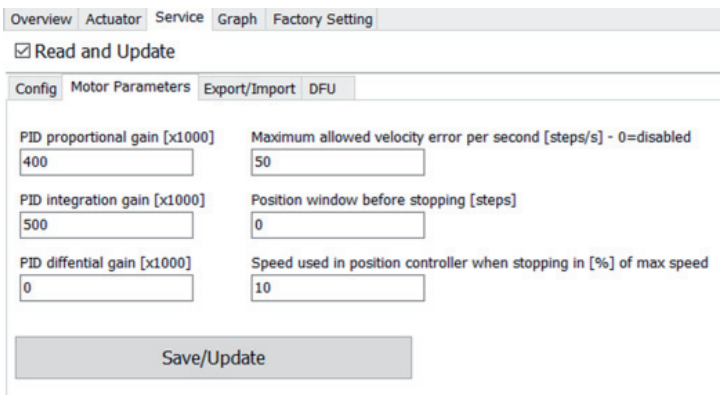
If not change it manually or by performing a Learning process. (See Learning and homing ini the chapter for „Generally used functions and Settings“.

Then perform a „Homing“ see chapter for „Generally used functions and settings“.

The next step is to do the same process for the other MDO actuators in that are meant to be in the system. Chose the next actuator in line and do the same process.

ⓘ Be aware when setting up the parameters for the MDO function all actuators need to have the exact same setup. Only addresses need to be continuously.





Check that parameter are the same for all actuator „Actuator parameters“ and „Service motor parameters“.

Parring the system

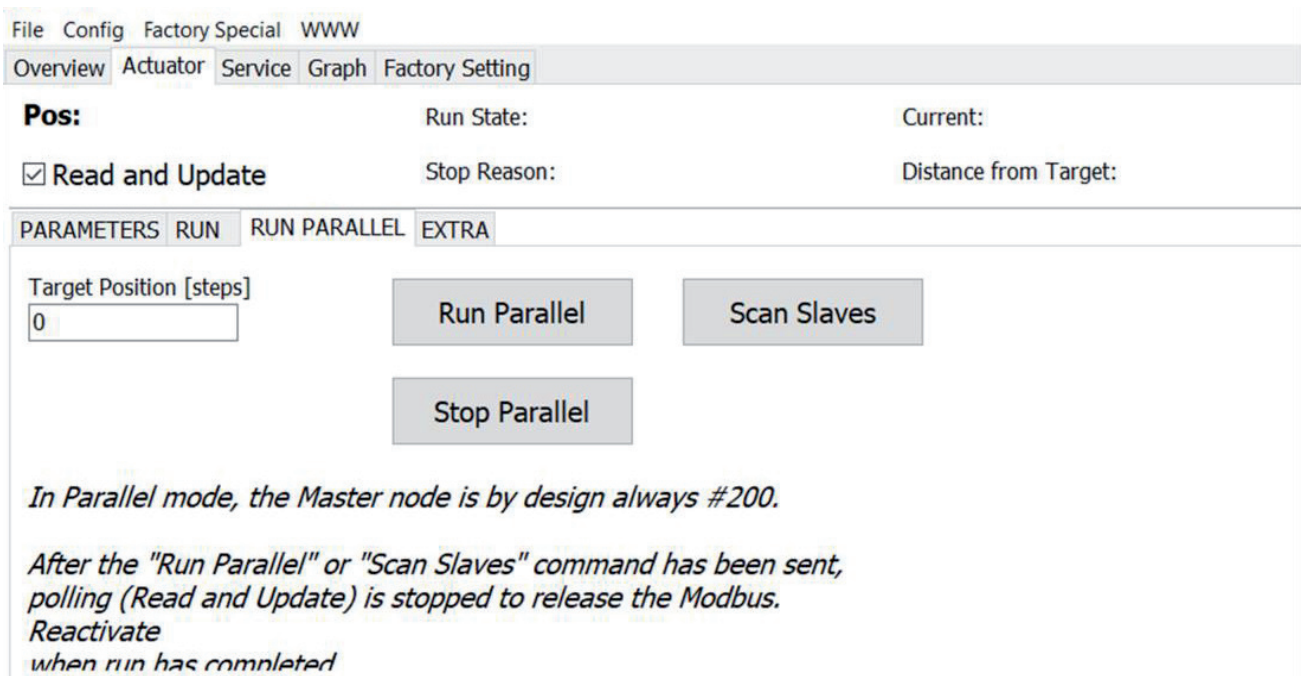
When all actuators are setup correctly and connected to the bus, they are ready to be build as a system „Paired“.

Go to „Overview“ activate actuator address 200 as the only one. Other actuators must not be activated.

The go to the folder „Actuator-RUN PARALLEL“ chose the button „Scan Slaves“. Now the system is build and it can be tested.

ⓘ Before testing secure that all actuators are aligned.

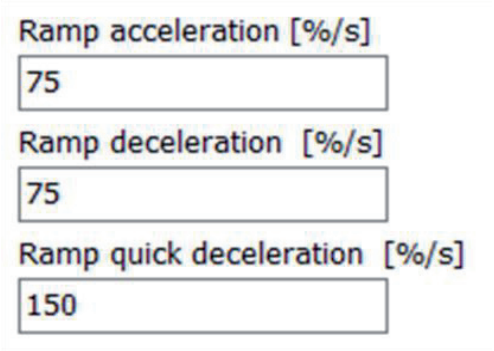
Testing is done by typing in a position under „Target Position“ and hitting the button „Run Parallel“



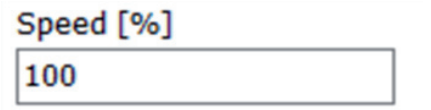
ⓘ It is very important that the folder „Actuator-RUN PARALLEL“ is the only folder that is used/visual when running parallel. All others interfere with the command execution.

ⓘ When running with handset please disconnect Bansbach Config Tool or only have the „Actuato RUN PARALLEL“ folder open. All others will interfere with the command execution.

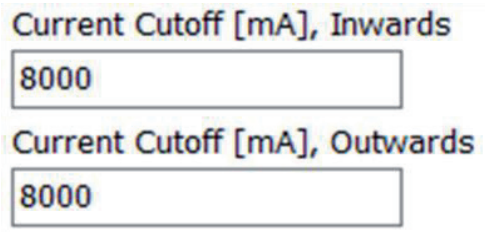
Start and stop ramp is a percentage to a second, so 100% is a second. If the stop function is activated the quick decleration time is used.



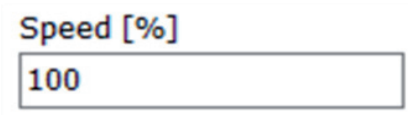
Speed limits the maximum speed.



Current-limits are individual for reverse and forward directions. Refer to datasheet for actual actuator for maximum recommended current when adjusting.



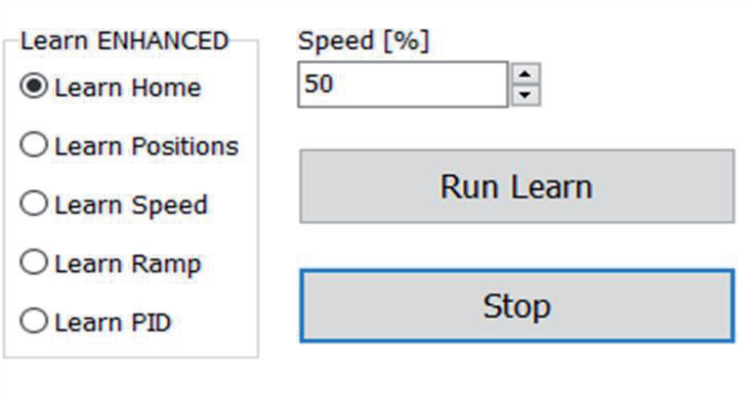
Speed limits the maximum speed.



Homing and Learning are two functions for the correct installation and setup of the actuator. Homing returns the actuator to the inwards mechanical end of the actuator. And the Learning performs a measurement of the actuator stroke and stores it.

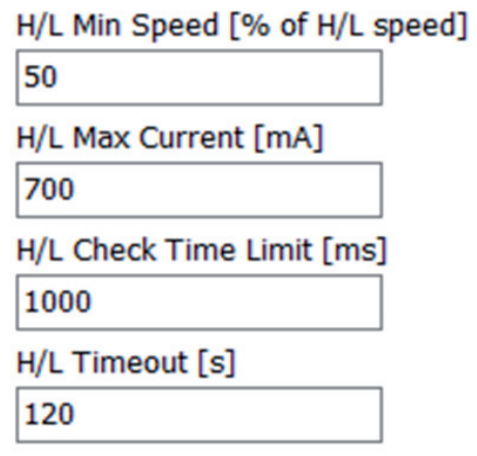
The Bansbach actuators comes with default setup from the factory.

Choose the process to run and press „Run Learn“. If something should occur and you wish to stop the process press „stop“. The process will then not be stored.



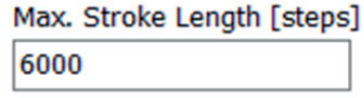
It is possible to choose if the Learning or Homing is done from inwards to outward (retracted) or from outwards to inwards (extracted).

ⓘ A set of special parameters will be used under learning / Homing. That will mean that the speed and current is as default set to be lower.



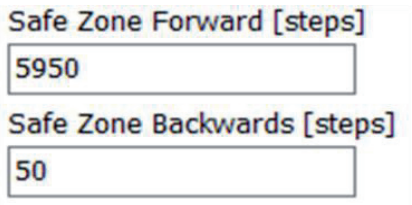
ⓘ If using range scale, the parameters for that will be erased under learning.

Stroke Length is the total length of the movement length and is measured as counting steps/tics from the encoder in the actuator. It is possible to type in the stroke length or it will be updated under learning.



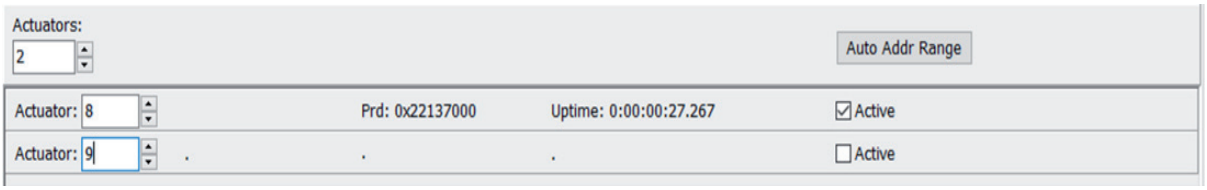
ⓘ If the stroke length is manually typed in. It is necessary to also manually typing in the safe-zone.

Safe-zone is the work aria of the actuator and is measured as counting steps/tiks from the encoder in the actuator. This will as default under learning be set to 50 step/tics from outwards/inwards. This function will then use a small bit of the stroke length for securing that the actuator is not running in I-trip/overcurrent at the end.



Other functions and information

Actuator overview is the first page in the Bansbach Config Tool and is showing the actuators that are installed and setup.

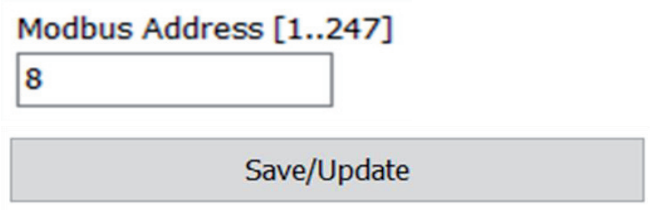


Type in the numbers of actuator and the individual addresses. It is only possible to work with one actuator at a time. But it is possible to see all active actuators at a time.

ⓘ If the actuator is recognized the uptime counter will be counting when „active“ is chosen.

Adding more actuators: For adding more actuators in the Bansbach Config-Tool they need to have different addresses. All actuators come with a default address „8“ from factory. And if more actuators are needed, they need to have individual addresses. So this must be change once at a time.

Type in the new address „between 1 and 199“ an save.



ⓘ Adress 200 to 207 is reserved for parallel drive.

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