

CONNECTION

Connect motors and supply as in picture. Supply voltage 12-35Vdc must be filtered, ripple less than 20% . Pulse inputs can work with positive (PNP) or negative (NPN) pulses. Selection is made with PULSE LOGIC-switch. Other inputs work with positive commands.

PARAMETER SETTINGS

Connect serial interface unit EM-236 or Laptop-PC to the CONFIG-connector. You can do it while the supply power is ON. EM-236 displays the type of the device. Push the select button and you can scan the parameters with arrow buttons. Parameters can be changed with + and - buttons. If you want to save parameters do it with a long push of save button.

parameter list with :	quality	(set range)	-default
1/11 Running speed		40-100% (40-100)	-100%
2/11 Home speed		20-60% (20-60)	-60%
3/11 Start ramp		0-2s (0-20)	-0,5s
4/11 Stop ramp		0-2s (0-20)	-0s
5/11 Current limit		1-20A (10-200)	-5A
6/11 Difference limit		3-50pulses (3-50)	-10
7/11 Behaviour	smo.-> aggr.	(1-5)	-5
8/11 I-trip indication	enabled =0	disable=1	-0
9/11 Start condition	rev. dir=0/both	dir.=1	-1
10/11 Mode	cont.=1/imp.=2/imp.-2=3		-1
11/11 Power-on home	disable =0	enabled =1	-0

PARAMETER DESCRIPTION

Running speed is the speed which is used in normal mode.

Home speed is the low speed used during home-routine.

Start and stop ramps define the acceleration and deceleration time to 0-100%-0 speed.

Current limit is limit value for current trip. If current limit value is exceeded the motors will be stopped. During the period of start ramp + 1s the current limit is 1.5 times the current limit set value.

Difference limit is the value for largest allowable difference between A and B pulse counters. If this value is exceeded motors will be stopped.

Adjust behaviour defines how fast and intensively the driver will adjust the synchronisation between motors A and B. Smooth 1 --> Aggressive 5

I-trip-indication
FAULT output can be set to go ON also in current trip situation.

Start condition enables the device to re-start the motor to both or only to opposite direction after a trip or stop situation.

Mode sets the driver control mode.
In continuous mode the motor runs as long as command (fw or bw) is ON.
In impulse mode a short command starts the motor and the direction is changed with opposite command. Motor will stop only with stop command.
In impulse-2 mode motor starts with short (FW/BW) impulse. Following command stops the motor, and next command (FW/BW) starts the motor again. Of course in all modes the difference limit, current limit and STDP-command will stop the motors.

power-on home sets device to make drive home routine every time when power comes on.

INPUTS / OUTPUTS

PULSE A and B inputs are for incoming feedback pulses.

Fw & Bw are command inputs forward / backward.

STDP input is for the use of external stop command (eg. end switches).

HOME input is for starting the *drive home* routine

TRIM inputs enable driving of only one motor for setting the balance of the system or emergency overriding of motors, one or both.

FAULT output is activated in the following situations:

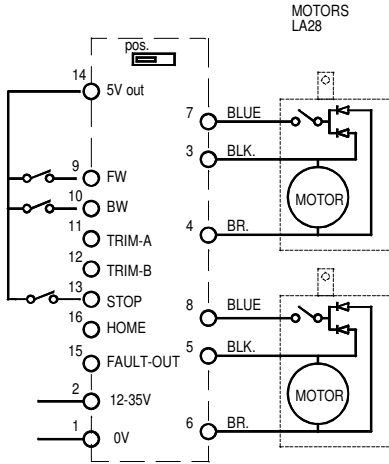
- difference limit exceeded
- pulses have disappeared
- too high temperature
- current limit exceeded (if enabled)

Notice! fault output is pulled down on alarm.

Inputs, 4-30Vdc (as HIGH) signal levels
0-1V, (as LOW)

Output, NPN open collector max. 50mA

EXAMPLE 1.
3-WIRE MOTOR WITH REED SWITCH
PULSE SENSOR, PULSE LOGIC
LINK SHOULD BE IN POS. POSITION



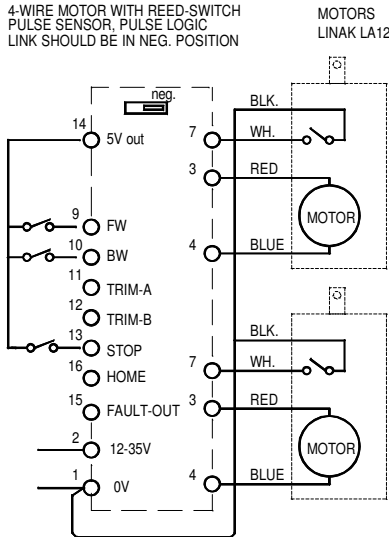
DRIVE HOME ROUTINE (balancing)

Drive home routine is a calibration cycle for balancing the system. Home routine can be started by giving FW and BW commands at the same time for 3s or with incoming signal to home input. If "power-on home" parameter is enabled the home routine is started every time when power comes on. Drive home routine can be interrupted with new FW or BW command or signal to STOP input. When drive home routine starts, both motors start to run to same direction and will run until current limit stops the motor or pulses stop coming. During the drive home routine the fault led is blinking slowly. When blinking stops and both motors have stopped the device has reset the pulse counters. Now device is ready for use.

FAULTS

If some of the following malfunction occurs, motor is jammed (I-trip-ind.), pulses disappear or pulse counter difference is too high (unbalance), the device will stop the motors and FAULT output will be pulled down. When motor is re-started the FAULT output is reset. Faults are also indicated with fault led.
Fault led indicates with the following manner:
2 blinks = current trip, 3 blinks = pulses disappeared, 4 blinks = difference limit, 5 blink = over temperature.

EXAMPLE 2.
4-WIRE MOTOR WITH REED SWITCH
PULSE SENSOR, PULSE LOGIC
LINK SHOULD BE IN NEG. POSITION



TRIM and override

TRIM input allows the balance trimming and emergency use. When one of TRIM inputs is activated only the corresponding motor will run. During trim-run the balance adjust and pulse counters are disabled. If both TRIM inputs A and B are activated, it is possible to override motors and only the current limit is active.

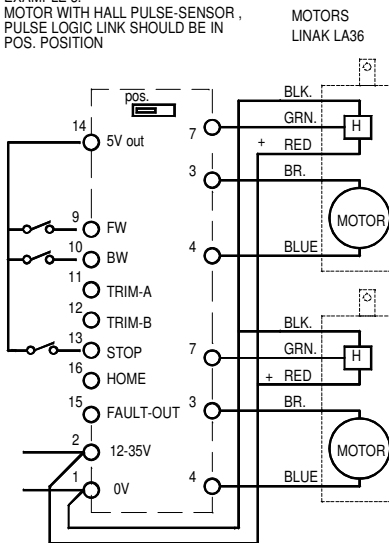
MONITORING.

During the normal use it is possible to monitor the function of driver with EM-236. Select the monitor mode in EM-236 and you can check the following values:
- 1/4 current, motor A 10-200 = 1-20A
- 2/4 current, motor B 10-200 = 1-20A
- 3/4 pulse count / run cycle (only motor A)
- 4/4 pulse count difference

FEEDBACK PULSES

Pulse inputs can work with positive or negative feedback pulses. When pulse logic switch is in negative position, the inputs are internally pulled to 5V with 10kohm resistor. When positive logic is chosen the inputs are pulled to 0V correspondingly.

EXAMPLE 3.
MOTOR WITH HALL PULSE-SENSOR ,
PULSE LOGIC LINK SHOULD BE IN
POS. POSITION



FASTENING OPTIONS

1. 4 x 3mm SCREW
2. DIN-RAIL BASE
3. Polycarbonate box IP66
4. Integrated with mains supply (max. 10A total) in IP66 Polycarbonate box.