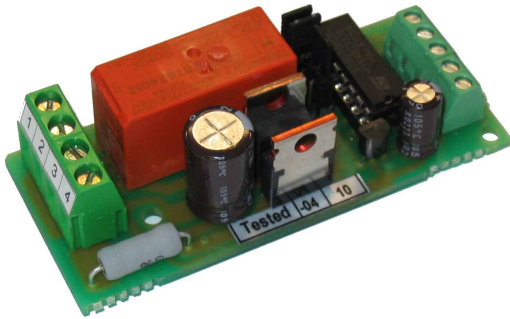# EM-165pf POSITIONING DRIVER 12-32Vdc

FEATURES

• **Pos. accuracy typ. ±1%**
• **High efficiency >92%**
• **For motors 5-200W**
• **Start- and stop-ramp**
• **Overload protection**
• **Error indication**
• **Control value with pot. or voltage**
• **128, 256, 512 ,1024 pulse ranges**
• **Adjustable current limit**
• **Rail base mountable**
• **EMC-tested (CE)**

EM-165pf is a positioning driver for pulse feedback systems. Potentiometer or direct voltage signal can be used as control value. The device has inbuild up-down counter and servo amplifier for positioning. There are four counter ranges: 128, 256, 512 and 1024 pulses. Additionally the range can be fine-tuned. The power stage of the unit is capable of directly driving a DC-motor. EM-165pf is suitable for example driving a spindle motor equipped with pulse transducer. EM-165pf is best suited for slow and medium speed systems with transitional period of 4...50s (from end to end). The current limit is settable and can be used to limit the torque of the motor. Current trip feature will shut down the driver in fault situation, if either current is on the limit for over 2s, or if it takes more than 50s to reach the set value. In fault situation the error output will be activated. Reactivation from the trip situation is done by applying a reverse control command or by switching power off and back on.

Every time the unit is switched on, it will first drive the mechanism to one end and reset the counter. After this it will drive the mechanism to control value. Every time the unit receives new control value, it starts the motor and begins to compare the counter value with control value. When these two start to approach each other, the controller slows down and finally stops when the values are indentical. Besides using one of the pulse ranges, the positioning range can be fine tuned with control value range trim. EM-165pf is small in size and can be mounted into a rail using a rail mounting base or screws. The unit has a self recovery overload protection and short circuit protection. However the use of an external fuse is recommended.

TECHNICAL DATA

Supply	12-32Vdc
Idle current	< 40mA
Protection	self recovery thermal prot.
	shot circuit prot. approx.30A
Load capacity	5A continuos
	8A 50% use max. 30s
	12A 20% use max. 10s
Current limit	0- 12A settable
Precision	typ. ±1% range
Control value range	0-5V or 0-10V (pin 7)
Input impedance	100kohm
Potentiometer	1...10kohm.
Pulse in	4-30V 4.7kohm
Pulse width	> 5ms
Pulse frequency	max 200Hz
Pulse range	128, 256 ,512 or 1024
Auxillary pin 5	5V max. 15mA
Error output	NPN -open coll.
	max. 30V / 50mA
Efficiency	> 92%
Oper. temperature	-20...60°C
Dimensions	73,32,20mm
Weight	approx.40g

BLOCK DIAGRAM EM-165pf
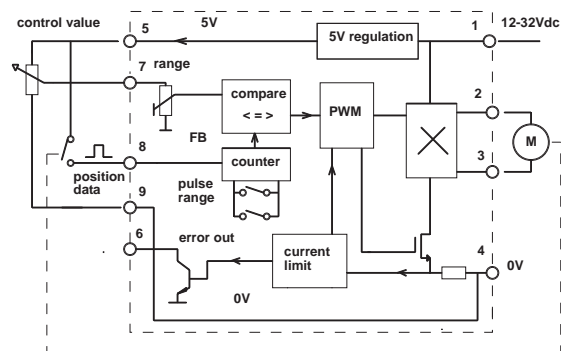
OPERATING INSTRUCTIONS EM-165pf

IMPORTANT !
Supply voltage must be filtered 12-32 VDC with less than 20% ripple.
Choose the fuse according to the application (max. 15A). Check the
polarity before connecting.

SETTINGS

CURRENT TRIP (DRIVE SHUT DOWN)
When current trip activates, the driver will shut down and the error
output will activate. Current trip will activate in either of the following
cases:
- overcurrent situation for over 2s
- positioning takes longer than 50s

CURRENT LIMIT (MOTOR TORQUE LIMIT)
Maximum motor current can be limited with current limit trim.

PULSE RANGE
Minimum value is from one end to other end. Setting is done with
two jumpers.

RANGE
Control value scale trim, use this to fine tune range.
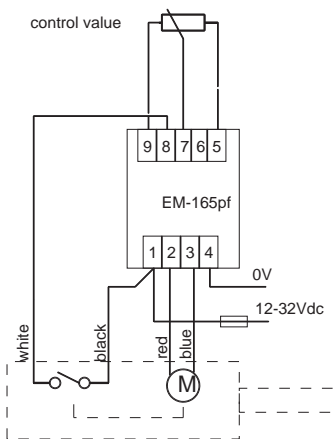
OPERATING INSTRUCTIONS
Connect the application and make sure the current limit is not set
too high. Choose the pulse range according to the application.

When power is switched on, the unit will perform a reset operation,
in which positioning count value is set at zero in certain position. In
practice the unit drives motor towards the other end until no more
pulses are received, in other words system is driven home after which
counter is reset. After this process control value is used to drive
system to the desired position. Pulse receiving can be ended by
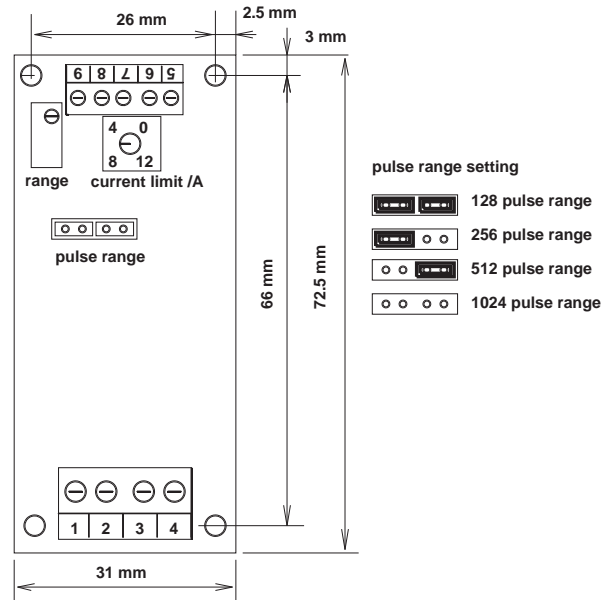using an external limit switch.

Funtional direction can be changed by exchanging the motor wiring
polarity.

pulse range setting

128 pulse range
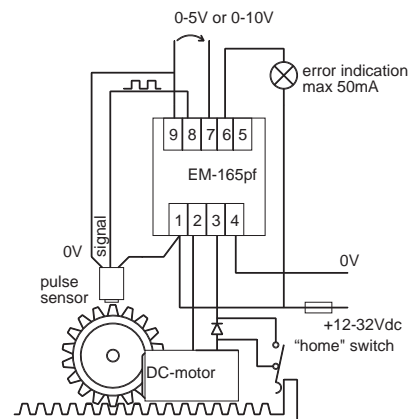256 pulse range
512 pulse range
1024 pulse range

TERMINALS

1. 12-32Vdc
2. Motor
3. Motor
4. 0V, gnd.
5. 5V ref. output max 15mA
6. Error output OPEN-COLL. 50mA
7. Control value input 50mV-5V, 100mV-10V or pot.
8. Positioning data input (4-30V pulse).
9. 0V, signal gnd

EXAMPLE 1

In this example positioning data is derived from internal pulse switch
in spindle motor. Potentiometer is used to set control value. Spindle
motor has internal limit switches, which will take care of reset operation.

Spindle motor LINAK LA.12 with pulse output.

EXAMPLE 2

Application feedback is derived from pulse sensor.
Control value is set with 0-5V or 0-10V voltage signal.
"Home"-switch will take care of reset operation, the
diode above switch makes it possible to startup in other
direction, when positioning starts.

Pulse sensor + gear motor