## EMTC Villamosgépgyártó Bt.

**Operating and handling instructions** 

2700 Cegléd Külső-Kátai út Ipari park 5. Tel: +36 53 501-114 Fax: +36 53 322-135



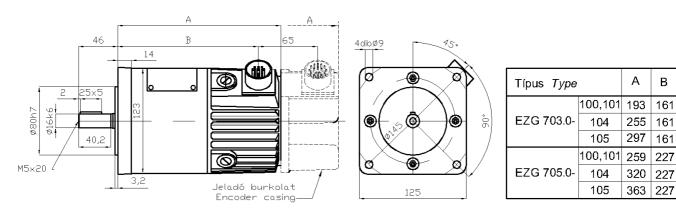
EZG 703, 705 typed DC servomotors

### 1. General remarks

The operating and handling instructions manual contains all information needed to store, put into operation and maintain EZG 703, 705 typed DC servomotors. Keeping the instructions is a precondition for warranty claims. Special attention should be paid to the safety instructions.

## 2. Technical specifications

The technical specifications are summarized below and they can be find specifically on the machine nameplate.



				EZG 703.0	EZG 705.0
	Operating data	Abrev.	Unit	Value	
1	Nominal torque at continuous duty	$M_a$	Nm	3	6
2	Nominal current at continuous duty	$I_c$	A	13	15
3	Max. current without demagnetizing	$I_m$	A	80	100
4	Max. winding temperature rise	$T_t$	$C^{0}$	155	155
5	Speed range	п	1/min	0-2500	0-2000

	Mechanical data	Abrev.	Unit	Value	
6	Rotor inertia	$J_m$	Kgm <sup>2</sup>	0,00192	0,00362
7	Max. acceleration	$\mathcal{E}_{max}$	rad/s <sup>2</sup>	8894	9844
8	Electromechanical time factor	t <sub>m</sub>	S	0,019	0,013
9	Thermal time factor	$t_t$	min	50	60
10	Static friction torque	Ms	Nm	0,113	0,113
11	Weight	т	kg	7	11,3

	Electrical data		Abrev.	Unit	Value	
12	Voltage coefficient ±10%		Ke	V/1000min <sup>-1</sup>	24,9	41,7
			Kv	Vs/rad	0,24	0,40
13	Torque coefficient ±10%		$K_M$	Nm/A	0,24	0,40
14	Rotor resistance $\pm 10\%$	with no brushes	$R_a$	Ω	0,45	0,46
		with brushes	$R_m$	Ω	0,49	0,50
15	Rotor inductivity		La	mH	1,6	2
16	Electrical time factor		$t_e$	ms	3,3	4

### EMTC Villamosgépgyártó Bt.

**Operating and handling instructions** 

2700 Cegléd Külső-Kátai út Ipari park 5. Tel: +36 53 501-114 Fax: +36 53 322-135



EZG 703, 705 typed DC servomotors

#### 3. Working principle

The magnetic field of EZG 703, 705 typed servomotors is assured by stroncium ferrite permanent magnets. A special feature of these servomotors is their speed that can be adjusted in a very large range and they can be significantly overloaded for a short period of time. The in-built thermal resistant insulation materials assure a high operating temperature. The servomotors may be optionally equipped with tachogenerators, incremental encoders or both.

#### 4. Feed-back devices

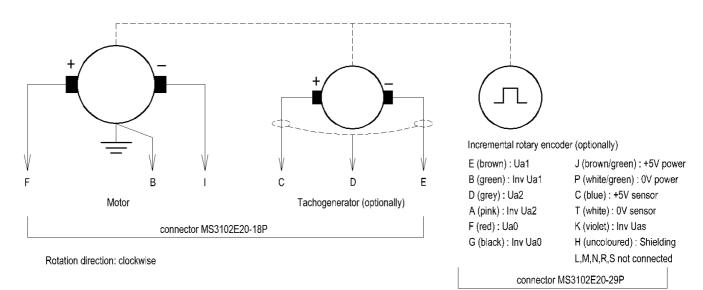
**4.1. Tachogenerator**. It provides a DC voltage proportionally with motor speed. Technical data are contained in below table.

Nomination	Abrev.	Unit	Value	Remark
Voltage coefficient	K <sub>e</sub>	V/1000min <sup>-1</sup>	10	No-load conditions
Linearity error		%	≤ 0,15	
Reversing error		%	≤ 0,4	
Voltage wave		%	≤ 0,6	
Nominal current	In	mA	1	
Max. current	I <sub>max</sub>	mA	25	
Rotor resistance	R <sub>a</sub>	Ω	85	
Loading resistance	R <sub>L</sub>	kΩ	10	

#### 4.2. Incremental encoder (1500 or 2500 signals/revolution)

The encoder is attached to the motor shaft by a coupling element. Turning the shaft, two synus signals are generated by fotoelectical scanning. These signals are then electronically transformed into two square signals Ua1 and Ua2 which are  $90^{\circ}$  shifted and their negations InvUa1 and InvUa2. A reference pulse and its negation is also generated Ua0 and InvUa0.

#### 5. Electrical connection of servomotor and feed-back devices



#### EMTC Villamosgépgyártó Bt.

# **Operating and handling instructions**

2700 Cegléd Külső-Kátai út Ipari park 5. Tel: +36 53 501-114 Fax: +36 53 322-135



EZG 703, 705 typed DC servomotors

#### 6. Safety instructions



The outer surface of the servomotor may exceed 100<sup>0</sup>C, therefore the touching may cause serious burning injuries!



The connection, putting into operation, reparation should be made by skilled personel, this way a safe and reliable operation can be reached and unnecessary costs are avoided.



Any connection must be made only under no-voltage conditions!



The metal frame must be always grounded thru the grounding pin of the connector.



It is strictly forbidden to touch the moving parts! Keep away your hand, fingers and any other part of your body from the turning motor parts.



In case of any deviation from the normal operation (higher current, temperature, vibration, unusual noises or smell), a specialist must be informed immediately. In unambiguous cases the servomotor must be switched off urgently.

Pulleys or couplings may be monted onto the shaft only with suitable tools. When pushing on, the shaft must be choked from the opposite drive end in order to prevent bearing damage.

#### 7. Storage.

The servomotor has to be stored in a dry place. In case of a a longer storage period the insulation resistance should be checked prior connection and the shaft should be protected against rusting.

#### 8. Maintenance

After 2000 working hours the lenght of brushes should be checked. If needed all brushes must be replaced by new ones. The accumulated coal powder must be also eliminated from the servomotor.