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**MOTOR
POWER**
COMPANY

MTR - GEARLESS MOTOROLLER

INNOVATION IN INTRALOGISTIC SMART SOLUTION





MTR - GEARLESS MOTOROLLER

*INTRODUCING THE FUTURE
IN SORTING AND MATERIAL
HANDLING TECHNOLOGY*

Motor Power Company
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**MOTOR
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COMPLETE TECHNOLOGICAL
INNOVATION IN MOVEMENT



Motor Power Company keeps developing new concepts in sorting and material handling. Our goal is sharing with the market our domain expertise in intralogistics; innovative solutions through our gearless technology products. We propose motion control bundles composed by gearless motorollers and smart drives. All our solutions are in-house developed and are particularly oriented for control, movement, storage and protection of materials and products throughout manufacturing, sorting, warehousing, distribution, consumption and disposal. Motor Power Company specialises in the design, development and manufacturing of high performance industrial motion solutions. We have acquired consolidated expertise and technical know-how from 30 years experience with all kinds of applications and through our continuous commitment to research and development. This allows us to partner leading international companies in the supply of products and solutions for automation and motion control.

The motoroller series at a glance

Gearless motoroller 46 - cartridge version **800rpm@24-48 Vdc**



Frameless gearless cartridge motoroller for general conveyor applications. Suitable for 50mm roller tube integration, roller tube range available on request

Features

- » Two models
- » Rated power 50 Watt and 115 Watt
- » Rated torque 0,6 Nm and 1,35 Nm
- » Hall sensors and encoder feedback for higher precision
- » Cartridge diameter 46 mm suitable for all 50 mm diameter tube
- » 24 and 48Vdc power supply
- » Full speed control
- » Wide roller customization

Gearless power pack motoroller 60 **800rpm@60 Vdc**



Tube equipped gearless motoroller for cross belt driving and controlling.

Features

- » Ready to use motoroller 60mm diameter
- » Rated power 235 Watt
- » Rated torque 2,8 Nm
- » 60Vdc power supply
- » Full speed control

Gearless motoroller 76 **Cartridge version** **800rpm@48-65 Vdc**



Gearless cartridge motoroller for cross belt driving and controlling. Suitable for 80mm roller tube integration, roller tube range available on request

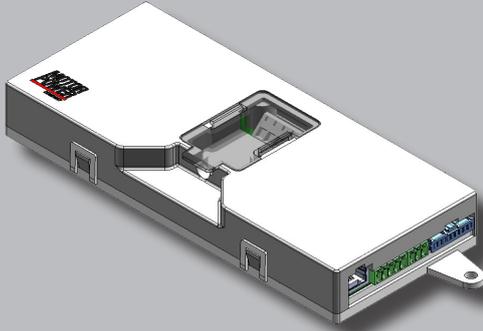
Features

- » Rated power 260 Watt
- » Rated torque 3,1 Nm
- » Encoder feedback for higher precision
- » Cartridge diameter 76 mm suitable for all 80 mm diameter tube
- » 48 and 65 Vdc for power supply
- » Full speed control
- » Wide roller customization

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The drive series at a glance

DMR 50-5/50 dual axes drive



The perfect matched drive for enhancing motoroller 46 features

Features

- » Dual axes operation
- » 24 and 48 Vdc operating supply voltage
- » Encoder and Hall Sensor feedback
- » CanOpen Fieldbus
- » RS485 programming interface
- » I/O programmability for speed, start and stop control

Lite Pro drive



Lite Pro drive is ideal for controlling motoroller 60

Features

- » 24 and 48 Vdc operating supply voltage
- » Encoder and Hall Sensor feedback
- » CanOpen Fieldbus
- » I/O programmability for speed, start and stop control

DMR 76-10/65



Motoroller 76 matches drive DMR 76-10/65 for the perfect bundle

Features

- » 24 and 65 Vdc operating supply voltage
- » Encoder and Hall Sensor feedback
- » Profibus Fieldbus
- » I/O programmability for speed, start and stop control
- » I/O programmability for speed, start and stop control
- » I/O proxy dual loop

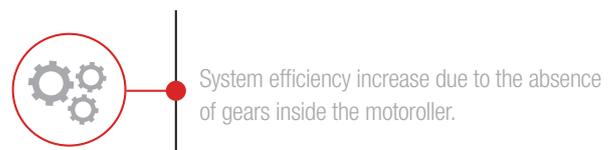
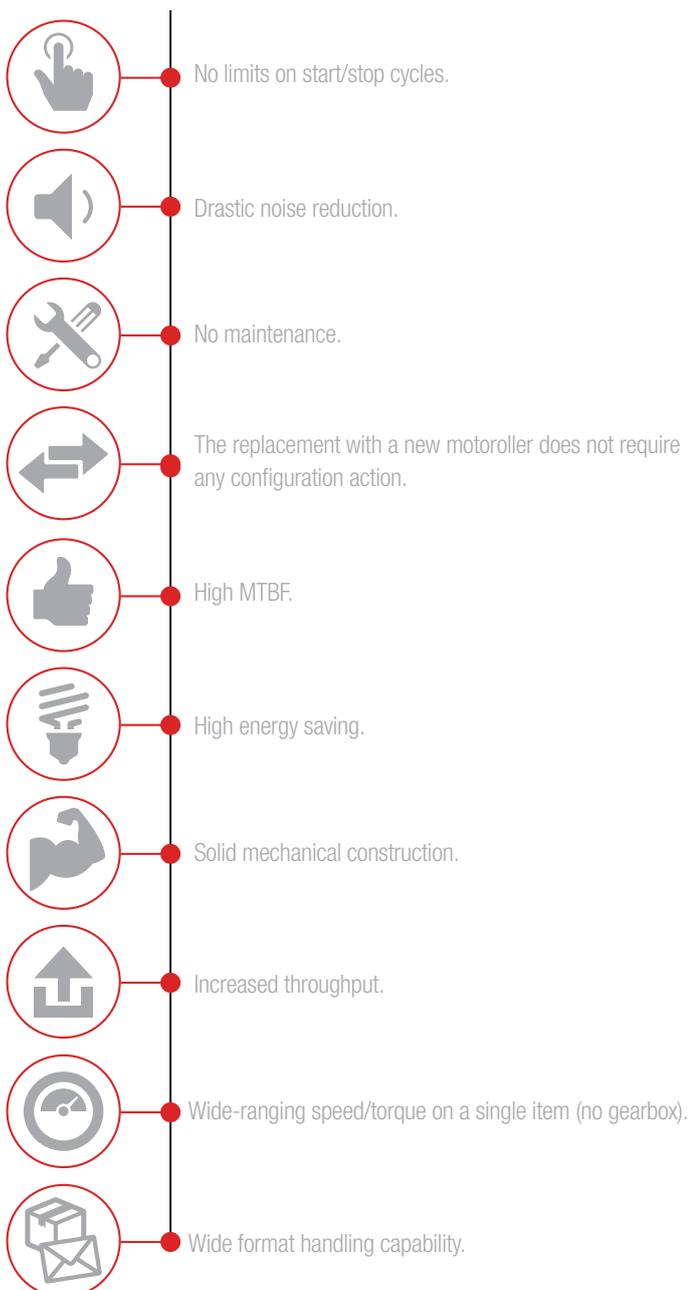
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Gearless motorollers and drives.

Increased efficiency and limitless performances

Motor Power Company introduces these perfect matched bundles constituted by gearless motorollers and smart drives. Everything has been conceived as a specific product for conveyor, crossbelt or any roller transfer systems. Two versions are proposed; **frameless cartridges** without tube, to be inserted into the roller to be moved, and **power pack** version, a ready to use motoroller embedded in its own tube. The technology on which the motor is based comes from the direct drive torque motors. Consequently, the motion is transmitted directly from the motoroller to the load, without any gears.



Motoroller without gears ensures:

- > **High MTBF**, as the motoroller needs less components than the standard kinematic chain
- > **System efficiency increase** due to the absence of gears inside the motoroller
- > **Accuracy**, due to the feedback reliability
- > **High dynamic** thanks to the direct drive technology
- > **Easy replacement**, with the autotuning system of DMR Drives, the substitution with a new motoroller does not require any configuration action
- > **Easy commissioning**, due to a unique part number, there are no different gearbox ratios to handle according to different speed needs.
- > **Wide speed availability**, one motoller for all speed range

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MOTOROLLER Frameless - gearless cartridge only

MTR FL	46	140	13	H1	D0	XXX
Model		Size	Winding	Feedback	Connection	Optional
1	2	3	4	5	6	

1	Model	MTR FL 46 MTR FL 76	
2	Size	MTR FL 46 75 - 140 MTR FL 76 100	
3	Winding	MTR FL 46 06 (*) - 13 <small>(*) winding 06 for MTR FL 46 only</small> MTR FL 76 14	
4	Feedback	H1 Hall Sensor E1 Incremental encoder ABZ - 3584 cpr	
5	Connection	D0 - cable output with connectors	

MOTOROLLER Power Pack - gearless motoroller with tube

MTR PP	76	100	14	H1	D0	01	-	80	-	XXX
Model	Size	Winding	Feedback	Connection	Fixed shaft	Tube type	Tube lenght	Indle shaft	Optional	
1	2	3	4	5	6	7	8	9	10	

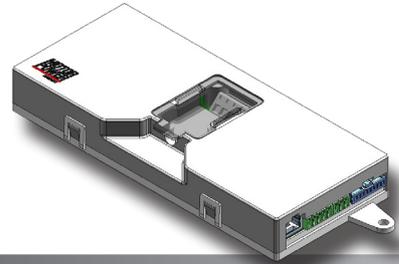


1	Model	MTR PP 46 MTR PP 60 MTR PP 76
2	Size	MTR PP 46 75 - 140 MTR PP 60 150 MTR PP 76 100
3	Winding	MTR PP 46 06 (*) - 13 <small>(*) winding 06 for MTR PP 46 only</small> MTR PP 60 21 MTR PP 76 14
4	Feedback	H1 Hall Sensor E1 Incremental encoder ABZ - 3584 cpr
5	Connection	D0 - cable output with connectors
6	Fixed shaft	01 - Male tread
7	Tube type(*)	01 - Standard tube 02 - Double grooved tube 03 - Conveyor belt tube 04 - Poly-V pulley tube 05 - Double grooved pulley tube 06 - Tapered sleeves tube 07 - Double grooved and tapered sleeves tube 08 - Poly-V and tapered sleeves tube 09 - Double grooved pulley and tapered sleeves tube
		<small>(*) for MTR PP 46 only</small>
8	Tube lenght(*)	Lenght in mm <small>(*) For MTR PP 60 lenght is fixed</small>
9	Indle shaft(*)	AA: hex spring loaded AB: female thread AC: poly-V hex spring loaded AD: poly-V thread <small>(*) for MTR PP 46 only</small>

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DMR 50-5/50 DRIVE TYPE



DMR	50-5/50	E	65
Drive Name	Model	Feedback	Fieldbus
	1	2	3

1	Drive model	50-5/50
2	Feedback	H = Hall sensor E = Incremental encoder
3	Fieldbus	C = CANopen

DMR 76-10/65 DRIVE TYPE



DMR	76-10/65	E	65
Drive Name	Model	Feedback	Fieldbus
	1	2	3

1	Drive model	76-10/65
2	Feedback	H = Hall sensor E = Incremental encoder
3	Fieldbus	P = Profibus

LITE PRO DRIVE TYPE



LPRO	E	40	C
Drive Name	Feedback	Model	Fieldbus
	1	2	3

1	Feedback	E = Hall sensor and encoder
2	Model (output current) Arms	40 = 8/24
3	Fieldbus	C = CANopen

MOTOROLLER 46 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	28
THERMAL PROTECTION	NTC	INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686
CE certified			

Motoroller 46 75 06 Motoroller 46 75 13 Motoroller 46 140 13

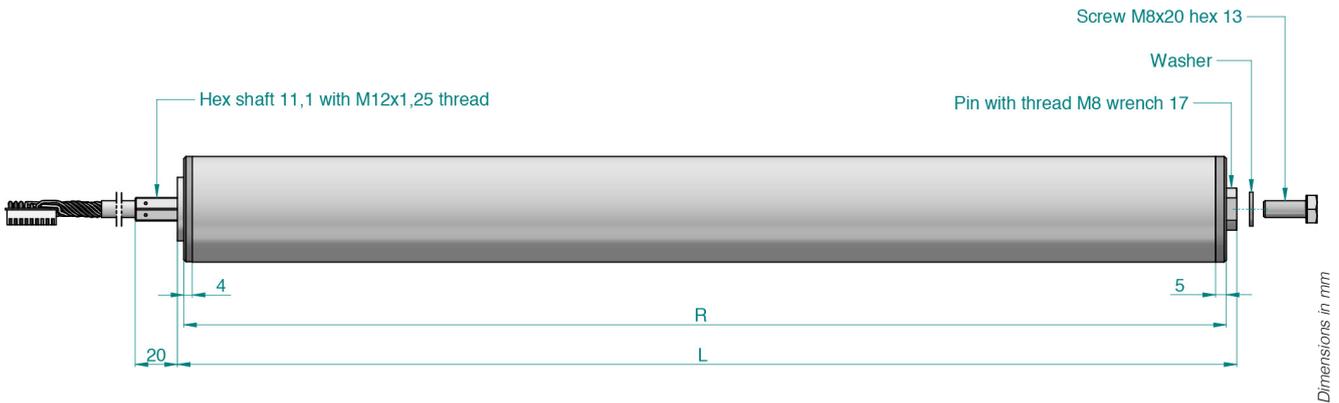
Stall torque	Cn0	Nm	0,74	0,74	1,5
Peak torque	Cpk	Nm	2,2	2,2	4,5
Rated torque	Cn	Nm	0,6	0,6	1,35
Rated working speed	nM	rpm	800	800	800
Maximum working speed @ 24Vdc	nmax	rpm	1000	500	500
Maximum working speed @ 48Vdc	nmax	rpm	1150	1150	1000
Rated output power	Pn	W	50	50	115
Stall current	In0	Arms	3,3	1,63	3,3
Peak current	l _{pk}	Arms	11	5,71	10,61
Rated current	In	Arms	2,7	1,33	3
Torque constant ±10%	Kt	Nm/Arms	0,22	0,45	0,45
Voltage constant ±10%	Ke	Vrsm/Krpm	13,6	27,6	27,6
Phase/phase resistance ±10% @25°C	Rff	Ohm	0,77	2,64	1,23
Phase/phase resistance ±10% @25°C	Lff	mH	1,35	5,4	2,81
Electrical time constant	Te	ms	1,75	2	2,3
Rotor inertia	Jm	Kg cm ²	5	5	6,1
Motor weight	m	Kg	1,96	1,96	2,73
Axial shaft load @800 rpm	Fa	N			110
Radial shaft load @800 rpm	Fr	N			220 (applied on the rotor's centering)

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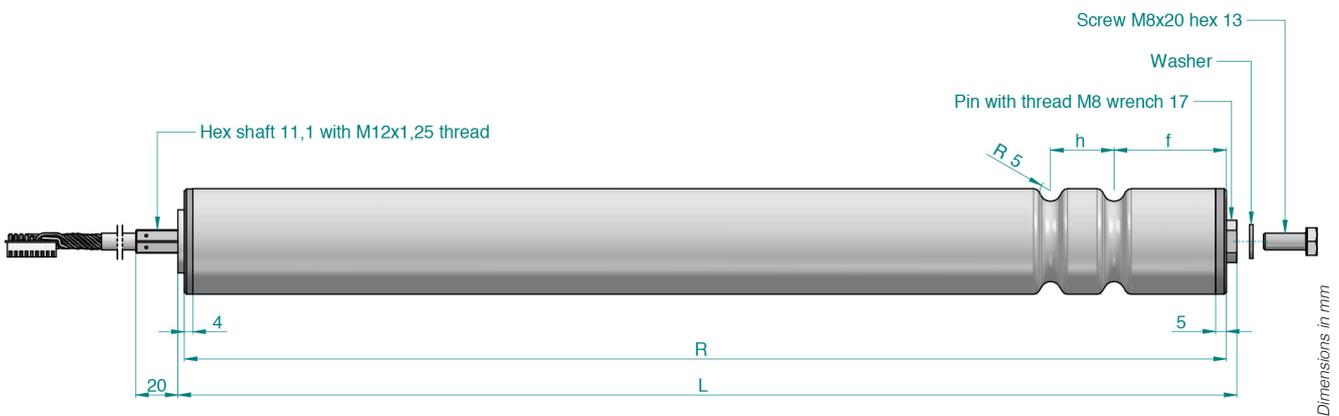
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MOTOROLLER 46 POWER PACK TUBE TYPE

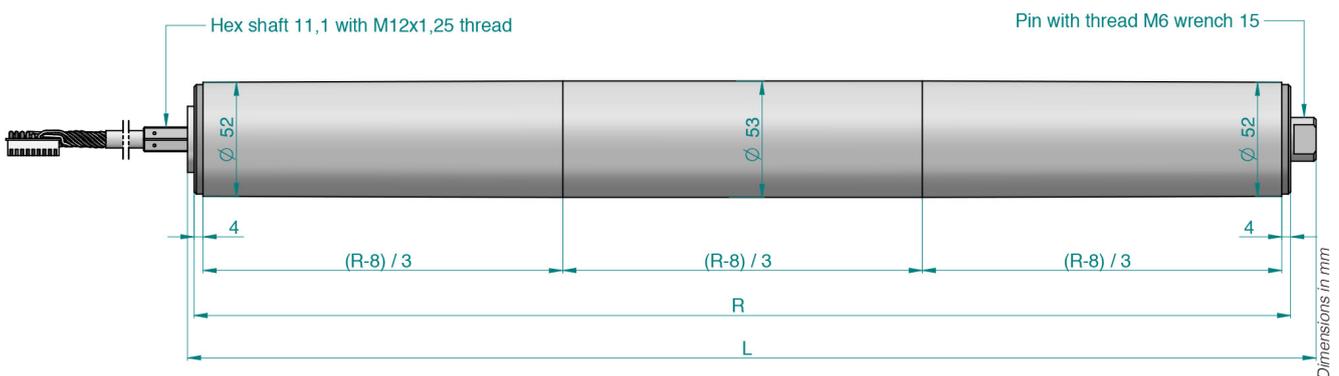
Motoroller 46 standard tube 01



Motoroller 46 double grooved tube 02

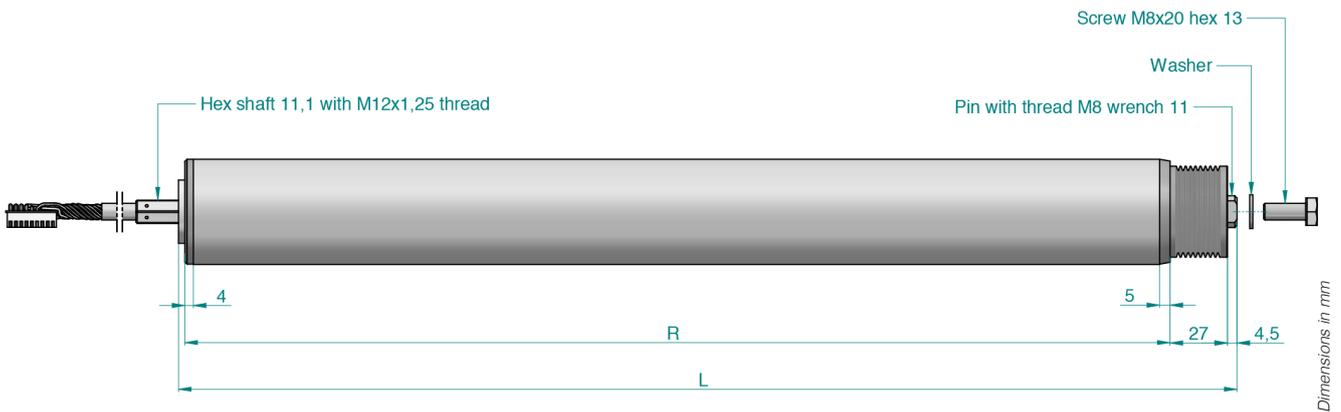


Motoroller 46 conveyor belt tube 03

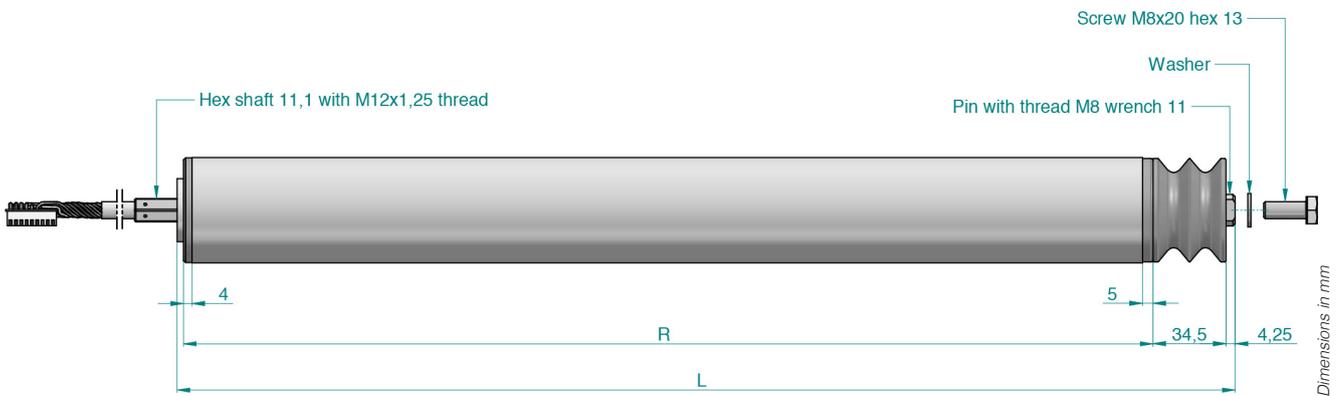


MOTOROLLER 46 POWER PACK TUBE TYPE

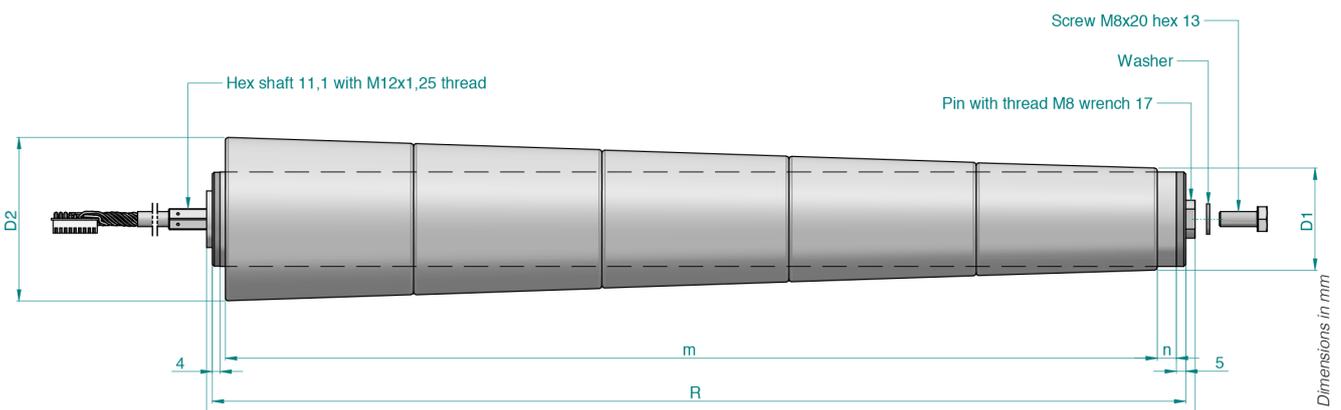
Motoroller 46 poly-V pulley tube 04



Motoroller 46 double grooved pulley tube 05

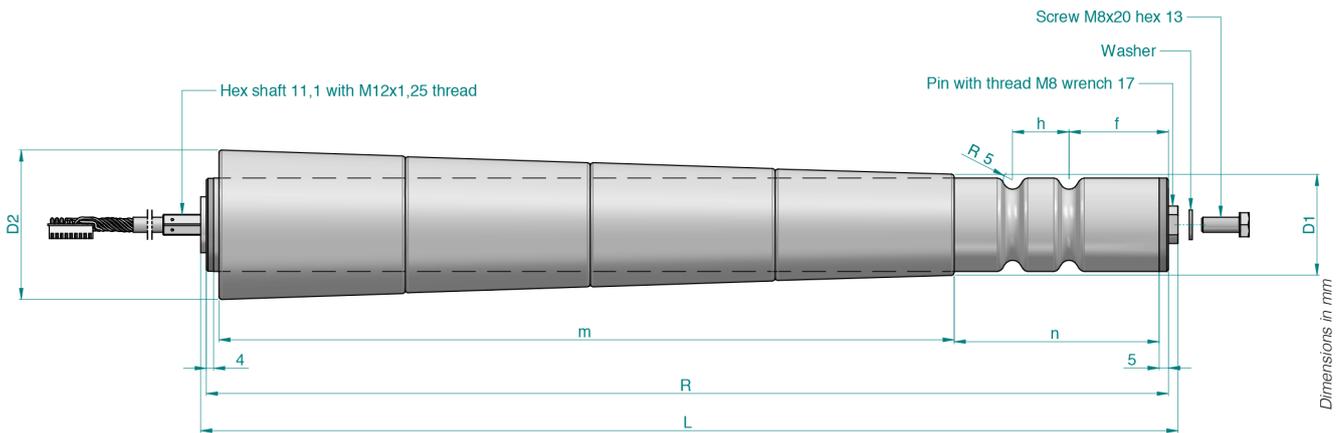


Motoroller 46 tapered sleeves tube 06

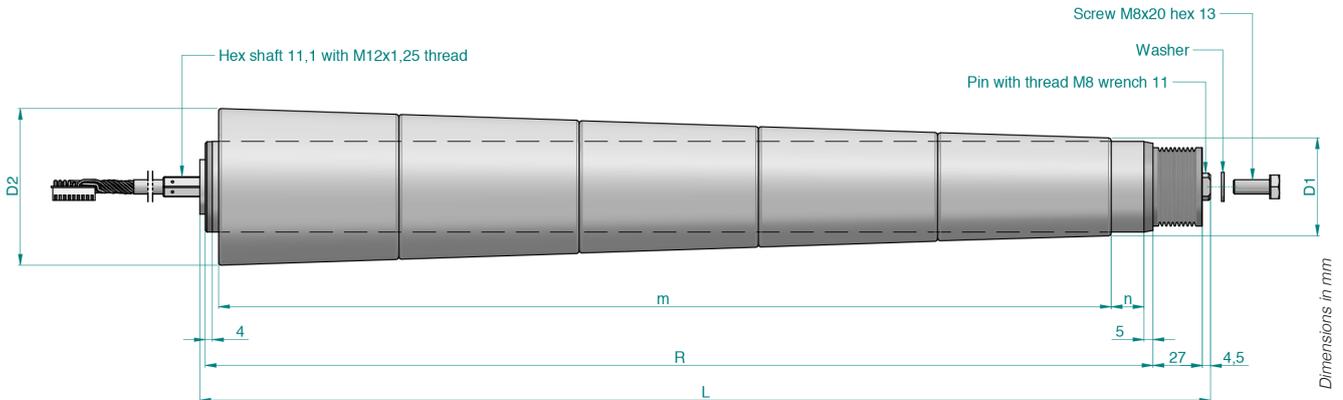


MOTOROLLER 46 POWER PACK TUBE VERSIONS

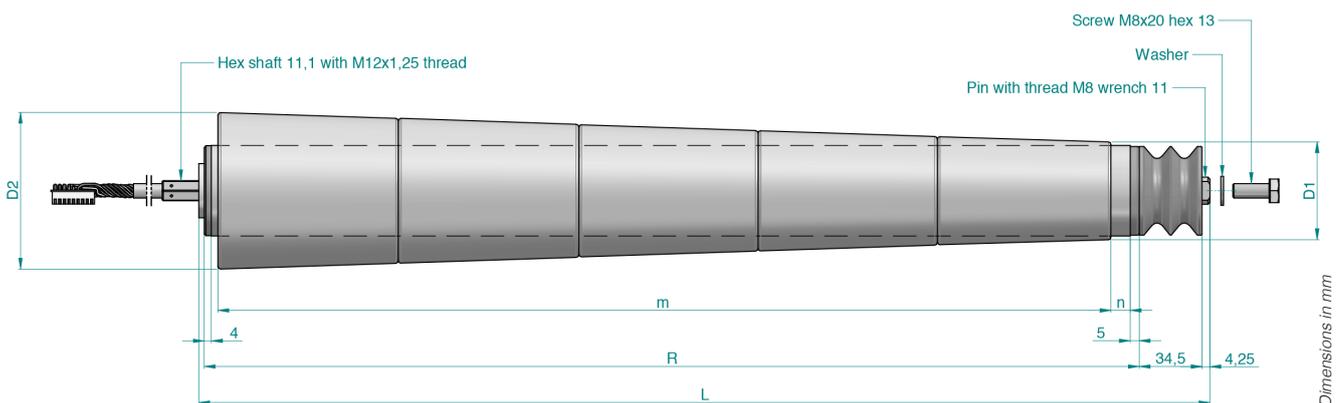
Motoroller 46 double grooved and tapered sleeves tube 07



Motoroller 46 poly-V pulley and tapered sleeves tube 08



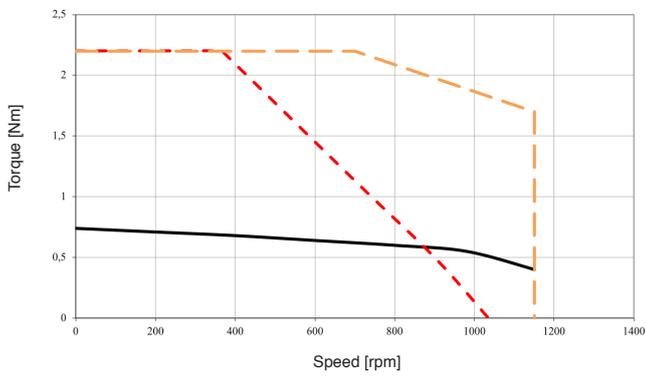
Motoroller 46 double grooved pulley and tapered sleeves tube 09



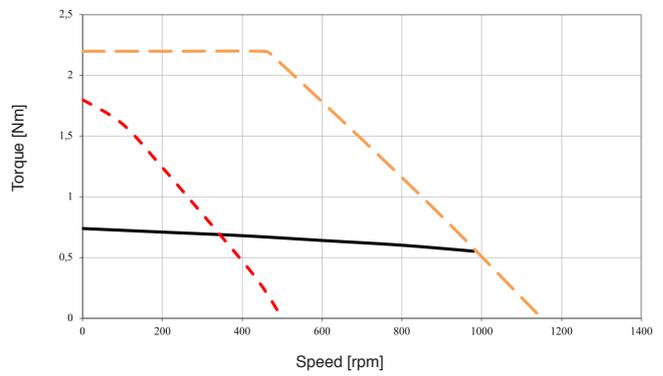
MOTOROLLER 46 TORQUE /SPEED CHARTS



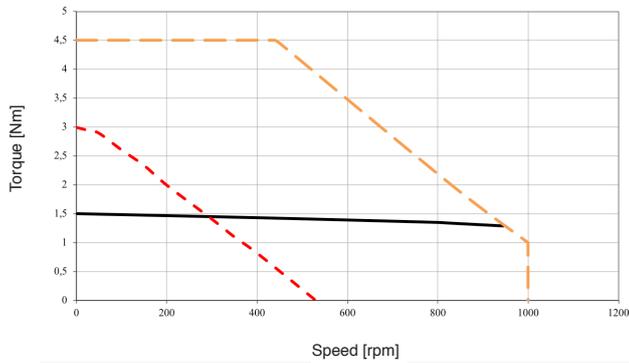
MOTOROLLER 46 75 06



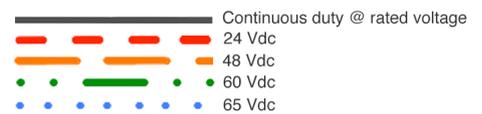
MOTOROLLER 46 75 13



MOTOROLLER 46 140 13



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MOTOROLLER 60 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	28
THERMAL PROTECTION	NTC	INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686
CE certified			

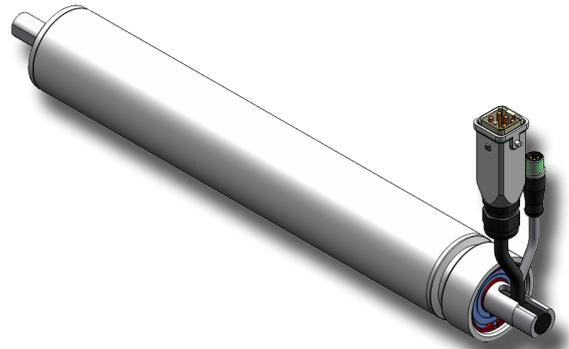
Motoroller 60 150 21

Stall torque	Cn0	Nm	3,2
Peak torque	Cpk	Nm	10
Rated torque	Cn	Nm	2,8
Rated working speed	nM	rpm	800
Maximum working speed @ 60Vdc	nmax	rpm	1200
Rated output power	Pn	W	235
Stall current	In0	Arms	6,1
Peak current	l _{pk}	Arms	23
Rated current	In	Arms	5,2
Torque constant ±10%	Kt	Nm/Arms	0,53
Voltage constant ±10%	Ke	Vrsm/Krpm	31,8
Phase/phase resistance ±10% @25°C	Rff	Ohm	0,5
Phase/phase resistance ±10% @25°C	Lff	mH	1,8
Electrical time constant	Te	ms	3,6
Rotor inertia	Jm	Kg cm ²	16,8
Motor weight	m	Kg	5,3
Axial shaft load @800 rpm	Fa	N	140
Radial shaft load @800 rpm	Fr	N	600 (applied on the rotor's centering)

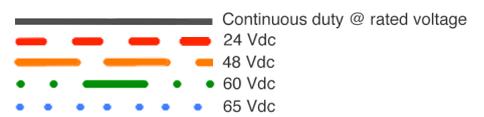
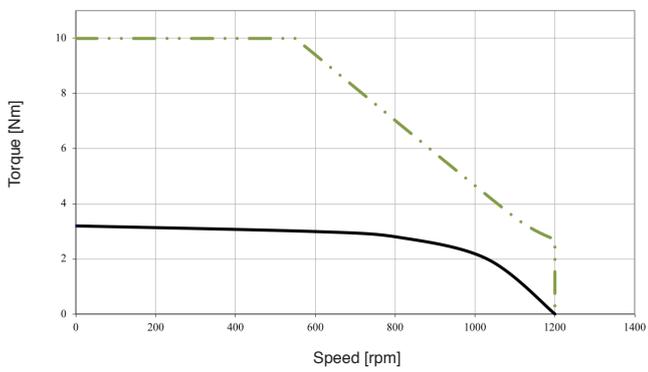
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MOTOROLLER 60 TORQUE /SPEED CHARTS



MOTOROLLER 60 150 21



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MOTOROLLER 76 RATINGS AND SPECIFICATIONS

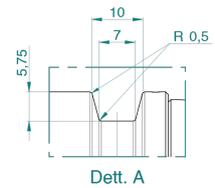
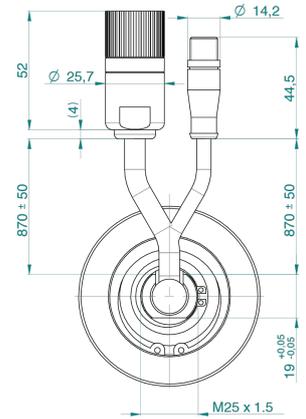
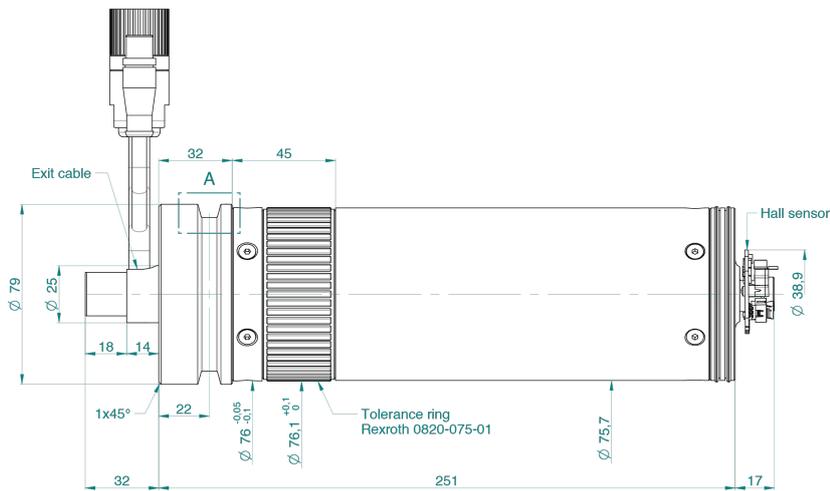
TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	28
THERMAL PROTECTION	NTC	INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686
CE certified			

Motoroller 76 100 14

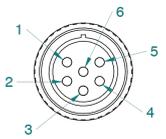
Stall torque	Cn0	Nm	3,6
Peak torque	Cpk	Nm	22
Rated torque	Cn	Nm	3,1
Rated working speed	nM	rpm	800
Maximum working speed @ 48Vdc	nmax	rpm	800
Maximum working speed @ 65Vdc	nmax	rpm	1000
Rated output power	Pn	W	260
Stall current	In0	Arms	6,1
Peak current	l _{pk}	Arms	41
Rated current	In	Arms	5,2
Torque constant ±5%	Kt	Nm/Arms	0,59
Voltage constant ±10%	Ke	Vrsm/Krpm	36
Phase/phase resistance ±10% @25°C	Rff	Ohm	0,51
Phase/phase resistance ±10% @25°C	Lff	mH	0,7
Electrical time constant	Te	ms	1,37
Rotor inertia	Jm	Kg cm ²	23,2
Motor weight	m	Kg	5,1
Axial shaft load @800 rpm	Fa	N	220
Radial shaft load @800 rpm	Fr	N	500 (applied on the rotor's centering)

MOTOROLLER 76 FRAMELESS DIMENSIONS

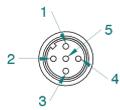
Motoroller 76 100



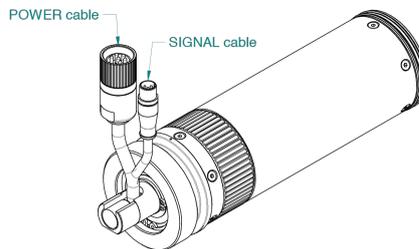
Dimensions in mm



POWER CONNECTOR
Hypertac 6p MS
1 = -
2 = PHASE U
3 = PHASE V
4 = PHASE W
5 = -
6 = PE



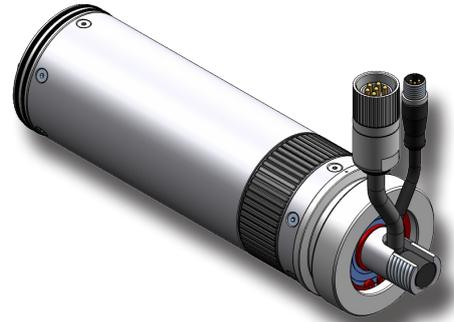
SIGNAL CONNECTOR
M12 5p MS
1 = HALL U
2 = HALL V
3 = HALL W
4 = 5V
5 = GND



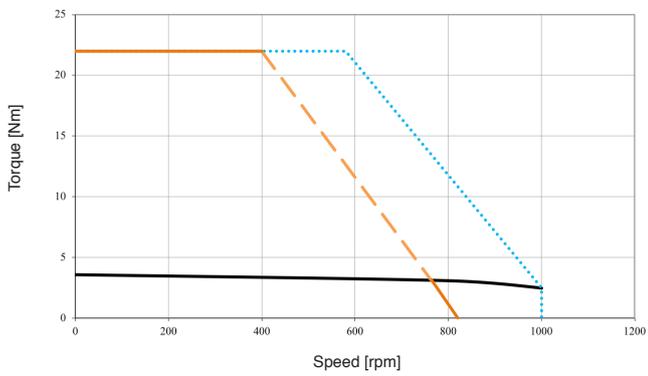
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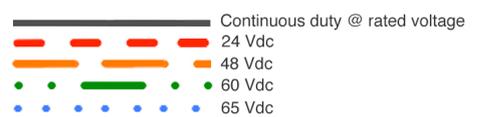
MOTOROLLER 76 TORQUE /SPEED CHARTS



MOTOROLLER 76 100 14



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FEEDBACK FEATURES

H1 HALL SENSOR

Motor size		Motoroller 46 -60- 76
Nominal Voltage	V	5-9 ±5%
Nominal current	mA	100
Electronic type		OPEN COLLECTOR
N° of pulses revolution	ppr	84

E1 INCREMENTAL ENCODER

Motor size		Motoroller 46 -60- 76
Nominal Voltage	Vdc	5-9 ±5%
Nominal current	mA	100
Electronic type		OPEN COLLECTOR
Zero impulse		ONE AT A LAP
N° of pulses revolution	ppr	896
Resolution	cpr	3584

DMR SERVO DRIVES

The DMR series is a series of customized drives dedicated to logistic automation market.

The series features two models: DMR 50-5/50 and DMR76-10/65, designed and manufactured for driving gearless motorrollers, exploiting its technological advantages based on direct drive without any gear for motion transmission.

DMR 50-5/50 FEATURES

- > **DUAL AXES OPERATION CAPABILITY**
- > **PERFECT MATCH WITH GEARLESS MOTORROLLER MTR46**
- > **I/O PROGRAMMABILITY**
- > **FUSE PROTECTION**
- > **CROSSBELT FUNCTIONALITY**
- > **CONVEYOR FUNCTIONALITY**
- > **SPEED AND ACCELERATION PROGRAMMABILITY**
- > **HALL SENSOR AND ENCODER FEEDBACK**
- > **DMR BROWSER SOFTWARE INTERFACE**
- > **RS 485 PROGRAMMING INTERFACE**
- > **CAN OPEN FIELDBUS**
- > **PHOTO EYE SUPPORT**
- > **2 INPUT, 2 OUTPUT RELAY EACH AXIS**



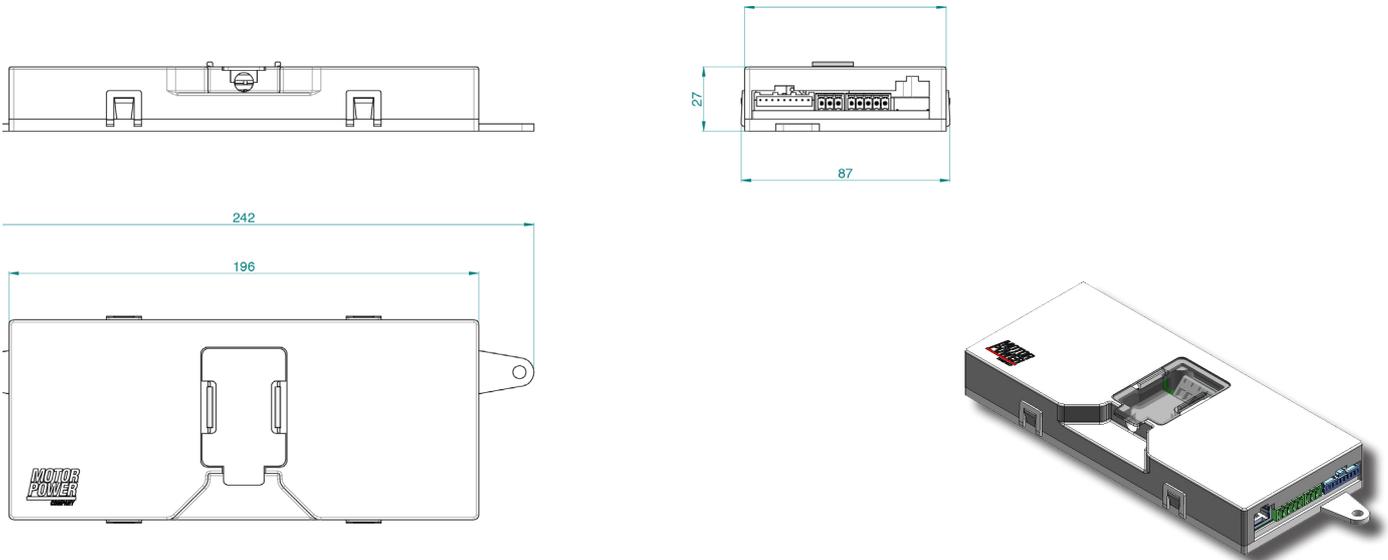
DMR 50-5/50 PRODUCT DATA

FEATURE	UNITS	DMR 50-5/50
Rated output power	W	180 each axis
Efficiency at rated power	%	>95
Operating supply voltage	Vdc	12-60
Typical supply voltage	Vdc	48
Maximum operating voltage	Vdc	80
Auxiliary supply voltage		24 V (8-30)
Rated output current	Arms	5
Peak output current	Arms	15
Peak time	s	3
PWM switching frequency	kHz	16 kHz
Maximum output frequency	Hz	<600
Commutation		Sinusoidal and space vector
Dimensions	WxDxH mm	196x70x27
Working temperature	°C	-20 ÷ +55
Storage temperature	°C	-40 ÷ +75
Humidity	%	85% not condensing
Altitude without derating	m	1000
IP protection	IP	20

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DMR 50-5/50 PRODUCT DIMENSIONS



Dimensions in mm

DMR 50-5/50 PRODUCT DATA

MOTOR CONNECTION

PIN	NAME
1	Phase U
2	Phase V
3	Phase W
4	Thermal sensor
5	Power supply 5V
6	0V
7	Hall U/Inc A
8	Hall V/Inc B
9	Hall W/Inc Z

PHOTO EYE INPUT

PIN	NAME
1	24V
2	GND
3	Photo eye input

POWER CONNECTION

PIN	NAME
1	24V logic
2	0 V
3	48 V power

I/O DEFINITION

PIN	DIRECTION	FUNCTION
1	Input	Enable
2	Input	Dir
3	Input	Analog Input
4	Output	Fault
5	Output	Configurable

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DMR SERVO DRIVES

DMR 76-10/65 HP is a digital drive for motorollers in cross belt applications. Main features of this drive are current digital control achieved with the technique of vector space and updated with a 10 kHz frequency. Speed digital loop with proportional-integral compensator updated with 10 kHz frequency. Position digital loop with proportional compensator and handling of dead zone updated with 10 kHz frequency. Digital Profibus interface for connecting to supervisor PLC. Motor feedback interface via Hall sensors.

DMR 76-10/65 FEATURES

- > **THE PERFECT MATCHED DRIVE FOR GEARLESS MOTOROLLER**
- > **DMR BROWSER SOFTWARE INTERFACE**
- > **FUSE PROTECTION**
- > **CROSSBELT FUNCTIONALITY**
- > **SPEED AND ACCELERATION PROGRAMMABILITY**
- > **HALL SENSOR AND ENCODER FEEDBACK**
- > **2 INPUT, 2 OUTPUT RELAY**
- > **USB PROGRAMMING INTERFACE**
- > **PROFIBUS FIELBUS DP V1**
- > **I/O PROGRAMMABILITY**
- > **I/O PROXY DUAL LOOP**



DMR 76-10/65 PRODUCT DATA

FEATURE	UNITS	DMR 76-10/65
Rated output power	W	650
Efficiency at rated power	%	>95
Operating supply voltage	Vdc	24-80
Typical supply voltage	Vdc	48-65
Maximum operating voltage	Vdc	85
Auxiliary supply voltage		-
Rated output current	Arms	10
Peak output current	Arms	50
Peak time	s	0,75 on 20s
PWM switching frequency	kHz	16 kHz
Maximum output frequency	Hz	<600
Commutation		Sinusoidal and space vector
Dimensions	WxDxH mm	250x150x45
Working temperature	°C	-20 ÷ +55
Storage temperature	°C	-40 ÷ +75
Humidity	%	85% not condensing
Altitude without derating	m	1000
IP protection	IP	54 on drive front 40 on the whole drive

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DMR 76-10/65

CONNECTION

DRIVE POWER	
PIN	NAME
1	V+
2	-
3	-
4	-
5	V-
6	-

PROFIBUS IN	
PIN	NAME
1	-
2	DATA-/A-LINE
3	-
4	-
5	DATA+/B-LINE

PROFIBUS OUT	
PIN	NAME
1	V+
2	DATA-/A-LINE
3	V _{REF}
4	DATA+/B-LINE
5	-

DIGITAL I/O	
PIN	NAME
1	OUT1 COM
2	INRET 123
3	+24V _{DC}
4	OUT1 NC
5	IN1
6	IN2
7	IN3
8	GND (+24 V _{DC})

SEE IT BEFORE IT HAPPENS

CONNECTION

MOTOR OUTPUT	
PIN	NAME
1	-
2	U
3	V
4	W
5	-
6	PE

FEEDBACK	
PIN	NAME
1	U/A
2	V/B
3	W/Z
4	5V _{DC}
5	GND

PROXY DUAL LOOP	
PIN	NAME
1	+24V _{DC} PROXY
2	INRET 123 PROXY
3	GND (+24V _{DC})
4	OUT2 NO
5	OUT2 NO
6	IN7 PROXY
7	+24 V _{DC}
8	OUT2 COM

The LITE PRO series is represented by the extremely compact 4-quadrants drives perfect matched to control motoroller 60. This series features as standard CanOpen interface and a complete programmable version with integral Motion Process Unit, that allows stand alone and network architecture operation.

FEATURES

- > **STANDARD FEEDBACK TTL ENCODER AND HALL SENSOR**
- > **DIGITAL I/O: UP TO 8 DIGITAL INPUTS AND 1 OR 2 DIGITAL OUTPUTS CUSTOMIZABLE WITH SEVERAL BUILT-IN FUNCTIONS**
- > **CONTROL: STANDARD PI CONTROL LOOP**
- > **SERVO MODES: TORQUE, VELOCITY AND POSITION WITH S-CURVE PROFILE**
- > **INTERNAL SCRIPT**
- > **EXTREME COMPACT DESIGN**
- > **USB PROGRAMMING KEY**

INTERFACE

- > **ANALOG VELOCITY AND TORQUE COMMAND $\pm 10V$**
- > **CANopen**



MOTORS

MOTION CONTROL

MECHATRONICS



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