



# INTERROLL DRUM MOTOR 138i



Standard  
Asynchronous  
Drum Motors  
138i

Strong powerful drive for conveyors with high-duty cycles

## Product Description

### Applications

The drum motor is a real all-round component because of its wide power and speed range.

- ✓ Conveyors with high-duty cycles
- ✓ Transport conveyors
- ✓ Logistics applications
- ✓ Airport check-in conveyors
- ✓ Mobile conveyors
- ✓ Food processing
- ✓ Steel or plastic modular belt applications
- ✓ Dry, wet and wash-down applications

### Characteristics

- ✓ Salt-water-resistant aluminium end housings
- ✓ 3-phase AC induction motor
- ✓ Dual voltage
- ✓ Integral thermal motor protection
- ✓ Steel-hardened helical spur gear
- ✓ Low noise
- ✓ Maintenance-free
- ✓ Lifetime lubricated
- ✓ Reversible
- ✓ Reinforced shaft for SL above 900 mm

## Technical Data

### Electrical data

Motor type	Asynchronous squirrel cage motor, IEC 34 (VDE 0530)
Insulation class of motor windings	Class F, IEC 34 (VDE 0530)
Voltage	230/400 V ±5 % (IEC 34/38) Most international voltages and frequencies can be supplied on request
Frequency	50 Hz
Internal shaft sealing system	Double-lipped, FPM
Protection rate	IP66
Thermal protection (see p 245)	Bi-metal switch
Operating modes (see p 230)	S1
Ambient temperature, 3-phase motor (see p 207)	+5 to +40 °C
Ambient temperature, 3-phase motor for applications with positive drive belts, or without belts (see p 207)	+5 to +25 °C

### General technical data

Max. shell length SL	1,600 mm
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## Order Information

Please refer to the Configurator at the end of the catalogue..

## Material Versions

You can choose the following versions of drum body components and electrical connection. The versions depend on the material of the components.

Component	Version	Material				
		Aluminium	Mild steel	Stainless steel	Brass / Nickel	Techno-polymer
Shell	Crowned		✓	✓		
	Cylindrical		✓	✓		
	Cylindrical + key, for using sprockets		✓	✓		
End housing	Standard	✓		✓		
	With grooves or chain sprockets	✓		✓		
Shaft	Standard		✓	✓		
	Cross-drilled thread, M8		✓	✓		
External seal	Galvanised labyrinth		✓			
	Stainless steel labyrinth			✓		
Electrical connector	Straight connector			✓	✓	
	Elbow connector			✓		✓
	Terminal box	✓		✓		✓

Please contact your Interroll customer consultant for further versions.

## Options

- Lagging for friction drive belts, see p 128
- Lagging for plastic modular belts, see p 134
- Lagging for positive drive solid homogeneous belts, see p 138
- Multiprofile for positive drive solid homogeneous belts, see p 140
- Sprockets for plastic modular belts, see p 142
- Backstops, see p 150
- Balancing, see p 151
- Electromagnetic brakes and rectifiers, see p 152
- Feedback Devices, see p 158
- Food-grade oil (EU, FDA), see p 256
- Low temperature oil, see p 256
- Labyrinth with FPM, see p 248
- cULus safety certifications, see p 251
- Non-horizontal mounting (more than ± 5°), see p 231

**Note:** Combination of encoder and electromagnetic brake is not possible.

## Accessories

- Mounting brackets, see p 168
- Idler pulleys, see p 178 to p 183
- Conveyor rollers, see p 188
- IFI - IP55 Frequency Inverter, see p 122



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## Product Range

The following tables give an overview of the possible motor versions. When ordering, please specify the version in accordance with the configurator at the end of the catalogue.

All data and values in this catalogue refer to 50 Hz operation.

### Motor versions

#### Mechanical data for 3-phase motors

P <sub>N</sub> kW	np	gs	i	v m/s	n <sub>A</sub> min <sup>-1</sup>	M <sub>A</sub> Nm	F <sub>N</sub> N	SL <sub>min</sub> mm				
0.090	12	3	72.55	0.041	5.7	136.7	1,981	300				
0.180	8	3	72.55	0.068	9.4	165.8	2,403	300				
			40.91	0.121	16.7	96.0	1,391	300				
0.250	6	3	72.55	0.091	12.5	173.1	2,508	300				
0.370	4	3	72.55	0.133	18.5	174.4	2,527	300				
			61.85	0.157	21.7	150.1	2,175	300				
			49.64	0.195	27.0	121.4	1,760	300				
			40.91	0.237	32.8	100.9	1,463	300				
			34.00	0.285	39.4	83.9	1,216	300				
			30.55	0.317	43.9	75.4	1,092	300				
			25.39	0.381	52.8	62.8	910	300				
			2	20.22	0.479	66.3	50.5	732	300			
				16.67	0.581	80.4	42.0	608	300			
				12.44	0.778	107.7	31.4	455	300			
				10.00	0.968	134.0	25.3	366	300			
				0.550	2	3	72.55	0.281	39.0	122.9	1,780	300
							61.85	0.330	45.7	105.7	1,532	300
			49.64				0.411	56.9	85.6	1,240	300	
40.91	0.499	69.1	71.1				1,031	300				
34.00	0.601	83.1	59.1				856	300				
25.39	0.804	111.3	44.3				641	300				
2	20.22	1.010	139.7				35.6	516	300			
	16.67	1.225	169.6				29.6	428	300			
	12.44	1.641	227.1	22.1	321	300						
	10.00	2.042	282.6	17.8	258	300						
0.750	4	3	34.00	0.293	40.6	164.9	2,390	350				
			30.55	0.327	45.2	148.1	2,147	350				
			25.39	0.393	54.4	123.5	1,790	350				
			2	20.22	0.493	68.3	99.3	1,438	350			
				16.67	0.599	82.9	82.5	1,195	350			
				12.44	0.802	111.0	61.8	895	350			
				10.00	0.998	138.1	49.6	719	350			
				3	49.64	0.404	55.9	158.2	2,293	350		
					40.91	0.490	67.8	131.5	1,906	350		
			34.00		0.590	81.6	109.3	1,584	350			
			25.39		0.790	109.3	81.9	1,186	350			
			2		20.22	0.992	137.2	65.8	953	350		
					16.67	1.203	166.5	54.7	792	350		
					12.44	1.611	223.0	40.9	593	350		
10.00	2.005	277.5			32.9	477	350					

#### Mechanical data for 3-phase motors (Motors for applications with positive drive belts or no belts)

P <sub>N</sub> kW	np	gs	i	v m/s	n <sub>A</sub> min <sup>-1</sup>	M <sub>A</sub> Nm	F <sub>N</sub> N	SL <sub>min</sub> mm				
0.074	12	3	72.55	0.041	5.7	112.5	1,654	300				
0.149	8	3	72.55	0.067	9.4	137.4	2,020	300				
0.207	6	3	72.55	0.090	12.7	141.9	2,087	300				
0.306	4	3	72.55	0.133	18.6	143.0	2,103	300				
			49.64	0.194	27.2	99.6	1,465	300				
			40.91	0.235	33.0	82.8	1,217	300				
			34.00	0.283	39.7	68.8	1,012	300				
			30.55	0.315	44.2	61.8	909	300				
			25.39	0.379	53.2	51.5	758	300				
			2	20.22	0.475	66.8	41.4	609	300			
				16.67	0.577	81.0	34.4	506	300			
				12.44	0.772	108.5	25.8	379	300			
				0.455	2	3	72.55	0.277	39.0	101.6	1,494	300
							61.85	0.325	45.7	87.4	1,286	300
							49.64	0.405	56.9	70.8	1,040	300
			40.91				0.492	69.1	58.8	865	300	
			34.00				0.592	83.1	48.9	719	300	
25.39	0.793	111.3	36.6				538	300				
2	20.22	0.995	139.7				29.4	433	300			
	16.67	1.207	169.6				24.4	359	300			
	12.44	1.617	227.1	18.3	269	300						
	10.00	2.012	282.6	14.7	216	300						
0.620	4	3	34.00	0.292	41.0	134.8	1,983	350				
			30.55	0.325	45.7	121.1	1,781	350				
			25.39	0.391	55.0	101.0	1,485	350				
			2	20.22	0.491	69.0	81.2	1,194	350			
				16.67	0.596	83.7	67.4	992	350			
				12.44	0.798	112.1	50.5	743	350			
				10.00	0.993	139.5	40.6	597	350			
				0.826	2	3	49.64	0.396	55.6	131.4	1,932	350
							40.91	0.481	67.5	109.2	1,606	350
			34.00				0.578	81.2	90.7	1,334	350	
25.39	0.775	108.8	68.0				999	350				
2	20.22	0.973	136.6				54.6	803	350			
	16.67	1.180	165.7				45.4	667	350			
	12.44	1.580	221.9				34.0	500	350			
	10.00	1.967	276.2				27.3	402	350			

P <sub>N</sub>	Rated power
np	Number of poles
gs	Gear stages
i	Gear ratio
v	Rated velocity of the shell
n <sub>A</sub>	Rated revolutions of the drum shell
M <sub>A</sub>	Rated torque of drum motor
F <sub>N</sub>	Rated belt pull of drum motor
SL <sub>min</sub>	Min. shell length



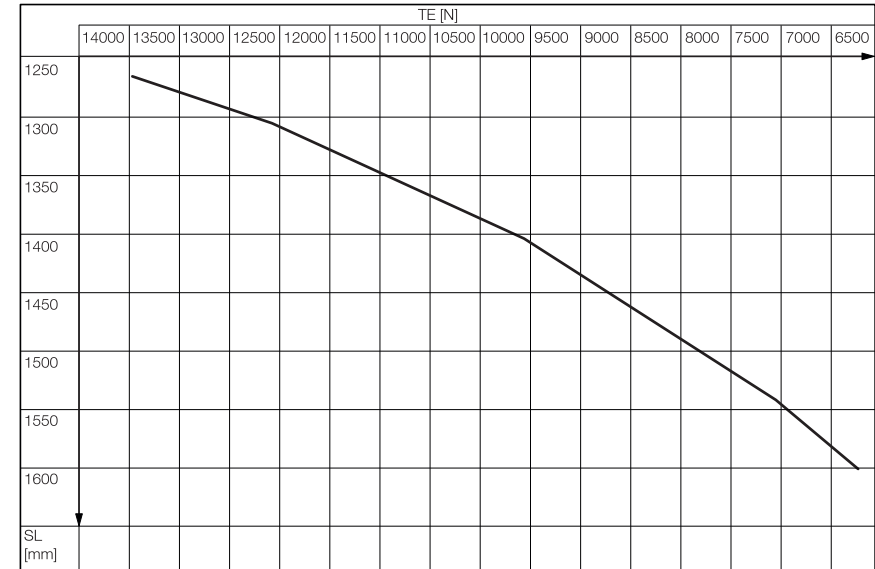
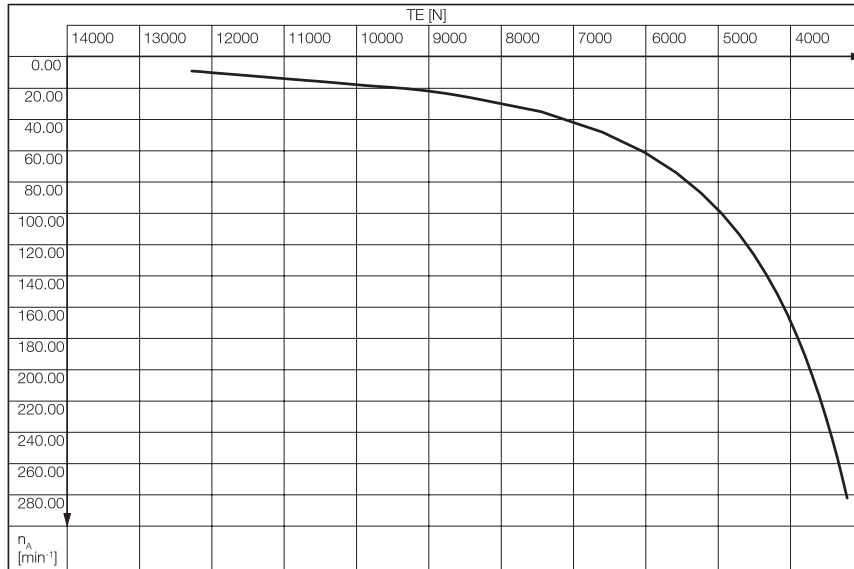
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## Belt Tension



**Note:** To get the right value of the maximum allowed belt tension, first find the maximum allowed TE value for the drum motor RPM. For motors with SL > 1,250 mm, check if the maximum allowed TE value for the SL is lower. In this case, use the lower value as maximum allowed TE value.

TE	Belt Tension
$n_A$	Rated revolutions of the drum shell
SL	Shell length



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## Electrical data for 3-phase motors (Standard motors)

$P_N$ kW	np	$U_N$ V	$I_N$ A	cos $\varphi$	$\eta$	$J_R$ kgcm <sup>2</sup>	$I_s/I_N$	$M_s/M_N$	$M_p/M_N$	$M_b/M_N$	$R_M$ $\Omega$	$U_{SH\ delta}$ V DC	$U_{SH\ star}$ V DC
0.090	12	230	1.14	0.40	0.49	9.3	3.0	1.15	1.15	1.68	92.0	21	-
		400	0.66	0.40	0.49	9.3	3.0	1.15	1.15	1.68	92.0	-	36
0.180	8	230	1.21	0.64	0.58	9.3	2.6	1.10	1.10	1.55	64.0	25	-
		400	0.70	0.64	0.58	9.3	2.6	1.10	1.10	1.55	64.0	-	43
0.250	6	230	1.30	0.72	0.67	9.3	3.0	1.35	1.35	1.75	44.0	21	-
		400	0.75	0.72	0.67	9.3	3.0	1.35	1.35	1.75	44.0	-	36
0.370	4	230	1.68	0.79	0.70	5.6	3.3	1.55	1.55	1.95	26.5	18	-
		400	0.97	0.79	0.70	5.6	3.3	1.55	1.55	1.95	26.5	-	30
0.550	2	230	2.25	0.80	0.76	3.5	5.5	3.20	3.20	3.65	11.4	10	-
		400	1.30	0.80	0.76	3.5	5.5	3.20	3.20	3.65	11.4	-	18
0.750	4	230	3.29	0.80	0.71	9.9	3.4	2.10	2.10	2.45	9.7	13	-
		400	1.90	0.80	0.71	9.9	3.4	2.10	2.10	2.45	9.7	-	22
1.000	2	230	4.16	0.80	0.75	6.2	5.4	3.40	3.40	3.95	5.4	9	-
		400	2.40	0.80	0.75	6.2	5.4	3.40	3.40	3.95	5.4	-	16

## Electrical data for 3-phase motors (Motors for applications with positive drive belts or no belts)

$P_N$ kW	np	$U_N$ V	$I_N$ A	cos $\varphi$	$\eta$	$J_R$ kgcm <sup>2</sup>	$I_s/I_N$	$M_s/M_N$	$M_p/M_N$	$M_b/M_N$	$R_M$ $\Omega$	$U_{SH\ delta}$ V DC	$U_{SH\ star}$ V DC
0.074	12	230	0.94	0.40	0.49	9.3	2.7	1.16	0.99	1.32	110.0	21	-
		400	0.55	0.40	0.49	9.3	2.7	1.16	0.99	1.32	110.0	-	36
0.149	8	230	0.94	0.64	0.61	9.3	2.4	1.32	1.16	1.40	98.0	29	-
		400	0.55	0.64	0.61	9.3	2.4	1.32	1.16	1.40	98.0	-	52
0.207	6	230	1.10	0.68	0.69	9.3	2.7	1.40	1.24	1.40	47.8	18	-
		400	0.64	0.68	0.69	9.3	2.7	1.40	1.24	1.40	47.8	-	31
0.306	4	230	1.26	0.79	0.77	5.6	3.0	1.34	1.16	1.49	33.1	16	-
		400	0.73	0.79	0.77	5.6	3.0	1.34	1.16	1.49	33.1	-	29
0.455	2	230	2.12	0.72	0.74	3.5	5.0	2.38	1.98	2.56	14.1	11	-
		400	1.23	0.72	0.74	3.5	5.0	2.38	1.98	2.56	14.1	-	19
0.620	4	230	2.66	0.79	0.73	9.9	3.1	1.07	1.40	1.24	11.8	12	-
		400	1.55	0.79	0.73	9.9	3.1	1.07	1.40	1.24	11.8	-	22
0.826	2	230	3.13	0.81	0.81	6.2	4.9	1.90	1.74	2.07	6.8	9	-
		400	1.82	0.81	0.81	6.2	4.9	1.90	1.74	2.07	6.8	-	15

$P_N$	Rated power
np	Number of poles
$U_N$	Rated voltage
$I_N$	Rated current
cos $\varphi$	Power factor
$\eta$	Efficiency
$J_R$	Rotor moment of inertia
$I_s/I_N$	Ratio of starting current to rated current
$M_s/M_N$	Ratio of starting torque to rated torque
$M_p/M_N$	Ratio of pull-up torque to rated torque
$M_b/M_N$	Ratio of break-down torque to rated torque
$R_M$	Phase resistance
$U_{SH\ delta}$	Preheating voltage in delta connection
$U_{SH\ star}$	Preheating voltage in star connection

## Cable Specifications

Available cables for connectors (see also p 252):

- Standard, screened
- Standard, unscreened
- Halogen-free, screened
- Halogen-free, unscreened

Available length: 1 / 3 / 5 / 10 m

## Connection Diagrams

For connection diagrams, see Planning Section on p 260.



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Standard  
dimensions

## Dimensions

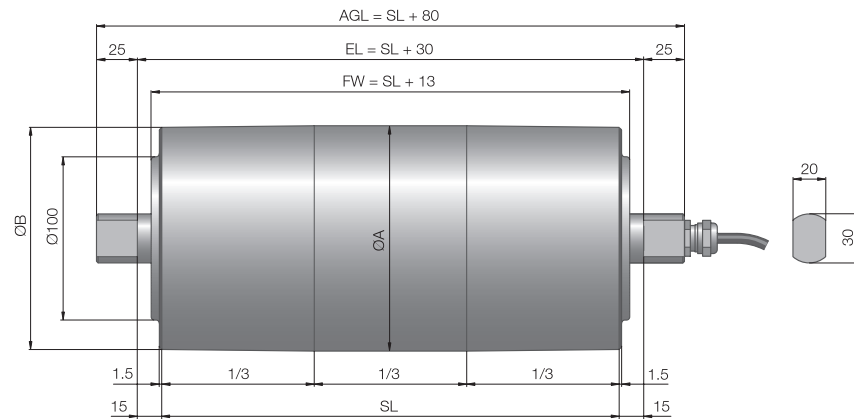


Fig.: Drum motor with straight connector

Type	Ø A mm	Ø B mm
138i crowned shell	138.0	136.0
138i cylindrical shell	136.0	136.0
138i cylindrical shell + key	137.0	137.0

Connector  
dimensions

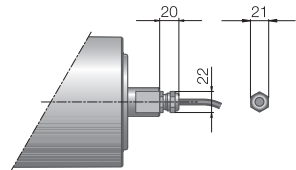


Fig.: Straight connector, brass/nickel

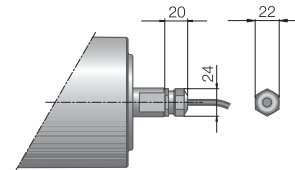


Fig.: Straight connector, stainless steel

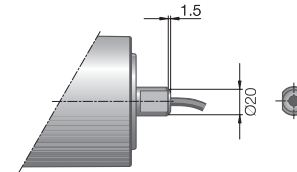


Fig.: Straight cable outlet, PU shaft plug

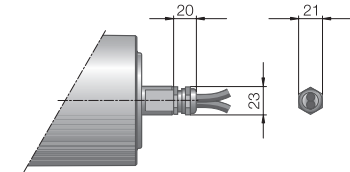


Fig.: Straight connector / Feedback device, brass/nickel

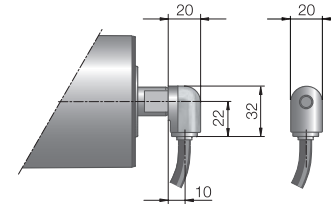


Fig.: Elbow connector, technopolymer

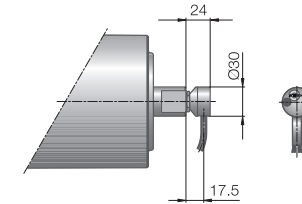


Fig.: Elbow connector, stainless steel

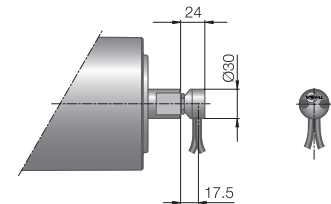


Fig.: Elbow connector / Feedback device, stainless steel

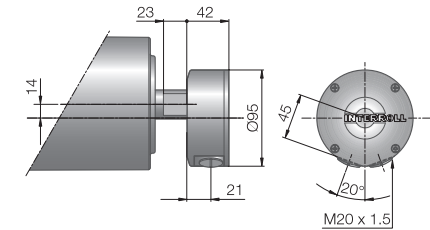


Fig.: Terminal box, stainless steel



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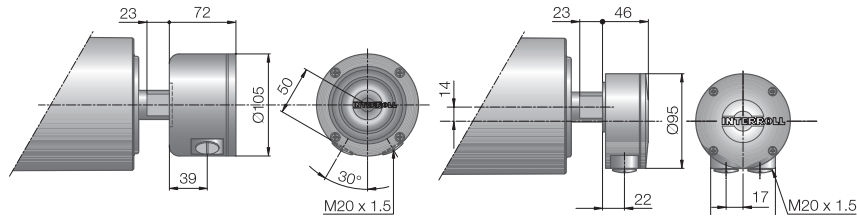


Fig.: Terminal box, technopolymer

Fig.: Terminal box, aluminium

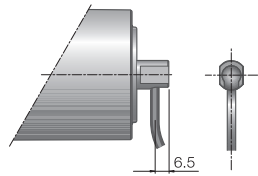


Fig.: Cable slot connector

Shafts for fixing

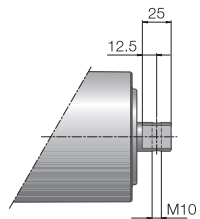


Fig.: Shaft, cross-drilled and threaded

The following options increase the minimum length of the drum motor.

Option	Min. SL with option mm
Brake	Min. SL + 50
Encoder	Min. SL + 50
Cable slot connector	Min. SL + 50

Standard drum motor lengths and their weights:

Shell length SL in mm	300	350	400	450	500	550	600	650	700	750	800	850
Average weight in kg	14.50	15.70	16.90	18.10	19.30	20.50	21.70	22.90	24.10	25.30	26.50	27.70
Shell length SL in mm	900	950	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400	1,450
Average weight in kg	28.90	33.11	34.43	35.75	37.07	38.39	39.71	41.03	42.35	43.67	44.99	46.31
Shell length SL in mm	1,500	1,550	1,600									
Average weight in kg	47.63	48.95	50.27									

Min. length with  
option

Standard length  
and weight