

CMZ hardware

STEPPER MOTORS

Ed. 2.3- English - 12 November 2009



S I S T E M I
E L E T T R O N I C I

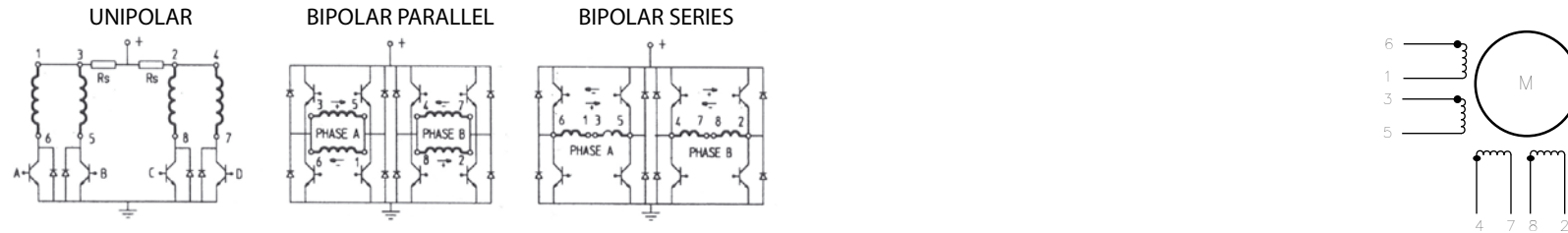
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Motors summary and comparison with obsolete motors

STEPPER MOTORS										
Codification Number for MMFL series:										
Example	MMFL	86	ST	94	43	08	A	F.1		
Explanation	MMFL	Size in mm	Motor type: ST=standard stepper STH=stepper high torque	Motor lenght in mm	Current in A	Leads Wires	Shaft configuration A=single shaft B=double shaft	Special configuratioin Number		
General code			Order code		Description				Holding Torque (Nm)	Page
ST (Standard torque line)										
MMFL 86 ST 94 43 08 X			MMFL86ST944308AF.1		Single faced shaft 9.525 mm, top side output, wire leads				4,80	5
			MMFL86ST944308B2.2		Double shaft (primary faced shaft 9.525mm), top side output, wire leads					6
sobstitutes:										
MMHN 200 3438 (obsolete)									4,80	7
MMFL 86 ST 125 64 08 X			MMFL86ST1256408AK.0		Single keyed shaft 12mm, top side output, wire leads				7,60	8
sobstitutes:										
MMHN 200 3451 (obsolete)									7,60	9
STH (High Torque line)										
MMFL 57 STH 56 28 04 X			MMFL57STH562804AC.0		Single round shaft 6.35mm, connector output				1,30	10
sobstitutes:										
MMHS 200 2221 (obsolete)									0,98	11
MMFL 57 STH 76 28 04 X			MMFL57STH762804A.0		Single round shaft 6.35mm, top side output, wire leads				1,90	12
sobstitutes:										
MMHS 200 2231 (obsolete)									1,63	13
MMFL 60 STH 86 28 04 X			MMFL60STH862804AC.0		Single faced shaft 8mm connector output, 2.8A				3,10	14
			MMFL60STH862008AF.0		Single faced shaft 8mm connector output, 2A					15
MMFL 86 STH 65 55 04 B (only for ISD1291-obsolete)			MMFL86STH655504B4.3		Double shaft (primary keyed shaft 12mm) rear side output, wire leads				3,40	16
			MMFL86STH655504B5.2		Double shaft (primary keyed shaft 12mm) rear side output, cabled wiring					17
MMFL 86 STH 80 55 04 B (also for ISD1281)			MMFL86STH80-5504B1.1 (obsolete)		Double shaft (primary keyed shaft 12mm) top side output, wire leads				4,60	18
			MMFL86STH805504B4.3		Double shaft (primary keyed shaft 12mm) rear side output, wire leads					19
			MMFL86STH805504B5.2		Double shaft (primario keyed 12mm), rear side output, cabled wiring					20
MMFL 86 STH 80 55 04 A			MMFL86STH805504A.0		Single faced shaft 12,7mm, top side output, wire leads					21
			MMFL86STH805504A1.0		Single keyed shaft 12mm, top side output, wire leads					22

STEPPER MOTORS				
CMZ Code	Types	Description	Holding Torque (Nm)	Page
STH (High Torque line)				
MMFL 86 STH 96 55 04 A	MMFL86STH965504A.0	Single faced shaft 12,7mm, top side output, wire leads	7,00	23
	MMFL86STH965504A1.0	Single keyed shaft 12mm top side output, wire leads		24
MMFL 86 STH 96 80 04 B (only for ISD-12A1)	MMFL86STH968004B1.2	Double shaft (primary keyed shaft 12mm) rear side output, wire leads		25
	MMFL86STH968004B2.2	Double shaft (primary keyed shaft 12mm) rear side output, cabled wiring		26
MMFL 86 STH 118 80 04 B (only for ISD1271)	MMFL86STH1188004B2.1 (obsolete)	Double shaft (primary keyed shaft 12mm) top side output, wire leads	8,70	27
	MMFL86STH1188004B4.3	Double shaft (primary keyed shaft 12mm) rear side output, wire leads		28
	MMFL86STH1188004B5.2	Double shaft (primary keyed shaft 14mm) rear side output, wire leads		29
	MMFL86STH1188004B6.2	Double shaft (primary keyed shaft 12mm) rear side output, cabled wiring		30
	MMFL86STH1188004B7.2	Double shaft (primary keyed shaft 14mm) rear side output, cabled wiring		31
substitutes:				
MMHS 200 3437 (obsolete)		Shaft 12mm	5,5	32
MMFL 86 STH 156 99 04 B (also for ISD1261)	MMFL86STH1569904B2.2 (obsolete)	Double shaft (primary keyed shaft 12mm) top side output, wire leads	12,00	33
	MMFL86STH1569904B5.2	Double shaft (primary keyed shaft 14mm) rear side output, wire leads		34
	MMFL86STH1569904B6.2	Double shaft (primary keyed shaft 14mm) rear side output, cabled wiring		35
	MMFL86STH1569904B7.3 (obsolete)	Double shaft (primary keyed shaft 12mm) rear side output, wire leads		36
	MMFL86STH1569904B8.2 (obsolete)	Double shaft (primary keyed shaft 12mm) rear side output, cabled wiring		37
substitutes:				
MMHS 200 3455 (obsolete)		Shaft 12mm	10,00	38
MMFL 86 STH 156 99 04 A	MMFL86STH1569904A.0	Single keyed shaft 14mm top side output, wire leads	12,00	39
MMFL 110 STH 150 65 04 A	MMFL110STH1506504A.0	Single keyed shaft 19mm top side output, wire leads	21,00	40
MMFL 110 STH 201 80 04 A	MMFL110STH2018004A.0	Single keyed shaft 19mm top side output, wire leads	28,00	41
Particular Motors				
MMFL 110 STH 201 60 08 A (not standard)	MMFL 110 STH 201 60 08 A 01	Single keyed shaft 19mm, IP65	28,00	42
TS 3684N81 (for ISD1241/CAN.121) (obsolete)		Faced double shaft (primary 14mm), top side output, wire leads	4,2	43
TS 3684N93 (for ISD1241/CAN.111) (customized)		Round double shaft (primary 14mm), top side output, wire leads	4.2	44
TS 3684N82 (for ISD1251/CAN.121)(obsolete)		Keyed doudle shaft (primary 14mm), top side output, wire leads	7,9	45

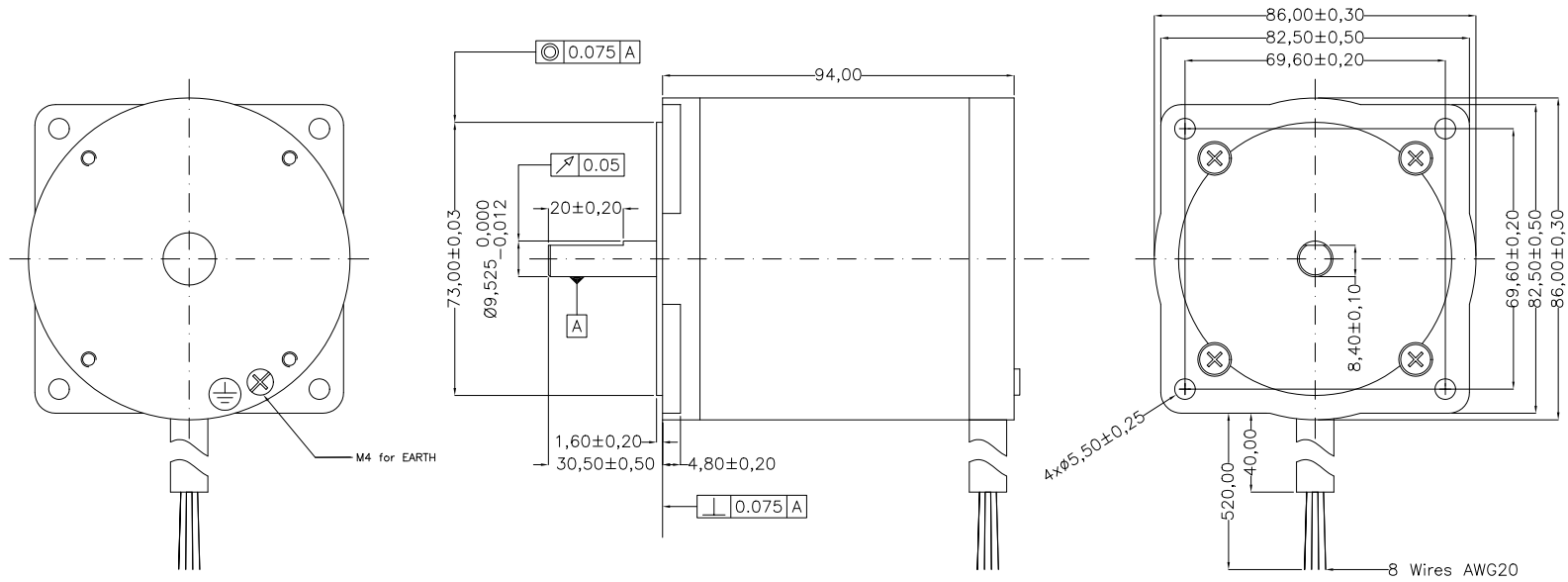
Type of connections for stepper motors with 8 leads



Type	COLOR 1	COLOR 2	COLOR 3	COLOR 4	COLOR 5	COLOR 6	COLOR 7	COLOR 8	N.of leads
MMHN2003438	white/black	yellow	white/orange	red	orange	black	white/red	white/yellow	8
MMHN2003451	white/black	yellow	white/orange	red	orange	black	white/red	white/yellow	8
MMHN2002221	white/brown	red	white/orange	yellow	orange	brown	white/yellow	white/red	8
MMHN2002231	white/brown	red	white/orange	yellow	orange	brown	white/yellow	white/red	8
MMFL86ST12564008	red/white	yellow	black/white	green	black	red	green/white	yellow/white	8
MMFL86ST944308X	red/white	yellow	black/white	green	black	red	green/white	yellow/white	8
MMFL86ST944308AF.1	red/white	black	yellow/white	orange	yellow	red	orange/white	black/white	8
MMFL60STH862008AF.0	blue	black	red/white	green/white	red	blue/white	green	black/white	8

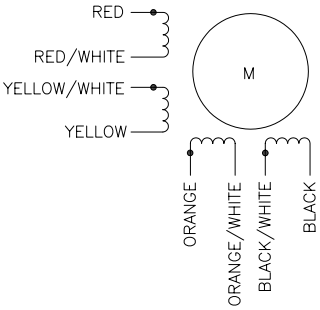
MMFL86ST944308AF.1

1,8° Size 86 mm - **4,8 Nm** standard torque - **9,525 mm** faced single shaft

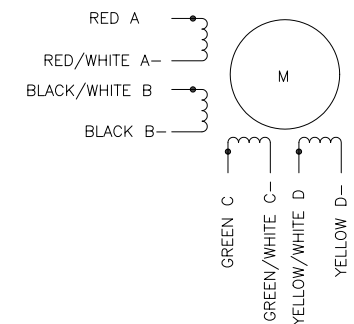


Wiring Diagram

Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86ST944308AF.1	BIPOlar PARALLEL	4,80	6	1200	3,3	0,385	2,4	8	1,8°
	BIPOlar SERIES	4,80	3	1200	13,2	1,54	2,4	8	1,8°
	UNIPOLAR	3,80	4,3	1200	3,3	0,77	2,4	8	1,8°



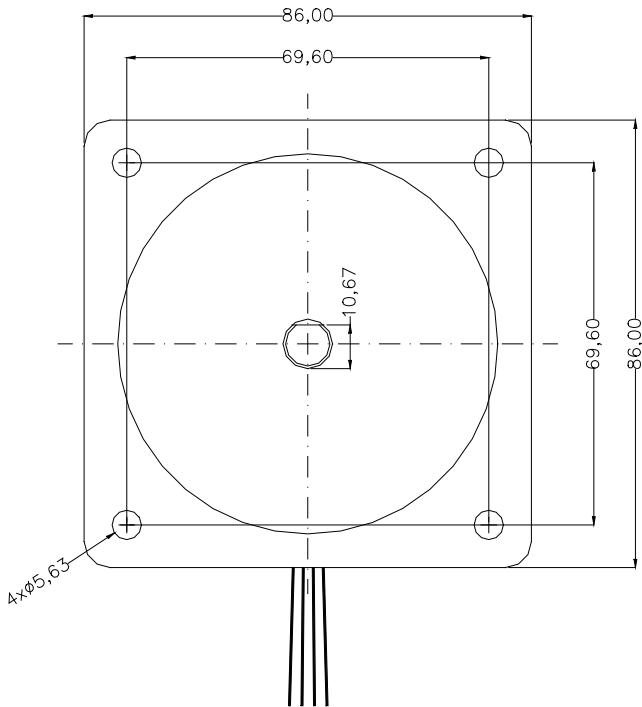
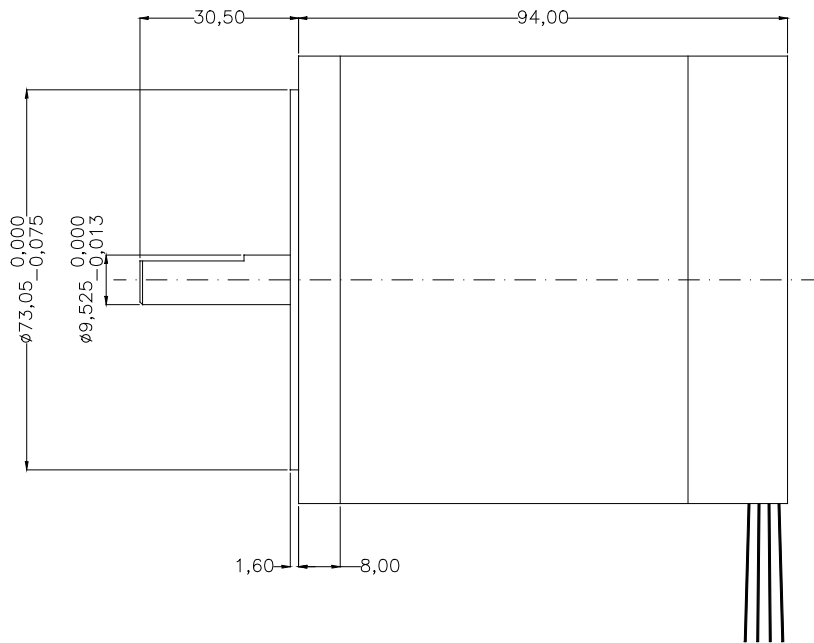
1,8° Size 86 mm - **4,8 Nm** standard torque - **9,525 mm** primary faced shaft



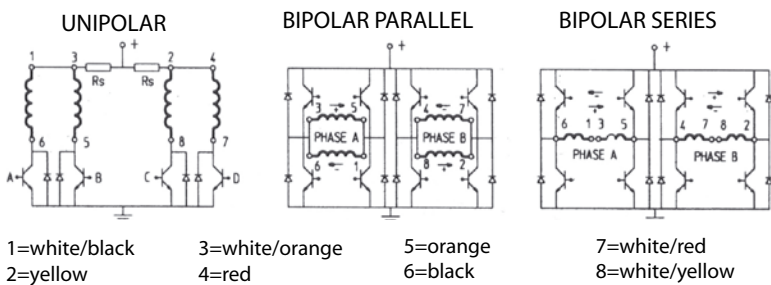
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86ST944308B2.2	BIPOLAR PARALLEL	4,80	6	1200	3,3	0,385	2,4	8	1,8°
	BIPOLAR SERIES	4,80	3	1200	13,2	1,54	2,4	8	1,8°
	UNIPOLAR	3,80	4,3	1200	3,3	0,77	2,4	8	1,8°

MMHN2003438 (Obsolete)

1,8° Size 86 mm - Standard Torque - **9,525 mm** primary faced shaft



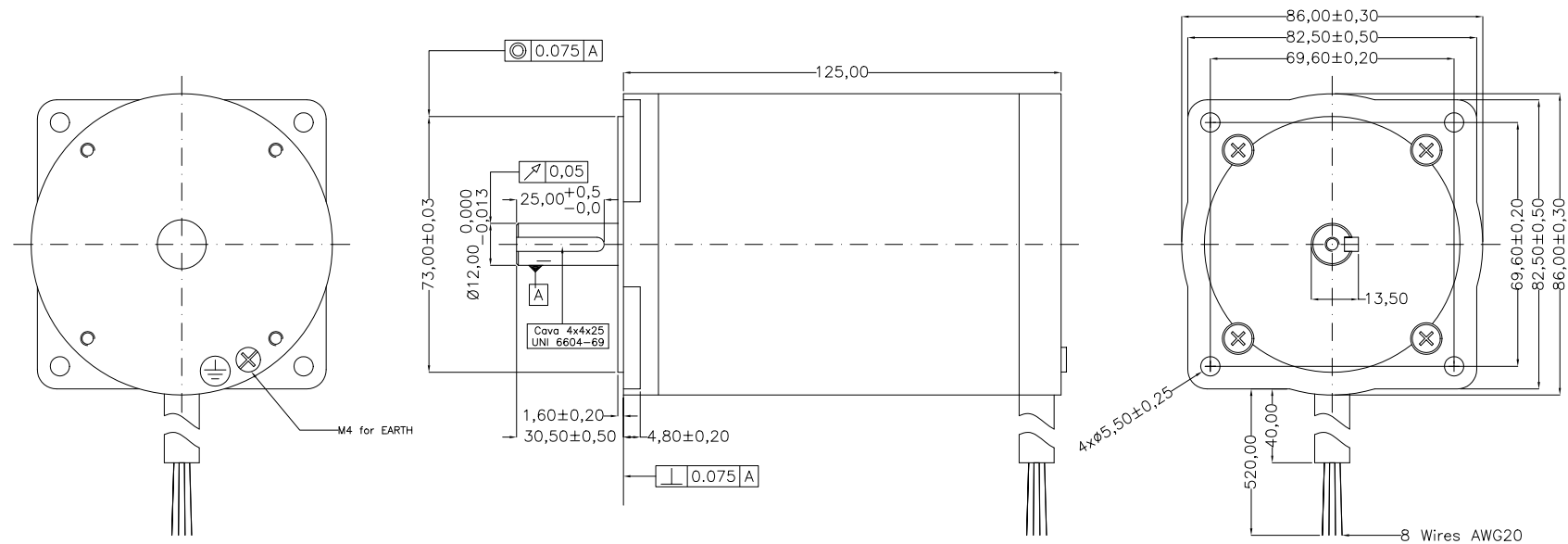
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHN2003438 (Obsolete)	BIPOLAR PARALLEL	4,80	6	1200	3,5	0,37	2,4	8	1,8°
	BIPOLAR SERIES	4,80	3,01	1200	14	1,5	2,4	8	1,8°
	UNIPOLAR	3,80	4,3	1200	3,5	0,75	2,4	8	1,8°

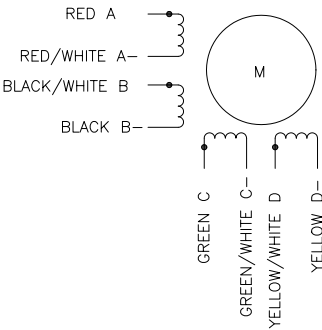
MMFL86ST1256408AK.0

1,8° Size 86 mm - **7,6 Nm** standard torque - **12 mm** single keyed shaft



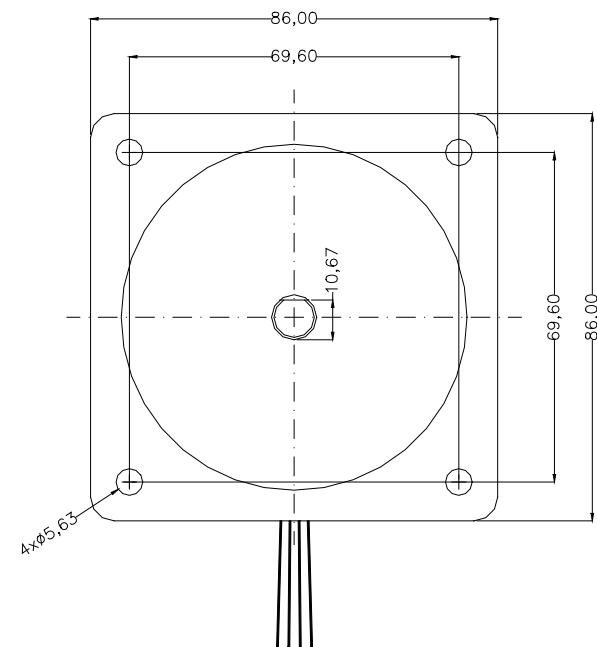
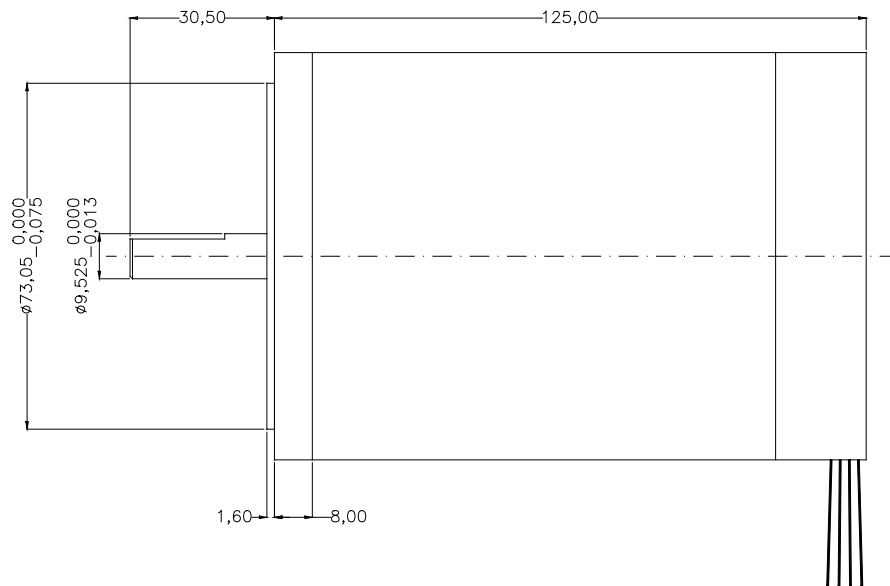
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86ST1256408AK.0	BIPOLAR PARALLEL	7,6	9,06	1800	3,5	0,4	3,6	8	1,8°
	BIPOLAR SERIES	7,6	4,53	1800	14	1,6	3,6	8	1,8°
	UNIPOLAR	6	6,4	1800	3,5	0,8	3,6	8	1,8°

Wiring Diagram

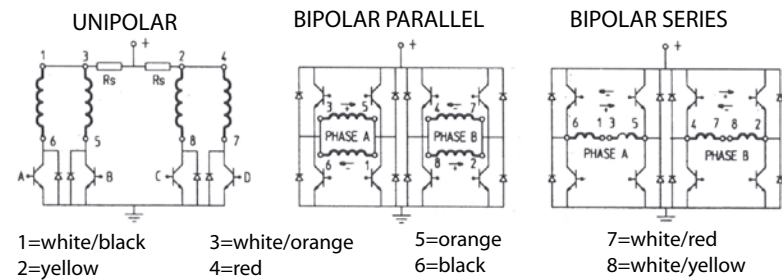


MMHN2003451 (Obsolete)

1,8° Size 86 mm **7,6 Nm** standard torque - **9,25 mm** single faced shaft



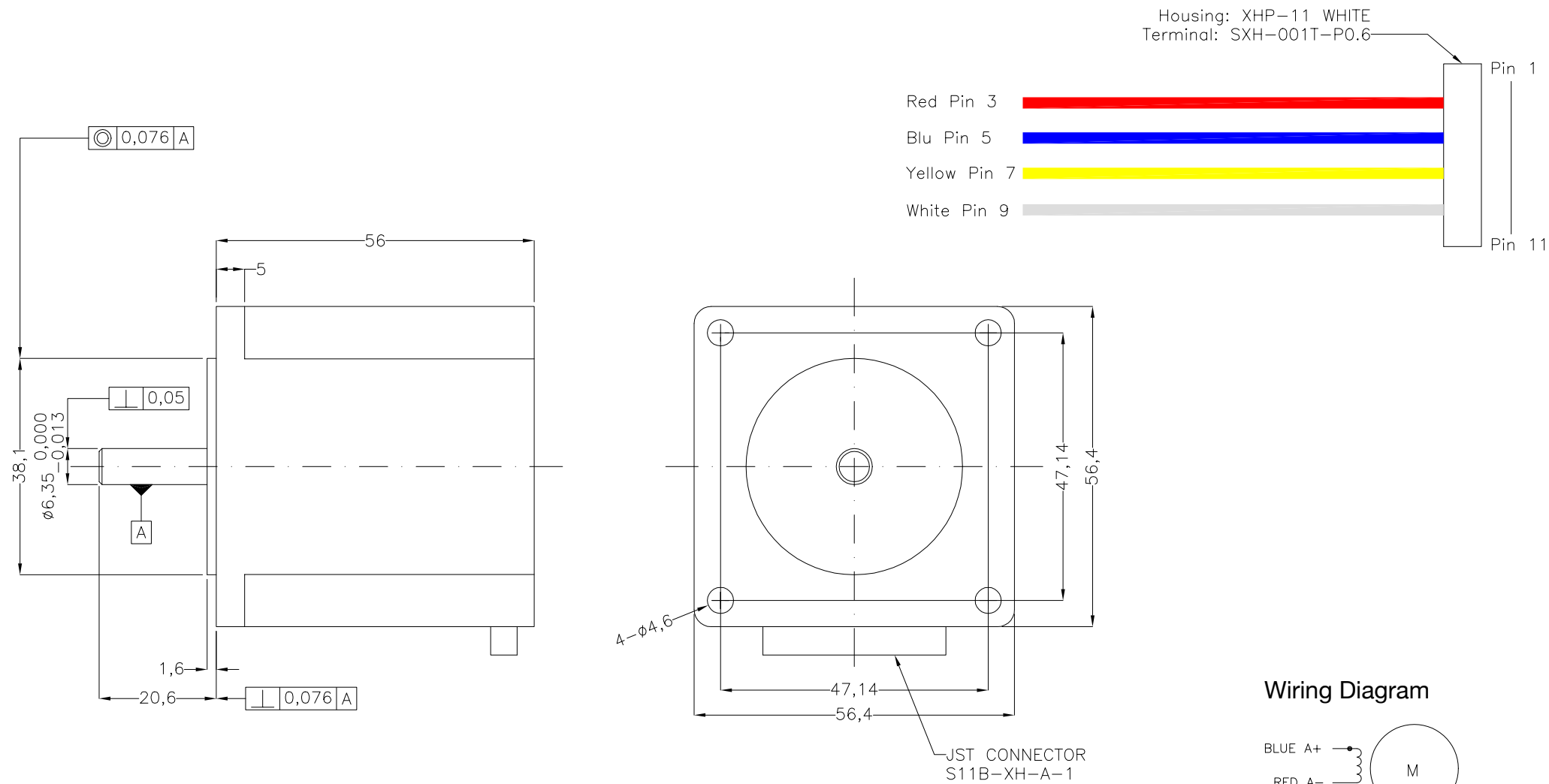
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHN2003451 (Obsolete)	BIPOLAR PARALLEL	7,6	9	1800	1	0,25	3,6	8	1,8°
	BIPOLAR SERIES	7,6	4,48	1800	10	1	3,6	8	1,8°
	UNIPOLAR	6,2	6,4	1800	2,5	0,5	3,6	8	1,8°

MMFL57STH562804AC.0

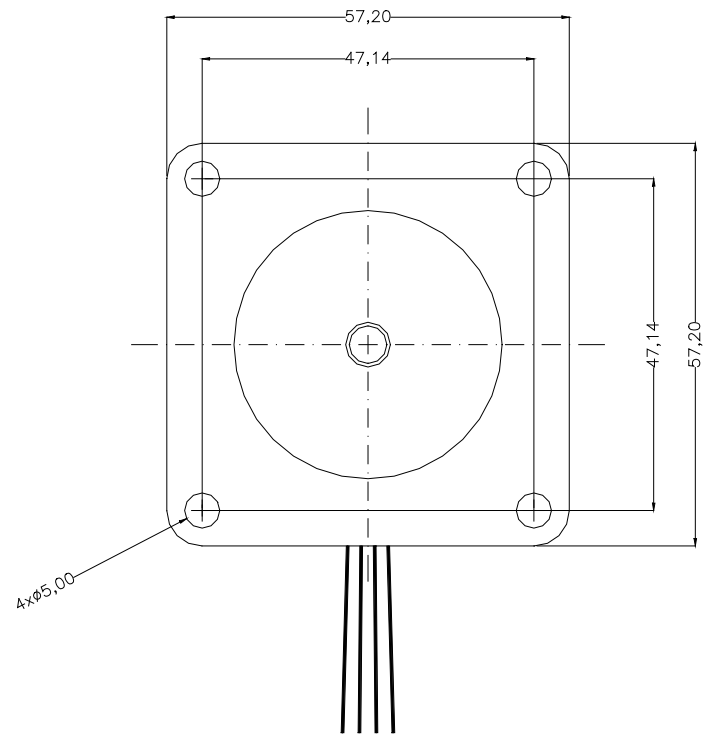
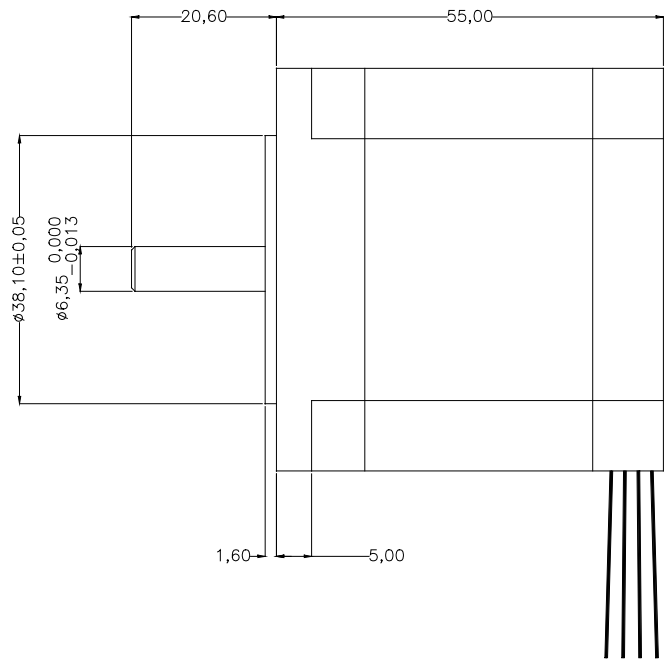
1,8° Size 57 mm - **1,3 Nm** high torque - **6,35 mm** single round shaft



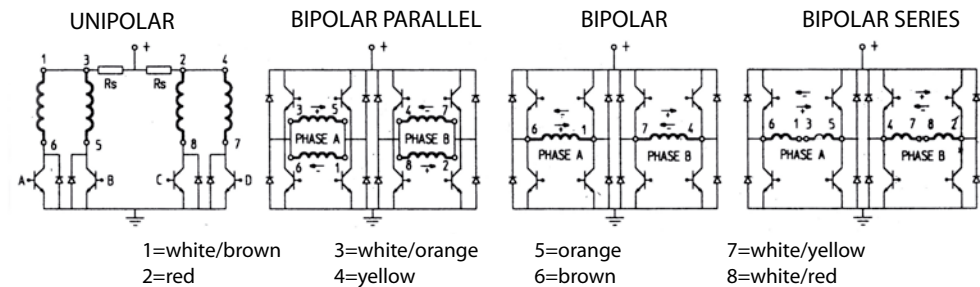
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL57STH562804AC.0	BIPOLAR PARALLEL	1,3	2,8	300	2,5	0,9	0,7	4	1,8°

MMHS2002221 (Obsolete)

1,8° Size 57 mm - **0,98 Nm** HighTorque - **6,35 mm** single round shaft



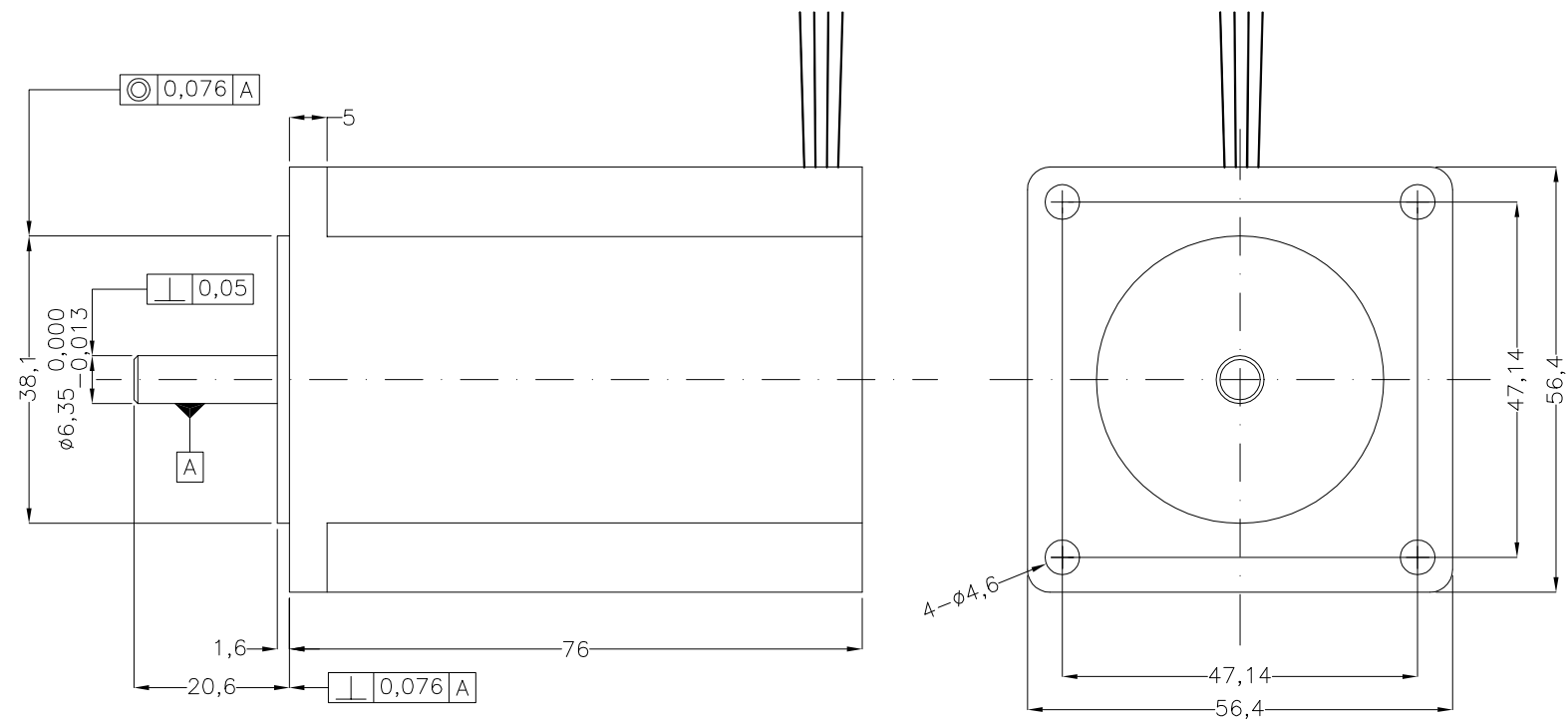
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHS2002221 (Obsolete)	BIPOLAR PARALLEL	0,98	4,2	220	0,9	0,35	0,7	8	1,8°
	BIPOLAR SERIES	0,98	2,1	220	3,6	1,4	0,7	8	1,8°
	UNIPOLAR	0,75	3	220	0,9	0,7	0,7	8	1,8°

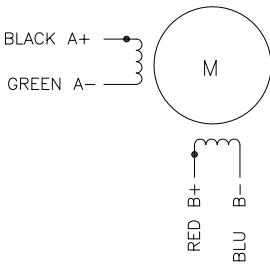
MMFL57STH762804A.0

1,8° Size 57 mm - **1,9 Nm** high torque - **6,35 mm** single round shaft



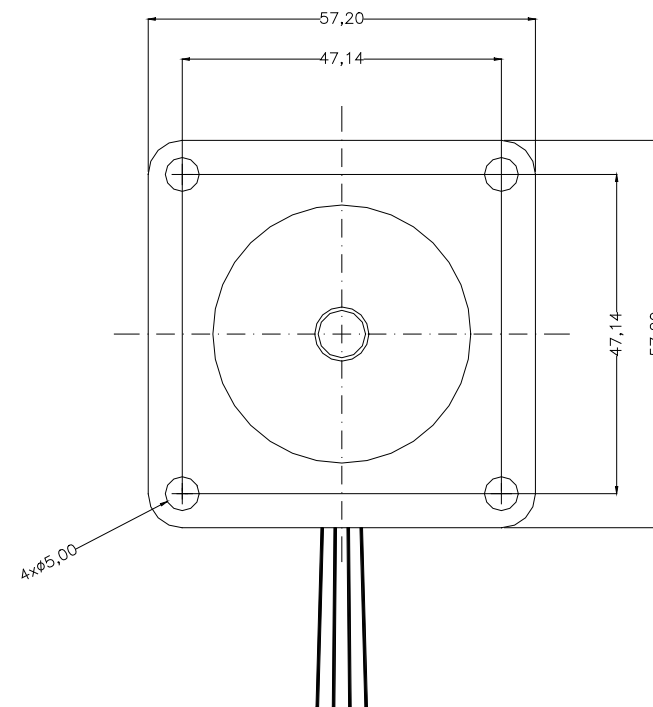
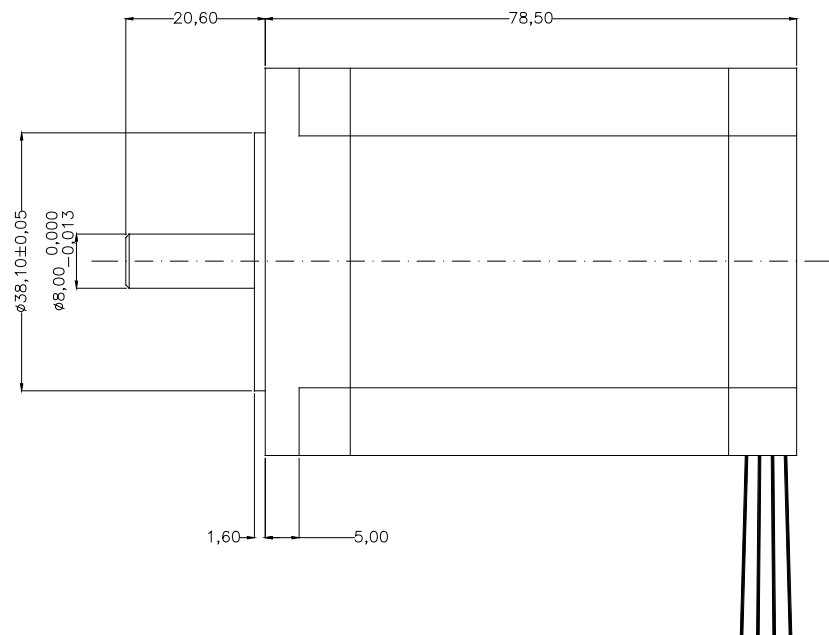
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm ²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL57STH762804A.0	BIPOLAR PARALLEL	1,9	2,8	480	3,6	1,13	1	4	1,8°

Wiring Diagram

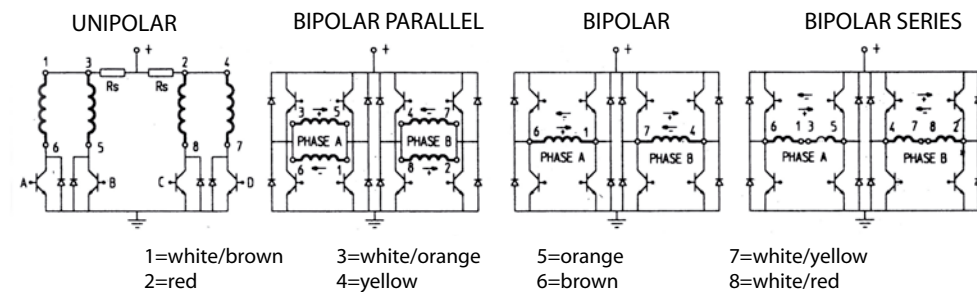


MMHS2002231 (Obsolete)

1,8° Size 57 mm - **1,63 Nm** High Torque - **8 mm** single round shaft



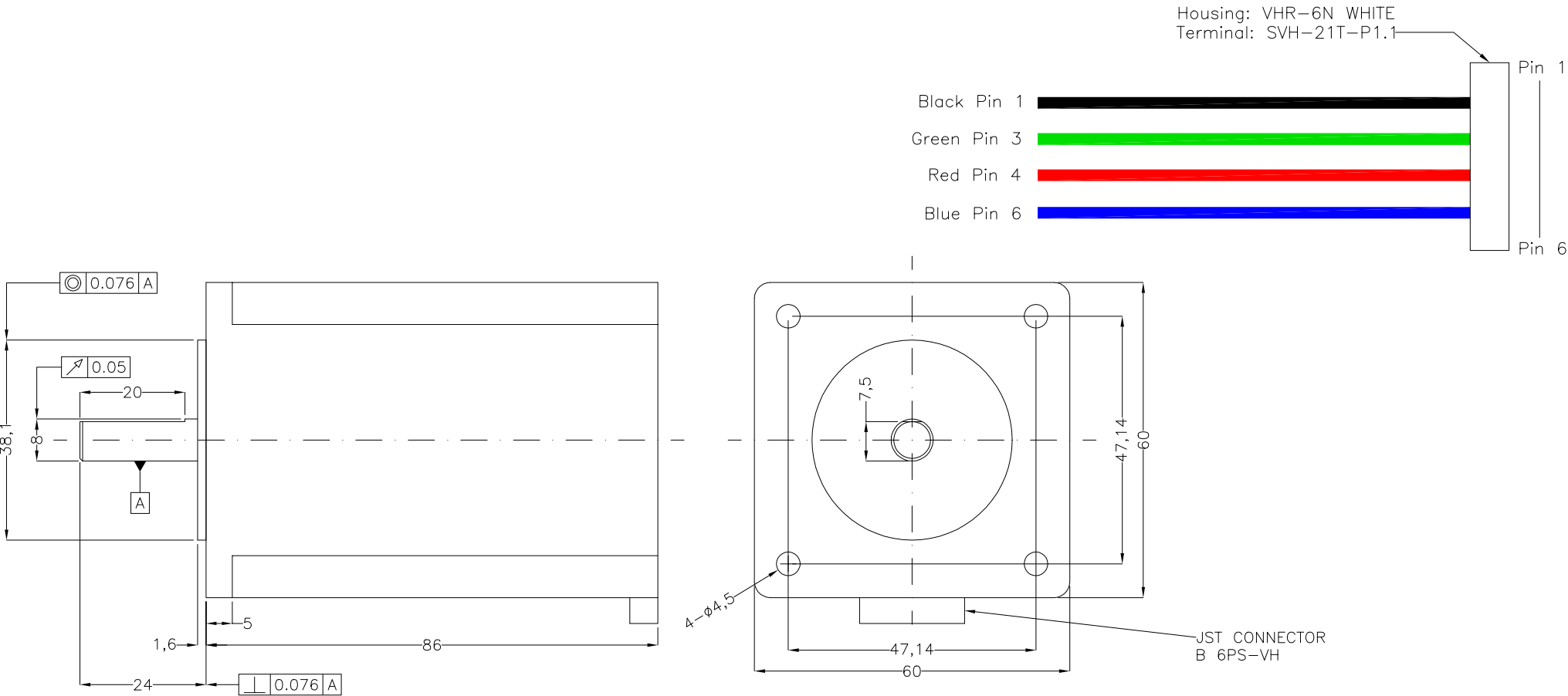
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHS2002231 (Obsolete)	BIPOLAR PARALLEL	1,63	4,2	340	1,7	0,55	1,0	8	1,8°
	BIPOLAR SERIES	1,63	2,1	340	6,8	2,2	1,0	8	1,8°
	UNIPOLAR	1,25	3,00	340	1,7	1,1	1,0	8	1,8°

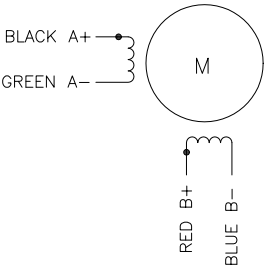
MMFL60STH862804AC.0

1,8° Size 60 mm - **3,10 Nm** high torque - **8 mm** single faced shaft



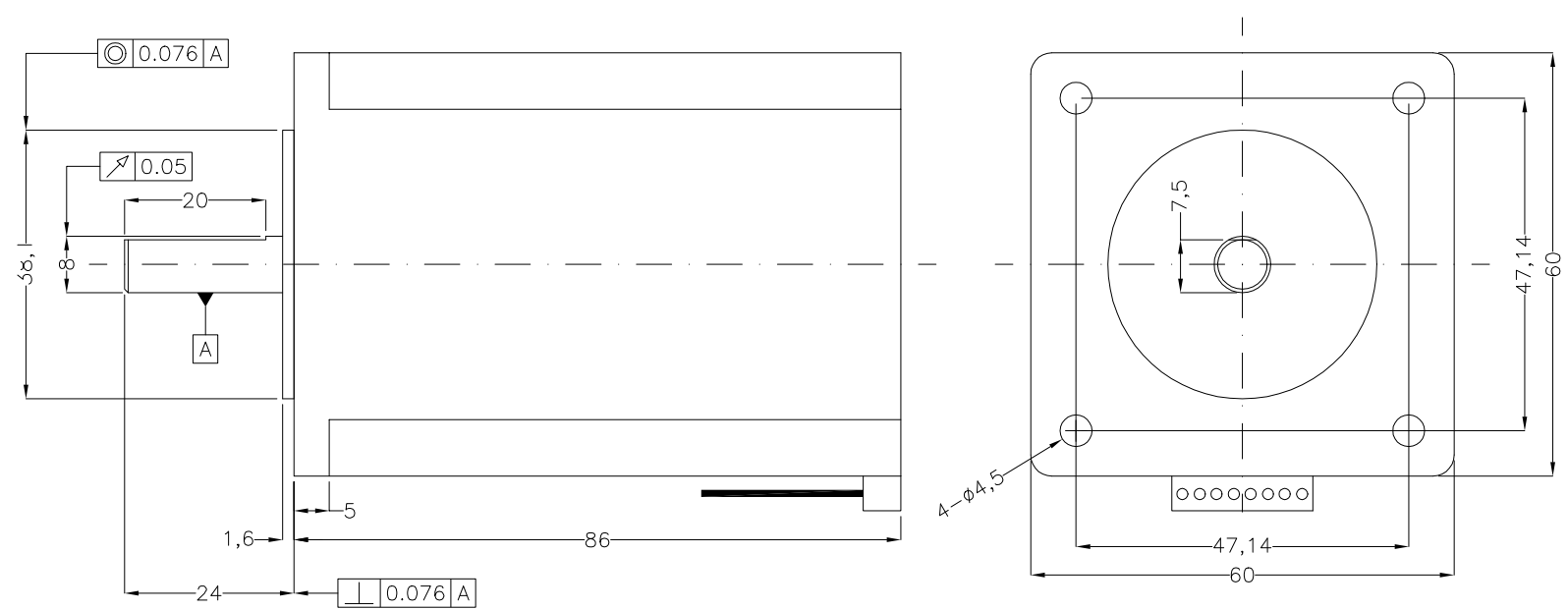
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL60STH862804AC.0	BIPOLAR PARALLEL	3,10	2,8	840	6,8	1,5	1,4	4	1,8°

Wiring Diagram



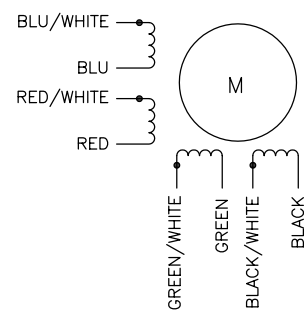
MMFL60STH862008AF.0

1,8° Size 60 mm - **3,10 Nm** high torque - **8 mm** single faced shaft

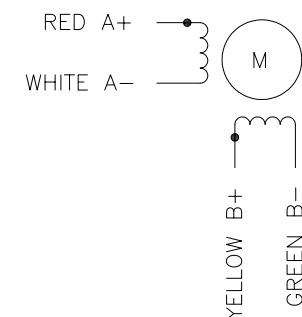


Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL60STH862008AF.0	BIPOLAR PARALLEL	3,1	2,8	840	6,8	1,5	1,4	8	1,8°
	BIPOLAR SERIES	3,1	1,4	840	27,2	6	1,4	8	1,8°
	UNIPOLAR	2,2	2	840	6,8	3	1,4	8	1,8°

Wiring Diagram



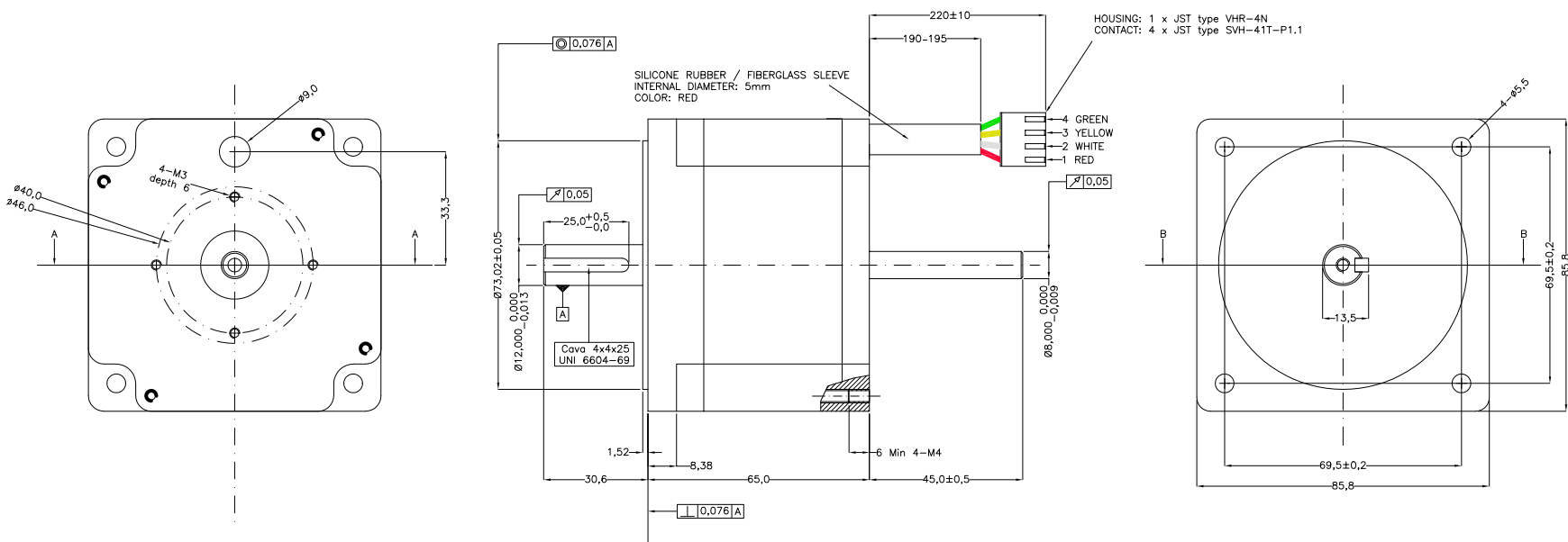
1,8° Size 86 mm - **3,40 Nm** high torque - **12 mm** primary keyed shaft



Type	Connections	Holding Torque (Nm)	Phase current (Bipolar Parallel) (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH65-5504B4.3	BIPOLAR PARALLEL	3,4	5,5	1000	1,7	0,28	1,7	4	1,8°
Used for ISD1291/xxx.101 (3 poles power supply) <i>(obsolete)</i> Used for ISD1291/xxx.301 (4 poles power supply) <i>(obsolete)</i>									

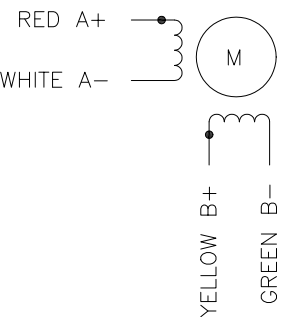
MMFL86STH655504B5.2

1,8° Size 86 mm - **3,40 Nm** high torque - **12 mm** primary keyed shaft



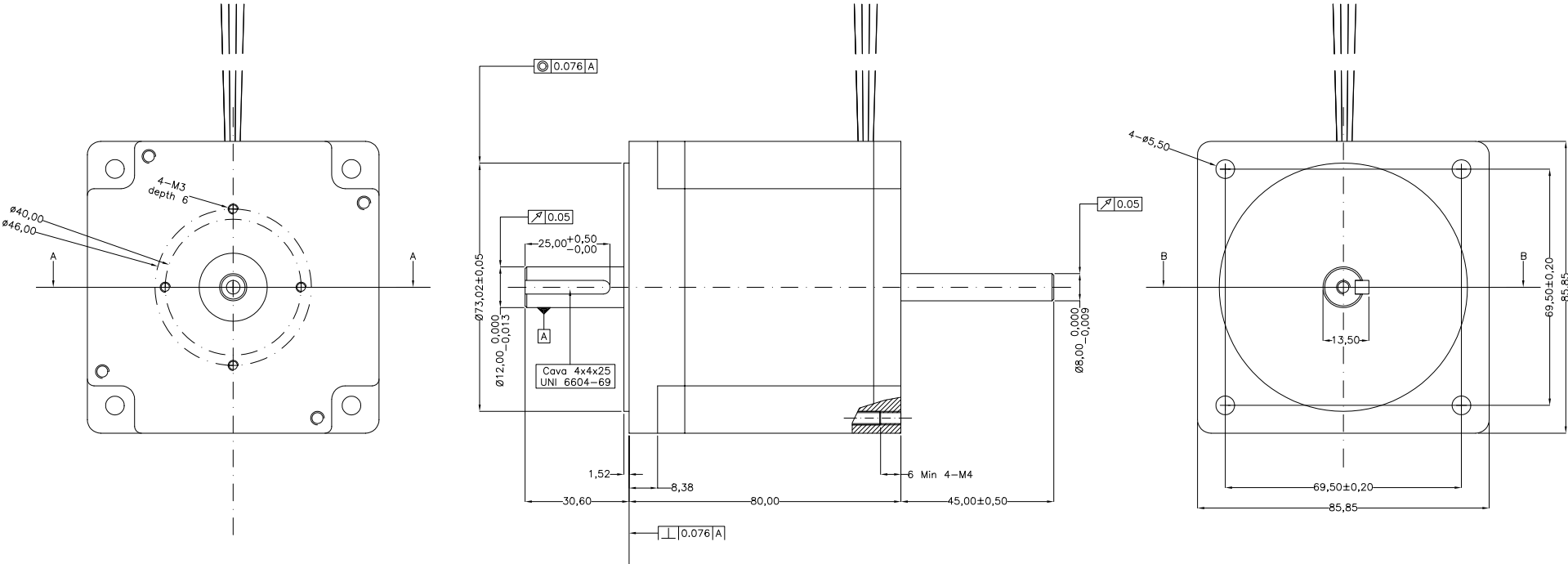
Type	Connections	Holding Torque (Nm)	Phase current (Bipolar Parallel) (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH65-5504B 5.2	BIPOLAR PARALLEL	3,4	5,5	1000	1,7	0,28	1,7	4	1,8°
Used for ISD1291/xxx.101 (3 poles power supply)									
Used for ISD1291/xxx.301 (4 poles power supply)									

Wiring Diagram

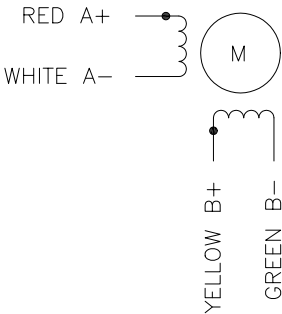


MMFL86STH805504B1.1

1,8° Size 86 mm - **4,6 Nm** high torque - **12 mm** primay keyed shaft



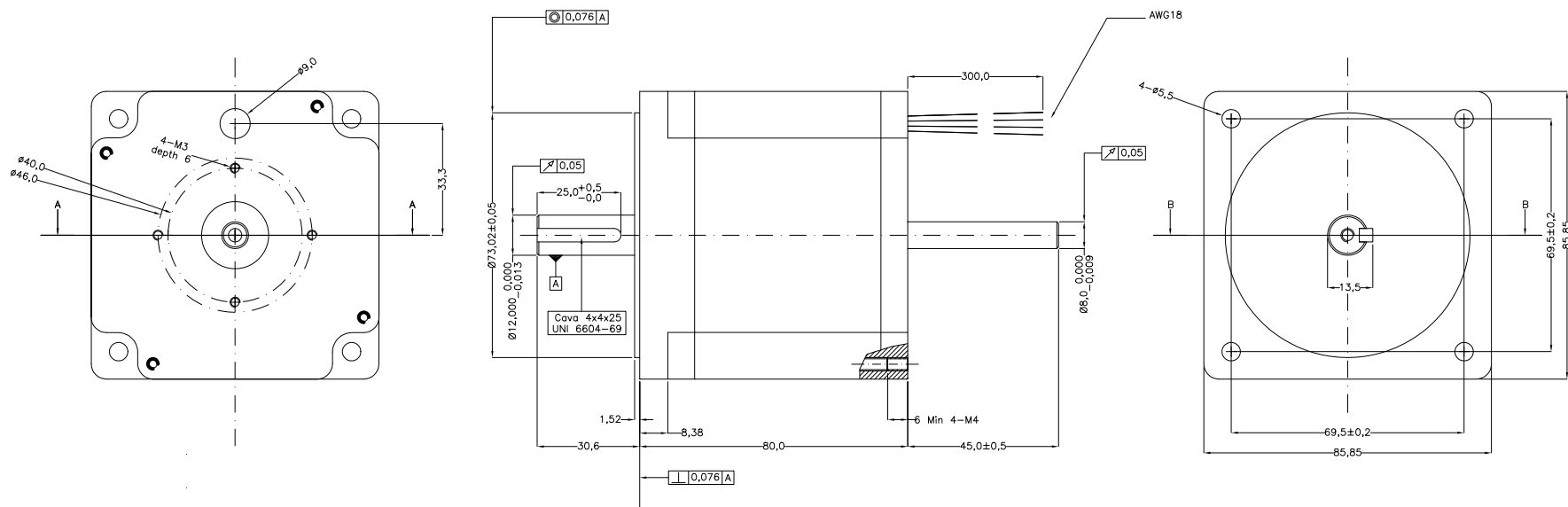
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH805504B1.1	BIPOLAR PARALLEL	4,60	5,50	1400	4	0,46	2,3	4	1,8°
Used for ISD1281/xxx.101 (3 poles power supply)									
Used for ISD1281/xxx.301 (4 poles power supply)									

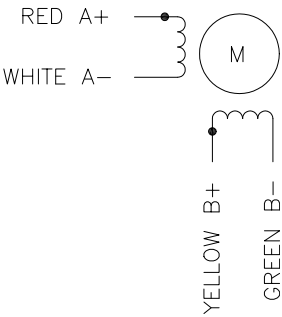
MMFL86STH805504B4.3 (substitutes MMFL86STH805504B3 motor)

1,8° Size 86 mm - **4,6 Nm** high torque - **12 mm** primary keyed shaft

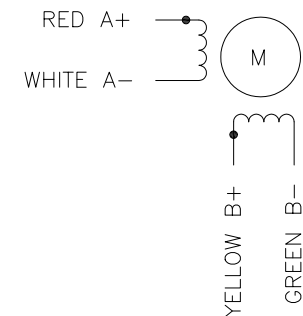


Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH 80 - 5504B4.3	BIPOLAR PARALLEL	4,60	5,50	1400	4	0,46	2,3	4	1,8°
Used for ISD1281/xxx.101 (3 poles power supply) Used for ISD1281/xxx.301 (4 poles power supply)									

Wiring Diagram



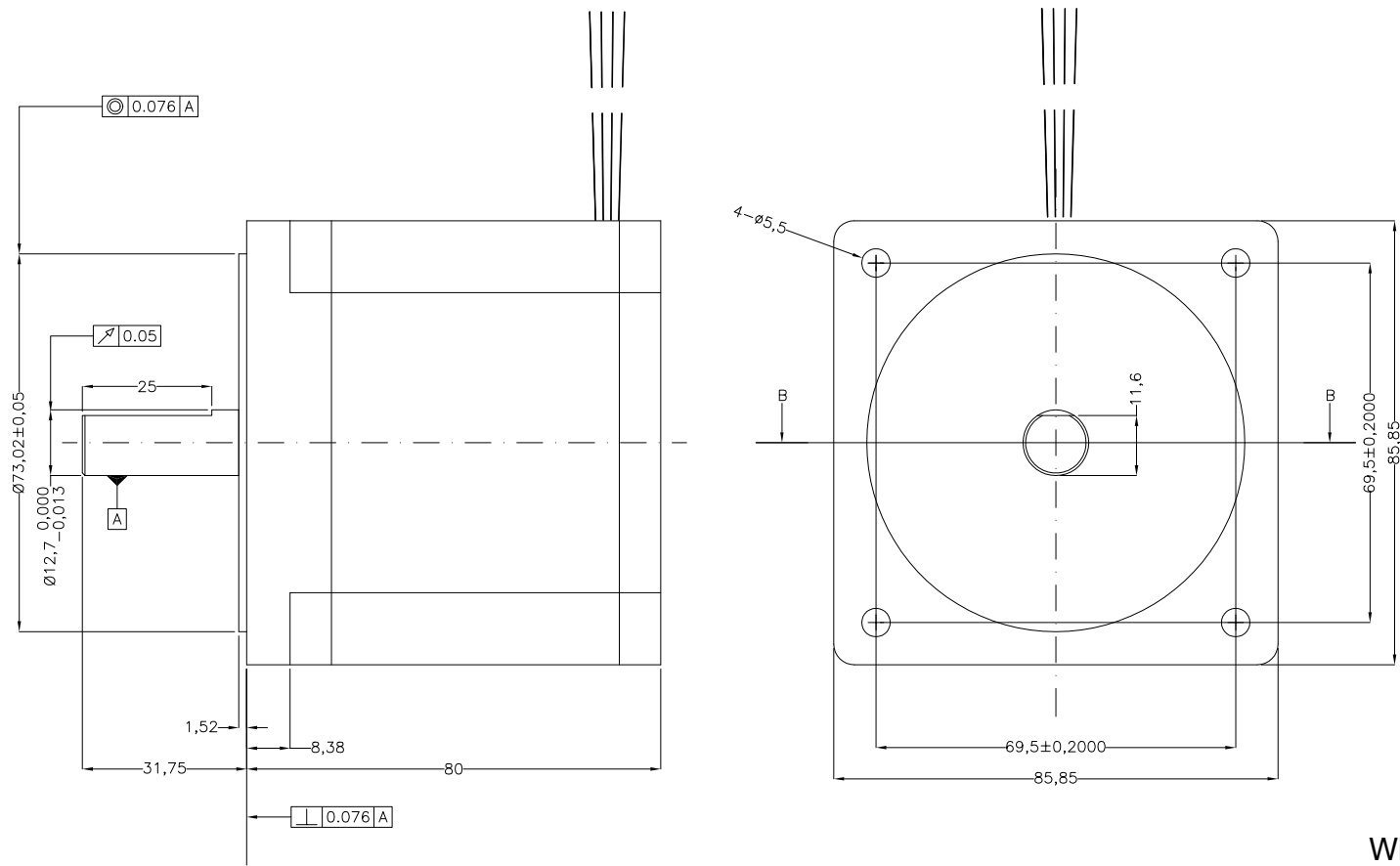
1,8° Size 86 mm - **4,6 Nm** high torque - **12 mm** primay keyed shaft



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH805504B5.2	BIPOLAR PARALLEL	4,60	5,50	1400	4	0,46	2,3	4	1,8°
Used for ISD1281/xxx.101 (3 poles power supply) Used for ISD1281/xxx.301 (4 poles power supply)									

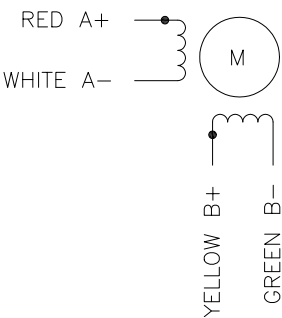
MMFL86STH805504A.0

1,8° Size 86 mm - **4,6 Nm** high torque - **12,7 mm** single faced shaft



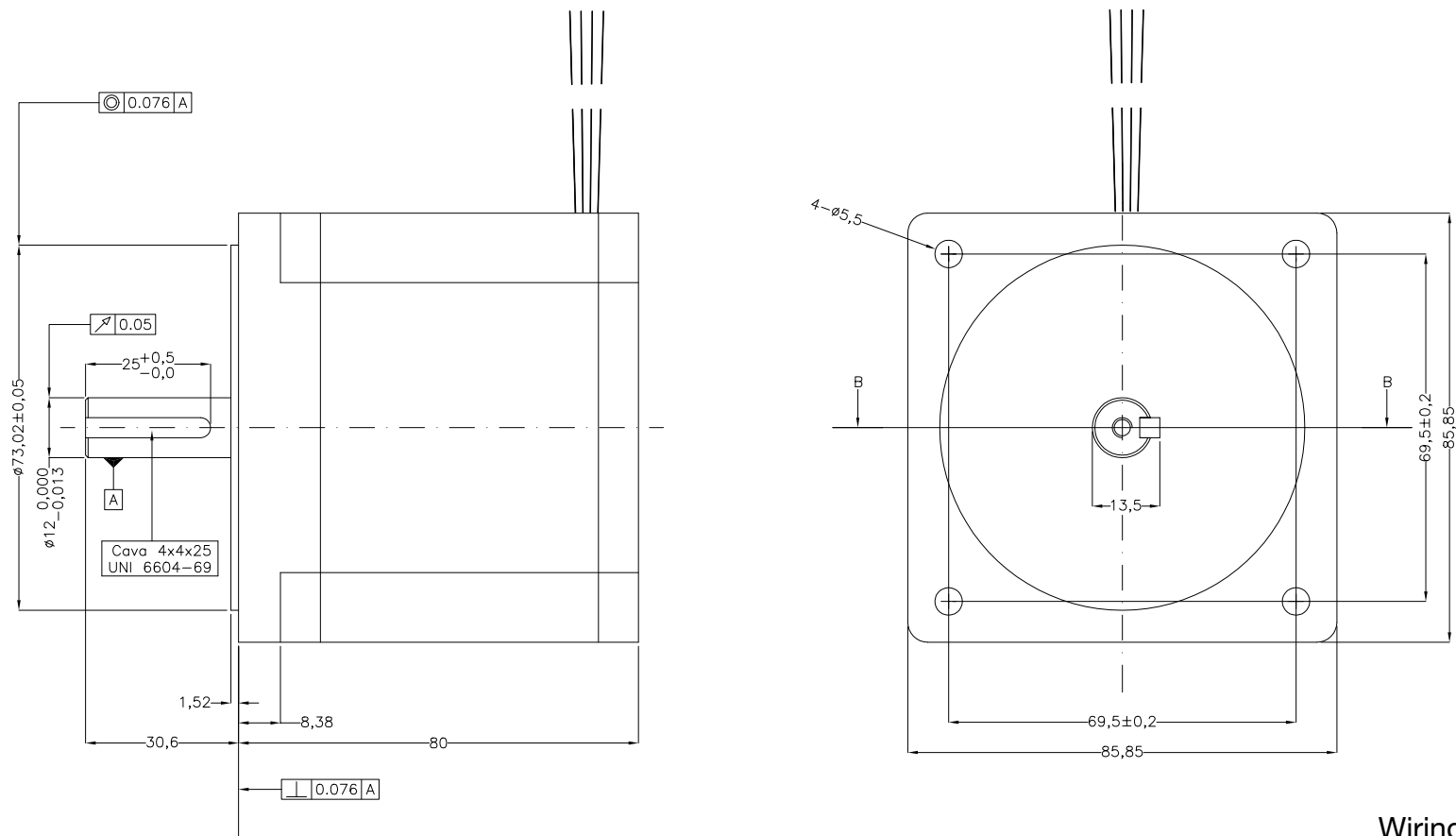
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH 805504A.0	BIPOlar PARALLEL	4,60	5,50	1400	4	0,46	2,3	4	1,8°

Wiring Diagram



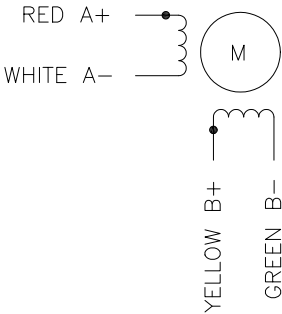
MMFL86STH805504A1.0

1,8° Size 86 mm - **4,6 Nm** high torque - **12 mm** single keyed shaft



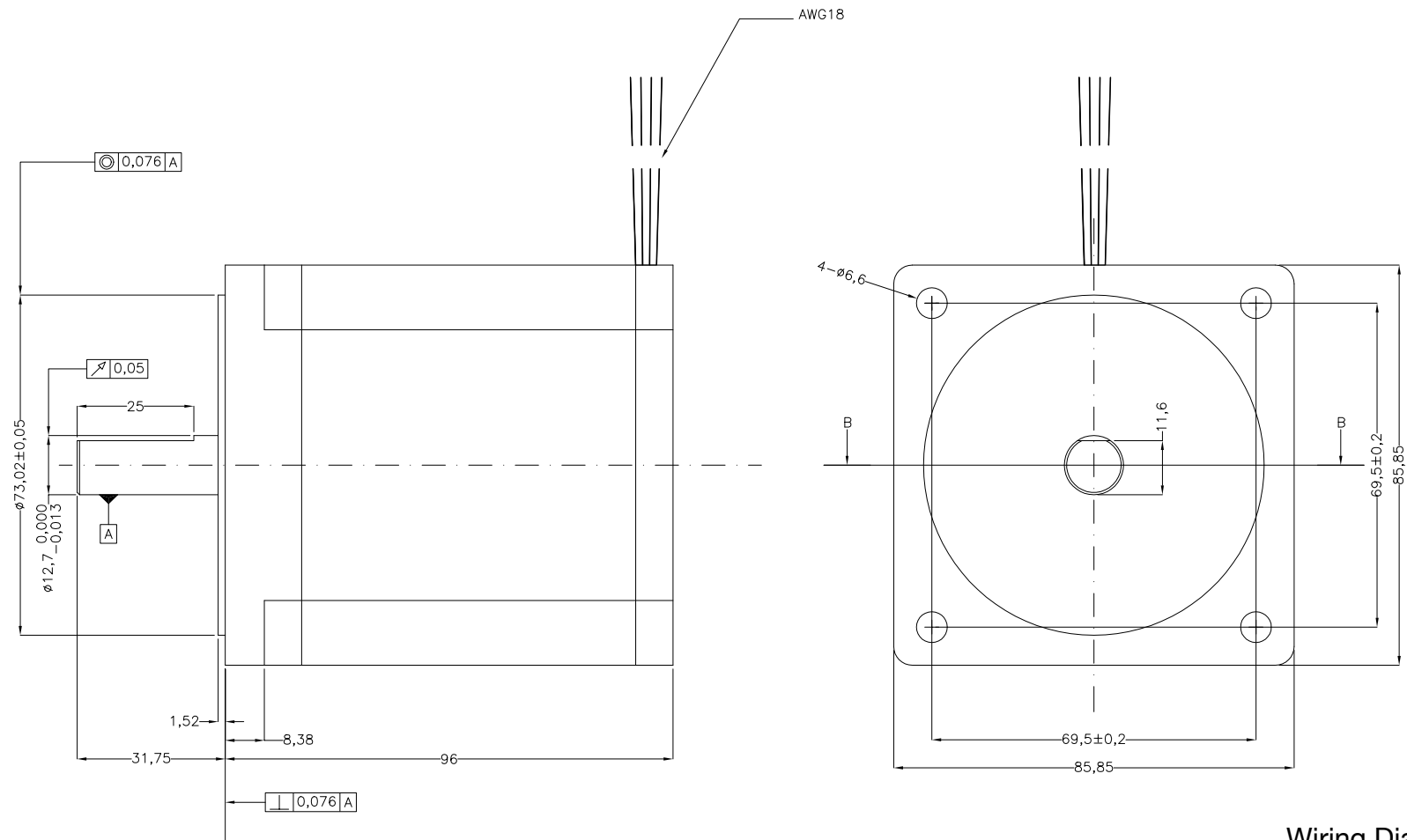
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH805504A1.0	BIPOLAR PARALLEL	4,60	5,50	1400	4	0,46	2,3	4	1,8°

Wiring Diagram



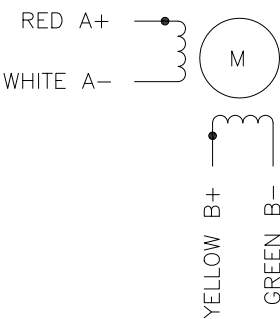
MMFL86STH965504A.0

1,8° Size 86 mm - **7,0 Nm** high torque - **12,7 mm** single faced shaft



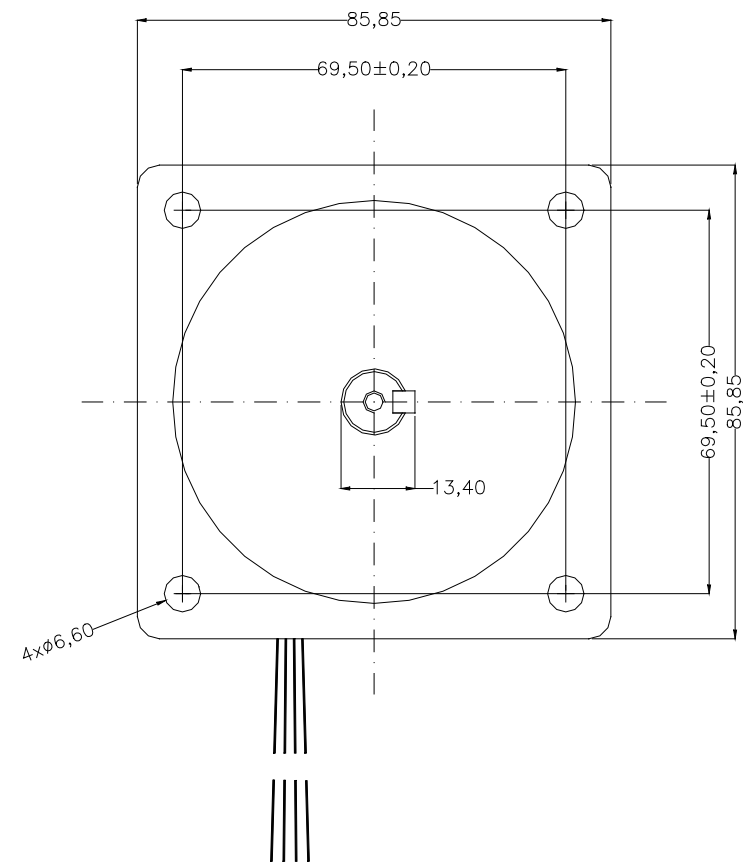
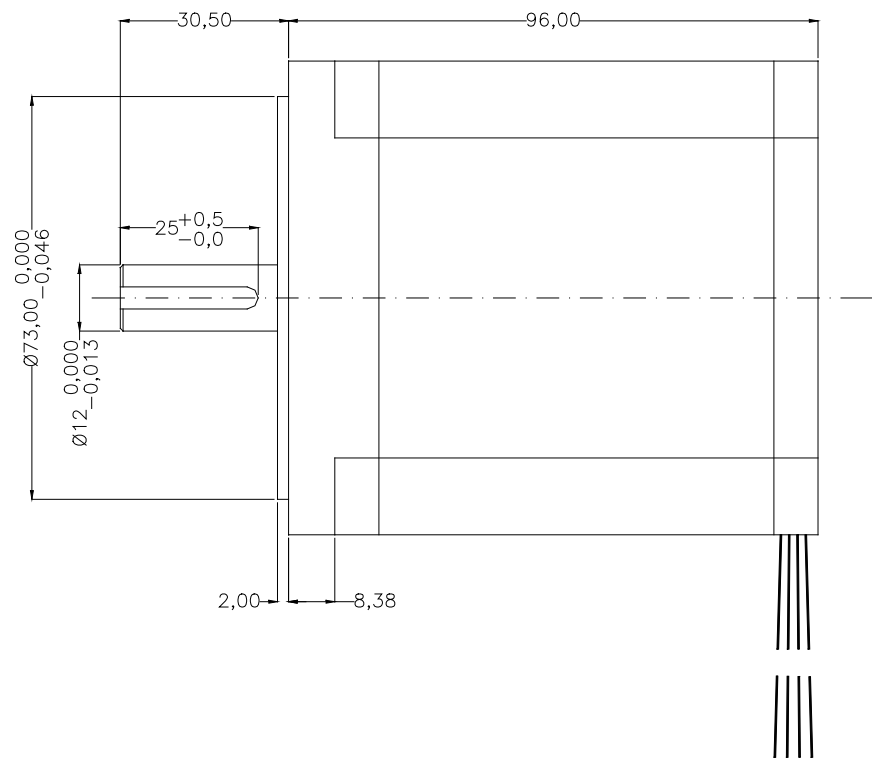
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH965504A.0	BIPOLAR PARALLEL	7,0	5,5	1000	7,2	0,66	1,7	4	1,8°

Wiring Diagram



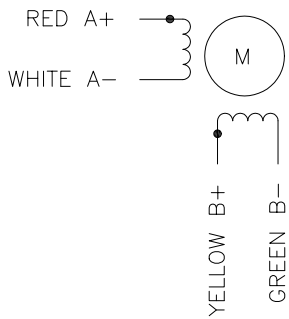
MMFL86STH965504A1.0

1,8° Size 86 mm - **7,0 Nm** high torque - **12 mm** single keyed shaft



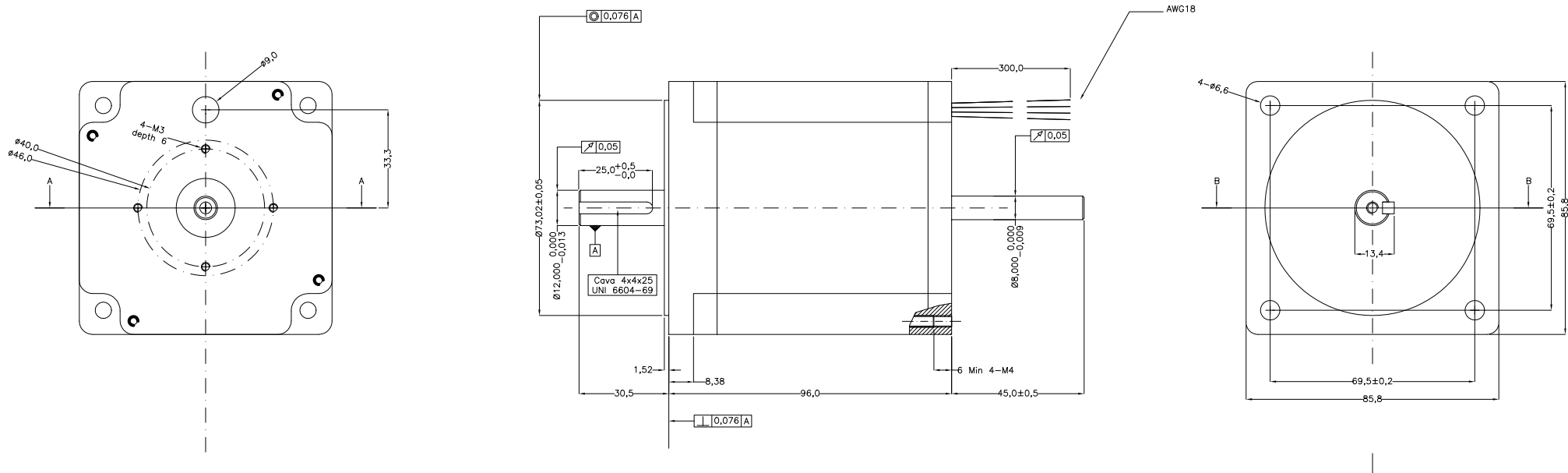
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH965504A1.0	BIPOLAR PARALLEL	7,0	5,5	2700	3,6	0,34	2,8	4	1,8°

Wiring Diagram



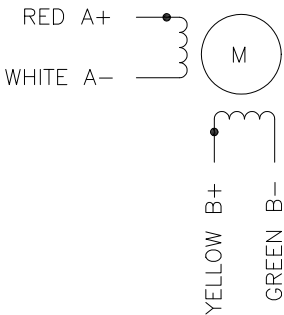
MMFL86STH968004B1.2

1,8° Size 86 mm - **7,0 Nm** high torque - **12 mm** primary keyed shaft



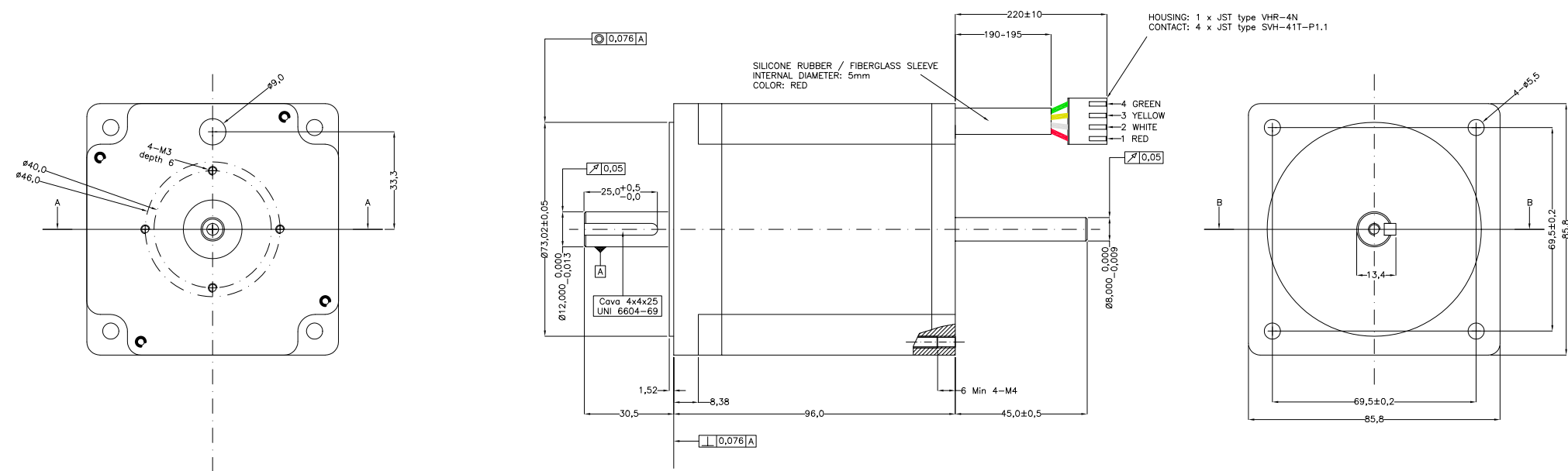
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH968004B1.2	BIPOLAR PARALLEL	7,0	8,0	2700	3,6	0,34	2,8	4	1,8°
used for ISD12A1/XXX.101 (3 poles power supply) used for ISD12A1/XXX.301 (4 poles power supply)									

Wiring Diagram



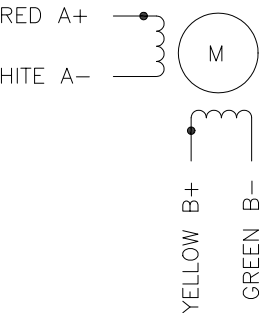
MMFL86STH968004B2.2

1,8° Size 86 mm - **7,0 Nm** high torque - **12 mm** primary keyed shaft

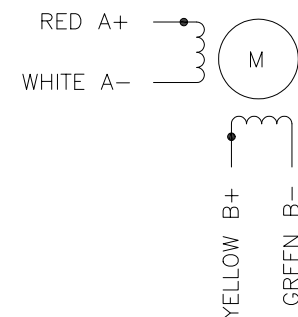


Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH968004B2.2	BIPOLAR PARALLEL	7,0	8	2700	3,6	0,34	1,7	4	1,8°
used for ISD12A1/XXX.101 (3 poles power supply) used for ISD12A1/XXX.301 (4 poles power supply)									

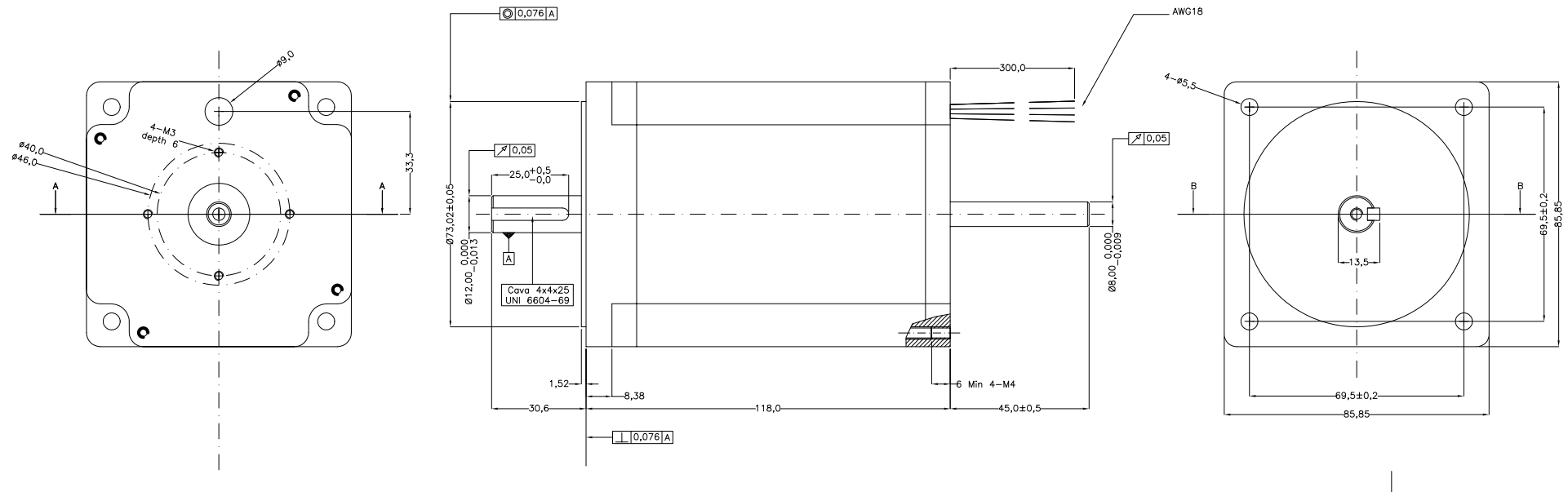
Wiring Diagram



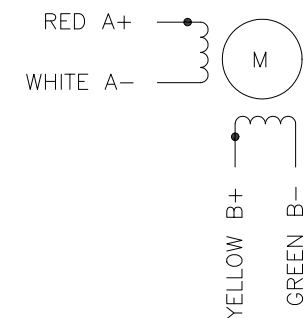
1,8° Size 86 mm - **8,7 Nm** high torque- **12 mm** primary keyed shaft

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1,8° Size 86 mm - **8,7 Nm** high torque- **12 mm** primary keyed shaft



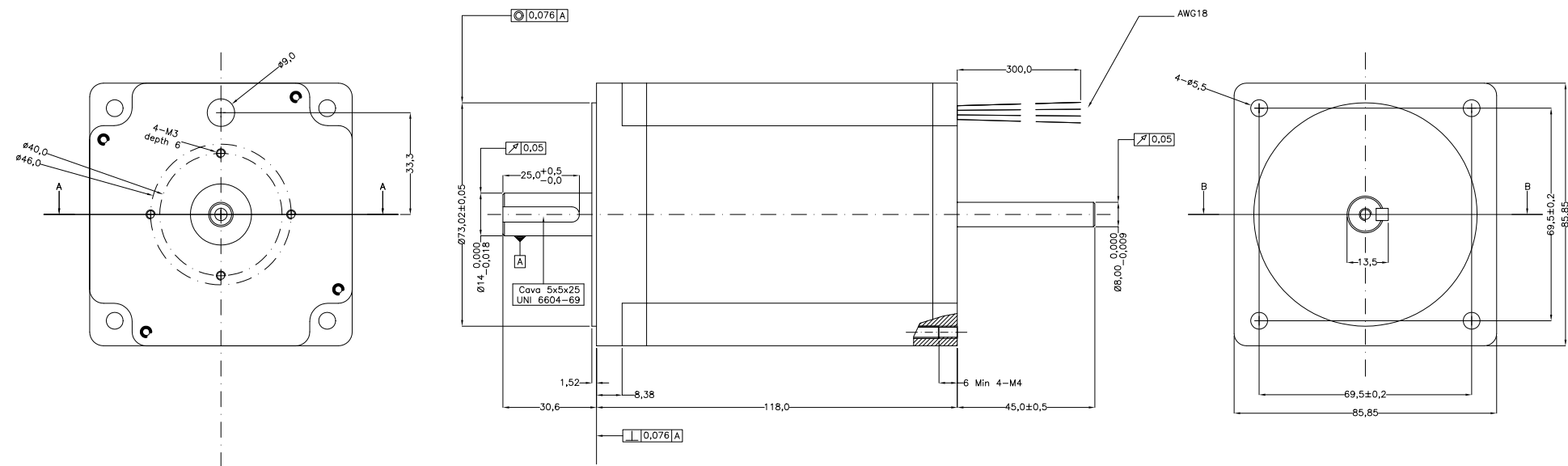
Wiring Diagram



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm ²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1188004B4.3	BIPOLAR PARALLEL	8,70	8,00	2700	2,9	0,31	3,8	4	1,8°
used for ISD1271/XXX.101 (3 poles power supply) used for ISD1271/XXX.301 (4 poles power supply)									

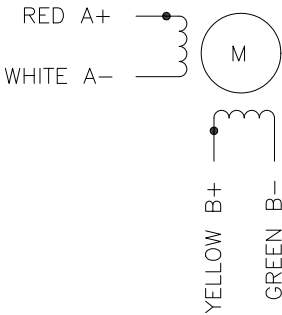
MMFL86STH1188004B5.2

1,8° Size 86 mm - **8,7 Nm** high torque- **14 mm** primary keyed shaft



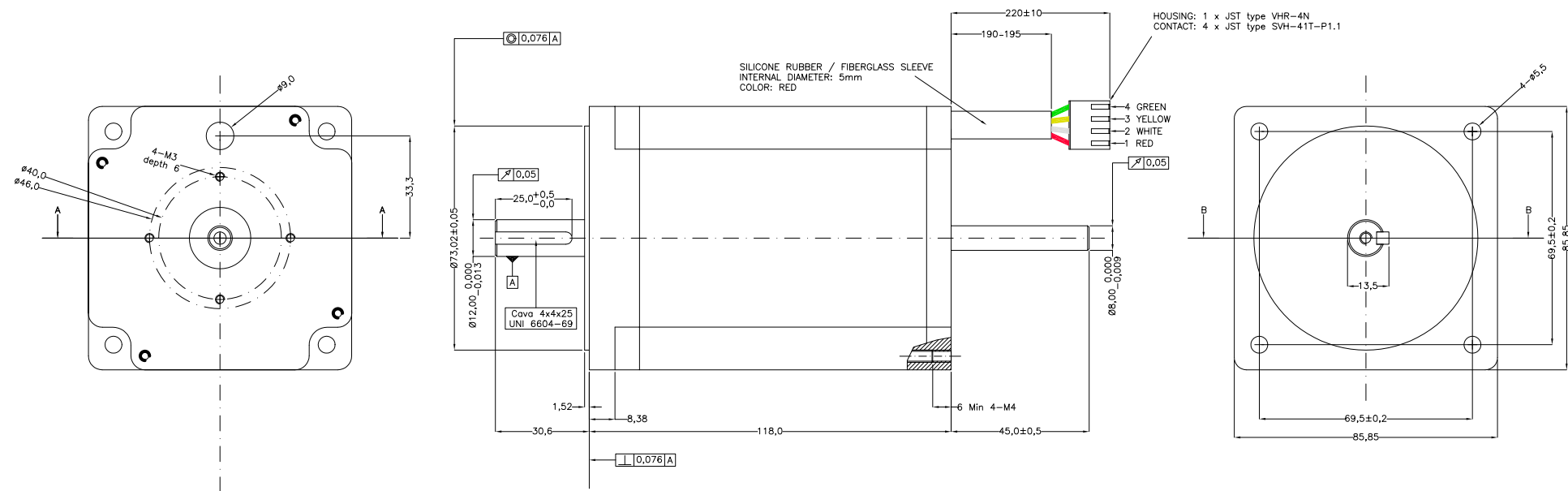
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1188004B5.2	BIPOLAR PARALLEL	8,70	8,00	2700	2,9	0,31	3,8	4	1,8°
used for ISD1271/XXX.131 (3 poles power supply) used for ISD1271/XXX.331 (4 poles power supply)									

Wiring Diagram



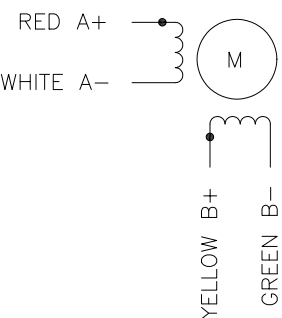
MMFL86STH1188004B6.2

1,8° Size 86 mm - **8,7 Nm** high torque- **12 mm** primary keyed shaft



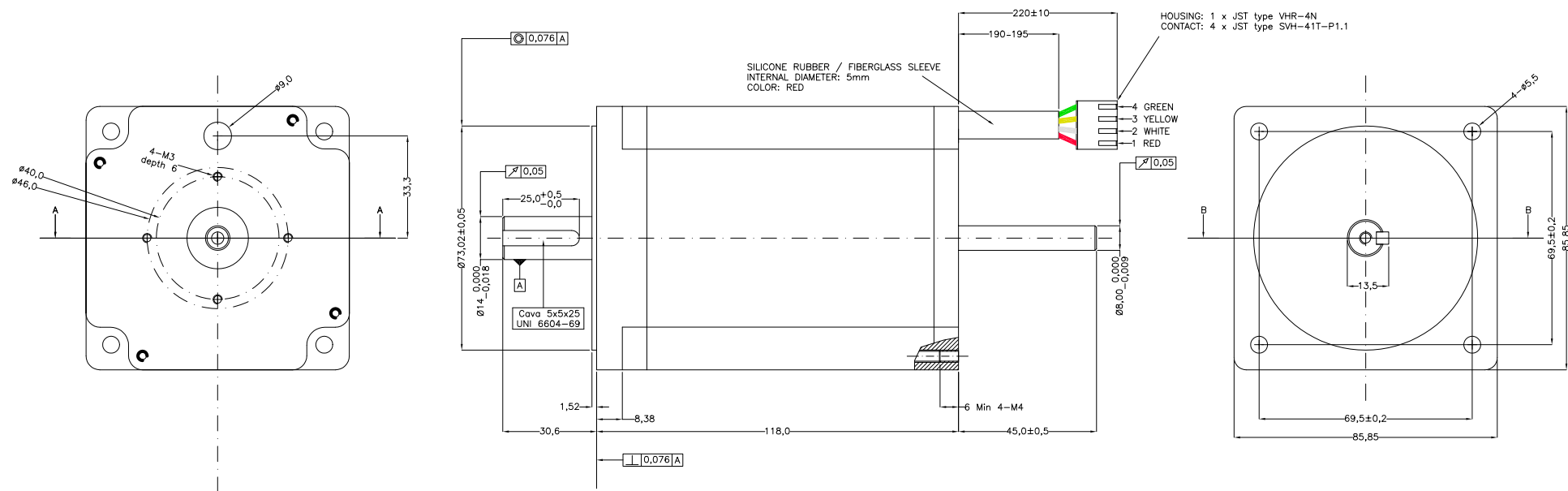
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1188004B6.2	BIPOLAR PARALLEL	8,70	8,00	2700	2,9	0,31	3,8	4	1,8°
used for ISD1271/XXX.101 (3 poles power supply) used for ISD1271/XXX.301 (4 poles power supply)									

Wiring Diagram



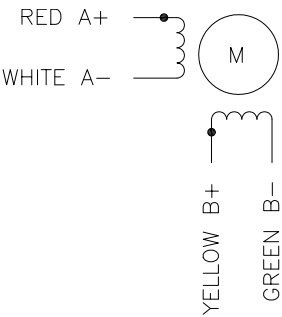
MMFL86STH1188004B7.2

1,8° Size 86 mm - **8,7 Nm** high torque - **14 mm** primary keyed shaft



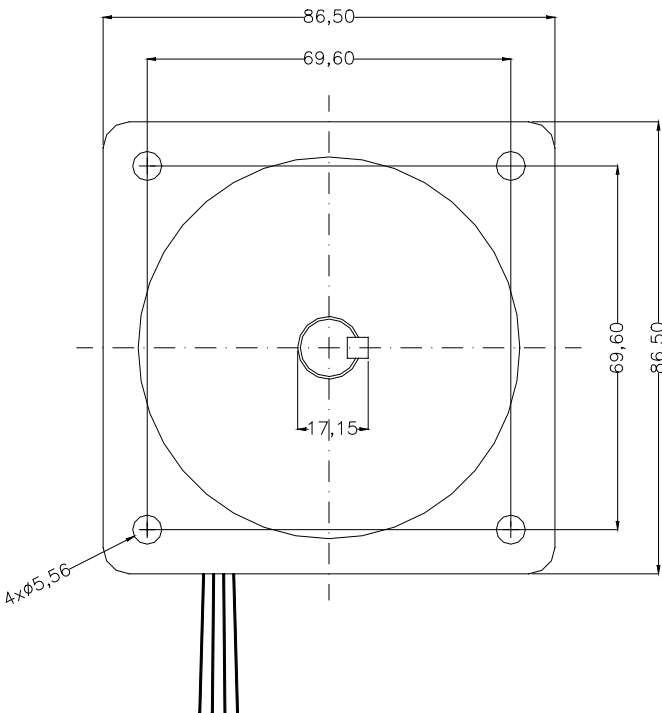
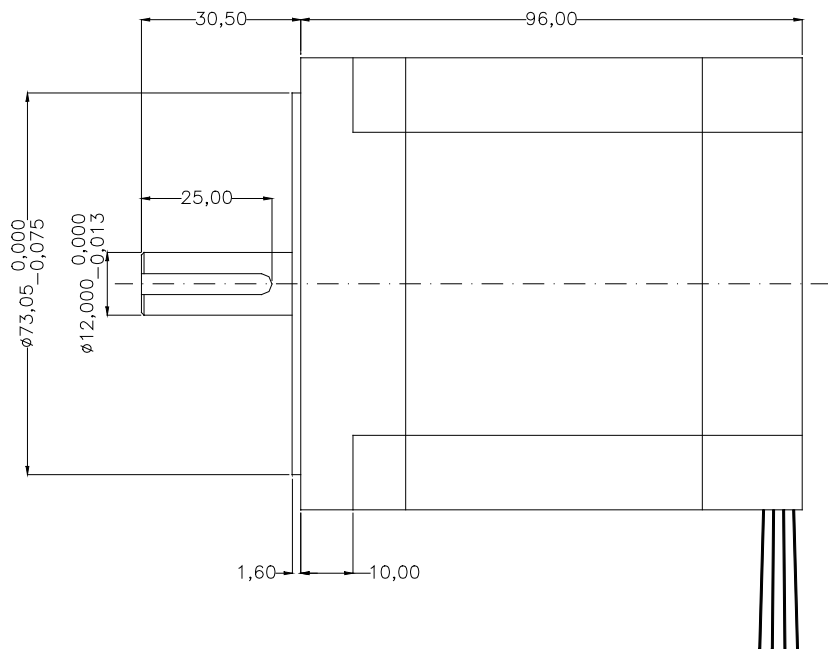
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1188004B7.2	BIPOLAR PARALLEL	8,70	8,00	2700	2,9	0,31	3,8	4	1,8°
used for ISD1271/XXX.131 (3 poles power supply) used for ISD1271/XXX.331 (4 poles power supply)									

Wiring Diagram



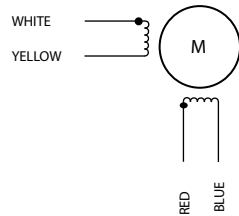
MMHS2003437 (Obsolete)

1,8° Size 86 mm - **5,5 Nm** high torque - **12 mm** primary keyed shaft



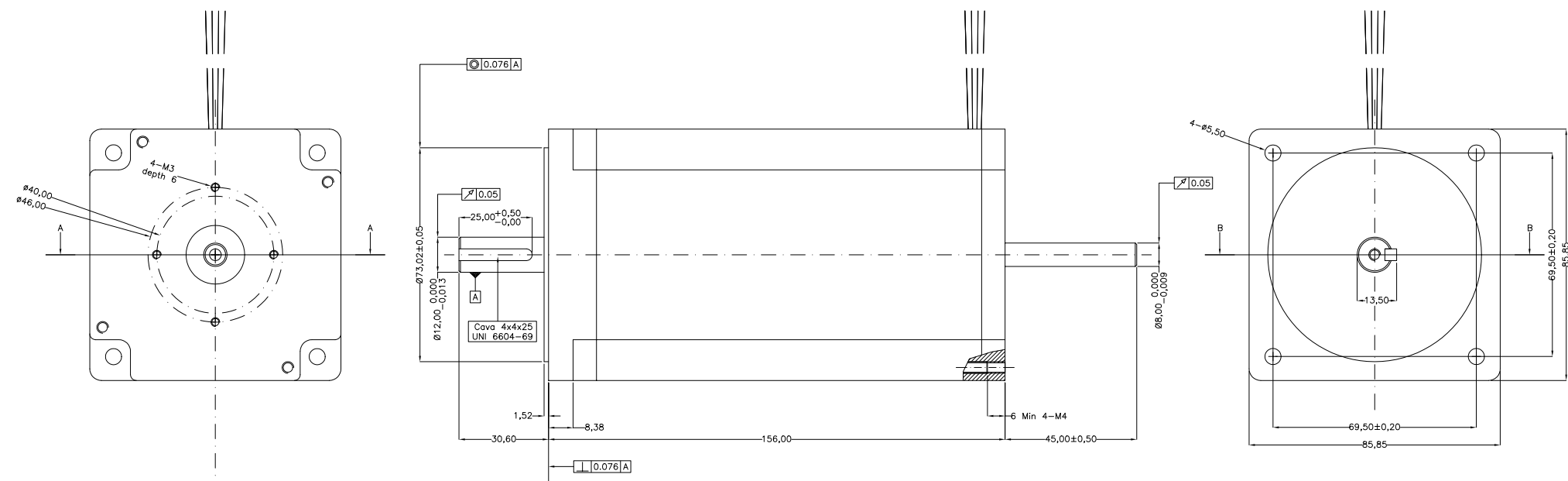
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHS2003437 (Obsolete)	BIPOLAR PARALLEL	5,5	8	3460	1,6	0,19	3	4	1,8°

Wiring Diagram



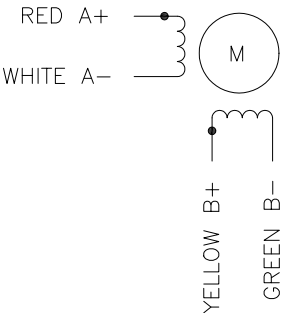
MMFL86STH1569904B2.2

1,8° Size 86 mm - **12 Nm** high torque- **12 mm** primary keyed shaft

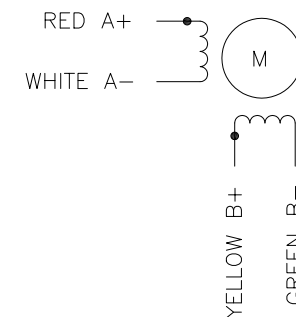


Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1569904B2.2	BIPOLAR PARALLEL	12,00	9,90	4000	2,9	0,21	5,3	4	1,8°
used for ISD1261/XXX.101 (obsolete)									

Wiring Diagram

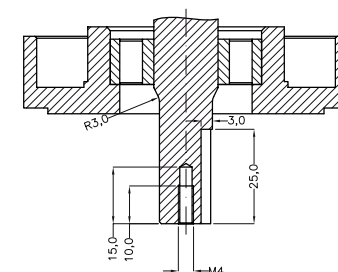


1,8° Size 86 mm - **12 Nm** high torque - **14 mm** primary keyed shaft



Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1569904B5.2	BIPOLAR PARALLEL	12,00	9,90	4000	2,9	0,21	5,3	4	1,8°
used for ISD1261/XXX.131 (3 poles power supply) used for ISD1261/XXX.331 (4 poles power supply)									

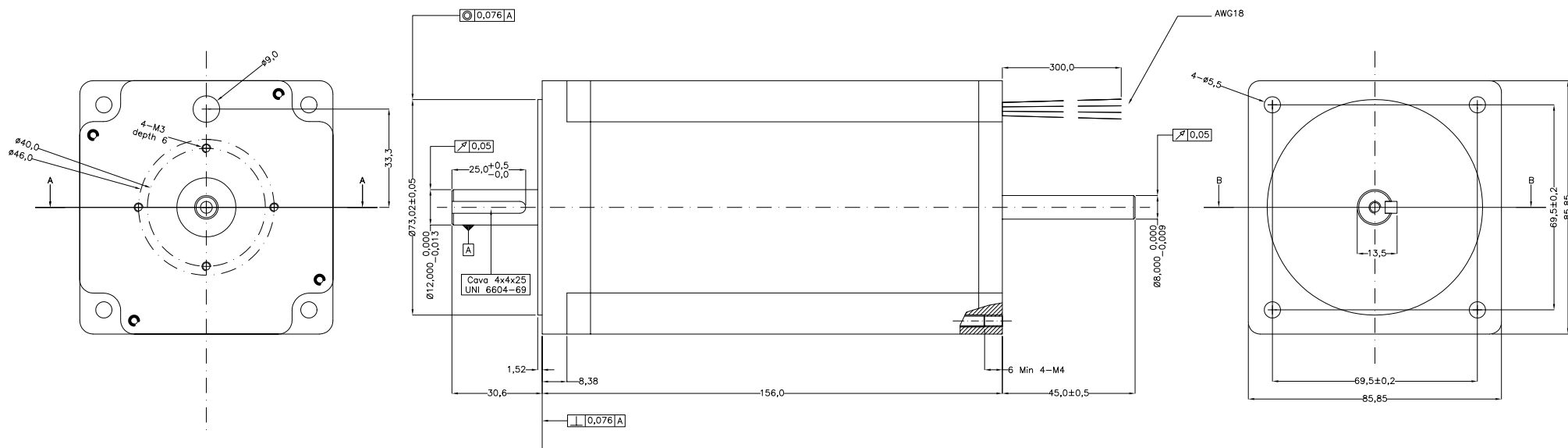
1,8° Size 86 mm - **12 Nm** high torque- **14 mm** primary keyed shaft



used for ISD1261/XXX.131 (3 poles power supply)
used for ISD1261/XXX.331 (4 poles power supply)

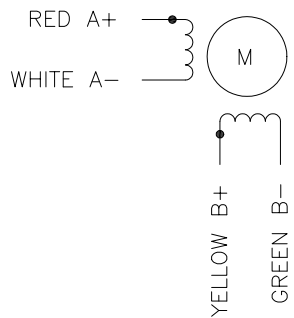
MMFL86STH1569904B7.3 (substitutes the MMFL86STH1569904B3 motor)

1,8° Size 86 mm - **12 Nm** high torque- **12 mm** primary keyed shaft



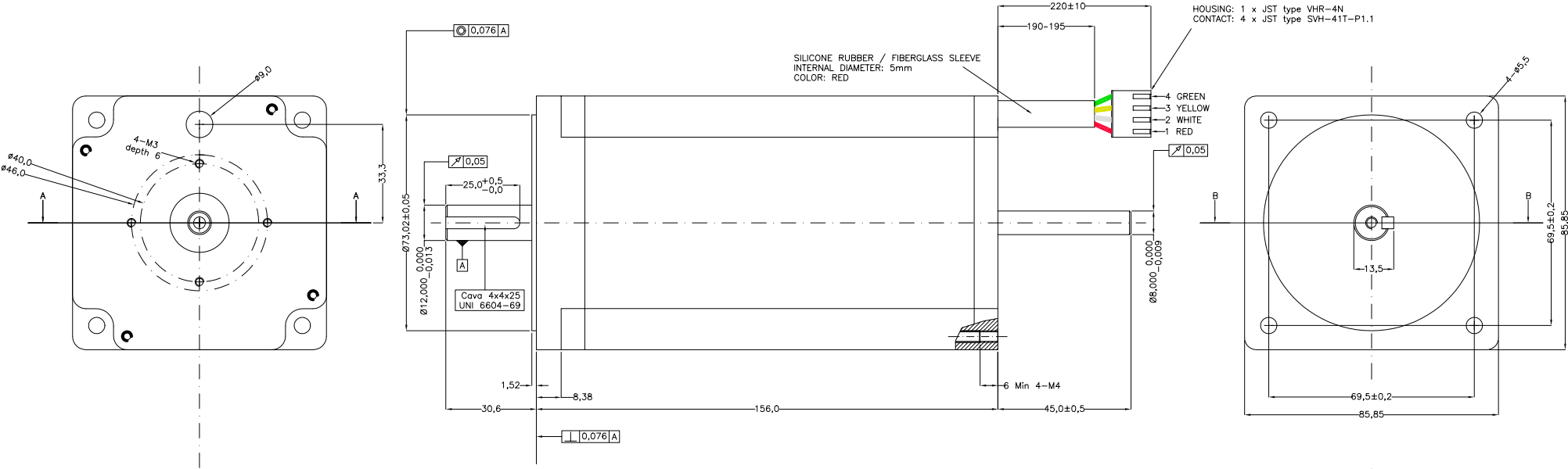
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1569904B7.3	BIPOLAR PARALLEL	12,00	9,90	4000	2,9	0,21	5,3	4	1,8°
used for ISD1261/xxx.101 (obsolete)									

Wiring Diagram



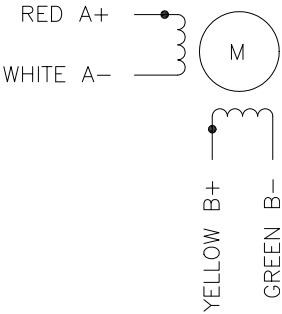
MMFL86STH1569904B8.2

1,8° Size 86 mm - **12 Nm** high torque- **12 mm** primary keyed shaft



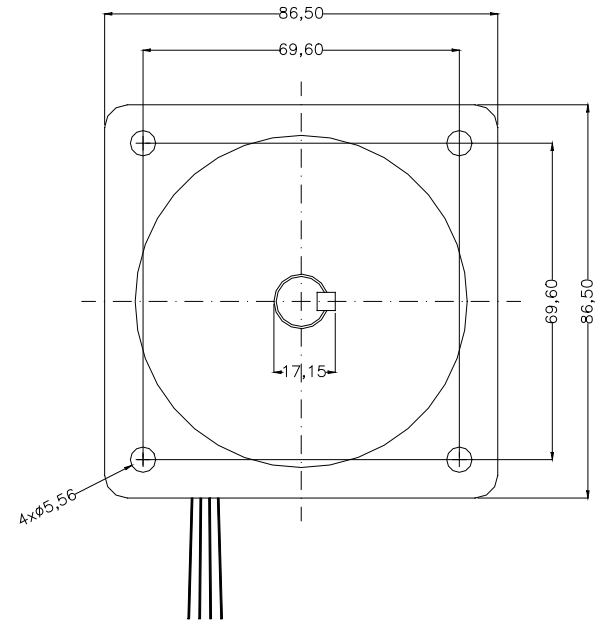
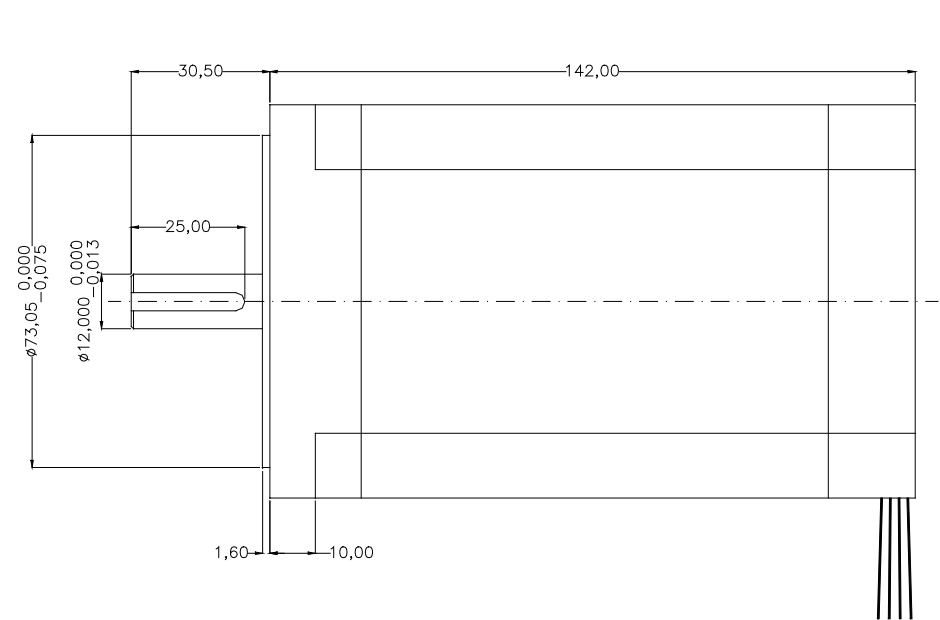
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1569904B8.2	BIPOLAR PARALLEL	12,00	9,90	4000	2,9	0,21	5,3	4	1,8°
used for ISD1261/XXX.101 (obsolete)									

Wiring Diagram



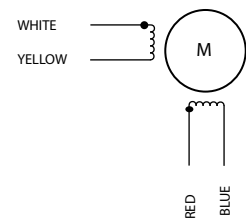
MMHS2003455(Obsolete)

1,8° Size 86 mm - **10 Nm** high torque - **12 mm** keyed single shaft



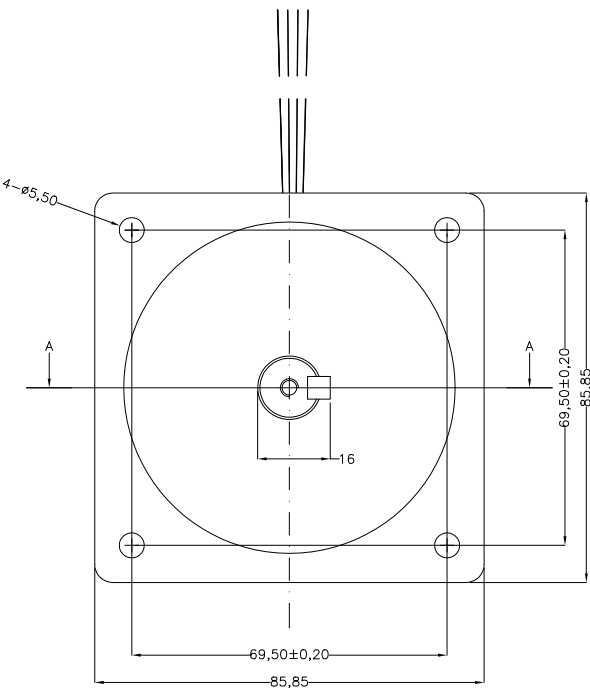
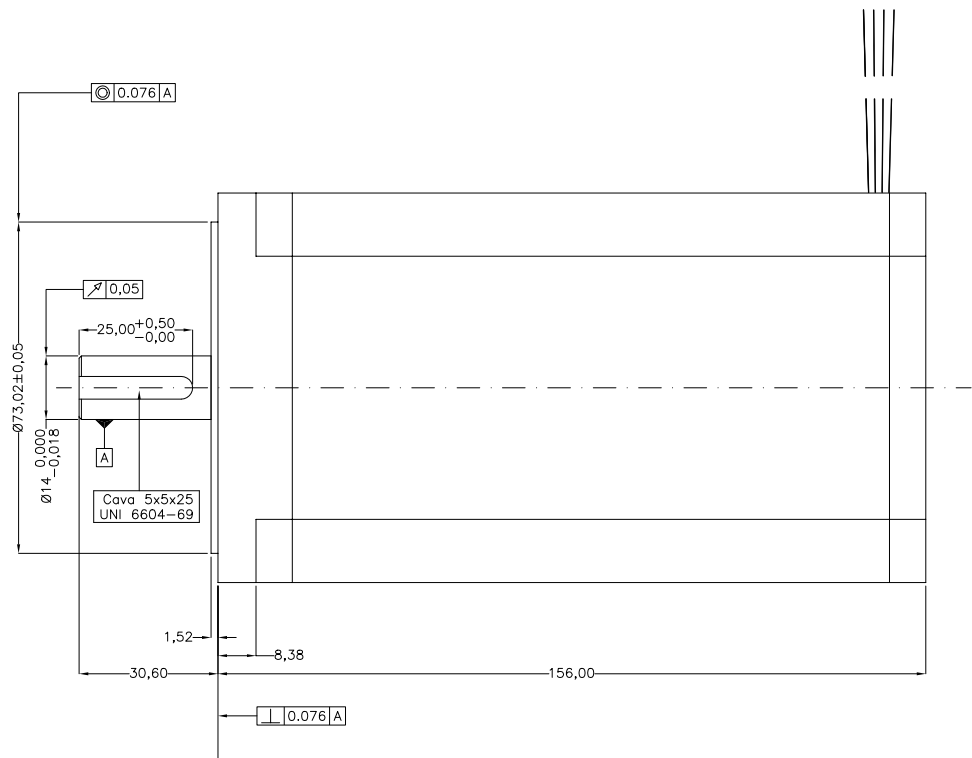
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMHS2003455 (Obsolete)	BIPOLAR PARALLEL	10	8	4900	2,6	0,29	4,9	4	1,8°

Wiring Diagram



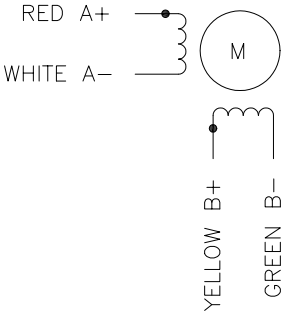
MMFL86STH1569904A.0

1,8° Size 86 mm - **12 Nm** high torque - **14 mm** single keyed shaft



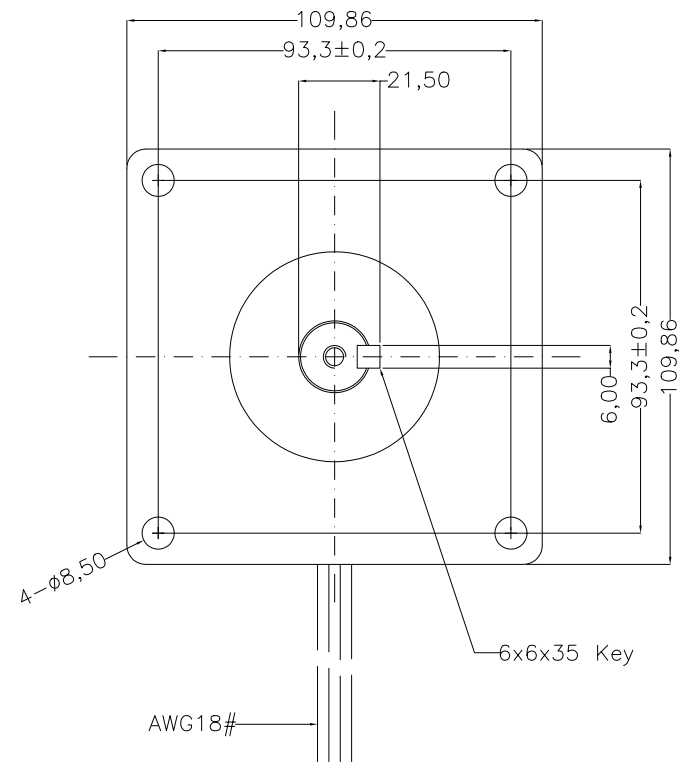
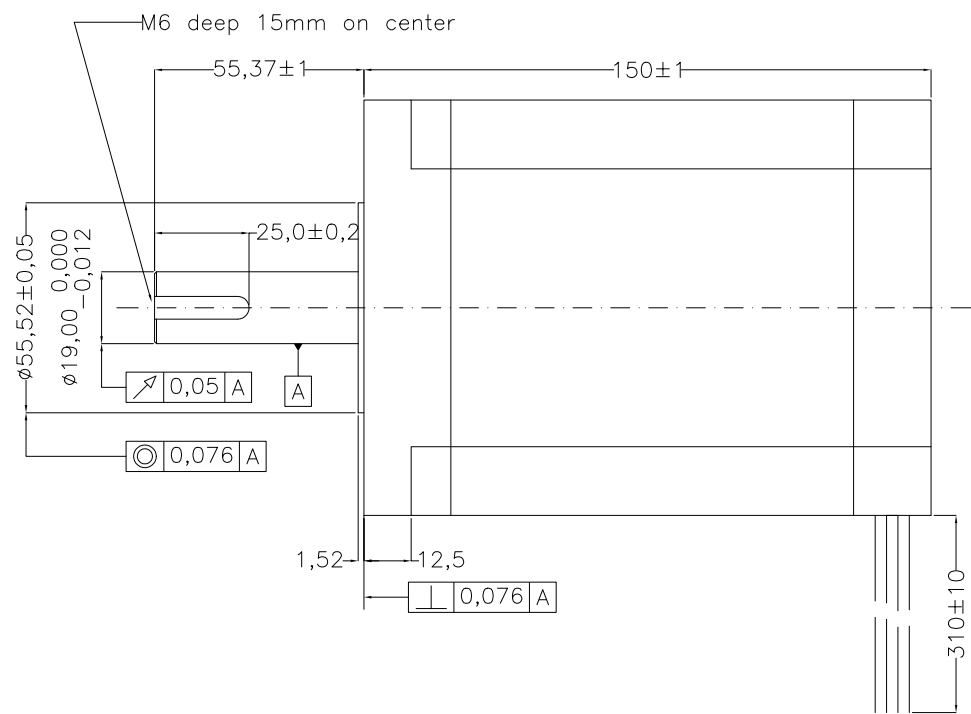
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL86STH1569904A.0	BIPOLAR PARALLEL	12,00	9,90	4000	2,9	0,21	5,3	4	1,8°

Wiring Diagram

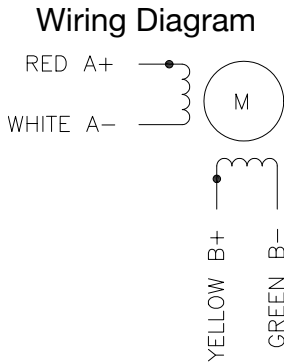


MMFL110STH1506504A.0

1,8° Size 110 mm - **21Nm** high torque - **19 mm** single keyed shaft

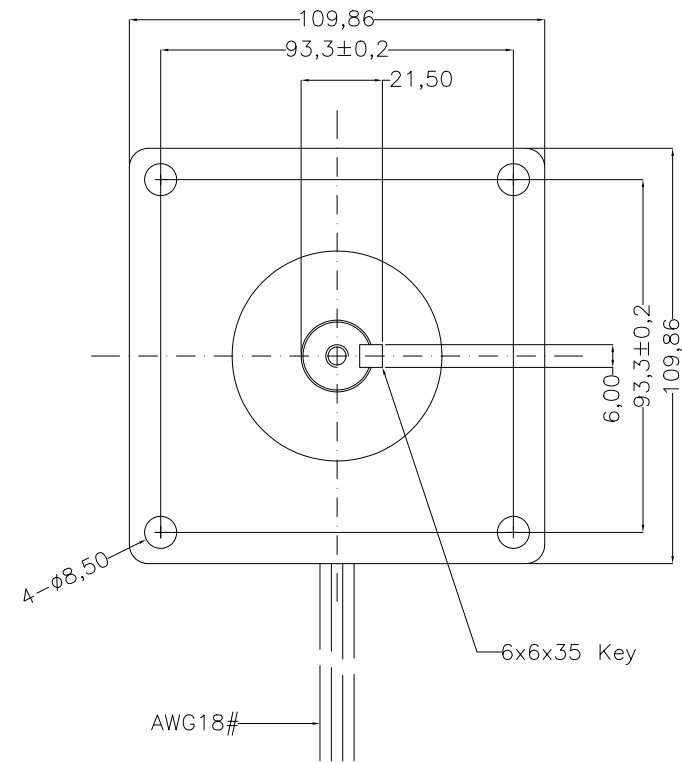
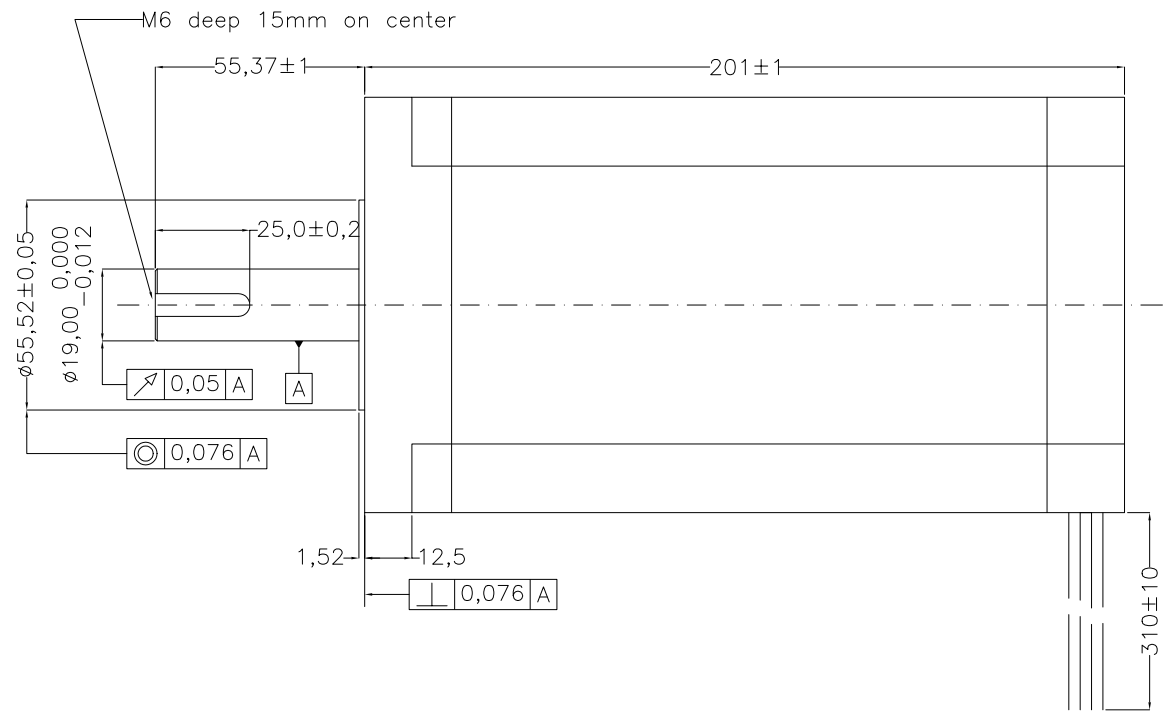


Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL110STH1506504A.0	BIPOLAR PARALLEL	21,00	6,50	10900	15	0,8	8,4	4	1,8°



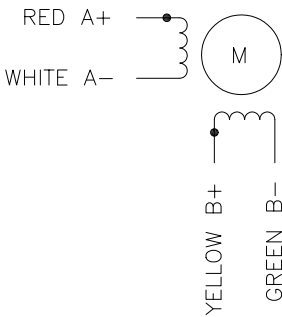
MMFL110STH2018004A.0

1,8° Size 110 mm - **28Nm** high torque - **19 mm** single keyed shaft



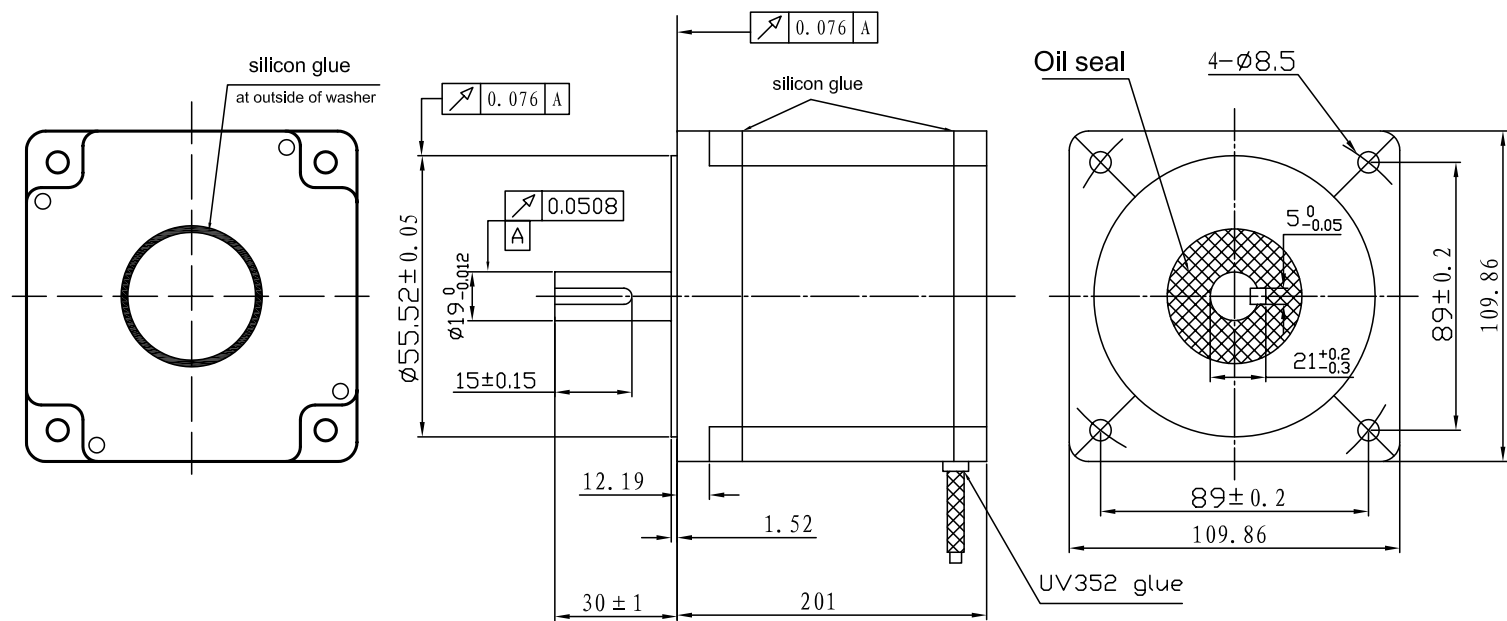
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL110STH2018004A.0	BIPOLAR PARALLEL	28,00	8,00	16200	12	0,67	11,7	4	1,8°

Wiring Diagram



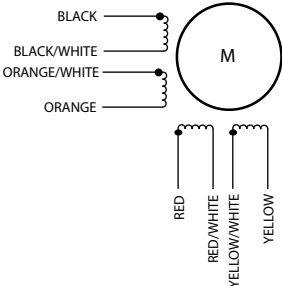
MMFL110STH201-6008A01 IP65 (Not standard motor)

1,8° Size 110 mm - **28,5 Nm** High Torque - **19 mm** single keyed shaft



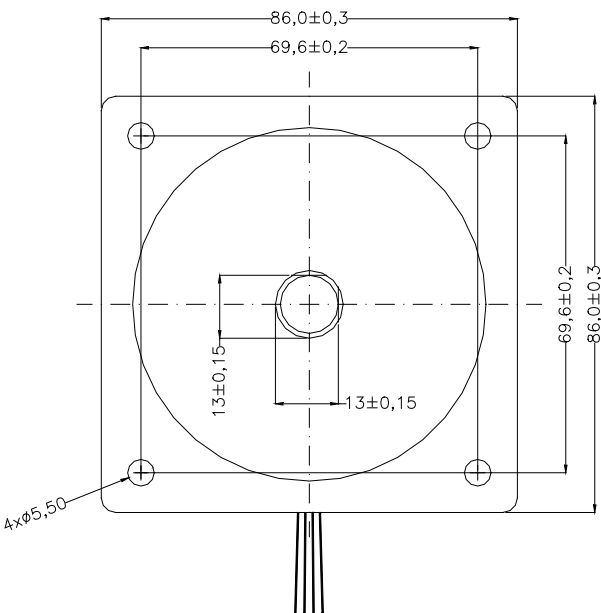
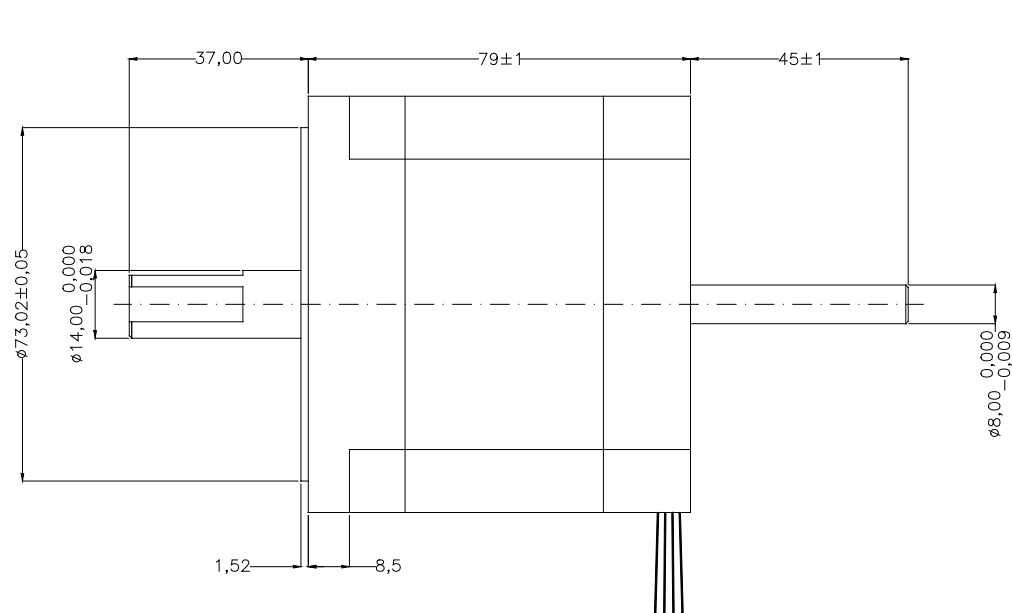
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
MMFL110STH201-6008A01IP65	BIPOLAR PARALLEL	28,50	8,50	16200	12	0,615	11,7	8	1,8°
	BIPOLAR SERIES	28,50	4,25	16200	48	2,46	11,7	8	1,8°
	UNIPOLAR	20,0	6	16200	12	1,23	11,7	8	1,8°
X: A=single shaft B=double shaft									

Wiring Diagram



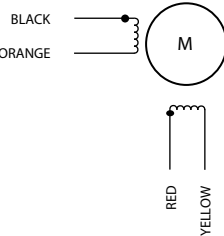
TS3684N81 (Obsolete)

1,8° Size 86 mm - **4,2 Nm** high torque - **14 mm** Faced Shaft



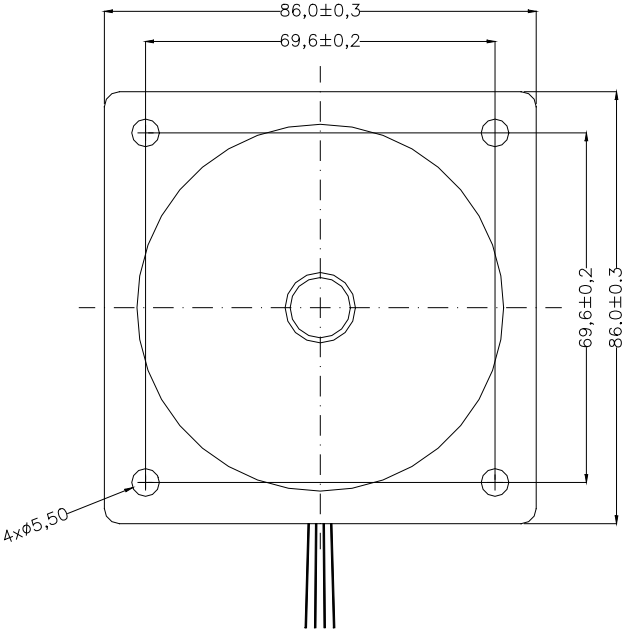
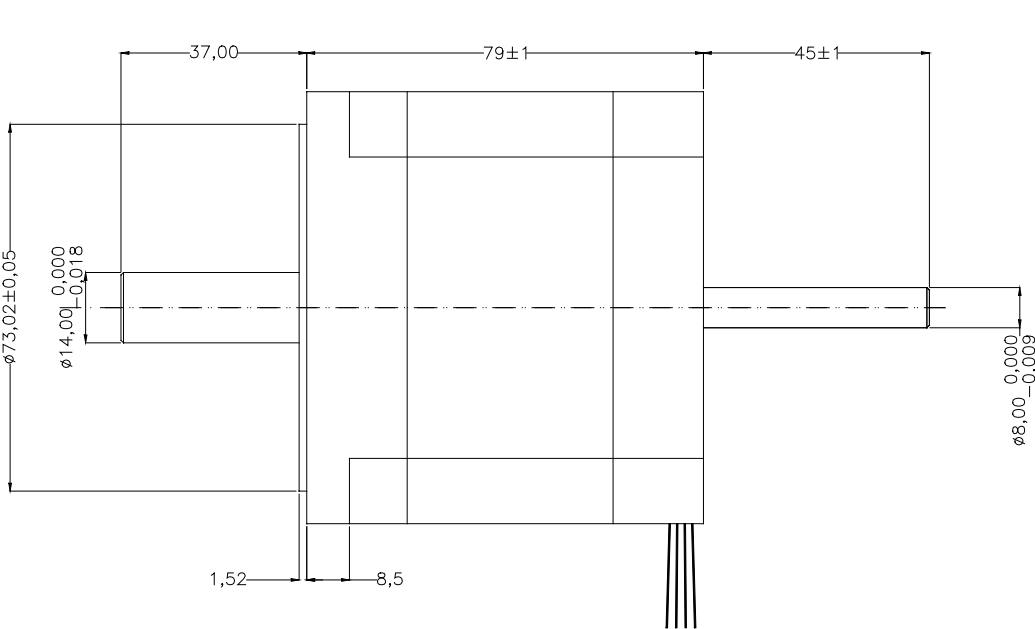
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohms)	Weight (Kg)	N. of leads	Step Angle
TS3684N81	BIPOLAR PARALLEL	4,2	5,8	1600	2,8	0,35	2,1	4	1,8°
Used for ISD1241.121 (obsolete)									

Wiring Diagram



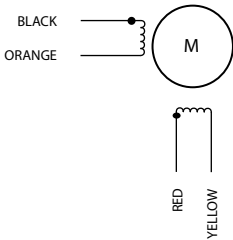
TS3684N93 (Customized)

1,8° Size 86 mm - 4,2 Nm high torque - **14 mm** primary round shaft



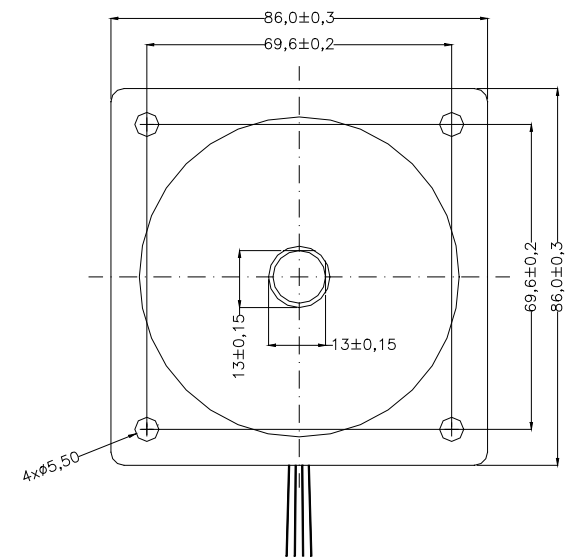
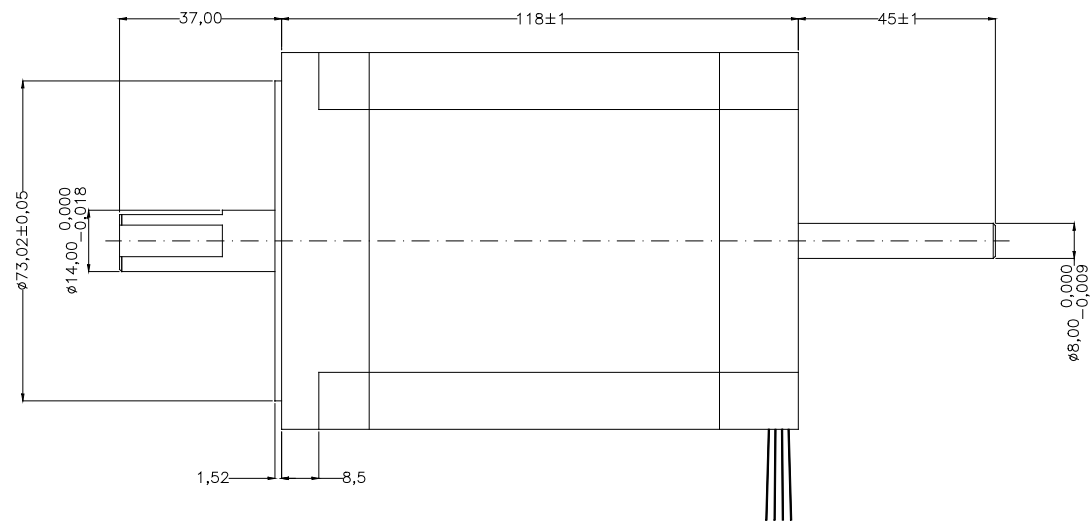
Type	Connections	Holding Torque (Nm)	Phase current (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
TS3684N93	BIPOLAR PARALLEL	4,20	5,8	1600	2,8	0,35	2,1	4	1,8°
Used for Customized ISD1241.111									

Wiring Diagram



TS3684N82 (Obsolete)

1,8° Size 86 mm - **7,9 Nm** high torque - **14 mm** primary faced shaft



Type	Connections	Holding Torque (Nm)	Phase current (Bipolar Parallel) (A)	Inertia Jm (gcm²)	Phase inductance (mH)	Resistance (ohm)	Weight (Kg)	N. of leads	Step Angle
TS 3684 N82	BIPOLAR PARALLEL	7,9	5,8	3200	5,0	0,5	3,5	4	1,8°
Used for ISD1251/CAN.121(obsolete)									

Wiring Diagram

