

高精度通用型 行星式減速機

Universal High-precision Planetary
Gear Reducers

產品特點

Characteristics

高定位精度、低噪音

High-positioning accuracy and low noise

內部齒輪採用高級鎳鎢鉬合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒面光滑，耐磨性佳，精度高。

Inner gears are made of SNCM alloys. Deep carburizing is treated first and ground comes next. These procedures make gear surface smoother, endure higher abrasion resistance and perform higher accuracy.

高剛性

High torsional rigidity

輸出端採用歐製雙滾錐軸承支撐，可承受更大之軸向和徑向負載。箱體內環齒及行星托架皆為一體式結構，剛性佳。

Output shaft is supported with European-made double-row tapered roller bearings and sustains higher axial and radial loads. Ring gear and carrier are one-piece structure to obtain excellent torsional rigidity.

高起動

High dynamics

行星式結構的高精度，低慣性矩及平衡特性，配合伺服馬達驅動，可達到高起動的特性。

Good balance between the high accuracy and the low moments of inertia is highlighted in the planetary gear structure. High dynamics are achievable in coordination with the transmission of servo motors.

易安裝

Easy to install

減速機聯接板及輸入軸孔採彈性設計，能與各廠牌的伺服馬達相結合。

Input shaft bushings and connection plates come in various dimensions and can be compatible with all servo motors.

長壽命、免保養

Long service life and maintenance-free

採用德製優質人工合成潤滑油，流動性佳，富含極佳抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換機油。

採用特製高品質、耐熱、耐磨不易變質之油封，減速機密封性佳。

Premium Germany-made synthetic oil is adopted with high circulation and anti-ultra-pressure additive. Components are thoroughly protected and lubricated in the gearbox. No oil change is required.

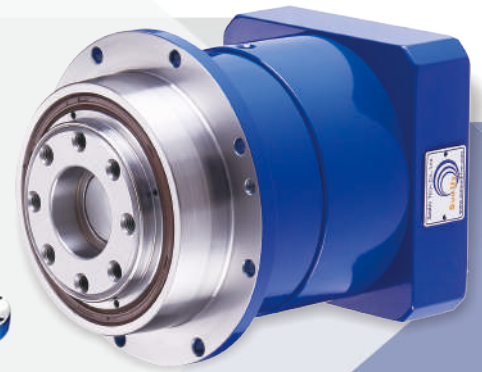
Stable, high-quality, heat-resistant and wear-resistant seals are in use to secure airtightness.

盤面式輸出軸，行星托架與法蘭面為一體式結構，確保與搭配件之同心度與結合強度。結構設計緊湊，適用於有限空間應用

Output shaft is designed with the flange design. Carrier and flange come in one-piece structure to ensure both the concentricity and bong strength of within the accessories. Compact design is perfect for the limited space.



DGS



DG

▶ 電腦數控分度盤
CNC rotary table

▶ 自動交換盤
Automatic pallet changer

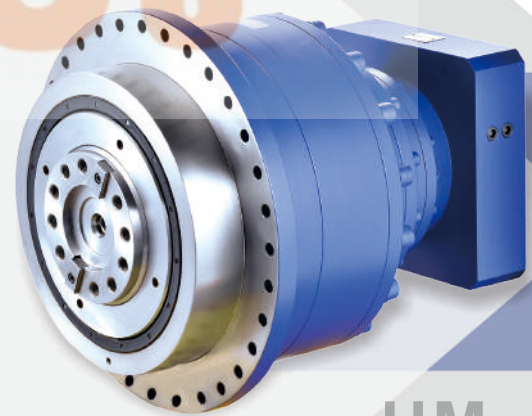
▶ 換刀機構
Automatic tool changer

▶ 醫療產業
Medical industry

▶ 半導體機械設備 / 光電面板
TFT-LCD & semi-conductor mechanical equipment

輸出端採用四顆行星齒輪傳動，加大軸承設計，可負荷更大的扭矩剛性和彎曲力矩，適用於重負荷，高精度，耐久性的機械

Four planetary gears and larger bearings are added onto the output shaft. Higher torsional rigidity and bending torque are acceptable. Compatible with heavy-duty, high-accuracy machinery.



UM

▶ 數控重型龍門銑床
CNC gantry type milling machine

▶ 數控落地搪床
CNC planning boring machine

▶ CNC 重型臥車.立車
CNC heavy duty horizontal & vertical lathe

▶ 重型CNC彎管機
Heavy tube bending machine

▶ 塑膠押出成型機
Plastic extruder molding machine

▶ 全電式塑膠射出成型機
All-electric injection molding machine

▶ 風力發電機
Wind turbine

▶ 潛遁機
Tunnel boring machine

▶ 重型工程機械
Heavy construction engineering machine

規 格 Size			DG164	DG290	DG310	DG440	DG500	DG655	DG785	
最大加速扭矩 T_{2B} (1) Output Torque	Nm	減速比 i								
		★ 4/5	58	145	360	710	1700	3600	6100	
		7	55	125	335	650	1650	3350	5050	
		10	36	100	260	500	1300	2000	3500	
緊急停止扭矩 T_{2Not} (2) Emergency Stop Torque	Nm	★ 4/5	115	310	700	1260	3250	8800	15000	
		7	105	270	625	1150	2800	8300	13650	
		10	100	220	500	900	2300	5000	10500	
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	★ 4/5	30	80	190	375	800	2250	3300	
		7	28	75	175	340	750	1830	2820	
		10	18	60	125	265	700	1050	1750	
減速比 i		單段 1-Stage		4/5/7/10						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	4/5	3300	3000	2300	2000	1500	1200	1000	
		7/10	4000	3200	2600	2500	2200	1700	1500	
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	4~10	6000	6000	4500	4000	3500	2500	2200	
軸向負荷力 F_{aMax} (3) Axial Load	N	4~10	1650	2200	4200	6150	10000	33000	50000	
精密背隙 Reduced Backlash	arcmin	4~10	≤2	≤1	≤1	≤1	≤1	≤2	≤2	
標準背隙 Standard Backlash	arcmin	4~10	≤4	≤3	≤3	≤3	≤3	≤3	≤3	
扭轉剛性 Torsional Rigidity	Nm/ arcmin	4~10	12	32	83	155	580	950	1380	
滿載時使用效率 Efficiency with Full Load	%	4~10	≥97							
使用壽命 L_{h2} Service Life	h	4~10	20000							
重量 Weight	kg	4~10	1.6	4.0	7.0	14.5	31	62	83.5	
噪音值 (4) Noise Level	dB		≤60	≤62	≤65		≤66	≤68		
使用溫度範圍 Permissible Gear Reducer Temp	°C		- 10°C ~ + 90°C							
防護等級 Protection Class			IP 64							
潤滑油 Lubrication			人工合成潤滑油 Synthetic oil viscosity				ISO VG220			
轉動慣量 J_1 Mass Moments of Inertia	kg cm ²	4	0.32	0.65	4.40	9.10	30.45	-	-	
		5	0.31	0.63	4.33	8.90	28.85	52.92	108.05	
		7	0.29	0.62	4.25	8.52	28.15	40.06	100.20	
		10	0.28	0.60	4.23	8.45	27.77	39.52	97.80	

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。 Note (1) Data are measured at the frequency under 1000 times per hour. Contact us if your data are beyond the presented table above.

註(2)堪用期內可作1000次之動作。 Note (2) Operation can be up 1000 times in product life.

註(3)輸出轉速100rpm作用於輸出軸中心。 Note (3) Act at the center of output shaft in 100 rpm.

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。 Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm; 1-meter distance and free load operation.

• DG655及DG785無4之減速比。

• 如您所需之減速比，非表內所有，請與本公司洽詢。

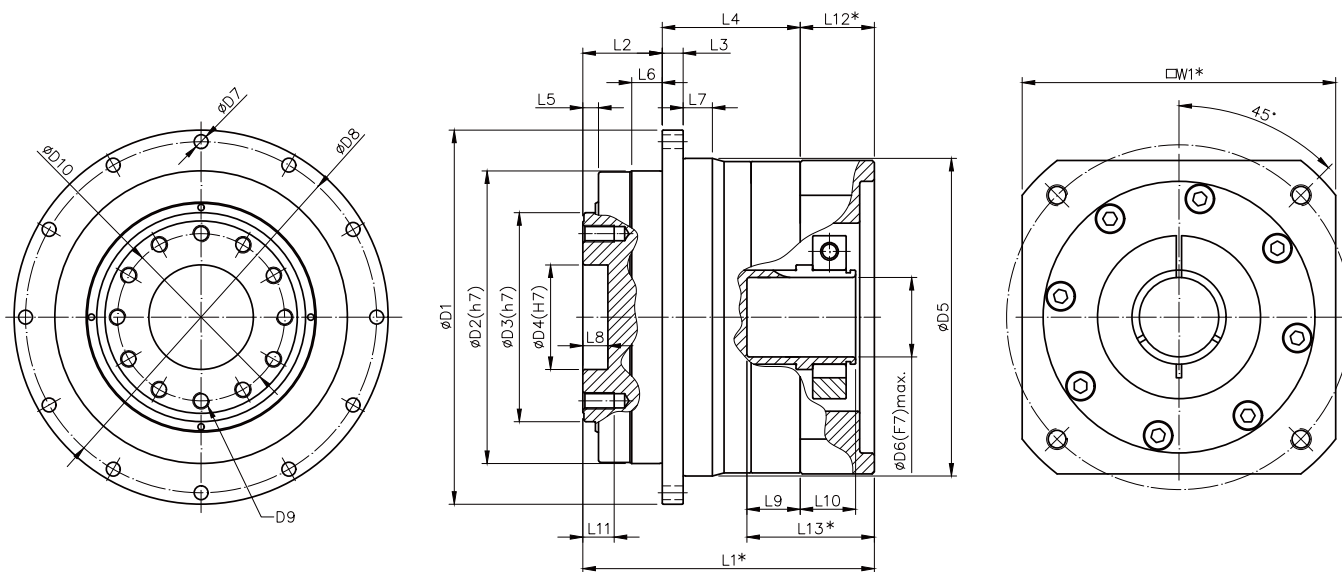
• 若為連續運轉使用，請與本公司洽詢。

• Ratio 4 is not available for DG655 and DG785.

• If any customized ratios are unavailable from above, please contact us for more.

• Consult us if your mode is continuous operation.

DG 尺寸 [mm] Dimensions [mm]



DG

規格 Size	DG164	DG290	DG310	DG440	DG500	DG655	DG785
※□W1 min.	70	95	120	152	210	190	240
∅D1	86	118	145	179	247	300	330
∅D2(h7)	64	90	110	140	200	255	285
∅D3(h7)	40	63	80	100	160	180	200
∅D4(H7)	20	31.5	40	50	80	100	100
∅D5	70	95	120.5	152.5	212.5	255	285
∅D6(F7)max.	14	19/24	32	38	48	55	60
∅D7	4.5	5.5	5.5	6.6	9	13.5	13.5
∅D8	79	109	135	168	233	280	310
D9	M5*P0.8	M6*P1	M6*P1	M8*P1.25	M10*P1.5	M16*P2	M20*P2.5
∅D10	31.5	50	63	80	125	140	160
※L1	82	109	133.75	140.2	180	229	248.5
L2	19.5	30	29	38	50	66	75
L3	4	7	8	10	12	18	20
L4	40	51	71.25	69.2	84	122.5	123.5
L5	4	7	7	7.5	8.5	13.5	16.5
L6	8	10	10	18	20	28	35
L7	7	8	9	14	15	20	21
L8	8	12	12	12	16	20	20
L9	9	15	30.5	29.2	37.5	44.5	47
L10	18	22.5	22.5	25.8	45	40	39
L11	7	10	12	15	20	25	30
※L12	22.5	28	33.5	33	46	47	50
※L13	31.5	43	64	62.2	83.5	90.5	97

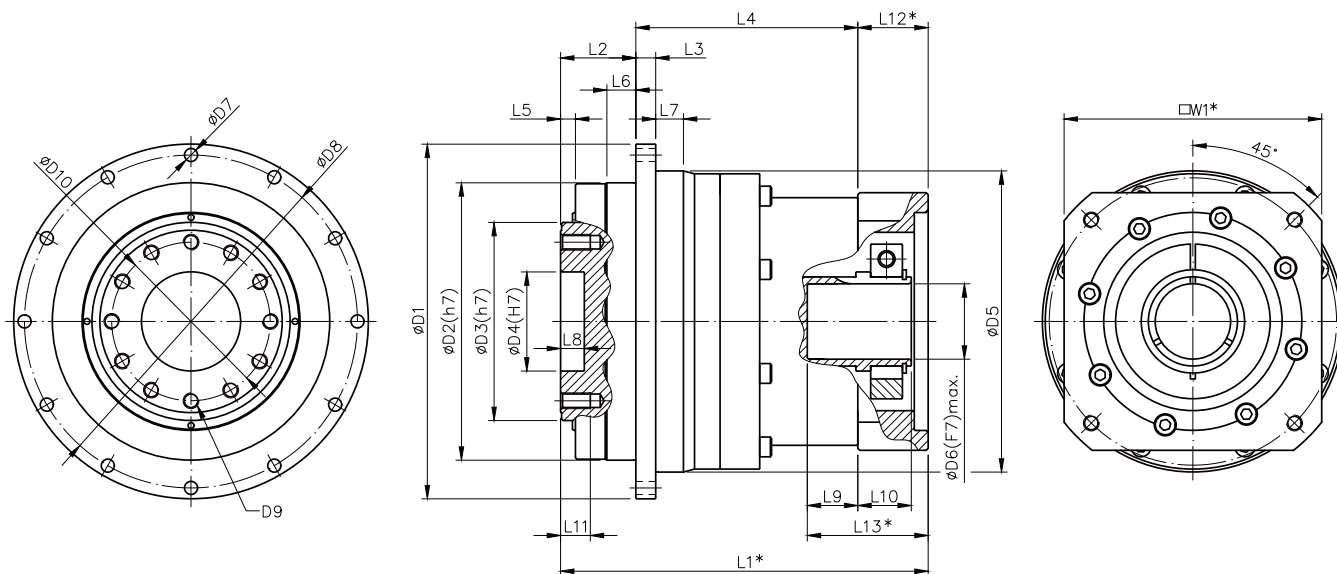
· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
 · 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
 · We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

規 格 Size		減速比 i		DG164	DG290	DG310	DG440	DG500	DG655	DG785
最大加速扭矩 $T_{2B}^{(1)}$ Output Torque	Nm	★16/20/25/28/35/40/50		58	145	360	760	1650	3600	6100
		21		42	102	310	610	1400	3450	5050
		31		42	115	300	630	1600	3600	6000
		61		46	115	285	560	1400	2850	4820
		70		55	130	335	700	1500	3350	5050
		91		33	85	255	510	1310	2800	4810
		100		36	100	260	550	1410	2800	4810
緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque	Nm	★16/20/25/28/35/40/50		115	310	700	1260	3250	8500	14500
		21		105	260	610	1050	2800	8300	12100
		31		105	260	610	1100	2800	8500	14000
		61		105	240	570	930	2700	7300	10500
		70		105	270	625	1100	2750	8300	13650
		91		100	220	490	850	2200	5000	10500
		100		100	220	500	900	2300	5000	10500
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	★16/20/25/28/35/40/50		40	92	215	410	1080	2450	3800
		21		30	82	175	360	860	2150	3300
		31		30	72	180	370	1250	2250	3720
		61		32	72	175	370	1120	1620	2910
		70		28	88	180	405	900	1830	2820
		91		16	40	110	230	710	1600	2910
		100		18	60	125	265	800	1600	2910
減速比 i		雙段 2-Stage	16/20/21/25/28/31/35/40/50/61/70/91/100							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	16~40		4000	3500	2800	3000	2500	2000	1500
		50~61		5000	4000	3000	3200	3000	2400	2000
		70~100		5500	4500	3500	3800	3300	2500	2200
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	16~100		6000	6000	5000	5000	4000	3500	3500
軸向負荷力 $F_{aMax}^{(3)}$ Axial Load	N	16~100		1650	2200	4200	6150	10000	33000	50000
精密背隙 Reduced Backlash	arcmin	16~100		≤2	≤1	≤1	≤1	≤1	≤2	≤2
標準背隙 Standard Backlash	arcmin	16~100		≤4	≤3	≤3	≤3	≤3	≤3	≤3
扭轉剛性 Torsional Rigidity	Nm/ arcmin	16~100		12	32	83	155	565	900	1380
滿載時使用效率 Efficiency with Full Load	%	16~100		≥94						
使用壽命 L_{h2} Service Life	h	16~100		20000						
重量 Weight	kg	16~100		1.7	4.2	7.2	15	35	60	80
噪音值 $^{(4)}$ Noise Level	dB			≤60	≤62	≤65		≤66	≤68	
使用溫度範圍 Permissible Gear Reducer Temp	°C			- 10°C ~ + 90°C						
防護等級 Protection Class				IP 64						
潤滑油 Lubrication				人工合成潤滑油 Synthetic oil viscosity				ISO VG220		
轉動慣量 J_1 Mass Moments of Inertia	kg · cm ²	16		0.19	0.31	0.63	4.35	9.30	-	-
		20		0.16	0.30	0.61	4.28	9.10	29.00	30.05
		21		0.17	0.31	0.62	4.30	9.05	29.10	30.08
		25		0.16	0.30	0.61	4.28	9.10	29.00	30.10
		28		0.20	0.28	0.60	4.10	8.75	-	-
		31		0.18	0.32	0.63	4.30	9.12	29.05	29.00
		35		0.15	0.28	0.60	4.10	8.75	28.30	28.48
		40		0.12	0.27	0.58	4.05	8.60	-	-
		50		0.12	0.27	0.58	4.05	8.60	27.95	28.07
		61		0.13	0.28	0.59	4.10	8.70	28.05	28.07
		70		0.12	0.26	0.57	4.05	8.60	27.95	28.07
91		0.11	0.27	0.58	4.08	8.65	27.90	28.05		
100		0.10	0.25	0.57	4.05	8.55	27.85	28.05		

- 註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2)堪用期內可作1000次之動作。
 註(3)輸出轉速100rpm作用於輸出軸中心。
 註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
- Note (1) Data are measured at the frequency under 1000 times per hour. Contact us if your data are beyond the presented table above.
 Note (2) Operation can be up 1000 times in product life.
 Note (3) Act at the center of output shaft in 100 rpm.
 Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm; 1-meter distance and free load operation.
- DG655及DG785無16、28、40之減速比。
 - 如您所需之減速比，非表內所有，請與本公司洽詢。
 - 若為連續運轉使用，請與本公司洽詢。
 - Ratio 16, 28 and 40 are unavailable for DG655 and DG785.
 - If any customized ratios are unavailable from above, please contact us for more.
 - Consult us if your mode is continuous operation.

DG 尺寸 [mm] Dimensions [mm]



DG

規格 Size	DG164	DG290	DG310	DG440	DG500	DG655	DG785
※□W1 min.	70	95	100	130	150	210	210
∅D1	86	118	145	179	247	300	330
∅D2(h7)	64	90	110	140	200	255	285
∅D3(h7)	40	63	80	100	160	180	200
∅D4(H7)	20	31.5	40	50	80	100	100
∅D5	70	95	120.5	152.5	212.5	255	285
∅D6(F7)max.	14	19	24	32/38	38	48	48
∅D7	4.5	5.5	5.5	6.6	9	13.5	13.5
∅D8	79	109	135	168	233	280	310
D9	M5*P0.8	M6*P1	M6*P1	M8*P1.25	M10*P1.5	M16*P2	M20*P2.5
∅D10	31.5	50	63	80	125	140	160
※L1	108.5	139	152.75	187	208.5	300.5	310
L2	19.5	30	29	38	50	66	75
L3	4	7	8	10	12	18	20
L4	63.5	81	96.75	118.5	125	187.5	190
L5	4	7	7	7.5	8.5	13.5	16.5
L6	8	10	10	18	20	28	35
L7	7	8	9	14	15	20	21
L8	8	12	12	12	16	20	20
L9	15.5	14.5	20.5	30.5	28.5	38.8	38.8
L10	18	21	21	22.5	26.5	33.2	33.2
L11	7	10	12	15	20	25	30
※L12	22.5	28	27	30.5	33.5	47	45
※L13	38	42.5	47.5	61	62	85.2	83.8

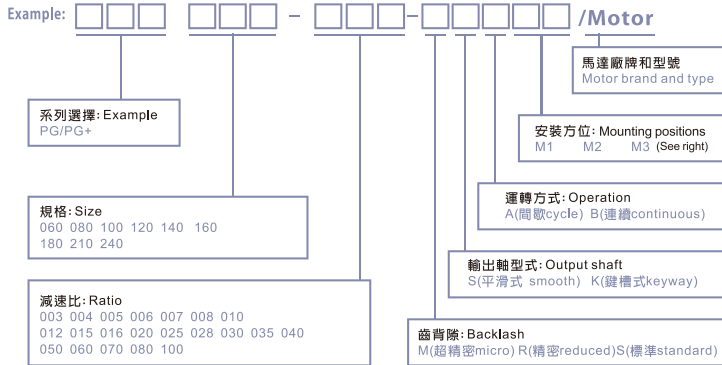
· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
· We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

高精度通用型行星式減速機

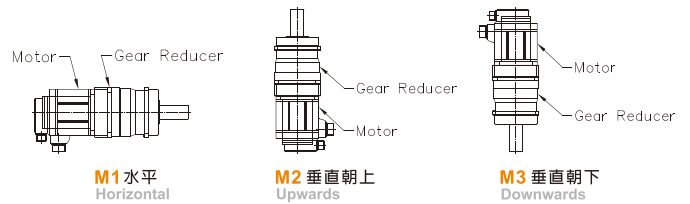
Universal high-precision planetary gear reducers

選用範列: **P G B 0 6 0 - 0 0 5 - R S A M 1** /MITSUBISHI-HC-KFS43

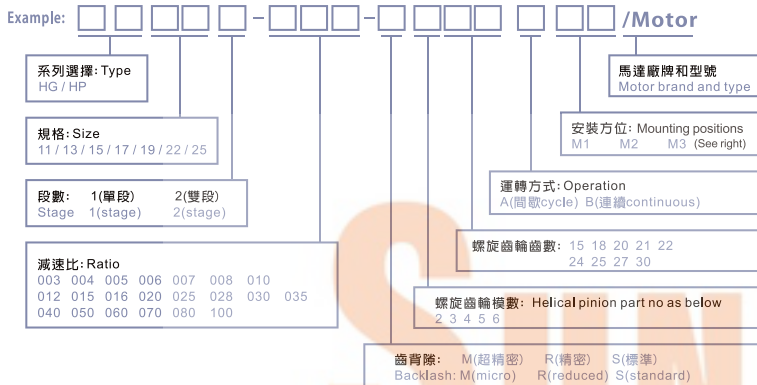


安裝方位

Mounting positions

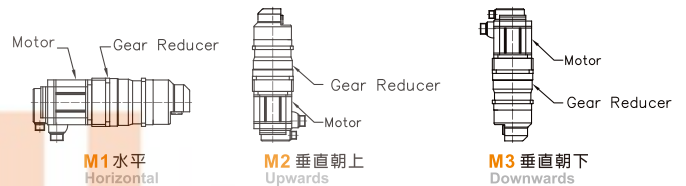


選用範列: **H G 1 1 1 - 0 0 5 - R 2 1 8 A M 1** /MITSUBISHI/HCSF5102

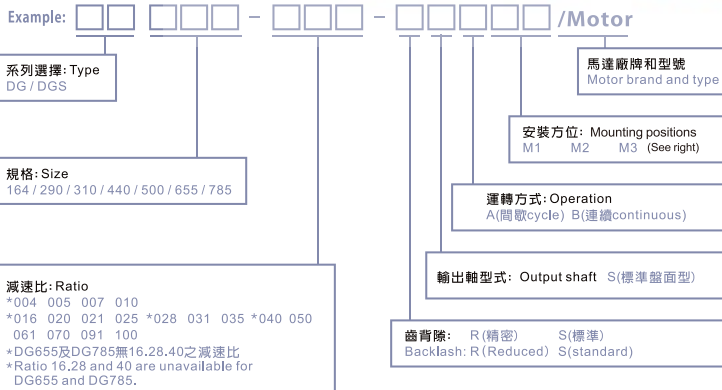


安裝方位

Mounting positions

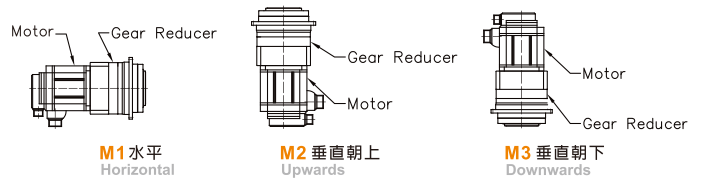


選用範列: **D G 1 6 4 - 0 0 5 - R S A M 1** /MITSUBISHI-HC-KFS43

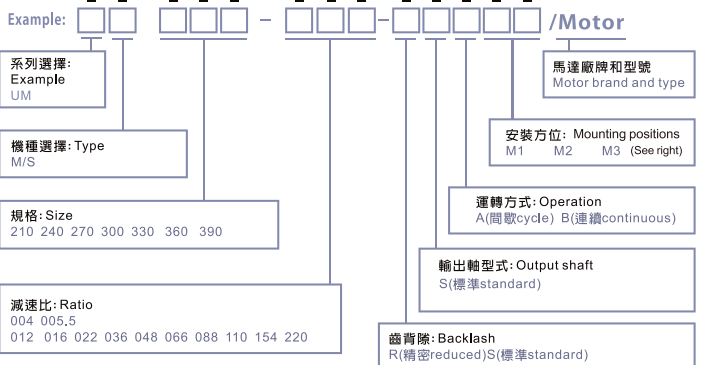


安裝方位

Mounting positions



選用範列: **U M 2 1 0 - 1 1 0 - R S A M 1** /MITSUBISHI-HC-KFS43



安裝方位

Mounting positions

