Nidec

MOTION CONTROL

SERVO MOTOR SERIES

UNIMOTOR HD

ULTRA LOW VOLTAGE

(24V - 48V)

060 to 142 Frames

0.64 to 10.2 Nm

(30.6 Nm Peak)

24V / 48V

Nidec

All for dreams

Unimotor hd
Ultra Low Voltage (24Vdc - 48Vdc)

Unimotor hd Ultra Low Voltage is a high dynamic brushless AC servo motor range designed for use in pulse duty applications where rapid acceleration and deceleration are required. The motors are available in frame sizes from 060 to 142.

Innovation

Nidec Motion Control specializes in the development and manufacturing of power-dense, standard and custom servo motors, fractional and subfractional gearmotors, as well as a wide array of motor controllers that round out our motion control offering. We are an innovative company who delivers a unique and elevated customer experience to our OEM customers. Whether it's through our standard offering of platform products or a custom solution requiring full engineering support, our main driver is to achieve our customers' complete satisfaction.

Faster set-up

With our proven direct mounting design, we can reduce the need for mechanical parts and increase the speed for application commissioning.

Features

Unimotor hd - ultra low voltage is suitable for many industrial applications, the extensive range of features include:

- Torque range from 0.64 Nm to 10.2 Nm
- Connector variants, flying leads and 90° rotatable
- Variety of flange possibilities (IEC/NEMA)
- IP65 conformance, sealing against water spray and dust when mounted and connected with optional connectors. This is reduced to IP50 when used with flying leads.
- Low winding voltages of 24 Vdc to 50 Vdc
- Rated speeds from 1,000 to 6,000 rpm and others available
- Thermal protection by a KTY84.130 sensor
- Flexible mounting
- All-in-one solution

Wide range of accessories

In addition we offer a range of accessories to cover your system requirements:

- Feedback and power cables for static and dynamic applications
- Gearboxes
- AGV Wheels
- Integrated Drives

Accuracy and resolution to suit Your application requirements

For performance, the right feedback device is critical. We have selected the incremental encoder for high accuracy and medium resolution.

Custom built motors

We understand that each project is individual. For this reason we can develop application specific motors, removing constraints from your design process.

Whether it is shaft lengths or connector types, we can delivery the motor to your exact requirements.

Key Advantages

* High efficiency across a range of speeds.
* Ultra-flexible technology delivering variable speed.
* Increased battery efficiency.
* Reduced setup times.
* Versatility in design, specifically for your needs.

Nidec
MOTION CONTROL

DRIVE OBSESSED SINCE 1973

Drives: they're what we do. Whether you're designing a new machine or installing a replacement, we know you need quick delivery and an easy set up, with the confidence that your drive is going to keep on performing with accurate control.

So leave it to the specialists. We've dedicated ourselves to designing and manufacturing variable speed drives since 1973. This means quick set up, high reliability, maximum motor control and fast, efficient service.

Outstanding performance

The outstanding performance of our drives is the fruit of over 45 years of engineering experience in drive design..

Technology you can rely on

Robust design and the highest build quality ensure the enduring reliability of the millions of drives installed around the world.

Open design architecture

Based on open design architecture, our drives integrate with all primary communication protocols.

Embedded intelligence

Precision motor control is combined with high performance embedded intelligence, ensuring maximum productivity and efficiency of your machinery.

Global reach, local support

Highly experienced, locally based Application Engineers design and support drive technology to provide maximum value, wherever you are in the world.

Unimotor hd
Ultra Low Voltage (24V - 48V)

Quick reference table

Frame size	PCD (mm)	Low voltage											
060	070		0.64	1.92									
			0.18	0.48									
067	075			1.45	3.70								
				0.30	0.75								
089	100				3.20						7.80		
					0.87	2.34							
115	130							5.8					10.2
								2.40				4.41	
142	165											9.2	
												14.4	
Stall	(Nm) 0	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
Inertia	(kg.cm2) 0	0.1	0.2	0.3	0.5	0.8	1.0	2.4	2.5	3.0	4.0	15.0	20.0

Conformance and standards

CE RoHS Compliant 2+ YEAR Worldwide Warranty DNV·GL ISO 9001

Nidec MOTION CONTROL

Standard Ordering information

Use the information below in the illustration to create an order code for a **24V** Ultra Low Voltage motor.

060	AD	B	30	0	F
Frame size	**Motor voltage**	**Stator length**	**Rated speed**	**Brake**	**Connection type**
	060 - 089 frame	**060 frame**	**060 frame**	**060 frame**	**060 - 089 frame**
060	**AD** = 24V	**A to B**	**30** = 3000 rpm	**0** = Not fitted (Std)	**F** = Flying leads - cut ends (0.5m Standard)
067		**067 frame**	**067 frame**	**5** = Parking Brake	**Q** = Flying leads - RoboteQ drive connections (0.5m Standard)
089		**A to C**	**10** = 1000 rpm	**067 - 089 frame**	
		089 frame	**15** = 1500 rpm	**0** = Not fitted (Std)	
		A	**30** = 3000 rpm*	**6** = Parking Brake	
			089 frame		
			15 = 1500 rpm		

***Only available on 'A' length**

A	CT		C
Output shaft	**Feedback device**		**Inertia**
060 - 089 frame	**060 frame**		**060 - 089 frame**
A = Key	**CT** = Incremental Encoder	CT 4096	**C** = Standard + KTY thermistor (KTY84)
F = Key and half key supplied separately	**KU** = Incremental Encoder	CT 1024	
	067 frame		
	CT = Incremental Encoder	CT 4096	
	KU = Incremental Encoder	CT 1024	
	CR = Incremental Encoder	R35i	
	089 frame		
	CA = Incremental Encoder	CFS50	
	CJ = Encoder (5PP push-pull comms)	R35i	
	CT = Incremental Encoder	CT 4096	

Use the information below in the illustration to create an order code for a **48V** Ultra Low Voltage motor.

060	LD	B	60	0	F
Frame size	**Motor voltage**	**Stator length**	**Rated speed**	**Brake**	**Connection type**
	060 - 142 frame	**060 frame**	**060 frame**	**060 frame**	**060 - 142 frame**
060	**LD** = 48V	**A to B**	**60** = 6000 rpm	**0** = Not fitted (Std)	**F** = Flying leads - cut ends (0.5m Standard)
067		**067 frame**	**067 frame**	**5** = Parking Brake	**Q** = Flying leads - RoboteQ drive connections (0.5m Standard)
089		**A to C**	**20** = 2000 rpm	**067 - 142 frame**	
115		**089 frame**	**30** = 3000 rpm	**0** = Not fitted (Std)	
142		**A to C**	**60** = 6000 rpm[1]	**6** = Parking Brake	
		115 frame	**089 frame**		
		A to B	**10** = 1000 rpm		
		142 frame	**15** = 1500 rpm[2]		
		A	**30** = 3000 rpm[1]		
			115 frame		
			10 = 1000 rpm		
			142 frame		
			20 = 2000 rpm		

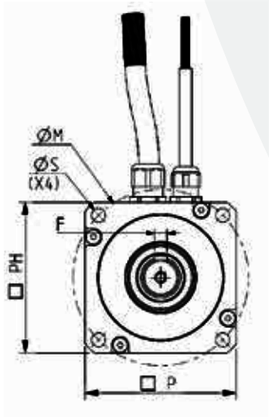
[1] **Only available on 'A' length**
[2] **Only available on 'A & B' lengths**

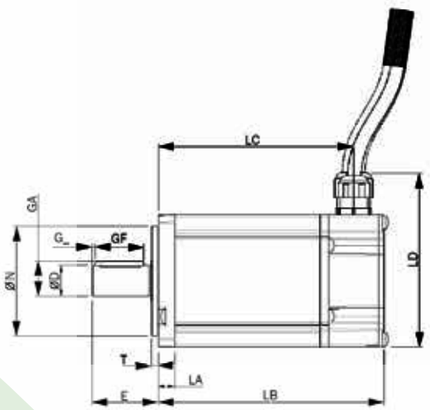
A	CT		C
Output shaft	**Feedback device**		**Inertia**
060 - 142 frame	**060 frame**		**060 - 142 frame**
A = Key	**CT** = Incremental Encoder	CT 4096	**C** = Standard + KTY thermistor (KTY84)
F = Key and half key supplied separately	**KU** = Incremental Encoder	CT 1024	
	067 frame		
	CT = Incremental Encoder	CT 4096	
	KU = Incremental Encoder	CT 1024	
	CR = Incremental Encoder	R35i	
	089 - 142 frame		
	CA = Incremental Encoder	CFS50	
	CJ = Encoder (5PP push-pull comms)	R35i	
	CT = Incremental Encoder	CT 4096	

Gearboxes are available upon request, please refer to pages 13-15 for additional order code and technical information.

Frame size 060

Motor frame size (mm)	060LD		060AD	
Voltage (Vdc)	48		24	
Frame length	A	B	A	B
Continuous stall torque (Nm)	0.64	1.28	0.64	1.28
Peak torque (Nm)	1.92	3.84	1.92	3.84
Standard inertia (kgcm²)	0.18	0.33	0.18	0.33
Winding thermal time constant (sec)	47	51	47	51
Standard Motor weight (kg)	1.6	2.0	1.6	2.0
Number of poles	10	10	10	10
Speed (rpm)	6,000		3,000	
Kt (Nm/A)	0.07		0.07	
Ke (V/krpm)	4.4		4.4	
Rated torque (Nm)	0.64	1.28	0.64	1.28
Stall current (A)	9.2	18.3	9.2	18.3
Rated power(kW)	0.4	0.8	0.2	0.4
R (ph-ph) (Ohms)	0.20	0.07	0.20	0.07
L (ph-ph) (mH)	0.43	0.21	0.43	0.21
Standard Connection	Flying Leads		Flying Leads	





Δt= 100 °C winding 40 °C maximum ambient
All data subject to ± 10 % tolerance
Stall torque, rated torque and power relate to maximum continuous operation
tested in a 20 °C ambient at **12 kHz drive switching frequency**
All other figures relate to a 20 °C motor temperature
Maximum Intermittent winding temperature is 140°C

Motor dimensions (mm)

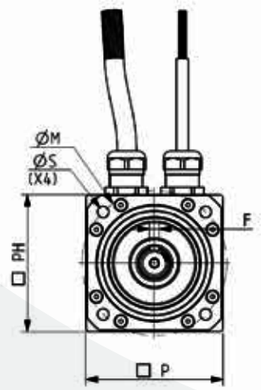
	Feedback CT / KU				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (±0.5)	
060A	82.5	66.5	119.5	103.5									
060B	102.5	86.5	139.5	123.5	7.5	3.0	50.0	80.0	60.0	5.5	70.0	60.0	M5
060C	122.5	106.5	159.5	143.5									

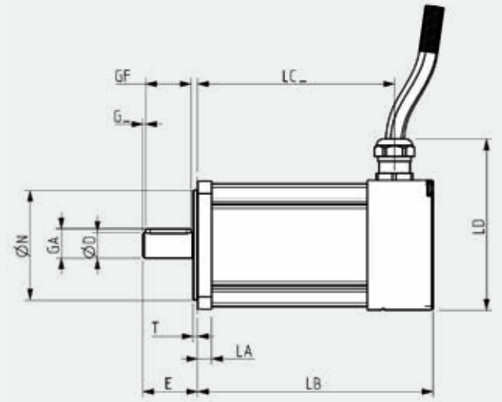
Shaft dimensions (mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1.0)
Std	14.0	30.0	16.0	22.0	1.5	5.0	M5 x 0.8	10.0

Frame size 067

Motor frame size (mm)	067LD			067AD		
Voltage (Vdc)	48			24		
Frame length	A	B	C	A	B	C
Continuous stall torque (Nm)	1.45	2.55	3.70	1.45	2.55	3.70
Peak torque (Nm)	4.4	7.7	11.1	4.4	7.7	11.1
Standard inertia (kgcm²)	0.30	0.50	0.75	0.30	0.50	0.75
Winding thermal time constant (sec)	54	61	65	54	61	65
Standard Motor weight (kg)	2.0	2.6	3.2	2.0	2.6	3.2
Number of poles	10	10	10	10	10	10
Speed (rpm)	2,000			1,000		
Kt (Nm/A)	0.21			0.21		
Ke (V/krpm)	12.8			12.8		
Rated torque (Nm)	1.4	2.5	3.6	1.4	2.5	3.6
Stall current (A)	6.9	12.2	17.7	6.9	12.2	17.7
Rated power(kW)	0.30	0.52	0.80	0.30	0.52	0.80
R (ph-ph) (Ohms)	0.59	0.22	0.14	0.59	0.22	0.14
L (ph-ph) (mH)	1.7	0.8	0.6	1.7	0.8	0.6
Standard Connection	Flying Leads			Flying Leads		
Speed (rpm)	3,000			1,500		
Kt (Nm/A)	0.14			0.14		
Ke (V/krpm)	8.5			8.5		
Rated torque (Nm)	1.4	2.5	tba	1.4	2.5	tba
Stall current (A)	10.4	18.3	tba	10.4	18.3	tba
Rated power(kW)	0.44	0.77	tba	0.44	0.77	tba
R (ph-ph) (Ohms)	0.27	0.11	tba	0.27	0.11	tba
L (ph-ph) (mH)	0.8	0.4	tba	0.8	0.4	tba
Standard Connection	Flying Leads			Flying Leads		
Speed (rpm)	6,000			3,000		
Kt (Nm/A)	0.07			0.07		
Ke (V/krpm)	4.3			4.3		
Rated torque (Nm)	1.3	n/a	n/a	1.3	n/a	n/a
Stall current (A)	20.7	n/a	n/a	20.7	n/a	n/a
Rated power(kW)	0.82	n/a	n/a	0.82	n/a	n/a
R (ph-ph) (Ohms)	0.08	n/a	n/a	0.08	n/a	n/a
L (ph-ph) (mH)	0.2	n/a	n/a	0.2	n/a	n/a
Standard Connection	Flying Leads			Flying Leads		





Δt= 100 °C winding 40 °C maximum ambient
All data subject to ± 10 % tolerance
Stall torque, rated torque and power relate to maximum continuous operation
tested in a 20 °C ambient at **12 kHz drive switching frequency**
All other figures relate to a 20 °C motor temperature
Maximum Intermittent winding temperature is 140°C

Motor dimensions (mm)

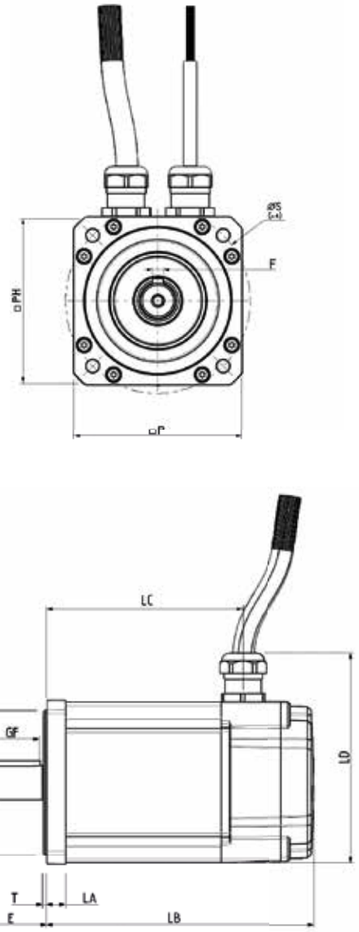
	Feedback CT / KU / CR				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (±0.5)	
067A	142.9	109.0	177.9	144.0									
067B	172.9	139.0	207.9	174.0	7.7	2.5	60.0	111.5	70.0	5.8	75.0	67.0	M5
067C	202.9	169.0	237.9	204.0									

Shaft dimensions (mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1.0)
Std	14.0	30.0	16.0	25.0	1.5	5.0	M5 x 0.8	13.5

Frame size 089

Motor frame size (mm)	089LD			089AD
Voltage (Vdc)	48			24
Frame length	A	B	C	A
Continuous stall torque (Nm)	3.2	5.5	8.0	3.2
Peak torque (Nm)	9.6	16.5	24.0	9.6
Standard inertia (kgcm²)	0.87	1.61	2.34	0.87
Winding thermal time constant (sec)	85	93	98	85
Standard Motor weight (kg)	3.18	4.28	5.50	3.18
Number of poles	10	10	10	10
Speed (rpm)	1,000			
Kt (Nm/A)	0.42			
Ke (V/krpm)	25.6			
Rated torque (Nm)	3.20	5.25	7.80	n/a
Stall current (A)	7.62	13.10	19.00	n/a
Rated power(kW)	0.33	0.55	0.82	n/a
R (ph-ph) (Ohms)	0.56	0.22	0.14	n/a
L (ph-ph) (mH)	3.7	1.7	1.1	n/a
Standard Connection	Flying Leads			n/a
Speed (rpm)	1,500			1500
Kt (Nm/A)	0.24			0.14
Ke (V/krpm)	15.17			8.50
Rated torque (Nm)	3.0	5.2	n/a	3
Stall current (A)	13.0	25.1	n/a	23.0
Rated power(kW)	0.50	0.82	n/a	0.94
R (ph-ph) (Ohms)	0.26	0.11	n/a	0.08
L (ph-ph) (mH)	1.64	0.78	n/a	0.50
Standard Connection	Flying Leads			Flying Leads
Speed (rpm)	3,000			
Kt (Nm/A)	0.14			
Ke (V/krpm)	8.5			
Rated torque (Nm)	3	n/a	n/a	n/a
Stall current (A)	23	n/a	n/a	n/a
Rated power(kW)	0.94	n/a	n/a	n/a
R (ph-ph) (Ohms)	0.08	n/a	n/a	n/a
L (ph-ph) (mH)	0.5	n/a	n/a	n/a
Standard Connection	Flying Leads			n/a



Δt= 100 °C winding 40 °C maximum ambient
All data subject to ± 10 % tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 20 °C ambient at **12 kHz drive switching frequency**
All other figures relate to a 20 °C motor temperature
Maximum Intermittent winding temperature is 140°C

Motor dimensions (mm)

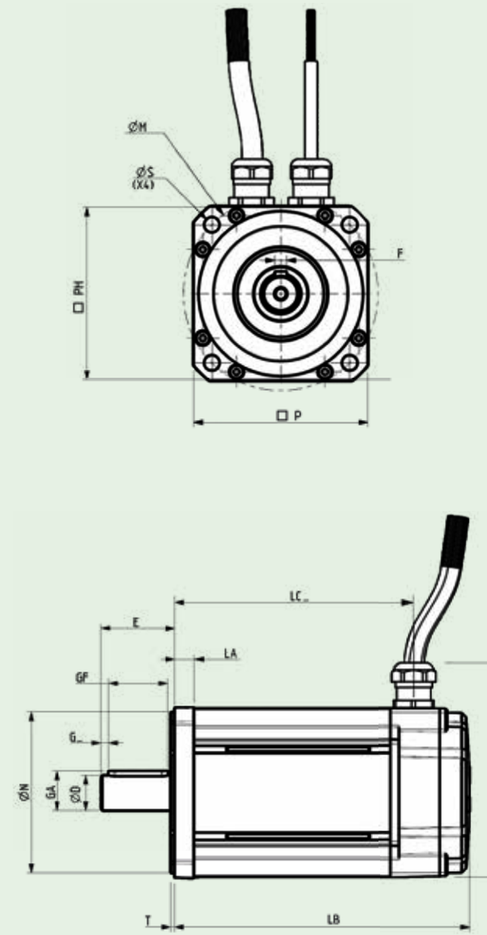
	Feedback CA				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (±0.5)	
089A	160.8	123.5	200.9	163.6	10.3	2.2	80.0	130.5	91.0	7.0	100.0	89.0	M6
089B	190.8	153.5	230.9	193.6									
089C	220.8	183.5	260.9	223.6									
	Feedback CJ / CT												
089A	137.8	123.5	177.9	163.6									
089B	167.8	153.5	207.9	193.6									
089C	197.8	183.5	237.9	223.6									

Shaft dimensions (mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1.0)
Std	19.0	40.0	21.5	32.0	3.7	6.0	M6 x 1	17.0

Frame size 115

Motor frame size (mm)	115LD	
Voltage (Vdc)	48	
Frame length	A	B
Continuous stall torque (Nm)	5.8	10.2
Peak torque (Nm)	17.4	30.6
Standard inertia (kgcm²)	2.40	4.41
Winding thermal time constant (sec)	161	164
Standard Motor weight (kg)	5.13	7.00
Number of poles	10	10
Speed (rpm)	1,000	
Kt (Nm/A)	0.42	
Ke (V/krpm)	25.6	
Rated torque (Nm)	5.46	9.36
Stall current (A)	13.0	24.3
Rated power(kW)	0.57	0.98
R (ph-ph) (Ohms)	0.28	0.10
L (ph-ph) (mH)	2.2	0.9
Standard Connection	Flying Leads	



Δt= 100 °C winding 40 °C maximum ambient
All data subject to ± 10 % tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 20 °C ambient at **12 kHz drive switching frequency**
All other figures relate to a 20 °C motor temperature
Maximum Intermittent winding temperature is 140°C

Motor dimensions (mm)

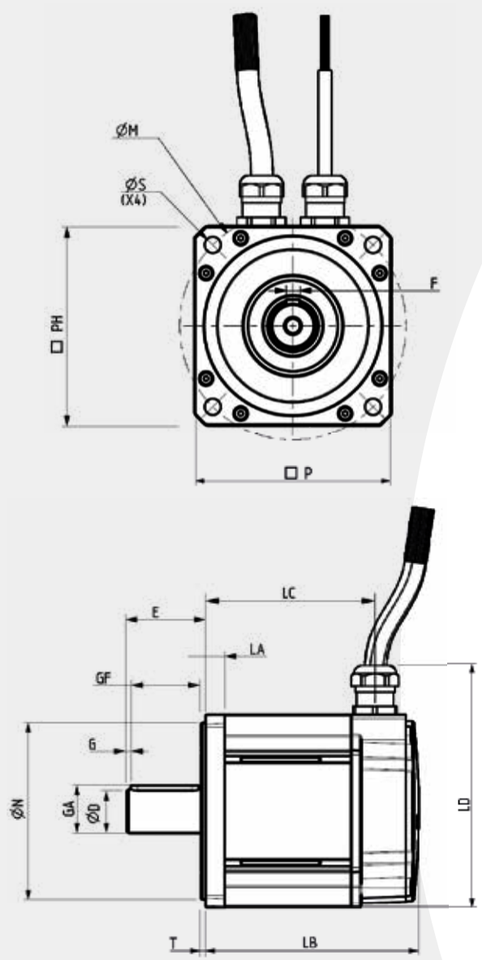
	Feedback CA				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (±0.5)	
115A	176.8	137.0	213.9	174.1	13.2	2.7	110.0	156.5	116.0	10.0	130.0	115.0	M8
115B	206.8	167.0	243.9	204.1									
	Feedback CJ / CT												
115A	153.8	137.0	190.9	174.1									
115B	183.8	167.0	220.9	204.1									

Shaft dimensions (mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1.0)
Std	24.0	50.0	27.0	40.0	5.3	8.0	M8 x 1.25	20.0

Frame size 142

Motor frame size (mm)	142LD
Voltage (Vdc)	48
Frame length	A
Continuous stall torque (Nm)	9.2
Peak torque (Nm)	27.6
Standard inertia (kgcm²)	14.4
Winding thermal time constant (sec)	235
Standard Motor weight (kg)	7.44
Number of poles	10
Speed (rpm)	2,000
Kt (Nm/A)	0.18
Ke (V/krpm)	10.9
Rated torque (Nm)	8.6
Stall current (A)	51.7
Rated power(kW)	1.8
R (ph-ph) (Ohms)	0.02
L (ph-ph) (mH)	0.22
Standard Connection	Flying Leads



Δt= 100 °C winding 40 °C maximum ambient
All data subject to ± 10 % tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 20 °C ambient at **12 kHz drive switching frequency**
All other figures relate to a 20 °C motor temperature
Maximum Intermittent winding temperature is 140°C

Motor dimensions (mm)

	Feedback CA / CJ												
	Unbraked length		Braked length		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (±0.5)	
142A	157.3	122.5	255.8	221.0	14.0	3.4	130.0	170.6	142.0	12.0	165.0	142.0	M10

Shaft dimensions (mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1.0)
Std	32.0	58.0	35.0	50.0	3.0	10.0	M12 x 1.75	29.0

Gearboxes

Along side our Ultra Low Voltage motors we also offer a range of gearboxes. These have been selected to compliment the motors in demanding environments for application requirements such as AGV's or Robotics.

GEARBOX SUFFIX

Motors requiring gearboxes must have the pcd/shaft and a special code at the end of the part number as per definitions below:-

e.g. 060LDA300FACTC**060220-GSAC**

PCD / SHAFT
VRL-070
062160
VRL-090
080220
VRL-120
108320
VRL-155
140400

Type	Ordering Code
VRL-070 (10:1)	**GSAC** *Compatible for 060, 067 frames*
VRL-090 (10:1)	**GSAI** *Compatible for 067, 089 and 115 frames*
VRL-120 (10:1)	**GSAO** *Compatible for 089, 115 and 142 frames*
VRL-155 (10:1)	**GSAU** *Compatible for 115 and 142 frames*

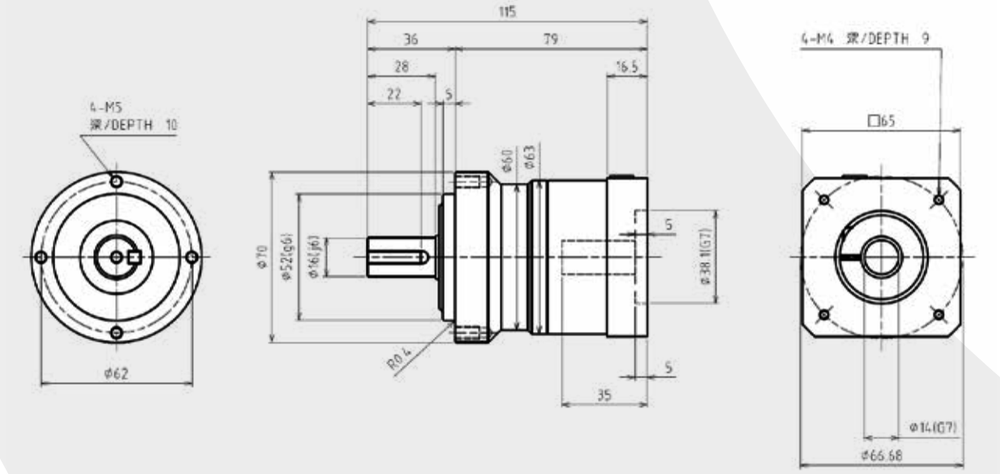
GEARBOX CHARACTERISTICS

	VRL - 070	VRL - 090	VRL - 120	VRL - 155
Ordering Code	GSAC	GSAI	GSAO	GSAU
Type	In-Line Planetary	In-Line Planetary	In-Line Planetary	In-Line Planetary
Ratio	10:1	10:1	10:1	10:1
Stages	1	1	1	1
Weight (kg)	1.5	3.5	7.8	16
Efficiency	95%	95%	95%	95%
Backlash (arc/min)	≤5	≤5	≤5	≤5
Radial Load Max (Fr, N) @ E/2 & Fa=0	640	1200	2000	4700
Axial Load Max (Fa, N) @ Fr=0	530	1600	2500	4100
Output Torque Nominal (Nm)	18	50	120	240
Output Torque Peak (Nm)	35	80	225	470

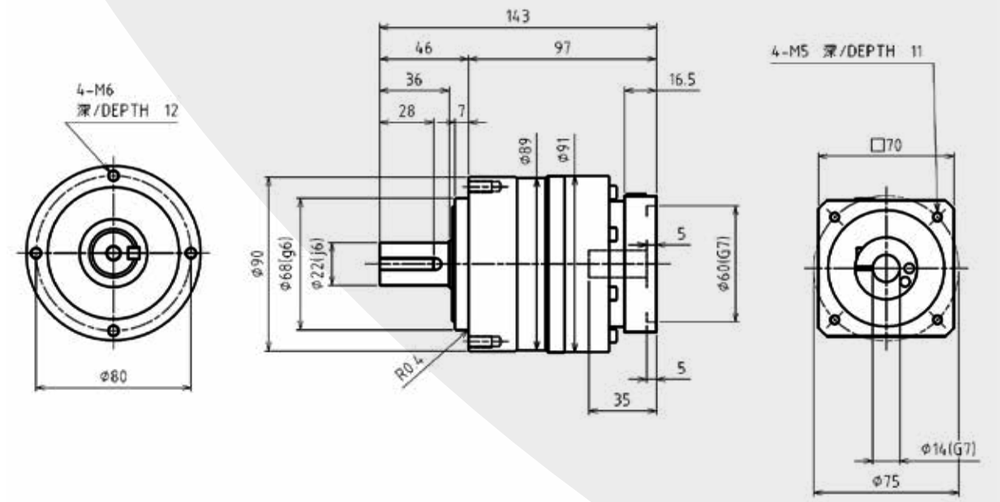
*not to be sold separately

GEARBOX TYPES & DIMENSIONS

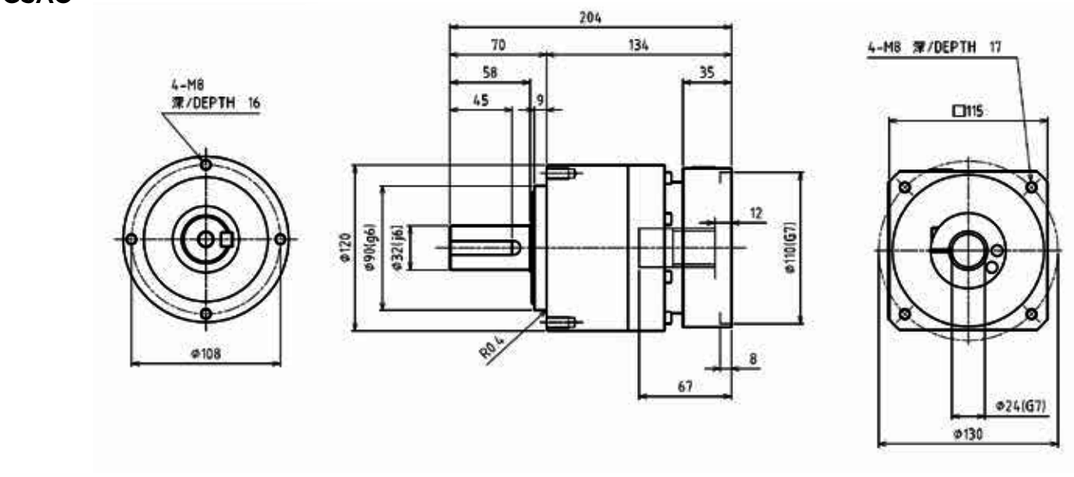
VRL-070 (10:1)
GSAC



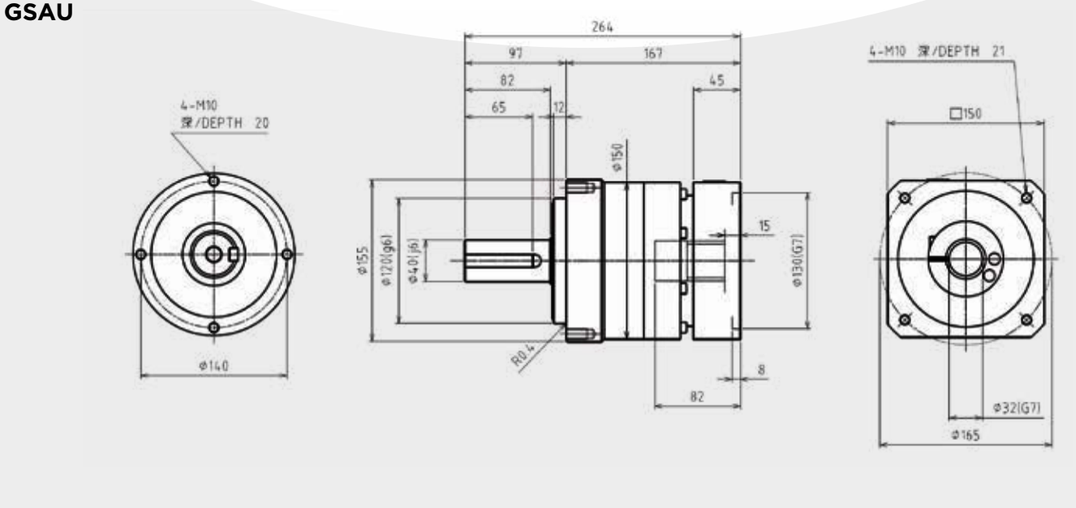
VRL-090 (10:1)
GSAI



VRL-120 (10:1)
GSAO



VRL-155 (10:1)
GSAU

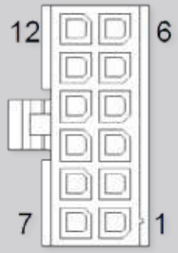


Electrical Specifications

MOTOR CONNECTIONS - 'Q' connector

Signal

Pin	Colour	Function	Pin	Colour	Function
1	RED	POWER	7	YELLOW	CH A
2	GREEN	HALL A	8	-	-
3	BROWN	HALL B	9	BLUE	CH B
4	WHITE	HALL C	10	-	-
5	BLACK	GROUND	11	-	-
6	-	-	12	-	-



Signal connection: 500mm flying lead, M16 gland.

AWG PVC wire, insulated in ULAWM 2725 PCV jacket, screened, 12-Way Molex connector 43025-1200.

Power

Pin	Colour	Function
1	ORANGE	U
2	RED	V
3	YELLOW	W
4	GREEN/YELLOW	EARTH

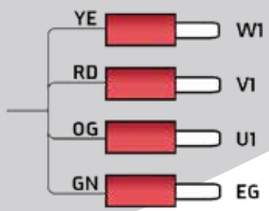
Motor Frame	Connection	
	Gland Size*	Output Type
060	M10	Ferrules
067	M16	Spade
089	M16-M20	Spade
115	M16-M25	Spade
142	PG21	Ring

* Dependant on winding speed & voltage.

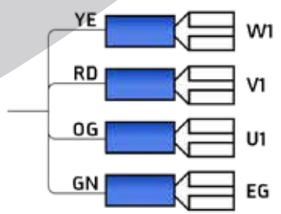
Power connection: 500mm flying lead.

AWG UL 1330 wire, with polyolefin heat-shrink sleeve, with Ferrules, Spade connectors or M6 Ring terminals (as per images below), fitted to lead wires.

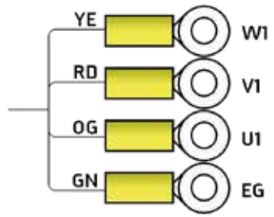
060 frame



067 - 115 frame

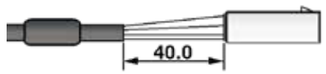


142 frame



Brake

Pin	Colour	Function
1	WHITE	+VE
2	BLACK	- VE



Brake connection: 500mm flying lead.

AWG PCV wire, insulated, 2-Way Molex connector 39-01-3029.

Note: Lead lengths are subject to ±25.0mm tolerance.

BRAKE CHARACTERISTICS - spring applied

Motor Frame	Supply Voltage (V)	Power (W)	Torque (Nm)	Release Time (ms)	Maximum Backlash (°)	Additional Weight (kg)
060	24	7.2	1.4	50	0.80	0.28
067	24	15.0	2.0	65	3.00	0.68
089	24	18.5	10.0	82	0.50	1.40
115 - 142	24	17.5	16.0	105	0.40	2.09

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With the current demands for fully integrated, modular servo drive systems used in Automated Guided Vehicles, we have combined simplicity along with an innovative modular solution to meet with these demands.

Our Motion Control group excels at designing AGV motors and drive systems that offer innovative technology along with long-lasting quality. We have designed customised AGV solutions for some of the biggest names in retail distribution. You can depend on our products to provide the energy efficiency, dependability and longevity you require.

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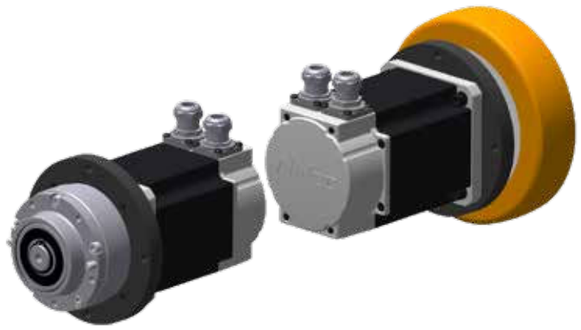
You will benefit from our years of experience, our highly skilled staff and our comprehensive service catalogue.



With our direct mounting design the need for other mechanical parts is reduced along with the setup time.

The complete AGV solutions are ideal for a range of payloads from 500Kg to 2000Kg.

Each solution includes 2xAGV motors with integrated gearbox, AGV wheels, 1xDual Channel Drive and a 1x Drive Control Cable, everything you need to get started.

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