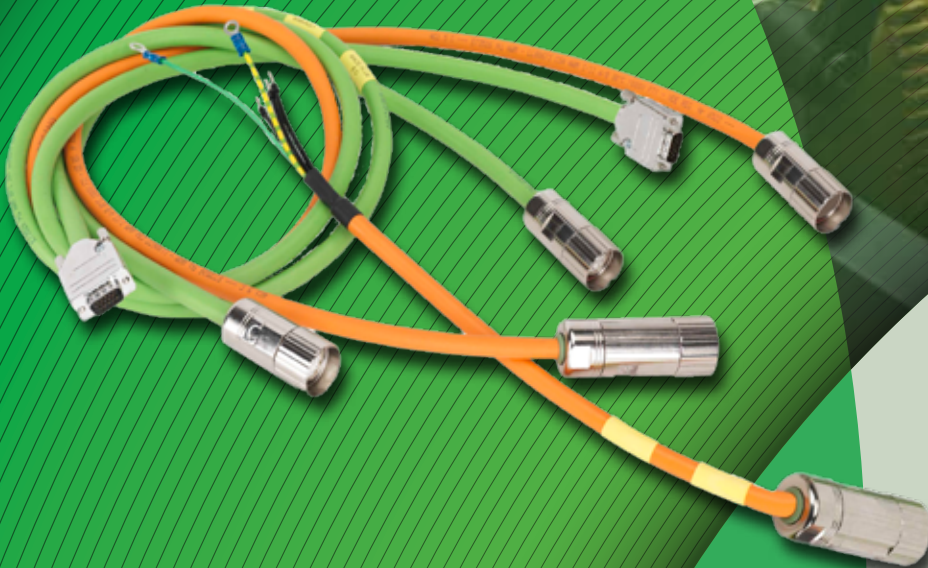


**CONTROL TECHNIQUES
DYNAMICS**

SERVO SERIES

CABLES & CONNECTIONS



UNIMOTOR HD
UNIMOTOR FM
DIGITAX HD
UNIDRIVE M

Nidec
All for dreams

Connectivity

Cables form an integral part of a servo system installation. The ready made cables from Control Techniques allow system installers to avoid intricate, time consuming assembly normally associated with connecting servo systems.



Reliability and Safety

Control Techniques maintains the highest standards of cable integrity and reliability in compliance with all regulatory requirements. All cables and connectors are constructed to meet safety standards and protected against EMC noise immunity, to ensure reliable and failsafe operation.



Matched motor, drive and cable combinations

Our cables are designed to ensure optimum connection between Unidrive M or Digitax HD drives, and Unimotor fm or hd motors.



Variants

Choosing the right cables and connections for your application is critical in getting optimum performance. Control Techniques has an extensive range of options that can meet the requirements for different servo motor and drive combinations to suit most applications:

- Phase conductors from 1.0 mm² (10 A) to 25 mm² (70 A).
- With and without brake wire pairs.
- Motor end connector or ferrules for hybrid box.
- Drive end tailored to suit drive, i.e. ferrules or ring terminals.
- Hybrid option, combining both power and signal into one convenient cable.



Wide range of accessories

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

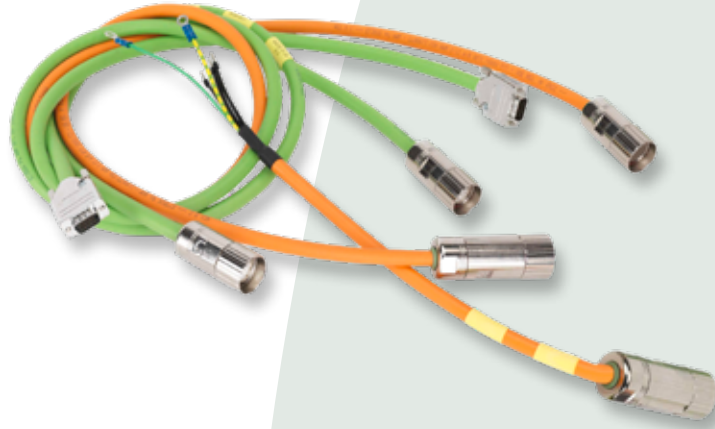
- Feedback and power cables for static and dynamic applications
- Conversion cables
- Connector kits
- Flange kits



Features

- Low-smoke, halogen-free and flame-retardant construction (PUR jacket type).
- Power cables and connectors UL recognised.
- Complies with DESINA coding - Orange for power, Green for signal.
- Optimum noise immunity.
- No need for crimp and insertion / removal tools.
- Encoder cable has low voltage drop for longer cable lengths and separately screened thermistor wires.
- Pre-assembled cables offer consistent quality at competitive prices.
- Power cables either with or without brake wires.
- Cable assembly type identification label.
- Brake wires are separately shielded within the power cable.





CABLE SPECIFICATIONS

Jacket Type	POWER (std + hybrid)		SIGNAL	
	PVC	PUR	PUR	PVC
Electrical	<ul style="list-style-type: none"> Nominal voltage: 1,000 V UL Power cores U₀/U 0.6/1 kV Control cores U₀/U 300/500 V Test voltage: 3kV Conductor resistance (at 20°C): according to class 6 VDE 0295, EN 60228 Insulation resistance (at 20°C): >20 MΩ x km 		<ul style="list-style-type: none"> Nominal voltage: 1,000 V UL Maximum 350 V (VDE/DIN) Test voltage: maximum 3kV Conductor resistance (at 20°C): according to class 6 VDE 0295, EN 60228 Insulation resistance (at 20°C): > 20 MΩ x km Mutual capacitance: core / core approx. 70 pF/m core / screen approx. 110 pF/m Speed of propagation (Vp): 5.05 ns/m (66%) 	
Mechanical	<ul style="list-style-type: none"> Minimum bending radius: 15 x outer diameter (fixed installation) 	<ul style="list-style-type: none"> Minimum bending radius: 5 x outer diameter (fixed installation) Minimum bending radius: 7.5 x outer diameter (dynamic installation) Installation: cable into drag-chain Maximum speed: 5 m/s Maximum acceleration: 40 m/s² Number of cycle: 5,000,000 	<ul style="list-style-type: none"> Minimum bending radius: 15 x outer diameter (fixed installation) 	
Thermal	<ul style="list-style-type: none"> Operating temperature range: -30°C to +80°C Maximum operating temperature in accordance with UL: +80°C 			
Chemical	<ul style="list-style-type: none"> Oil resistance: in accordance with UL1581 	<ul style="list-style-type: none"> Oil resistance: according to EN 50363-10-2, OIL 80°C UL 758 	<ul style="list-style-type: none"> Oil resistance: according to UL1581 	
Fire Behaviour	<ul style="list-style-type: none"> Flame retardant: in accordance with EN60332-1 / Cable flame test: FT1 CSA C.22.2 n° 210 			
	<ul style="list-style-type: none"> Halogen-free: in accordance with IEC 60754-1 			
Approvals	<ul style="list-style-type: none"> Desina standard - UL/CSA AWM EC Low voltage directive 73/23/EEC and CE marking directive 93/68/EEC EU directive 2002/95/CE restriction of the use of hazardous substance (RoHS) 			

Conformance and standards



Ordering information

Power Cable

FIELD NUMBER

1	2	3	4	5	6	7	8	9	10	11	12
M	B	B	A	A	A	0	0	2	5	0	1

Cable type (field N°1&2)

MB = Power + 2w

MS = Power

MQ = Power + 2 x (2w)

Jacket type (field N°3)

A = PVC fixed installation

B = PUR dynamic installation

Length metre (*) (field N°7,8,9&10)

0010 = 1 metre

0025 = 2.5 metres

1000 = 100 metres max

Optional:
Progressive alphanumeric code for customer special requests (field N°11&12)

Phase & conductor size (field N°4)		Drive end connection (field N°5)	Motor end connection (field N°6)
MS = Power	MB/MQ = Additional Parts	A = Unidrive M size 3-4-5, Digitax HD/ST, Unidrive SP size 0-1-2, Flying Leads (Ultrasonic Welding)	A = 6 way power size 1, from 1 to 4 mm ²
A = 1 mm ²	+ 0.5 mm ²	B = Unidrive M size 6, Unidrive SP size 3	B = 6 way power size 1.5, 4 mm ²
B = 2.5 mm ²	+ 0.5 mm ²	C = Unidrive M size 7	C = 6 way power size 1.5, from 6 to 10 mm ²
C = 4 mm ²	+ 1 mm ²	D = Unidrive M size 8	D = Hybrid box ring terminal M6
D = 6 mm ²	+ 1 mm ²	P = Motor power 6 way Extension	E = Hybrid box ring terminal M8
E = 10 mm ²	+ 1 mm ²	S = Special	F = Ferrules
F = 16 mm ²	+ 1 mm ²	X = Cut end	M = 9 way YTec
G = 25 mm ²	+ 1 mm ²		S = Special
			X = Cut end

- (*) Length metre / cable requiring (cm) lengths will be rounded up to the next highest half metre; e.g. 2.1 will be changed to a 2.5 metre cable.
- Maximum cable assembly length 100 metres.
- For hybrid box wiring diagram please refer to page 14.



Signal Cable

FIELD NUMBER

1	2	3	4	5	6	7	8	9	10	11	12
S	I	B	A	A	A	0	0	2	5	0	1

***Jacket type (field N°3)**

A = PVC fixed installation

B = PUR dynamic installation

Length metre () (field N°s 7-10)**

0010 = 1 metre

0025 = 2.5 metres

1000 = 100 metres max

Optional:

Progressive alphanumeric code for customer special requests (field N°11&12).

Cable & Jacket type, Phase & conductor size (field N°s 1,2&4)	Drive end connection (field N°5)	Motor end connection (field N°6)
SI*A = SI - (Incremental encoder + SinCos EnDat 2.1)	A = Unidrive M700, Unidrive SP, Epsilon EP, Digitax SP (Encoder 15 pin D type straight connector)	A = Unimotor 17 way connector (SI/SE)
SR*B = SR - (Resolver)	B = Flying Leads (Ultrasonic Welding)	B = Unimotor 12 way connector (SR/SS)
SS*C = SS - (SinCos Hiperface Encoder)	F = Digitax HD, low profile 90° - inc. SC EnDat, Resolver & SinCos (15 pin D type)	C = Unimotor 90° 17 way connector (SI/SE)
SE*E = SE - (Serial EnDat 2.2 only)	G = Digitax HD, low profile 90° - inc. SC EnDat, Resolver & SinCos (15 pin D type) with flying lead for thermistor	D = Unimotor 90° 12 way connector (SR/SS)
	P = Signal male plug Extension	G = Unidrive M / Unidrive SP / Digitax ST (Encoder 15 pin D type connector hd) Extension
	T = Digitax HD (M750) low profile 90° - EnDat only (Encoder 15 pin D type connector)	K = Unimotor 15 way YTec connector
	S = Special	L = Unimotor 12 way YTec connector
	X = Cut end	S = Special
		X = Cut end

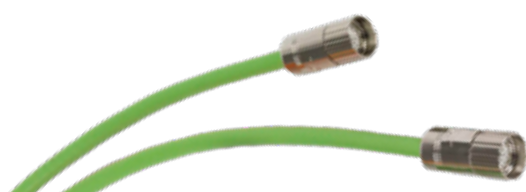
Cable	Feedback option
SI	CR, CA, CT, EM, FM, EC, FC, EB, FB
SR	AR, AE
SS	TL, UL, RA, SA
SE	EF, FF, EG, FG, GB, HB, EN, FN

e.g. 067UDB300BACRA would require a SIBAFA0050 cable part number.

- (**) Length metre / cable requiring (cm) lengths will be rounded up to the next highest half metre; e.g. 2.1 will be changed to a 2.5 metre cable.
- Maximum cable assembly, please refer to page 15.
- For complete cable construction, please refer to page 9.

Encoder breakout kits for use with 'B', Flying leads drive end connection

Part Number	MK Description	Image
82700000020200	Encoder breakout kit for Digitax HD	
82000000012200	Encoder breakout kit for Unidrive M70x	



Hybrid (Power and Signal Combined)

FIELD NUMBER

1	2	3	4	5	6	7	8	9	10	11	12
H	Y	B	A	A	A	0	0	2	5	0	1

Cable & Jacket type (field N°1,2&3)

HYB = Power standard

Jacket type (field N°3)

B = PUR dynamic installation

Length metre (*) (field N°7,8,9&10)

0010 = 1 metre

0025 = 2.5 metres

1000 = 100 metres max**

Optional:
Progressive alphanumeric code for customer special requests (field N°11&12).

Phase & conductor size (field N°4)	Drive end connection (field N°5)	Motor end connection (field N°6)
A = 1.5 mm ² + 0.75 mm ²	A = Ultrasonic welding and 15 way High Density D Sub for signal	A = Hybrid, connector size 1
B = 2.5 mm ² + 1 mm ²	B = Ultrasonic welding, Unidrive M size 5, 15 pin D type straight connector	B = Hybrid, connector size 1.5
C = 4 mm ² + 1 mm ²	C = Ultrasonic welding, Unidrive M size 6, 7, & 8, 15 pin D type straight connector	S = Special
	D = Digitax HD size 01, 02 & 03, 15 pin D type 90° low profile connector	X = Cut end
	E = Digitax HD size 01 & 02 complete with EMC bracket and terminal block fitted, 15 pin D type 90° low profile connector	
	F = Digitax HD size 03 complete with EMC bracket and terminal block fitted, 15 pin D type 90° low profile connector	
	S = Special	
	X = Cut end	



- (*) Length metre / cable requiring (cm) lengths will be rounded up to the next highest half metre; e.g. 2.1 will be changed to a 2.5 metre cable.
- Maximum cable assembly please refer to page 15.
- ** For Digitax HD maximum cable length is 50m.

Cable Construction

POWER CABLE

Phase and conductor size (current rating CEI EN 60204-1:2006-09 at 40° C - installation method B2)	Power + number of cores x cross section (mm ²)	Nominal outer diameter (mm) MS	Nominal outer diameter (mm) MB	Tolerance (mm)
1 mm ² (10.1 Amps)	4G1 + (2 x 0.5)	8.1	9.9	± 0.3
MQ = 1 mm ² (10.1 Amps)	4G1 + 2 x (2 x 0.5)			
2.5 mm ² (17.4 Amps)	4G2.5 + (2 x 0.5)	10.9	12.5	± 0.3
4 mm ² (23 Amps)	4G4 + (2 x 1)	12.1	12.5	± 0.3
6 mm ² (30 Amps)	4G6 + (2 x 1)	14.8	16.2	± 0.4
10 mm ² (40 Amps)	4G10 + (2 x 1)	18.3	19.5	± 0.4
16mm ² (54 Amps)	4G16 + (2 x 1)	21.4	21.6	± 0.5
25 mm ² (70 Amps)	4G25 + (2 x 1)	26.5	26.9	± 0.5

SIGNAL CABLE

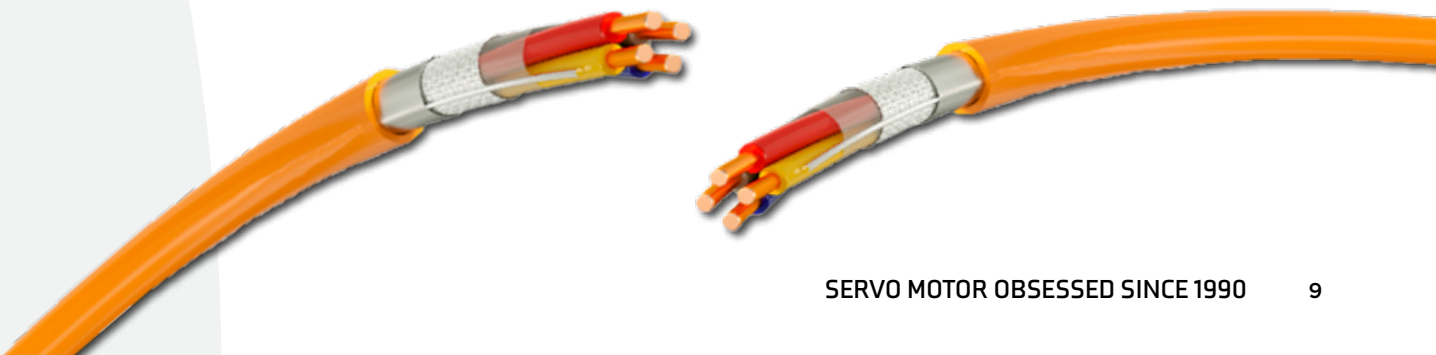
Cable code and type	Construction cross section (mm ²)	Nominal outer diameter (mm)	Tolerance (mm)
SI - (Incremental encoder + SinCos EnDat 2.1)	6 x 2 x 0.25 + 1 x 2 x 0.34 + 1 x 2 x 0.50 mm ²	10.2	± 0.3
SR - (Resolver)	4 x (2 x 0.25) ST mm ²	8.9	± 0.3
SS - (Sincos Hiperface Encoder)	4 x (2 x 0.15) + 1 x 2 x 0.50 mm ²	7.3	± 0.3
SE - (Serial EnDat 2.2 only)	4 x (2 x 0.15) + 1 x 2 x 0.50 ST mm ²	7.3	± 0.3

HYBRID CABLE (POWER AND SIGNAL COMBINED)

Phase and conductor size (current rating CEI EN 60204-1:2006-09 at 40° C - installation method B2)	Construction cross section (mm ²)	Nominal outer diameter (mm)	Tolerance (mm)
A - 1.5 mm ² + 0.75 mm ² (13.1 Amps)	4G1.5 + (2 x 0.75) ST+ (2 x AWG24) + 2x (2 x AWG28)	13.7	± 0.3
B - 2.5 mm ² + 1 mm ² (17.4 Amps)	4G2.5 + (2 x 0.75) ST+ (2 x AWG24) + 2x (2 x AWG28)	14.8	± 0.3
C - 4 mm ² + 1 mm ² (23 Amps)	4G4.0 + (2 x 1.0) ST+ (2 x AWG24) + 2x (2 x AWG28) / ST	16.1	± 0.3

ST = Static Screen

AWG = American Wire Gauge



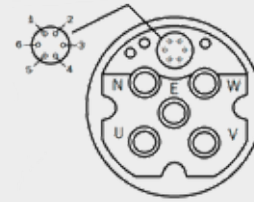
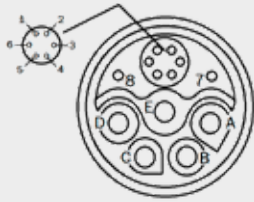
POWER PLUG - Motor end

Size 1 Type Connector			Size 1.5 Type Connector		
Pin	With brake Function	Without brake Function	Pin	With brake Function	Without brake Function
1	Phase U (R)	Phase U (R)	U	Phase U (R)	Phase U (R)
2	Phase V (S)	Phase V (S)	V	Phase V (S)	Phase V (S)
3	Ground	Ground	⊖	Ground	Ground
4	Phase W (T)	Phase W (T)	W	Phase W (T)	Phase W (T)
5	Brake		+	Brake	
6	Brake		-	Brake	
Shell	Screen	Screen	Shell	Screen	Screen

SIGNAL PLUG - Motor end

Pin	SI		SE	SR	SS
	Incremental encoder (CA, CT, CR)	Sincos absolute encoders (EM, FM, EC, FC, EB, FB)	EnDat only absolute encoders (EF, FF, EC, FC, EM, FM EG, FG, GB, HB, EN, FN)	Resolver (AE, AR)	SICK SinCos Hiperface encoders (RA, TL, UL, SA)
1	Thermistor	Thermistor	Thermistor	Excitation High	REF Cos
2	Thermistor	Thermistor	Thermistor	Excitation Low	+ Data
3		Screen (Optical only)	Screen (Optical only)	Cos High	- Data
4	S1			Cos Low	+ Cos
5	S1 Inverse			Sin High	+ Sin
6	S2			Sin Low	REF Sin
7	S2 Inverse			Thermistor	Thermistor
8	S3	+ Clock	+ Clock	Thermistor	Thermistor
9	S3 Inverse	- Clock	- Clock		Screen
10	Channel A	+ Cos			0 V
11	Index	+ Data	+ Data		-
12	Index Inverse	- Data	- Data		+ V
13	Channel A Inverse	- Cos			
14	Channel B	+ Sin			
15	Channel B Inverse	- Sin			
16	+ V	+ V	+ V		
17	0 Volts	0 V	0 V		
Body	Screen	Screen	Screen		Screen

HYBRID PLUG (POWER & SIGNAL COMBINED) - Motor end



Size 1			Size 1.5		
Heidenhain EnDat only absolute encoders (EF, FF, EC, FC, EM, FM, EG, FG, GB, HB, EN, FN)			Heidenhain EnDat only absolute encoders (EF, FF, GB, HB)		
	With brake	Without brake		With brake	Without brake
Pin	Function	Function	Pin	Function	Function
1	+ V	+ V	1	+ V	+ V
2	0 V	0 V	2	0 V	0 V
3	+ Data	+ Data	3	+ Data	+ Data
4	- Data	- Data	4	- Data	- Data
5	+ Clock	+ Clock	5	+ Clock	+ Clock
6	- Clock	- Clock	6	- Clock	- Clock
7	- Brake		N	-	-
8	+ Brake		U	Phase U (R)	Phase U (R)
A	Phase U (R)	Phase U (R)	V	Phase V (S)	Phase V (S)
B	Phase V (S)	Phase V (S)	PE	Ground	Ground
C	Phase W (T)	Phase W (T)	W	Phase W (T)	Phase W (T)
D	-	-	+	Brake	
E	Ground	Ground	-	Brake	

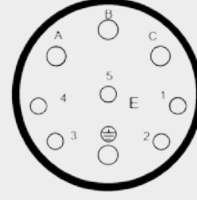
Please note the thermistor is wired through the encoder for the power/signal combined.

15 WAY PLUG - Drive end

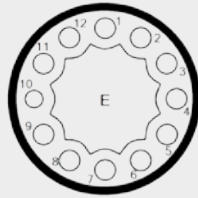
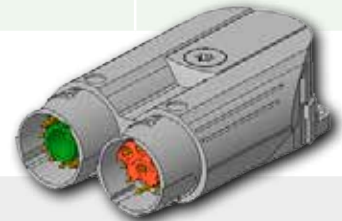


Pin	SI		SE	SR	SS
	Incremental encoders (CA, CT, CR)	SinCos absolute encoders (EM, FM, EC, FC, EB, FB)	EnDat only absolute encoders (EF, FF, EM, FM, EC, FC, EG, FG, GB, HB, EN, FN)	Resolvers (AE, AR)	SinCos Hiperface encoders (TL, UL, RA, SA)
Pin	Function	Function	Function	Function	Function
1	Channel A	+ Cos	+ Data	+ Cos	+ Cos
2	Channel A Inverse	- Cos	- Data	- Cos	REF Cos
3	Channel B	+ Sin	+ Clock	+ Sin	+ Sin
4	Channel B Inverse	-Sin	- Clock	- Sin	REF Sin
5	Index	+ Data		+ Excitation	+ Data
6	Index Inverse	- Data		- Excitation	- Data
7	S1				
8	S1 Inverse				
9	S2				
10	S2 Inverse				
11	S3	+ Clock			
12	S3 Inverse	- Clock			
13	+ V	+ V	+ V		+ V
14	0 V	0 V	0 V	Thermistor	0 V
15	Thermistor	Thermistor	Thermistor	Thermistor	Thermistor
Body	Screen	Screen	Screen	Screen	Screen

Y-TEC SIGNAL/POWER PLUG - Motor end

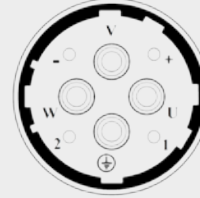
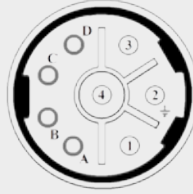


Signal - Type T Connector (CT)		Power - Type T connector		
Pin	Function	Pin	With brake Function	Without brake Function
1	Ground	A	Phase U	Phase U
2	Channel A	B	Phase V	Phase V
3	Channel A Inverse	C	Phase W	Phase W
4	Channel B	1	Thermistor +	Thermistor +
5	Channel B Inverse	2	Thermistor -	Thermistor -
6	+ V	3	+ V	
7	S1	4	0 Volts	
8	S2	⊖	Ground	Ground
9	S3			
10	S1 Inverse			
11	S2 Inverse			
12	S3 Inverse			
A	Index			
B	Index Inverse			
C	-			



Signal - Type T Connector			
Pin	(EG / FG) Function	(TL / UL) Function	Resolver Function
1	+ V	+ V	-
2	+ Data	+ Data	-
3	- Data	- Data	-
4	+ Clock	-	-
5	- Clock	-	-
6	-	-	Excitation Low
7	0 Volts	0 Volts	-
8	-	+ Sin	Sin High
9	-	REF Sin	Sin Low
10	-	+ Cos	Cos High
11	-	REF Cos	Cos Low
12	-	-	Excitation High

8 WAY POWER PLUG - Motor end



Size 1 - Type R Connector			Size 1.5 - Type Z Connector		
Pin	With brake Function	Without brake Function	Pin	With brake Function	Without brake Function
1	Phase U (R)	Phase U (R)	U	Phase U (R)	Phase U (R)
2	Ground	Ground	V	Phase V (S)	Phase V (S)
3	Phase W (T)	Phase W (T)	⊕	Ground	Ground
4	Phase V (S)	Phase V (S)	W	Phase W (T)	Phase W (T)
A	Thermistor	Thermistor	+	Brake	
B	Thermistor	Thermistor	-	Brake	
C	Brake		1	Thermistor	Thermistor
D	Brake		2	Thermistor	Thermistor
Shell	Screen	Screen	Shell	Screen	Screen

Perfect combinations



Digitax HD

Optimized for high-dynamic applications, Digitax HD provides the flexibility of both standalone and modular configurations. The drive offers full servo control plus open loop permanent magnet and induction motor control across four functionality levels: EtherCAT, MCI machine control, multiprotocol Ethernet and the flexible Base drive.

For motors below 16A continuous stall current.

Unidrive M700

Unidrive M700 series provides high performance motor control and ultimate control flexibility in order to satisfy the requirements of machine builders and high specification industrial and hoisting applications.

For motors above 16A continuous stall current.

Unimotor hd

Unimotor hd is Control Techniques' high dynamic brushless AC servo motor range. With high peak torque, low inertia and the most compact dimensions, Unimotor hd is optimized for applications requiring rapid acceleration and deceleration.



Cable Diameter Selection

Cable and connector required according to motor size

3 Phase VPWM drives 200-240Vrms - Unimotor fm

Motor Frame Size (mm)	075E3				095E3					115E3				
Frame length	A	B	C	D	A	B	C	D	E	A	B	C	D	E
Speed 2,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Speed 3,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5	2.5
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	M6
Speed 4,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5	1.0	2.5	2.5	2.5	4.0
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	M6
Speed 6,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	2.5	◆	◆	1.0	2.5	◆	◆	◆
Recommended connector size	1	1	1	1	1	1	1	◆	◆	1	1	◆	◆	◆

3 Phase VPWM drives 380-480Vrms - Unimotor fm

Motor Frame Size (mm)	075U3				095U3					115U3				
Frame length	A	B	C	D	A	B	C	D	E	A	B	C	D	E
Speed 2,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Speed 3,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Speed 4,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5
Recommended connector size	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Speed 6,000 (rpm)														
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	◆	◆	1.0	1.0	◆	◆	◆
Recommended connector size	1	1	1	1	1	1	1	◆	◆	1	1	◆	◆	◆

3 Phase VPWM drives 200-240Vrms - Unimotor hd

Motor Frame Size (mm)	060ED			067ED				089ED				115ED				142ED					190ED						
Frame length	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	E	A	B	C	D	E	F	
Speed 2,000 (rpm)																					Speed 1,000 (rpm)						
Cross section (mm ²)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	1.0	2.5	2.5	2.5	2.5	4.0	◆	◆	◆	◆	◆	◆
Recommended connector size	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	1	1	1	1	1	1	1.5	◆	◆	◆	◆	◆
Speed 3,000 (rpm)																					Speed 1,500 (rpm)						
Cross section (mm ²)	◆	◆	◆	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5	2.5	◆	2.5	4.0	6.0	10.0	◆	◆	◆	◆	◆	◆	◆	◆
Recommended connector size	◆	◆	◆	1	1	1	1	1	1	1	1	1	1	1	◆	1	1.5	1.5	1.5	◆	◆	◆	◆	◆	◆	◆	◆
Speed 4,000 (rpm)																					Speed 2,000 (rpm)						
Cross section (mm ²)	◆	◆	◆	◆	◆	◆	◆	◆	◆	1.0	1.0	2.5	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Recommended connector size	◆	◆	◆	◆	◆	◆	◆	◆	◆	1	1	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Speed 6,000 (rpm)																					Speed 3,000 (rpm)						
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	4.0	◆	2.5	4.0	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Recommended connector size	1	1	1	1	1	1	1	1	1	1	◆	1	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

◆ frame size not available

- The information contained in this specification is for guidance only and does not form part of any contract.
- Control Techniques have an ongoing process of development and reserves the right to change the specification without notice.

142E3					190E3								Motor Frame Size (mm)	
A	B	C	D	E	A	B	C	D	E	F	G	H	Frame length	
Speed 2,000 (rpm)													Cross section (mm ²)	
1.0	1.0	2.5	2.5	4.0	1.0	2.5	6.0	10.0	10.0	16.0	16.0	25.0	6.0	
1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	M6			Recommended connector size	
Speed 3,000 (rpm)													Cross section (mm ²)	
1.0	2.5	2.5	4.0	6.0	2.5	6.0	10.0	16.0	25.0	25.0	25.0	25.0	10.0	
1	1	1	1.5	1.5	1.5	1.5	1.5	M6			Recommended connector size			
Speed 4,000 (rpm)													Cross section (mm ²)	
1.0	2.5	4.0	6.0	10.0	2.5	10.0	16.0	25.0	◆	◆	◆	◆	16.0	
1	1	1.5	1.5	1.5	1.5	1.5	M6		◆	◆	◆	◆	Recommended connector size	
Speed 6,000 (rpm)													Cross section (mm ²)	
2.5	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	25.0	
1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	Recommended connector size	

142U3					190U3								250U3		
A	B	C	D	E	A	B	C	D	E	F	G	H	D	E	F
Speed 2,000 (rpm)													Speed 1,000 (rpm)		
1.0	1.0	1.0	1.0	2.5	1.0	1.0	2.5	4.0	4.0	6.0	10.0	10.0	4.0	4.0	6.0
1	1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Speed 3,000 (rpm)													Speed 1,500 (rpm)		
1.0	1.0	1.0	2.5	2.5	1.0	2.5	4.0	6.0	10.0	10.0	16.0	16.0	6.0	10.0	10.0
1	1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	M6		1.5	1.5	1.5
Speed 4,000 (rpm)													Speed 2,000 (rpm)		
1.0	1.0	2.5	4.0	4.0	1.0	4.0	6.0	10.0	◆	◆	◆	◆	10.0	16.0	16.0
1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	◆	◆	◆	◆	1.5	M8	
Speed 6,000 (rpm)													Speed 2,500 (rpm)		
1.0	2.5	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	16.0	25.0	25.0
1	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	M8		

3 Phase VPWM drives 380-480Vrms - Unimotor hd

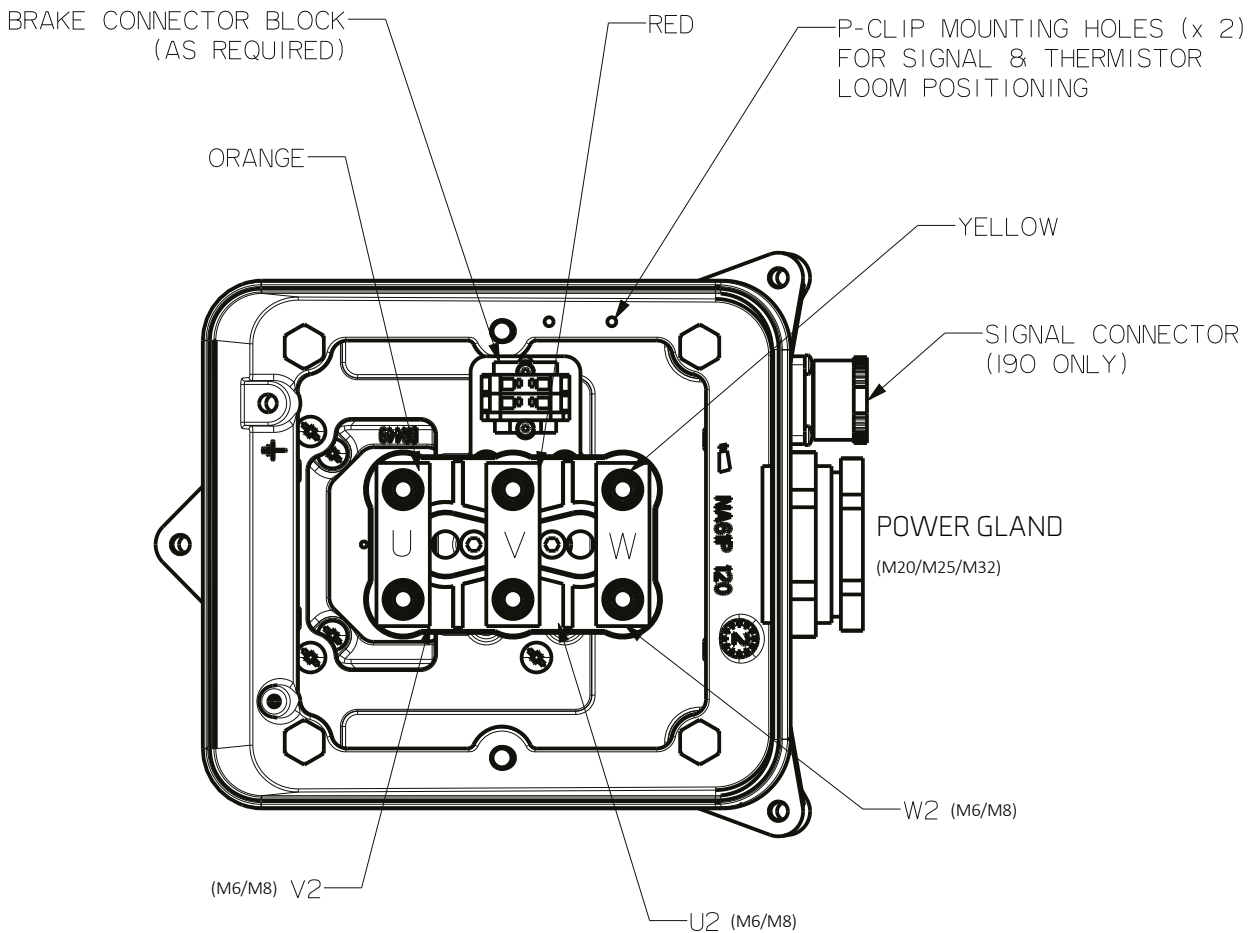
Motor Frame Size (mm)	060UD			067UD				089UD				115UD				142UD					190UD									
Frame length	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	E	A	B	C	D	E	F				
Speed 2,000 (rpm)																									Speed 1,000 (rpm)					
Cross section (mm ²)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	6.0				
Recommended connector size	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	1.5				
Speed 3,000 (rpm)																									Speed 1,500 (rpm)					
Cross section (mm ²)	◆	◆	◆	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5	2.5	2.5	4.0	6.0	◆	◆	◆	◆	◆	6.0				
Recommended connector size	◆	◆	◆	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.5	1.5	◆	◆	◆	◆	1.5			
Speed 4,000 (rpm)																									Speed 2,000 (rpm)					
Cross section (mm ²)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	10.0			
Recommended connector size	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	1.5			
Speed 6,000 (rpm)																									Speed 3,000 (rpm)					
Cross section (mm ²)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	◆	1.0	1.0	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			
Recommended connector size	1	1	1	1	1	1	1	1	1	◆	1	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			

- The recommended connector has been selected using the connector manufacturer's de-rating values applied to a motor at full operational temperature.
- M6/M8 refers to ring terminal sizes on hybrid box.

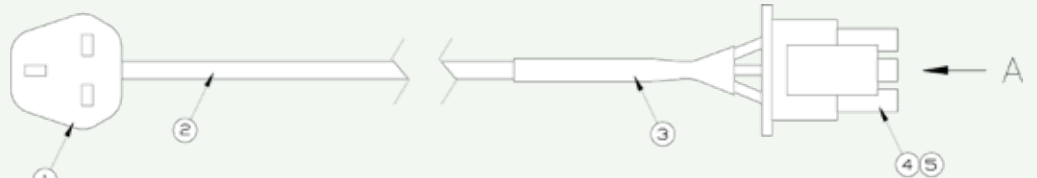
3 Phase VPWM drives 380 - 480 Vrms - Unimotor fm fan blown

Motor Frame Size (mm)	095U5		115U5		142U5		190U5	
Frame length	D	E	D	E	D	E	G	H
Speed 2,000 (rpm)								
Cross section (mm ²)	◆	◆	◆	◆	◆	◆	10.0	16.0
Recommended connector size	◆	◆	◆	◆	◆	◆	1.5	M6
Speed 3,000 (rpm)								
Cross section (mm ²)	1.0	1.0	2.5	2.5	2.5	4.0	16.0	25.0
Recommended connector size	1	1	1	1	1.5	1.5	M6	M8
Speed 4,000 (rpm)								
Cross section (mm ²)	1.0	1.0	2.5	4.0	4.0	6.0	25.0	25.0
Recommended connector size	1	1	1	Hybrid Box	1.5	1.5	M8	M8
Speed 6,000 (rpm)								
Cross section (mm ²)	2.5	2.5	4.0	6.0	10.0	16.0	◆	◆
Recommended connector size	1	1	M6	M6	1.5	M6	◆	◆

Hybrid box Connections

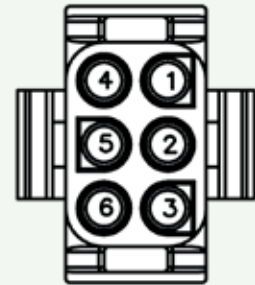


Fan box Connections

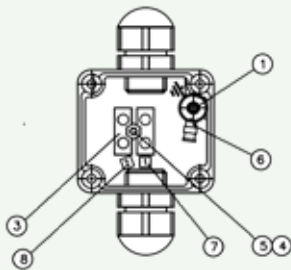


AMP - STANDARD

FUNCTION	WIRE COLOUR	SOCKET
N/C	-	1
N/C	-	2
N/C	-	3
NEUTRAL	BLUE	4
LIVE	BROWN	5
EARTH	GREEN	6

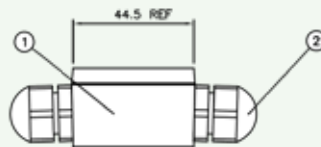
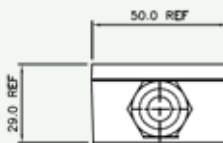


VIEW 'A'
OF CONNECTOR



ITEM No.	PART NUMBER	DESCRIPTION	QTY
1	84/0078/MC	CONNECTOR BOX + EARTH SCREW	1
2	754.335.2	NYLON CABLE GLAND	2
3	755.487.9	TERMINAL BLOCK - 2 WAY	1
4	615.777.4	SCREW M2.5 x 16 CSK POSI BZP	1
5	615.975.3	M2.5 FULL BZP NUT	1
6	752.424.2	INSULATED RING TERMINAL	1
7	751.974.5	WIRE MARKER '1'	1
8	751.973.3	WIRE MARKER '2'	1

TERMINAL BOX - OPTIONAL



Maximum Cable Length

The maximum cable length is restricted by the effect of the voltage drop on the power supply to the encoder.



Maximum recommended length

Cable Types	Maximum Cable Length										
	Resolver		Renco	CT	Sick		Heidenhain				
SIBA SC EnDat			CR 50m	CT 50m	CA 50m		EB/FB 100m	EM/FM 100m	EC/FC 100m		
SEBE Serial EnDat Only							EG/FG 100m	GB/HB 100m	EN/FN 100m	EC/FC 100m	EM/FM 100m EF/FF 100m
SSBA SinCos SICK Hiperface					TL/UL 100m RA/SA 100m						
SRBA Resolver	AE 100m	AR 100m									
HYB Power + Signal Combined							EG/FG 100m	EF/FF 100m	EN/FN 100m	GB/HB 100m	

- For Digitax HD maximum cable length is 50m.



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EMPLOYEES
WORLDWIDE



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GROUP
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230+
COMPANIES

CONTROL TECHNIQUES

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OEM
CUSTOMERS



5M+
INSTALLED
DRIVES



1,400+
EMPLOYEES



70
COUNTRIES



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.



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