

LMD eCylinder

Lexium MDrive® with electric cylinder



Integrated motors, control electronics, and captive shaft electric cylinder



Intelligent motion systems



Description

Quiet, clean and compact, these LMD products integrate motor, drive electronics, and captive shaft electric cylinder to directly convert rotary motion to linear motion. Products deliver distinct benefits, including replacing pneumatics in some applications.



LMD-42 – NEMA 17 with eCylinder
pictured foot mounts (L) and flange mounts (R)



LMD-57 – NEMA 23 with eCylinder
pictured foot mounts (L) and flange mounts (R)

Lexium MDrive® with eCylinder

integrated motor, drive electronics and electric cylinder



Product offer

Lexium MDrive® (LMD) products with eCylinder integrate a 1.8° 2-phase stepper motor, drive electronics, and inline mounted captive shaft electric cylinder. Linear motion is produced by a coated, stainless steel acme screw/PEEK-blend nut system coupled directly to the motor's driving shaft. These compact products offer many distinct benefits including competitive price, high accuracy and repeatability. They can also provide a cleaner, quieter alternative to pneumatics in some applications.

Four (4) communication versions are available:

- Pulse/Direction: RS-422/485 serial interface products with 4 operating modes.
- Programmable Motion Control: RS-422/485 interface with programmable controller.
- CANopen: CANopen interface with programmable controller.
- EthernetTCP/IP: supports user-selectable protocols Profinet, EtherNet/IP, ModbusTCP.

Easily integrated into motion control systems, fully programmable LMD products with on-board I/O do not require an external controller. Complex motion profiles are possible along with data feedback. An optional multi-turn absolute encoder can also detect and store position information, even when powered down.

Real time closed loop performance is available for enhanced performance and feedback. Closed loop products are equipped with 1000 line (4000 count/rev) encoders internal to the unit, requiring no extra space in an application. Encoders perform stall detection, position maintenance and find index mark, in addition to monitoring motor shaft position for real time closed loop feedback. Benefits also include:

- no loss of synchronization/stalling
- full use of motor torque
- torque mode control
- reduced motor heat (1)
- lower energy consumption (1)

(1) Achieved with hMTechnology variable current control.

Application areas

Lexium MDrive® with eCylinder are compact motion control solutions for high reliability, enhanced performance, and reduced energy consumption. Products can be applied to a wide range of applications requiring linear motion.

Answering these simple questions can help determine your choice of linear motion solution:

- What is the weight of the load to be moved?
- What speed and distance is the load to be moved?
- What is the load's orientation: vertical, horizontal?
- What force is required?
- How much space is available?

Discuss your linear motion requirements with a Schneider Electric Motion representative.

General features

- Integrated microstepping drive, 1.8° 2-phase stepper motor and electric cylinder
- NEMA 17 & 23 motors, single stack length
- Stroke lengths from 2" up to 24" (2)
- +12 up to +60 VDC input power range (2)
- Fully programmable integrated motion controller (3)
- Advanced current control for exceptional performance and smoothness
- Multi-turn absolute encoder (3)
- Closed loop control with 1000 line internal encoder and hMTechnology (3)
 - Prevents motor stalling while delivering numerous performance advantages
 - Variable current control reduces motor heat and lowers energy consumption
- 20 microstep resolutions to 51,200 steps/rev including: Degrees, Metric, Arc Minutes
- 0 to 2.56 MHz step clock rate selectable in 0.59 Hz increments
- Graphical user interface provided for quick and easy parameter setup
- Cost effective, compact design
- Custom products available

(2) Determined by NEMA motor frame size.

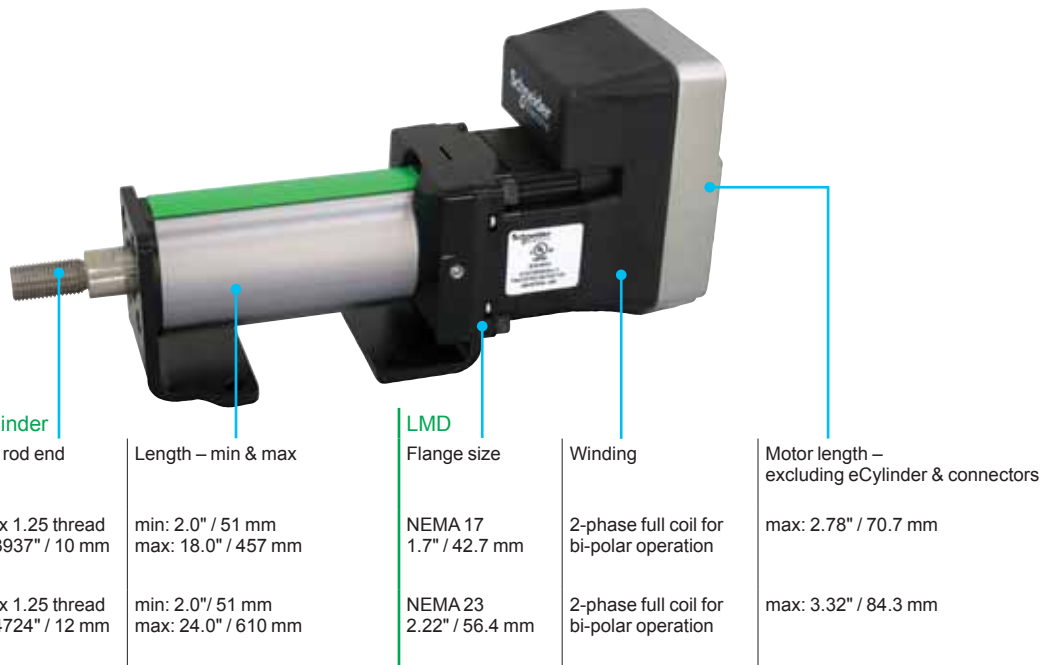
(3) Unavailable in some products.

Specifications			LMD•42 (NEMA 17) w/eCylinder	LMD•57 (NEMA 23) w/eCylinder
Input power	Voltage		+12...+48 VDC	+12...+60 VDC
	Current maximum (1)		2.0 A	3.5 A
Motor	Frame size	NEMA	17	23
		inches	1.7	2.22
	mm	42.7	56.4	
Maximum thrust (2)	PEEK-blend nut	stack size	single	single
		lbs	225	250
Stroke length	Minimum	kg	102	113
		inch	2.0	2.0
	Maximum	mm	5.0	5.0
		inch	18.0	24.0
Accuracy	Maximum	mm	457	610
		±inches per inch	0.0003	0.0003
Backlash	Maximum	±mm per cm	0.002	0.002
		inch	0.002	0.002
Axial end play	Maximum	mm	0.05	0.05
		inches @ lbs	0.002 @ 2	0.002 @ 2
Weight (without screw)	Step angle α	mm @ N	0.05 @ 9	0.05 @ 9
		oz/g	13.6 / 385	24.8 / 703
Thermal	Operating temp non-condensing	°	1.8	1.8
		Heat sink maximum	85°C	100°C
Protection	Type	Motor maximum	100°C	
		Temp warning	0...84°C, user selectable	
		Earth grounding	via product chassis ground lug	
Communication versions	Type	IP rating	IP20	
		Pulse/Direction	RS-422/485	
		Programmable Motion Control	RS-422/485 programmable with stored memory	
		CANopen	CANopen interface with programmable controller	
	Ethernet	EtherNetIP, Profinet, ModbusTCP		

(1) Actual power supply current will depend on voltage and load.
 (2) Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

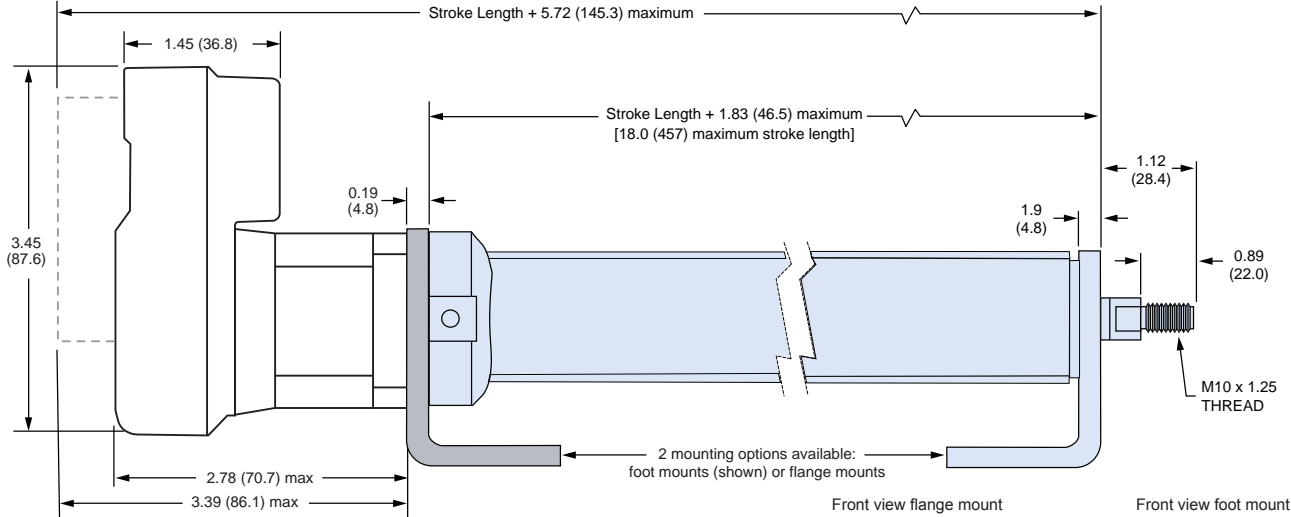
An optional Communication Converter is recommended with first orders.

Overview

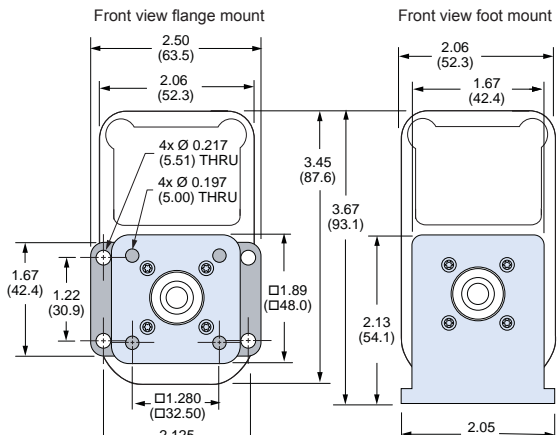


LMD•42 with eCylinder – NEMA size 17

Dimensions in inches (mm)

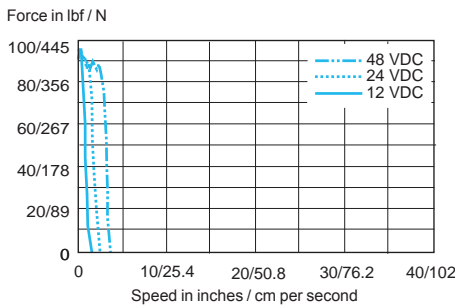


			Screw A	Screw B	Screw C	Screw D
Screw	Diameter	inches	0.375	0.375	0.375	0.375
		mm	9.525	9.525	9.525	9.525
Travel	Per rev	inches	0.100	0.250	0.500	1.000
		mm	2.54	6.35	12.7	25.4
	Per full step	inches	0.00125	0.0013	0.0025	0.0050
		mm	0.03175	0.03302	0.0635	0.127

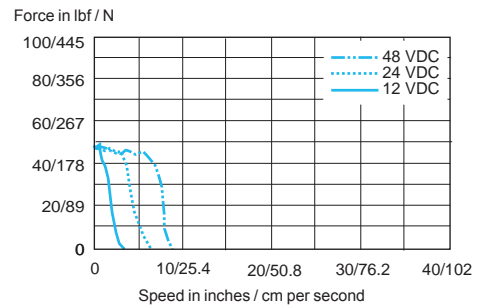


Speed-force curves

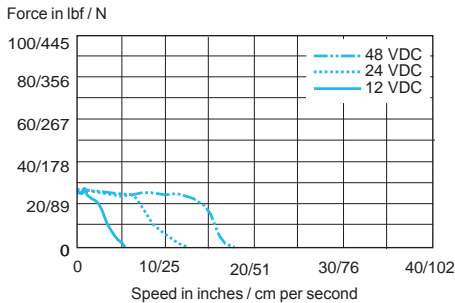
Screw A
0.100" lead



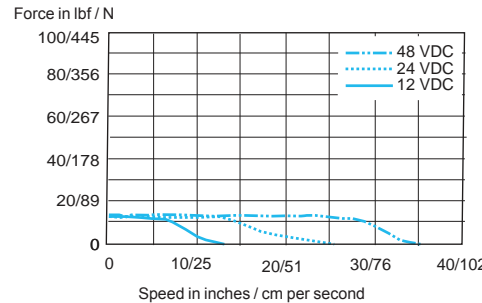
Screw B
0.250" lead



Screw C
0.500" lead

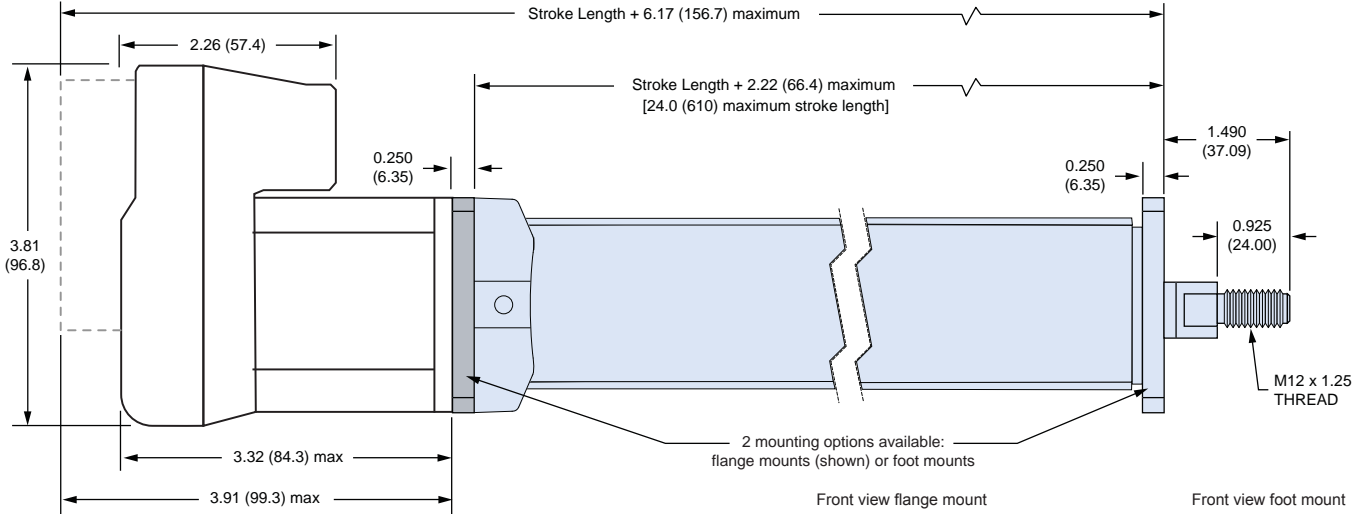


Screw D
1.000" lead

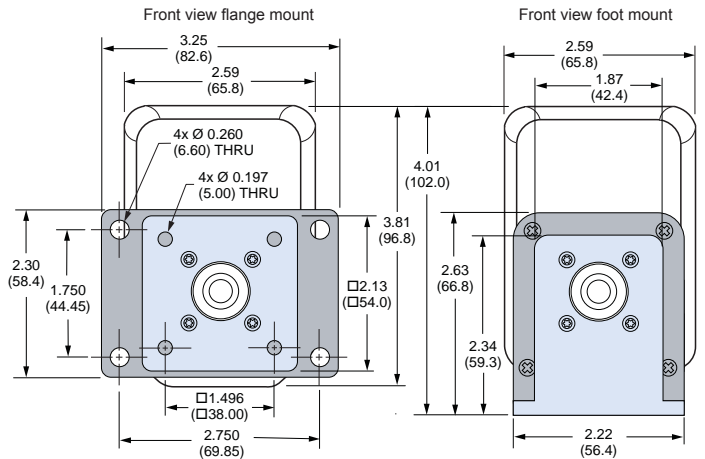


LMD•57 with eCylinder – NEMA size 23

Dimensions in inches (mm)

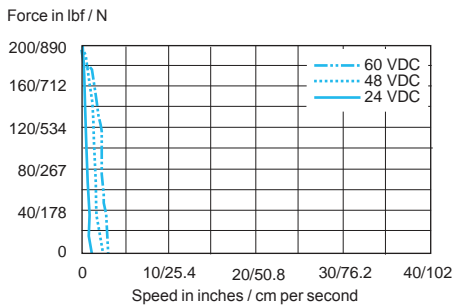


		Screw A		Screw B		Screw C		Screw D	
Screw	Diameter	inches	0.375	0.375	0.375	0.375	0.375	0.375	0.375
		mm	9.525	9.525	9.525	9.525	9.525	9.525	9.525
Travel	Per rev	inches	0.100	0.250	0.500	1.000			
		mm	2.54	6.35	12.7	25.4			
	Per full step	inches	0.00125	0.0013	0.0025	0.0050			
		mm	0.03175	0.03302	0.0635	0.127			

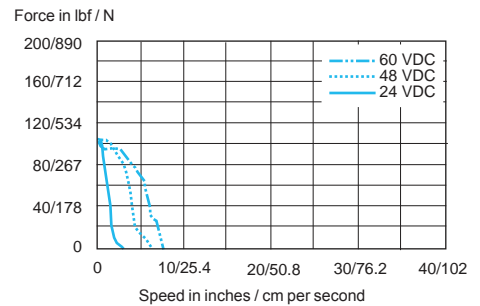


Speed-force curves

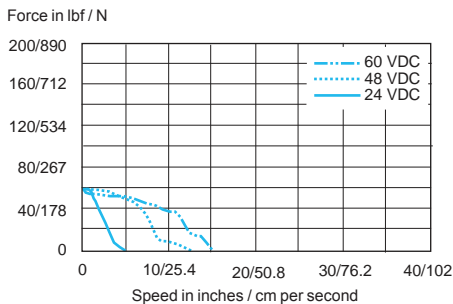
Screw A
0.100" lead



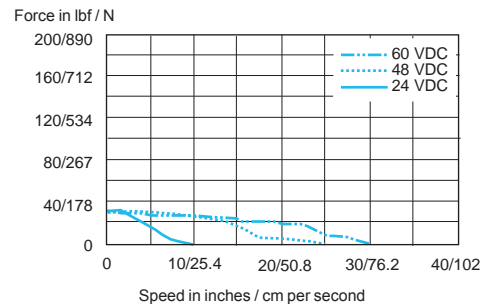
Screw B
0.250" lead



Screw C
0.500" lead



Screw D
1.000" lead



Part numbers

Lexium MDrive® with eCylinder

integrated motor, drive electronics and electric cylinder



LMD-42 NEMA 17
above left to right: eCylinder with flange mounts,
M12 circular connectors, pluggable connectors



LMD-57 NEMA 23
above left to right eCylinder shown with foot mounts,
M12 circular connectors, pluggable connectors

Part numbers

Example	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Product LMD = Lexium MDrive	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Control type C = Closed loop / with hMT (1) A = Absolute Encoder and closed loop / with hMT (1) (2) O = Open loop / no hMT or encoder	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Communication type P = Pulse/Direction via RS-422/485 serial interface (2) M = Programmable Motion Control via RS-422/485 serial interface A = CANopen interface E = EtherNet/IP, ModbusTCP, Profinet, MCode/TCP	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Flange size 42 = NEMA 17 / 42mm 57 = NEMA 23 / 57mm	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Motor length 1 = single stack	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Connector style P = Pluggable connectors, IP20 rating C = M12 circular connectors, IP20 rating	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Linear style -C = electric cylinder	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Nut S = PEEK-blend	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Screw lead A = 0.100" / 2.54 mm B = 0.250" / 6.35 mm C = 0.500" / 12.7 mm D = 1.000" / 25.4 mm	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Stroke length available in 0.1" increments 020 = 02.0" / 51 mm minimum 180 = 18.0" / 457 mm maximum (for size 42/NEMA17) 240 = 24.0" / 610 mm maximum (for size 57/NEMA23)	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN
Mounts M = flange mounts F = foot mounts	L	M	D	C	M	4	2	1	P	-C	S	A	0	6	0	M	NN

(1) Closed loop control delivers encoder feedback and hMT enhanced motor performance.

(2) Pulse/Direction products are not available with Absolute Encoder.

Options

Customization

Options are available for customizing LMD eCylinder products to your specific application needs. These include:

- positioning sensors
- mounting hardware
- cylinder ends
- ball screw configuration
- screw sizes

FlexCenter

Our FlexCenter is dedicated to finding custom solutions. To begin a discussion of your special application needs, please complete the custom product inquiry form at <https://motion.schneider-electric.com/contacts/>

Lexium MDrive® with eCylinder

integrated motor, drive electronics and electric cylinder



MD-CS660-000



for pluggable connector products

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Communication converters USB-pluggable converter to set/program communication parameters in 32- or 64-bit						
Mates to DB9 connector	6.0 (1.8)	MD-CC404-000	•	•		
Mates to DB9 connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC501-000			•	

Replacement mating connector kits

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Includes one 2-pin power mate, and one set (2 pieces) 7-pin multifunction mates	—	CK-14	•			
Includes one 2-pin power mate, and one set (2 pieces) 7-pin multifunction mates	—	CK-15		•	•	•

for M12 circular connector products

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Communication converters USB-pluggable converter to set/program communication parameters in 32- or 64-bit						
Mates to M12 5-pin female connector	6.0 (1.8)	MD-CC405-000	•	•		
Mates to M12 5-pin male connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC502-000			•	

Cordsets

Shielded cables pre-wired with straight M12 mating connectors

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Communication cordset mates to 5-pin female connector	10.0 (3.0)	MD-CS600-000	•	•		
Power cordset mates to 4-pin male connector	10.0 (3.0)	MD-CS620-000	•	•	•	•
I/O cordset mates to 12-pin female connector	10.0 (3.0)	MD-CS630-000	•			
I/O cordset mates to 12-pin male connector	10.0 (3.0)	MD-CS610-000		•	•	•
Communication cordset mates to 4-pin female connector	6.5 (2.0)	MD-CS640-000				•
Communication cordset mates to 5-pin male connector	10.0 (3.0)	MD-CS650-000				

Daisy chaining

Connect multiple units together in sequence with Y cable. Termination plug, sold separately, is required at end of run.

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Y cable mates to M12 communication connector	0.3 (1.0)	MD-CS660-000			•	
M12 bus termination (resistor) plug	—	PLG-M12TP			•	

(1) Communication types:

P = Pulse/Direction via RS-422/485 serial interface

M = Programmable Motion Control via RS-422/485 serial interface

A = CANopen interface

E = EtherNet/IP, ModbusTCP, Profinet, MCode/TCP

for all products with absolute encoder

description	length feet (m)	part number	comm types (1)			
			P	M	A	E
Back-up battery pack Extend stored position data up to 5-years for 1 to 6 LMD units						
Battery pack, DIN-rail mount. Uses 3 AA batteries, not provided	—	ICP0531				
LMD mating cable(s) with crimp connector to flying lead end	3.3 (1.0)	PD02-0531-FL1				
PLC mating cable with crimp connector to flying lead end	3.3 (1.0)	PD04-0531-FL1				

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Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not binding until they have been confirmed with us.

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