

N A T O S E R I E S

NATO Screwdrivers – Current Control with Torque Only, or Torque and Angle Capability

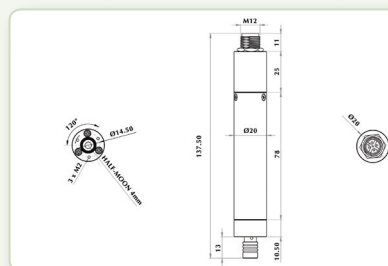
TORQUE UP TO 50 Ncm



NATO for automation with suction head (optional)

Kolver's experience with current control technology has led to the creation of the NATO screwdrivers; the first ultra-low torque, truly accurate current controlled torque driver designed for applications in which torques below 50 Ncm are required, especially in the mobile industry. The NATO features an innovative electric motor coupled with planetary gearboxes, producing extremely low inertia and minimal friction for long life, and very accurate torque production. NATO Series is available with torque only or torque and angle capabilities.

NATO screwdrivers range in torque from 1 to 50 Ncm, and feature an ESD-safe housing and cord set or aluminium body (20mm diameter), for fixture mount applications. Drivers are inline style, with a lever start actuation. NATO systems are available with our 8 P-set programmable controllers for maximum versatility. Foot pedals are available in cases where the operator would like the convenience of manual operation with the NATO/CA series.



EDU2AE/TOP/NT

Features of the NATO and EDU2AE/TOP/NT System:

- An ultra low torque range of 1 - 50 Ncm.
- Speed: ranges from 200–700 RPM.
- DC current controlled low inertia, low voltage iron-less motor.
- The NATO inline driver is also offered as the NATO..CA fixture mount model for automation and robotic use.
- 4 mm half moon chuck on NATO15 and Hex 1/4" on NATO50.
- Up to eight (8) P-sets available.
- 1–99 Screws per program.
- Adjustable torque.
- Adjustable Brake (slow speed) time.
- Adjustable Ramp (slow start) time.
- Adjustable Minimum and Maximum rundown time setting.
- Auto reverse setting with adjustable speed and adjustable torque.
- Prevailing Torque (thread cutting) capability.
- Programmable left or right rotation.
- Unscrew lockout capability.
- Programmable controller calibration.
- Nm, lbf.in or kgf.cm setting.
- Adjustable Minimum and Maximum torque setting.
- Barcode, switchbox and socket tray programming capability.
- Programmable sequencing.
- Six language settings.
- Password protected.
- Suction heads specific for NATOs.

NATO System with Torque only

Model	Code	Torque	RPM min-max	Weight kg	Dimensions mm	Style
NATO15D	160015	1-15 Ncm	350-700	0,20	201x33	Inline
NATO15CA	163015	1-15 Ncm	350-700	0,12	138x20	Aluminium body
NATO50D	160050	5-50 Ncm	200-700	0,26	210x33	Inline
NATO50CA	163050	5-50 Ncm	200-700	0,18	150x25	Aluminium body
EDU2AE/TOP/NT Control unit	031000/TOP/NT	Programmable torque (8 P-sets) with user interface screens		2,00	190x205x120	
EDU2AE/TOP/NT/E Control unit	031000/TOP/NT/E	Like EDU2AE/TOP/NT + remote programming via USB & PC (with EDU EXPAND software)		2,00	190x205x120	

NATO System with Torque and Angle

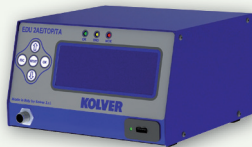
Model	Code	Torque	RPM min-max	Weight kg	Dimensions mm	Style
NATO15D/TA	160015/TA	1-15 Ncm	350-700	0,20	201x33	Inline
NATO15CA/TA	163015/TA	1-15 Ncm	350-700	0,12	138x20	Aluminium body
NATO50D/TA	160050/TA	5-50 Ncm	200-700	0,26	210x33	Inline
NATO50CA/TA	163050/TA	5-50 Ncm	200-700	0,18	150x25	Aluminium body
EDU2AE/TOP/NT/TA Control unit	031000/TOP/NT/TA	Programmable torque & angle (8 P-sets) with user interface screens		2,00	190x205x120	



MITO Screwdrivers – Current Control with Torque Only, or Torque and Angle Capability

TORQUE RANGE FROM 0,2 TO 1,5 Nm

Kolver's experience with current control technology has led to the creation of the MITO series; a truly unique low torque and accurate current controlled torque driver. The MITO features an innovative electric motor coupled with planetary gearboxes, producing extremely low inertia and minimal friction for long life, and very accurate torque production. MITO Series is available in torque, or torque and angle models. Model MITO 15D ranges in torque from 0,2 to 1,5 Nm, and features an ESD-safe housing and cord set, compact ergonomic design. Drivers are available in pistol or inline style, catering to operator preference and comfort. MITO systems are available with our 8 P-set programmable controllers and work in conjunction with all EDU2AE series controllers for maximum versatility.



EDU2AE/TOP/TA

Features of the EDU2AE/TOP:

- Up to eight (8) P-sets available.
- Programmable sequencing.
- 1–99 Screws per program.
- Adjustable torque.
- Adjustable Ramp (slow start) time.
- Fast approach speed and final tightening speed
- Adjustable speed control (450–850 RPM).
- Adjustable Minimum and Maximum rundown time setting.
- Auto reverse setting with adjustable speed and adjustable torque.
- Prevailing Torque (thread cutting) capability.
- Programmable left or right rotation.
- Unscrew lockout capability.
- Programmable controller calibration.
- Nm, lbf.in or kgf.cm setting.
- Adjustable Minimum and Maximum torque setting.
- Barcode, switchbox and socket tray programming capability.
- Multilanguage software.
- Password protected.

Features of the EDU2AE/TOP/TA:

- All of the above features.
- 6 torque and angle strategies:
 - Torque priority: angle count from torque threshold (T) or from remote input (T/I) or from lever input (T/L).
 - Angle priority: driver stops when angle is reached from threshold torque (A) or from remote input (A/I) or from lever (A/L).

MITO Screwdrivers

Model	Code	Torque Nm	RPM min-max	Weight kg	Dimensions mm	Style
MITO15D	170015	0,2-1,5	450-850	0,35	216x33	Inline
MITO15D/TA (Torque & Angle)	170015/TA	0,2-1,5	450-850	0,40	216x33	Inline
MITO15P	170014	0,2-1,5	450-850	0,50	194x159x45	Pistol grip

MITO Control units

Model	Code	Features	Weight kg	Dimensions mm
EDU2AE	032000	Programmable with user interface screens	2,4	195x170x110
EDU2AE/HPro	032000/HPRO	Like EDU2AE + Torque value, additional signals, Serial Port, serial print, integrated screw counter, Optional screwdriver connector on back panel	2,4	195x170x110
EDU2AE/TOP	032000/TOP	8 different programs - selection by barcode, socket tray, switchbox	2,5	190x205x120
EDU2AE/TOP/E	032000/TOP/E	Like EDU2AE/TOP + remote programming via USB & PC (with EDU EXPAND software)	2,5	190x205x120
EDU2AE/TOP/TA	032000/TOP/TA	Programmable Torque & Angle (8 P-Sets) with user interface screens	2,5	190x205x120



PLUTO Screwdrivers Current Control Style

TORQUE UP TO 50 Nm

Kolver's ingenuity and experience have led to the development of Pluto (PLUs Torque) screwdrivers, the most advanced DC tools in the market, able to reach 50 Nm. They feature an innovative coreless electric motor with low inertia and friction with absence of iron losses for extreme efficiency and extended life. Planetary gearboxes with high quality composite materials. Pistol grip to fit operator's hand ergonomically. PLUTO screwdrivers are available in pistol or inline styles; lever, trigger, or push-to-start. All models are ESD safe. Pluto CA/SR series drivers are designed for higher torque applications up to 50 Nm. The CA/SR features a sleek design with a robust aluminium body allowing for operator comfort and durability. Torque & Angle models are also available.



PLUTO IN PUSH-TO-START



ANGLE SCREWDRIVERS
see page 16



PLUTO with LED,
see page PLUTO..TA



PLUTO20CA/SR

Model	Code	Torque Nm	RPM min-max	Dimensions mm	Weight kg	Housing
PLUTO3D	130203	0,5-3,0	370-1300	226x40	0,55	Inline
PLUTO3P	130204	0,5-3,0	370-1300	159x174x45	0,55	Pistol
PLUTO3P/U	130205	0,5-3,0	370-1300	163x174x45	0,55	Pistol grip with top connector
PLUTO3D/PS	130203/PS	0,5-3,0	370-1300	263x40	0,55	Inline/Push-start
PLUTO6D	130206	0,85-6,0	200-850	226x40	0,55	Inline
PLUTO6P	130207	0,85-6,0	200-850	159x174x45	0,55	Pistol
PLUTO6P/U	130207/U	0,85-6,0	200-850	163x174x45	0,55	Pistol grip with top connector
PLUTO6D/PS	130206/PS	0,85-6,0	200-850	263x40	0,55	Inline/Push-start
PLUTO10D/N	130211/N	1,5-10,0	110-600	226x40	0,55	Inline
PLUTO10P/N	130210/N	1,5-10,0	110-600	159x174x45	0,55	Pistol
PLUTO10P/U/N	130210/U/N	1,5-10,0	110-600	163x174x45	0,55	Pistol grip with top connector
PLUTO10D/PS	130211/PS	1,5-10,0	110-600	263x40	0,55	Inline/Push-start
PLUTO15D/N	130216/N	2,0-15,0	60-320	226x40	0,60	Inline
PLUTO15P/N	130215/N	2,0-15,0	60-320	159x174x45	0,60	Pistol
PLUTO15P/U/N	130215/U/N	2,0-15,0	60-320	163x174x45	0,60	Pistol grip with top connector
PLUTO15D/PS	130216/PS	2,0-15,0	60-320	263x40	0,60	Inline/Push-start
PLUTO20CA/SR	133221/SR	3,0-20,0	50-200	232x53	1,10	Aluminium body, start/reverse buttons
PLUTO35CA/SR	133236/SR	3,0-35,0	40-140	247x57	1,50	Aluminium body, start/reverse buttons
PLUTO50CA/SR	133250/SR	5,0-50,0	20-90	252x57	1,50	Aluminium body, start/reverse buttons



PLUTO Screwdrivers Clutch Style

TORQUE RANGE FROM 0,5 TO 7 NM

PLUTO clutch screwdrivers are innovative state-of-the-art screwdrivers. High-efficiency and low inertia CORELESS motors allow high performances on any kind of joint. The new clutch for the regulation of the tightening torque guarantees an excellent accuracy, i.e. 3% on the whole torque range, which means our PLUTOs feature the best CP and CM in the market.

PLUTO screwdrivers fulfill the highest environmental protection requirements: minimal vibrations, maximum safety, low noise level, electromagnetic compatibility, no polluting emissions, low energy consumption.

They all come standard with ESD-safe body. The range features three inline and three pistol models for manual use, plus their corresponding models for automated applications.

They work with EDU2AE/FR, the control unit specifically designed for PLUTO/FR screwdrivers, but they're also compatible with the complete EDU2AE series (PLUTO/FR/TA are meant to be used with EDU2AE/TOP/TA only).

PLUTO/FR come standard with ESD-safe body, suspension bail and 2,5 m connection cable. Spiral cable available on request. The new heavy duty cables and connectors, developed for robotic applications, are made of antistatic dissipative material for safe use in an EPA environment.

Model	Code	Torque Nm	RPM min-max	Dimensions mm	Weight kg	Housing
PLUTO3FR	131203	0,5-3,2	800-1300	274x40	0,55	Inline
PLUTO3FR/P	131204	0,5-3,2	800-1300	158x224x45	0,55	Pistol
PLUTO3FR/P/U	131204/U	0,5-3,2	800-1300	163x232x45	0,55	Pistol grip with top connector
PLUTO5FR	131205	0,7-5,0	600-1000	274x40	0,55	Inline
PLUTO5FR/P	131206	0,7-5,0	600-1000	158x224x45	0,55	Pistol
PLUTO5FR/P/U	131206/U	0,7-5,0	600-1000	163x232x45	0,55	Pistol grip with top connector
PLUTO7FR	131207	1,5-7,0	350-600	274x40	0,55	Inline
PLUTO7FR/P	131208	1,5-7,0	350-600	158x224x45	0,55	Pistol
PLUTO7FR/P/U	131208/U	1,5-7,0	350-600	163x232x45	0,55	Pistol grip with top connector
PLUTO3FR/CA	133203	0,5-3,2	800-1300	252x40	0,75	Aluminium body
PLUTO3FR/CA/FN	133203/FN	0,5-3,2	800-1300	328x40	0,80	Aluminium body, telescopic spindle
PLUTO5FR/CA	133205	0,7-5,0	600-1000	328x40	0,75	Aluminium body
PLUTO5FR/CA/FN	133205/FN	0,7-5,0	600-1000	328x40	0,80	Aluminium body, telescopic spindle
PLUTO7FR/CA	133207	1,5-7,0	350-600	252x40	0,75	Aluminium body
PLUTO7FR/CA/FN	133207/FN	1,5-7,0	350-600	328x40	0,80	Aluminium body, telescopic spindle
PLUTO3FR/TA	131203/TA	0,5-3,2	800-1300	274x40	0,55	Inline
PLUTO5FR/TA	131205/TA	0,7-5,0	600-1000	274x40	0,55	Inline
PLUTO7FR/TA	131207/TA	1,5-7,0	350-600	274x40	0,55	Inline

CONTROL UNITS - PLUTO SERIES



EDU2AE



EDU2AE/HPro



EDU2AE/TOp



EDU2AE/TOp/E



EDU2AE/TOp/TA

PLUTO Control Units Single & Multi-Torque

EDU2AE Series Switching Controllers act as an AC to DC transformer and torque controller. The electronic control circuit cuts the power supply to the motor as soon as the pre-set torque has been reached.

The whole EDU2AE Series is now totally renovated and fully upgraded with our state-of-the-art advanced software for torque controlling. The main features of the new switching control units are:

- Universal usage: All units are equipped with a high power switching transformer with 90-260 V AC power supply: 100% more power and 40% weight reduction.
- New software: EDU2AE & EDU2AE/HPro have a 2.00 version, all TOP units a 5.00 version installed.
- More accurate than ever: The combination of the switching transformer and new software allows MITO & PLUTO screwdrivers to reach a much higher accuracy, better than +/- 5% all over the torque range.
- Better endurance in environment with high noise and interference level: All units comply to norms 61000-6-2 and 61000-6-3.
- Improved EMC features: All units are equipped with a solid steel base and back panel.
- New Features: Users are able to select a fast approach speed and a final tightening speed to adapt to any type of application. It is also possible to select an endless time of clockwise rotation for any application requiring no max time option.
- Multilanguage: English, Italian, German, French, Portuguese, Spanish.

EDU2AE control units can be used in combination with any Kolver current controlled MITO and PLUTO and/or clutch PLUTO screwdriver.

An easy-to-use scroll menu allows to select, set and/or adjust the following functions:

- Screwdriver model
- Tightening torque, fastening and unscrewing speed
- Acceleration ramp
- Min and Max fastening time
- Autoreverse

The EDU2AE/TOp multiple torque system is designed to expand the functionality of PLUTO screwdrivers by enabling multiple torque settings (up to 8) using one controller and one driver. All functions can also be controlled remotely via 15 input and 11 output connectors, which can be connected to one of our optional accessories such as Switch Box, Socket/Bit Tray, Bar Code Scanner, Printer and Ethernet assist.

EDU2AE/TOp/E has all of the features of the standard EDU2AE/TOp and the Expand software package for remote programming via USB port & PC.

The features of the EDU2AE/TOp/E come standard with EDU2AE/TOp/TA, the torque and angle control unit (see page 10).

Model	Code	Features	Dimensions mm	Weight kg
EDU2AE	032000	Programmable with user interface screens	195x170x110	2,4
EDU2AE/FR	032000/FR	For PLUTO..FR series. Like EDU2AE + Run time, Integrated screw counter, Additional signals, Serial Port, Optional screwdriver connector on back panel	195x170x110	2,4
EDU2AE/HPro	032000/HPro	Like EDU2AE + Torque value, Run Time, Additional signals, Serial Port, serial print, integrated screw counter, Optional screwdriver connector on back panel	195x170x110	2,4
EDU2AE/TOp	032000/TOp	8 different programs - selection by barcode, socket tray, switchbox	190x205x120	2,5
EDU2AE/TOp/E	032000/TOp/E	Like EDU2AE/TOp + remote programming via USB & PC (with EDU EXPAND software)	190x205x120	2,5
EDU2AE/TOp/TA	032000/TOp/TA	Programmable Torque & Angle (8 P-Sets) with user interface screens	190x205x120	2,5

PLUTO Control Units – TOP EXPAND



EDU2AE/TOP/E



EDU2AE/TOP/TA

EDU2AE/TOP/E and EDU2AE/TOP/TA are now available with programming software. Each control unit is supplied standard with EDU EXPAND software and an 8Gb USB flash drive. An external WiFi device is available on request.

Main features:

PC programming (back panel): it is possible to set, change and save all parameters through our new “EDU EXPAND” software for PC. EDU EXPAND communicates with the control unit via mini-USB or RS232.

Saving/programming on USB flash drive (front panel): you can now save the results of each screwing operation directly on USB pen drive! It is also possible to upload via USB drive all parameters/programs previously set on “EDU EXPAND”. Just connect your USB to the port and recall the desired programs on the menu. The programs set on control unit can be downloaded on USB and recalled on another unit and on EDU EXPAND, too.

EDU2AE Switching Control Units

4. KOLVER TORQUE ANALYZER (v1.0.2)

FILE EDIT ?

SEARCHED: PLUTO 100/TA INSTRUMENT: Minik_20

CONTROL PANEL

NUM	TORQUE (Nm)	HOUR	DATE	SCREWDRIVER
1	2.515	14:41:58	11/11/2016	PLUTO 100/TA
2	2.544	14:42:06	11/11/2016	PLUTO 100/TA
3	2.503	14:42:08	11/11/2016	PLUTO 100/TA
4	2.577	14:42:11	11/11/2016	PLUTO 100/TA
5	2.595	14:42:13	11/11/2016	PLUTO 100/TA
6	2.532	14:42:16	11/11/2016	PLUTO 100/TA
7	2.538	14:42:18	11/11/2016	PLUTO 100/TA
8	2.514	14:42:28	11/11/2016	PLUTO 100/TA
9	2.514	14:42:28	11/11/2016	PLUTO 100/TA
10	2.548	14:42:31	11/11/2016	PLUTO 100/TA
11	2.574	14:42:34	11/11/2016	PLUTO 100/TA
12	2.568	14:42:36	11/11/2016	PLUTO 100/TA
13	2.560	14:42:39	11/11/2016	PLUTO 100/TA
14	2.593	14:42:45	11/11/2016	PLUTO 100/TA
15	2.525	14:42:49	11/11/2016	PLUTO 100/TA
16	2.583	14:42:52	11/11/2016	PLUTO 100/TA
17	2.542	14:42:54	11/11/2016	PLUTO 100/TA
18	2.597	14:42:56	11/11/2016	PLUTO 100/TA
19	2.583	14:42:58	11/11/2016	PLUTO 100/TA
20	2.516	14:43:12	11/11/2016	PLUTO 100/TA
21	2.616	14:44:11	11/11/2016	PLUTO 100/TA
22	2.586	14:44:14	11/11/2016	PLUTO 100/TA
23	2.605	14:44:16	11/11/2016	PLUTO 100/TA
24	2.543	14:44:19	11/11/2016	PLUTO 100/TA
25	2.574	14:44:23	11/11/2016	PLUTO 100/TA
26	2.580	14:44:25	11/11/2016	PLUTO 100/TA
27	2.586	14:44:27	11/11/2016	PLUTO 100/TA
28	2.596	14:44:29	11/11/2016	PLUTO 100/TA
29	2.568	14:45:51	11/11/2016	PLUTO 100/TA

TOTAL STATISTICAL VALUES

Mean value: 2.582
Maximum Value: 2.616
Average: 2.557
Machine capacity: SUITABLE (1.33)
On value: 2.635
Onk value: 2.635
Sigma: 0.0323

FIXING SPECIFICATION

Normal torque: 2.5574
Minimum torque: 2.5017
Maximum torque: 2.6332
Tolerance: 10

Precision +/-: 0.0228

SENSOR VALUE

2.528

ACTUAL VALUE

MAX: 2.528
MIN: NULL
AVERAGE: NULL

SERIAL PORT

TRACK DISK

DISCOVER

EXPORT

APPLY

REMOVE

KOLVER

The EDU2AE series of controllers for MITO & PLUTO screwdrivers has been totally renovated and fully upgraded to improve the system performances. Thanks to the new state-of-the-art advanced software for torque controlling it is now possible to reach the most accurate results with CM / CMK values higher than ever! All units are meant for universal usage and are equipped with a high power switching transformer with 90-260 V AC power supply for 100% more power and 40% weight reduction. The combination of the switching transformer and new software allows the MITO & PLUTO screwdrivers to reach a much higher accuracy, better than +/- 5% all over the torque

range. All units comply to norms 61000-6-2 and 61000-6-3 and therefore have better endurance in environments with high noise and interference levels. Improved EMC features are guaranteed thanks to solid steel base and back panel. The new features allow users to select a fast approach speed and a final tightening speed to adapt to any type of application and it is also possible to select an endless time of clockwise rotation for any application requiring no max time option. The new EDU2AE control units are now multilanguage: you can choose among English, Italian, German, French, Portuguese or Spanish. A wide range of accessories for remote programming and PC interface is available for the complete EDU2AE series.



ETHERNET DEVICE
code 020075



SWITCHBOX SWBX88
code 020033



BAR CODE SCANNER
code 020050



SOCKET TRAY CBS880
code 020042