

2023



Customized HMI
Motor control electronic
LED control electronic

Dynamic Motion



Dynamic Motion's activities

Always focused on customer requests and application fitting, our different markets share the same needs: Electronic carefully designed and produced within high level exigency. LED and motor control implemented in a highly collaborative way.

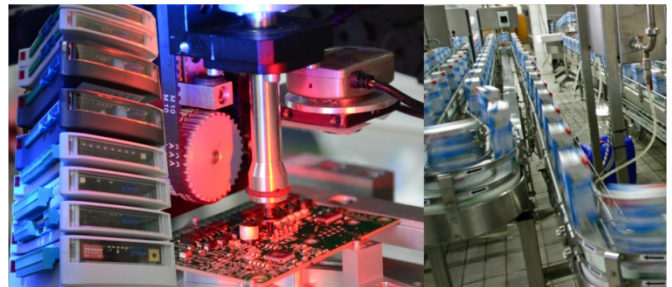
HMI customised

- Modern and smooth interface
- Customized software and hardware
- Sizes: 2.4" to 7", with capacitive touch
- Low power (from at 0.3W)
- Fast start (1 sec. typical)
- Integrated motor driver(s) on request



Electronic motor controllers and actuators for factory automation

- Material transformation industry
- Automated assembly lines
- Food industry
- Pharmaceutical industry



Electronics for Handheld indoor/outdoor apparatus

- Agricultural hand tools
- Professional battery operated systems



Electronic and software for Security, Access control and Signalization

- Displays for outdoor activities, controlled by Web, Lan, sms, radio controlled, ...
- Motorized doors and locks
- Counting systems



Dynamic Motion

Dynamic Motion is specialised in design and production of customized and standard electronic, including control from several watts up to 1kW.

Dynamic Motion proposes an evaluative range of motor drivers for DC, BLDC (Brushless DC) and Steppers motors, characterized by performance, application adaptation and competitive prices.

Programmable electronics designed with focus on performance and ease of use.

In addition to our standard range, we produce custom or customized electronics.



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Electronic boards handling

Electronic boards include high density semiconductors that are sensitive to electrostatic discharge (ESD). Please take all the necessary measures and follow active norms to ensure safe handling and reliable operation of our boards. Damages consecutive to ESD are not covered by the warranty.



The measures are for instance:

- Always use ESD dissipative material in contact to the boards during storage, transport, handling
- Manipulate the boards using ESD body protections

Cooling

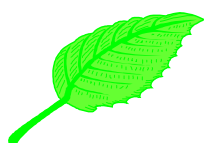
An electronic system creates heat. Sometimes very few but in powerful systems with 90% efficiency, the 10% losses could be more than negligible. To ensure a reliable operation with an appropriate dissipation, environment temperature must stay relatively low, if possible below 50°C. When operation temperature is between 50 and 80°C, operation is still possible, nevertheless precision drift and ageing of some components may occur, illustrated by the memory reliability: typically 500 years at room temperature and 15 years at 85°C.



Testing in real condition is the best way to avoid any issue.

Environmental considerations

The idea that the electronic systems are more durable when always powered than switched OFF when unused is generally false. All of our boards have no damage to be switched ON and OFF frequently; it's even a way to increase their life by reducing the electrical and physical stress in the materials inside components.



WEEE: (Waste Electrical and Electronic Equipment Directive, 2012/19/EU). As manufacturer and importer of electronic products, we provide the service of collecting used equipments sold by us for a proper recycling. More generally, while disposal electronic as waste, please use the special waste circuit. Even if today electronics



doesn't contain lead any more, other materials can still be harmful for the environment. Recycling is therefore mandatory.

RoHS All our products are RoHS 3 compliant (2017/2102/EU), that means that it is lead-free and phthalate-free, and the components does not contains harmful substances such as mercury or cadmium.

Embedded protections

Our boards always include various protections that inhibits or reduce the risk of damage in case of misuse.

Anyway it is necessary to keep the frame of use as follow: Never reverse the voltage, never exceed the maximum allowed voltage.

Power-up

In case of voltages above 35V, when power-up is brutal (example: a power supply with capacitors and a relay) the current may be very high during a very short time (often >100A during some μ s). This current may sometimes blow a fuse or dramatically reduce relay life.

To prevent such consequences, it is better when possible, to keep uninterruptible liaison between the power supply and the electronic. When this is not possible, a power-up sequence may be used: through a resistor during ~1 second, then direct.

An optional circuit is also proposed.

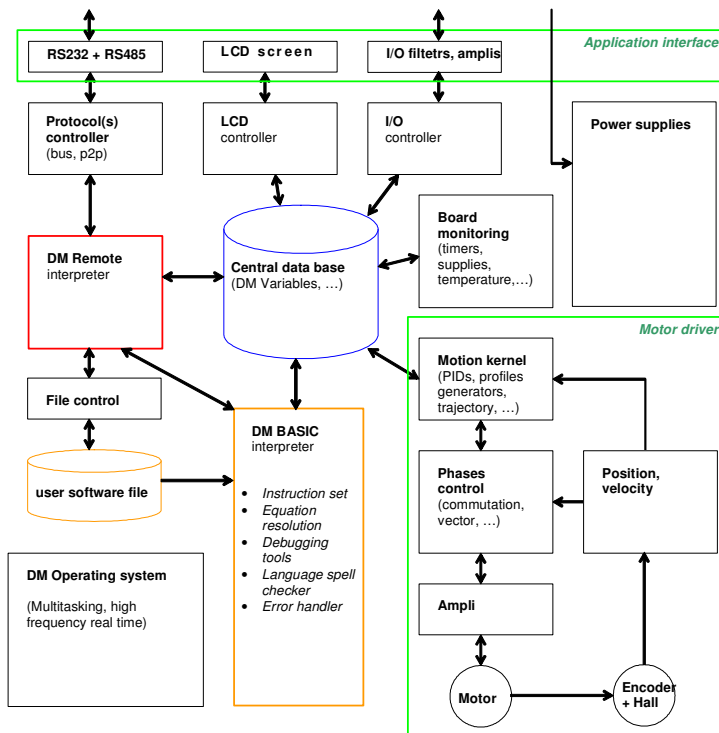
Controllers Tinaxis Plus, BASIC programmable

The "Tinaxis plus" electronics are simple to use but powerful electronics, freely programmable by the user, using BASIC programming language. Tinaxis electronics includes a powerful microprocessor and opens the possibility to change parameters and create simple or complex user software that will animate your application. These features make Tinaxis especially convenient to use in complex and autonomous machines.

The BASIC programming language used in Tinaxis is modern and structured, using the original syntax, with subroutines, without the need of the line numbers.

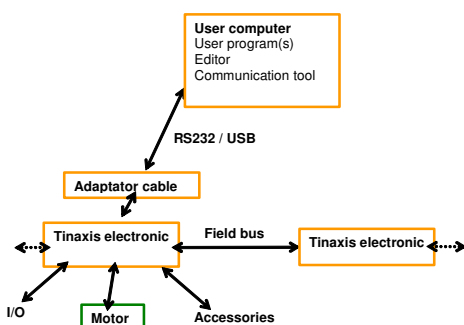
Typical applications are:

- Industrial assembly machines
- Process control
- Autonomous apparatus
- Handlers
- Portable apparatus
- Home automation

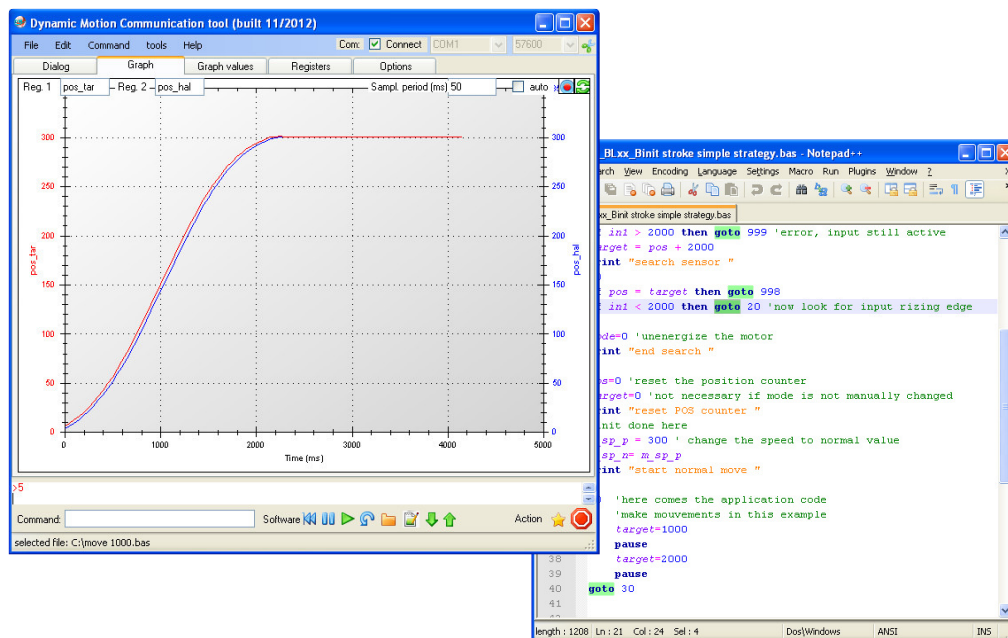


can be used as remote controlled device.

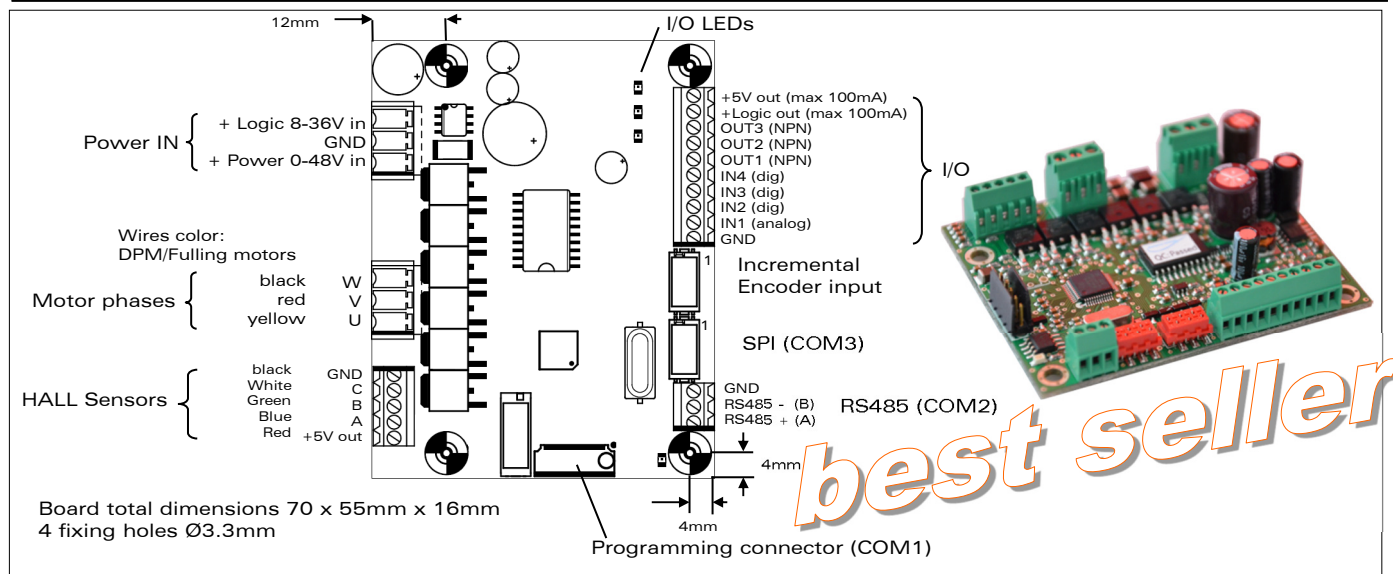
Tinaxis electronics can hold the user software or



Free Windows™ software: download from:
www.dynamicmotion.ch



Tinaxis+ BL120, BLDC 36V/48V, 5A/8A, programmable



Programmable electronic drive for BLDC motors: positioning, speed, torque
Compact, superior cost to performance ratio, multi-purpose motor driver
 Typical use: measuring apparatus, production machines, laboratory machines, portable machines

Specification	unit	value
a) General		
1 Motor types		BLDC with HALL sensor, with or without encoder. Also for brushed DC
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo bytes	10
b) Electrical specifications		
4 Supply voltage Power (supply for motor)	V	0-48V
Supply voltage Logic (Supply for processor)	V	8-36V
5 Output current (motor)	A	5 continuous / 8 peak
6 Input current (logic supply)	A	0.1 typical
7 PWM Frequency	kHz	6 to 60
8 Motor speed	RPM	0-100'000
c) Inputs Outputs (I/O)		
8 HALL sensor inputs: integrated pull-up, available current for HALL sensors at 5V: max 20mA		
9 General purpose inputs: 1 analog (IN1), 0-25V with ~30mV resolution, 3x digital (for 10 to 24V logic (IN2-4)		
10 Unconnected input voltage (pulled down)		0V ±80mV
11 General use outputs: 3 digital, NPN open collector to GND, max 100mA 35V, with LEDs		
12 Encoder optional input, counting frequency	MHz	5 max, with index
13 COM1 TTL UART: programming, remote control		
14 COM2 RS485: programming, remote control, inter-DM bus		
15 COM3 SPI extension port (LCD displays, absolute encoder, ...)		
16 Response time after input change	ms	<2.5
17 5V output (internal DC-DC converter)		5V ±10%: max 100mA
18 +V Logic output		Connected to +Logic IN through diode.
d) Mechanical characteristics		
19 Temperature, recommended (ambient / board)	°C	0 to 65 / 85
20 Integrated protections: temperature, motor current, ESD in I/O, moderate over-voltage, under-voltage		
21 Without housing, I/O connectors with screws, pitch 2.54mm for wires section from 0.05 to 1.3mm ² Power connectors with screws, pitch 3.5mm for wires section from 0.25 to 1.6mm ²		

Designation	Article nr.
1 Tinaxis Plus BL120.01	P010-E210
Special version on request (housing, shape, I/O, power, larger display, keyboard, USB, ...)	

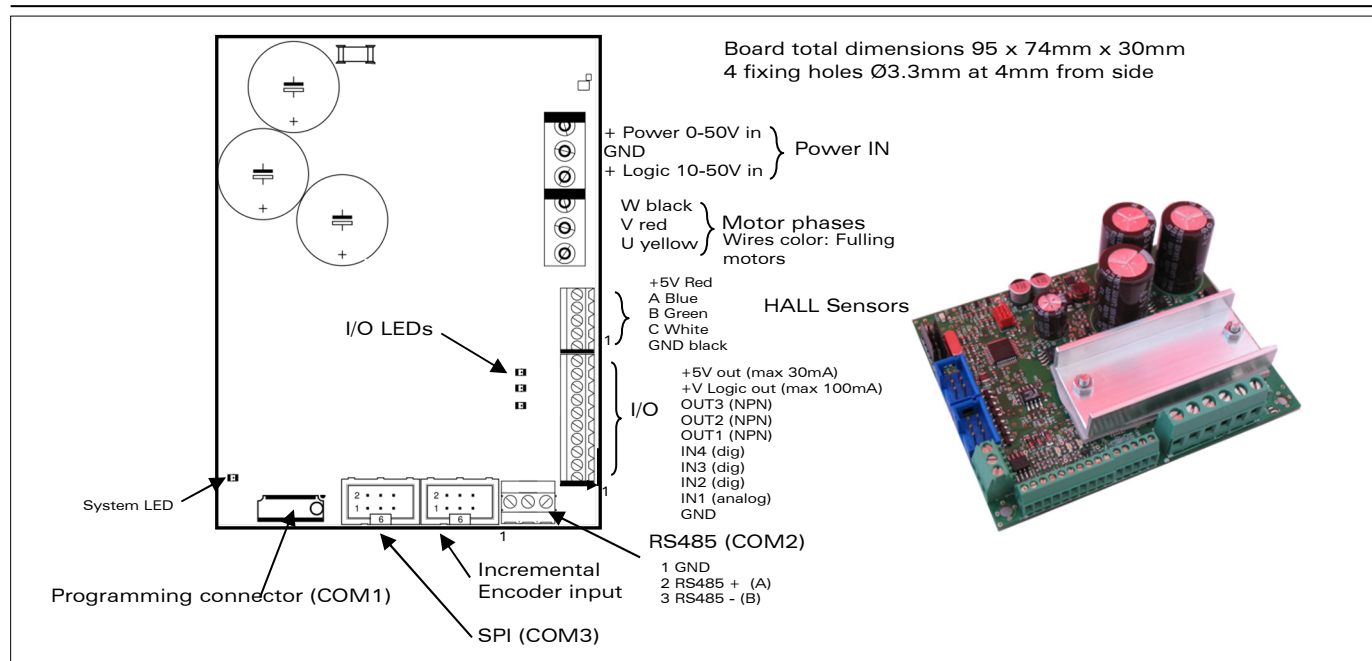
preferred version

WARNING: Do not supply the outputs 5V and + Logic out. Use it only to supply local accessories such as detectors, switches, lamps, sound generators ...

Required tools: USB (P000-034) or RS232 (P000-016), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 3.x

Tinaxis+ BL600, BLDC 50 V, 6A/10A, programmable



Specification	unit	value
a) General		
1 Motor types	BLDC with HALL sensor or without, with or without encoder. Also for brushed DC	
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo bytes	20
b) Electrical specifications		
4 Supply voltage Power (supply for motor)	V	0-50V
Supply voltage Logic (Supply for processor)	V	10-50V
5 Output current continuous/peek per phase	A	20 / 30
6 Input current (logic supply)	A	0.03 typical
7 PWM Frequency	kHz	1 to 60
8 Motor speed	RPM	Up to 20000 (100000 under special conditions)
c) Inputs Outputs (I/O)		
9 HALL sensor inputs: integrated pull-up, available current for HALL sensors at 5V: max 20mA		
10 General purpose inputs: 1 analog (IN1), 0-25V with ~30mV resolution, 3x digital (for 10 to 24V logic (IN2-4)		
11 Unconnected input voltage (pulled down)		0V ±50mV
12 General use outputs: 3 digital, NPN open collector to GND, max 100mA 35V, with LEDs		
13 Encoder optional input, counting frequency	MHz	5 max, with index
14 Response time after input change	ms	<2.5
15 Programming (UART)		Require cable adapter P00-016
16 Regulated output voltage	5V	5V ±2%: max 20mA
d) Mechanical characteristics		
17 Temperature, recommended (ambient / board)	°C	0 to 65 / 85
18 Integrated protections: temperature, motor current, ESD in I/O, short circuited I/O		
19 Without housing, I/O connectors with screws, pitch 2.54mm for wires section from 0.05 to 1.3mm² Power connectors with screws, pitch 5mm for wires section from 0.5 to 4 mm²		
Designation		Article nr.
1 Tinaxis Plus BL600.01		P010-E300
Special version on request (housing, shape, I/O, power, larger display, keyboard, USB, ...)		

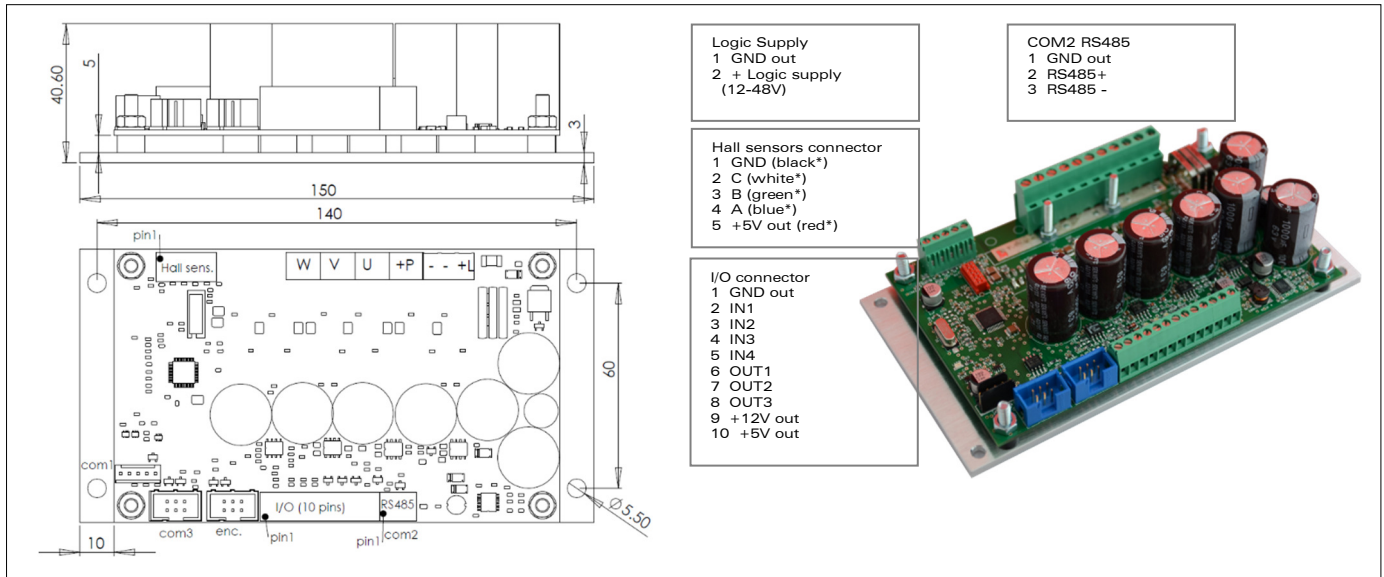
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WARNING: Do not supply the outputs 5V and + Logic out. Use it only to supply local accessories such as detectors, switches, lamps, sound generators ...

Required tools: Cable USB to Tinaxis (P000-034), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 3.x

Tinaxis+ BL962, BLDC 48 V, 40 A (80A peak), programmable



Programmable electronic drive for BLDC motors: positioning, speed, torque

Typical use: measuring apparatus, production machines, laboratory machines, portable machines

Specification	unit	value
a) General		
1 Motor types		BLDC with HALL sensor, with or without encoder. Also for brushed DC
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo bytes	10
b) Electrical specifications		
4 Supply voltage Power (supply for motor)	V	0-52V
Supply voltage Logic (Supply for processor)	V	12-52V
5 Output current (motor)	A	40 continuous / 80 peak
6 Input current (logic supply)	A	0.15 typical
7 PWM Frequency	kHz	1 to 30
8 Motor speed	RPM	0-30'000
c) Inputs Outputs (I/O)		
8 HALL sensor inputs: integrated pull-up, available current for HALL sensors at 5V: max 20mA		
9 General purpose inputs: 1 analog (IN1), 0-25V with ~30mV resolution, 3x digital (for 10 to 24V logic (IN2-4)		
10 Unconnected input voltage (pulled down)		0V ±80mV
11 General use outputs: 3 digital, NPN open collector to GND, max 100mA 35V, with LEDs		
12 Encoder optional input, counting frequency	MHz	5 max, with index
13 COM1 TTL UART: programming, remote control		
14 COM2 RS485: programming, remote control, inter-DM bus		
15 COM3 SPI extension port (LCD displays, absolute encoder, ...)		
16 Response time after input change	ms	<2.5
17 5V output (internal DC-DC converter)		5V ±10%: max 100mA
18 +V Logic output		Connected to +Logic IN through diode.
d) Mechanical characteristics		
19 Temperature, recommended (ambient / board)	°C	0 to 65 / 85
20 Integrated protections: temperature, motor current, ESD in I/O, moderate over-voltage, under-voltage		
21 Without housing, I/O connectors with screws, pitch 3.5mm for wires section from 0.25 to 1.6mm ² Power connectors with screws, pitch 5mm for wires section from 0.25 to 4mm ²		

Designation	Article nr.
1 Tinaxis+ BL960.01 Standard (48V 40A)	P010-E238
Customization available: box, shape, connectors, power rating, communication ...	
	preferred version

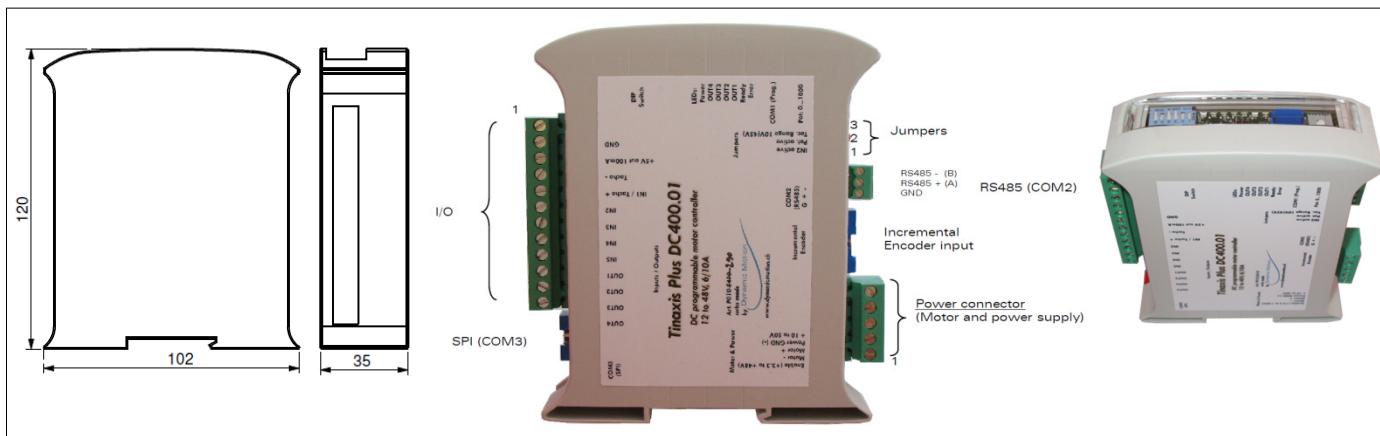
WARNING: Do not supply the outputs 5V and + Logic out. Use it only to supply local accessories such as detectors, switches, lamps, sound generators ...

Required tools: USB (P000-034) or RS232 (P000-016), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 3.x

The power connectors are parallelized by 2. Each can drive up to 25A continuous, therefore when using this board above 25A, please parallelize the supply and motor wires. Cooling: above 25A, we recommend that you increase the natural cooling by forced air or increased size cooler.

Tinaxis+ DC400, DC 48 V, 8A / 15A, programmable w/ BASIC



Programmable electronic drive for DC motors: positioning, speed, torque.

Encoder + tacho input

Ready to use as versatile motor amplifier (using build-in program)

Programmable (built-in program can be replaced by user program)

Typical use: measuring apparatus, production machines, laboratory machines, portable machines

Replacing analog amplifiers, taking advantage of digital control

Built-in software: modes selectable with front switches. Voltage amplifier, transconductance amplifier, speed regulation on tacho signal speed regulation on encoder signal, speed regulation on RxI feedback, positioning on encoder feedback

Specification	unit	value
a) General		
1 Motor types		brushed DC, coreless and iron cored
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo bytes	10
b) Electrical specifications		
4 Supply voltage Power (supply for motor)	V	10-55V
5 Output current (motor)	A	8 continuous / 15 peak
6 Input current (logic supply)	A	No load: 0.07 typical, max 15A
7 Chopper PWM Frequency	kHz	6 to 60
c) Inputs Outputs (I/O)		
8 Tacho input voltage	V	Range 1: $\pm 16V$, range 2: $\pm 36V$
9 Encoder input, quadrature and index		TTL 5V or line driver decoder RS422
10 5V output current (encoder + SPI + IO together)	A	0.4 max, protected through diode
11 1 General purpose analog input IN1, 0-25V with $\sim 30mV$ resolution, shared with Tacho input		
12 1 General purpose analog input IN2, $\pm 24V$ with $\sim 30mV$ resolution. Pulled down 30k		
13 3 General purpose digital inputs IN3 to 5, threshold $\sim 4V$, compatible with 5 to 30V logic. Pulled down 30k		
14 General use outputs: 4 digital, NPN open collector to GND, max 100mA 35V, with LEDs		
15 Encoder optional input, counting frequency	MHz	5 max, with index
16 ENABLE input	V	Disable= unconnected or lower than 4V Enabled=5 to 50V
17 Response time after input change	ms	<2.5
18 COM1 port: Programming (UART, TTL)		Require adapter cable or TTL levels
19 COM2 port: UART RS485: network, ascii, progr.		
20 COM3 port: SPI TTL, for accessories		i.e. Display, absolute encoder, TTL I/O
d) Mechanical characteristics		
21 Temperature, recommended (ambient / board)	$^{\circ}C$	0 to 65 / 85
22 Integrated protections: temperature, motor current, ESD in I/O, short circuited I/O, overvoltage, undervoltage		
23 I/O connectors with screws, pitch 3.5 mm for wires section from 0.05 to 1.6mm ² Power connectors with screws, pitch 5mm for wires section from 0.25 to 3.5mm ²		

Designation

1 Tinaxis Plus DC400.01

Special version on request

Article nr.

P010-E290

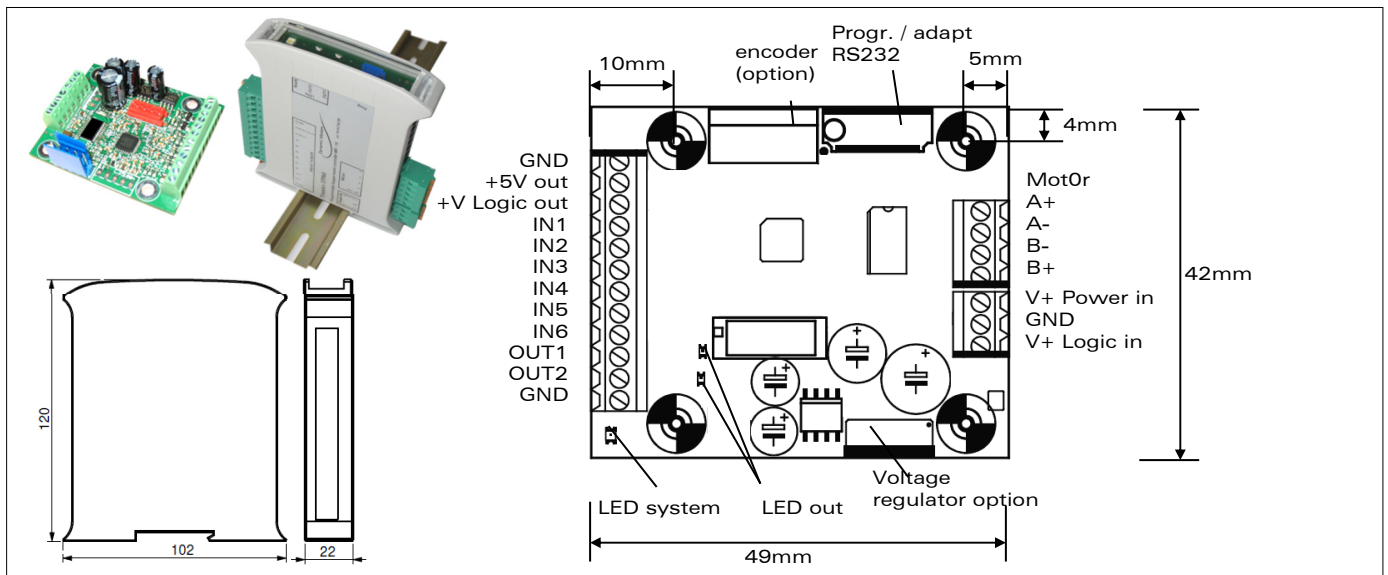
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WARNING: Do not supply the outputs 5V out. Use it only to supply local accessories such as detectors, switches, lamps, sound generators ...

Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 3.x

Tinaxis+ STP60, microstep 48 V, 1.2 A



Stepper motor intelligent controller, with microstepping, 2 phases current control (PWM)

Driver and controller integrated: steps generation, ramps, movement sequence, I/O management

Typical use: measuring instruments, factory automation, handlers, laboratory machines, precise positioning

Adapted to motors technology: hybrid, disc magnet and tin-can

Specification	unit	value
a) General		
1 Motor types		Stepper, 2 phases at 90°, 4, 6 or 8 terminals
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo octets	5
b) Electrical specifications		
4 Supply voltage (logic / power) without regulator with option regulator (unique supply) Din rail version	V	10-18V / 10 - 48V NC / 11-35V 7-35 / 10 - 48V
5 Output current (motor phase)	A	1.2 continuous / peak
6 Input current (logic supply)	A	0.07 typical
7 PWM Frequency	kHz	N.A.
8 Microsteps, software selectable		1/2/4/16 or automatic
c) Inputs Outputs (I/O)		
9 General use inputs: 6 analogue, 0-25V with ~7mV resolution and 1ms scan rate		
10 Unconnected input voltage (pulled down)		0V ±20mV
11 General use outputs: 2 digital, NPN open collector to GND, max 100mA 35V, with LEDs		
12 Encoder optional input, counting frequency	kHz	50 max
13 Response time after input change	ms	<2.5
14 Programming tool		cable P00-016 needed + free PC software
d) Mechanical specifications		
15 Ambient temperature	°C	-0 à 65
16 Integrated protections: temperature, motor current, ESD in I/O, short circuited I/O		
17 Board version: block connectors with screws, pitch 2.54mm for wires section from 0.05 to 1.3mm ² DIN rail housing version: disconnectable block connectors, 2.5mm ²		

Designation	Reference
1 Tinaxis+ STP60.02 Standard version, without regulator neither encoder	P010-E180
2 Tinaxis+ STP 60.01 no encoder input, single supply (integrated 12V regulator)	P010-E181
3 Tinaxis+ STP60.01DB DIN rail box version, no encoder, with regulator	P010-E181DB
3 Tinaxis+ STP 60.04 with encoder and double supply	on request
4 Tinaxis+ STP 60.03 with encoder and single supply (integrated 12V regulator)	on request
5 Tinaxis+ STP 60.06 with encoder and double supply, improved thermal cooling (recommended when using between 0.9 and 1.2A)	on request
6 Tinaxis+ STP 60.05 with encoder and single supply (integrated 12V regulator) , improved thermal cooling (recommended when using between 0.9 and 1.2A)	on request

preferred version

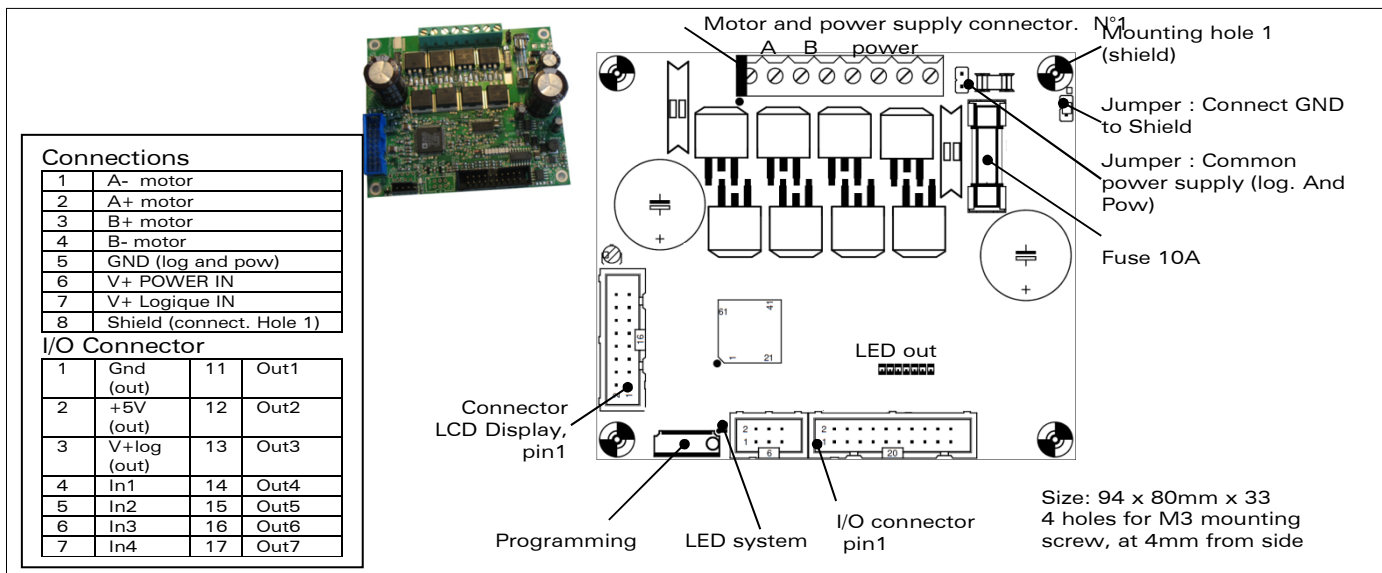
Remark

- The logic power input should not be supplied when the option "single supply" is chosen. A regulated 12V voltage is available at the same pin, in the condition that the regulator temperature is kept below 80°C.

Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 1.x

Tinaxis+ STP400, microstep 48 V, 7.5 A



Stepper motor intelligent controller, with microstepping, 2 phases current control (PWM)

Driver and controller integrated: steps generation, ramps, movement sequence, I/O management
Typical use: measuring instruments, factory automation, handlers, laboratory machines, precise positioning
Adapted to motors technology: hybrid, disc magnet and tin-can

Specification	unit	value
a) General		
1 Motor types	Stepper, 2 phases at 90°, 4, 6 or 8 terminals	
2 Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3 Memory for BASIC software	kilo octets	25
b) Electrical specifications		
4 Supply voltage (logic / power)	V	12 – 50V
5 Output current (motor phase)	A	1 to 7.5A continuous / peak
6 Input current (logic supply)	A	0.04 typical
7 PWM Frequency	kHz	N.A.
8 Microsteps, software selectable		1/2/4/16 or automatic
c) Inputs Outputs (I/O)		
9 6 general purpose analog inputs 0-25V with ~7mV resolution and 1ms scan rate		
1 general purpose digital input, 10 to 24V (threshold at ~5V)		
10 Unconnected input voltage (pulled down)		0V ±20mV
11 7 General use outputs: NPN open collector to GND, max 100mA 35V for all together, with control LEDs		
12 Encoder optional input, counting frequency	kHz	10 max
13 Response time after input change	ms	<2.5
14 1 LCD display port (HD44780 compatible)		2 x 16 characters. Available as option
14 Communication		RS485, optional MODBUS RTU
d) Mechanical characteristics		
19 Temperature, recommended (ambient / board)	°C	0 to 65 / 85
20 Integrated protections: temperature, motor current, ESD in I/O, moderate over-voltage, under-voltage		
21 Without housing, I/O connectors with screws, pitch 5mm for wires section from 0.25 to 2.5mm ² I/O connector: Quickie 20pins (DIN 41651)		
22 Compliance RoHS: Yes / REACH: data not available		

Designation	Reference
1 Tinaxis+ STP400.01 Standard version, without display	P010-E191
2 Tinaxis+ STP400.02 Standard, with LCD display	P010-E190
3 Tinaxis Plus SPT 600 Higher current, improved cooling – 12A	P010-E192

Customization possible at relatively low volume (connectors, shape, features)

preferred version

Remark

- The logic power input should not be supplied when the option "single supply" is chosen. A regulated 12V voltage is available at the same pin, in the condition that the regulator temperature is kept below 80°C.

Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)

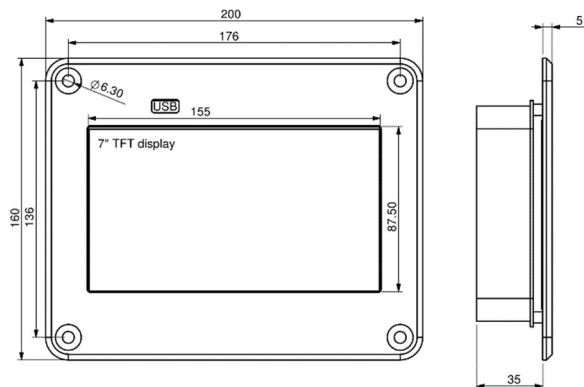
Required documentation: Hardware data sheet, Software manual version 1.x

Notes

- (*) When the continuous current exceed 4A, the power transistors generate some heat, temperature must be tested and if necessary take the appropriate measures (forced air, thermal conductive pad and cooler). Manufacturer is available for assistance.
- (*) When current setup is set below 1A, the real current will be around 1A.
- IN7 has special features options (frequency counter, timer)

Common power supply jumper: default setting=separate power/logic supply.

Example: 7 inch version



HMI 4.3" to 7" family

The **Tinaxis HMIx** is an HMI family combined with multiple inputs/outputs. It can control various kind of machines, by connecting sensors and accessories directly or by the use of extensions. It can be easily customized according customer needs, either software customization, either hardware customization.

Based on FreeRTOS, it is fast to boot (typical 1 sec.), immediate response on display action, capable of smooth animations (at 50 fps.)

- 4.3 to 7 inch 800x480 pixels, 24bit colour, with capacitive touch, highly responsive. 4.3" and 5" are IPS
- Metal frame (Aluminium)
- Able to display high quality graphics, with anti-aliasing, multiple fonts, jpg images, mpg videos, multi layers graphics with transparency effects
- Sound effects
- Up to 36 IOs
- RS485 bus (MODBUS, ...)
- Optional CAN bus
- Optional RS232
- Real time clock high precision with lithium battery (optionally rechargeable)
- SD card on board for user data, images, video, firmware update
- Optional USB host socket (to connect USB stick)
- Optional WIFI, Bluetooth, LAN
- Optional Tinaxis Modular sockets for motor controllers (stepper, BLDC, DC)
- Optional quadrature encoder input

Parameter (summary)	unit	value
1 Supply voltage	V	10-32V
2 Power consumption	W	0.3 to 4
3 Display brightness	Nits	Typical 350 (customizable)
4 10 Inputs compatible PNP, 5 to 24V level (pull-down ~30kOhm), threshold 2.5V, scan rate 1ms		
5 2 Fast inputs, compatible PNP, 5 to 24V level (pull-down ~30kOhm), threshold 2.5V, interrupt, 1MHz		
6 4 inputs compatible NPN, 5 to 24V level		
7 2 analog inputs 0-10V (5-20mA optional), 12 bit ADC		
8 4 outputs optocouplers 50mA		
9 6 outputs NPN (power mosfets 3A, 5 to 48V)		
10 Optional 8 additional outputs NPN 100mA / 24V		
11 General purpose outputs: 3 digital outputs, open collector to GND, max 100mA 35V, visualized by LEDs		
12 Microprocessor dual core 240Mhz + GPU		
13 Ambient temperature range for best LCD comfort	°C	5 to 35°C
14 Ambient temperature range during use	°C	0 to 55°C
15 Certifications: eligible for CE		

Contact us for more details

Softwares (for Windows™):

(Freely available at www.dynamicmotion.ch, menu Products/Support -> Download)



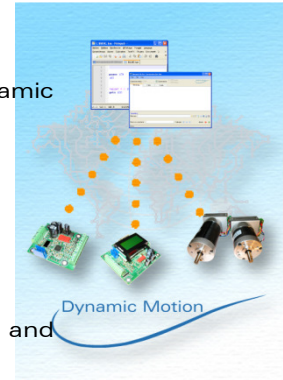
- Notepad++ A GNU text editor with special syntax coloration add-on for Dynamic Motion-BASIC language

notepad++.exe



- Dynamic Motion Communication Software running on Windows (DMComTool.exe)

Note: programming is also possible on non-Windows platforms, with any terminal and text editor software

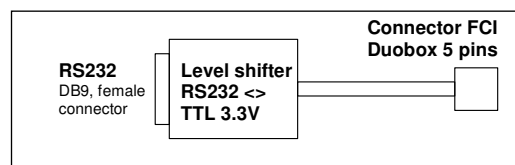


Cables

Tinaxis electronics require a cable to communicate between the programming computer and the TTL programming connector. Article P000-016 and P000-034 are made for this purpose.

P000-016

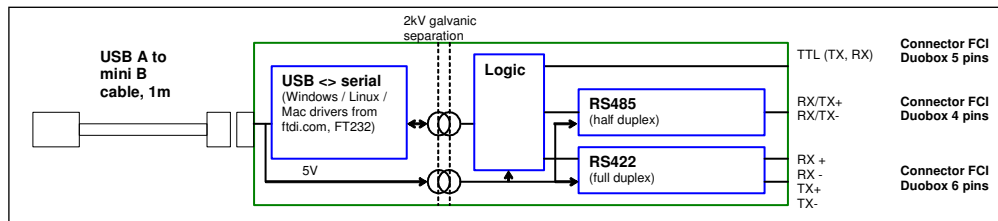
- 9 pins RS232 adaptor to 5 pins Tinaxis programming connector



P000-034 (with download link)

P000-035 (with USB disk including software/driver)

- Multistandard USB to Tinaxis adaptor, with galvanic separation
- Support TTL 3.3 / 5V (Tinaxis Connector)
- Support RS485 with fail safe (47k pull – up / down), terminal resistor 120 Ohm included (jumper activated), up to 115kbps, up to 1.2km wire length
- Support RS422 full duplex with fail safe and terminal resistor 120 Ohm, up to 1.2km wire length



Tinaxis+ Programming assistance

In order to help our customers to easily and quickly start with our products, we offer various assistance possibilities.

Free assistance

The free assistance is made by phone, to help customers to start-up with the programming environment, help selecting and connecting the material.

Within free assistance, we also create small software that we send by email, with an example of initialisation sequence that suit your material, activate the motor or connected peripherals and demonstrate the use of the main functions for your application. Attention: the user must make own software based on the given example. Time allowed for each project is limited; we test software on our hardware.

support@dynamicmotion.ch

Fixed price assistance

This assistance includes in addition the opening of a project in our records, an analysis of your specification and the creation of an algorithm that will make your application functional. At the end, simple applications can be terminated, or complex application is working with basic functionalities.

The requirements for fixed price assistance are:

- The description or specification is given by written, limited to ~10 elements
- The active material used in the project must be loaned to us in order to test our program and measure performance. In some cases, our hardware is enough for testing.
- Wiring the peripheral elements, up to 6 elements (power supply, buttons, lamp, display, motor, ...)
- Buying peripherals components (excluding material and shipping cost)
- Creation of a short application specification with crucial information (connexions, behaviour, performance)
- The amount of iterations (customer testing and additional specifications) is limited to 2
- The applicability is subject to our decision after your specification analysis. Working time allowed in the project is limited.
- The software is limited to initialization + algorithm of ~50 lines + comments

Flexible assistance

When fixed price assistance is too limited, we propose unlimited assistance, based on time rate.

Designation		Article
1	Fixed price assistance	P000-100
2	Flexible assistance (engineering)	P000-101

Encoders and accessories

Encod 1024, Magnetic encoder 1024 points, absolute on 1 turn

Round version

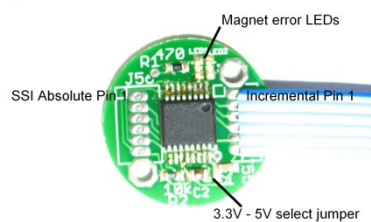


Fig. 1: Circuit and connexion

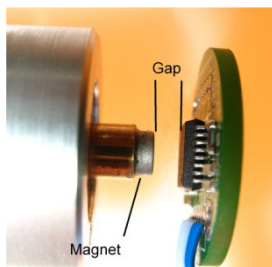


Fig. 2: mounting principle

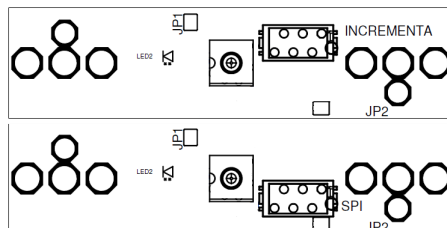
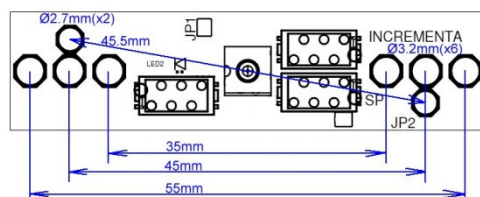
Incremental (round)
Pin 1: +5V
Pin 2: Out A
Pin 3: Out B
Pin 4: Out Index
Pin 5: +3.3V (optional)
Pin 6: GND

Absolute SSI (round)
Pin 1: +5V
Pin 2: CS (Chip Select)
Pin 3: CK (Clock)
Pin 4: Data Output
Pin 5: Data Input (for chain connexion)
Pin 6: GND

Incremental (rectangular)
Pin 1: +5V
Pin 2: Out A
Pin 3: Out B
Pin 4: Out Index
Pin 5: +3.3V (optional)
Pin 6: GND

Absolute SSI (rectangular)
Pin 1: GND
Pin 2: CK
Pin 3: DO
Pin 4: DI
Pin 5: CS
Pin 6: +5V

Rectangular version 15 x 60mm



Incremental version
P083-E15

SPI (SSI) version
P083-E12

Encoder kit, to measure the angle or speed of a shaft

The encoder kit is a very simple and cost effective solution to make a feed-back form a rotating shaft.

Thanks to Hall technology, combined with signal processing to create the digital outputs:

- Incremental quadrature A/B+index (256 lines/rev=1024pts)
- SSI serial absolute angle measurement

The kit comes with:

- Circuit
- Connector or Cable mounted (specify "incremental" or "SSI")
- Magnet (Ø 4mm x 2.5mm or Ø6 x 3mm)
- Optional line driver with complementary inputs/outputs (RS422)

Parameter (summary)	unit	value
1 Supply voltage, voltage selector OPEN	V	5 ± 10%
2 Supply voltage, voltage selector SHORT (solder drop)	V	3.3 ± 10%
3 Input current	mA	21 max
4 Mounting alignment error	mm	0.3
5 Mounting gap	mm	1 to 1.6
6 Resolution		2 x 256 pulses (1024 points) = 0.352°
7 Precision	mech. °	1.5
8 Rotation Speed	RPM	Incremental: 1000 max, SSI: 10000
9 Temperature of use	°C	-40 to 100
10 Magnet included in round encoder kit	mm	Ø4mm x 2.5mm (tol. 0/-0.1)
11 Magnet included in rectangular encoder kit	mm	Ø6mm x 3mm (tol. 0/-0.1)
12 Recommended cable length	mm	Max. 300 mm

Functional description, incremental

Voltage selector jumper:

5V operation (default): let the jumper open and do not use the 3.3V wire (Round version, pin 5).

3.3V operation: supply together the 5V (Pin 1) and 3.3V (Pin 5) wires with a single 3.3V source OR short the jumper and supply with any of the Pin 1 or Pin 5 with 3.3V. 3.3V is not available on rectangular version.

Functional description, absolute SSI

SSI is the industry standard serial communication used by encoder manufacturers. The information contains the absolute angle between 0 to 359.7°, coded with 10 bits.

Voltage selector jumper has the same functioning as the incremental connector, except that 3.3V is not available on the connector.

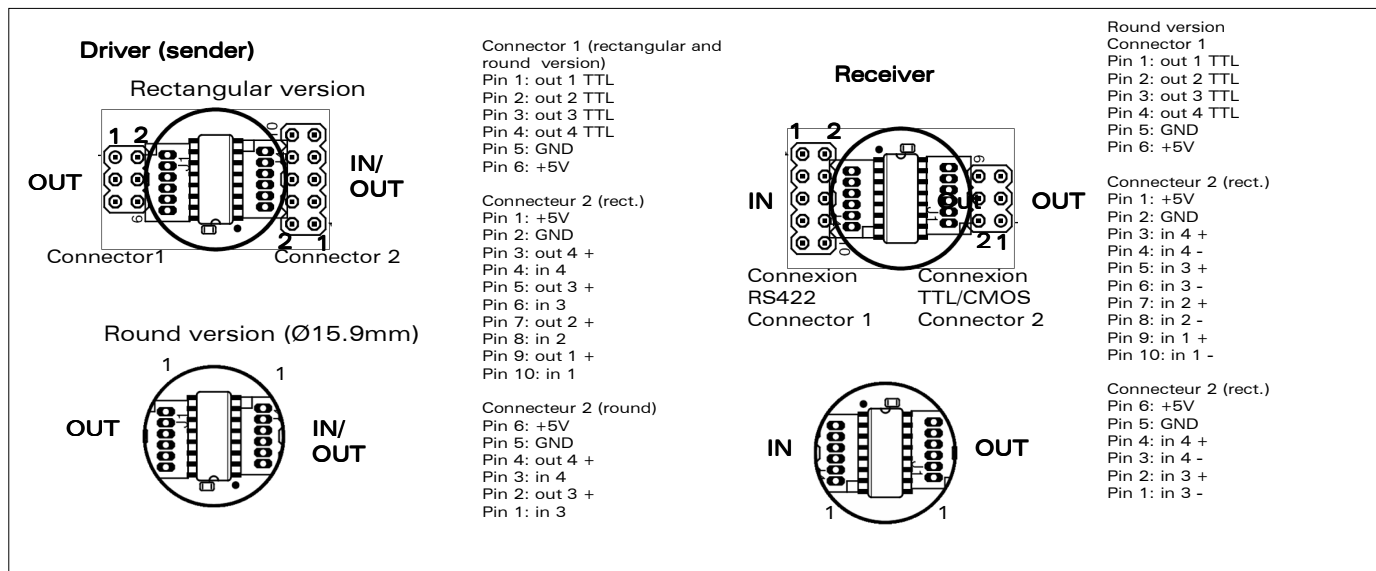
Rectangular version SSI (SPI) pinout is directly compatible with Tinaxis boards

Désignation	Article
1 Encod1024D16.01 Ø16mm SSI cable	P083-E160
2 Encod1024D16.02 Ø16mm incremental cable	P083-E161
3 Encod1024D20.01 Ø20mm SSI cable	P083-E200
4 Encod1024D20.02 Ø20mm incremental cable	P083-E201
5 Encod1024S15x30SPI.01 15 x 30mm, connector SPI (SSI)	P083-E12
6 Encod1024S20x30-LD.01 15 x 30mm, connector SPI (SSI) with line driver	P083-E11

Special versions possible, 1 to 4048 lines,

Preferred versions

Line-R, Line-D : Line driver / receiver RS422



**Simple circuit to convert differential signals provided by systems with line driver, to TTL.
2 of 4 channels, sender or receiver**

Specification	unit		value
a) General			
1 Norm	ANSI/TIA/EIA-422-B (also named RS-422)		
b) Electrical characteristics			
2 Supply voltage	V	4.5 to 5.5V	
3 Supply current	mA	20 (receiver) / 70 (driver)	
4 Protections	-		
c) Inputs / outputs			
5 Channels	Each channel is independent, it can encode / decode signals from an encoder.		
7 More electrical specifications	See Data Sheet National Semiconductor: DS3486 (Reciever) et DS3487 (Driver)		
8			
d) Mechanical characteristics			
12 Without housing			

5V

Longue distance
(de 0.5m à 1km)

5V

Line driver

Line receiver

Signaux simples

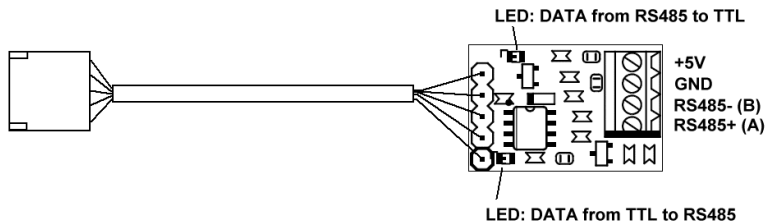
Signaux simples

Signaux complémentaires
sur paire torsadée

Designation	Article nr.
1 Line driver rectangular	P103-E10A
2 Line driver round	P103-E10B
3 Line receiver rectangular	P103-E12A
4 Line receiver round	P103-E12B

Converter RS485 to TTL (auto timing)

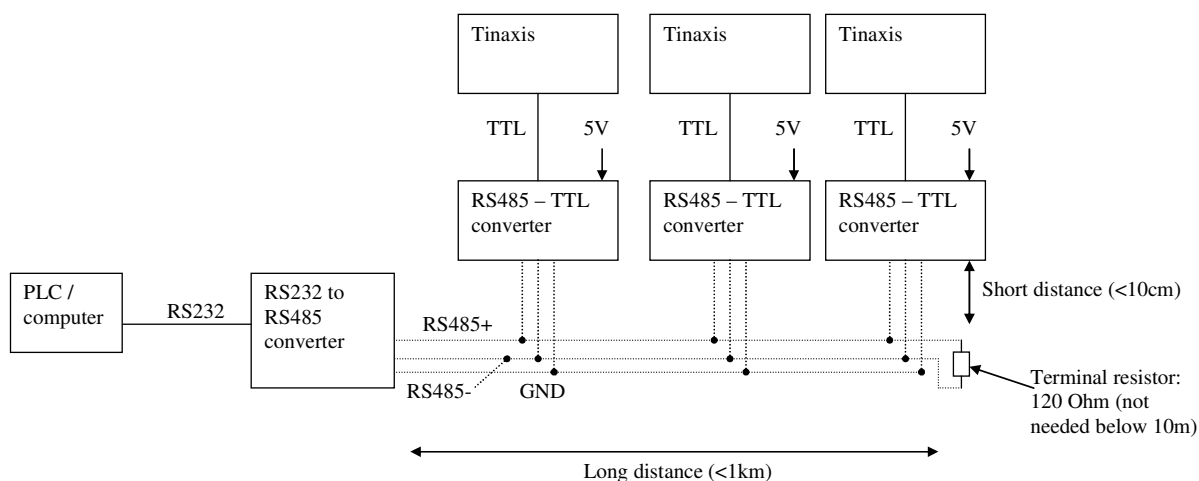
Converter TTL -to- RS 485



Allow to extend to RS485 any Tinaxis board which do not have native RS485 output
Advantages of RS485: long distance (up to 1km), high immunity, multi-point bus

Specifications	unit	value
a) General		
1 Norm	RS-485 / Half Duplex	
b) Electrical characteristics		
2 Supply voltage	V	4.5 to 5.5V
3 Current	mA	20, 80 peak
4 TTL signal specification	V	Compatible with 3.3V and 5V
5 Communication speed	bit/sec	57600
6 Insulation		No (GND TTL and GND RS485 common)
7 Recommended qty. of elements on the same bus	(max)	12 (recommended)
8 Working principle:	The signal present on TTL RX (input of the converter) commands the input/output state of the RS485 converter. As soon as a level 0 on TTL-RX is detected, the driver switch to “sender” and a timer is launched. The time is reset each time a level “0” is present. When timer is time-out, the driver switch to “receiver”	
c) Mechanical characteristics		
9 Connect0r TTL: DUOBOX Femelle (FCI), 5 poles	Pin1 V+ / 2 RX / 3 TX / 4 GND / 5 NC	
10 Connect0r RS485: terminal block	Max section 1.3 mm²	
11 No housing, TTL cable 40mm		

RS485 BUS principle



Designation

1 RS485 - TTL converter

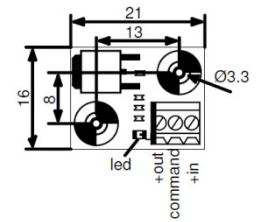
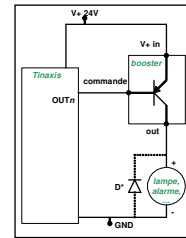
Article

P000-032

versions préférentielles

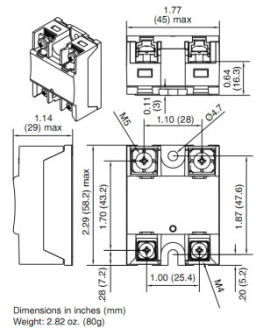
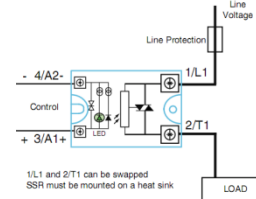
Output booster PNP

- 12 to 24V
- Up to 0.8A
- Cost effective
- In case of inductive load, protect with a diode
- Not short circuit protected
- ESD safe
- Screw terminal for 0.05 to 1.3mm²
- Art. Code: P103-E01



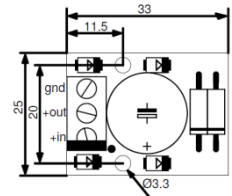
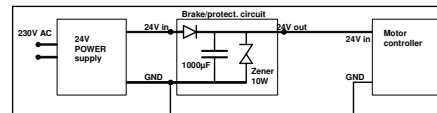
Static opto-relay (Triac opto relay)

- Load voltage: 12 to 280 V AC
- Load current: max 12A, min 5mA
- Command: 3 to 32V DC
- Zero cross switch
- Type TELEDYNE STH24D12
- Art. Code: P103-E13



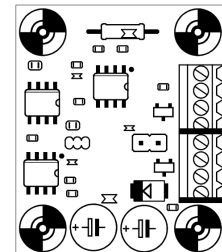
Brake and power supply protection, type BR26-4-A

- Prevent voltage rise in power supply
- Use together with switching power supply to prevent fault condition
- Dissipate braking energy, up to 8W continuous (with forced air cooling)
- Nominal voltage: 24V
- Max forward current: 4A continuous, 6A peak
- Not short circuit protected
- ESD safe
- Screw terminal for 0.1 to 1.6 mm² cables
- Art. Code: P103-E16



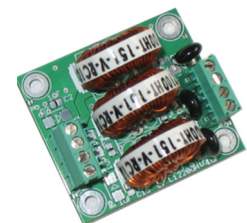
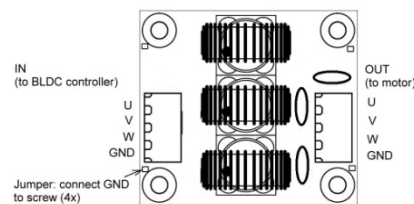
Sensor converter for differential signals to single ended conversion and amplification

- Convert $\pm 1\text{mV/V}$ or higher to 0..10V standard
- Power supply_ single ended 12V to 24V
- Gain: hardware programmed (from 5 to 1000)
- Low distortion, low noise
- Art. Code: P103-E04xxx (xxx is the gain, from 5 to 1000)
- Size: 31 x 37x mm
- 4 holes for M3 screws, at 4mm from side

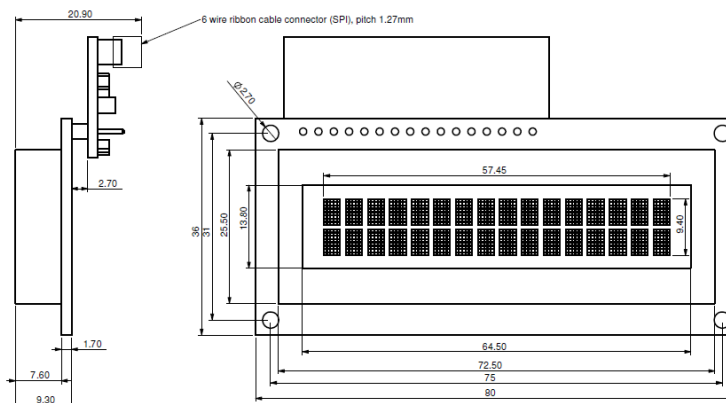
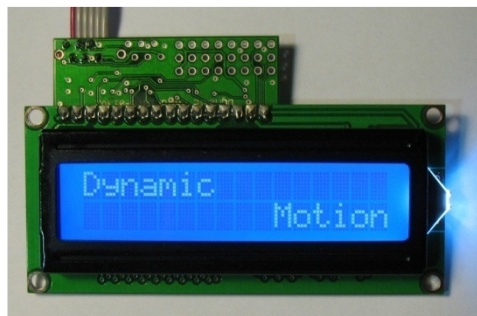


3 phases filter

- Filters the 3 motor phases
- CEM noise reduction
- Coreless motor efficiency increase
- Can be used with DC and BLDC motor
- Allow longer cables between driver and motor
- Must be connected near the driver
- Voltage max: $\pm 50\text{V}$
- Inductance: 150µH
- Nominal current: 3.3 or 1A
- Connection to GND: mandatory connected on driver side, can be left open on motor side
- Peak current (<10% time): 5 or 1.8A
- Art. Code for 3.3A version P000-026
- Art. Code for 1A version P000-027



LCD display, for SPI bus



Display LCD with white backlight

Extension to Tinaxis boards

- Visualization of any text
- Use the "print" command in the BASIC, and LOCATE registre to move the cursor
- Contrast digitally adjustable, available from BASIC
- Backlight ON/OFF available from BASIC

Specification	Unit	Value
a) General		
1 Require 6 pin SPI connector on and special protocol		
b) Electrical characteristics		
2 Voltage	V	5±10%
3 Current consumption	mA	< 100
4 Bus		SPI (TTL 3.3 to 5V)
5 Protocol		Custom Dynamic Motion
6 Compatibility with Dynamic Motion Tinaxis boards		BL120, BL961. Other, please ask manufacturer

Example of use:

a) the code to print as the picture on top, on BL120 board

```
com3cfg=11 'activate COM3 (SPI) as LCD port
Print "Dynamic"
com out 3 0 10 110 'equivalent to LOCATE=110, to set text pos.
Print "Motion"
```

b) print a special character on LCD display: example the " ➤ "

- 1) get the character code in the table. Code is binary 0111 1110
- 2) convert in number (hexa or decimal): hexa: 0H7E or decimal:126
- 3) in your code, use the command:

```
Print & 126 or print & 0H7E
```

Hex	000	001	010	011	100	101	110	111
xxxx0000	00	01	02	03	04	05	06	07
xxxx0001	08	09	0A	0B	0C	0D	0E	0F
xxxx0010	10	11	12	13	14	15	16	17
xxxx0011	18	19	1A	1B	1C	1D	1E	1F
xxxx0100	20	21	22	23	24	25	26	27
xxxx0101	28	29	2A	2B	2C	2D	2E	2F
xxxx0110	30	31	32	33	34	35	36	37
xxxx0111	38	39	3A	3B	3C	3D	3E	3F
xxxx1000	40	41	42	43	44	45	46	47
xxxx1001	48	49	4A	4B	4C	4D	4E	4F
xxxx1010	50	51	52	53	54	55	56	57
xxxx1011	58	59	5A	5B	5C	5D	5E	5F
xxxx1100	60	61	62	63	64	65	66	67
xxxx1101	68	69	6A	6B	6C	6D	6E	6F
xxxx1110	70	71	72	73	74	75	76	77
xxxx1111	78	79	7A	7B	7C	7D	7E	7F

Designation

1 P000-039 Blue bkground, white text. With 150mm flat cable

Customization possible: other colours, other size. Please contact manufacturer for availability

Article

P103-E04

LEDs in illumination and signalization are well known for its energy efficiency and long life.

For comfort and aesthetic, we provide control board with no compromise, to get the best out of the lamps

Programmable ambiances, effects, transitions

Highest comfort thanks to high frequency chopper or even continuous supply

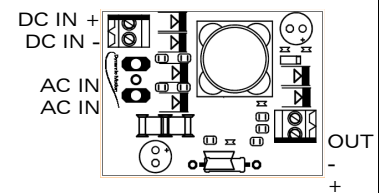


Examples of application:

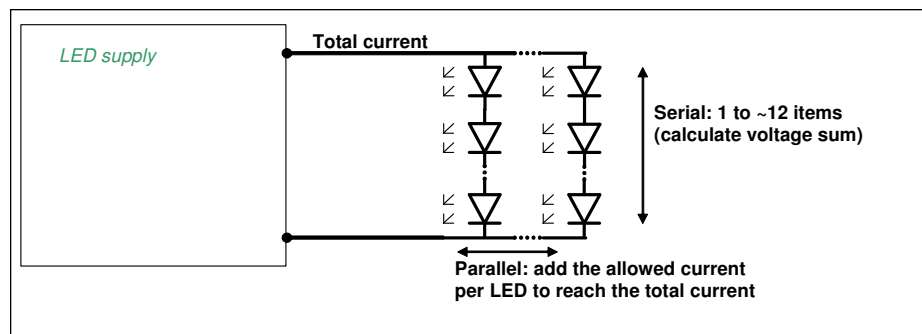
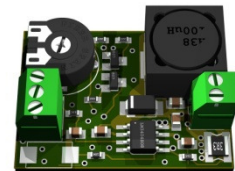
- Architectural illumination, with or without colour changing
- Ambience creation
- Renewal atmosphere on request
- Artistic objects / place illumination
- Storefronts
- Signalization
- Solar powered systems

10W Step-up fixed current

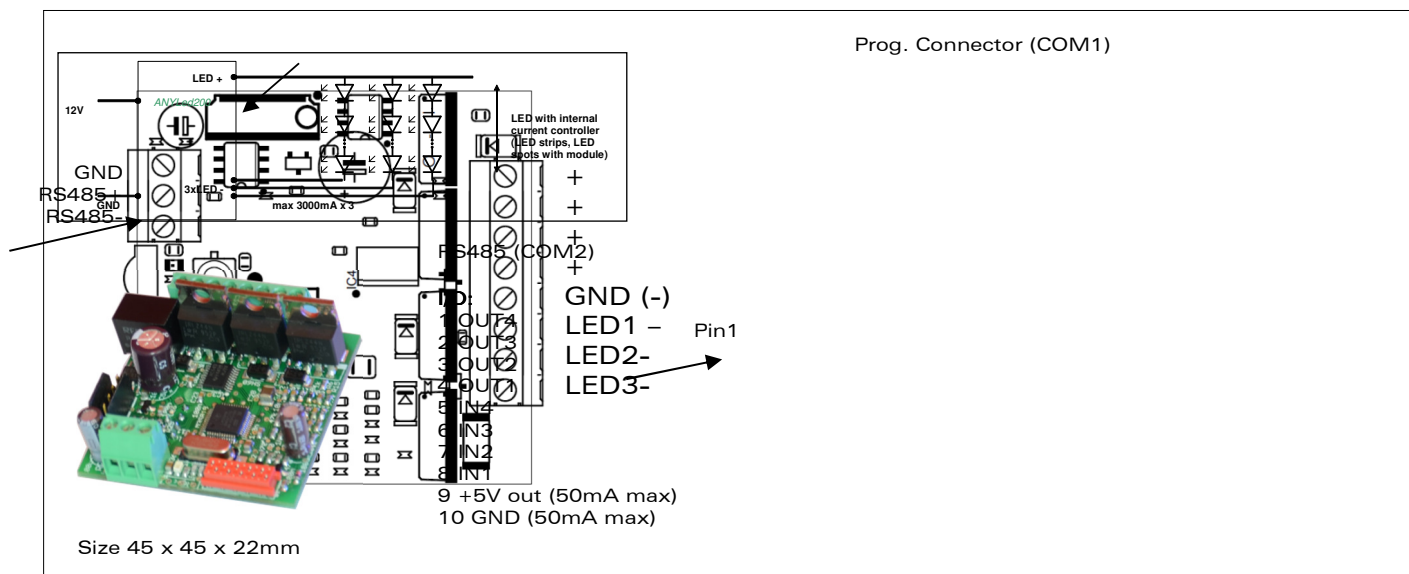
- Input 3 to 24V, max 0.6A
- Output voltage: from input voltage to 35V
- Output current: fixed, from 3mA to 350mA
- Ambient temperature: -20 to +65°C
- Size: 26 x 35mm, x12mm
- High efficiency
- Terminal screw connectors (default), optionally with wires
- Typical applications: battery powered systems, advertising displays
- 2 input versions: with AC input or with DC input
- Art. Code: (DC input) P102-E0103-xxxmA (replace xxx by current value)

**30W Step-Down fixed current and dimmer with potentiometer**

- Dimmer acts on current (no flickering)
- Best comfort of light (stable, constant light without chopper effect)
- Typical applications: working lamp, battery powered systems, advertising displays
- Input 5 to 38V, max 1A
- Output voltage: from 2V to input -1.5V
- Output current: dimmer from 0 to max / max is fixed at factory (resistor)
- Ambient temperature: -20 to +65°C
- Size: 33 x 24 x 15mm, + potentiometer shaft 25mm
- High efficiency
- Art. Code: (DC input) P102-E0301-xxxmA (replace xxx by current value).
- Common current values: 20mA, 80mA, 100mA, 350mA, 700mA



AnyLED 200, RGB modulator, programmable



LED controller, programmable with BASIC, 12V, 3x3A, high frequency PWM (16kHz)

Almost unlimited effects!

Colour quantity RGB ~4000'000'000'000 (4000 billion) (42 bits)

Luminosity control, each channel: 16000 (14 bit)

Typical applications:

- Ambiance creation, smooth random light colour and intensity variation
- Multicolour flashing effects
- Advertising illumination
- Artistic illumination
- Reducing energy consumption (adjust intensity to real need)
- Luminotherapy
- Natural light simulation (colour and intensity adaptation)
- ...

Specification	unit	value
a) General		
1 LED type: constant voltage (12V)		LED modules 12V LED strips 12V / self adhesive tape LED Colour: any (including RGB)
b) Electrical specifications		
2 Input voltage	V	10 to 25
3 Current (out)	A	Up to 9A (3x3A)
4 Current (IN)	A	Up to 9
5 Voltage out		Chopper of input voltage
5 Luminosity	%	0-100, steps of 0.1%
c) Mechanical specification		
6 Ambient temperature	°C	-10 to 75
7 Protections: over temperature, over current. Not tolerant to reverse voltage and short circuits		
8 Cooling: the board create some heat, please ensure board temperature do not exceed 85°C in any situation		
9 No housing		
10 I/O connector: Micromatch AMP 10 pins		
11 Power, LED and RS485 connector: pitch 3.5mm, up to 1.5 mm ²		
Designation		Art. Nr.
1 Anyled200-01		P102-E510
Custom version on request		

Remark

- The logic power input should not be supplied when the option "single supply" is chosen.

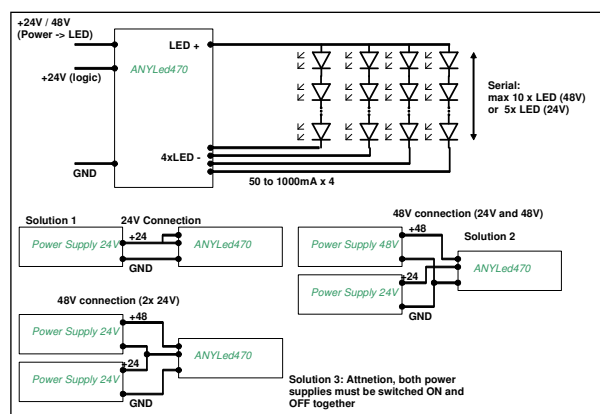
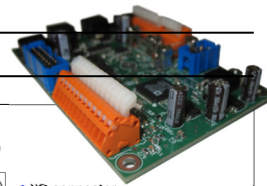
Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)

Required documentation: Hardware data sheet, Software manual version 3.x

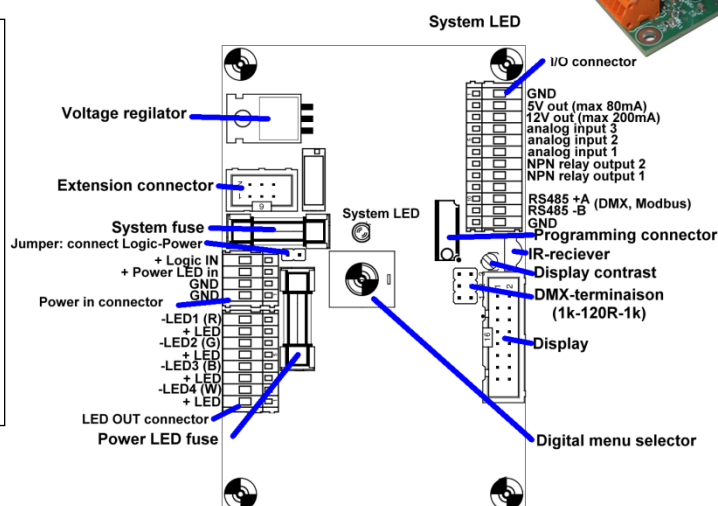
Notes

- Examples of programs available with the "Dynamic Motion programming suite"
- We provide service of programming your needs; please feel free to contact us with your idea. Programming can be free of charge or low fee.

AnyLED 470, RGB +W modulator, programmable



Size: 65 x 100 mm x 23mm
4 holes for M3 screws at 4mm to side



LED controller, programmable with BASIC, 12V, 4 x 1A, high frequency PWM
With integrated current regulator (DC-DC chopper converters)

Almost unlimited effects!

Typical applications:

- Ambiance creation, smooth random light colour and intensity variation
- Multicolour flashing effects
- Advertising illumination
- Artistic illumination
- Reducing energy consumption (adjust intensity to real need)
- Luminotherapy
- Natural light simulation (colour and intensity adaptation)
- ...

Specification	unit	value
a) General		
1 LED type:		- Power LED 1W, 3W, 5W serially connected - Low power LED serial/parallel connected (up to 720 LED 5mm/20mA per channel)
constant current		
LED chip directly connected		
b) Electrical characteristics		
2 Supply voltage	V	Power: 10-48V Logic: 14-28V
3 Output current total	A	2.8
4 Input current	A	max 3.5
5 Output current settings (software setting)	mA	50 to 700, my step of 1mA
6 Tension de sortie	V	Automatic, 0 to V+Power -2V
7 LED quantity serially connected according input voltage, white or blue LED (If the LED colour is red, it is possible to add 25% more, if colour is yellow or green: 10%)		12V: 1 to 2 LED 24V: 1 to 5 LED 36V: 1 to 7 LED 48V: 1 to 10 LED
8 Luminosity modulation	%	0-100, by step of 1%
9 IO (general purpose input/output signals)		3x analog input 0-24V 2x digital output (NPN), 24V 50mA
10 RS485		Optional DMX and MODBUS
11 Connector for LDC display		Alphanumeric type (HD44780 chipset)
12 Connector for IR remote receptor		
c) Mechanical characteristics		
13 Ambient temperature	°C	-0 to 65
14 Protections: short circuit on LED channels, over temperature, ESD		
15 Cooling: when used at more than 50% of the rated power, allow air circulation around the board.		
16 Without housing,		
17 Connectors LED, power supply and I/O: spring WAGO type for wires 0.05 to 1.3mm ²		
18 Display I/O: Quickie socket (for flat ribbon connector)		

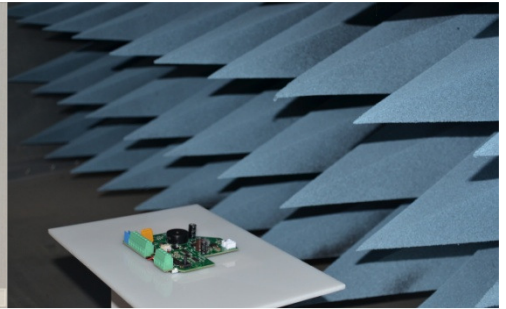
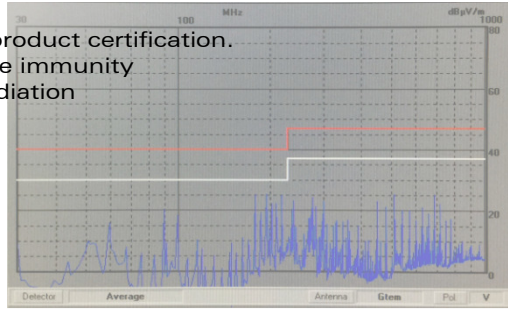
Designation	Article
1 Anyled470-01 Simple, without display	P102-E500
2 Anyled470-02 with display	
3 Anyled470-01 Kit: avec power supply 220V-24V, 1 RGB LED 9W and et 1 white LED, 1 display 4 lines blue/white, IR keychain remote control.	
Customization possible	

Services

Certification

We provide support for final product certification.

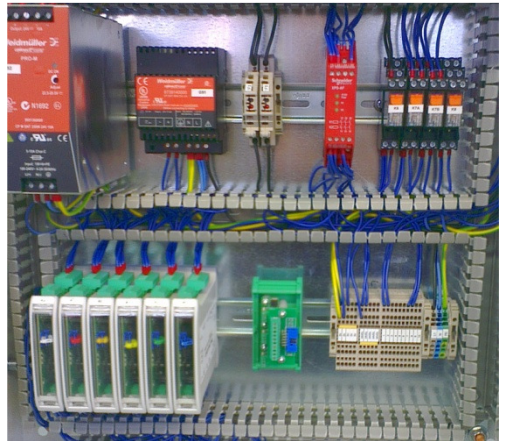
- Electrostatic discharge immunity
- EMI immunity and radiation



Integration

We provide the services for integrating our boards in your machines:

- Assistance for machine concept and design
- Creating the software
- Creating schematics
- Cabling
- Tests and validation on site
- Documentation



Co-developments

We take part of your developments according your needs, to provide best fitting electronic for your product. The added values are:

- Optimize integration concept of electronic-sensor-motor-mechanics
- External point of view, added creativity
- High skill punctual support
- Product optimization
- Better reliability and functionality



Custom design

Dynamic Motion design and produce custom electronics according customer specification.

- Include features taken from our standard products
- Create new features fitting customer needs
- Including user interfaces, communication, power, according request
- Size, shape, strengthening according request
- Housing, box, protections



Dynamic Motion

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