2023

Customized HMI
Motor control electronic
LED control electronic

Dynamic Motion

Dynamic Motion's activities

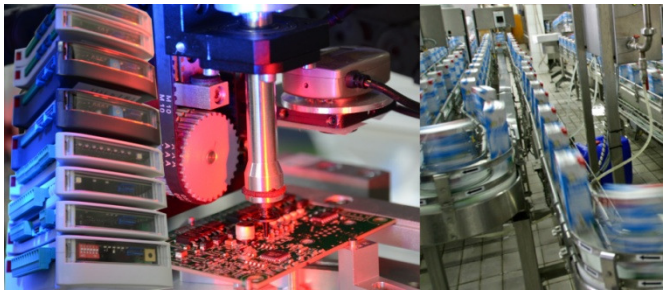
Always focused on customer requests and application fitting, our different markets share the same needs: Electronic carefully designed and produced within high level exigency. LED and motor control implemented in a highly collaborative way.

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 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.

Contents

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:

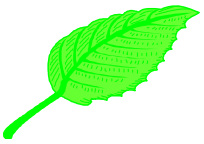
- Always use ESD dissipative material in contact to the boards during storage, transport, handling
- Manipulate the boards using ESD body protections

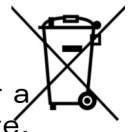
Cooling

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 µs). 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.

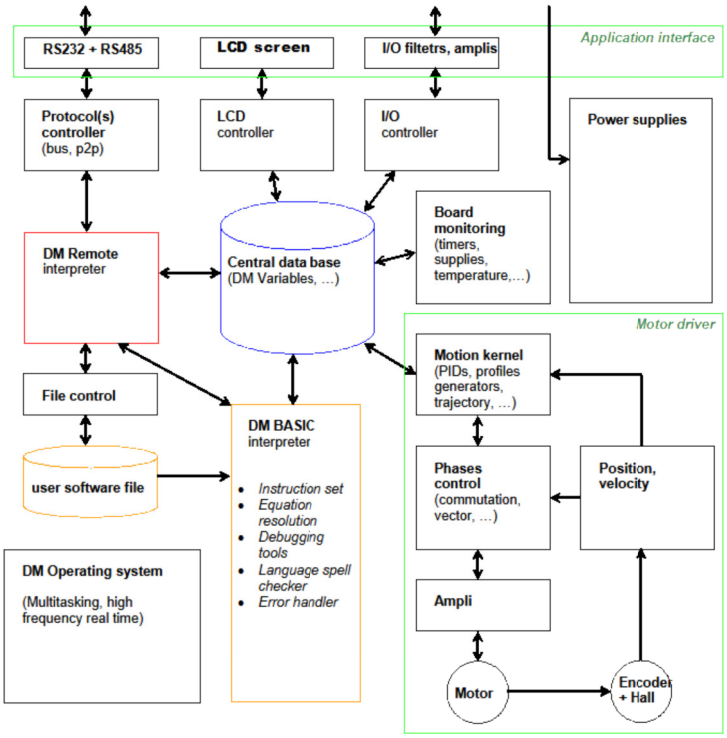
Controllers Tinaxis Plus, BASIC programmable

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.

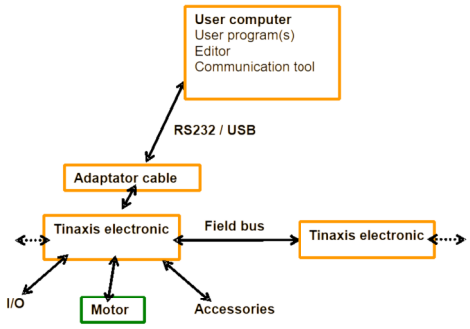
The BASIC programming language used in Tinaxis is modern and structured, using the original syntax, with subroutines, without the need of the line numbers.

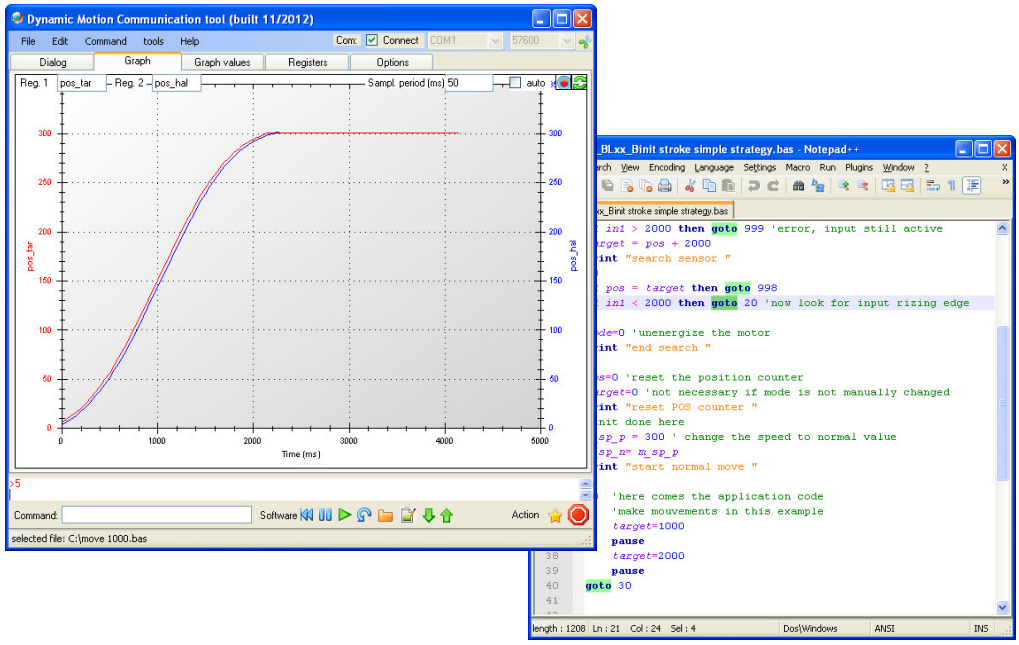
Typical applications are:

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

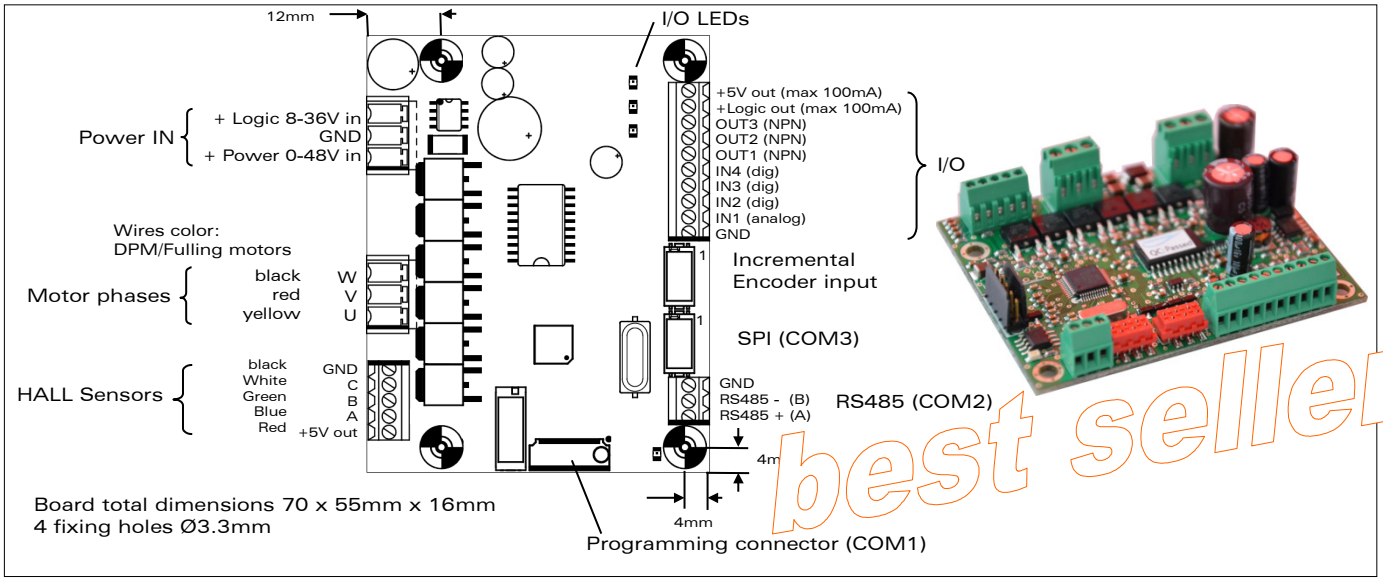


Tinaxis electronics can hold the user software or can be used as remote controlled device.




Dynamic Motion Communication tool (built 11/2012)
File Edit Command tools Help
Com: Connect COM1 57600
Dialog Graph Graph values Registers Options
Reg. 1 pos_tar Reg. 2 pos_hal Sampl. period (ms) 50 auto
Time (ms)
Command: Software Action
selected file: C:\move 1000.bas
BI.xx_Binit stroke simple strategy.bas - Notepad++
xx_Binit stroke simple strategy.bas
'here comes the application code
'make mouvements in this example
target=1000
pause
target=2000
pause
goto 30
length : 1208 Ln : 21 Col : 24 Sel : 4
Dos\Windows
ANSI
INS

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) Supply voltage Logic (Supply for processor)	V V	0-48V 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 1.3mm² Power connectors with screws, pitch 3.5mm for wires section from 0.25 to 1.6mm²		

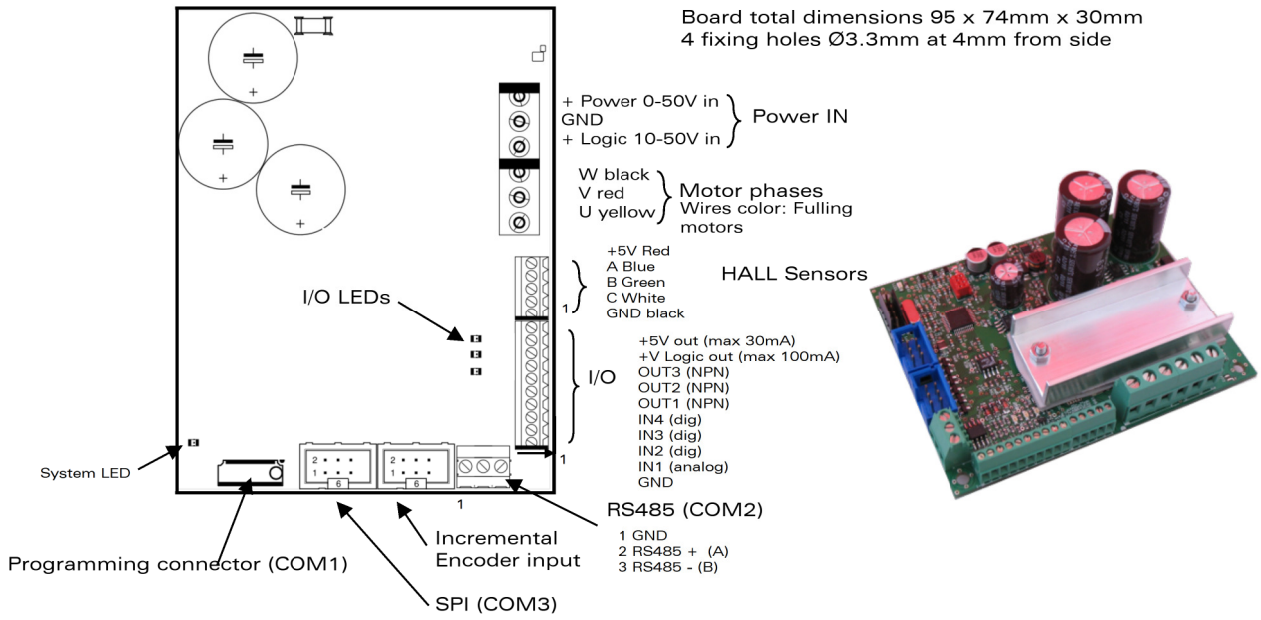
	Designation	Article nr.
1	Tinaxis Plus BL120.01	P010-E210

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



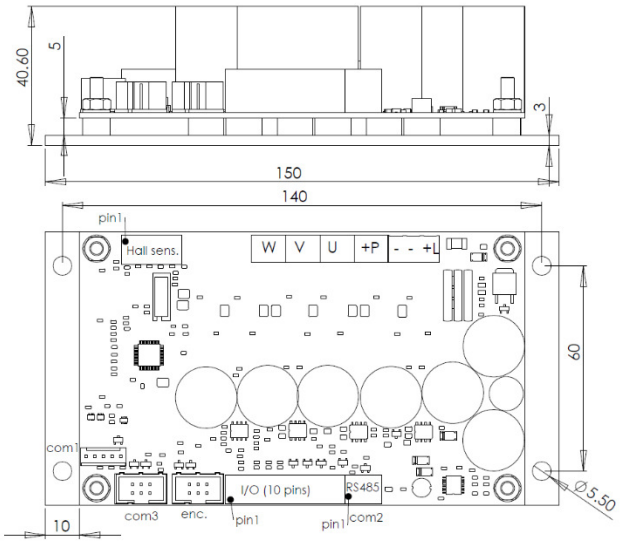
	Specification	unit	value
a) General			
1	Motor types		BLDC with HALL sensor or without, with or without encoder. Also for brushed DC
2	Integrated software: DM-BASIC, DM-REMOTE, DM-MOTION		
3	Memory for BASIC software	kilo bytes	20
b) Electrical specifications			
4	Supply voltage Power (supply for motor) Supply voltage Logic (Supply for processor)	V V	0-50V 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, ...)		

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: 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

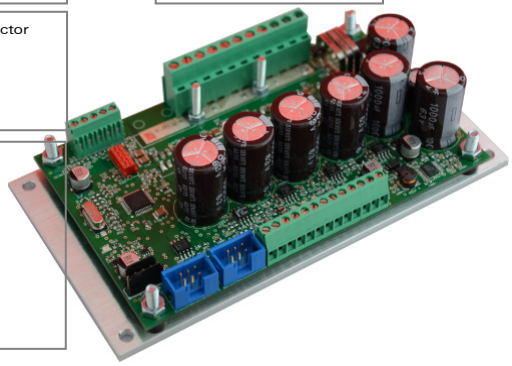


Logic Supply
1 GND out
2 + Logic supply (12-48V)

COM2 RS485
1 GND out
2 RS485+
3 RS485 -

Hall sensors connector
1 GND (black*)
2 C (white*)
3 B (green*)
4 A (blue*)
5 +5V out (red*)

I/O connector
1 GND out
2 IN1
3 IN2
4 IN3
5 IN4
6 OUT1
7 OUT2
8 OUT3
9 +12V out
10 +5V out



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 1.6mm² Power connectors with screws, pitch 5mm for wires section from 0.25 to 4mm²		

	Designation	Article nr.
1	Tinaxis+ BL960.01 Standard (48V 40A)	P010-E238

Customization available: box, shape, connectors, power rating, communication ...

preferred version

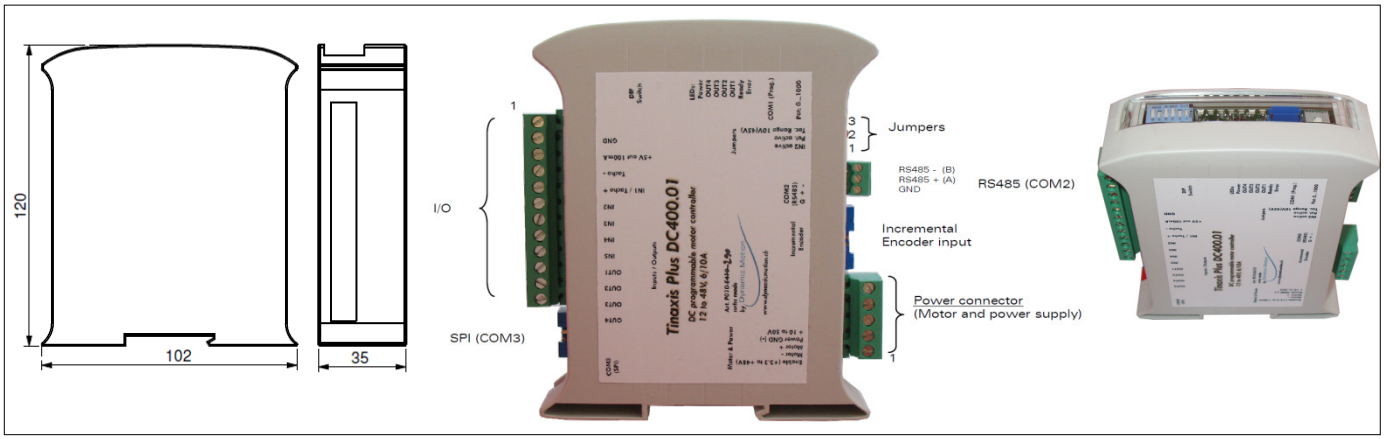
WARNING: Do not supply the outputs 5V and + Logic out. Use it only to supply local accessories such as detectors, switches, lamps, sound generators ...

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: ±16V, range 2: ±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 ~30mV resolution, shared with Tacho input		
12	1 General purpose analog input IN2, ±24V with ~30mV resolution. Pulled down 30k		
13	3 General purpose digital inputs IN3 to 5, threshold ~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)	°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 1.6mm² Power connectors with screws, pitch 5mm for wires section from 0.25 to 3.5mm²		

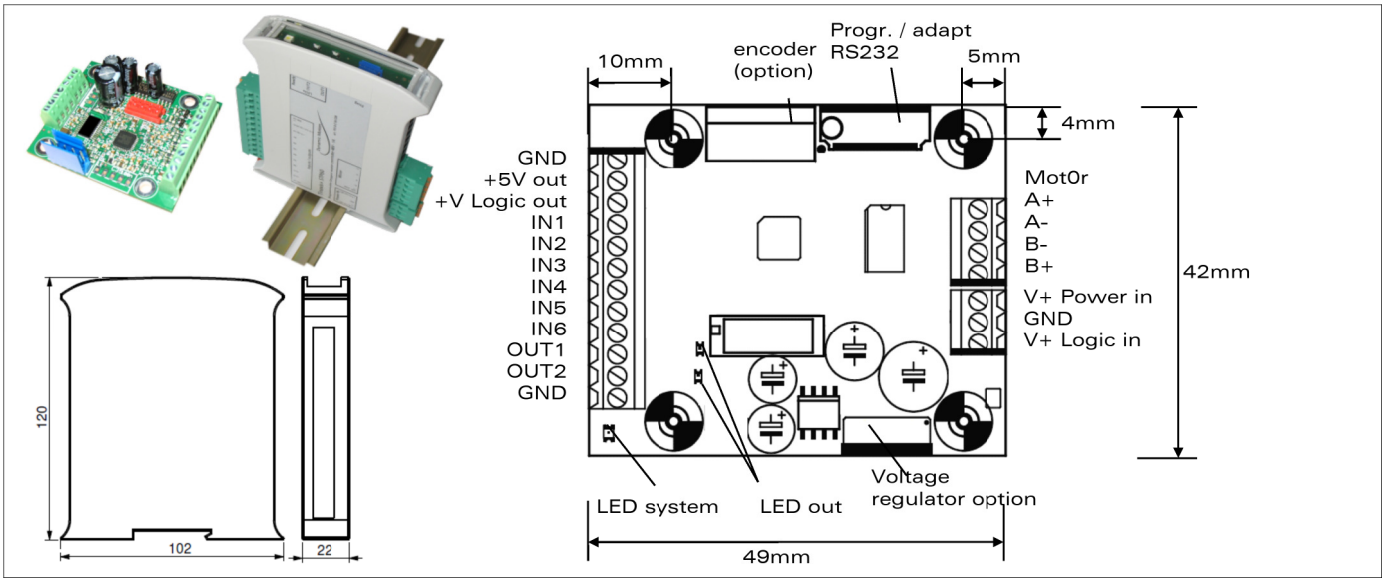
	Designation	Article nr.
1	Tinaxis Plus DC400.01	P010-E290

Special version on request

preferred version

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 1.3mm² DIN rail housing version: disconnectable block connectors, 2.5mm²		

	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

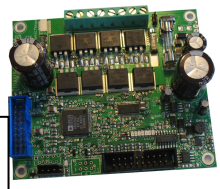
preferred version

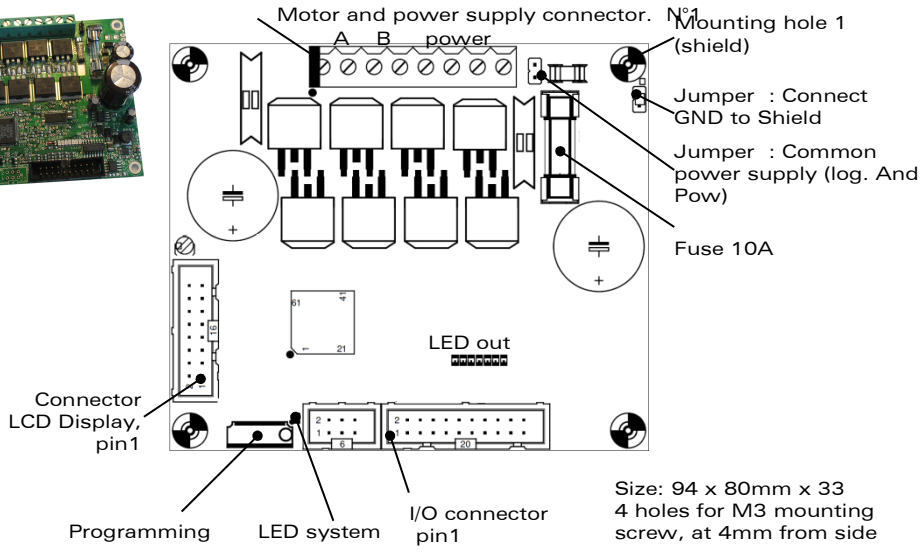
Remark

- 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





Connections

1	A- motor
2	A+ motor
3	B+ motor
4	B- motor
5	GND (log and pow)
6	V+ POWER IN
7	V+ Logique IN
8	Shield (connect. Hole 1)

I/O Connector

1	Gnd (out)	11	Out1
2	+5V (out)	12	Out2
3	V+log (out)	13	Out3
4	In1	14	Out4
5	In2	15	Out5
6	In3	16	Out6
7	In4	17	Out7
8	In5	18	gnd (out)
9	In6	19	Rs485+
10	In7	20	Rs485-

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 2.5mm² 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.

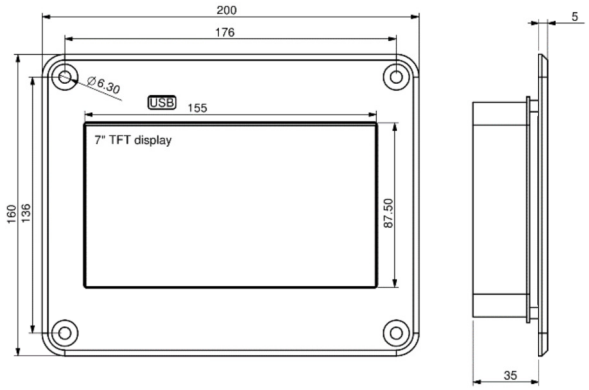
Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)
Required documentation: Hardware data sheet, Software manual version 1.x

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.

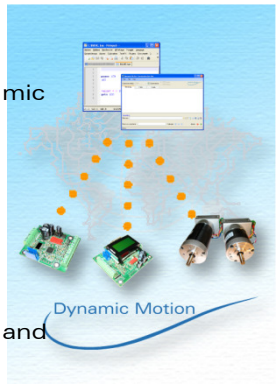
Based on FreeRTOS, it is fast to boot (typical 1 sec.), immediate response on display action, capable of smooth animations (at 50 fps.)

- 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

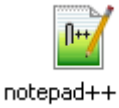
	Parameter (summary)	unit	value
1	Supply voltage	V	10-32V
2	Power consumption	W	0.3 to 4
3	Display brightness	Nits	Typical 350 (customizable)
4	10 Inputs compatible PNP, 5 to 24V level (pull-down ~30kOhm), threshold 2.5V, scan rate 1ms		
5	2 Fast inputs, compatible PNP, 5 to 24V level (pull-down ~30kOhm), 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

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

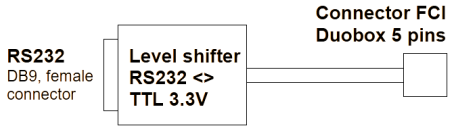
Note: programming is also possible on non-Windows platforms, with any terminal and text editor software

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.

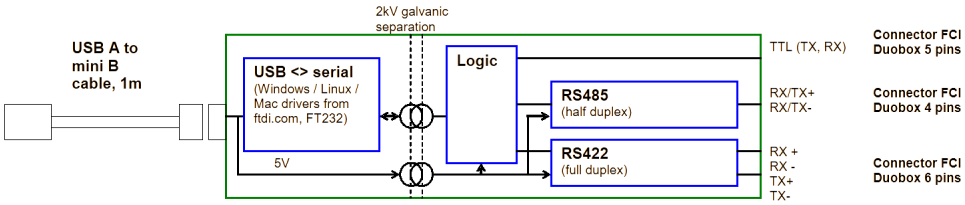
P000-016

- 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 makes 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

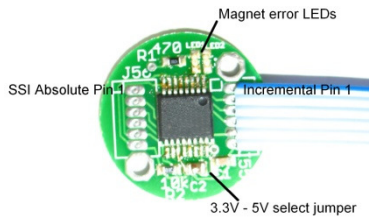


Fig. 1: Circuit and connexion

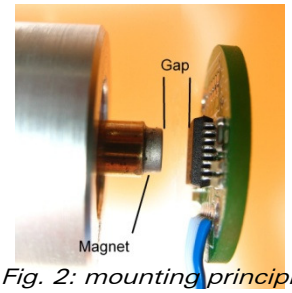


Fig. 2: mounting principle

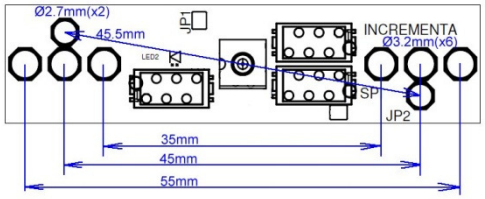
Incremental (round)
Pin 1: +5V
Pin 2: Out A
Pin 3: Out B
Pin 4: Out Index
Pin 5: +3.3V (optional)
Pin 6: GND

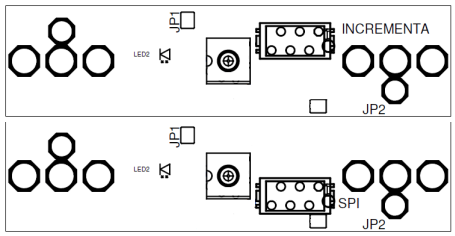
Absolute SSI (round)
Pin 1: +5V
Pin 2: CS (Chip Select)
Pin 3: CK (Clock)
Pin 4: Data Output
Pin 5: Data Input (for chain connexion)
Pin 6: GND

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

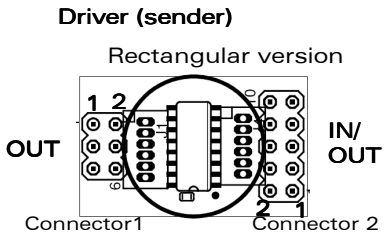
SSI is the industry standard serial communication used by encoder manufacturers. The information contains the absolute angle between 0 to 359.7°, coded with 10 bits.
Voltage selector jumper has the same functioning as the incremental connector, except that 3.3V is not available on the connector.
Rectangular version SSI (SPI) pinout is directly compatible with Tinaxis boards

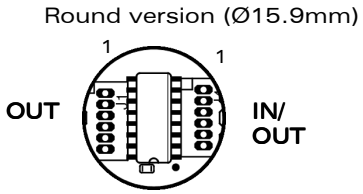
	Désignation		Article
1	Encod1024D16.01	Ø16mm SSI cable	P083-E160
2	Encod1024D16.02	Ø16mm incremental cable	P083-E161
3	Encod1024D20.01	Ø20mm SSI cable	P083-E200
4	Encod1024D20.02	Ø20mm incremental cable	P083-E201
5	Encod1024S15x30SPI.01	15 x 30mm, connector SPI (SSI)	P083-E12
6	Encod1024S20x30-LD.01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

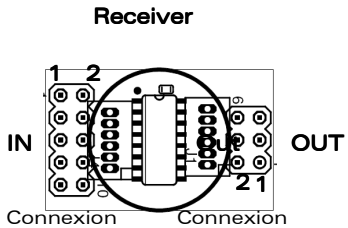


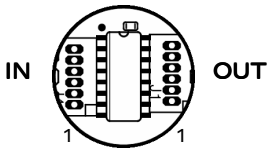


Connector 1 (rectangular and round version)
Pin 1: out 1 TTL
Pin 2: out 2 TTL
Pin 3: out 3 TTL
Pin 4: out 4 TTL
Pin 5: GND
Pin 6: +5V

Connecteur 2 (rect.)
Pin 1: +5V
Pin 2: GND
Pin 3: out 4 +
Pin 4: in 4
Pin 5: out 3 +
Pin 6: in 3
Pin 7: out 2 +
Pin 8: in 2
Pin 9: out 1 +
Pin 10: in 1

Connecteur 2 (round)
Pin 6: +5V
Pin 5: GND
Pin 4: out 4 +
Pin 3: in 4
Pin 2: out 3 +
Pin 1: in 3





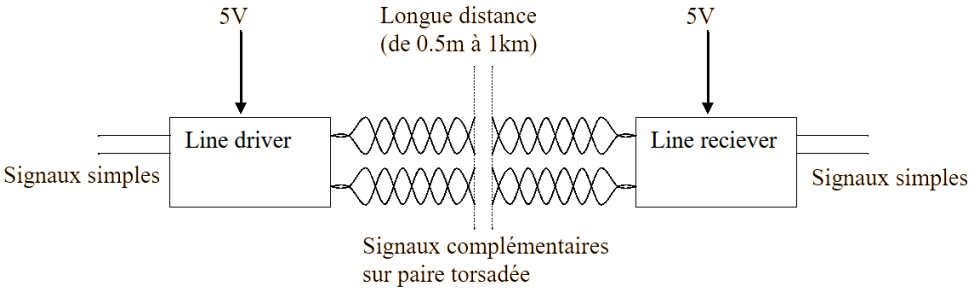
Round version
Connector 1
Pin 1: out 1 TTL
Pin 2: out 2 TTL
Pin 3: out 3 TTL
Pin 4: out 4 TTL
Pin 5: GND
Pin 6: +5V

Connecteur 2 (rect.)
Pin 1: +5V
Pin 2: GND
Pin 3: in 4 +
Pin 4: in 4 -
Pin 5: in 3 +
Pin 6: in 3 -
Pin 7: in 2 +
Pin 8: in 2 -
Pin 9: in 1 +
Pin 10: in 1 -

Connecteur 2 (rect.)
Pin 6: +5V
Pin 5: GND
Pin 4: in 4 +
Pin 3: in 4 -
Pin 2: in 3 +
Pin 1: in 3 -

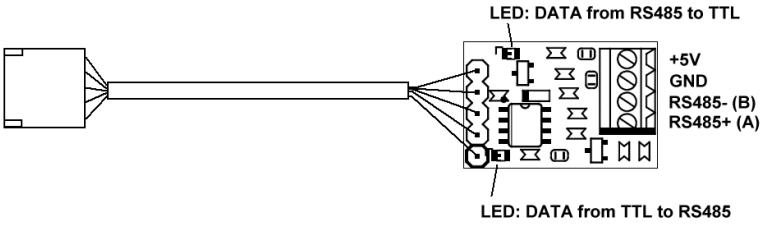
Simple circuit to convert differential signals provided by systems with line driver, to TTL. 2 of 4 channels, sender or reciever

	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 encore / 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		



	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

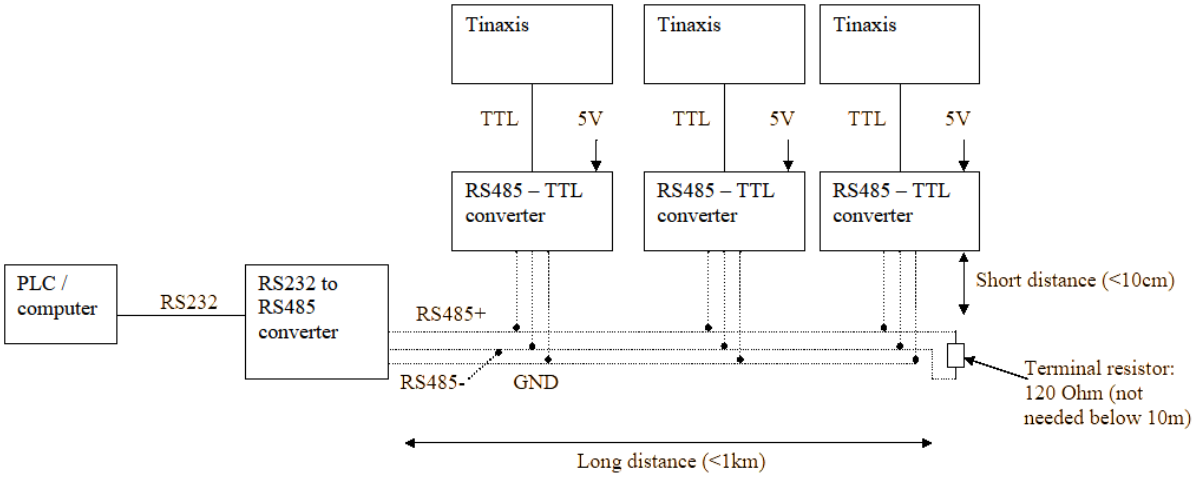
Converter RS485 to TTL (auto timing)



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



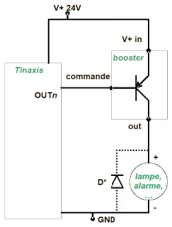
	Designation	Article
1	RS485 – TTL converter	P000-032

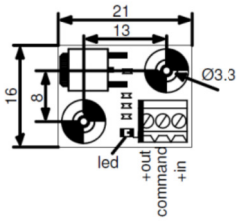
versions préférentielles

Accessories

Output booster PNP

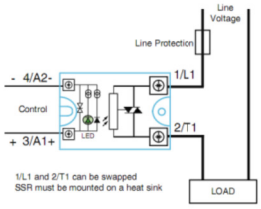
- 12 to 24V
- Up to 0.8A
- Cost effective
- In case of inductive load, protect with a diode
- Not short circuit protected
- ESD safe
- Screw terminal for 0.05 to 1.3mm²
- Art. Code: P103-E01

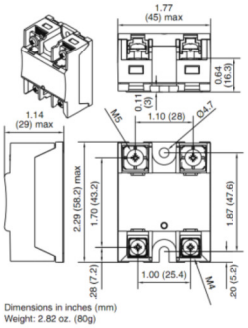




Static opto-relay (Triac opto relay)

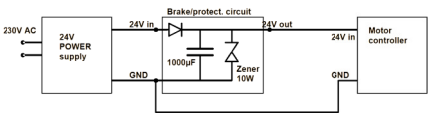
- Load voltage: 12 to 280 V AC
- Load current: max 12A, min 5mA
- Command: 3 to 32V DC
- Zero cross switch
- Type TELEDYNE STH24D12
- Art. Code: P103-E13

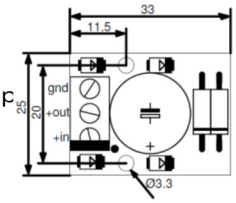




Brake and power supply protection, type BR26-4-A

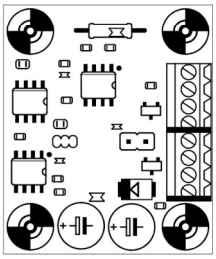
- Prevent voltage rise in power supply
- Use together with switching power supply to prevent faut condition
- Dissipate braking energy, up to 8W continuous (with forced air cooling)
- Nominal voltage: 24V
- Max forward current: 4A continuous, 6A peak
- Not short circuit protected
- ESD safe
- Screw terminal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





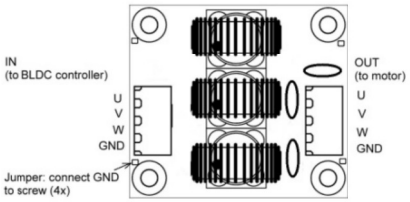
Sensor converter for differential singals to single ended conversion and amplification

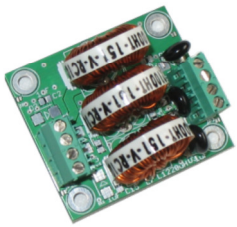
- Convert ±1mV/V or higher to 0..10V standard
- Power supply_ single ended 12V to 24V
- Gain: hardware programmed (from 5 to 1000)
- Low distortion, low noise
- Art. Code: P103-E04xxx (xxx is the gain, from 5 to 1000)
- Size: 31 x 37x mm
- 4 holes for M3 screws, at 4mm from side



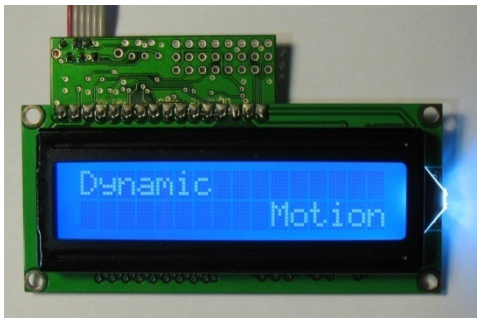
3 phases filter

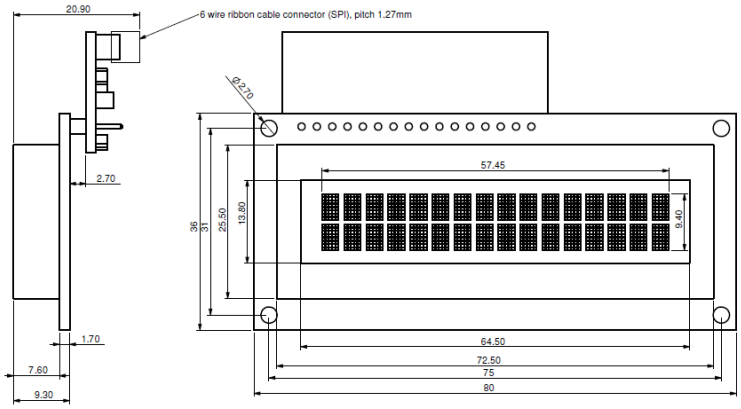
- Filters the 3 motor phases
- CEM noise reduction
- Coreless motor efficiency increase
- Can be used with DC and BLDC motor
- Allow longer cables between driver and motor
- Must be connected near the driver
- Voltage max: ±50V
- Inductance: 150µH
- Nominal current: 3.3 or 1A
- Connection to GND: mandatory 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 cunsomption	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
```

	Designation		Article
1	P000-039	Blue bkground, white text. With 150mm flat cable	P103-E04
Customization possible: other colours, other size. Please contact manufacturer for availability			

Power LED

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

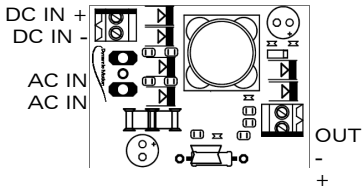
Programmable ambiances, effects, transitions
Highest comfort thanks to high frequency chopper or even continuous supply

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

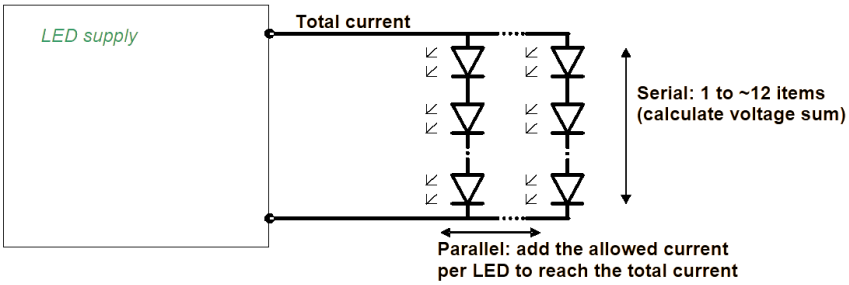
10W Step-up fixed current

- 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)

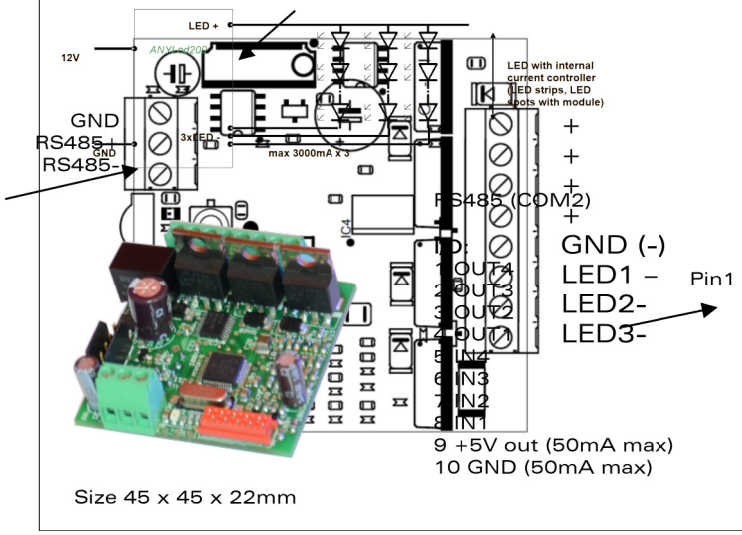


30W Step-Down fixed current and dimmer with potentiometer

- 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 tp 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 mm²		

	Designation	Art. Nr.
1	Anyled200-01	P102-E510
Custom version on request		

Remark

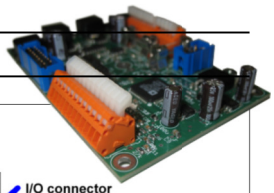
- The logic power input should not be supplied when the option "single supply" is chosen.

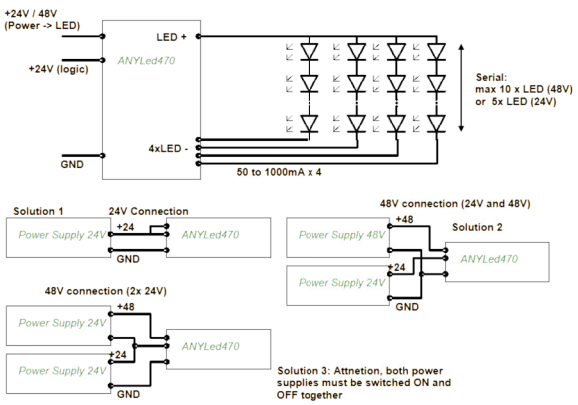
Required tools: Cable RS232 to Tinaxis (P000-016), soft PC "Dynamic Motion programming suite" (free download)
Required documentation: Hardware data sheet, Software manual version 3.x

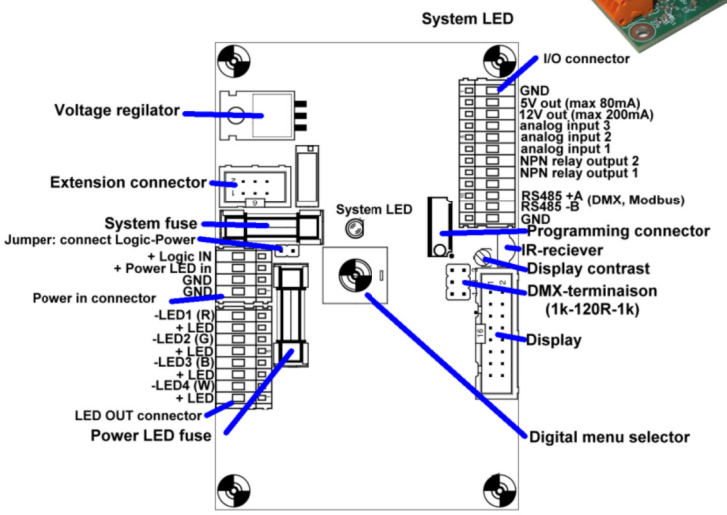
Notes

- 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: ·constant current ·LED chip directly connected		- Power LED 1W, 3W, 5W serially connected - Low power LED serial/parallel connected (up to 720 LED 5mm/20mA per channel)
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 1.3mm²		
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.	

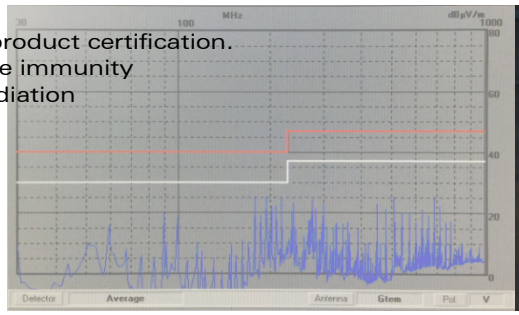
Customization possible

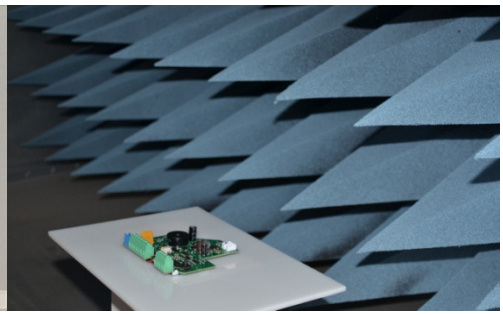
Services

Certification

We provide support for final product certification.

- Electrostatic discharge immunity
- EMI immunity and radiation

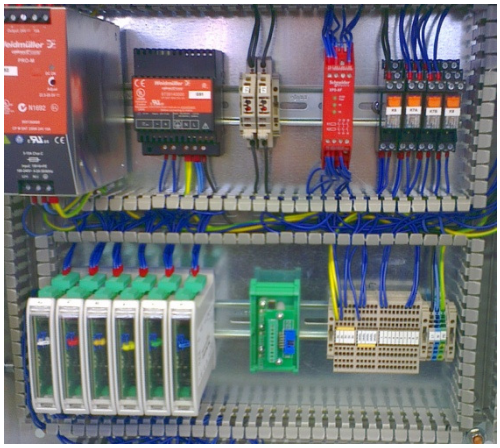




Integration

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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