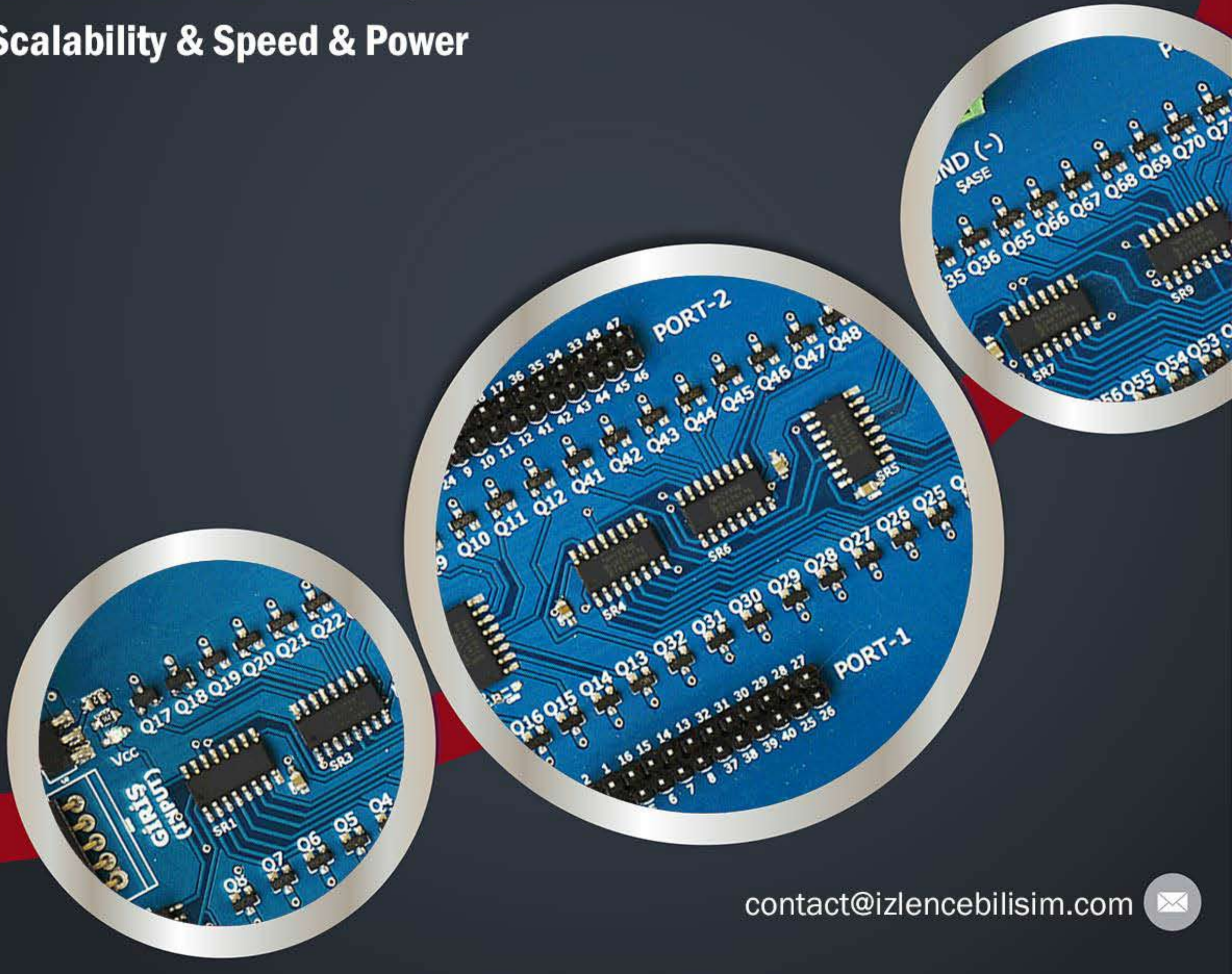
Serial Driver

SS963 v5b/v5c

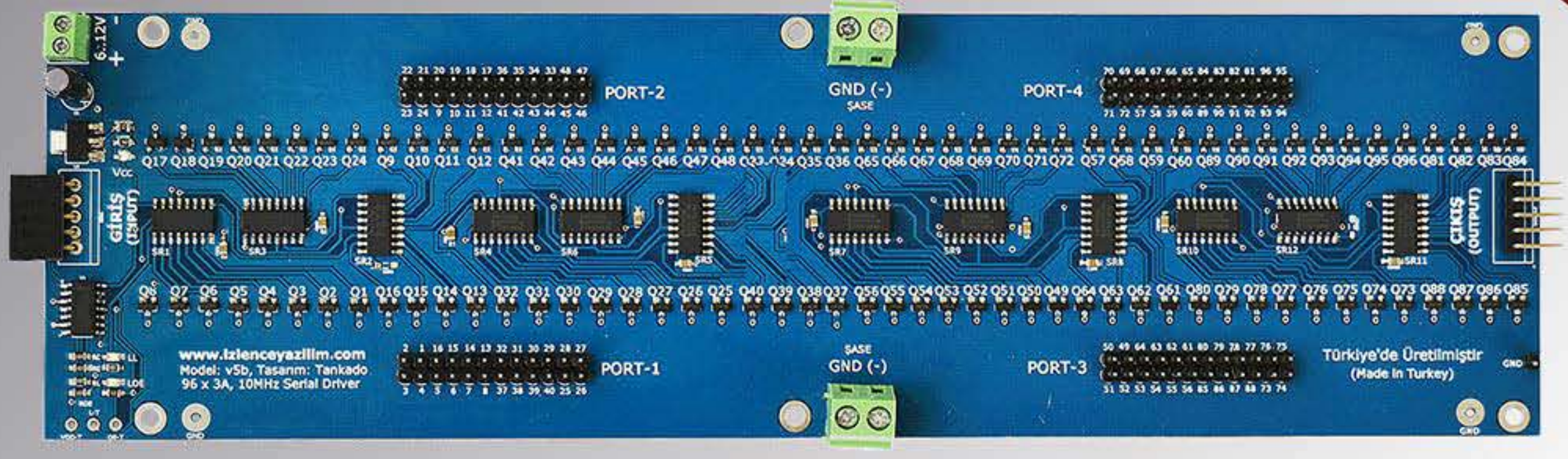
Scalability & Speed & Power



contact@izlencebilisim.com

Model

SS-963 v5C Serial Driver



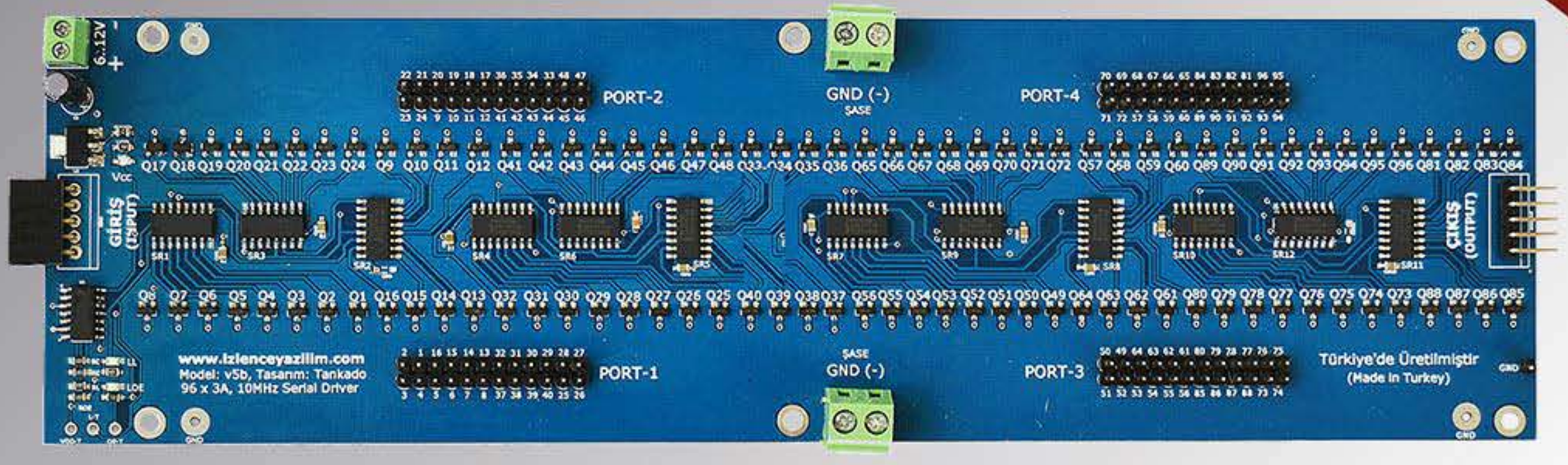
Product Overview

The **SS963** serial driver is a high-efficiency power driver board. The **SS963** serial driver allows you to safely and quickly control thousands of electronic loads, especially stripe leds, RGB Leds and relays. The **SS963** basically transfers the 96-bit data it receives serially from the control input to its outputs quickly. Our board designed by Turkish engineers and manufactured in Turkey by local resources with high efficiency at speeds of megahertz level and very low power consumption like 0.5 watts.

The desired output speeds can be used for various purposes ranging from providing the input data frequency to adjusting the brightness of the light with PWM methods and providing the desired motor speeds.

Each output pin has a maximum current capacity of 4.4A and can safely drive 10 meters of a three-chip strip LED with each output pin. The **SS963** also allows step motors to be controlled with ability to operate in high frequency currents. A single **SS963** can control up to 24 step motors.

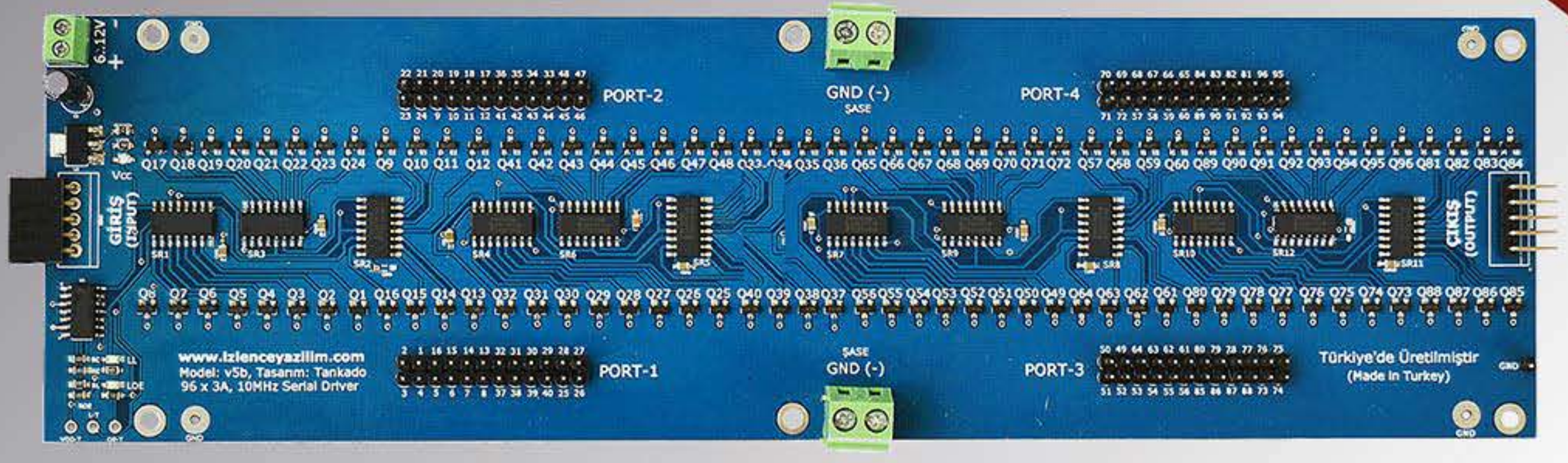
Model
SS-963 v5B/C Serial Driver



Features

- PCB size: 6.9 cm x 23.0 cm
- Board size: 6.9 cm x 24.9 cm
- Wide output operating voltage range (0-30V)
- 96 x 3A (4.4A max) outputs
- 1 serial input
- Small size (7cm X 22cm)
- Standard connection slots (IDC connector)
- Wide output operating voltage range (0-30V)
- Compatibility with microcontroller systems
  (Arduino, NetDuino, MSP430, STM32, Teensy, BeagleBone ...)
- Compatibility with microprocessor systems
  (Raspberry Pi, Banana Pi, Intel Galileo...)
- Github: https://github.com/enseitankado/ss963-serial-power-driver

Model
SS-963 v5B/C Serial Driver

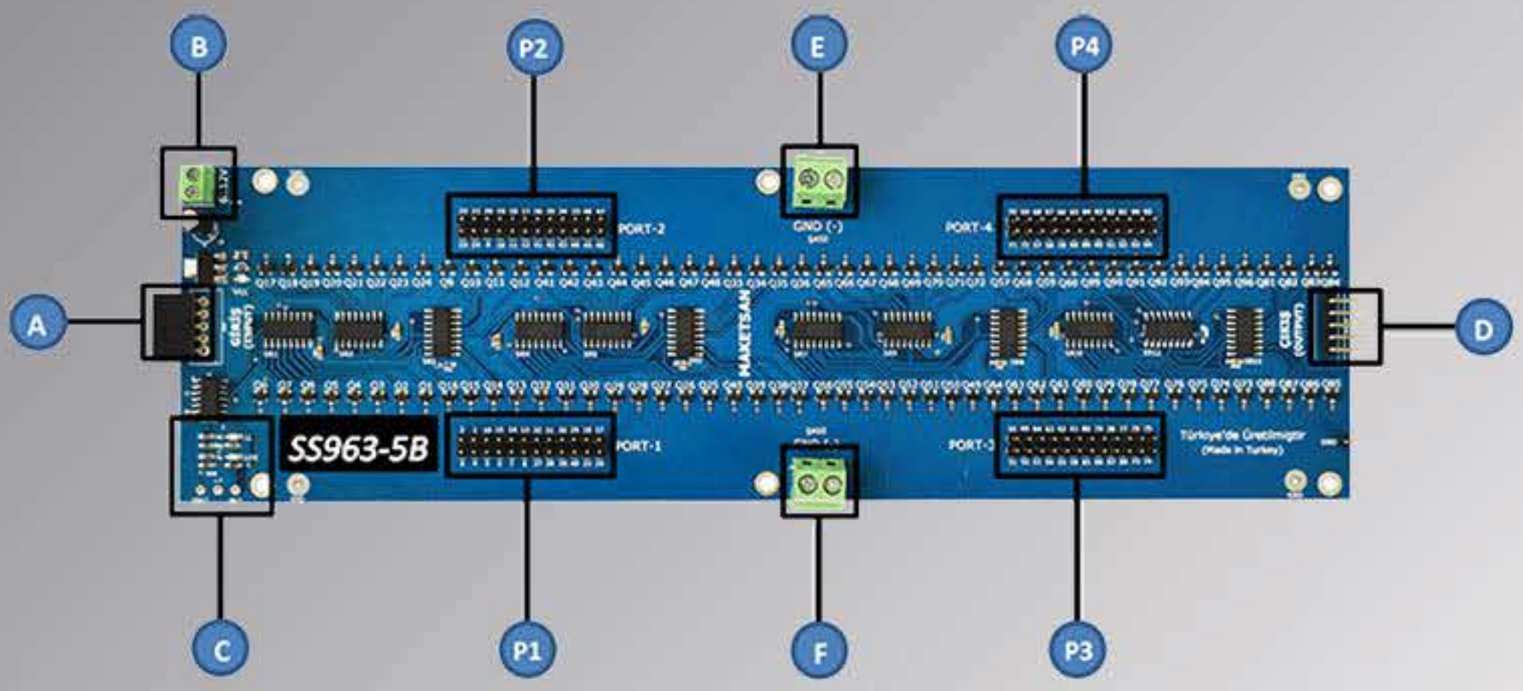


Technicial Specifications

- 100% CMOS technology
- Power supply voltage 9-30V
- High power protection fuse
- Reverse polarity protection
- Supply overcurrent protection (100mA fuse)
- Power supply spike protection
- Power consumption ~5mA
- Data, Clock, Latch and Reset control inputs
- Input data length is 96 bits
- Number of outputs: 96
- Each output current is 3A (normal) 4.4A (maximum)
- Wide output operating voltage range (0-30V)
- Each output voltage is 12v (normal) 30v (maximum)
- Total output current is 100A (max)
- Data input frequency is 100Mhz (max)
- Each output frequency = Input frequency / Number of outputs
- Cascade wirable (X * 96)
- Power indicator led
- Data processing indicator led
- Electromagnetic interference protection (Anti-EMI)
- Test points (Data, Clock, Latch, Clear, Feed)

(*) Yalnızca v5c de geçerli

Model
SS963B Sections



A: Control Inputs
B: Board Power Supply Input (9-30v)
C: Operation Indicator LEDs
D: Control Outputs for Cascading
E,F: Ground Connection Terminals
P1,P2,P3,P4: 24x3A Load Outputs

1.Control Inputs (A)

The control inputs are the input points of the numeric data sent to the board to control outputs. The data to be transmitted consists of a digital signal (Serial Data) in length 96 bits. In order for the signal to advance on the card, a clock signal must accompany this work. The control input (A) is connected to a micro-controller or microprocessor system to send the appropriate numeric data.

2.Board Power Supply Input(B)

The energy is given from this terminal to form the working voltage required by the board. An energy source having a current capacity at least 50 mA and 9 to 30 volts is connected to the supply terminal. Having sufficient power capacity and good DC regulation of the power supply is the most important factor in achieving stable output control.

3.Operation Indicators (C)

The SS963-5B has 3 indicator LEDs. From these LEDs, Vcc LED indicates that the board's supply voltage is supplied and the board is energized. The LL labeled LED lights up when each 96-bit data sent to the board. The LOE LED displays at low logic and goes off when the outputs are active.

4.Control Outputs for Cascade Connection (D)

The SS963-5B/C can be connected in series to increase the number of outputs. To obtain the number of outputs you need, the A and D connectors are wired together to expand.

5.Ground Connection Terminals (E and F)

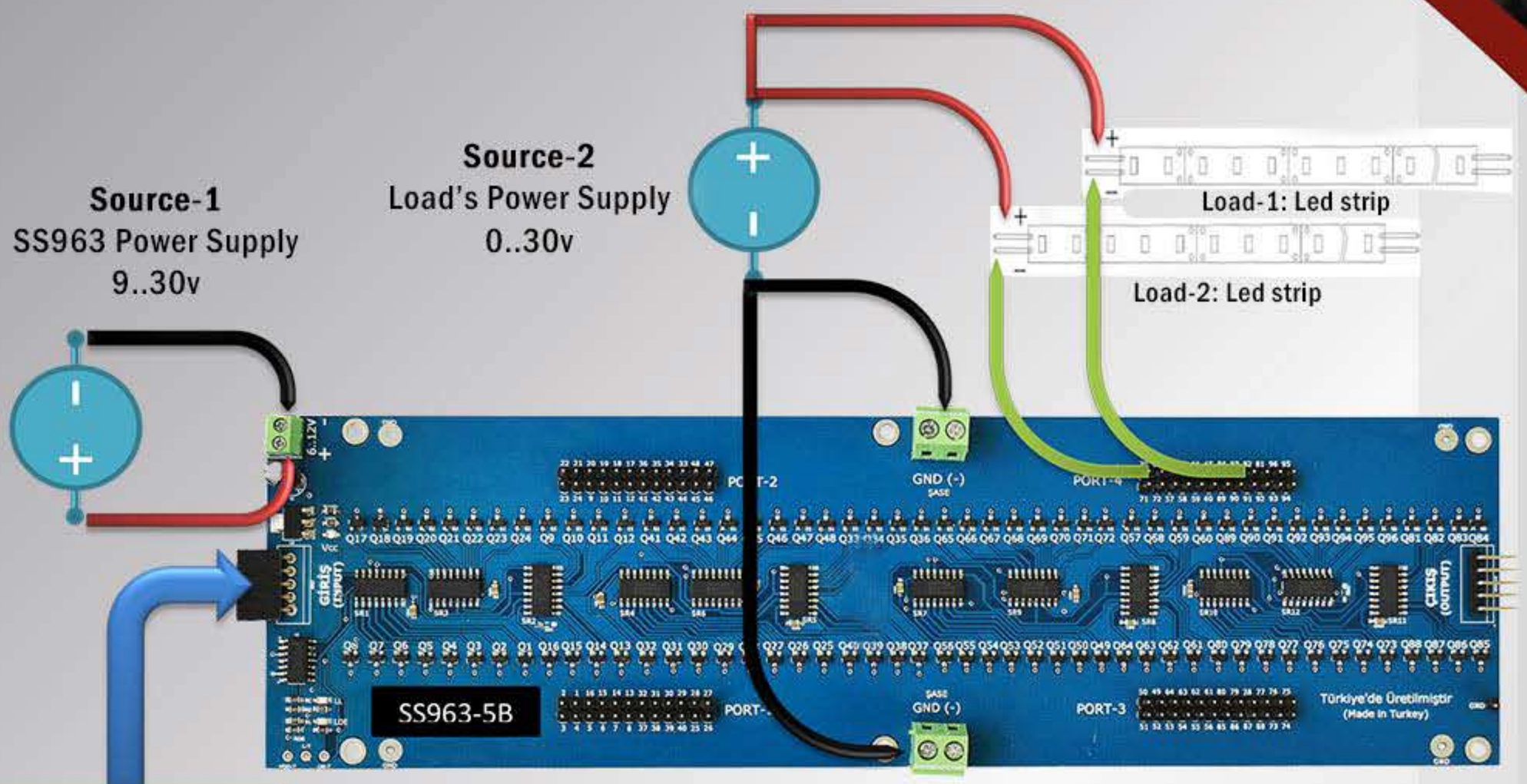
Each output can be raised up to 4.4 Ampere, which allows chassis / cathode energy to the loads to be controlled. SS963-5-B/C has common cathode outputs. It is expected that the cathode of the power supply (negative) should be connected to these terminals by a cable of sufficient thickness.

6.Load Outputs (P1, P2, P3 and P4)

Loads to be controlled are connected to these outputs via an IDC (2x12 pin 2.54mm) connector. Each output has a current capacity of 3A. Loads up to 4.4A can be connected to these outputs when necessary.

Model

How To Wire The Electrical Connection Of The SS963

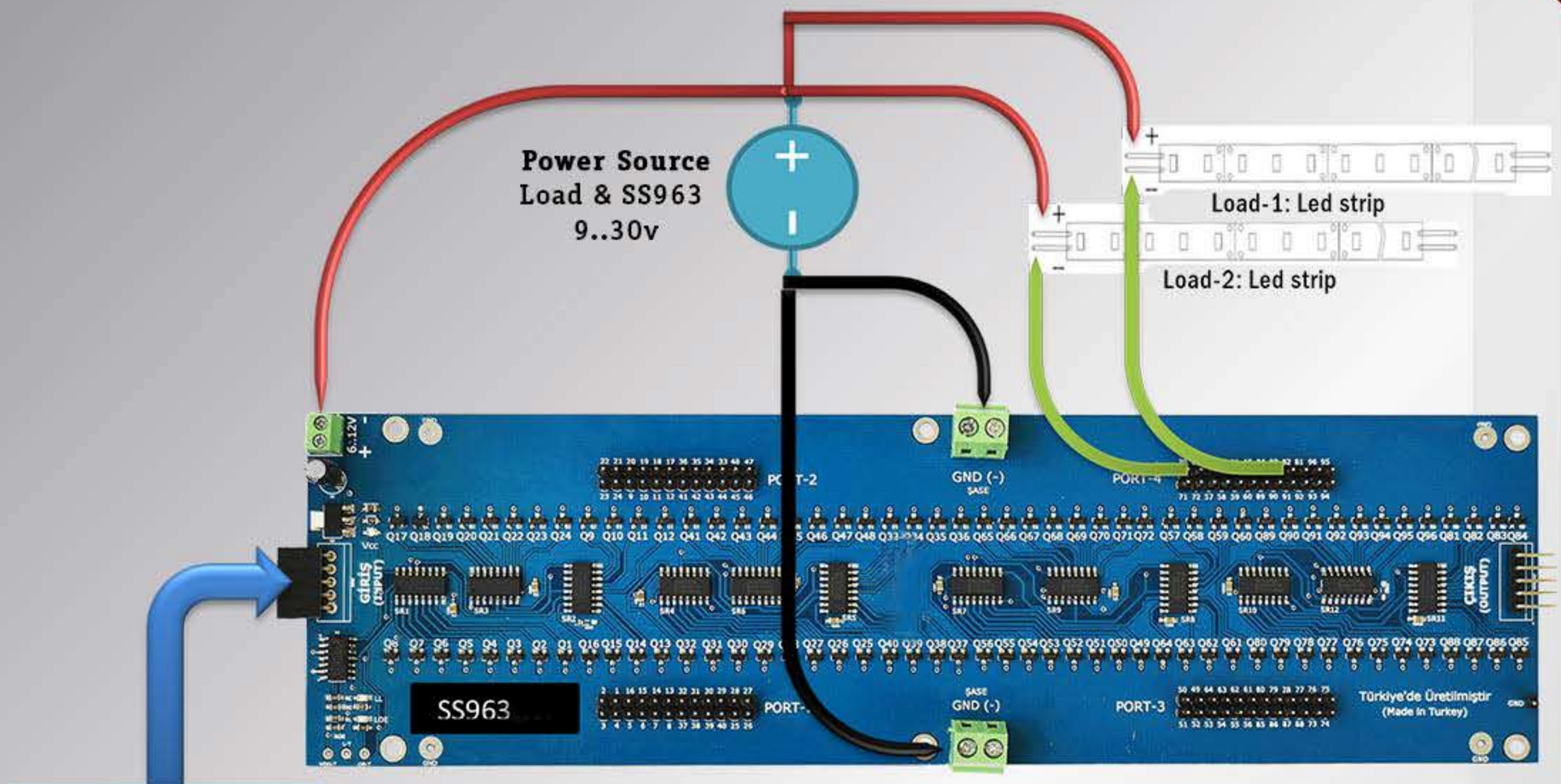


Before you connect the **SS963** product, you should conduct the static electricity on your body by touching the accumulated electrical ground contact (heater pad, metal pipe or wall) so that the product is not damaged. This will prevent the sensitive components of **SS963** from being damaged by static electricity accumulated in thousands of volts. In the basic connection diagram above, two separate DC supply sources are used (Source 1 and Source 2). The sources you use must have good DC regulation. In particular, it is important that Source-1 has good DC regulation in order for **SS963** to work properly.

Source-1 must be a supply source with a current capacity of at least 50mA that produces a DC voltage between 9 and 30 volts. Our recommendation in this regard is that the source has a current capacity of more than 100mA with good voltage regulation, so the operation of the system will last longer.

Source-2 can be at any voltage between 0 and 30 volts, that you need to connect to the outputs. Also, using a source with at least 1.5 times the current capacity of the total current that the loads you need to control will make your system run longer. **SS963** has a common cathode (open collector) design. This means that the cathodes (negative) of the loads you will connect to the **SS963** must be connected to the output ports (P1, P2, P3 and P4). Loads use anode voltage common from Source-2. The cathodes of Source-1 and Source-2 are common. For this reason you can also connect to the cathode of Source-1, to the cathode of Source-2, not to the supply terminal of **SS963** . There are 2 large earth (GND) terminals on the **SS963** . Connecting Source-2's earth terminal to both cathode terminals of the **SS963** is important to maintain stable operation of the system at high current requirements. If the loads to be controlled are between 6 and 12 volts, there is no need to use two different power supplies. In this case, you can supply both the **SS963** and your loads with the same source.

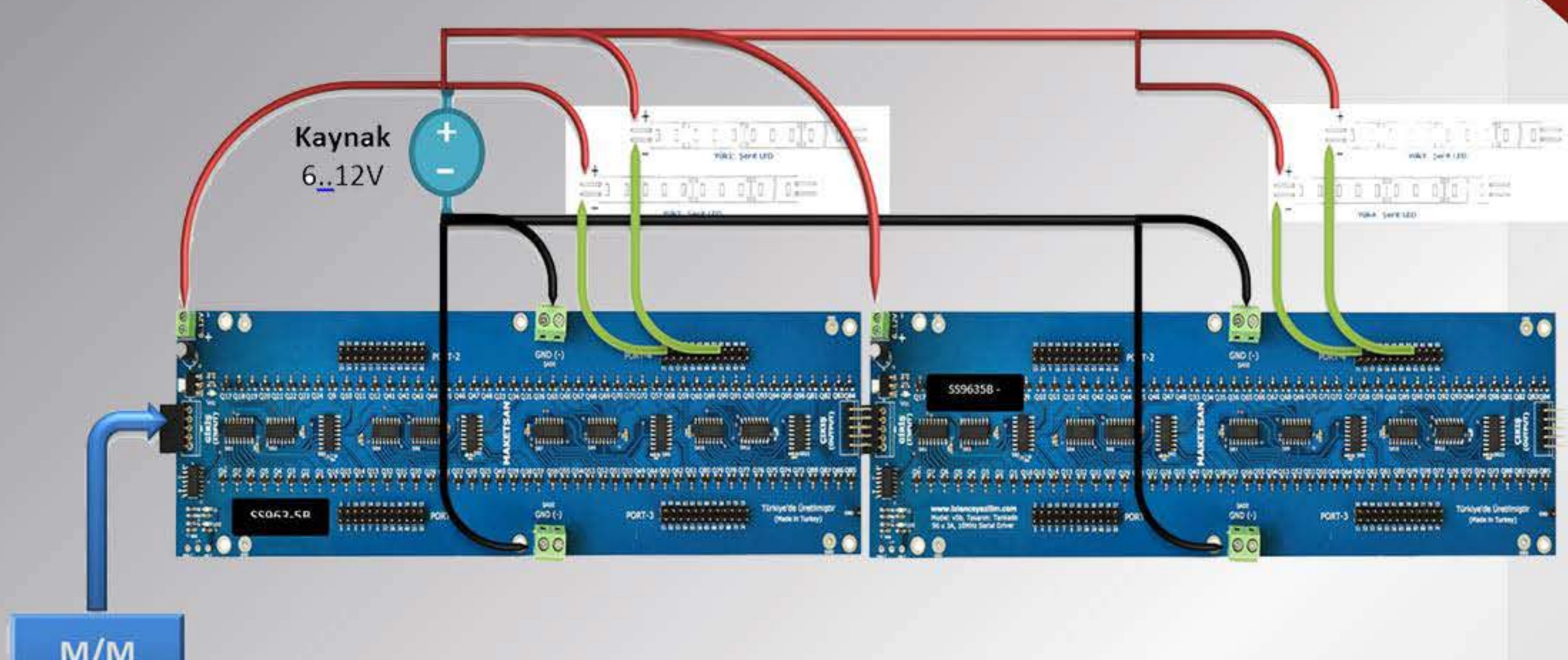
Model
How to Supply the SS963 with one energy source?



Single power supply is used in the illustration. If the loads you want to control are between 9 and 30 volts (the upper limit for SS963 v5C is 30v), you can use the power supply for the supply of **SS963**. In this case you can connect the anode of the source (positive terminal) to the anode input of the SS963 (B terminal). When linking, be careful not to connect the terminal B to the cathode (negative terminal). Otherwise, you may cause damage to the power supply and the **SS963**. (This risk has been removed for SS963 v5C)

In such a connection, it is necessary to use a DC power supply with good regulation and power capacity so that the **SS963** can operate steadily. Only a good power supply can prevent sudden and excessive power changes. We recommend you to use a power supply that can supply 1.5 times and more of the current capacity you need.

Model
Cascading SS963



The number of outputs can be increased by connecting the cascade connection with the **SS963** input and output control connectors. Up to 100 **SS963** connections can be connected and controlled by a single microcomputer and microcontroller system. As can be seen from the above connection diagram; the anode of the source is connected to the anode of the **SS963** 's power supply terminal (B) and the cathode source (negative terminal) is connected to the cathode terminal of **SS963** 's (E, F) ground terminals.

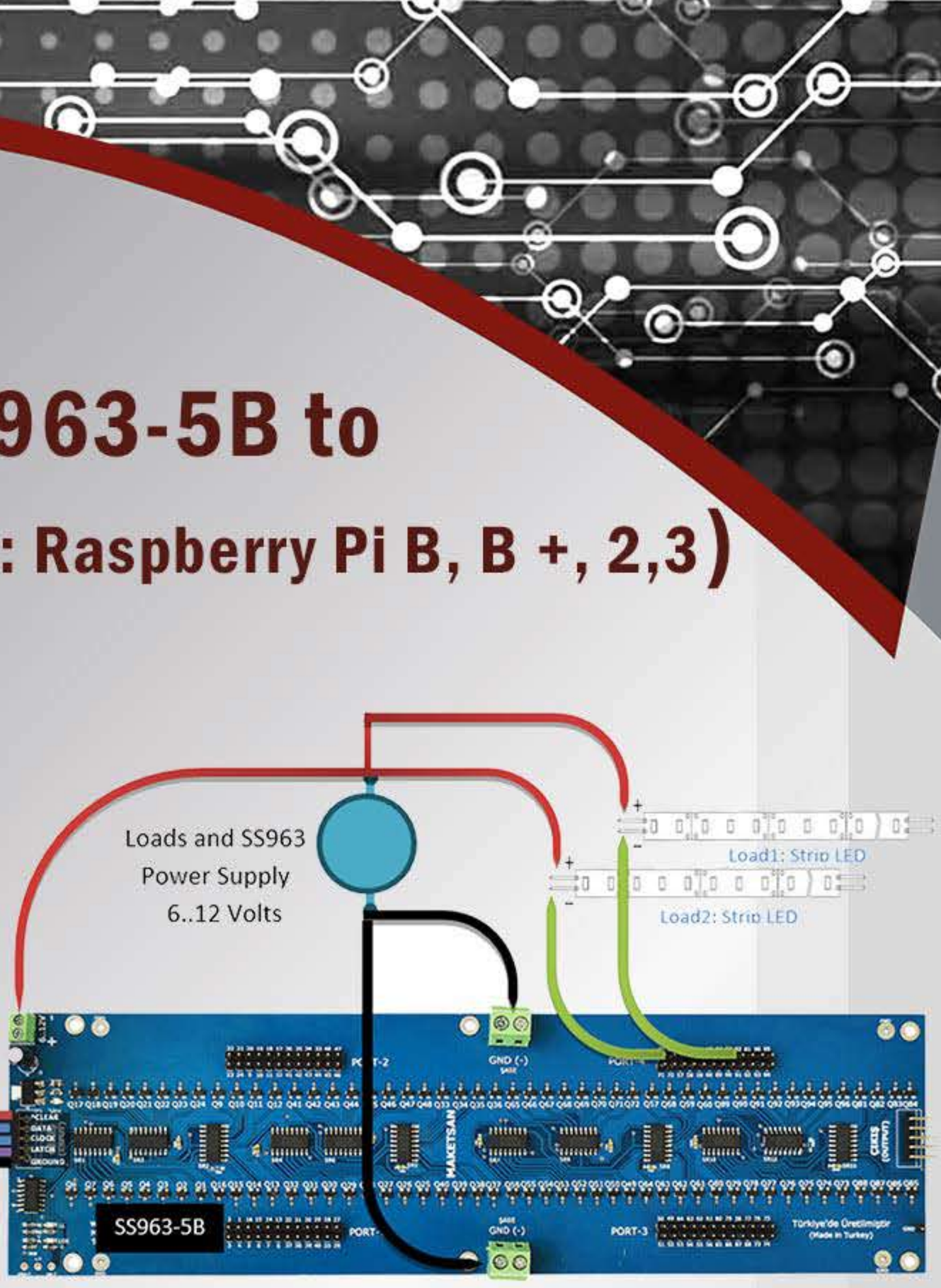
The output frequency to be obtained in the cascade connection is divided in each cascade. For example the output frequency, which is normally 260KHz, drops to 130KHz when these 2 cards are connected. Make sure that the connectors which are providing the inter-card connections (A and D) in the cascade connected correctly and tightly interlocked. In such cases, it will be suitable to mount the cards on a fixed floor with screw holes.

Model

Connection of SS963-5B to System Device (Ex: Raspberry Pi B, B +, 2,3)

5v 1A microUSB Adapter

Network cable (Switch or Modem)



SS963 v5b FUNCTION TABLE

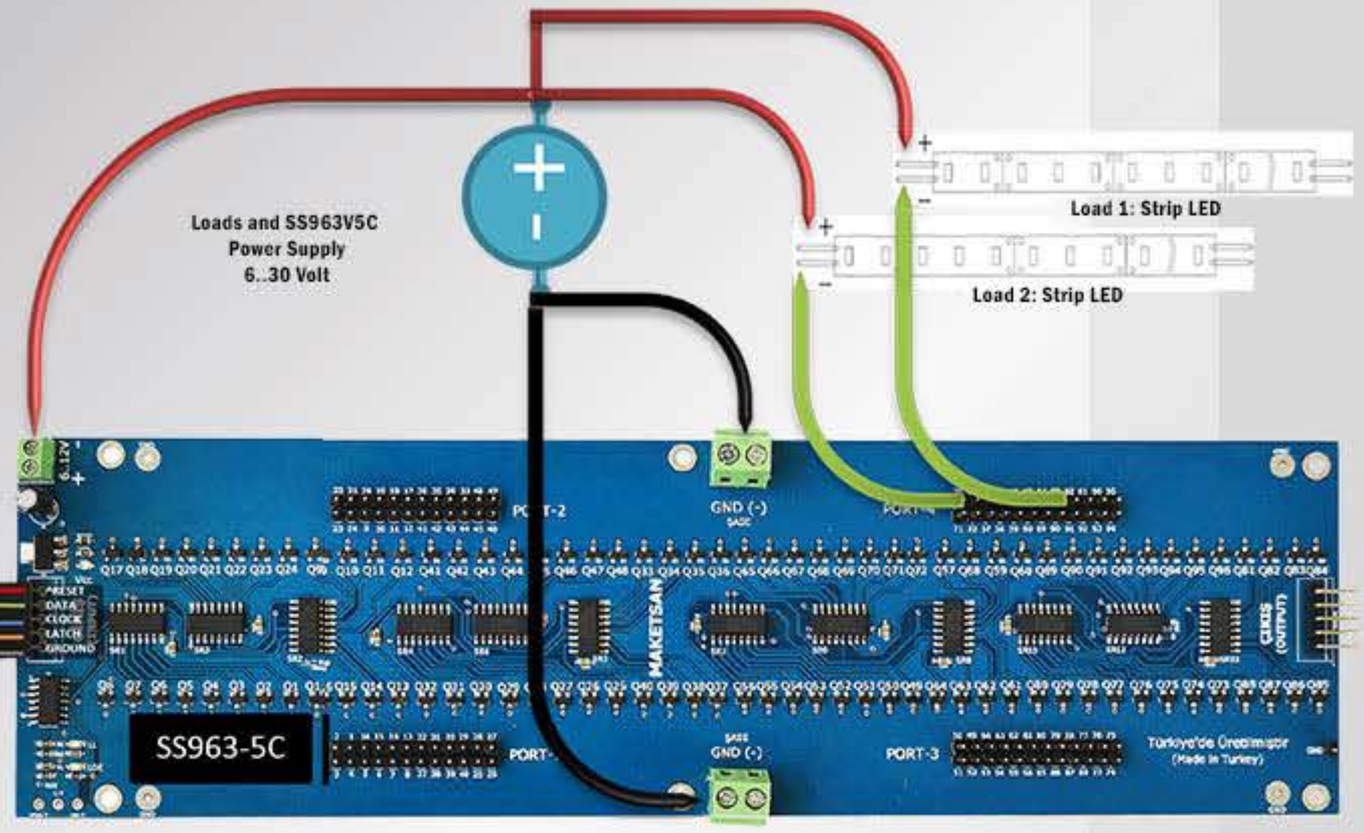
INPUTS				OUTPUTS
DATA	CLOCK	LATCH	CLEAR	
X	X	X	H	All outputs (Q1-QN) are passive.
X	X	X	L	All outputs (Q1-QN) are active.
L	↑	X	X	The RQ1 register becomes "Low" (Logic 0). Other output registers will receive the value of output from the register before it. RQN = RQN-1
H	↑		X	The RQ1 register becomes "High" (Logic 1). Other output registers will receive the value of output from the register before it. RQN = RQN-1
X	X	↑	X	The logic state that all output registers (RQ_x) is written to outputs (Q_x).

In the above diagram, the connection of a SS963 v5b to a Raspberry Pi computer is shown.

Model
Connection of SS963-5C to System Device (Ex: Raspberry Pi B, B +, 2,3)

5v 1A microUSB Adaptor

Ağ kablosu (Switch veya Modeme)



SS963 v5c FUNCTION TABLE

INPUTS				OUTPUTS
DATA	CLOCK	$\overline{RESET}$	LATCH	
X	X	L	X	All output registers (Q1-QN) become "Low" (Logic 0).
L	↑	H	X	The RQ1 register becomes "Low" (Logic 0). Other output registers will receive the value of output from the register before it. RQN = RQN-1
H	↑	H	X	The RQ1 recorder becomes "High" (Logic 1). Other output registers will receive the value of output from the register before it. RQN = RQN-1
X	X	X	↑	The logic state that all output registers (RQ_x) is written to outputs(Q_x).

In the above diagram, the connection of a SS963 v5c to a Raspberry Pi computer is shown.

contact@izlencebilisim.com

Alemdağ Street 796 Dudullu - Ümraniye - İstanbul

Phone: 0216 420 00 56

www.izlencebilisim.com

2017 / İstanbul - Catalog s1.2

* This catalog has been prepared with reference to SS-963 - v5c Datasheet v1.1