

External Components

External buffer block have two main purposes. First to buffer cathodes of displays and load shift registers. Schematic of each block is very simple. Each driver block consist from shift register 74XX595, Darlington buffer ULN 2803, 8 Load resistors and 2 connectors. Blocks in each LINE are connected serially via 10-pin ribbon cable (note **Figure 1**). All necessary signals for control of blocks are produced from LED Controller. Cables between neighbour blocks must be not longer than 1 m. To void a different light intensity in different Blocks, Ground must be assured to provide enough current for Darlington buffers. Each driver block occupied 10 bytes in controllers LED Buffer. Via writing of byte (bytes) in appropriate address in LED Buffer, LED Controller drives defined segments of selected indicator. After power up two LED LINES is filled with 00h (display is blanc). Each external block can drive up to 10 seven-segment displays. All 16 external blocks can drive up to 160 seven-segment displays for each LINE. All tree control signals are connected in parallel except, SDATA signal that must be connected serially between each block. Refer to **Figure 2**.

JP5 on LED Controller is used for different schematics applicable to drive LED displays. In this schematic **JP5** on LED Controller must be in open position, because ULN2803 invert data comes from shift register 74XX595. This schematic provide maximal Load current of 500 mA for each segment and is suitable for building of very large LED displays, where segments are constructed from multiple LED's.

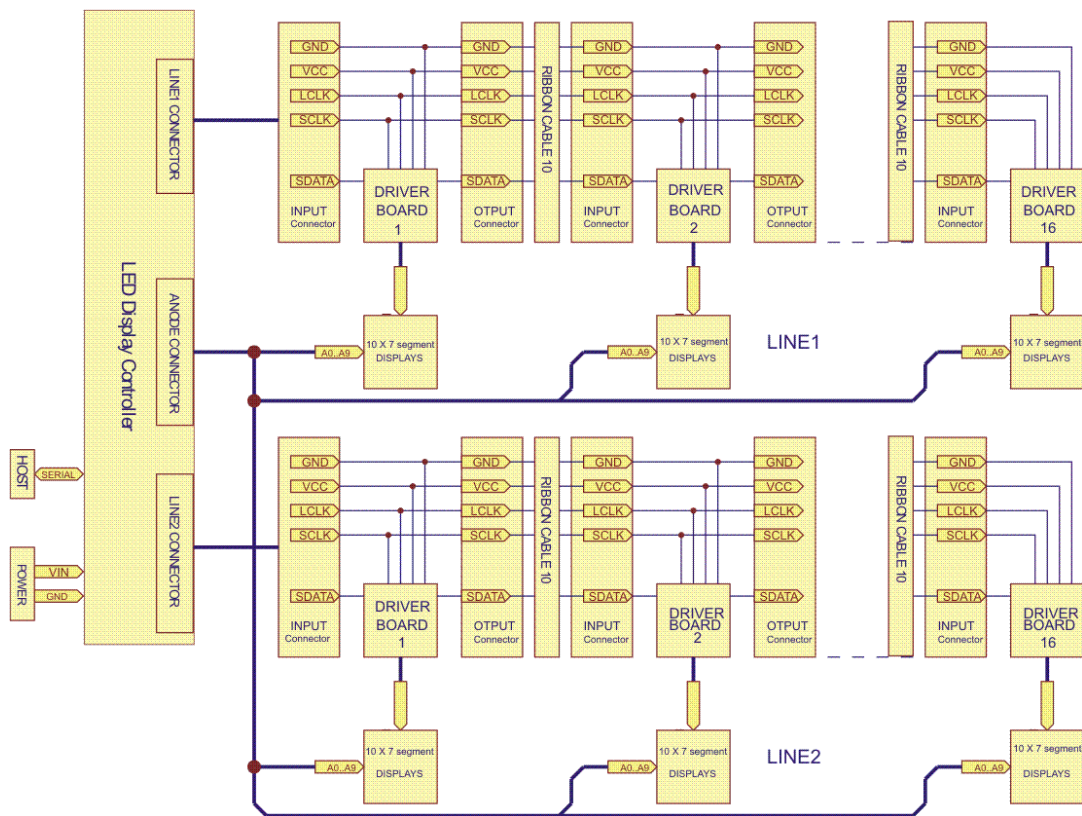


Figure 1

DRA2 – is the same as **DRA1**, but can drive directly 20 seven-segment indicators. In one line can be connected up to 8 **DRA2** boards. **Figure 2** shows **DRA2** schematic. Connectors **JP1** and **JP2** are the same as this of **DRA1**. **Figure 3** shows PCB board top level.

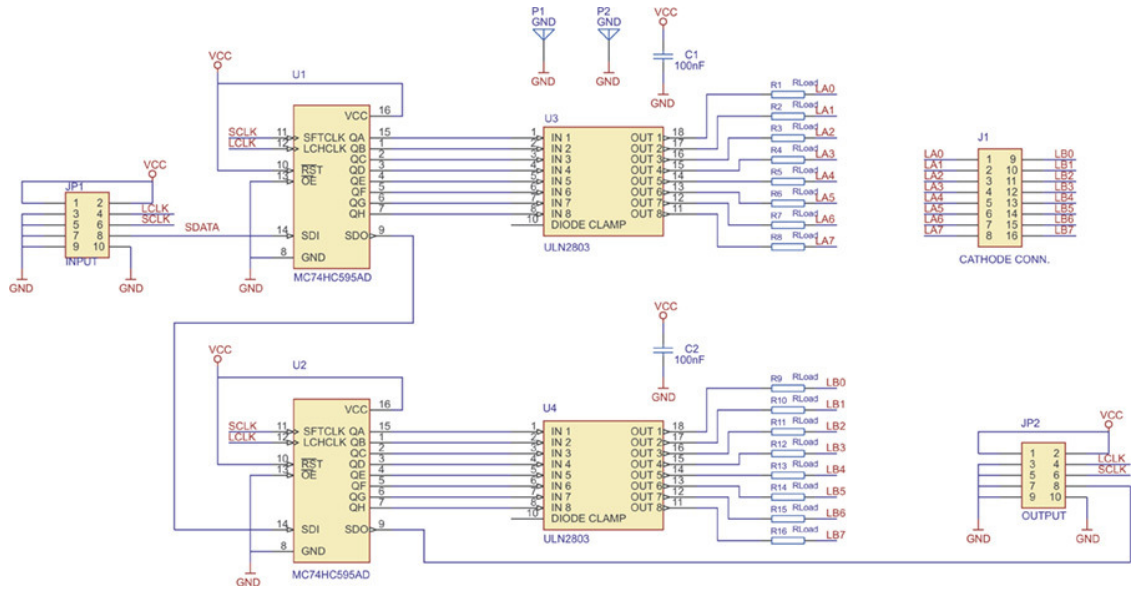
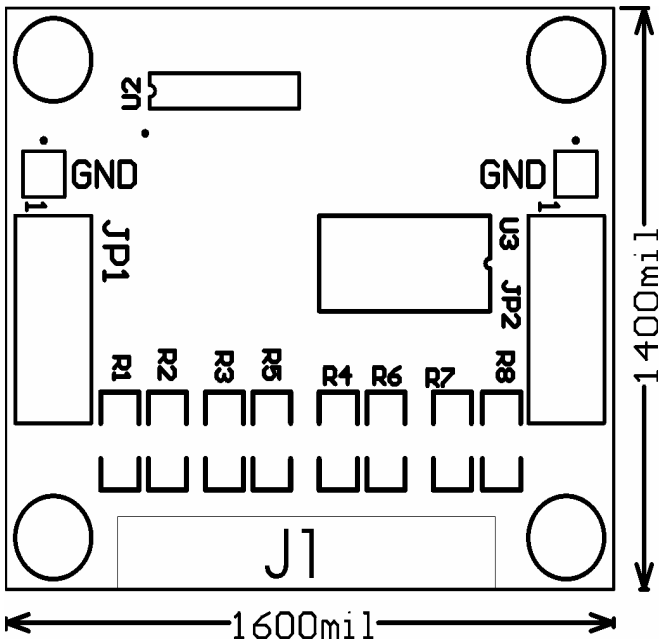


Figure 2



DRA2 PCB top view.

Figure 3

Figure 7 shows PCB board of **DRA2**

pin1	pin3	pin5	pin7	pin9	pin11	pin13	pin15
DA0	DA1	DA2	DA3	DA4	DA5	DA6	DA7
Pin2	pin4	pin6	pin8	pin10	pin12	pin14	pin16
DB0	DB1	DB2	DB3	DB4	DB5	DB6	DB7

J1 – Segment buss conn.

NOTES

If you have any questions or find some errors or misunderstandings in this documentation, do not hesitate to contact us on the next E-mails: support@itsdisplays.com or its@itsdisplays.com , and we try to answer you as soon as possible. Refer to <http://www.itsdisplays.com/> site to download Schematics and PCB source files.