Assembly instruction for booster
SpaxDCC v1.1

Kit is designating for slightly advanced electronics skills. You'll need soldering iron (soldering gun or better micro iron), tin, pincers.

Parameters

Proportions 103x62mm high ca 65mm
Supply voltage 15~24V AC or DC, with output current at least 2,2A. Interface via of straight connector outside diameter 5,5mm, inner 2,5mm
Output alternating-current voltage 15V / ~2,1A
Exit is equipped electronic fuse.

In case of using source with lower output current electronic fuse doesn't work, it can come to damage of booster or yard!

Recommended source e.g. ESPE ZSIDT24/2.7 4A- 255 (24V / 2,7A)
Program is written according to standards NMRA

Notice!!

In case installation to the box is necessary ensure sufficient ventilation!

Indication LED

After power on is indicated one of the following possibility:

RED	Cut off or overloading on exit Program cyclically they are trying to, whether cut off or overfreight is displaced. Isn't necessary shut off power supply for restoration activities booster.
ORANGE	Isn't present signal DCC, or mismatches timing
Green	Everything is OK

Connectors

J3 – power supply booster, polarity is in depended
RJ12 (2x) – input signal LocoNet® both connectors are transit for signal. By this is possible distribute signal over all yard.
DCC signal is on pin 1 plus 6.
Koleje (track) – output signal for power supply of track. In case using more booster is necessary individual circuits galvanic detach and ensure correct polarity between circuits.
Napájení (power supply) – connector isn't part of supplies (5,08mm pitch), over this connector it is possible add power supply portfolio. In case using do not place connector J3
DCC TTL – connector isn't part of supplies, in case using don't place connectors RJ12, serve for applied signal JK from DCC control unit. Signal JK is possible to sequentially divorce further by the help of genuine RJ12.

Content package

1x Printed Circuit Board	1x 330k resistor	1x BC547 transistor
1x Heatsink	1x R27 / 5W resistor	1x 78L05 voltage regulator TO92
2x M3x8 screw	1x 100R / 5W resistor	2x fuse holder
2x M3x10 screw	1x 4MHz crystal	1x fuse F4A
2x M3 nut	1x socket 18pin	2x connector RJ12
3x M3 spacer	2x 6N137 optocoupler	1x terminal 5,08mm
1x insulation via	2x 22pF ceramic capacitor	1x straight connector 5,5/2,5mm
1x insulation spacer TO220	2x 10nF ceramic capacitor	1x bi colour LED 5mm
2x 330R resistors	6x 100nF ceramic capacitor	1x 78S15 voltage regulator TO220
3x 1k0 resistors	1x 0,22uF electrolytic capacitor	1x KBU diode bridge
2x 1k8 resistors	2x 100uF electrolytic capacitors	1x L6203 H-bridge
1x 2k2 resistor	1x 2200uF electrolytic capacitor	1x PIC16F628A locked and programmed MCu

Conversion table resistors and capacitators

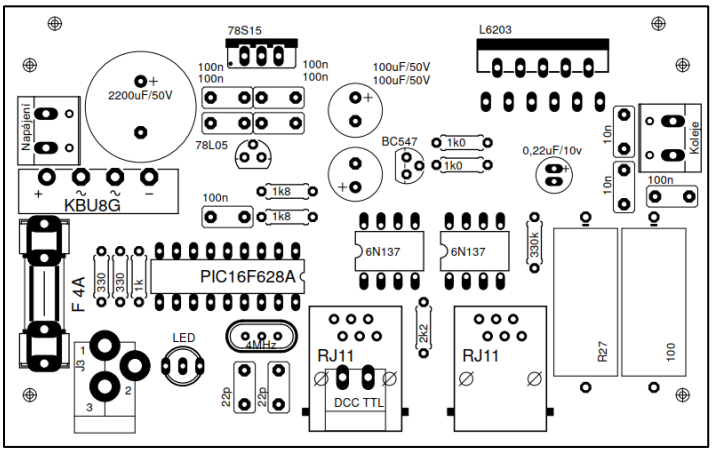
Description single resistors:

Coloured strip	**Value of resistor**
BK – black	330 – OR OR BK BK BN (beware of replacement with 330K!)
BN – brown	1k0 – BN BK BK BN BN
OR – orange	1k8 – BN GY BK BN BN
RD – red	2k2 – RD RD BK BN BN
GY – grey	330k – OR OR BK OR BN (beware of replacement with 330)

Ceramic capacitators number on case:
22p – 22
10n – 103
100n – 104

Assembly instruction for booster
SpaxDCC v1.1

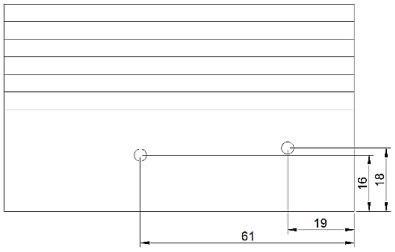
PCB assembly



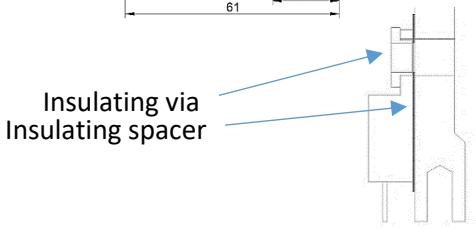
All components are placed from top side of PCB (side with white marking). On PCB is marked positions and values of components, some values could be changed without influence to functionality.

Recommended flow for component`s assembly:

1. First, assembly all resistors.
2. Following with crystal (4MHz).
3. Assembly socket for MCu 16F628A, MCu don`t insert yet; with socket, you can assembly also optocouplers 6N137 (dot on housing is equal to mark on PCB).
4. Assy all ceramic capacitors.
5. Assembly transistor BC547 a voltage regulator 78L05. Be careful about exchange of those components they has same housing!
6. Assembly fuse holders, be careful with correct placing. On side is “paw” for holding fuse.
7. Assy power resistors (white one) and again pay attention for correct value. Assembly straight connector J3 and terminal “koleje”.
8. Assembly all electrolytic capacitors instead of 2200uF. Pay attention for polarity, on board is marked plus pole, on capacitors is marked with strip negative pole! In case or reverse polarity capacitors could explode!
9. Assy RJ12
10. Assembly LED – slot must be on the left side oriented, if not red and green colour will be swapped. Shape and height adjust as required.
11. Assembly voltage regulator 78S15, leads must be flattened well to PCB.
12. Next components are H-bridge L6203 and rectifier KBU, again pay attention for right position.
13. As last but not least component assembly electrolytic capacitor 2200uF, pay attention for right polarity as in step 8.
14. Insert to socket MCu 16F628A, pay attention to right position.



Drill of holes Ø3,8mm for fixing H-bridge L6203 and voltage regulator 78S15 with drill according to sketch, both holes are drilled from plain side (components side) of heat sink.
During drilling is recommended „grease“ with industrial spirit. Burrs remove with bigger drill.



Insulating spacer and via is for galvanic dividing voltage regulator from heat sink, on heat sink is ground of H-bridge L6203.

LocoNet® is registered trade mark of Digitrax. Do not change circuit.

We are not responsible for connection of booster in yard and possibly damage trains, tracks, accessories, etc. In case of usage wrong power supply or wrong connection between tracks i.e. wrong polarity between sections!

This symbol indicates that the equipment must not be disposed into the regular household waste stream, according to EU directive 2012/19/EU.