Jenal Communications

Model FA1

Fleetsync Adapter Interface

Technical Manual

(Software Version 1.00)
(PCB Version 1.01)

The FA1 board has been designed to interface to a Kenwood radio using the Fleetsync protocol. It has eight current limited opto-coupled inputs (which can be isolated) and eight isolated changeover relay contacts. Connection to the radio is through a RJ45 connector on the board which can be directly wired to the microphone input of the radio (using the data in and data out connections).

The FA1 board is programmed using a standard Kenwood programming lead and the FA1V100.EXE programming software. The software is freely available from our site (http://jenal.com/downloads). To programme the FA1 the “RUN/PRG” switch on the board must be set to PRG. Return the switch to the RUN position after programming. A voltage source needs to be connected separately to the programming lead to allow the lead to work.

Each output relay can be controlled from a remote location by sending “STATUS” messages in the fleetsync protocol. A relay can be switched ON by sending “STATUS 2x”, where “x” is the relay number (1 to 8). Similarly, a relay can be switched OFF by sending “STATUS 3x”, where “x” is the relay number (1 to 8). A special command (if enabled) allows all relays to be switched OFF at the same time. This is done by sending a “STATUS 30" message.

The output relays can be programmed to operate in LATCH mode or in PULSE mode. In latch mode the relays are switched on and off as above. In pulse mode the relay is switched on by sending a “STATUS 2x” command and after a programmable preset the relay will switch off. The preset period can be from 0.1 Seconds to 99 Minutes 59.9 Seconds adjustable in 0.1 Second increments.

The pulse period will be between the preset period and the preset period minus 0.1 seconds. For example a preset pulse period of 1.5 Seconds will result in an output pulse of between 1.4 and 1.5 seconds.

The eight inputs can be set by links to accept various types of connections. These include:

1) an external one or two wire voltage source
2) a loop (eg relay contact)

or 3) a ground.

Each input can have two states - active and inactive. The FA1 will recognise when an input changes state and do one of the following:

1) Send a short message (user programmable)
2) Send a STATUS message (user programmable)

or 3) Do nothing

The active and inactive messages for each input can be separately programmed by use of the programming software.

The FA1 can be remotely interrogated for it’s status by sending a “STATUS 55" to it. The FA1 will respond with a short message saying:

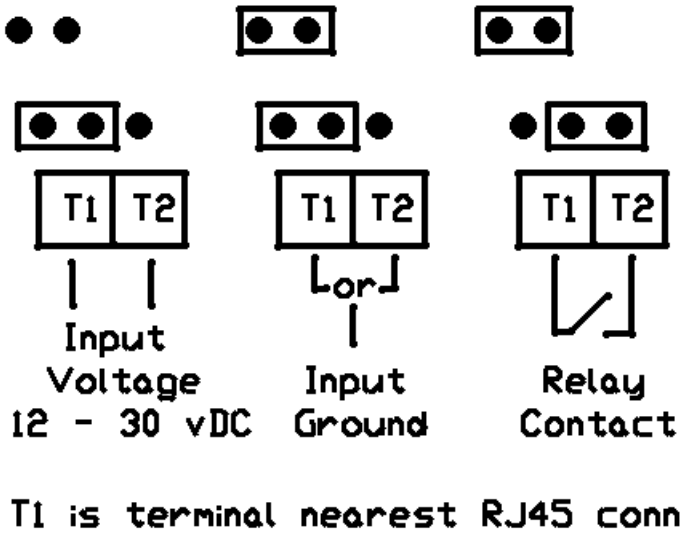
Inputs - 12345678 Outputs 12345678

If an input or output is active it’s number will appear, if inactive then an “x” will appear instead.

Each input and output has an associated LED which lights if the input/output is active. Additionally there is an LED which monitors the +5v supply(marked 5V) and an LED which flashes to show the programme is running (marked ACT).

There is an LCD option available for the FA1. This allows a 2 line x 16 character LCD to be plugged into the 16 way “LCD Option” connector on the board and will normally show the status of the inputs and outputs. The LCD will also display any activity as it happens (eg, “Input 1 active” or “Output 4 active”). This activity will normally show for two seconds and then revert to the input/output status display.

FA1 Jumpers and Input connection



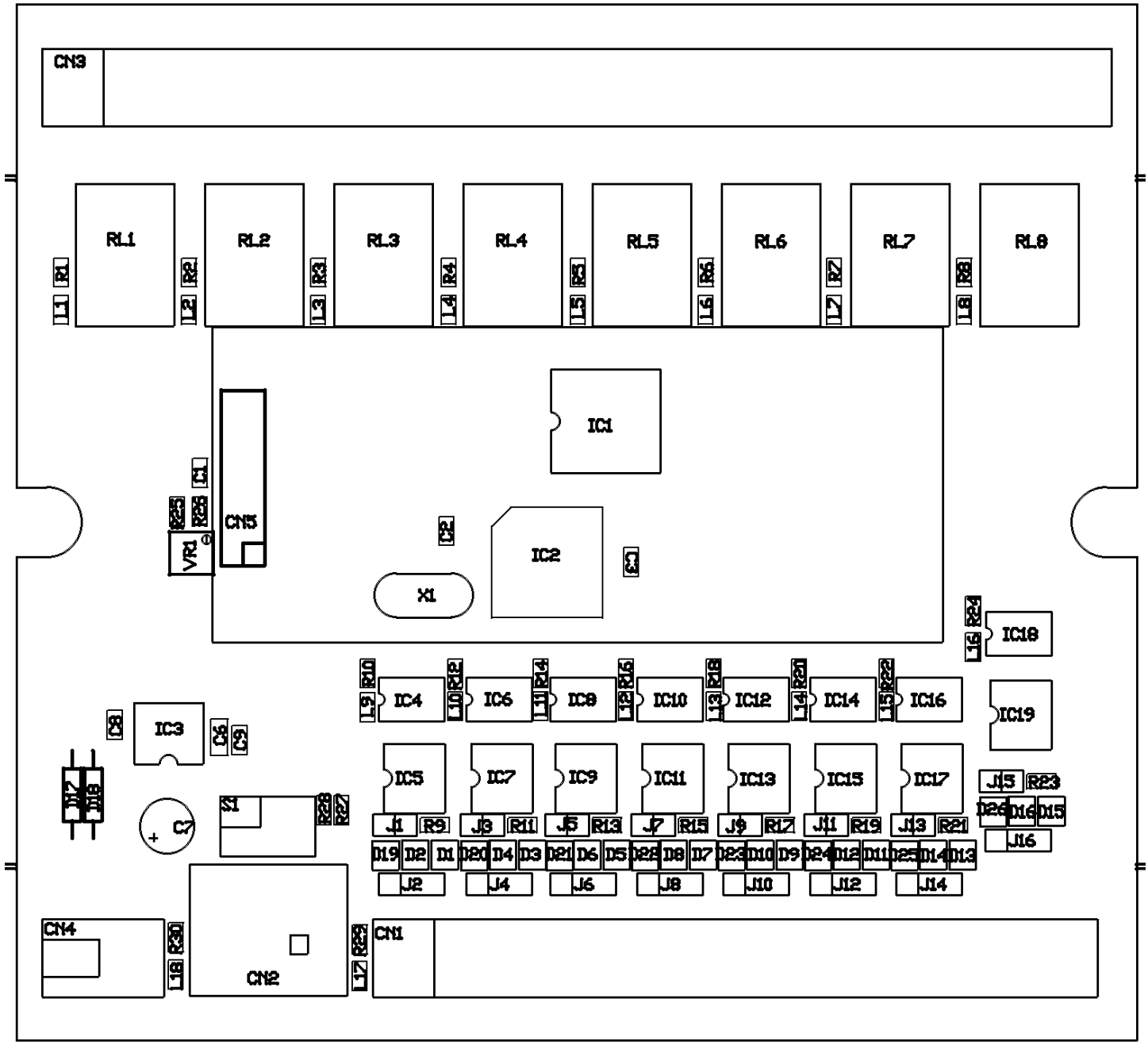
With the links installed as shown in the left hand picture above the input is set up to be fed from a DC voltage source nominally 12 to 30 volts (although the unit should work satisfactorily with as little as 5 volt DC). The input is not polarity conscious and is isolated in this mode. The input current is limited to approximately 10mA. A single wire voltage supply can be connected to either terminal as long as the other terminal is connected to the ground of the FA1 and also to the ground of the voltage supply.

When the links are installed as shown in the centre picture the input can be activated by simply connecting a switched ground to either input terminal. The switched ground can be supplied from a switch, a relay contact or an open collector output of another device. The switched ground will need to be able to sink a maximum of 10mA and the ground of the other device must be physically connected to the ground of the FA1.

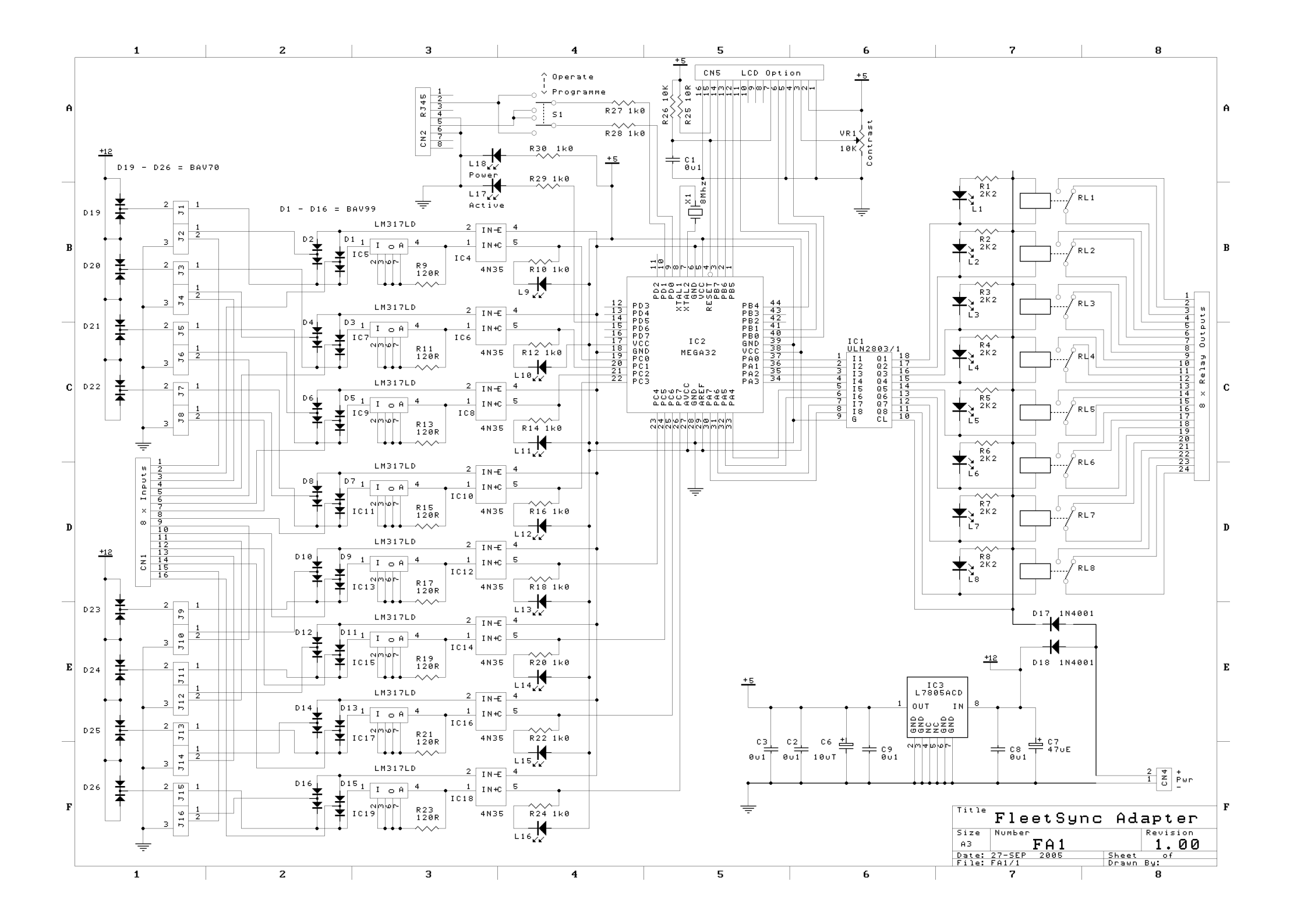
When the links are installed as shown in the right hand picture then the input can be activated by a switch or a relay contact wired across the terminals. Alternatively an open collector output can be connected to terminal T2 and the ground from the device connected to terminal T1 (which is grounded in this configuration). Do not connect a permanent ground to T2 as this will produce a permanently active state for the input.

FA1 PCB Component layout

8 x Outputs - Change-over relay contacts



Power input Radio i/f 8 x Inputs - Current limited opto-coupler inputs


D19 - D26 = BAV70
D1 - D16 = BAV99
Operate
Programme
S1
RJ45
CN2
R27 1k0
R28 1k0
R30 1k0
R29 1k0
L18
Power
L17
Active
CN5 LCD Option
R26 10K
R25 10R
VR1
10K
Contrast
C1
0u1
X1
8Mhz
IC2
MEGA32
IC1
ULN2803/1
LM317LD
4N35
R9 120R
R10 1k0
R11 120R
R12 1k0
R13 120R
R14 1k0
R15 120R
R16 1k0
R17 120R
R18 1k0
R19 120R
R20 1k0
R21 120R
R22 1k0
R23 120R
R24 1k0
L9
L10
L11
L12
L13
L14
L15
L16
8 x Inputs
CN1
R1 2K2
R2 2K2
R3 2K2
R4 2K2
R5 2K2
R6 2K2
R7 2K2
R8 2K2
L1
L2
L3
L4
L5
L6
L7
L8
RL1
RL2
RL3
RL4
RL5
RL6
RL7
RL8
8 x Relay Outputs
D17 1N4001
D18 1N4001
IC3
L7805ACD
C3 0u1
C2 0u1
C6 10uT
C9 0u1
C8 0u1
C7 47uE
CN4
Pwr
Title
FleetSync Adapter
Size
A3
Number
FA1
Revision
1.00
Date: 27-SEP 2005
File: FA1/1
Sheet of
Drawn By:

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