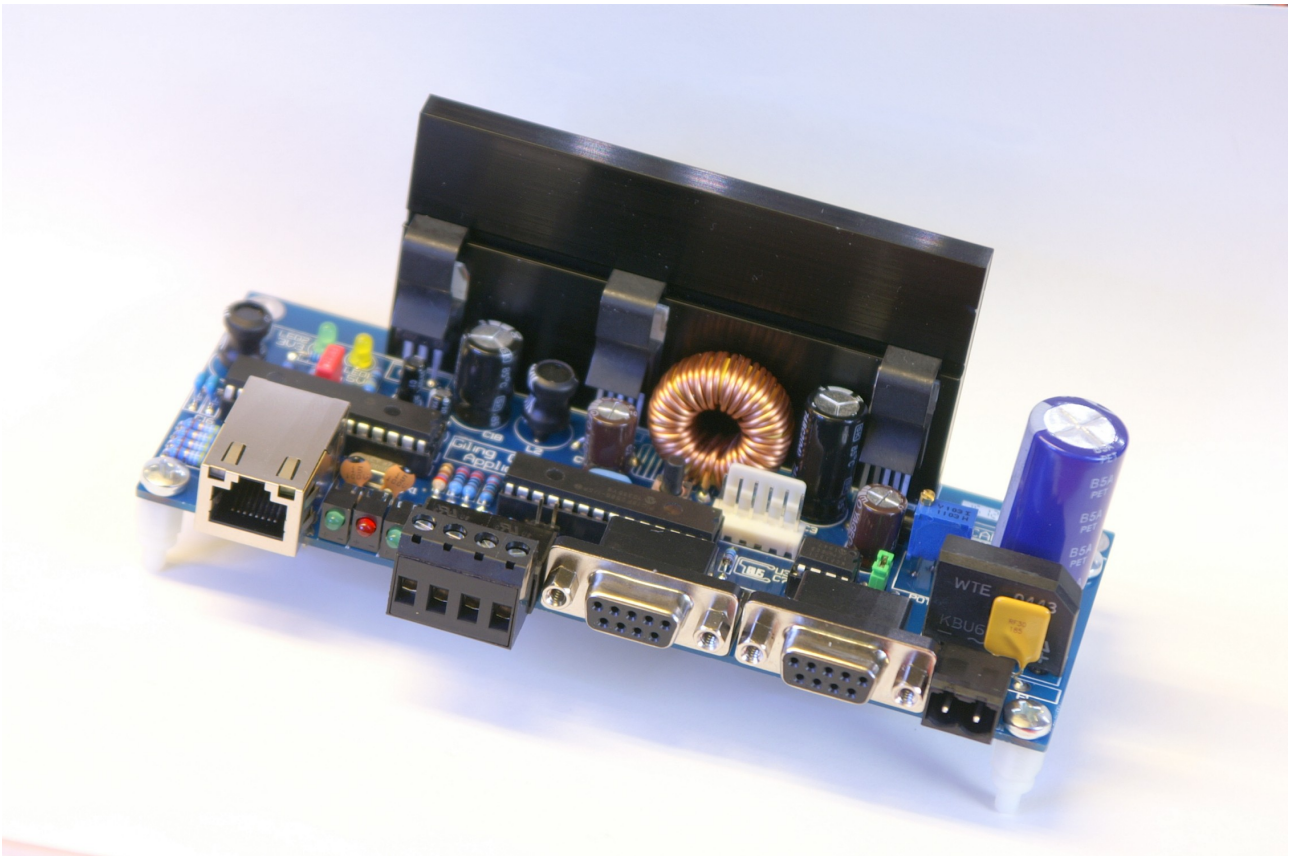


CAN-GC1e Ethernet to Cbus interface



Not warranty for correct description of parts or functioning of this unit.

This design is liable to changings.

The display pictures are as accurate as possible.

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Technical information:

Power Supply	:	18-24 dc / 16-20V ac 50-60Hz
Power consumption	:	max 55 Va. (depending on load)
Output power	:	12Vdc 3Amp
Connections	:	J1 – Power supply J5 – Screw terminals for CBUS/12V out J2 + J3 – SubD9 connector for CBUS/12V out J4 – Isolated Ethernet RJ45
Sizes (L x W x H)	:	150 x 60 x 45 mm

Important :

Before starting the construction of this kit, first read this manual, specially the remarks about possible assembling errors. In that way you will be able to construct this kit in the right order, and avoiding putting parts in the wrong way where possible.

Soldering must be done in the correct way, using a regulated solder tool and suitable solderwire.

No acid solder pastes or solutions are allowed in ANY circumstances, because it will destroy printed circuit and parts in the shorter or longer. Neglecting this is not accepted at all times, and any claim on not functioning of such unit will be refused.

Be sure that solderpoints are well heated so that solder is nicely flowing in the metallised holes. Bad solders points will force bad contacts, and thus not correct working systems.

'Cold' junctions should avoided. If you have no experience in soldering, use some old electronic material to educate yourself to do it right.

After soldering double check your work, specially where solder points are vedry close together.

Use correct and sufficient lighting, because the lack of that is caution #1 for having bad junctions.

Further more a basic knowledge of electronic components (how they look like) is essential.

In case of any doubts , ask your supplier !

General instructions on assembling a GCA Kit.

If you follow this manual strictly, the chance of malfunction is commonly nihil.

Double check your work step by step while proceeding, better read something twice than only half way.

Do not assemble in any other following order as recommended, and be careful not to forget any items.

The best way to do this is marking every step in this manual while proceeding.

Take your time, it is hobby and it should be pleasant to do it. And when everything results in a nice working unit, what should be expected, it will double your satisfaction. So DO NOT RUSH!

Most common mistake is incorrect positioning of parts like Elco's, integrated circuits and diodes.

Some parts are easy to trade with others, i.e. "n10" equals 100 pF, NOT 10 nF.

Also be sure to set each integrated circuit in correct position, that is with the 'notch' (mostly a little cut at one side of the circuit), in line with the mark on the pcboard. Also check that all pins are correctly straight down into the socket, and not folded under the IC.

Next cause can be 'cold' contact, where a solder point did not get enough heat to melt completely.

That is easy to check by the colour of the solderpoint. If it is not shiny, usually is not well soldered.

Only use solder which is advised to use for electronic components.

No soldering greases or fluids are allowed. These will cause damage to pc-boards and components, and doing so will make you lose any support if things are not working properly.

Leadfree solder is also allowed, but be aware that this kind of solder needs slightly higher temperature, so taking longer time to heat up and cool-down. So far there has been no test for the durability of this kind of soldering and what the higher temperature will do to materials.

If the unit does not appear to be working as described, even after seriously following the instructions above, there is a chance that one of the delivered parts is not working correctly.

If you are a newbie in this matter, it might be useful if you have somebody in your neighbourhood to help you locate the problem.

If that is all out of your options, it is possible to ship the well packed unit to your supplier.

Do not forget to add name and address and copy of your invoice, and also a clear description of the state of the problem. Also describe the used power supply, because also that could be your problem.

Please take care that all parts should be mounted flat on the board, unless otherwise instructed.

Soldering of all points is done from the bottom side of the board. Due to the through hole metallisation there is no need to do any soldering at the parts side, unless specifically stated.

Wires on the bottom side should be cut short. If this is done before soldering, the wires can be cut very short. If done after soldering, be aware NOT to cut in the soldering, because it can damage the pc-board.

Solder tool should have tip of no more than 1mm, and should be temperature regulated. This is specially important to avoid 'solderbridges' between two adjoining points.

General information on this project.

GAN-GC1e is a unit which connects computer via Ethernet with CANBUS.

Ethernet connection is electrically isolated from this board.

CAN-GC1e also has an economic switching power supply on board, 12V 3 amp, which is suitable to supply a large amount of CANBUS units.

Please take care to use a suitable transformer or DC-supply minimum 50VA to feed this unit.

If you do not need the full power from this unit, and want to use a smaller transformer, the fuse F1 should be swapped with a suitable one. Please ask your supplier for advice in this matter.

The 12V output is fully short-circuit protected, as long as suitable transformer is used.

The CANBUS, including the 12V power from this unit can be connected in three ways:

Two D-Type 9-pin connectors, suitable for use with all CAN-GCxx units and a 4-screw terminal, specially available for MERG System.

Be aware that use of suitable wires should be used to connect CANBUS.

Also wires should be at least 0,5mm² to suit the maximum current.

CANBUS wires should always be twisted.

It is also important to make sure that in the CANBUS, all cables/wires should be the same all over.

Statement:

This unit has been constructed as prototype, before the actual board was produced.

Only when it proved to be exactly conform the design and demands, it was further proceeded and sold.

This kit is delivered with two instruction parts.

Instruction part 1 : The assembly of the kit.

Instruction part 2 : Programming and user manual.

Warranty:

This kit includes a 1 year warranty.

This warranty covers the free repair of the malfunction, as long as this is proofable to be caused by the malfunctioning part(s).

Because we have no influence on correct construction of this kit, we can only guarantee the parts as delivered with this kit.

The functioning of this kit is guaranteed only if it is used for what the description has stated, and as long as assembling and soldering has been done completely conform this manual.

Further claims can not be made.

We do not take responsibility for any damage or following damage on other parts, used in combination with this unit.

Kits can not be reimbursed, and we restrict any support only to repair and/or supply damaged or not functioning parts/ kits.

With the following situations, there is no possible claim on any warranty:

- using soldering fluid or paste in any form while constructing or repairing this kit
- the use of not described and/or not delivered parts
- if soldering is done in a not suitable way.
- if there has been a proof of trying to remove and replace soldered parts in the board
- if changes in any form has been made to the unit
- if storage of parts/assembled unit is done in a harmful way, like high humidity or dust or any other situation that will cause damage to parts and/or unit
- if pc-board is damaged in any way
- using the unit in an incorrect way.
- using unsuitable connectors, not listed with this unit
- damage caused by not following this manual
- connection of non-suitable power supply
- Wrong polarisation (if applicable) of this unit
- if unit is not handled according this manual
- damages caused by wrong soldering i.e. bridges between solderpoints.

In all these cases, returning the unit will be done at your expenses.

Solder instructions:

If you are not experienced with soldering, first read these instructions, before you handle the soldering tool.

You need to have some serious practice, before starting the assembly of this kit.

- Start with a good and clean working space with adequate illumination
- NEVER use solder paste or fluid for electronic equipment. The acids in these compounds are very destructable for parts, the pc-board and the copper wires on the board. Only soldering wire with flux, suitable for electronic systems, is allowed.
- Use a good quality soldering tool, with temperature controlled tip
- Just heat up the soldering spot long enough, to achieve a good flow of the solder added to it. Too long heating of this spot will cause damage to the part and the pc-board.
- Soldering from bottom side of the board is sufficient, since all holes have through hole metallisation.
- Put soldering tool to point, touching both the board and the parts wire, and feed as much solder just in the joint between tool and spot, to fill in the hole. If you see a good flowing going on, remove soldering tool. Do not move part or board before solder has become solid again.
- Always keep your soldering tool clean. Cleaning the soldering tip with any suitable material is essential to good soldering. Suitable cleaning material are a wet sponge or copper brush.
- Protect your eyes, skin and clothing while soldering.
- Do not keep soldering point heated for more than 5 seconds, because then the parts and/or boards will be damaged.
- Be sure to put parts according to printing on the board itself and watch polarisation BEFORE soldering. Incorrect positions will not only cause damage to the part itself but could trigger a chain reaction of damaged parts after starting up.

Instruction part 1 : The assembly of the kit.

First check if all parts are available in the package.

Use for this check the partslist as delivered with the package.

There is a possibility that parts are slightly different from the list. i.e. 2 pcs of 2 pin screw terminal instead of 1 pc of 4 pin screw terminal.

Capacitors and Elco's can have a higher voltage as given in the list, NEVER lower !

Values of resistors, diodes and transistors, as well as integrated circuits should conform to the partslist.

If you find any wrong or missing parts please contact your supplier. We will take care for that.

- Start with resistors. In most kits, when there is a large amount of various values in resistors, resistors are stacked on a separate list with the described value. Bend the wires to fit into the holes, making the resistor flat on the board, and bend the wires slightly at the bottom, and cut the wire so that the resistor does not fall off the board again. Solder the wires.
- Resistors are

R1	470 Ohm
R2	120 Ohm
R3	220 Ohm
R4	220 Ohm
R5	220 Ohm
R6	47 Kohm
R7	120 Ohm
R8	100 Kohm
R9	10 Kohm
R10	2,32 Kohm 1% metalfilm
R11	270 Ohm
R12	49,9 Ohm
R14	49,9 Ohm
R15	49,9 Ohm
R16	49,9 Ohm
R17	270 Ohm
R18	2,2 Kohm 1% metalfilm
R19	10 Kohm
R20	10 Kohm

- Next bend wires of Diodes so that they will fit on the appropriate place. Remember the cathode line on the diode which should match the white cathode mark on the board. Bend the wires at the bottom side same as with resistors. Solder the diodes.
Diodes are :

D1	1N5822
D2	1N5818

- Now mount the Leds. For normal 3 and 5mm leds, it counts that the shortest wire is the cathode(= '-') , which is also the point where a flat side is at the edge of the led. Also here, after inserting the led correctly into the board, bend the wires at the bottom and cut them short. Led3,4 and 5 should just face the outside of the board.

Solder the leds.

Leds are:

LED1	LED 3mm Yellow
LED2	LED 3mm Green
LED3	LED B-3 GN
LED4	LED B-3-RT
Led5	LED B-3 GN

- Insert IC-sockets in the board. Remind the little 'notch' in the socket and the board, they should be aligned. The ease soldering bent two opposite pins at the underside of the board, to prevent falling out.

- Insert the small ceramic and MKT capacitors

Capacitors are:

C6,C7,C8,C16,C17	100 nF (indication 104K)
C9	220 nF (Indication u220 or 224K)
C14,C15	15 pF (indication 15)

- Insert the crystal X1 indicated with 25000000 in the board and handle it as a resistor. There is no polarity on this crystal.
- Do the same with Res1 = 8 Mhz resonator. Also here there is no polarity.
- Insert POT1 a blue potentiometer, and handle as resistor.
- Insert GR1 indicated as KBU 6B. Align + symbol on GR1 with + symbol on board. Bend the wires and handle as usual.
- Insert L1, L2 and L3. Coils are:
 - L1 = 100 uH Coil > no indication
 - L2 = 330 uH indicated as 331K
 - L3 = 330 uH indicated as 331K
 Fizing as usual.

- Insert connectors.

Connectors are:

J1	Two pin screw terminal
J2	Female d-connector
J3	Female d-connector
J4	Magjack Ethernet connector
J5	4 pin screw-terminal

ICSP1 6 pin Molex connector or 2 x 3 pin Molex connector.

For this ICSP1 watch the lining as drawn on the board, which indicates the position of the strip on the connector(s).

Be sure all pins are feeded through the board before soldering these connectors.

J2 and J3 , also solder the clip pins !

- The fuse F1 is to be mounted and soldered. No polarity is here to be aware of.
- The elco's are now in turn. Elco's are

C1	RAD 4.700/35
C2	RAD 100/35
C3	RAD 1.000/25V
C4	RAD 100/35
C5	RAD 10 uF 16V
C13	RAD 10 uF 16V
C18	RAD 1000 uF/16V

Be sure to align the polarity of Elco's with the + and – signs at the board. Most elco's have – sign marked in a white band. Bend wires at the bottom of the board and solder them.

- Last parts are the regulator IC.s and cooling. First insert he three regulators as indicated

here: VR1 LM2676-12
VR2 LM2576-5
VR3 LF33CV

Bend wires 1,3 and 5 of VR1 and VR2 a little bit to match the holes in the board.

Do NOT SOLDER YET!

Now mount the cooling with the two 3mm screws to the board. Take care that VR1,2,3 do not fall out while doing so. The cooling device has 3mm thread inside over the length. Hold the cooling to the right position and fasten it.

Now bent the three regulators do that thy will lie flat to the surface of the cooling and fix them with the provided clips. Double check if all three are flat to the cooling surface, correct if needed, and solder them.

Do NOT solder first because a good alignment with cooling will be imposible,

This will cause the regulator to overheat and also put too much strenght to board and to the wires of the regulator.

After double check of all soldering points (No Bridges !). the board is ready for a last checkup.

First connect power to J1.

Power can be between 18 and 24V dc or 16 to 20V ac (50-60 Hz).

After powering up, Led1, led2 and Led4 should be indicating.

Check the voltages.

On connections of C6 5Volt should be available (+/- 5%)

On connections of C8 3,3Volt should be available (+/- 5%).

Only if both voltages are correct, remove power and U1 , U2 and U3 can be inserted.

Please attend to correct position of each IC, indicated by the notch on the board.

Now we are ready for the first test.