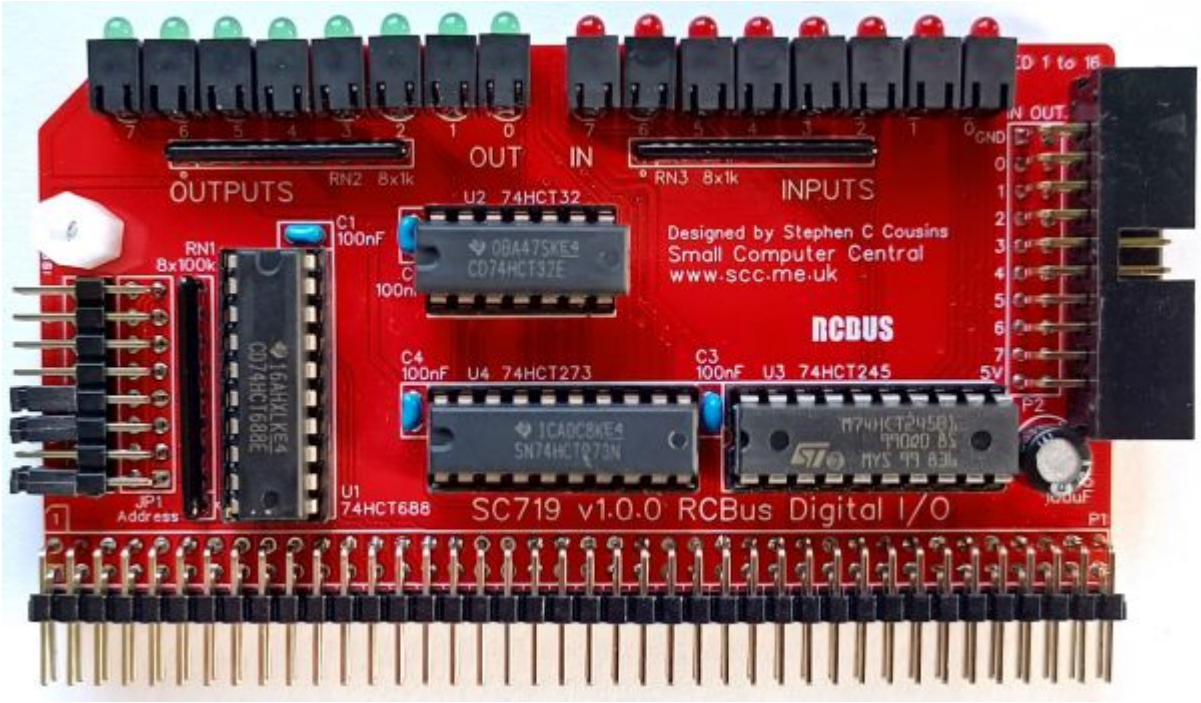
Small Computer Central

SC719 – RCBus Digital I/O Module

SC719 is a digital input/output module designed for the RCBus. It offers 8 inputs and 8 outputs at 5-volt TTL levels. Each input and output has an LED to indicate its state.



- SC719 – Assembly guide
- SC719 – Compatibility
- SC719 – Parts list
- SC719 – Printed circuit board
- SC719 – User guide
- SC700 series information (https://smallcomputercentral.com/rcbus/sc700-series/)
- SC700 series support (https://smallcomputercentral.com/support/)

Downloads

- SC719, v1.0, Kit contents sheet (PDF) (https://smallcomputercentral.com/wp-content/uploads/2023/08/sc719-kit-contents_v1.0.1_2023-08-28.pdf)
- SC719, v1.0, Schematic (PDF) (https://smallcomputercentral.com/wp-content/uploads/2023/05/sc719_v1.0.0_2023-05-07_17-11_schematic.pdf)
- SC719, v1.0, PCB design files (OSHWLab) (https://oshwlab.com/sccousins/sc719-v1-0-digital-io-module)
- SC719, v1.0, Gerber files (ZIP) (https://drive.google.com/file/d/1Bvt2M6LYN4C8CDgtdDkFJ3Ig3bn8oFKB/view?usp=drive_link)

Errata

- PCB v1.0.0 does not leave enough space for this capacitor C5 to fit tight to the PCB. Fixed in PCB v1.0.1

Suppliers

Kits	***Website***	***From***	***Currency***
Small Computers Direct	SCDirect (https://small-computers-direct.square.site/s/search?q=sc719)	UK	GBP
Stephen C Cousins	Tindie (https://www.tindie.com/search/?q=sc719)	UK	USD
Small Computer Central	Lectronz (https://lectronz.com/products/search?q=sc719)	UK	Euro/USD
PCBs	***Website***	***From***	***Currency***
Small Computers Direct	(https://small-computers-direct.square.site/s/search?q=sc733)SCDirect (https://small-computers-direct.square.site/s/search?q=sc719)	UK	GBP
Stephen C Cousins	Tindie (https://www.tindie.com/products/tindiescx/picknmix-boards-for-rcbus-80pin/)	UK	USD
Small Computer Central	Lectronz (https://lectronz.com/products/pick-n-mix-boards-for-rcbus-80pin)	UK	Euro/USD
Assembled and Tested	***Website***	***From***	***Currency***
Not available			
Components			
See parts list			

Small Computers Direct does not collect VAT for EU countries
Tindie does not collect VAT for EU countries
Lectronz does collect EU VAT for orders up to 150 EUR

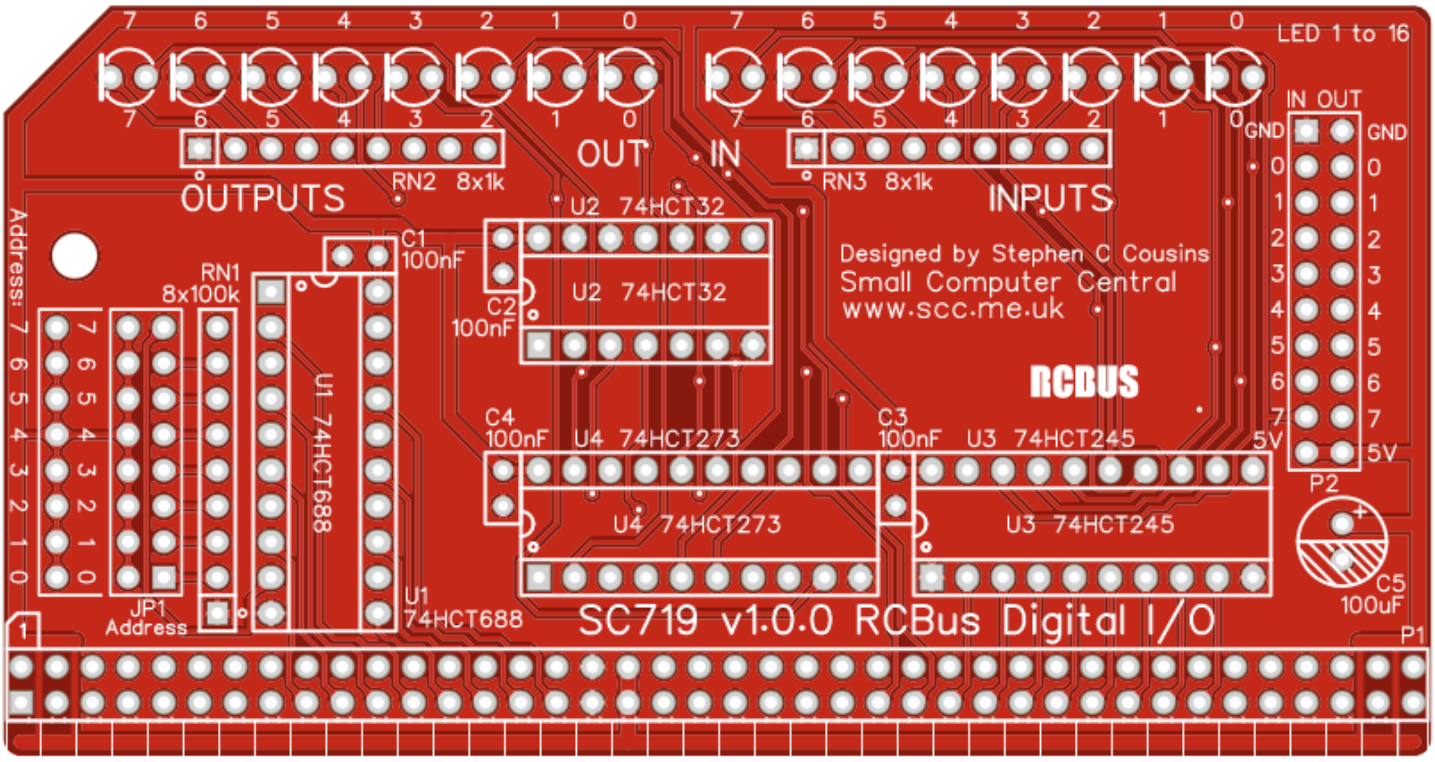
Parts List

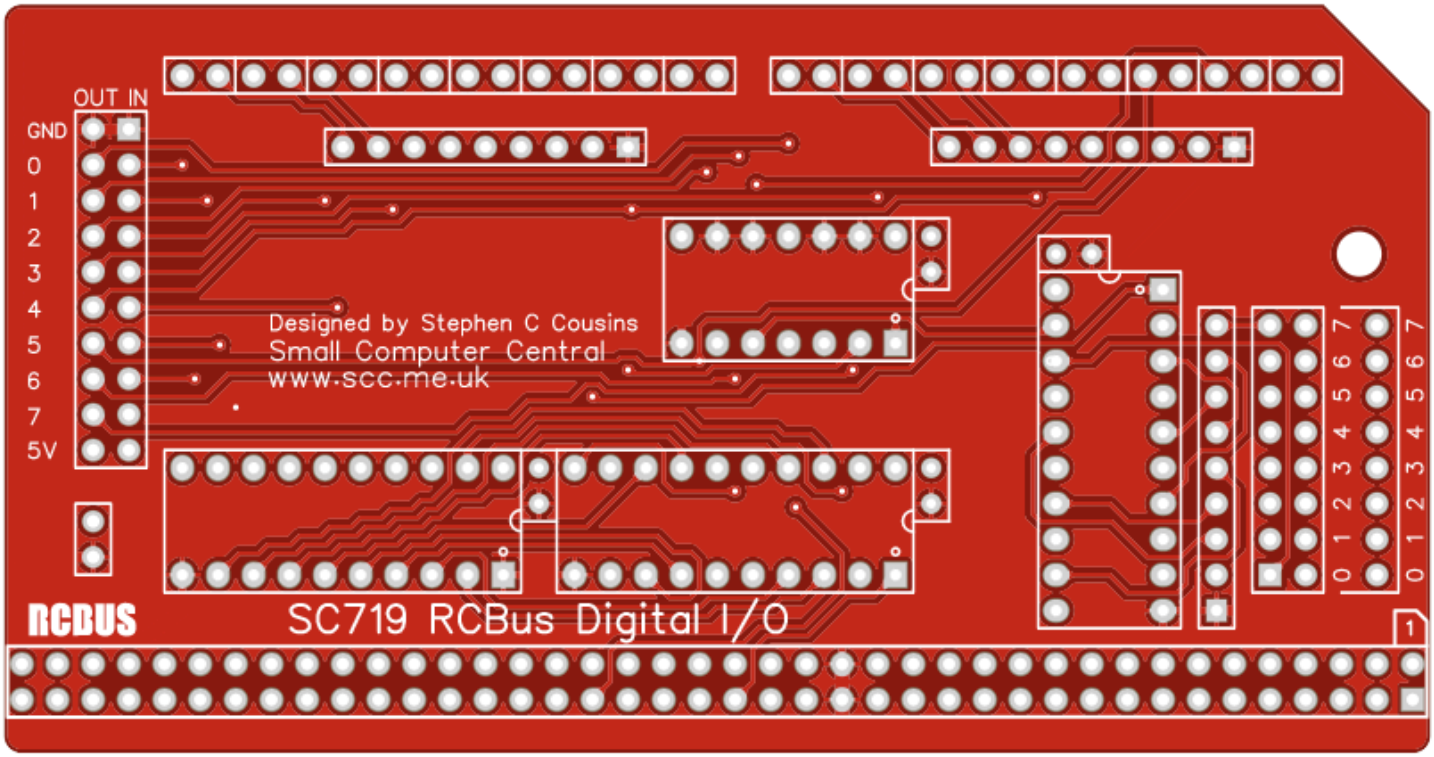
Reference	***Qty***	***Component***
PCB	1	SC719, v1.0, PCB
C1 to C4	4	Capacitor, ceramic, 100 nF

C5	1	Capacitor, electrolytic, 100 µF
JP1	1	Header, male, 2 row x 8 pin, angled
Jumper	8	Jumper shunt
LED1 to 8	8	LED, green, 3mm, angled
LED9 to 16	8	LED, red, 3mm, angled
P1	1	Header, male, 2 row x 40 pin, angled
P2	1	Box header, 2 x 10 pin, angled, or Header, male, 2 x 10 pin, angled
RN1	1	Resistor network, 8x100k, SIL, 9-pin
RN2 and RN3	2	Resistor network, 8x1k, SIL, 9-pin
Screw (for spacer)	1	Machine screw, 6mm, M3
Spacer	1	Spacer, 10mm, M3, nylon
U1	1	74HCT688
U2	1	74HCT32
U3	1	74HCT245
U4	1	74HCT273
IC socket 20-pin U1, U3 and U4	3	Socket, DIP, 20-pin
IC socket 14-pin U2	1	Socket, DIP, 14-pin

Component details and sourcing (https://smallcomputercentral.com/components/)

Printed Circuit Board





User Guide

SC719 is a digital input/output module designed for the RCBus. It offers 8 inputs and 8 outputs at 5-volt TTL levels. Each input and output has an LED to indicate its state.

The module's I/O address is set with jumpers (JP1). The module responds to input/output addresses matching the address set with these jumpers. When a jumper shunt is fitted, that bit must be a 1 (high voltage). When the shunt is not fitted, that bit must be a 0 (low voltage). The card has tight address decoding and only occupies a single input/output port address. Typically, the address will be 0x00 which is selected by not fitting any jumper shunts to JP1.

Input/output port functions

I/O Address	*Read*	*Write*
Configurable *1 base address	Inputs	Outputs

The RCBus I/O base address should be set to match the software you are using. Typically, this is 0x00 (no jumper shunts fitted).

Jumper options

Jumper	*Function*
JP1	Set module's RCBus I/O address

Assembly Guide

Below is the suggested order of assembly. A general guide to assembling circuit boards can be found here (https://smallcomputercentral.com/assembly-guide/).

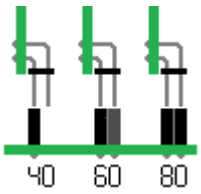
1. Decoupling capacitors C1 to C4
   These can be fitted either way around
2. Sockets for U1 to U4
   Fit such that the notch in the socket matches the curve in the outline on the PCB silkscreen
3. Resistor networks RN1, RN2 and RN3
   These must be fitted the correct way around whereby the dot on the component matches the dot on the PCB silkscreen
4. Bus header P1
   Make sure the pins are parallel to the PCB so that the board is vertical when it is fitted into a backplane socket
5. Header pins JP1
6. Light emitting diodes LED1 to LED16
   The angled LEDs in the kit only fit one way around, but standard LEDs need to have the short lead in the hole marked with a flat line
7. Box header or header pins P2
8. Capacitor C5
   PCB v1.0.0 does not leave enough room for this capacitor to fit tight to the PCB
9. Insert the integrated circuits into their sockets
   Make sure the notch in the component is at the end indicated by the notch in the socket and the curve on the PCB silkscreen
10. Fit the nylon spacer in the mounting hole

Compatibility

This module conforms to the RCBus specification v1.0 (https://smallcomputercentral.com/rcbus/) for RCBus-2014 and RCBus-Z80.

The RCBus specification includes RCBus-2014 (both RC2014 standard 40-pin bus and RC2014 enhanced 60-pin bus) and also the full 80-pin RCBus. The 80-pin RCBus provides support for advanced Z80 features, such as the interrupt daisy-chain, as well as support for other processor families.

The table below indicates electrical compatibility with each backplane type (40, 60 and 80 pin)



Backplane	?	Compatibility notes
RCBus 80-pin	✔	Fully supported
RCBus 60-pin (RC2014 enhanced)	✔	Fully supported
RCBus 40-pin (RC2014 standard)	✔	Fully supported

Notes

- This product is designed for hobby use and is not suitable for industrial, commercial, or safety-critical applications.
- The product contains small parts and is not suitable for young children.