

ARCNET Controller Board for ISA Bus

Device Description

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Questions and suggestions related to this document should be directed to:

TK Systemtechnik GmbH
Zaunkönigweg 1
85635 Höhenkirchen
info@tk-arcnet.de

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1. Performance Characteristics



The ARCNET controller board **A66_ISA** is an insert board designed for all PCs with an ISA bus. It is equipped with an ARCNET controller COM90C66 Revision D [1]. A summary of its performance characteristics is given below:

ARCNET

- COM90C66 Controller, Revision D
- Activation display LED
- BNC connections for RG-62/U coaxial cable
- Bit rate 2.5 Mbps

ISA Bus

- IRQ level selection by jumper
- I/O address range selection via DIP switch
- Memory address range selection via DIP switch

Application fields

The ARCNET controller board **A66_ISA** is intended to be a replacement of old ARCNET boards with COM90C66 ARCNET controller for the ISA bus, which are not available any more.

Software Support

- Direct access to the E/A addresses under DOS or Windows 9x
- Since the A66_ISA is compatible with the old boards, we do not provide drivers and software support.

2. Hardware Information

2.1. ARCNET Connections

The external ARCNET connection is realised with a BNC connector. The transmission medium must be coaxial cable of type RG-62/U. If the ARCNET controller **A66_ISA** is used at the start or end of an ARCNET bus segment, a 93 Ohm termination resistor must be connected with a BNC-T adapter along with the coaxial cable. Alternatively, the on-board termination resistor can be activated by shortening **J2** with a jumper.

The ARCNET connection has a LED to show bus activity.

2.2. ARCNET node address

The node address of the board can be set by a DIP switch (**SW2**), which can be operated directly at the slot cover plate. So there is no need to open the computer.

The settings at **SW2** can be done according to the examples given by the table below:

Node address	Binary	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
1	0000001	OFF	ON	ON	ON	ON	ON	ON	ON
2	0000010	ON	OFF	ON	ON	ON	ON	ON	ON
3	0000011	OFF	OFF	ON	ON	ON	ON	ON	ON
4	0000100	ON	ON	OFF	ON	ON	ON	ON	ON
5	0000101	OFF	ON	OFF	ON	ON	ON	ON	ON
..

Table 1 Settings for the ARCNET node address

2.3. Required Computer Resources

The ARCNET controller board **A66_ISA** requires one free interrupt line and two address ranges, 15 bytes in the I/O address range and 2048 bytes in the memory address range.

2.3.1. Interrupt

The interrupt level (IRQ) can be set by shortening exactly one position at the jumper field **J1**. One can choose from IRQ 2-7, 10-12, 14 and 15.

2.3.2. Address ranges

The address ranges for I/O and memory access are selected using DIP switch **SW1**.



Figure 1 DIP switch SW1

I/O address range

The I/O address range (port addresses) is selected using the switches at the positions 6,7 and 8 at the DIP switch **SW1**.

I/O address range	6	7	8
260-26F	0	0	0
290-29F	1	0	0
2E0-2EF	0	1	0
2F0-2FF	1	1	0
300-30F	0	0	1
350-35F	1	0	1
380-38F	0	1	1
3E0-3EF	1	1	1

Table 2 Setting of the I/O address range

Memory address range

The memory address range is selected using the switches at the positions 1 to 5 at the DIP switch **SW1**.

Memory address range	1	2	3	4	5
C:C000 – C:C7FF	0	0	0	1	0
C:C800 – C:CFFF	1	0	0	1	0
C:D000 – C:D7FF	0	1	0	1	0
C:D800 – C:DFFF	1	1	0	1	0
D:0000 – D:07FF	0	0	1	1	0
D:0800 – D:0FFF	1	0	1	1	0
D:1000 – D:17FF	0	1	1	1	0
D:1800 – D:1FFF	1	1	1	1	0
D:4000 – D:47FF	0	0	0	0	1

D:4800 – D:4FFF	1	0	0	0	1
D:5000 – D:57FF	0	1	0	0	1
D:5800 – D:5FFF	1	1	0	0	1
D:8000 – D:87FF	0	0	1	0	1
D:8800 – D:8FFF	1	0	1	0	1
D:9000 – D:97FF	0	1	1	0	1
D:9800 – D:9FFF	1	1	1	0	1
D:C000 – D:C7FF	0	0	0	1	1
D:C800 – D:CFFF	1	0	0	1	1
D:D000 – D:D7FF	0	1	0	1	1
D:D800 – D:DFFF	1	1	0	1	1

Table 3 Setting of the memory address range

3. Installation

3.1. Building the Board into the PC

The ARCNET controller board **A66_ISA** is very easy to install into any standard PC. The board is inserted into a free ISA slot, and then the slot cover plate of the ARCNET controller board is screwed to the computer housing.

Important Note: *The board must only be built into the computer in a powered down state, otherwise the computer or ARCNET controller board could be damaged*

3.2. Driver Installation

The driver installation procedure will depend on which operating system is being used. Refer to the documentation of the old board, which is going to be replaced by the ARCNET controller board **A66_ISA**.

4. Technical Data

4.1. Mechanical Data

Dimensions / Weight / Mounting	
Length	170 mm
Height	125 mm
Width	18 mm
Weight	100 g
Mounting	Insert into a free ISA slot

Table 4

4.2. Electrical Data

ARCNET Connections	
Controller	COM90C66, Revision D
Number	1
Data Transfer Rate	2,5 Mbps
Medium	Coaxial cable RG-62/U
Topology	Bus
Bus connection	BNC connectors
Termination Resistance	At start/end of a bus segment, internally or externally

Table 5

4.3. Environmental Data

Temperature / Humidity	
Operating Temperature	0 to + 55 °C
Storage / Transport Temperature	-40 to + 85 °C
Relative Humidity (operation)	95 % non condensing
Relative Humidity Storage and Transport	95 % non condensing

Table 6

5. Literature

Reference	Document
[1]	Data Sheet SMSC COM90C66 Revision B and D devices, 09/26/91
[2]	AUG (Arcnet User Group) ARCNET Hardware Manual

Table 7