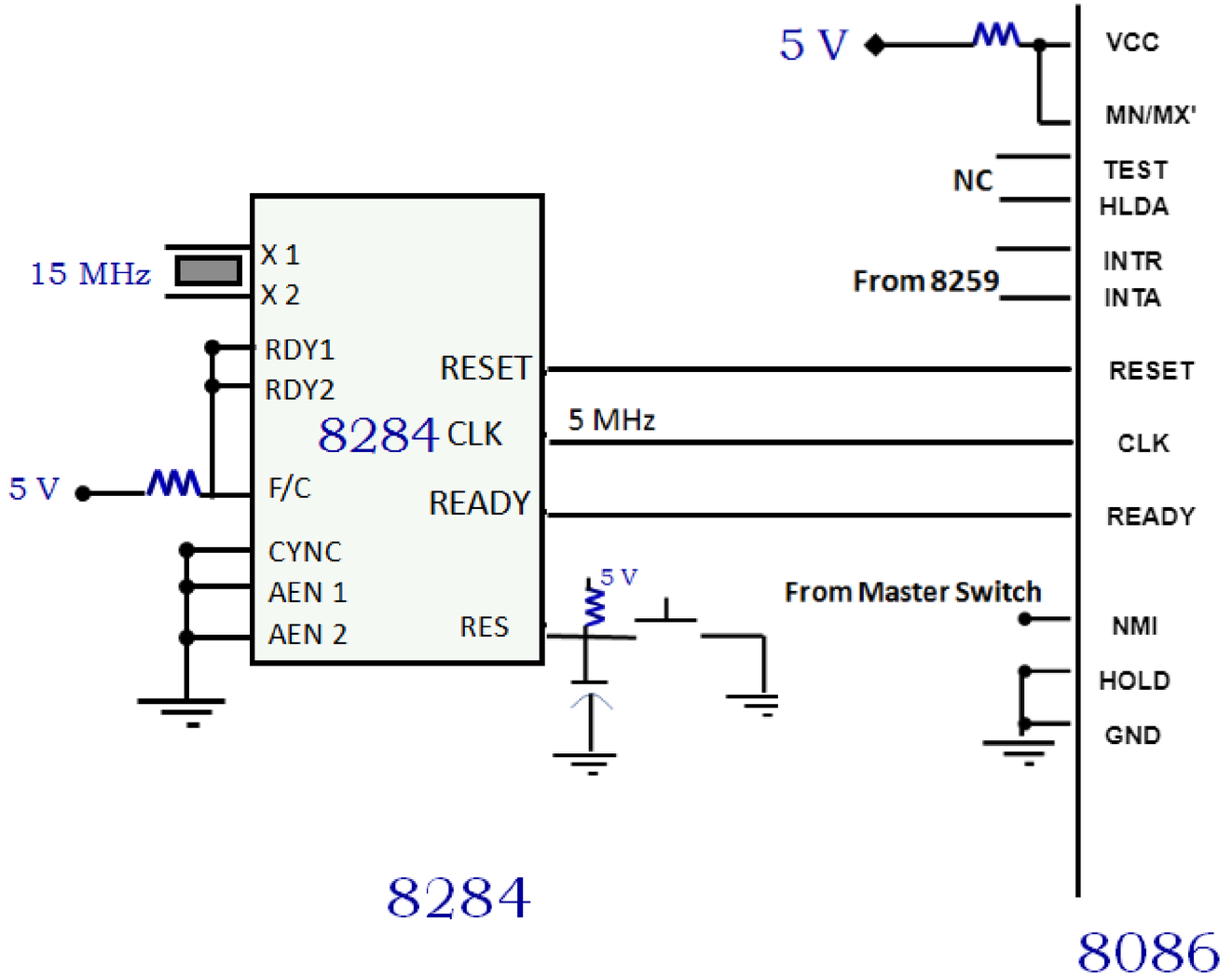
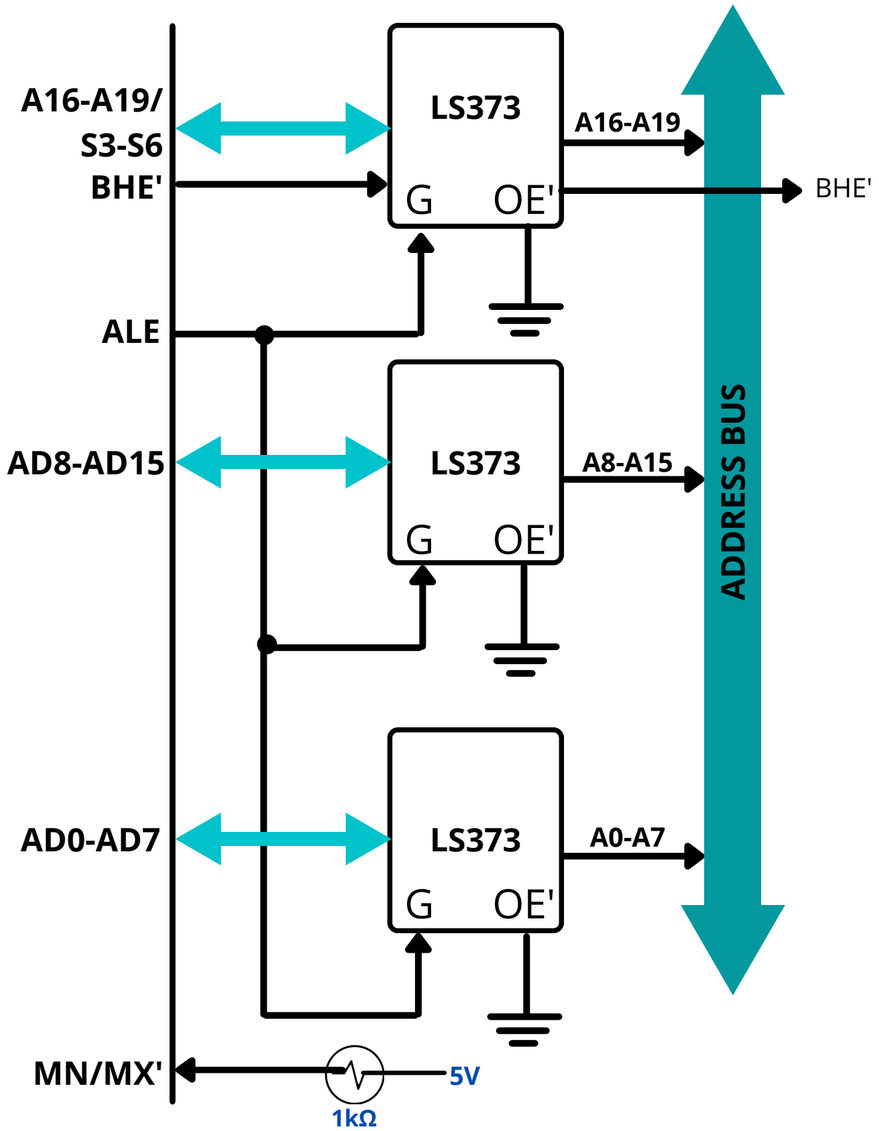
Hardware Diagrams

1. 8284
2. Address Bus
3. Data & Control Bus
4. Logic Circuit for Control Bus Signals
5. 8086
6. LS128 - 1 Memory Decoder
7. Memory Interfacing
8. LS128 - 2 I/O Decoder
9. 8255 - 1
10. 8255 - 2
11. ADC0808 - 1
12. ADC0808 - 2
13. 8254
14. 8254 Counters
15. 8259
16. Relay Mechanism for Valves
17. Conversion Circuit from 4-20mA to 0-5V

8284

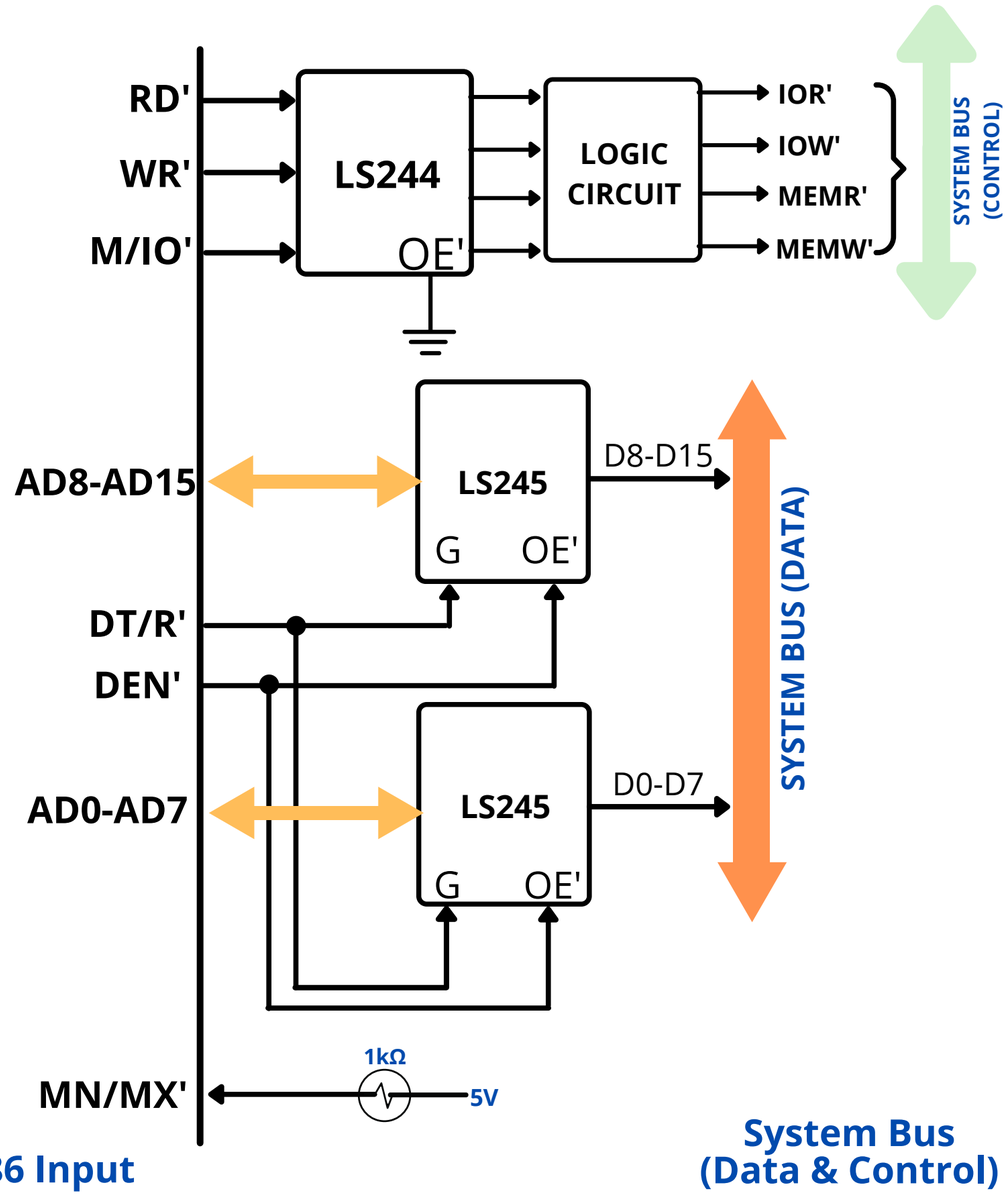

5 V
VCC
MN/MX'
NC
TEST
HLDA
From 8259
INTR
INTA
15 MHz
X 1
X 2
RDY1
RDY2
RESET
RESET
8284
CLK
5 MHz
CLK
5 V
F/C
READY
READY
CYNC
AEN 1
AEN 2
5 V
From Master Switch
RES
NMI
HOLD
GND
8284
8086

Address Bus Latching

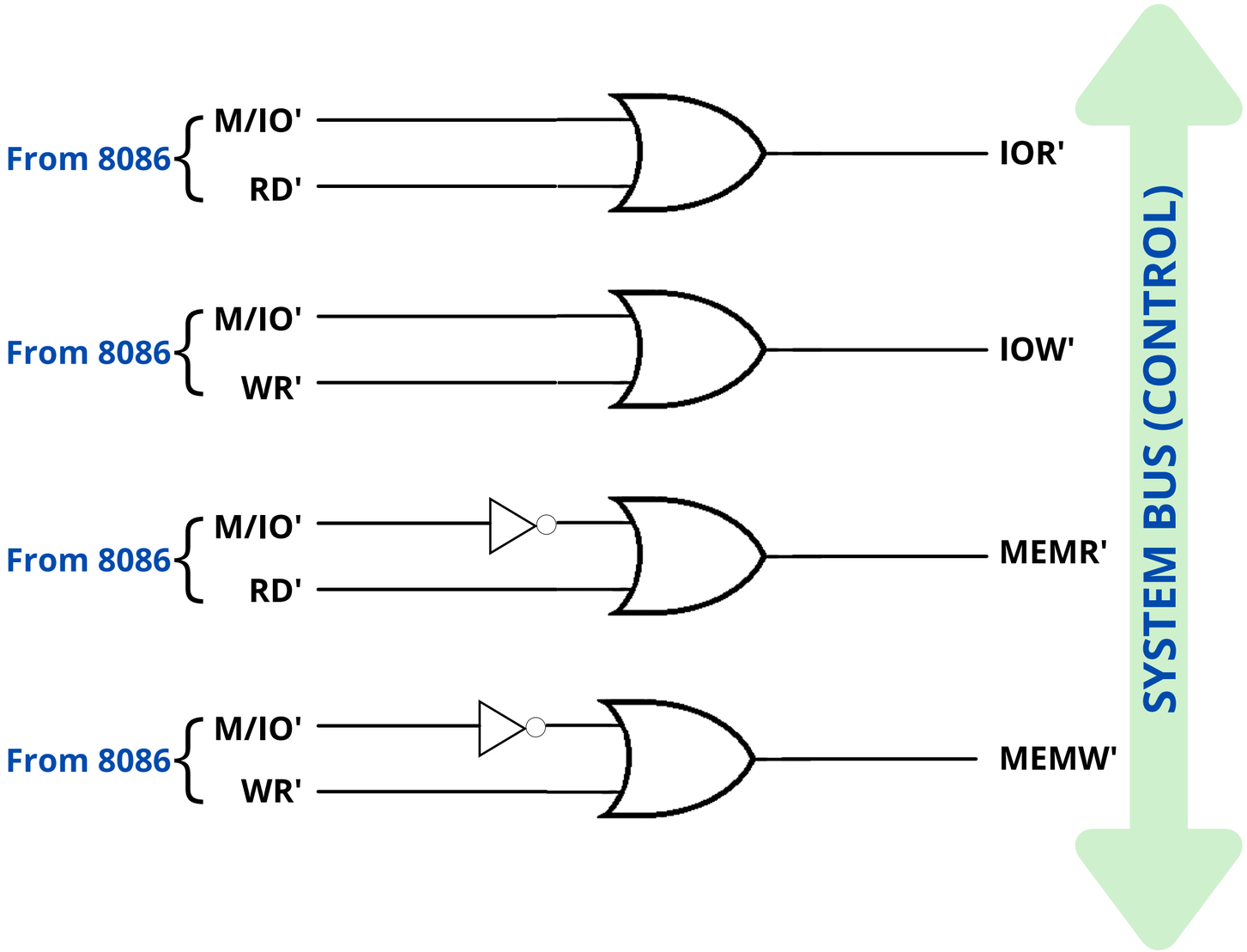


8086 Input **Address Bus**

Data & Control Bus Latching

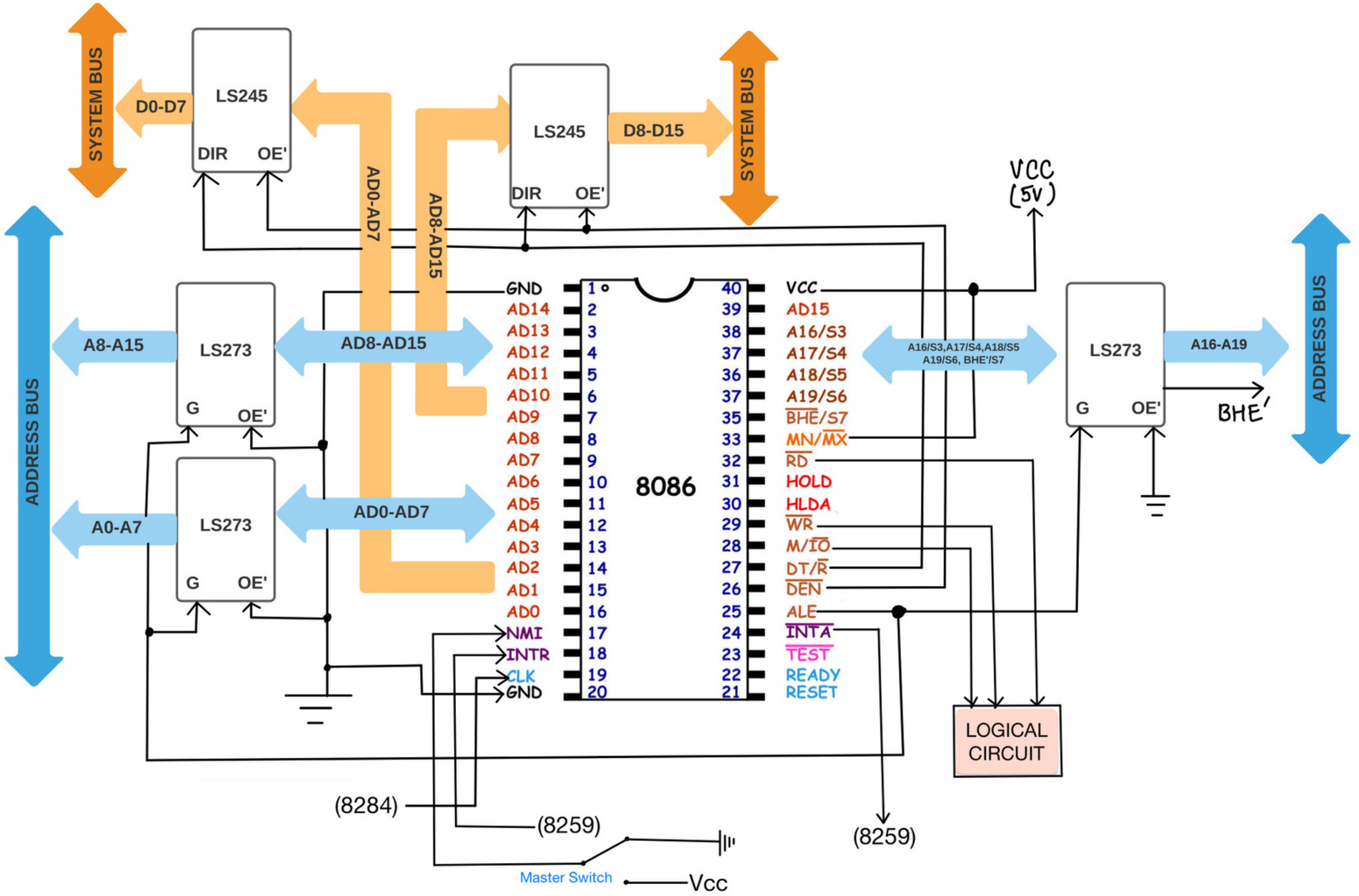


Logic Circuit to get Control Bus Signals

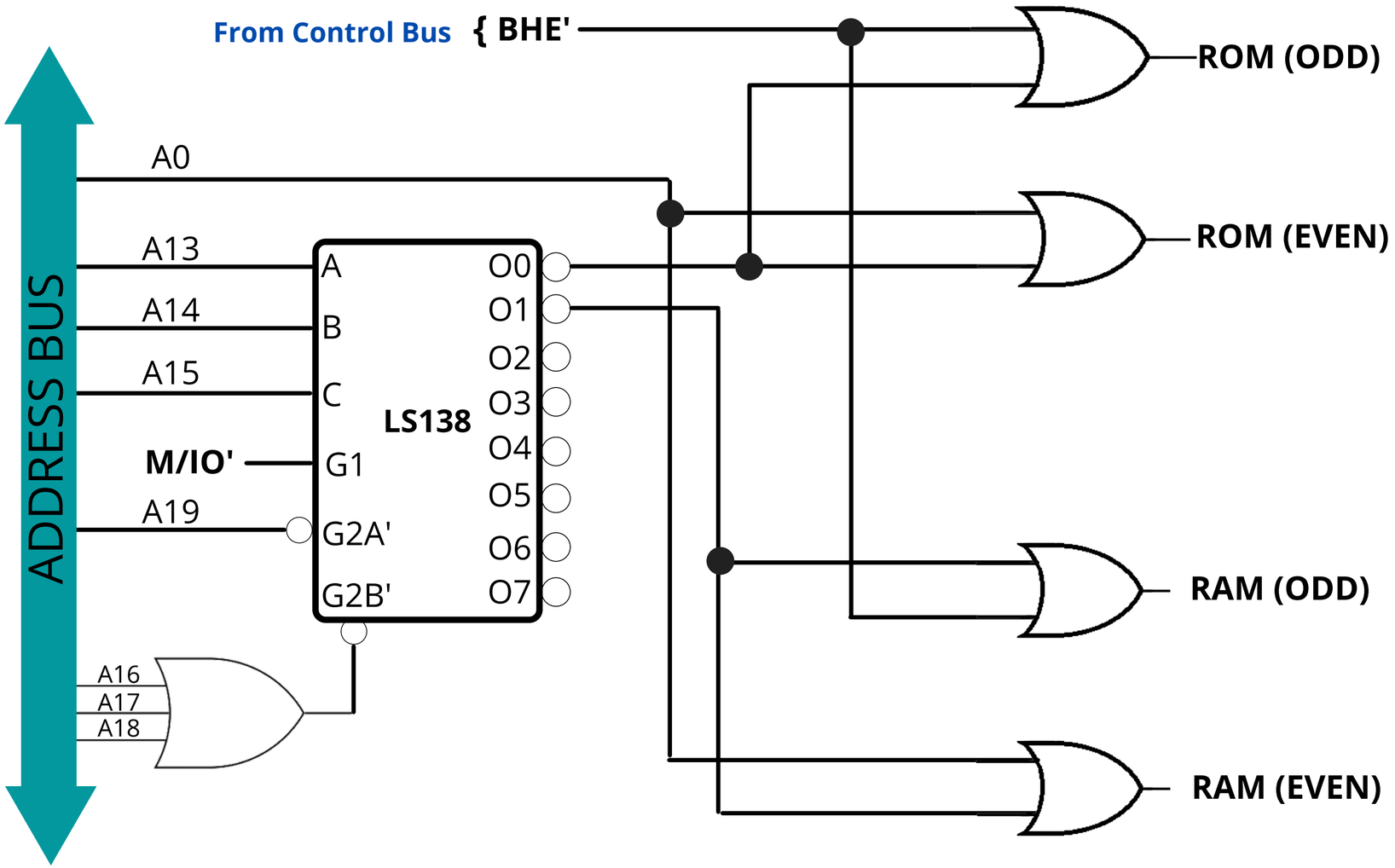


M/IO'	RD'	WR'	Bus Cycle
1	0	1	MEMR'
1	1	0	MEMW'
0	0	1	IOR'
0	1	0	IOW'

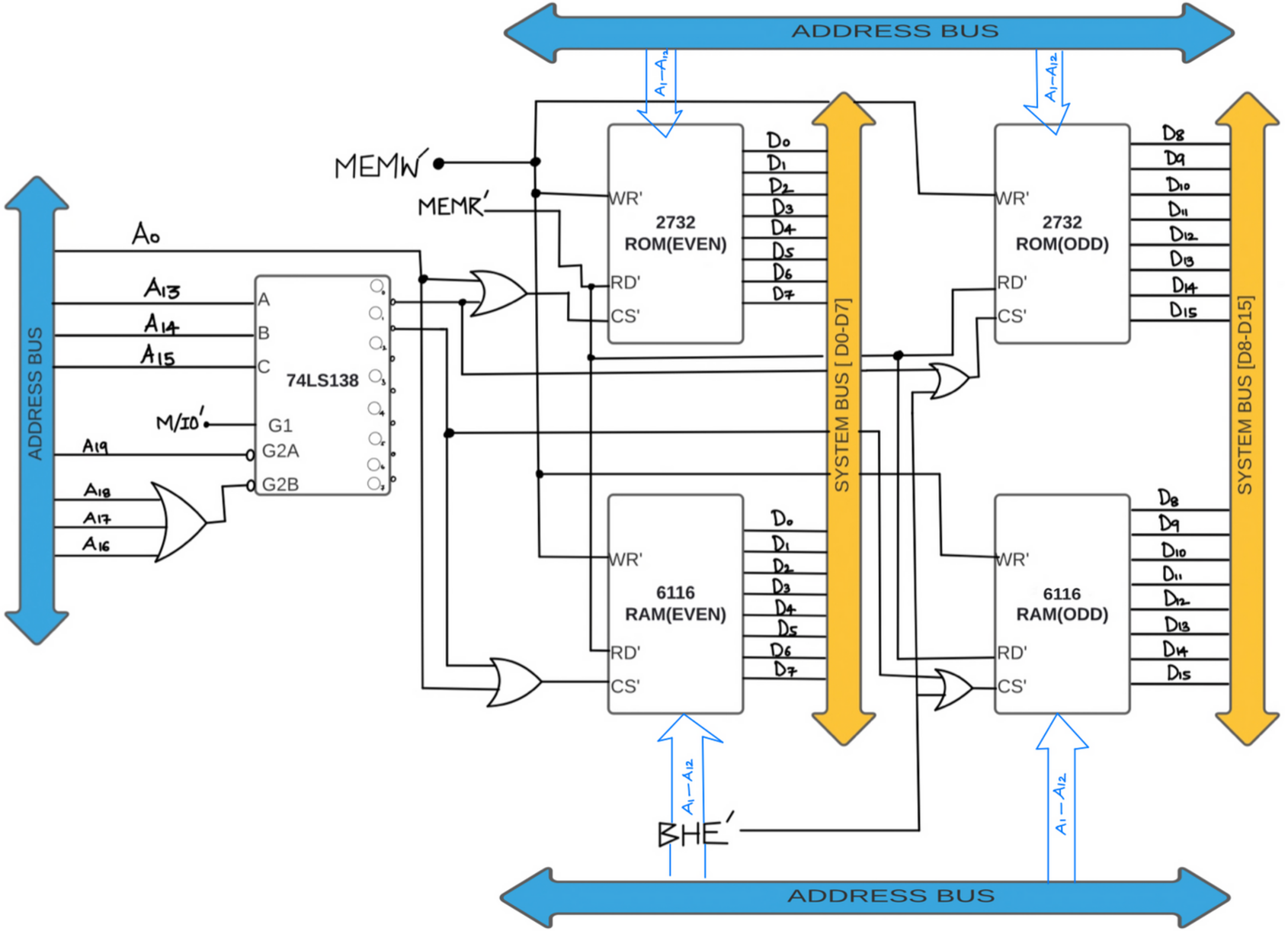
8086 Microprocessor



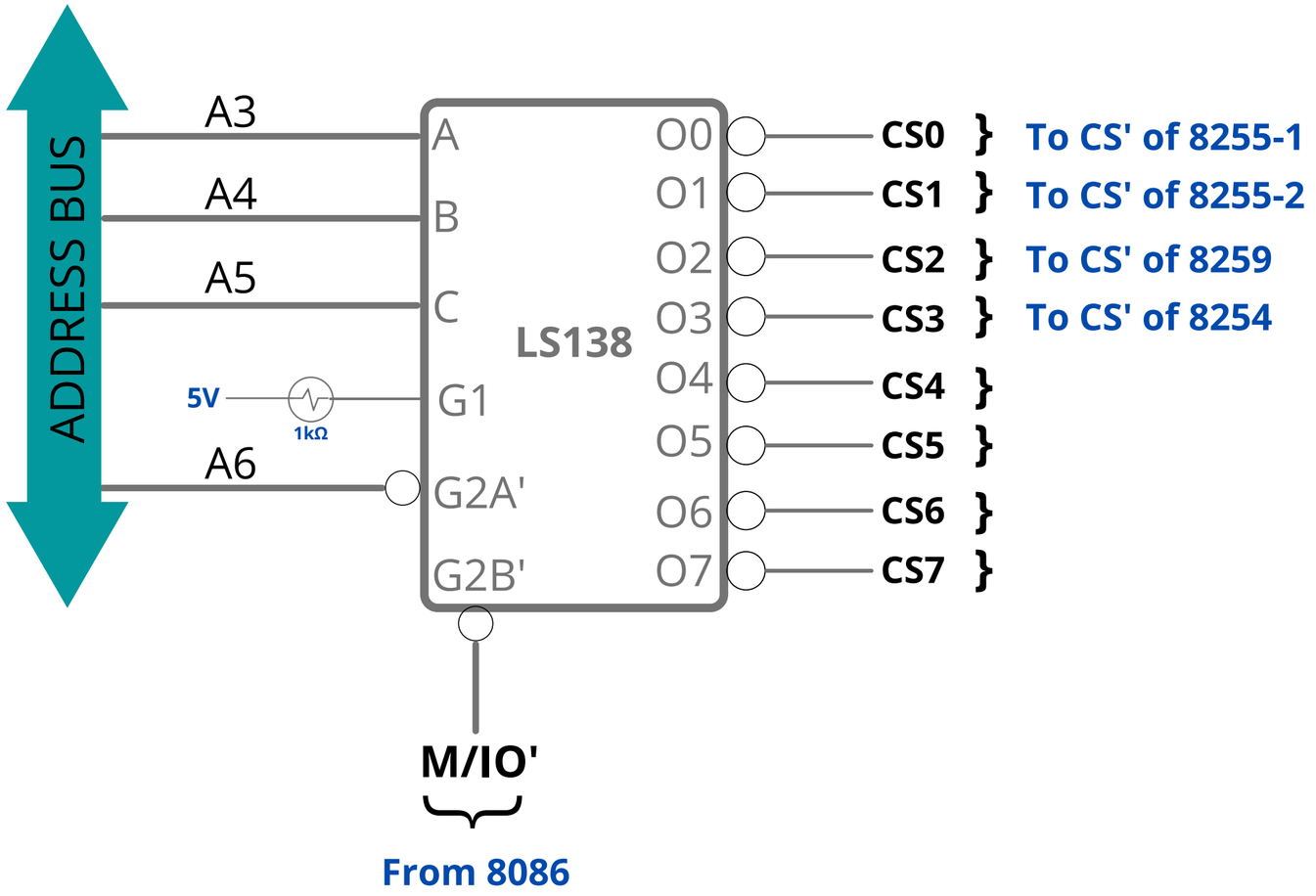
LS138 - 1 : Memory Decoder



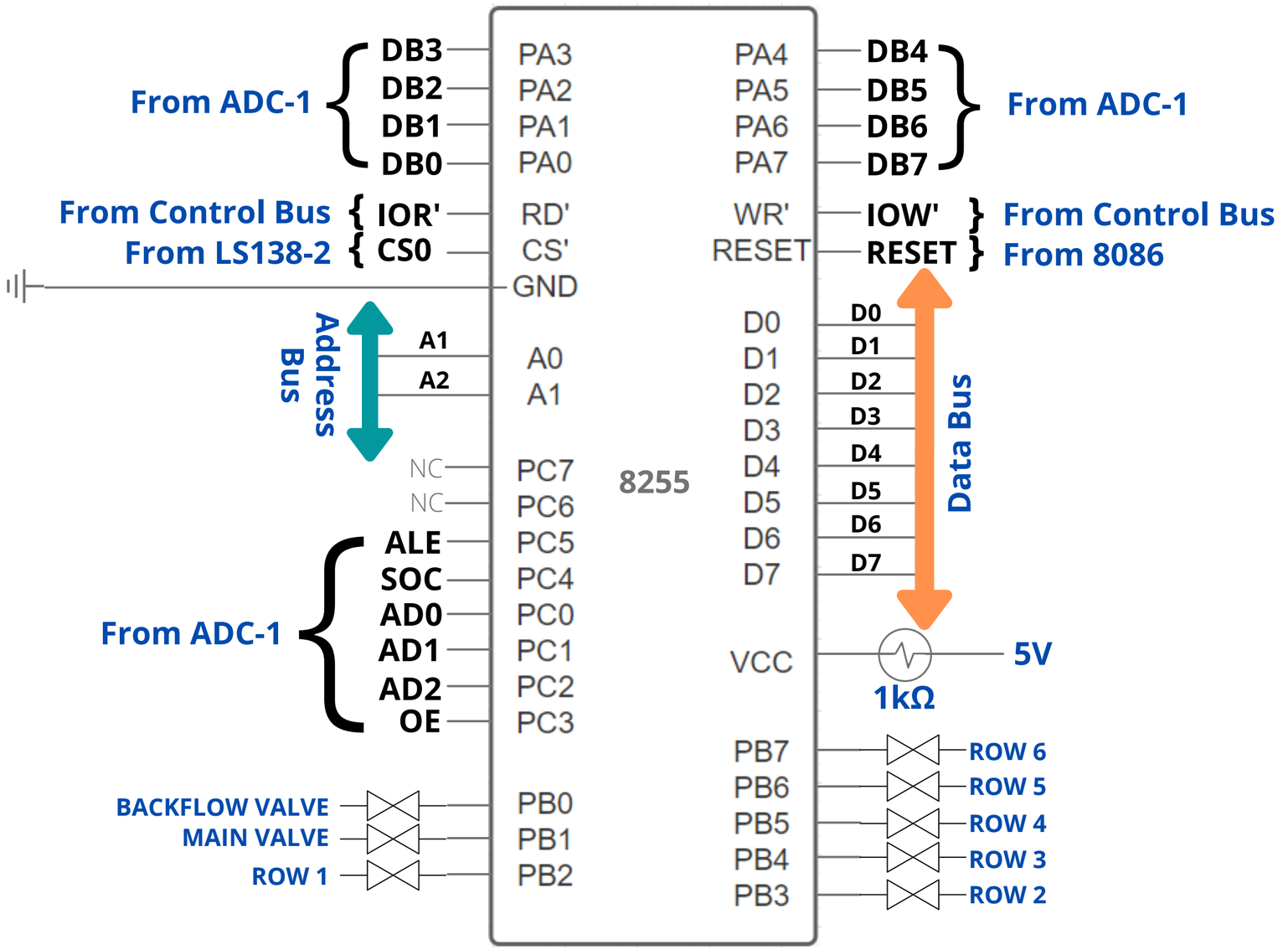
Memory Interfacing



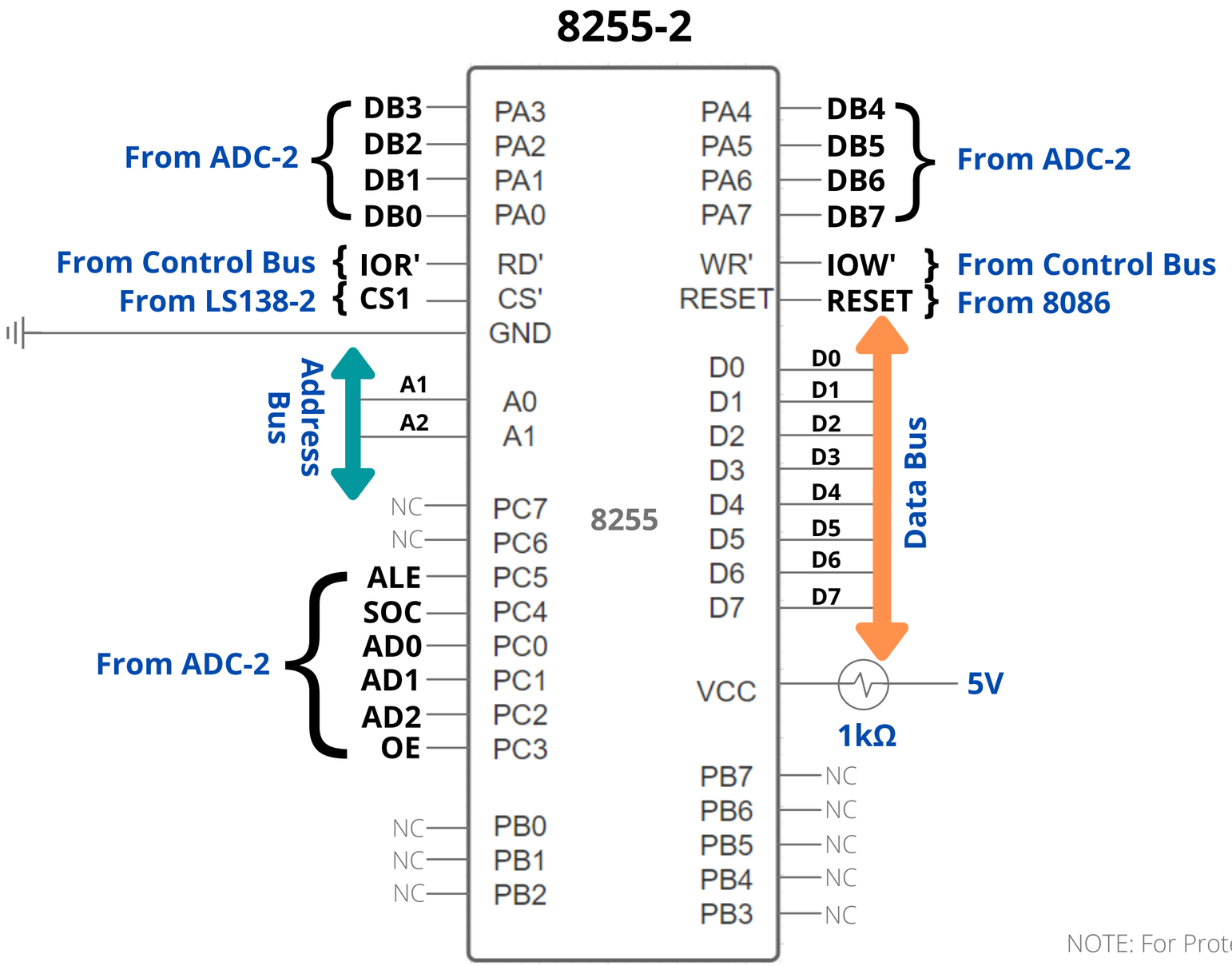
LS138 - 2 : I/O Decoder



8255-1



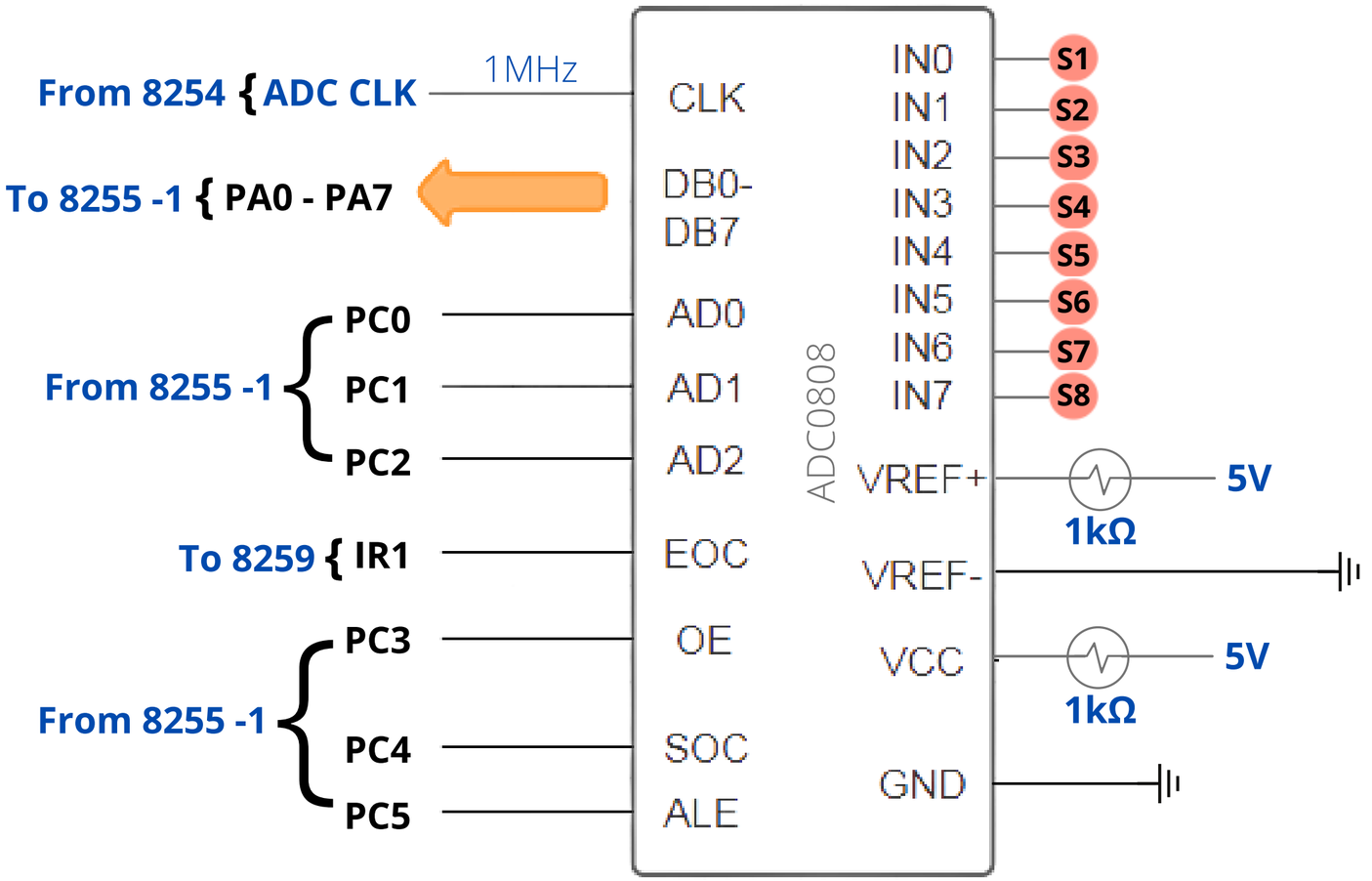
Port A is input
Port B is output
Port C is output



Port A is input
Port B is input
Port C is output

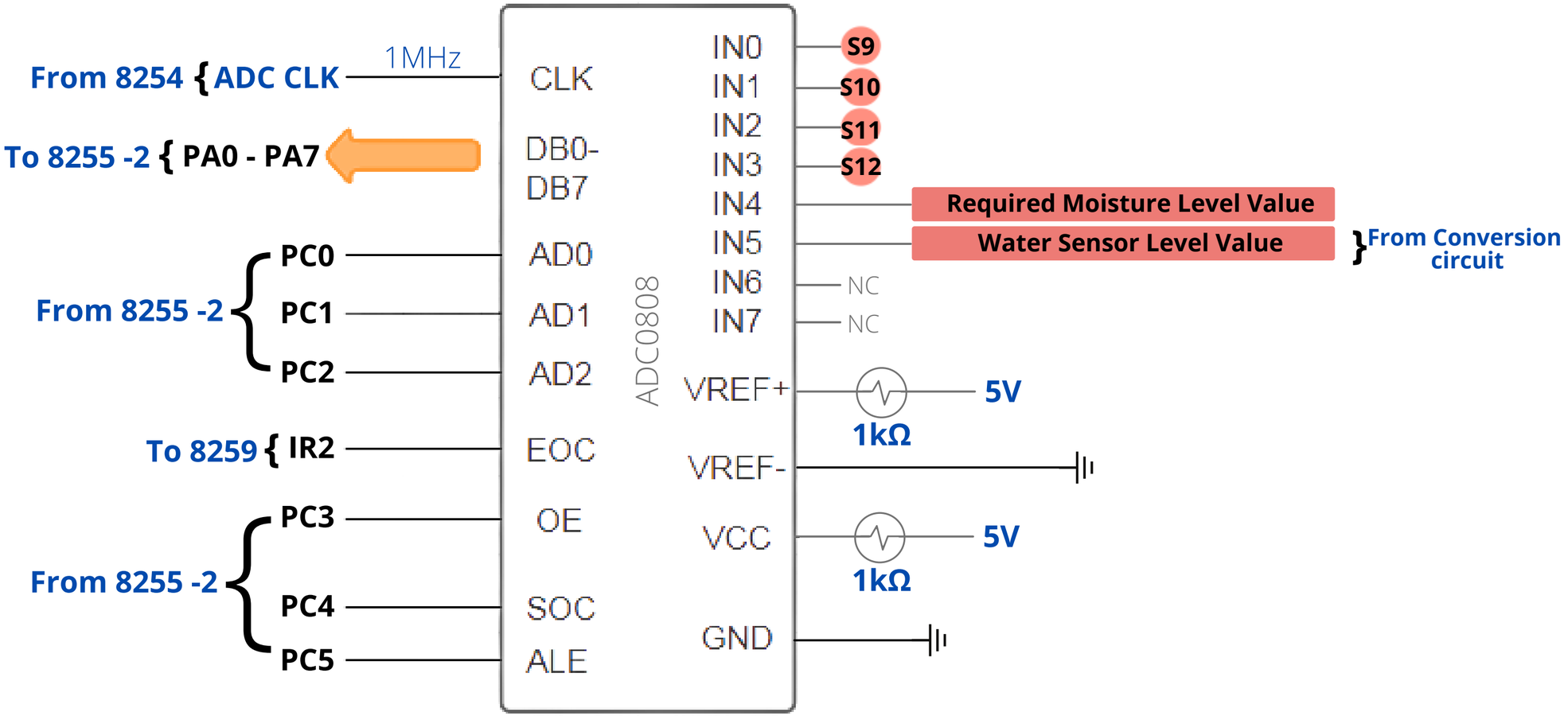
NOTE: For Proteus Simulation,
MASTER SWITCH is connected to PB0 of 8255-2
EOC from ADC-1 is connected to PB1 of 8255-2
EOC from ADC-2 is connected to PB2 of 8255-2

ADC0808 - 1



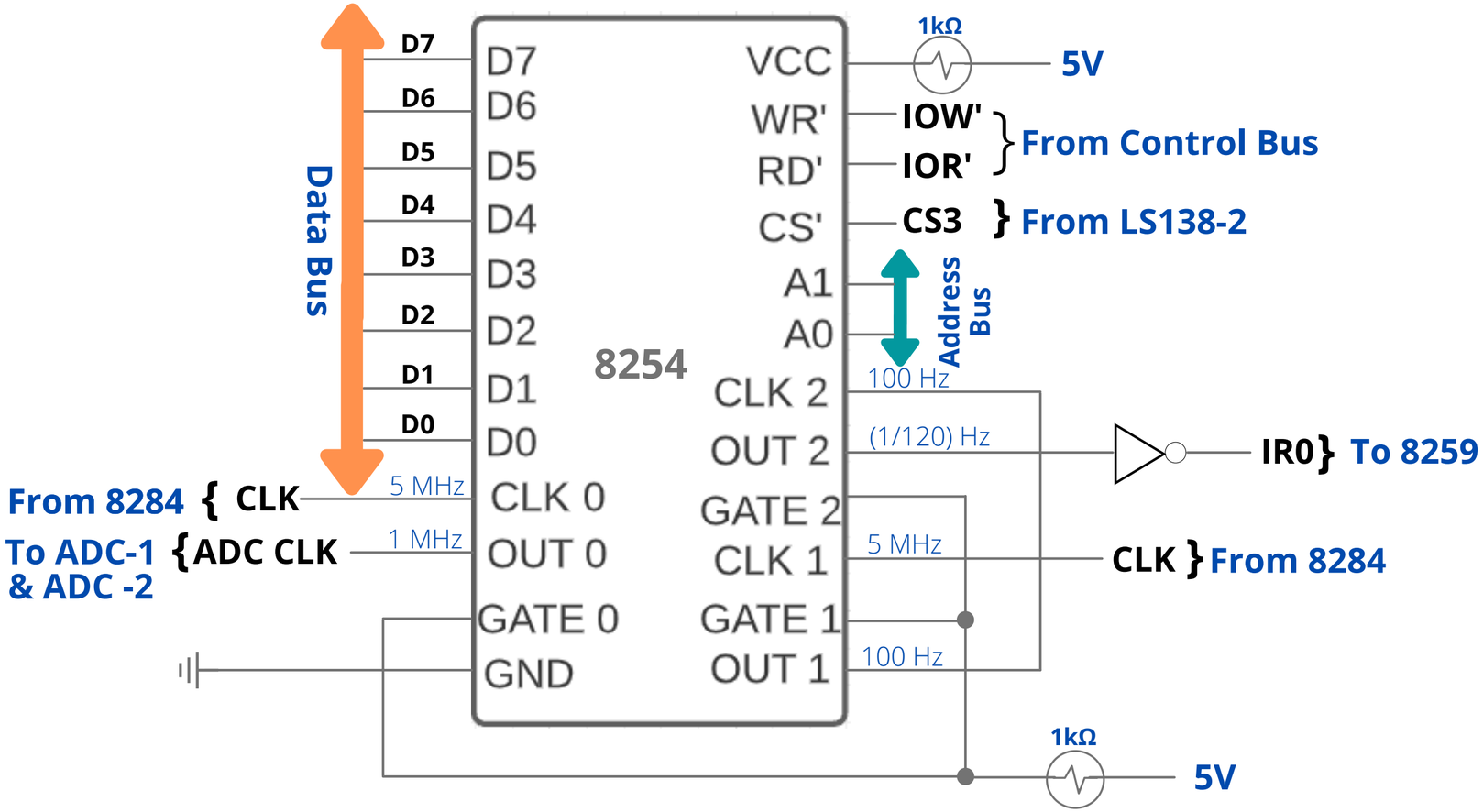
NOTE: For Proteus Simulation, EOC from ADC1 is connected to PB1 of 8255-2

ADC0808 - 2

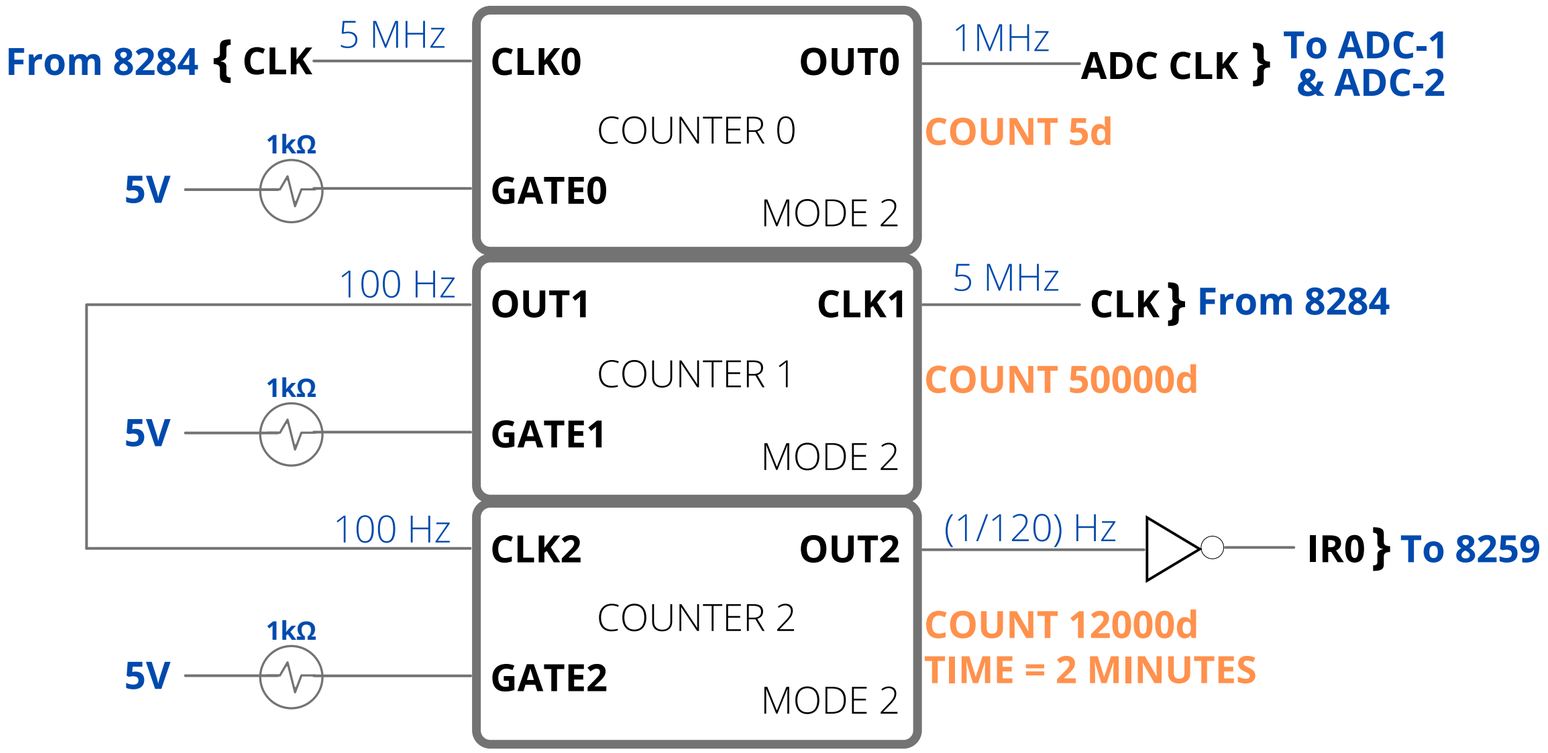


NOTE: For Proteus Simulation, EOC from ADC2 is connected to PB2 of 8255-2

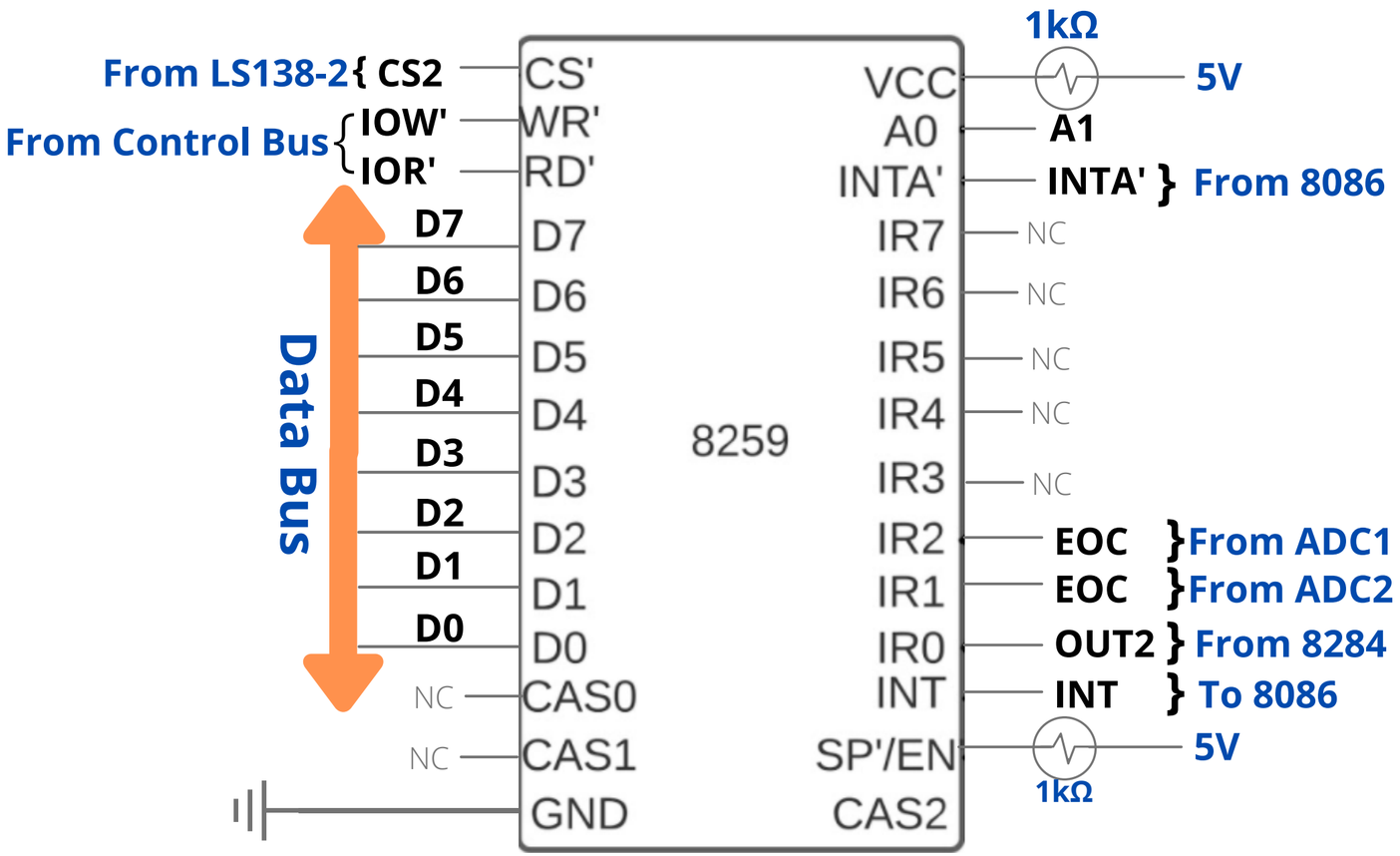
8254


D7
D6
D5
D4
D3
D2
D1
D0
Data Bus
From 8284 { CLK
To ADC-1 & ADC -2 {ADC CLK
5 MHz
1 MHz
D7
D6
D5
D4
D3
D2
D1
D0
CLK 0
OUT 0
GATE 0
GND
8254
VCC
WR'
RD'
CS'
A1
A0
CLK 2
OUT 2
GATE 2
CLK 1
GATE 1
OUT 1
1kΩ
5V
IOW'
IOR'
From Control Bus
CS3 } From LS138-2
Address Bus
100 Hz
(1/120) Hz
IR0} To 8259
5 MHz
CLK } From 8284
100 Hz
1kΩ
5V

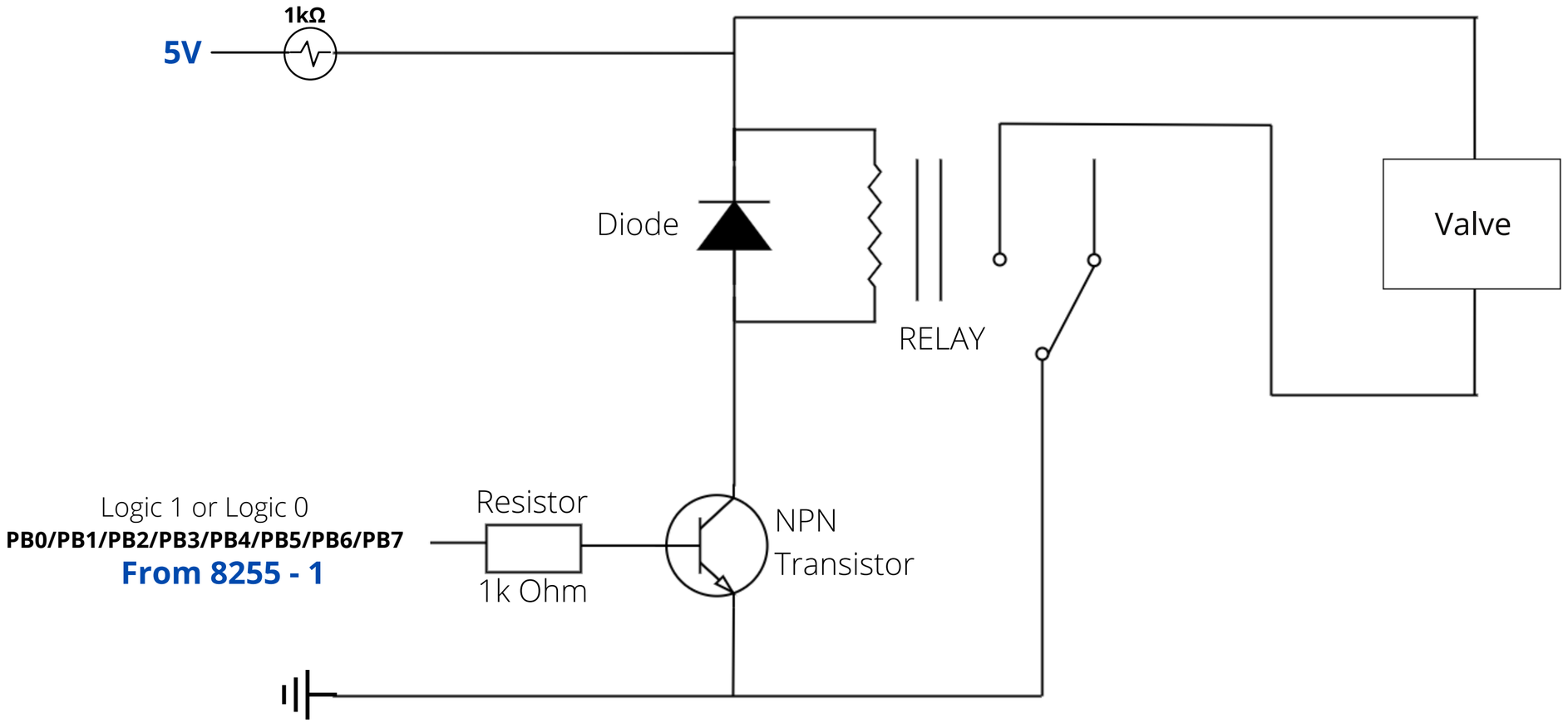
8254 Counters



8259


From LS138-2 { CS2
From Control Bus { IOW'
IOR'
Data Bus
D7
D6
D5
D4
D3
D2
D1
D0
NC
NC
CS'
WR'
RD'
D7
D6
D5
D4
D3
D2
D1
D0
CAS0
CAS1
GND
8259
VCC
A0
INTA'
IR7
IR6
IR5
IR4
IR3
IR2
IR1
IR0
INT
SP'/EN
CAS2
1kΩ
5V
A1
INTA' } From 8086
NC
NC
NC
NC
NC
EOC } From ADC1
EOC } From ADC2
OUT2 } From 8284
INT } To 8086
5V
1kΩ

Relay Mechanism for Valves



Conversion Circuit from 4-20mA to 0-5V