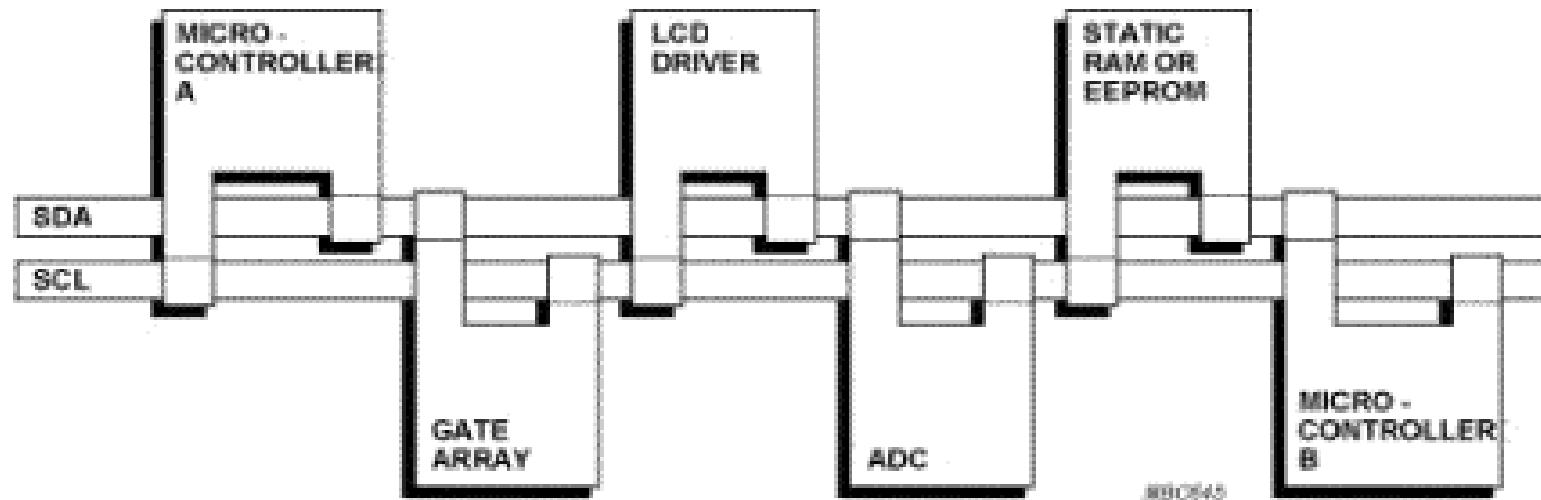


# I2C Overview

- Multi-mastered
- Send and receive
- Two wire (plus ground)
- Serial



# Terminology

Table 1 Definition of I<sup>2</sup>C-bus terminology

TERM	DESCRIPTION
Transmitter	The device which sends data to the bus
Receiver	The device which receives data from the bus
Master	The device which initiates a transfer, generates clock signals and terminates a transfer
Slave	The device addressed by a master
Multi-master	More than one master can attempt to control the bus at the same time without corrupting the message
Arbitration	Procedure to ensure that, if more than one master simultaneously tries to control the bus, only one is allowed to do so and the winning message is not corrupted
Synchronization	Procedure to synchronize the clock signals of two or more devices

# Physical Interface

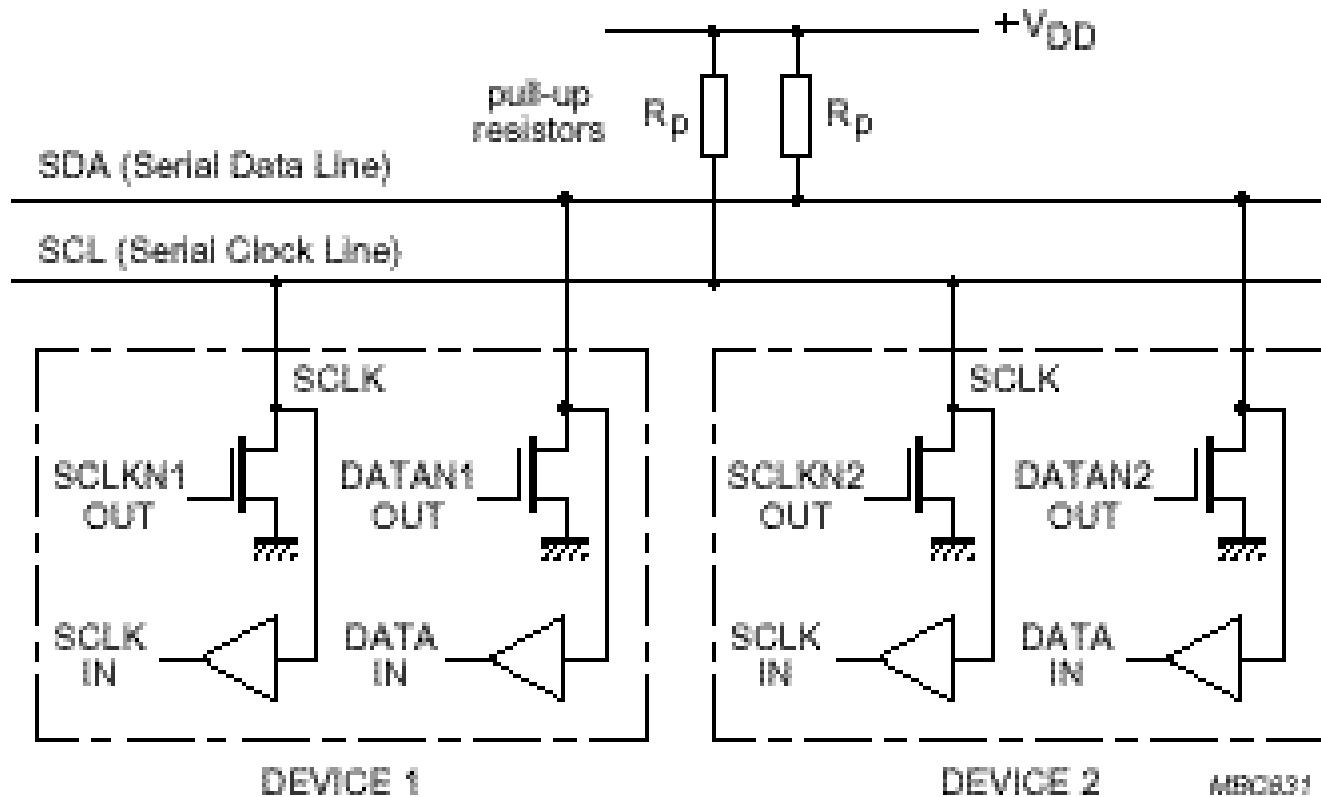
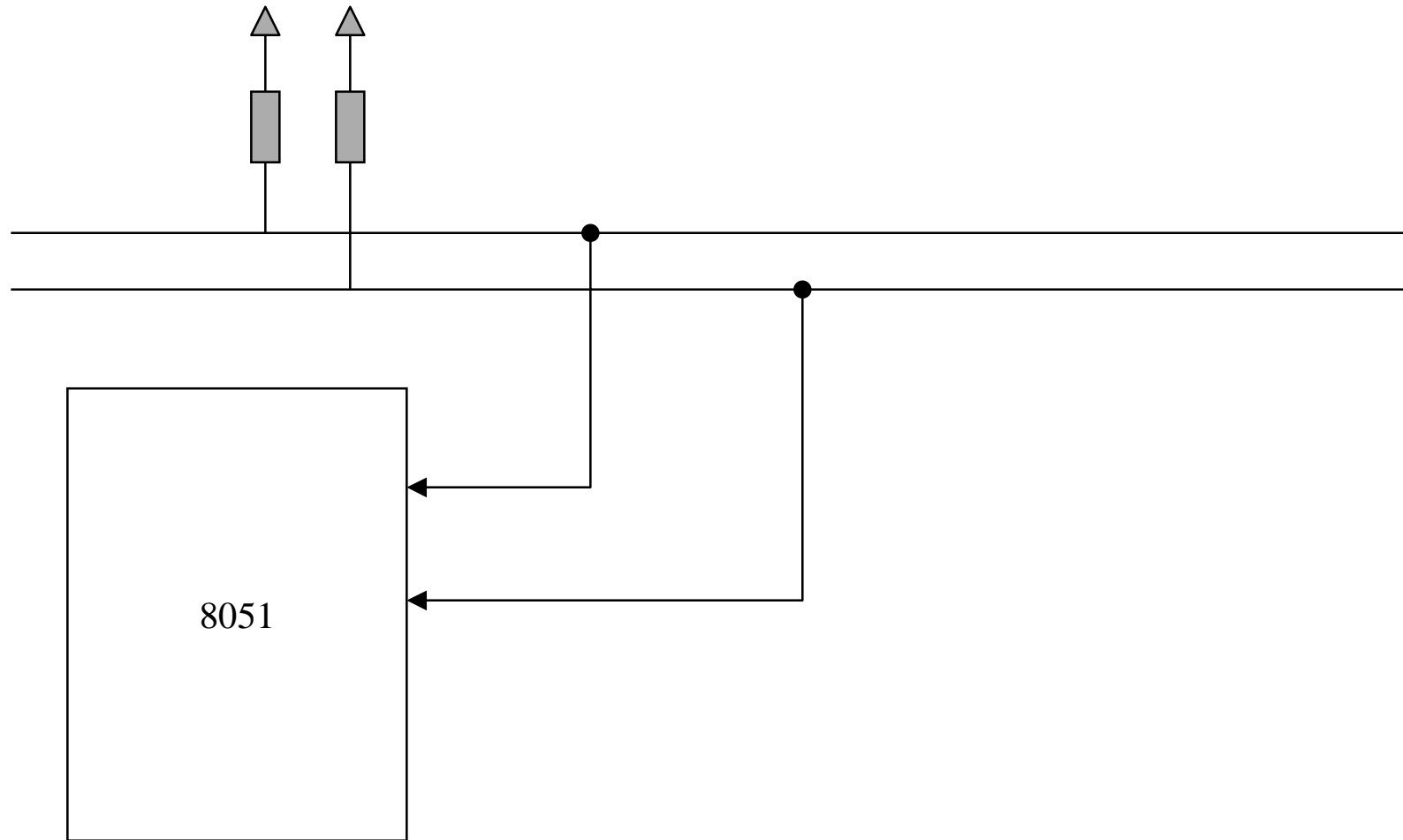


Fig.3 Connection of Standard- and Fast-mode devices to the I<sup>2</sup>C-bus.

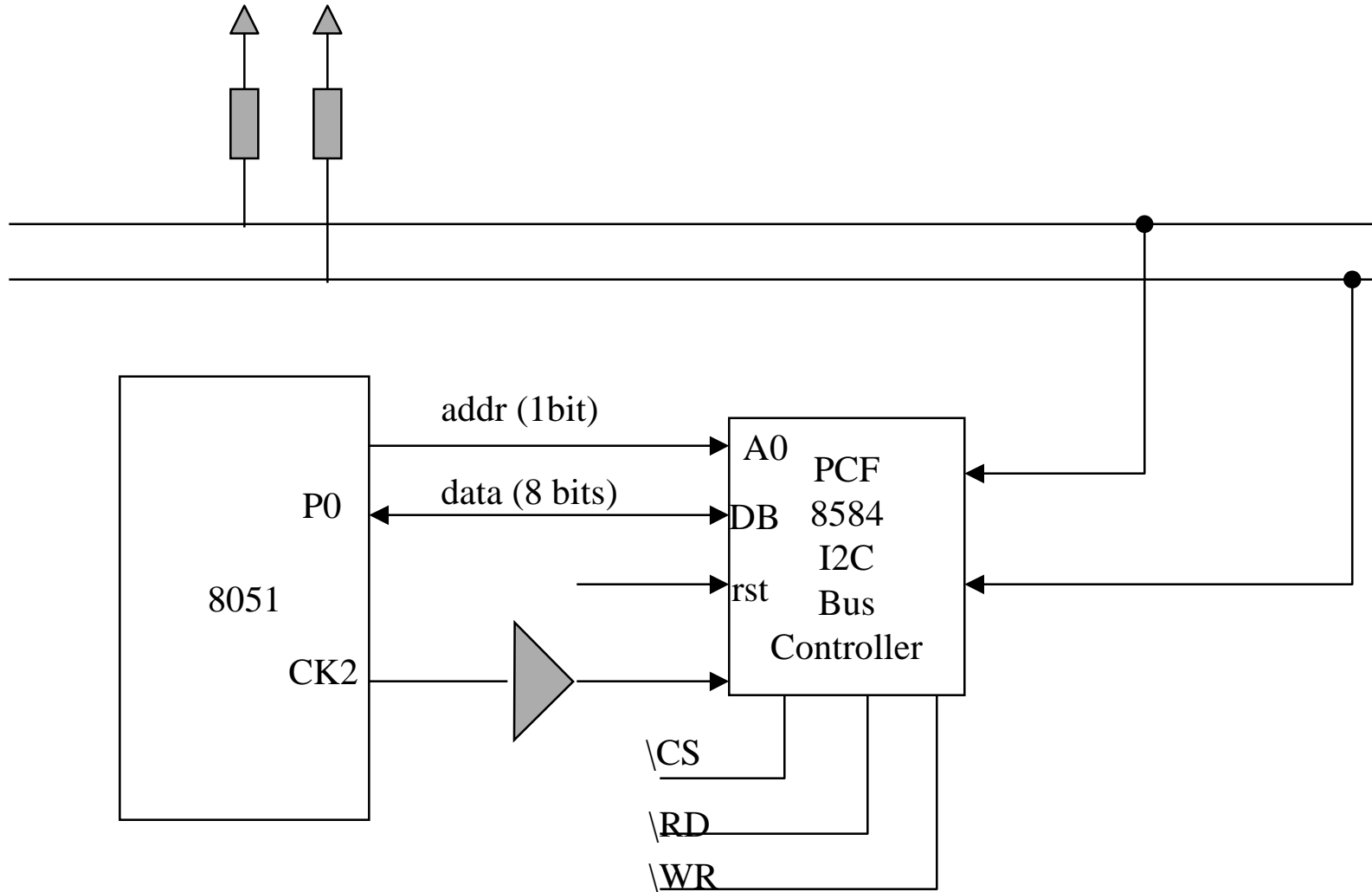
wired-and configuration

# Interfacing to the Bus



Electrical connection is fine. But the software is complex

# An alternative



Memory mapped device that handles bit level interface.  
Only do byte level stuff in software

# Bit Transfer

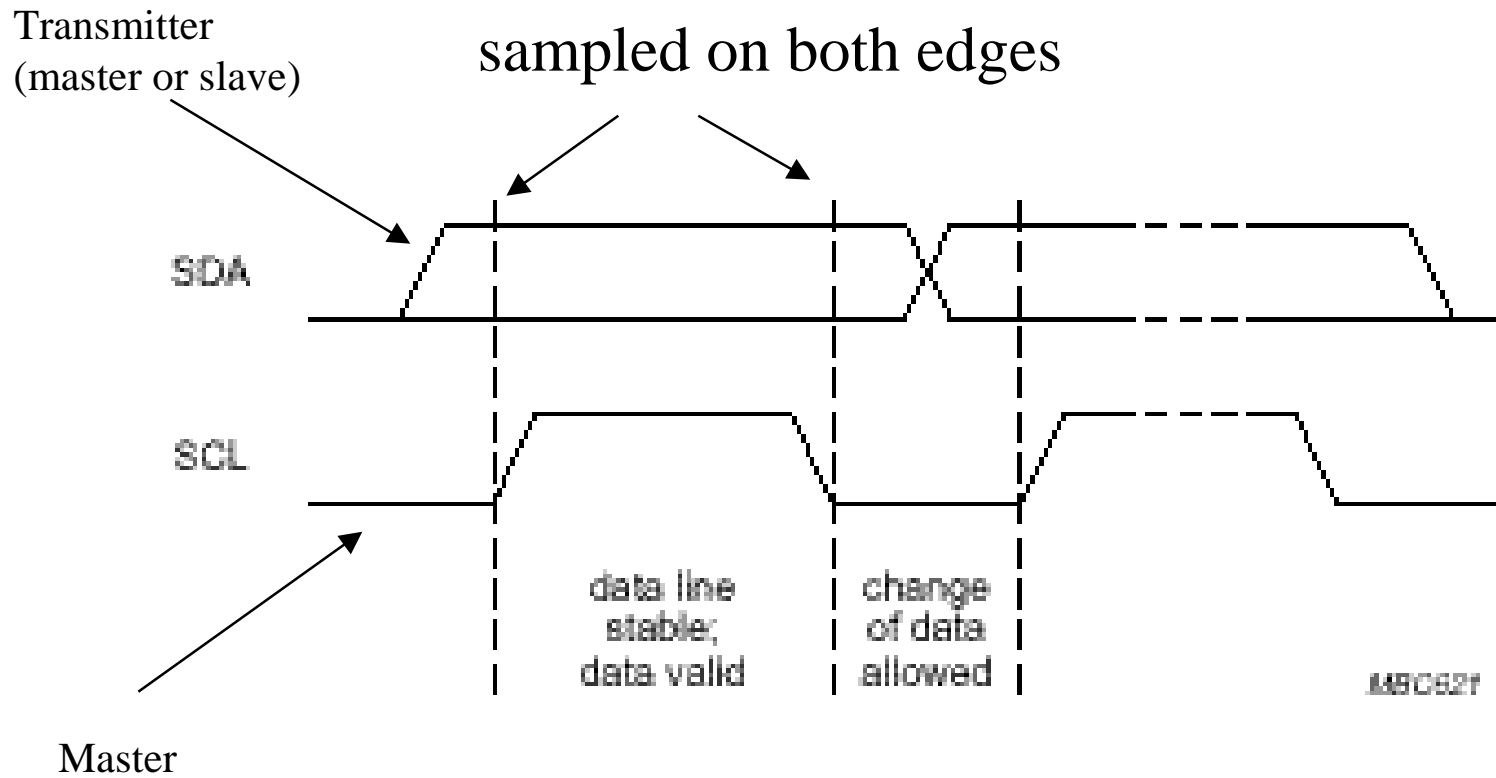


Fig.4 Bit transfer on the I<sup>2</sup>C-bus.

# Who gets to be master

The one who initiates a frame:

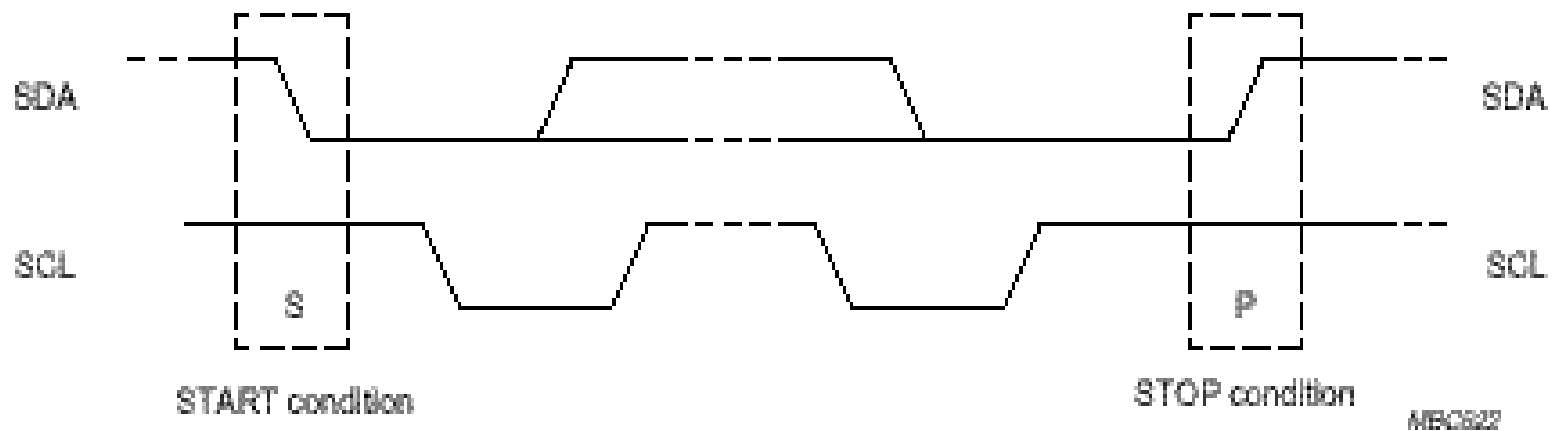


Fig.5 START and STOP conditions.

A frame is:

<Start><addr><data>...<data><Stop>     OR  
<Start><addr><data>...<data><R\_Start><addr><data>...<Stop>

# An I2C Byte Transfer

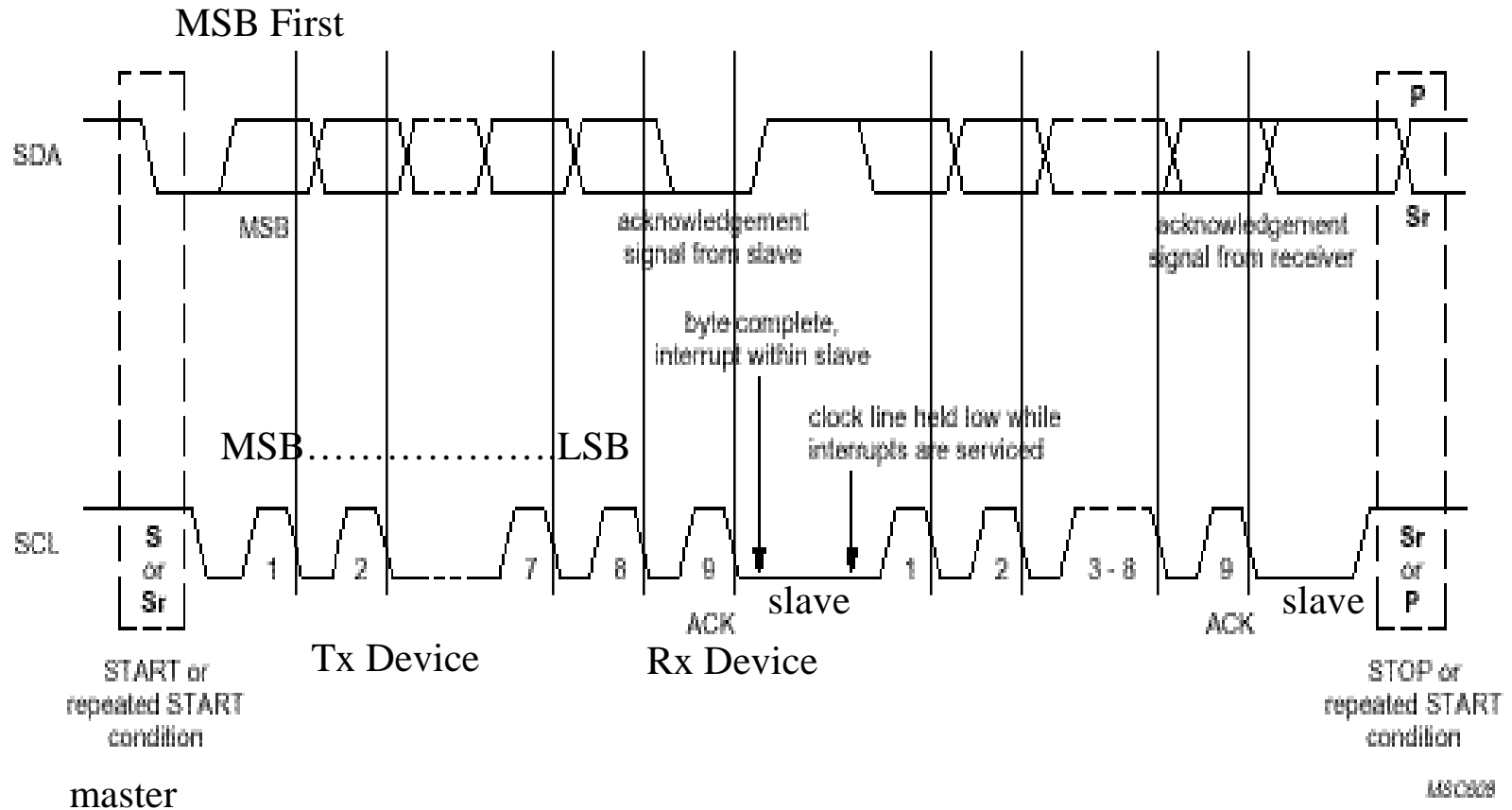


Fig.6 Data transfer on the I<sup>2</sup>C-bus.



# A Complete Frame

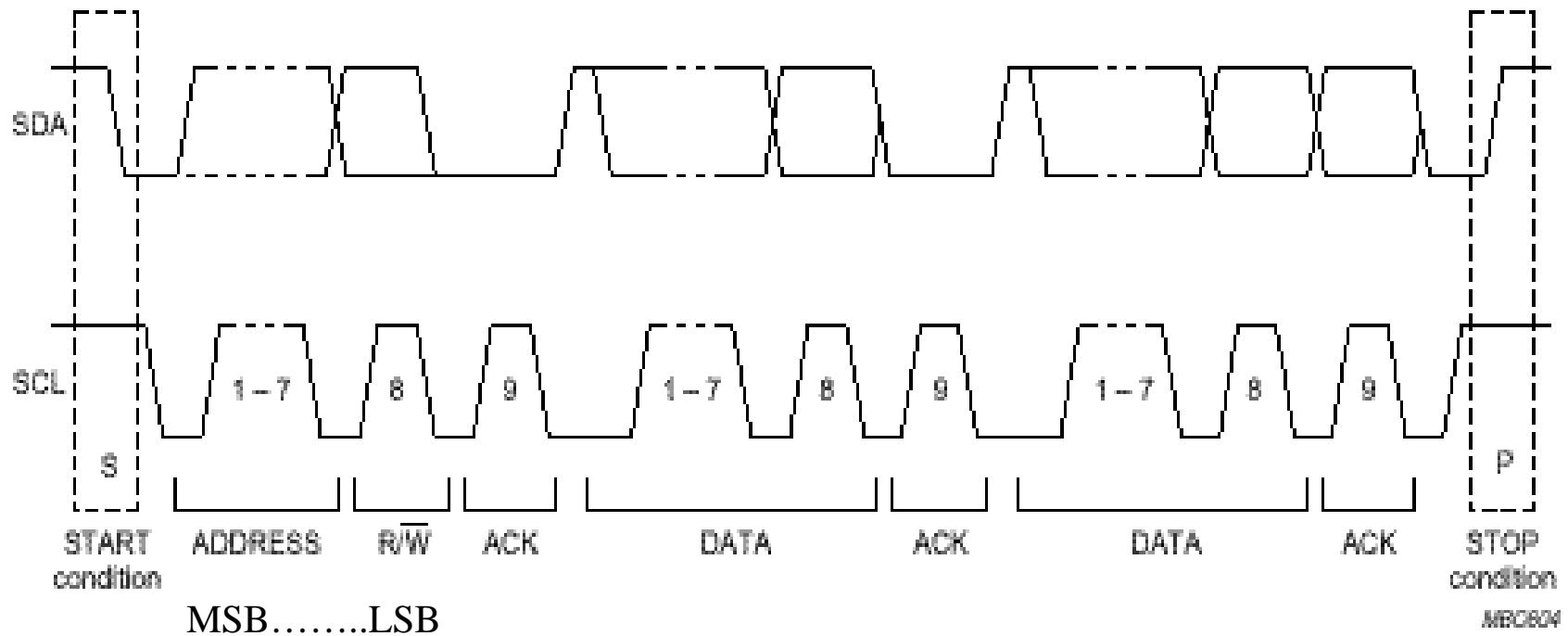


Fig.10 A complete data transfer.

Addresses are 7 bits, LSB of address byte is Read/Write control.  
Determines whether master or slave becomes the transmitter

# Arbitration

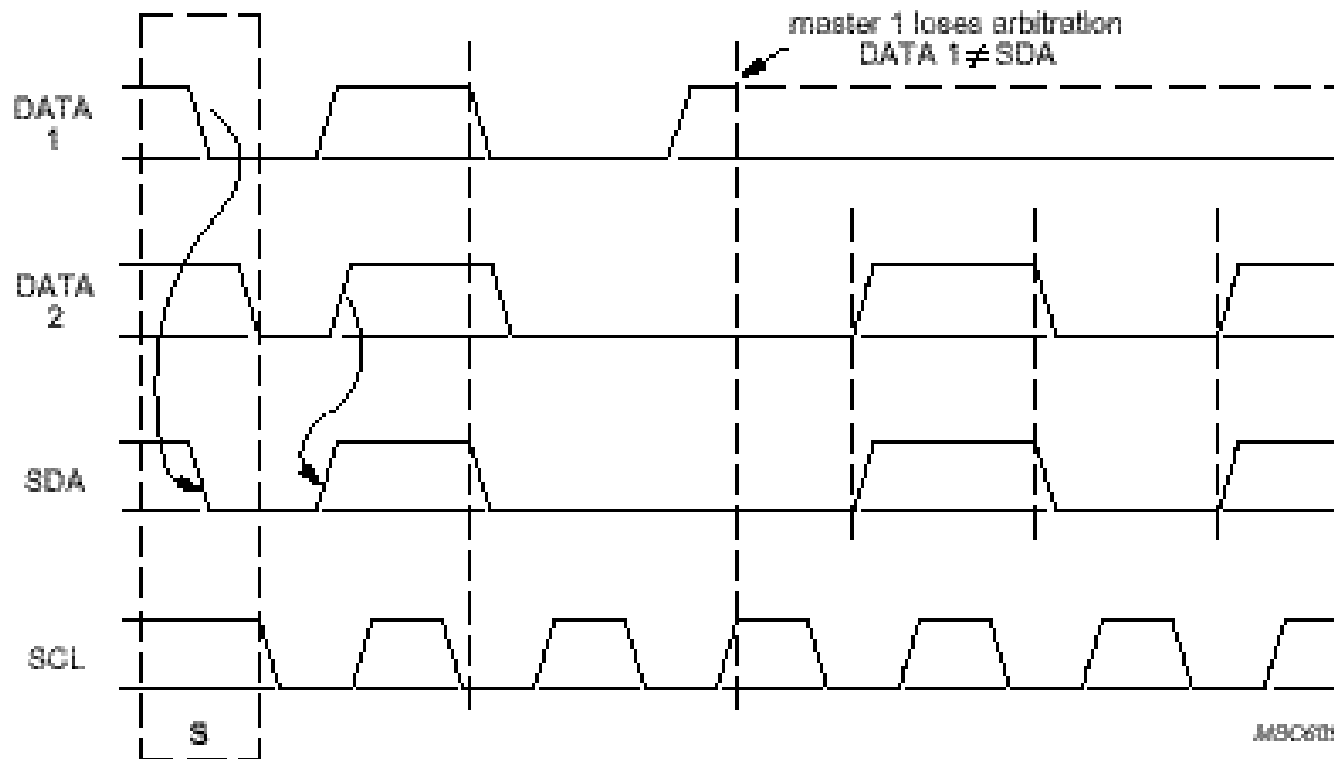
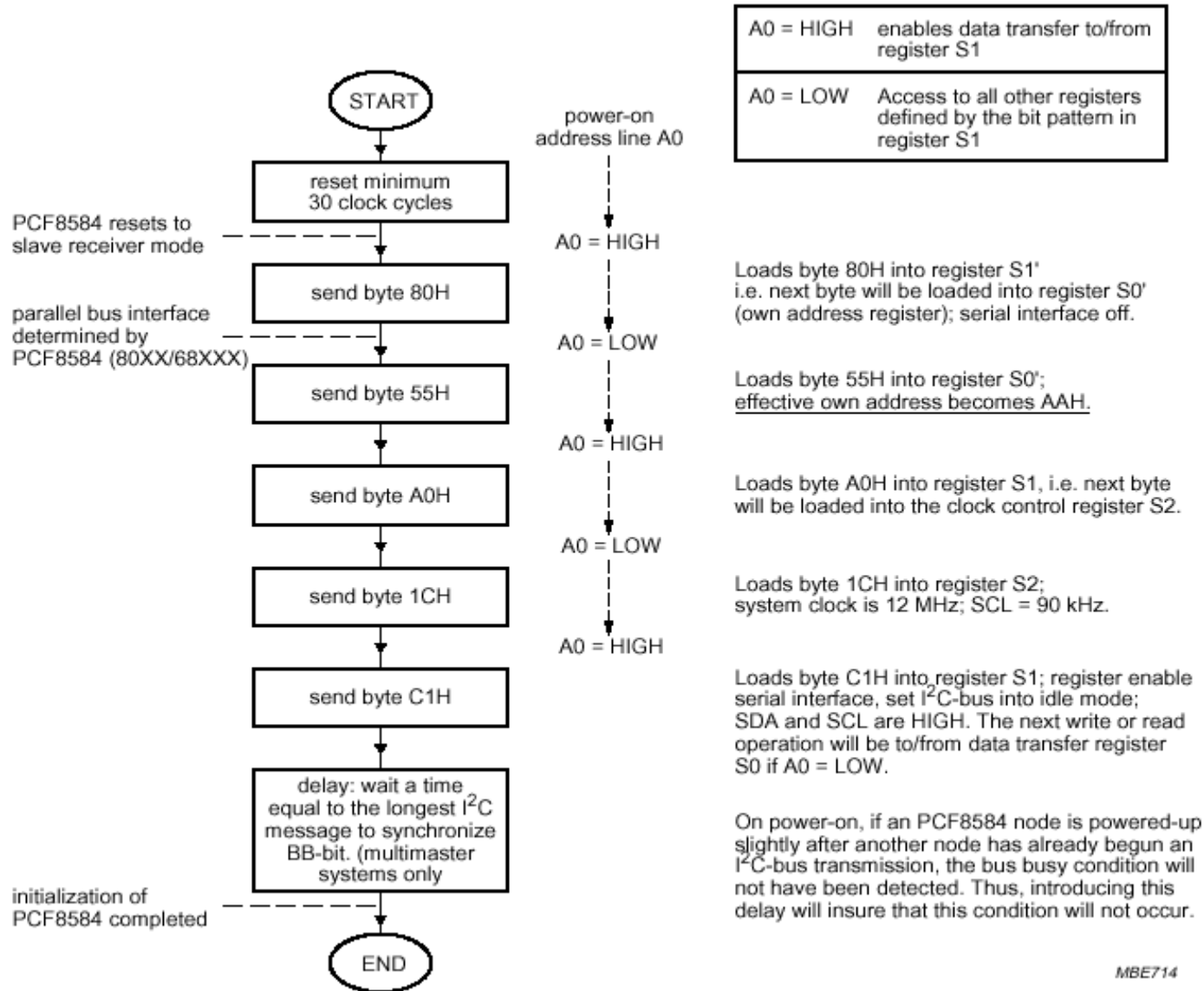


Fig.9 Arbitration procedure of two masters.

It is up to the failed master to try again when the bus is not busy.

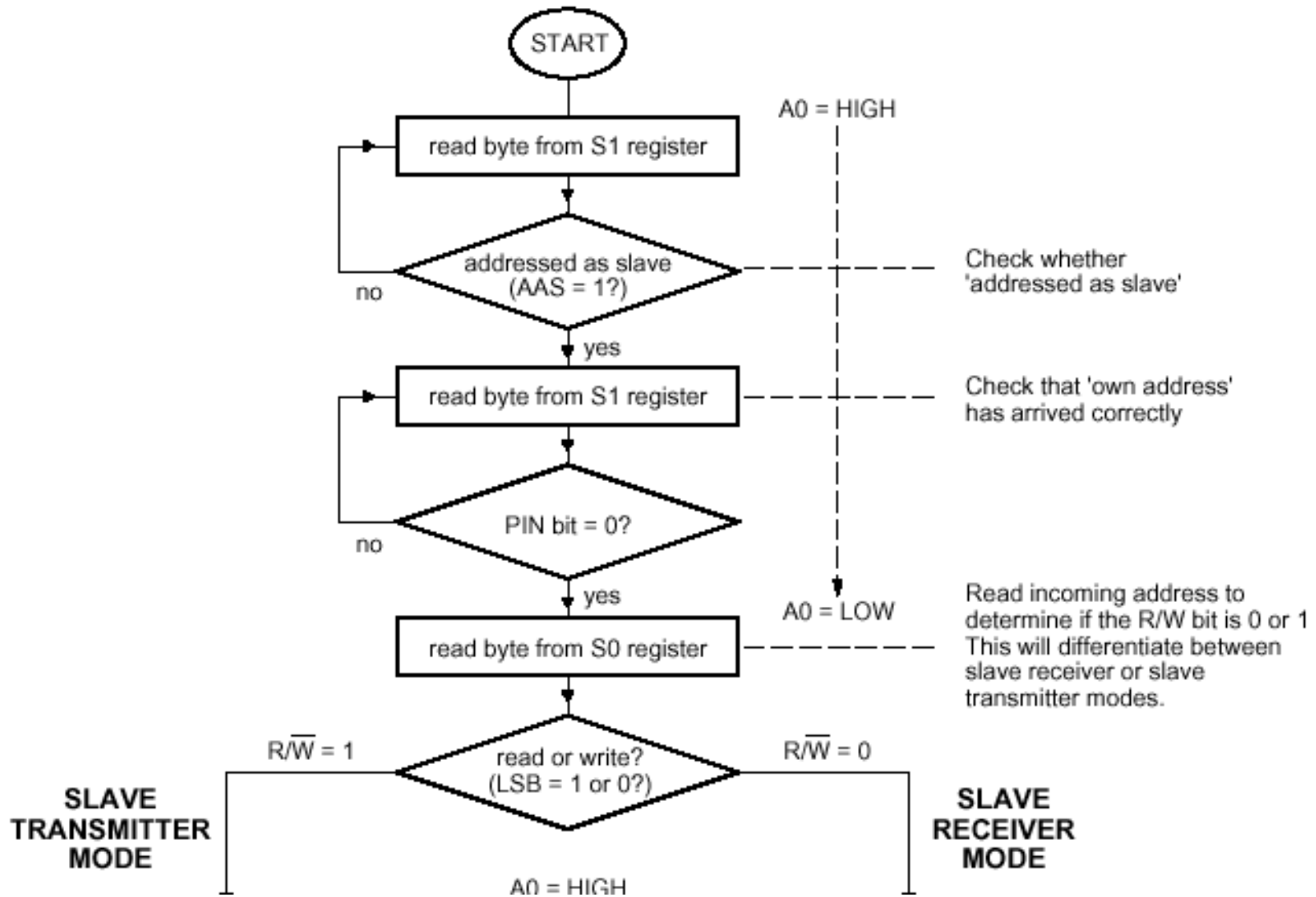
Seems like high address devices are low priority receivers...but I haven't read this anywhere

# Using the Bus Interface



MBE714

# Slave Flow



# Slave Receiver Mode

