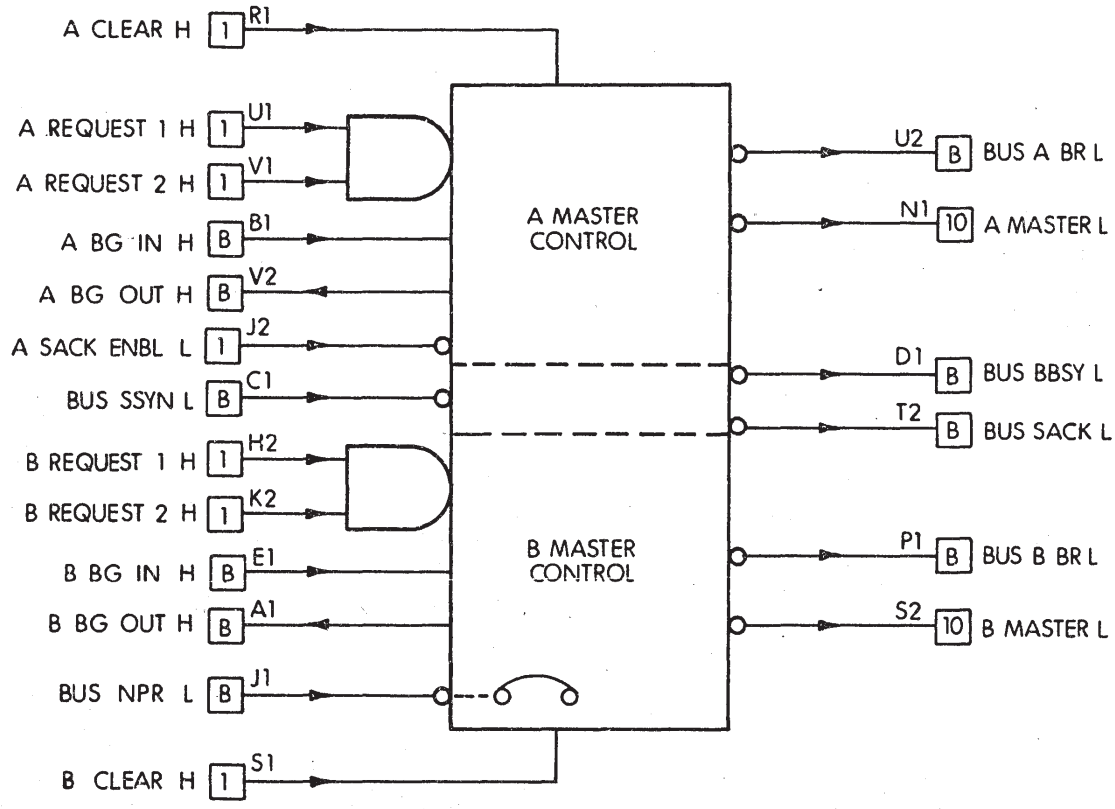
M7821
INTERRUPT CONTROL MODULE

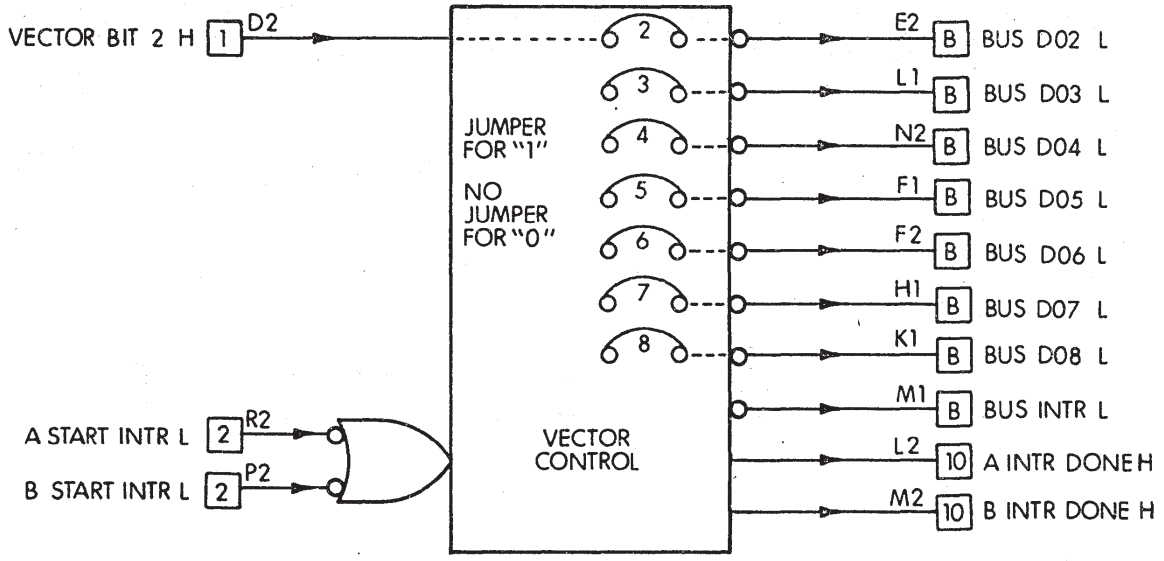
PDP-11 UNIBUS

M SERIES

Length: Extended
Height: Single
Width: Single

Price: $100





Volts	Power mA (max.)	Pins
+5	550	A2
GND		C2, T1

The M7821 Interrupt Control Module is a replacement for the M7820 that improves PDP-11 system performance. In almost all cases, it may be used directly in place of the M7820, without making any changes to hardware or software. A block diagram of the module is shown in the figure.

NOTE

The following description assumes the reader understands the function and operation of an M7820.

The M7821 does **not** have two identical Master Control halves. For devices which use one half of the module to become master with an NPR and one half for a BR, the A half (Request Bus pins U1 and V1) must be used for NPR and the B half (Request Bus pins H2 and K2) must be used for BR.

The NPR half of the module has the ability to prevent the un-assertion of BUS SACK for devices that do more than one data cycle each time they request the bus. This is done by holding pin J2 high until the beginning of the last bus cycle. SACK will be unasserted as soon as pin J2 goes low, and the input on J2 can, therefore, be a pulse or a level. Pin J2 is active only when the Master signal is asserted (pin N1 is low), and, therefore, pin J2 may be permanently grounded if only one bus cycle is done for each request.

NOTE

The M7820 requires pin J2 to be grounded for the interrupt section of the module to work, so the M7821 is compatible when used as a replacement.

The BR half of the module does not have the ability to hold BUS SACK asserted and always drop SACK when BUS BBSY is asserted. However, this section of the module does have some special circuitry that looks at the BUS NPR line which must be wired to pin J1 on the M7281. This circuitry, if it sees the assertion of the bus grant line to which the module is wired while BUS NPR is asserted, will block the grant and return SACK. When BBSY becomes unasserted from the last bus master, the M7821 will then clear SACK off the bus. The processor will then be able to service the NPR, improving the latency time for NPR devices.

CAUTION

Only some PDP-11 processors will work with the special circuitry described above. There is a jumper on the M7821 module which, when cut, prevents the special circuitry from working.

NOTE

Pin J1 is unused on the M7820 module, and if BUS NPR is not wired to this pin, the special jumper noted above must be cut.

If both halves of the M7821 are used for BR requests, pin J2 must be grounded and the jumper may be cut as required. If both halves are used for NPR requests, pin J2 may be used as required, and the jumper must be cut. Please note that if the normally BR half (Request Bus pins H2 and K2) are used for NPR's, only one bus cycle may be done per request.

The interrupt section of the module has been changed slightly also. **The jumpers on the M7821 module must be left in to generate a "one" in that bit position of the vector, and cut out to generate a "zero."** This is the reverse of the M7820. A jumper has also been added to vector bit 2. If the module is to be used the same way as a M7820, the jumper for bit 2 must be left in. However, if only one vector is being generated by the module, pin D2 should be permanently wired to a high level, and then the jumpers can be used to assign vectors to every vector location (4 bytes) without changing backpanel wiring. Note that the jumper for bit 2 must also be in for a one and cut for a zero.

SUMMARY OF COMPATIBILITY CONSIDERATIONS:
On the M7820, pin J2 must be grounded for the interrupt section to work. If pin J2 is grounded, then an M7821 module can be directly plugged in if the special jumper is cut, the vector bit 2 jumper is left in, and the rest of the jumpers are cut appropriately.

POWER: +5 Volts at 725 mA (max)
The grant chain to tie in the Master Control as follows:
BG IN has 390Ω to GND and BG OUT has Ω180 to +5 Volts

SIZE: Extended length, single height, single width FLIP CHIP module.