

THIS IS THE "RTMC LOGIC CONNECTOR"

THE DB25S CONNECTOR IS CONNECTED RTMC16 CARD "H1" VIA A 25 WIRE FLAT CABLE. PIN 26 OF H1 IS IGNORED. PIN 1 OF H1 (THE PIN NEAREST THE "H1" LEGEND ON THE BOARD) IS CONNECTED TO PIN 1 OF THE DB25S CONNECTOR.

THE CAMERA HOME AND EMERGENCY STOP CIRCUITS ARE NOT REQUIRED

ALL SIGNALS ARE TTL LEVEL. BE CAREFUL NOT TO LET THESE SIGNALS COME IN CONTACT WITH EXTERNAL VOLTAGES OR METALLIC OBJECTS .

AS SHOWN, THE EMERGENCY SWITCH CIRCUIT IS INTENDED FOR USE WITH A SINGLE SWITCH ON A SHORT CABLE.

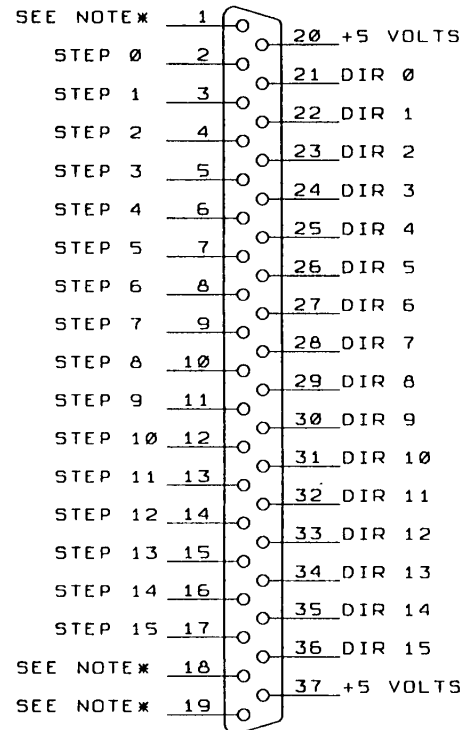
FOR COMPLEX EMERGENCY STOP CIRCUITS, USE AN OPTO-ISOLATOR TO PROTECT THE COMPUTER FROM DANGEROUS EXTERNAL VOLTAGES AND ELECTRICAL NOISE.

ALL THE ACCESSORIES SHOWN ARE OPTIONAL, ALTHOUGH THE SHOOT SWITCH IS ESSENTIAL FOR ANIMATION.

KUPER CONTROLS		
505-263-5949 FAX 505-298-3272		
Title		
SIMPLE ACCESSORY SCHEME		
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STEP AND DIRECTION CONNECTORS AS SEEN
FROM THE REAR OF THE COMPUTER.

CONNECTORS ARE DB37S



ON THE RTMC48 CARD, 40 PIN HEADERS
BRING OUT THE STEP AND DIRECTION
SIGNALS TO DB37S CONNECTORS IN
I/O SLOTS ON THE BACK OF THE COMPUTER.

HEADER ASSIGNMENTS ON THE RTMC48 CARD:

JP1 = AXES 1 TO 16 (0 TO 15)
JP2 = AXES 17 TO 32 (16 TO 31)
JP3 = AXES 33 TO 48 (32 TO 47)

FOR EACH GROUP OF 16 AXES,
*PINS 1, 18, AND 19 MAY BE SET TO PROVIDE
EITHER +5 VOLTS OR GROUND BY ADJUSTING JUMPERS
JP6, 7, AND 8 ON THE RTMC48 CARD. IN EACH CASE:

GND = CENTER TO YOUR LEFT (PINS 1 AND 2)
+5VOLTS = CENTER TO YOUR RIGHT (PINS 2 AND 3)

JP6 = AXES 1 TO 16 (0 to 15)
JP7 = AXES 17 TO 32 (16 to 31)
JP8 = AXES 33 TO 48 (32 to 47)

ALL SIGNAL OUTPUTS ARE OPEN-COLLECTOR TTL.

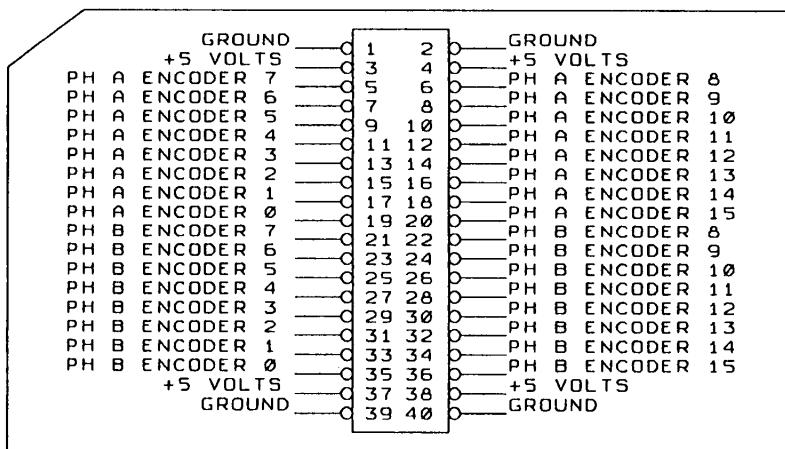
THE VOLTAGES AVAILABLE ON PINS 1, 18, 19, 20 AND 37
AND ARE INTENDED TO BE USED TO DRIVE OPTO-ISOLATED
INPUTS TO STEPPING MOTOR DRIVERS. THESE VOLTAGES
ARE THE COMPUTER BUS SUPPLY VOLTAGES. USE GREAT
CARE WHEN MAKING EXTERNAL CONNECTIONS. EXTERNAL
CIRCUITRY OTHER THAN OPTO-ISOLATED DRIVER INPUTS
USING THESE VOLTAGES SHOULD BE LIMITED TO 300 MILLIAMPS.

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RTMC48 PULSE OUTPUT CONNECTORS		
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ENCODER CONNECTOR JP4 ON THE RTMC48 CARD
 CONNECTOR IS A DUAL IN LINE PIN HEADER ON 0.1" CENTERS



TOP OF BOARD ->>

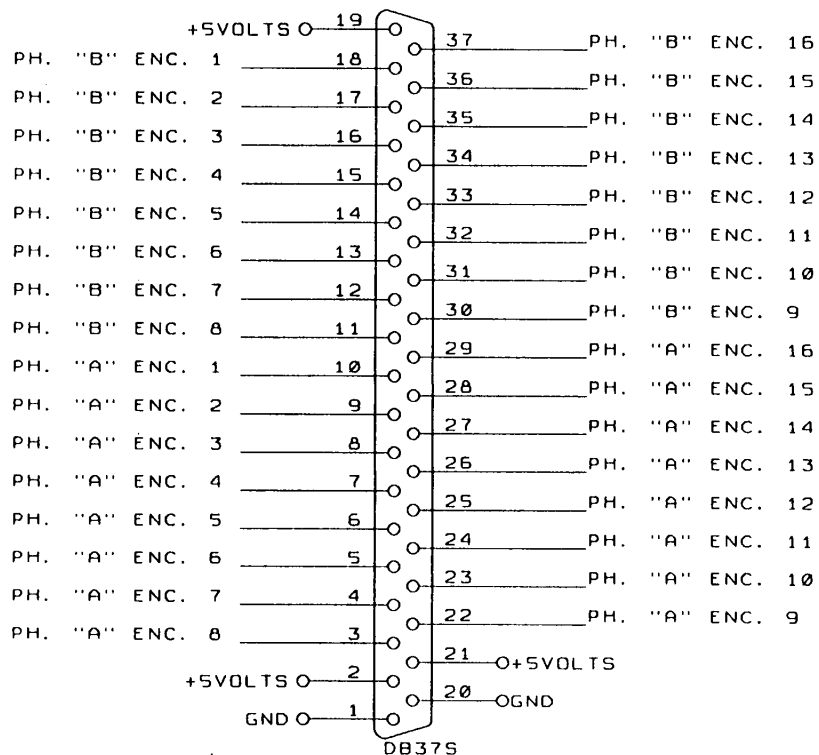
ALL ENCODER INPUTS ARE TTL LEVEL PULLED HIGH THROUGH 2.2K RESISTORS ON THE BOARD.

+5 VOLT AND GROUND VOLTAGES ARE OBTAINED FROM THE COMPUTER BUS POWER SUPPLY. USE GREAT CARE WHEN CONNECTING THESE VOLTAGES EXTERNALLY. THE MAXIMUM CURRENT WHICH SHOULD BE DRAWN IS 300 MILLIAMPERES, SUFFICIENT TO DRIVE 3 OR 4 NORMAL ENCODERS. IF YOU NEED TO USE MORE ENCODERS, USE AN EXTERNAL 5 VOLT SUPPLY OR KUPER BLACK BOX ENCODER INTERFACE. WHEN USING AN EXTERNAL SUPPLY, CONNECT ALL FOUR GROUND PINS TO THE POWER SUPPLY GROUND, BUT LEAVE THE +5 PINS OF JP4 UNCONNECTED.

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RTMC48 ENCODER INTERFACE CONNECTOR			
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HOOKING UP ENCODERS WITHOUT A BLACK BOX.



WIRE COLOR SCHEME FOR
US DIGIPOT S2-2048 ENCODERS
USING "MC/4" CONNECTORS
SUPPLIED BY U.S. DIGITAL

+5 VOLTS	ORANGE
GROUND	BROWN
PHASE A	YELLOW
PHASE B	BLUE

IT IS POSSIBLE TO HOOK UP ENCODERS WITHOUT THE BLACK BOX. THE ABOVE SCHEMATIC SHOWS THE ENCODER CONNECTIONS WHEN CONNECTOR "JP4" ON THE RTMC48 CARD IS BROUGHT OUT TO A MALE DB37P CONNECTOR AT THE BACK OF THE COMPUTER. IT IS ASSUMED THAT PIN ONE OF JP4 AND PIN ONE OF THE DB37 ARE CONNECTED TOGETHER VIA THE RED WIRE ON THE RIBBON CABLE.

PLEASE NOTE THAT THIS SCHEME DERIVES THE ENCODER POWER DIRECTLY FROM THE COMPUTER POWER SUPPLY. BE VERY CAREFUL TO PREVENT THE POWER LEADS FROM SHORTING AGAINST ANYTHING, AND USE SHIELDED CABLE WITH THE SHIELD CONNECTED ONLY TO THE COMPUTER CASE.

KEEP ALL LEADS AS SHORT AS POSSIBLE.

EACH ENCODER REQUIRES A CONNECTION FOR:

+5VOLTS, GROUND, PHASE A, PHASE B

FOR ENCODER #1:

ENCODER +5VOLTS: DB37 PIN 2
ENCODER GROUND: DB37 PIN 1
ENCODER PHASE A: DB37 PIN 10
ENCODER PHASE B: DB37 PIN 18

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ENCODER TO DB37 PINOUTS WITHOUT BLACK BOX		
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TIMECODE IN AND TIMECODE COMMON ACCEPT ALL LONGITUDINAL TIMECODE FORMATS. TIMECODE SHOULD BE OF GOOD QUALITY AND HAVE A HIGH SIGNAL LEVEL.

IN ORDER TO MAINTAIN GOOD TIMECODE SYNC, THE SOURCE SHOULD BE A TIMECODE GENERATOR OR THE "ADDRESS TRACK" ON A PROFESSIONAL TAPE DECK.

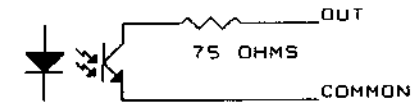
INPUT IMPEDANCE IS > 5000 OHMS.

VIDEO IN AND VIDEO COMMON CONNECT DIRECTLY TO NTSC OR PAL COMPOSITE VIDEO. A "SYNC ONLY" SOURCE IS ALSO ACCEPTABLE.

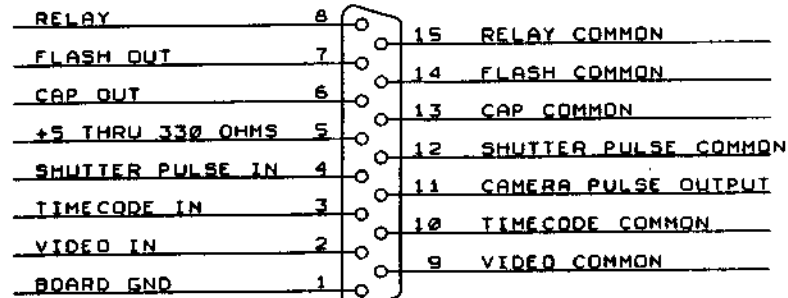
INPUT IMPEDANCE IS 75 OHMS.

RELAY AND RELAY COMMON ARE THE UNPOLARIZED CONTACTS ON A MECHANICAL RELAY. ABSOLUTE MAXIMUM RATING IS 100 VOLTS DC, 500 MILLIAMPERES.

TYPICAL OF CAP AND FLASH OUTPUTS



ABSOLUTE MAXIMUM RATING:
40 VOLTS, 200 MILLIAMPERES



DB15P ON KUPER CARD I/O CONNECTOR

SYNC CONNECTIONS FOR SOUND SPEED CAMERA MOTORS:
ALL CONNECTIONS ARE PIN-TO-PIN, NO SIGNAL CONDITIONING IS REQUIRED
INPUT IMPEDANCE IS 2000 OHMS

	PANAVISION	ARRI "B"	ARRI 535	FRIES
SHUTTER PULSE IN	PIN 9	PIN 2	PIN 7	PIN E
SHUTTER PULSE COMMON	PIN 8	PIN 9	PIN 4	PIN C

PANAVISION CONNECTOR: FFA 25310CNAC62
SOURCE: LEMO, TEL 800-444-LEMO, 707-578-8811

ARRIFLEX "B" CONNECTOR: "FISCHER 11 PIN"
ARRIFLEX 535 CONNECTOR: "FISCHER 9 PIN" P/N S104A055-130
STRAIN RELIEF CLAMP FOR 0.240" CABLE: /67S
SOURCE: W.W. FISCHER TEL 800-551-0121, FAX 404-551-6969

FRIES CONNECTOR: TMW R05-P88M
SOURCE: FRIES ENGINEERING, TEL 818-769-3600

IF YOU ARE USING A CINEMATOGRAPHY ELECTRONICS BASE, YOU MAY NEED TO PLACE A 2000 OHM RESISTOR IN SERIES WITH DB15 PIN 4

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DB15 ACCESSORY CONNECTOR ON RTMC48 CARD		
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