INSTRUCTIONS

MODEL AV-155D-N-LHB-C DRIVER

S.N.:

WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been dissembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.
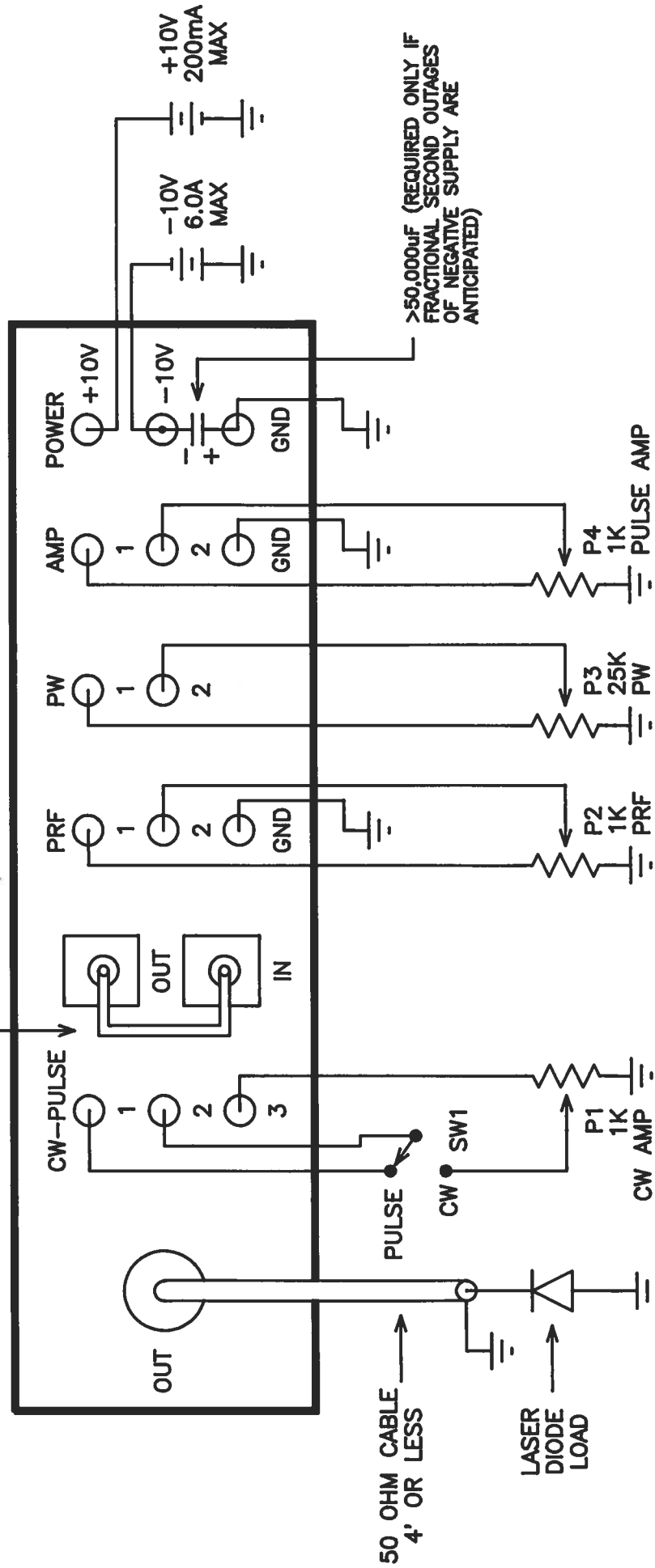
GENERAL OPERATING INSTRUCTIONS

1) The driver module should be secured to a heat sink using 4 10-32 machine screws, one for each corner hole. The driver was shipped with four 10-32 2" screws installed. The heat sink must be capable of maintaining the bottom surface of the chassis at less than $\approx$ +40°C when the module is dissipating 50 watts. Note that an internal temperature control circuit will remove the drive to the output stage in the case of severe overheating. As instructed by LHS, the heat sink surface of the driver module was left unfinished. Note that the end covers may protrude slightly and so should be milled down when finishing the bottom surface. Do <u>not</u> remove the end covers when finishing (or milling).

2) The module should be connected to its load, DC power supplies and external controls as shown in Fig. 1. Note that the pots may be molded composition, Cermet or wirewound (1/2W).

3) CAUTION:

   i) The negative power supply voltage must be in the range of -10 ±0.3 Volts. For applied voltage magnitudes of more than -10.3 Volts, severe overheating of the unit will result. For applied voltage magnitudes of less than -9.7 Volts, the unit may fail to function as a constant current supply.

   ii) The positive and negative supply potentials must be applied either simultaneously (within 0.1 sec) or the negative supply must be applied before the positive supply. If the positive supply is applied before the negative supply, a high positive current (> 1.0 Amperes) will flow and may damage both the load and the driver module. If fractional second outages of the negative supply is anticipated, a very large electrolytic energy storage capacitor (> 50,000 ufd) should be placed between the -10V input terminal and ground to maintain the negative potentials during the outage.

4) For internal pulse mode operation, the 50 Ohm cable between the IN and OUT ports must be connected and PINS 1 and 2 (CW-PULSE) should be connected by the user-supplied switch SW1. The pulse repetition frequency, width and amplitude are controlled by the user-supplied pots; P2, P3 and P4, respectively. In this mode, the maximum duty cycle is limited to 90%.

5) For internal CW mode operation, the 50 Ohm cable is connected and the user-supplied switch SW1 is placed in the CW position and the output amplitude is controlled by the user-supplied Pot P1 (P2, P3 and P4 are now inactive).

6) For external mode operation, the 50 Ohm cable is removed and 0 to +5.0 Volts is applied to the IN SMA connector (R_{IN} = 1K). Switch SW1 must be in the PULSE position. Pots P1, P2, P3 and P4 are inactive. In this mode the driver functions as a linear voltage to current connector. CAUTION: Output current rises to maximum if IN is left open-circuited.

7) The relationship between AMP pot settings (on input voltage amplitude) and output current may be conveniently established by connecting a 0.5 Ohm low inductance power resistor (such units are available from DALE or CADDOCK) between the OUT terminal and ground (no diode). The peak output current may be deduced from the peak output voltage (and 0.5 Ohm) and related to the input control setting. This resistive load may also be used to confirm the output pulse parameters (eg. PRF, PW, rise time, overshoot).

8) The laser diode load was simulated by placing three IR70H10 silicone rectifier diodes in series with a 0.1 Ohm 20 watt low inductance resistor. One end of the resistor was connected to ground so that this resistor could be used as a current-viewing element (by monitoring the resistor voltage).

9) The laser diode load is protected against positive going transients by a 1N5819 diode which shunts the final output stage of the driver.

10) For additional assistance:

Tel: (613) 226-5772
Fax: (613) 226-2802

INTERNAL MODE OPERATION: 50 OHM CABLE CONNECTED. SW1, P1, P2, P3, P4 FUNCTIONAL

EXTERNAL MODE OPERATION: 50 OHM CABLE REMOVED AND 0 TO +5V APPLIED TO IN CONNECTOR. SW1 MUST BE IN PULSE POSITION. P1, P2, P3, P4 INACTIVE. DRIVER OPERATES AS A LINEAR VOLTAGE TO CURRENT CONVERTER IN THE EXTERNAL MODE.

CAUTION: OUTPUT CURRENT RISES TO MAX IF IN IS LEFT OPEN CIRCUITED.

+10V 200mA MAX

−10V 6.0A MAX

>50,000uF (REQUIRED ONLY IF FRACTIONAL SECOND OUTAGES OF NEGATIVE SUPPLY ARE ANTICIPATED)

POWER

+10V

−10V

GND

AMP

1
2
GND

P4 1K PULSE AMP

PULSE AMP INCREASES FOR DECREASING R BETWEEN PINS 1 AND 2

PW

1
2

P3 25K PW

PW INCREASES FOR INCREASING R BETWEEN PINS 1 AND 2

PRF

1
2
GND

P2 1K PRF

PRF INCREASES FOR DECREASING R BETWEEN PINS 1 AND 2

OUT
IN

CW−PULSE

1
2
3

PULSE

CW SW1

P1 1K CW AMP

CW AMP INCREASES FOR DECREASING RESISTANCE BETWEEN PIN 3 AND WIPER

OUT

50 OHM CABLE 4' OR LESS

LASER DIODE LOAD

FIGURE 1 − AVTECH MODEL AV−155D−N−LHB−C CONTROL CONNECTIONS

☐ P.O. BOX 265
OGDENSBURG, NY
U.S.A. 13669-0265
TEL: (315) 472-5270
FAX: (613) 226-2802

✎ *ICS notified*

✉ BOX 5120 STN. F
OTTAWA, ONTARIO
CANADA K2C 3H4
TEL: (613) 226-5772
FAX: (613) 226-2802

Fax Ref No: __6269__

From: Avtech Electrosystems Ltd

To: __Lockheed Sanders,__

Our Fax No: __613-226-2802__

__Nashua, NH__

Date: __June 11, 1993__

Attn: __John Doherty, MS MER15-1813__
__Tel: 603-885-2741__

Receivers Fax No: __603-885-4603__

Subject: __5.2 Amp laser driver module__

No. pages Faxed: __3__

Following my FAX of May 3, I am pleased to provide some more detailed specifications for this unit:

Model designation: AV-155D-N-LHB-C

	Pulse Mode	CW Mode
Output amplitude:	-5.2 Amp (to 0 to -3 Volts). When triggered internally, output amplitude may be varied from 0 to -5.2 Amp via a user-supplied remote 1K pot which connects to 3 solder terminals. When triggered externally, the output amplitude is controlled by the amplitude of the applied trigger pulse (0 to +4 Volts). To trigger internally, the OUT-IN SMA connectors must be connected by a 4" long RG174 cable. To trigger externally, the RG174 cable is removed and the trigger pulse is applied to the IN SMA connector.	-5.2 Amp (to 0 to -3 Volts). Output amplitude may be varied from 0 to -5.2 Amp via a user-supplied remote 1K pot which connects to 3 solder terminals.

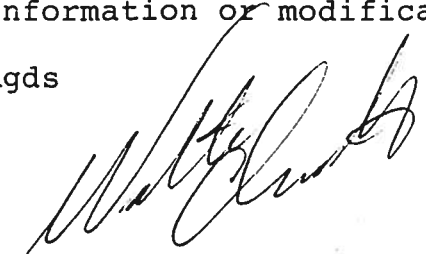|	Pulse Mode	CW Mode
Output pulse width:	1 to 10 ms. When triggered internally, controlled by user-supplied remote 25K pot which connects to two solder terminals. When triggered externally, the output pulse width equals the input trigger pulse width.	DC. User-supplied two-position switch selects CW or pulse mode. Connects to 3 solder terminals.
PRF:	Internal trigger: 100 Hz to 500 Hz. Controlled by a 5K user-supplied remote pot which connects to 3 solder terminals. External trigger: Equals input trigger PRF.	N/A.
Rise, fall time:	$\leq$ 10 us.	N/A.
Prime power:	a) +10 Volts, 0.3 Amp. b) -10 Volts, 3.0 Amp.	a) +10 Volts, 0.3 Amp. b) -10 Volts, 5.8 Amp.
Chassis size:	1.5" x 3" x 5".	
Chassis material:	Aluminum.	
Mounting:	3" x 5" surface must be attached to a heatsink to maintain the chassis temperature at less than 35^0C (power dissipated by the module is about 50 Watts).	
Connectors:	Prime power: Solder terminals PRF, PW, mode: Solder terminals Output: BNC connector. Diode may be connected using up to 4 feet of 50 Ohm coaxial cable (we also recommend the use of our AV-LZ1 low impedance line)	

Other: See our FAX of June 10/93.

Price: $1,698.00 US each, FOB destination
                 (i.e. delivered on your doorstep)

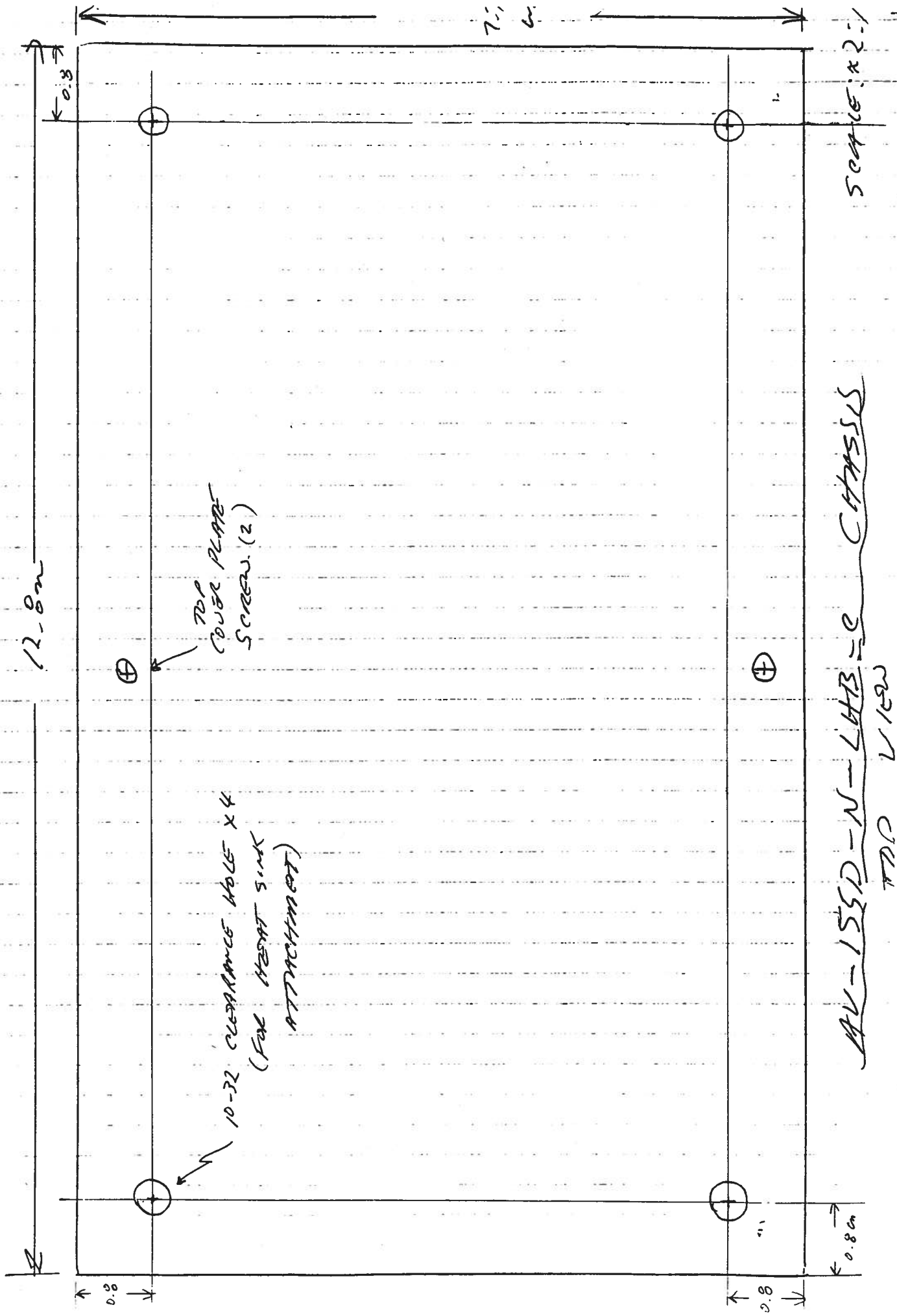Delivery: 3-4 weeks ARO.

Thank you for your continuing interest in our products. Please
call me again (1-800-265-6681) if you require any additional
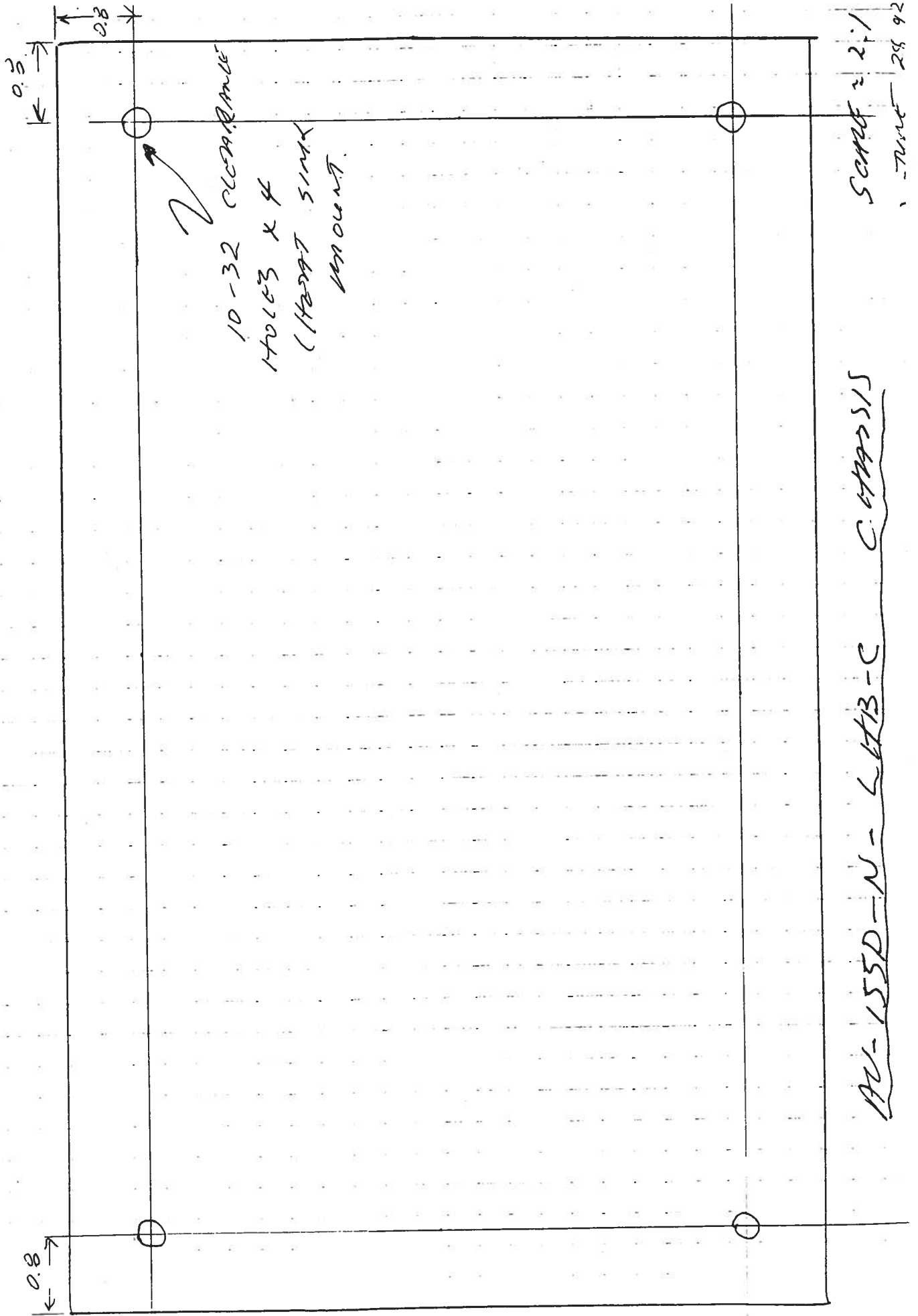information or modifications to the specifications.

Rgds

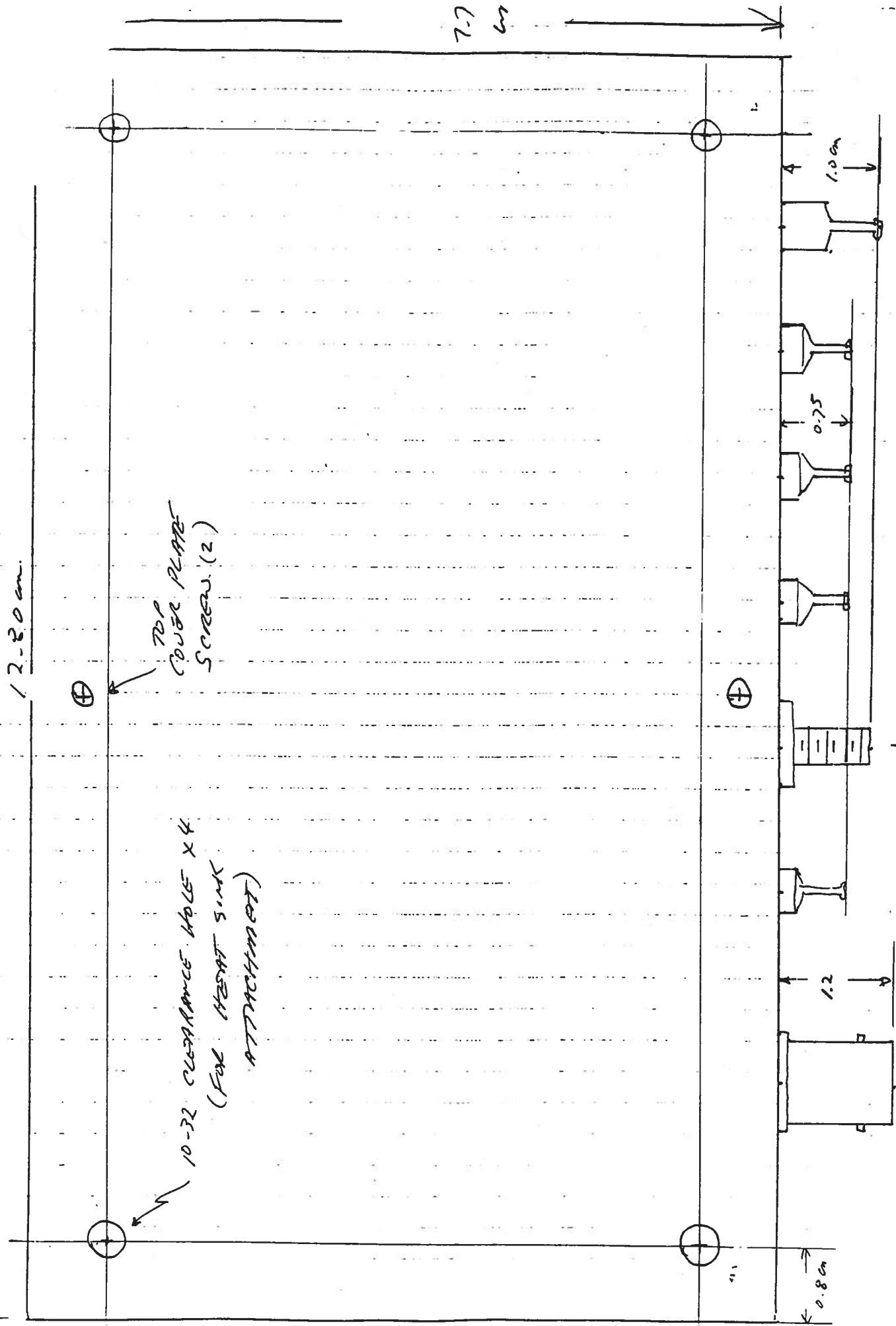Dr. Walter Chudobiak
Chief Engineer

WC:pr

12.8cm

0.8

TOP COVER PLATE SCREW. (2)

10-32 CLEARANCE HOLE × 4 (FOR HEAT SINK ATTACHMENT)

0.8cm

AU-155D-N-L443 = CHASSIS

TOP VIEW

SCALE. ×2:1

12.0 cm

40 cm

CW-PULSE   EXT   PRF   PW   AMP   PWR

OUT   OUT   1   1   1   +10V
                      2   2   2   -10V
1   IN   0   0   0
2   GND   GND   0   GND
0
GND

OUT

→ HEAT SINK SURFACE

SCALE: ≈2:1

R-155D-N-LHB-CHASSIS
SIDE VIEW (CONNECT SIDE)

10-32 CC-THREAD
HEAT SINK MOUNT X4

0.28

0.5

10-32 CLEARANCE
HOLES x 4
(FRONT SINK
MOUNT.

0.80

SCALE ≈ 2:1

1 JUNE 28 92

AU-155D-N-LAB-C CHASSIS

M-13SD-N-LHB-C   CHASSIS

NOTES

1) CHASSIS MATERIAL: EXTRUDED ALUMINUM

2) CHASSIS FINISH: a) TOP + SIDES. SAND BLAST. CLEAR VARNISH SPRAY
   b) BOTTOM. NATURAL EXTRUDED FINISH

3) PINS 1+2 ARE SOLDER FEED THROUGH TERMINALS FOR REMOTE SWITCHES POSTS + POWER CONNECT

4) EXT IN-OUT CONNECTORS ARE SMA.

5) OUT CONNECTOR IS BNC

6) HEAT SINK MOUNT IS LID FOUR. 10-32 MACHINE SCREWS PASS THROUGH FROM 7765 WINCH TOP TO BOTTOM SURFACE.

JUNE 28 93

M-155D N-LHB-C CHASSIS

SIDE VIEW (CONNECT SIDES)

SCALE: 2:1
MOD 1

Jack 6
Tank 2

END
COLOR
PUMP

P-32 CERAMIC 2.0
HEAT SINK MOUNT X4

7.7 cm

12.80cm

TOP COVER PLATE SCREW. (2)

10-32 CLEARANCE HOLE X4 (FOR HEAT SINK ATTACHMENT)

1.0cm

0.75

RG 174 CABLE.

1.2

0.8cm

SCALE : ~ 2:1

JULY 6 1993

PM-15SD-N-L4B-C

TOP VIEW

July 16/93