ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Newport / Oriel 84350* at our website: *Click HERE*

M-84350

ORIEL PRODUCT LINE
150 Long Beach Boulevard
Stratford, CT 06615
Phone: (203) 377-8282
(800) 714-5393
Fax: (203) 378-2457
E-MAIL: oriel.sales@newport.com

ELECTRONIC EXPOSURE TIME

MODEL 84350

USER MANUAL

Please read these instructions completely before operating this equipment. The specification and operating instructions apply only to the model(s) covered by this manual. If there are any questions or problems regarding the use of this equipment, please contact Newport or the representative from whom this equipment was purchased.

TABLE OF CONTENTS

I INTRODUCTION 1
II INSTALLATION 2
III OPERATION 3
IV CIRCUIT DESCRIPTION 4
V DRAWINGS 6
VI WARRANTY AND RETURNS 11

I INTRODUCTION

The ORIEL Model 84350 Electronic Exposure Timer Module consists of a highly reliable and repeatable digital electronic timer which may be used to control the opening of the shutter on all standard ORIEL Photoresist Exposure Systems. The standard module contains a ± 0.1 % repeatable 0 - 999.9 second timer unit with 0.1 second divisions. In operation, the timer is set to the desired exposure and a start button is pressed. The shutter than opens and at the end of the pre-set time, the shutter closes. The timer is then automatically reset and is immediately ready for the next exposure.

II INSTALLATION

Installation of the Model 84350 Exposure Control consists of merely connecting the rear panel power cable supplied to the ACCESSORIES connector on the power supply and the lamp housing cable to the matching connector on the arc lamp housing. These connectors should be securely tightened by hand.

Check that the 110/220V line switch on the Model 84350 rear panel is set to the same position as the 110/220V line switch on the power supply rear panel. If the power supply is a Model 68730, there is no 110/220V line switch to set, so set the Model 84350 line switch to the 220V position.

Selection of the line frequency, which is the basis for the timing interval, is normally accomplished at the factory. If it becomes necessary to alter the setting, the unit should be unplugged and the top cover removed. On the rear of the timer printed circuit board is a three pin post style connector with a shorting plug (blue) attached. Placing the shorting plug across the upper two posts selects 50 Hertz operation. Shorting the two lower posts together selects 60 Hertz operation.

III OPERATION

Once the arc lamp has been ignited and warmed up the 84350 may be operated as follows:

A) Electronic Timer

1. Turn **Power** switch **on**. The pilot lamp will come on indicating that all connections have been made properly.

2. Set the desired time on timer simply by rotating the knobs to the desired position.

3. Momentarily depress **START** button on the front panel; shutter will open, then close after the preset time has elapsed. A lamp mounted on the front panel will light when the timer is actually operating.

4. The timer section has a unique **HOLD** feature. At any time during a timed exposure, the **TIMER INTERRUPT** switch may be placed in the **ON** position. This will freeze the timer and close the shutter. The properly timed exposure may then be completed by subsequently placing the **TIMER INTERRUPT** switch to **OFF**.

5. If you desire to keep the shutter open for long periods of time, as when aligning the system, the **SHUTTER** switch may be turned to the **OPEN** position. This will bypass the timer and the shutter will remain open as long as power is supplied to the unit.

IV CIRCUIT DESCRIPTION

The ORIEL Model 84350 Timer consists of three (3) assemblies:

B) Timer

C) Shutter Control Board

D) Interface Board

A. TIMER - Refer to Schematic 8180-3-13-1

The timing portion of the board consists of U4, which divides down the mains frequency and U2 which does the counting and provides all of the necessary logic to drive an LED type four digit display in a multiplex mode. U1 and U3 provide the start/stop synchronization and U7 is a switch debouncer.

Four front panel switches are used to set the timing; it can be set from 0.1 seconds to 999 seconds enabling the operator to select a wide range of exposure times. The switches are the BCD encoding type and set the timing interval by allowing one or more bits to be transferred to the input port if Timer IC-U2 via the diodes CR4 - CR19.

Strobe output is taken from pins 18, 17, 16, and 15 of U2 and is fed to the common of each switch and the cathode of the individual digit to be displayed. The series of pulses is basically time sequenced and gives a flicker free effect at the display.

Transistor Q3 is used as the Decimal Point Driver and it is strobed at digit 3. This is the only point it is used on the display. Pin 5 of the display is the decimal point anode and with Q3 conducting, a positive voltage will be applied to it allowing it to conduct. The same pulse is driving the cathode, it is at a zero level, lighting up the decimal point.

TIMER CHIP STARTING METHOD

The Timer Chip is started by pushing the front panel start button. This button push generates a Register Load (RLD) pulse which causes the BCD switch data to be loaded into the timer chip and then a Reset (RST) pulse which actually starts the timing sequence. The Timer can be remotely started via connector J1 at the rear of the unit. This is brought out to a simple momentary switch as an accessory which is obtained from the factory. The same cable can be connected to a connector on the lamp housing for operator convenience. Optical isolator U6 is used to provide electrical isolation for remote starting.

TIMER INTERRUPT AND STOP SWITCHES

The timing sequence can be stopped if the Timer Interrupt switch on the front panel is switched on. The sequence will continue after the switch is turned off.

The STOP switch will stop the timing sequence and, in effect, bring the timer back to zero.

B) SHUTER CONTROL BOARD - Refer to Schematic 8160-2-1101

The Shutter Control Board is used to control the shutter solenoid. Transformer T1 (36VAC) feeds the board via a 20Ω, 12 watt resistor. This is used in order to change capacitor C1 to a voltage of about 50 volts for the initial pull-in of the solenoid. The solenoid is rated at 24 volts DC, but the higher voltage is necessary in order to develop the torque needed at the pull-in. After the solenoid is in, the voltage needed to keep it in is the rated voltage of the solenoid, or 24 VDC.

REMOTE CONSIDERATION

In order to remotely operate the Model 83450, it is necessary to supply a momentary contact closure to the two leads available in the **REMOTE** connector on the rear panel of the timer module.

This contact closure may be obtained from the user's equipment or from an ORIEL Model 8220 Foot Switch or Model 8225 Hand Held Push Button.

In systems employing an ORIEL Model 8228 Remote Start Button on Lamp Housing, all connections are made internally and need not be considered here.

C) INTERFACE BOARD - Refer to Schematic 84360-2-1401

The Interface Board provides for two-way communications to any remote controller (such as a wafer handler) with TTL (+5V) logic levels.

The output signal is at +5 VDC to signify the unit is available and is awaiting a command. The output signal drops to zero volts to show **busy**, and signifies the shutter is open. The VMOS transistor Q3 senses the command for **shutter open** and drives pin 1 of the Interface Connector (J4) on the rear panel.

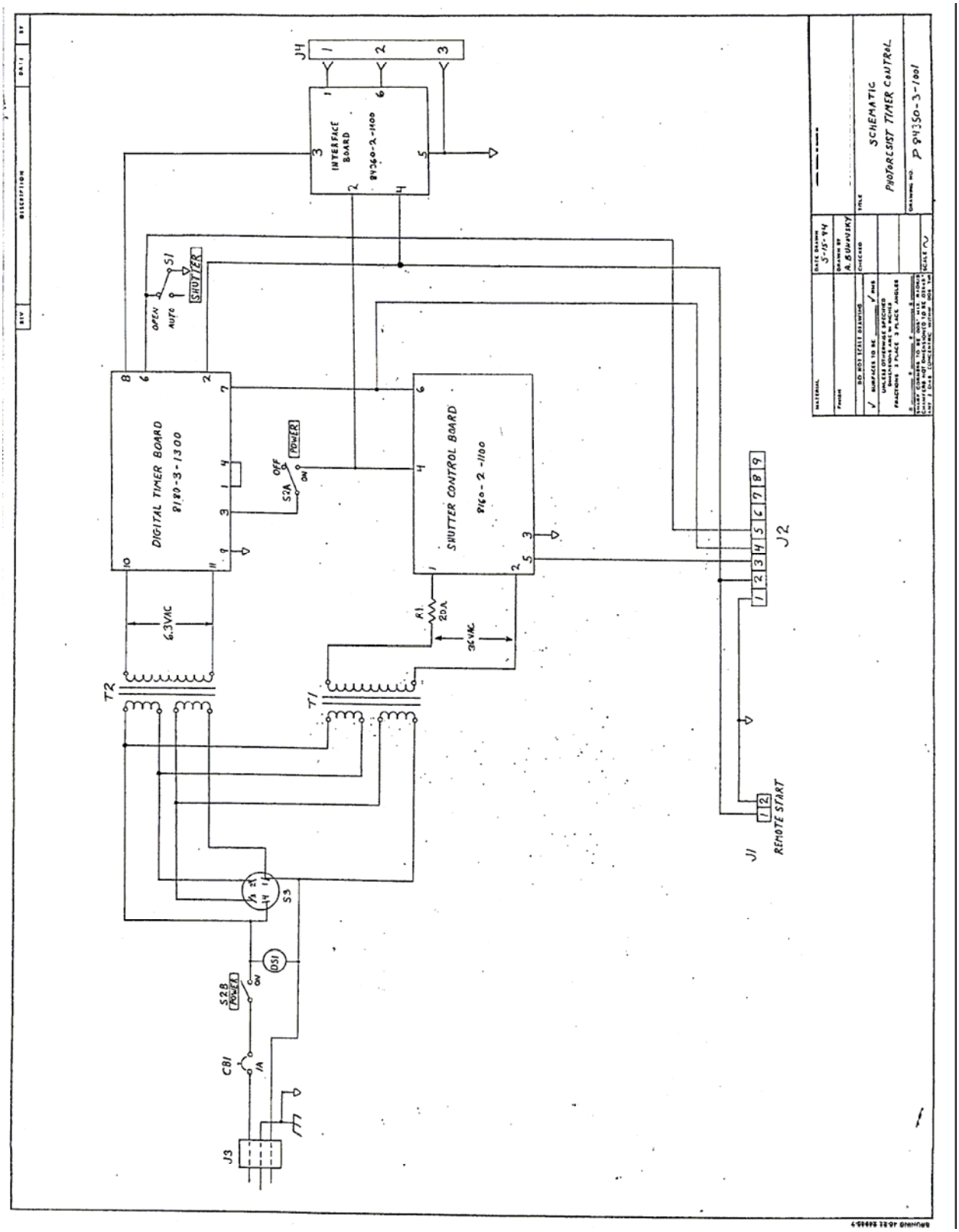
The input signal is a negative pulse to OV level with a duration of at least 100 microseconds and should be applied to pin 2 of the Interface Connector (J4). The input signal is filtered by R1/C1 to prevent extraneous triggering of the system and the command then switches VMOS transistor Q1. Transistor Q1 then triggers the one-shot multivibrator CD4528 which stretches the pulse out to approximately 0.1 seconds. The output of CD4528 then switches VMOS transistor Q2 which is connected across the Remote Connector J1.

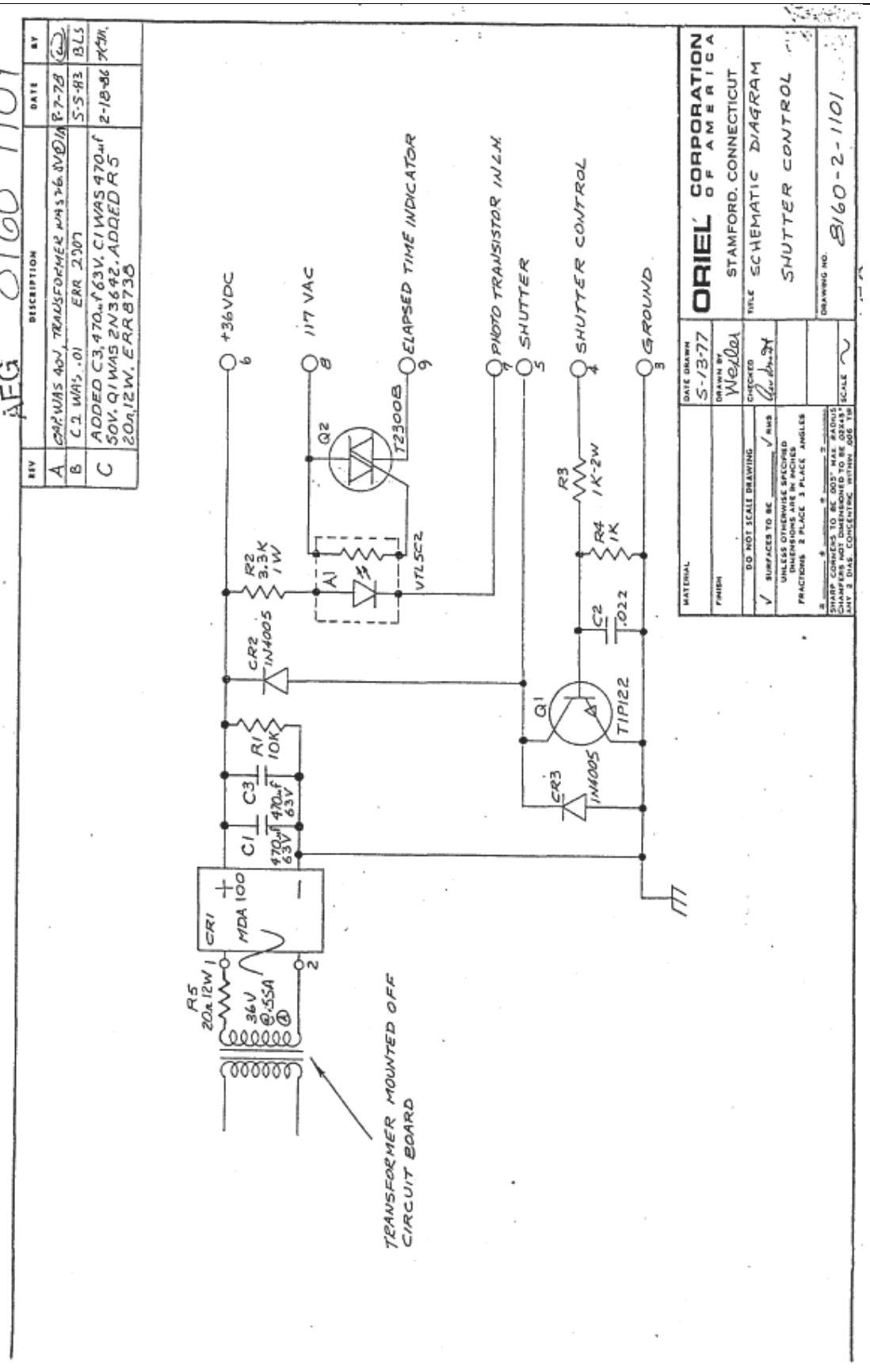
V DRAWINGS

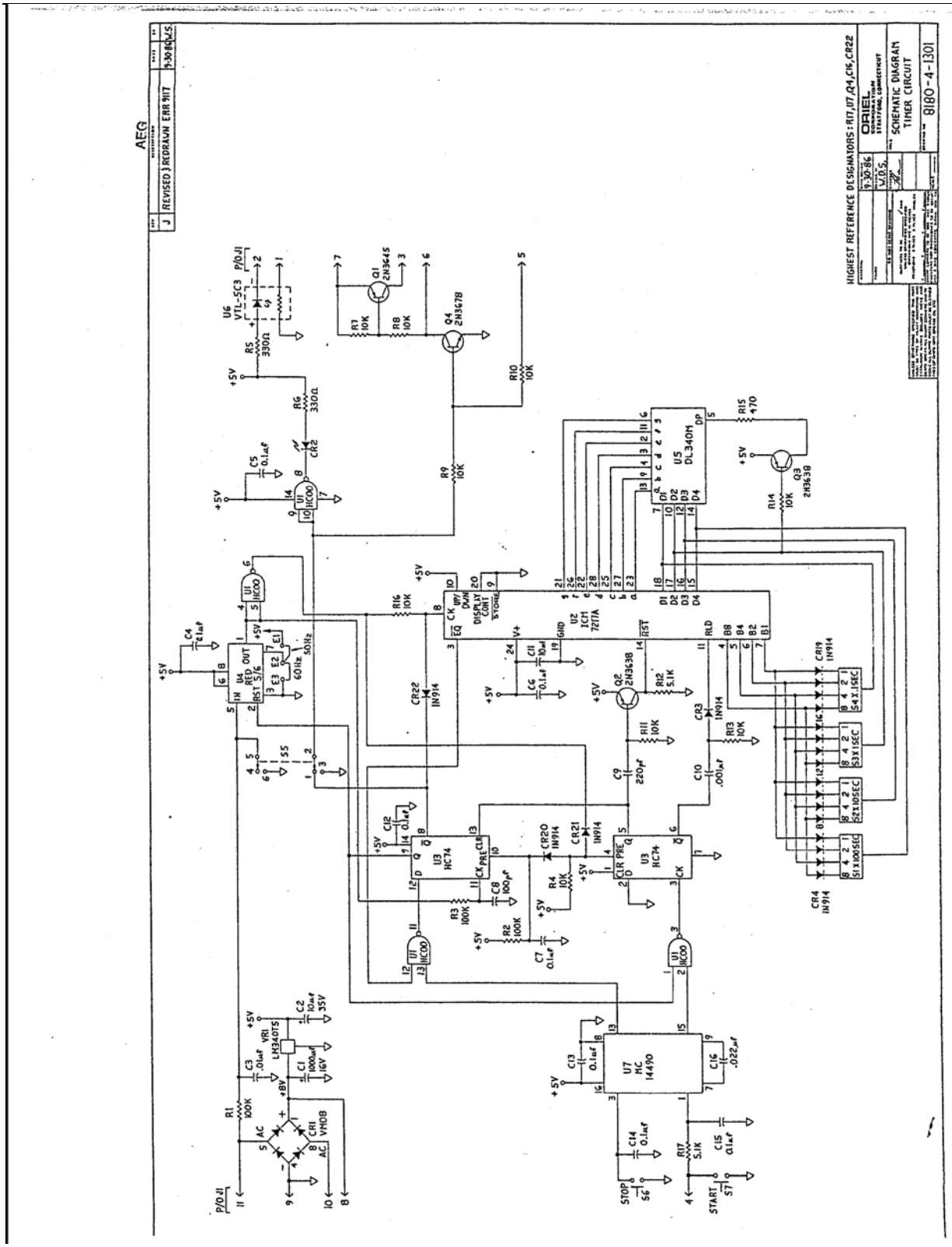
The following drawings are supplied with this manual:

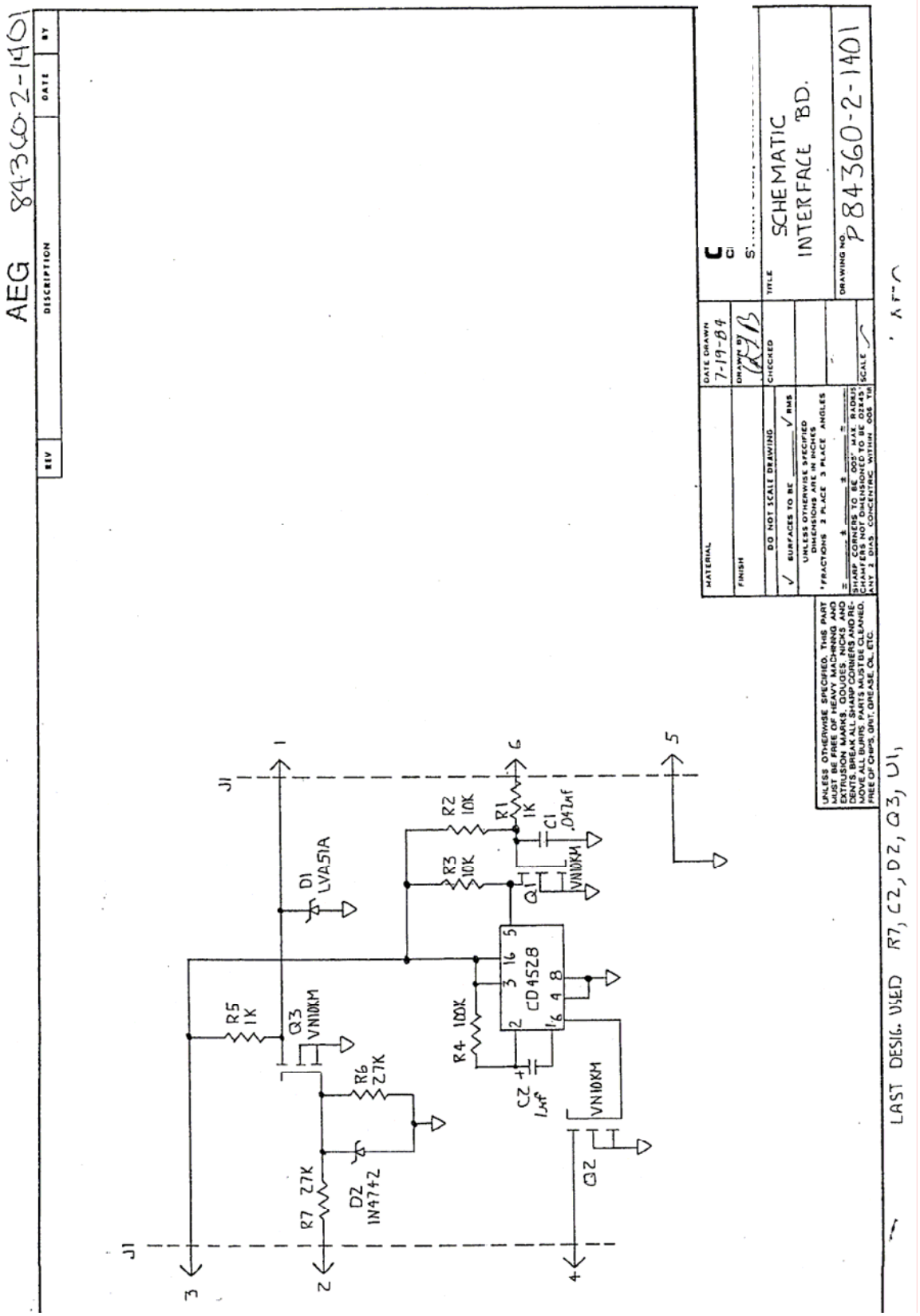
Schematics

84350-3-1001	TOP Assembly
8160-2-1101	Shutter Control
8180-3-1301	Timer
84360-2-1401	Interface


J4
INTERFACE BOARD
DIGITAL TIMER BOARD
SHUTTER CONTROL BOARD
S1
SHUTTER
S2A
POWER
S2B
POWER
K1
20A
T1
T2
6.3VAC
36VAC
J1
REMOTE START
J2
J3
CB1
S3
SCHEMATIC
PHOTORESIST TIMER CONTROL


AFG 8160-1101
REV | DESCRIPTION | DATE | BY
A | C42 WAS 40V, TRANSFORMER #43736 ADDED | 8-7-78 | [illegible]
B | C2 WAS .01 ERR 2307 | 5-5-83 | BLS
C | ADDED C3, 470uf/63V. C1 WAS 470uf 50V. Q1 WAS 2N3642. ADDED R5 20Ω, 12W. ERR 8738 | 2-18-86 | JKM
+36VDC
117 VAC
ELAPSED TIME INDICATOR
PHOTO TRANSISTOR IN L.M.
SHUTTER
SHUTTER CONTROL
GROUND
CR1 MDA 100
C1 470uf 63V
C3 470uf 63V
R1 10K
R2 3.3K 1W
R3 1K-2W
R4 1K
R5 20Ω 12W
C2 .022
CR2 IN4005
CR3 IN4005
Q1 TIP122
Q2 T23008
A1 VTLSC2
36V @.55A
TRANSFORMER MOUNTED OFF CIRCUIT BOARD
ORIEL CORPORATION OF AMERICA
STAMFORD, CONNECTICUT
TITLE SCHEMATIC DIAGRAM SHUTTER CONTROL
DRAWING NO. 8160-2-1101
DATE DRAWN 5-13-77
DRAWN BY Weller
CHECKED
MATERIAL
FINISH
DO NOT SCALE DRAWING
SCALE


AEG
REVISED & REDRAWN ERR 9117
HIGHEST REFERENCE DESIGNATORS: R17, U7, Q4, C16, CR22
ORIEL
SCHEMATIC DIAGRAM
TIMER CIRCUIT
8180-4-1301
U6 VTL-5C3
Q1 2N3645
Q4 2N3678
Q2 2N3638
Q3 2N3638
U5 DL340M
U2 ICM 7217A
U3 HC74
U7 MC 14490
U1 HC00
U4 NE 555
LM340T5
CR1 VM08
R1 100K
R2 100K
R3 100K
R4 10K
R5 330Ω
R6 330Ω
R7 10K
R8 10K
R9 10K
R10 10K
R11 10K
R12 5.1K
R13 10K
R14 10K
R15 470
R16 10K
R17 5.1K
C1 1000μf 16V
C2 10μf 35V
C3 .04μf
C4 .1μf
C5 0.1μf
C6 0.1μf
C7 0.1μf
C8 100pf
C9 220pf
C10 .001μf
C11 10μf
C12 0.1μf
C13 0.1μf
C14 0.1μf
C15 0.1μf
C16 .022μf
CR2
CR3 1N914
CR14 1N914
CR19 1N914
CR20 1N914
CR21 1N914
CR22 1N914
S1X100SEC
S2X10SEC
S3X1SEC
S4X.1SEC
50Hz
60Hz
START S7
STOP S6
P/O J1


AEG 84360-2-1401
REV
DESCRIPTION
DATE
BY
J1
D1 LVA51A
R1 1K
R2 10K
R3 10K
C1 .047uf
Q1 VN10KM
R5 1K
Q3 VN10KM
R6 27K
R7 27K
D2 IN4742
R4 100K
CD4528
C2 1uf
Q2 VN10KM
MATERIAL
FINISH
DO NOT SCALE DRAWING
SURFACES TO BE ____ RMS
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS 2 PLACE 3 PLACE ANGLES
SHARP CORNERS TO BE .005" MAX. RADIUS
CHAMFERS NOT DIMENSIONED TO BE 45°
DATE DRAWN 7-19-84
CHECKED
SCALE
TITLE
SCHEMATIC INTERFACE BD.
DRAWING NO
P84360-2-1401
UNLESS OTHERWISE SPECIFIED, THIS PART MUST BE FREE OF HEAVY MACHINING AND EXTRUSION MARKS, GOUGES, NICKS AND DENTS. BREAK ALL SHARP CORNERS AND REMOVE ALL BURRS. PARTS MUST BE CLEANED FREE OF CHIPS, OIL, GREASE, OIL, ETC.
LAST DESIG. USED R7, C2, D2, Q3, U1,

VI WARRANTY AND RETURNS

Newport warrants that all goods described in this manual (except consumables such as lamps, bulbs, filters, ellipses, etc.) shall be free from defects in material and workmanship. Such defects become apparent within the following period:

1. All products described here, except spare parts: one (1) year or 3000 hours of operation, whichever comes first, after delivery of the goods to the buyer.
2. Spare parts: ninety (90) days after delivery of goods to the buyer.

Newport's liability under this warranty is limited to the adjustment, repair and/or replacement of the defective part(s). During the above listed warranty period, Newport shall provide all materials to accomplish the repaired adjustment, repair or replacement. Newport shall provide the labor required during the above listed warranty period to adjust, repair and/or replace the defective goods at no cost to the buyer ONLY IF the defective goods are returned, freight prepaid, to a Newport designated facility. If goods are not returned to Newport, and the user chooses to have repairs made at their premises, Newport shall provide labor for field adjustment, repair and/or replacement at prevailing rates for field service, on a portal-to-portal basis.

Newport shall be relieved of all obligations and liability under this warranty of:

1. The user operates the device with any accessory, equipment or part not specifically approved or manufactured or specified by Newport unless buyer furnishes reasonable evidence that such installations were not the cause of the defect. This provision shall not apply to any accessory, equipment or part which does not affect the safe operation of the device.
2. The goods are not operated or maintained in accordance with Newport's instructions and specifications.
3. The goods have been repaired, altered or modified by other than authorized Newport personnel.
4. Buyer does not return the defective goods, freight prepaid, to a Newport facility within the applicable warranty period.

IT IS EXPRESSLY AGREED THAT THIS WARRANTY SHALL REPLACE ALL WARRANTIES OF FITNESS AND MERCHANTABILITY. BUYER HEREBY WAIVES ALL OTHER WARRANTIES, GUARANTEES, CONDITIONS OR LIABILITIES, EXPRESSED OR IMPLIED, ARRISING BY LAW OR OTHERWISE, WHETHER OR NOT OCCASIONED BY NEWPORT'S NEGLIGENCE.

This warranty shall not be extended, altered or varied except by a written document signed by both parties. If any portion of this agreement is invalidated, the remainder of the agreement shall remain in full force and effect.

CONSEQUENTIAL DAMAGES

Newport shall not be responsible for consequential damages resulting from misfunctions or malfunctions of the goods described in this manual. Newport's total responsibility is limited to repairing or replacing the misfunctioning or malfunctioning goods under the terms and conditions of the above described warranty.

INSURANCE

Persons receiving goods for demonstrations, demo loan, temporary use or in any manner in which title is not transferred from Newport, shall assume full responsibility for any and all damage while in their care, custody and control. If damage occurs, unrelated to the proper and warranted use and performance of the goods, recipient of the goods accepts full responsibility for restoring the goods to their condition upon original delivery, and for assuming all costs and charges.

RETURNS

Before returning equipment to Newport for repair, please call the Customer Service Department at (203) 377-8282. Have your purchase order number available before calling Newport. The Customer Service Representative will give you a Return Material Authorization number (RMA). Having an RMA will shorten the time required for repair, because it ensures that your equipment will be properly processed. Write the RMA on the returned equipment's box. Equipment returned without a RMA may be rejected by the Newport Receiving Department. Equipment returned under warranty will be returned with no charge for the repair or shipping. Newport will notify you of any repairs not covered by the warranty, with the cost of the repair, before starting the work.

Please return equipment in the original (or equivalent) packaging. You will be responsible for damage incurred from inadequate packaging, if the original packaging is not used.

Include the cables, connector caps and antistatic materials sent and/or used with the equipment, so that Newport can verify correct operation of these accessories.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP