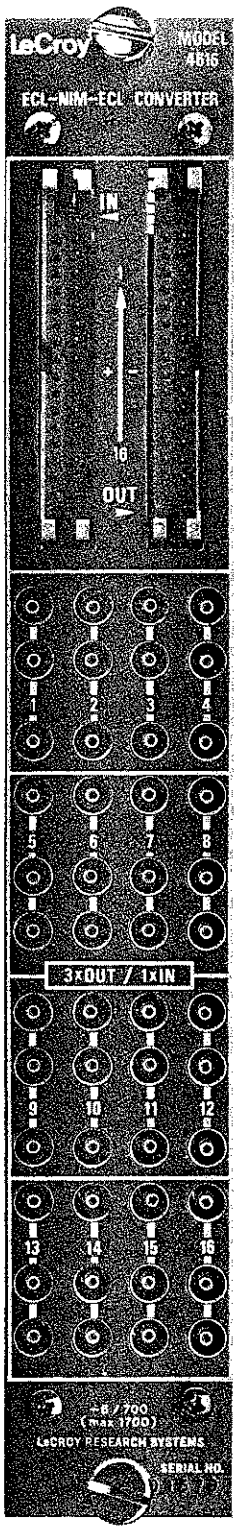
TECHNICAL DATA

LeCroy
RESEARCH SYSTEMS SA

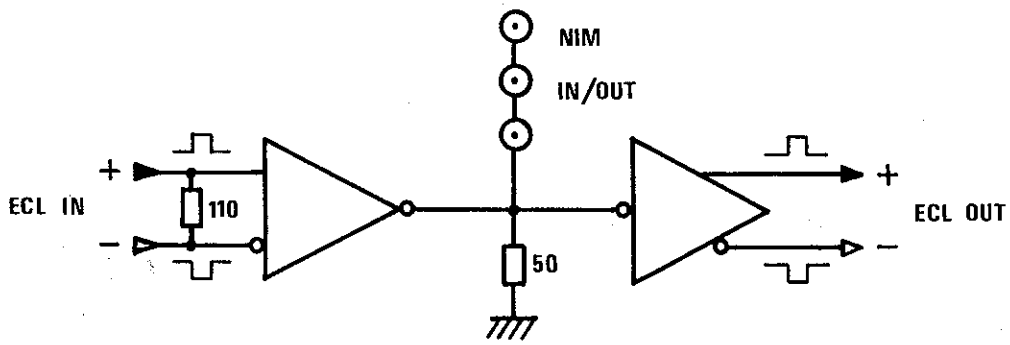


NIM Model 4616

16-Channel ECL/NIM/ECL Converter

- **High density:** 16 channels in a single-width NIM module.
- **ECLine full compatibility:** directly interfaceable with other ECLine circuits.
- **ECL/NIM/ECL in each channel:** each channel serves both for ECL-to-NIM as for NIM-to-ECL conversion.
- **Fan-out capability:** three NIM outputs and one ECL output per channel.
- **Low standby power consumption.**
- **High working frequency:** up to 150 MHz.
- **DC coupled.**

The Model 4616 is simultaneously an ECL-to-NIM and a NIM-to-ECL converter, specially designed to fill the gap between the new growing ECL circuitry and the old NIM electronics. The Model 4616 is designed so that each channel can be used for both applications. When ECL complementary pulses have to be converted, the circuit provides three NIM outputs and an additional ECL output. When a NIM pulse has to be converted, it is sent in one of the NM outputs (now used as an input) while the other two NIM outputs are unconnected. Thus, the circuit provides a single complementary ECL output. The accompanying diagram shows the basic circuit configuration of one channel.



March 1980

INNOVATORS IN INSTRUMENTATION

EUROPEAN PRODUCTS DIVISION

AVENUE LOUIS-CASAI 81 1216 COINTRIN-GENÈVE SUISSE

TÉLÉPHONE: 022/98 97 97

TÉLEX: 28 230

SPECIFICATIONS
NIM Model 4616
16-CHANNEL ECL/NIM/ECL CONVERTER

INPUT CHARACTERISTICS

ECL Inputs:	16, one per section, in a 2 x 17 pin connector; accept complementary ECL levels; typical threshold 200 mV.
NIM Inputs:	16, one per section, Lemo-type connector, to be chosen out of the three Lemo-type connectors in the channel; the other two have to be kept unconnected; input impedance 50 Ω ±5%; reflections < 10% for input risetimes >2 nsec.

OUTPUT CHARACTERISTICS

ECL Outputs:	16, one per section, in a 2 x 17 pin connector; ECL complementary levels (−0.8 V and −1.7 V); risetime 2 nsec typical.
NIM Outputs:	48, three bridged outputs per section, Lemo-type connectors; quiescently at 0 mV, > −700 mV into 3 x 50 Ω loads, max. −1.2 V into 1 x 50 Ω load, during output; risetime 2 nsec typical.

GENERAL

Maximum Frequency:	150 MHz.
Minimum Pulse Width	ECL and NIM inputs/outputs 4 nsec.
Transit Times:	ECL input to NIM output <6 nsec. ECL input to ECL output <10.5 nsec. NIM input to ECL output <6.5 nsec.
Power Requirements:	−6 V quiescently at 700 mA, with all loads connected and all channels activated max. 1.7 A.

OPERATOR'S MANUAL

NIM MODEL 4616

16 CHANNEL ECL / NIM / ECL CONVERTER

Revised
September , 1982

(ECO 2004)

A T T E N T I O N

CRATE POWER SHOULD BE TURNED OFF DURING INSERTION AND REMOVAL OF UNIT TO AVOID POSSIBLE DAMAGE CAUSED BY MOMENTARY MISALIGNMENT OF CONTACTS.

SEE POCKET IN BACK OF MANUAL FOR SCHEMATICS, PARTS LIST ADDITIONAL ADDENDA WITH ANY CHANGES TO MANUAL.

A T T E N T I O N

GENERAL INFORMATION

PURPOSE

This manual is intended to provide instruction regarding the setup and operation of the covered instruments. In addition, it describes the theory of operation and presents other information regarding its functioning and application.

The Service Documentation should be consulted for the schematics, parts lists and other materials that apply to the specific version of the instrument as identified by its ECO number.

UNPACKING AND INSPECTION

It is recommended that the shipment be thoroughly inspected immediately upon delivery. All material in the container should be checked against the enclosed Packing List and shortages reported promptly. If the shipment is damaged in any way, please notify the Customer Service Department or the local field service office. If the damage is due to mishandling during shipment, you may be requested to assist in contacting the carrier in filing a damage claim.

WARRANTY

LeCroy warrants its instrument products to operate within specifications under normal use and service for a period of one year from the date of shipment. Component products, replacement parts, and repairs are warranted for 90 days. This warranty extends only to the original purchaser. Software is thoroughly tested, but is supplied "as is" with no warranty of any kind covering detailed performance. Accessory products not manufactured by LeCroy are covered by the original equipment manufacturers warranty only.

In exercising this warranty, LeCroy will repair or, at its option, replace any product returned to the Customer Service Department or an authorized service facility within the warranty period, provided that the warrantor's examination discloses that the product is defective due to workmanship or materials and has not been caused by misuse, neglect, accident or abnormal conditions or operations.

The purchaser is responsible for the transportation and insurance charges arising from the return of products to the servicing facility. LeCroy will return all in-warranty products with transportation prepaid.

This warranty is in lieu of all other warranties, express or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract, or otherwise.

PRODUCT ASSISTANCE Answers to questions concerning installation, calibration,

and use of LeCroy equipment are available from the Research System Division Customer Services Department, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977-6499 (914) 578-6030, or your local field service office.

MAINTENANCE AGREEMENTS

LeCroy offers a selection of customer support service. For example, Blue Ribbon service provides guaranteed three-day turn around on repairs, a direct access number for product application assistance, yearly calibration and the addition of engineering improvements. Maintenance agreements provide extended warranty that allows the customer to budget maintenance costs after the initial warranty has expired. Other services such as installation, training, on-site repair, and addition of engineering improvements are available through specific Supplemental Support Agreements. Please contact the Customer Service Department or the local field service office for details.

DOCUMENTATION DISCREPANCIES

LeCroy is committed to providing state-of-the-art instrumentation and is continually refining and improving the performance of its products. While physical modifications can be implemented quite rapidly, the corrected documentation frequently requires more time to produce. Consequently, this manual may not agree in every detail with the accompanying product and the schematics in the Service Documentation. There may be small discrepancies in the values of components for the purposes of pulse shape, timing, offset, etc., and, occasionally, minor logic changes. Where any such inconsistencies exist, please be assured that the unit is correct and incorporates the most up-to-date circuitry.

SOFTWARE LICENSING AGREEMENT

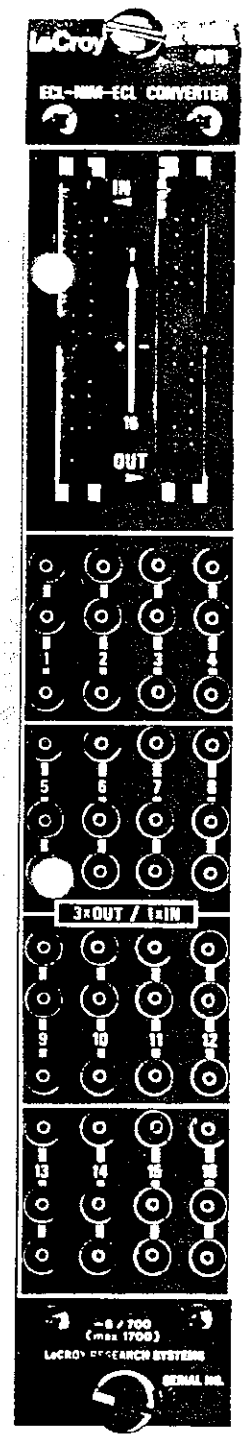
Software products are licensed for a single machine. Under this license you may:

- Copy the software for backup or modification purposes in support of your use of the software on a single machine.

- Modify the software and/or merge it into another program for your use on a single machine.

- Transfer the software and the license to another party if the other party accepts the terms of this agreement and you relinquish all copies, whether in printed or machine readable form, including all modified or merged versions.

NIM Standard
16 Input, ECL/NIM/ECL ECLine Translator



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16-Channel ECL/NIM/ECL Converter

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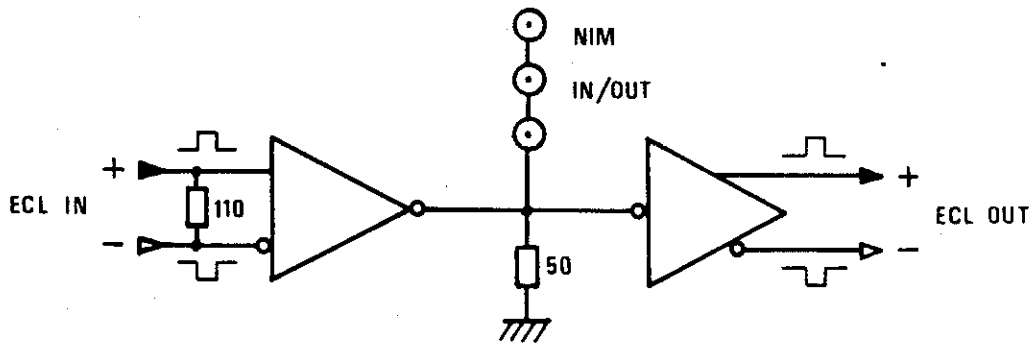

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NIM Model 4616
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Power Requirements:	− 6 V quiescently at 700 mA, with all loads connected and all channels activated max. 1.7 A.

SPECIFICATIONS SUBJECT TO CHANGE

TECHNICAL INFORMATION

(PARTS LIST, SCHEMATICS)

XENTIS V3.2
ZZBPSS
ZZIPMS

LECROY CORPORATION
4616 PARTS LIST
Proprietary information of LeCroy Corporation

PART NUMBER	DESCRIPTION	QUANTITY PER
4616-1	COMPLETED BOARD 4616-1	1
4616-2	COMPLETED BOARD 4616-2	1
4616-3	LOOSE PARTS 4616-3	1

End of report. 3 Details encountered.

XENTIS V3.2
ZZBPSS
ZZIPMS

LECROY CORPORATION
4616-1 PARTS LIST
Proprietary information of LeCroy Corporation

PART NUMBER	DESCRIPTION	QUANTITY PER
102412470	CAP CERA DISC 100V 47 PF	8
103327103	CAP CERA MONO 50V .01 UF	23
142824685	CAP TANT DIP CASE 6.8 UF	12
161030000	RES COMP ZERO OHMS	1
161335102	RES CARBON FILM 1 K	8
161335122	RES CARBON FILM 1.2 K	11
161335220	RES CARBON FILM 22 OHMS	9
161335222	RES CARBON FILM 2.2 K	8
161335240	RES CARBON FILM 24 OHMS	8
161335300	RES CARBON FILM 30 OHMS	8
161335510	RES CARBON FILM 51 OHMS	8
161335511	RES CARBON FILM 510 OHMS	18
181457201	RES VARI CERMET 200 OHMS	1
190042560	RESISTOR NETWORK 56 OHMS	2
204042003	IC LINE RECEIVER MC10115P	2
204042016	IC 2-INPUT OR/NOR F10101P	2
230110005	DIODE SWITCHING 1N4448	18
235010005	DIODE RECTIFIER 1N4005	1
253010835	DIODE HOT CARRIER HP2835	9
270130401	TRANSISTOR NPN A401	8
270170001	TRANSISTOR NPN 2N5770	8
275170002	TRANSISTOR PNP 2N5771	3
276150194	TRANSISTOR PNP 2N5194	1
300020001	BEAD SHIELDING "1/2" SIZE	8
300050001	CHOKE FERRITE SINGLE LEAD	1
400000316	SOCKET IC OPEN FRAME 16	6
402112001	CONN PC MTG NICKEL LEMO	24
403119134	HDR DBL ROW RT ANGLE 34	1
433221004	FUSE PICO II 125V 1 AMP	1
454110034	HDR SOLD TAIL/MALE 34	1
714616013	PC BD PREASS'Y 4616-1	1

End of report. 31 Details encountered.

XENTIS V3.2
ZZBPSS
ZZIPMS

LECROY CORPORATION
4616-2 PARTS LIST
Proprietary information of LeCroy Corporation

PART NUMBER	DESCRIPTION	QUANTITY PER
102412470	CAP CERA DISC 100V 47 PF	8
103327103	CAP CERA MONO 50V .01 UF	23
142824685	CAP TANT DIP CASE 6.8 UF	12
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204042016	IC 2-INPUT OR/NOR F10101P	2
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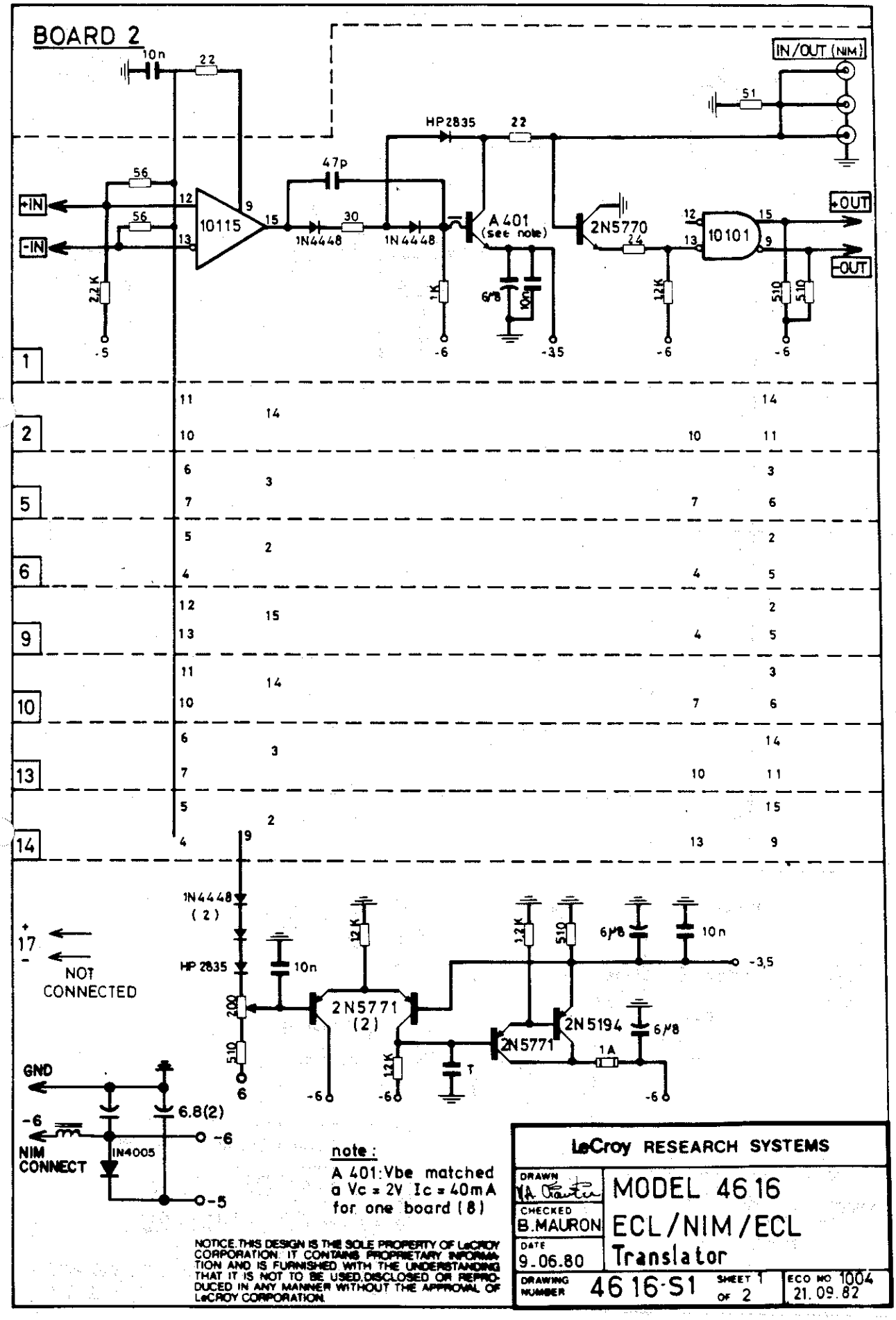
235010005	DIODE RECTIFIER 1N4005	1
253010835	DIODE HOT CARRIER HP2835	9
270130401	TRANSISTOR NPN A401	8
270170001	TRANSISTOR NPN 2N5770	8
275170002	TRANSISTOR PNP 2N5771	3
276150194	TRANSISTOR PNP 2N5194	1
300020001	BEAD SHIELDING "1/2" SIZE	8
300050001	CHOKE FERRITE SINGLE LEAD	1
400000316	SOCKET IC OPEN FRAME 16	6
402112001	CONN PC MTG NICKEL LEMO	24
403119134	HDR DBL ROW RT ANGLE 34	1
433221004	FUSE PICO II 125V 1 AMP	1
454110034	HDR SOLD TAIL/MALE 34	1
714616023	PC BD PREASS'Y 4616-2	1

End of report. 30 Details encountered.

XENTIS V3.2 LECROY CORPORATION
ZZBPSS 4616-3 PARTS LIST
ZZIPMS Proprietary information of LeCroy Corporation

PART NUMBER	DESCRIPTION	QUANTITY PER
403310016	CONN FLAT CABLE 16-POS	4
405112001	CONNECTOR BLOCK (PIN)	1
405212002	GUIDE PIN (MALE)	1
405213001	GUIDE PIN (MALE)	1
405312001	GUIDE PIN (FEMALE)	2
405613001	CONNECTOR HOOD	1
512471005	SPACER (LONG) FOR 4616	2
512471006	SPACER (SHORT) FOR 4616	2
540104101	WRAPAROUND NIM SIZE #1	1
540105011	BRACKET NIM WRAP SIZE #1	2
540109100	SWITCH HOLE PATTERN COVER	1
555611001	CAPTIVE SCREW 6-32	2
555621002	CAPTIVE SCREW RETAINER	2
560440005	SCREW PHILIPS 4-40X5/16	4
560440016	SCREW PHILIPS 4-40X1"	4
567256004	SCREW FLAT PHIL 2-56X1/4	4
567440004	SCREW FLAT PHIL 4-40X1/4	10
585141237	RIVET "POP" ALU 1/8X.237	2
592011016	CABLE FLAT 16-COND	2
724616003	FRONT PNL PREASSY 4616	1
734616001	SIDE NIM LEFT 4616	1
734616004	SIDE NIM RIGHT 4616	1

End of report. 22 Details encountered.

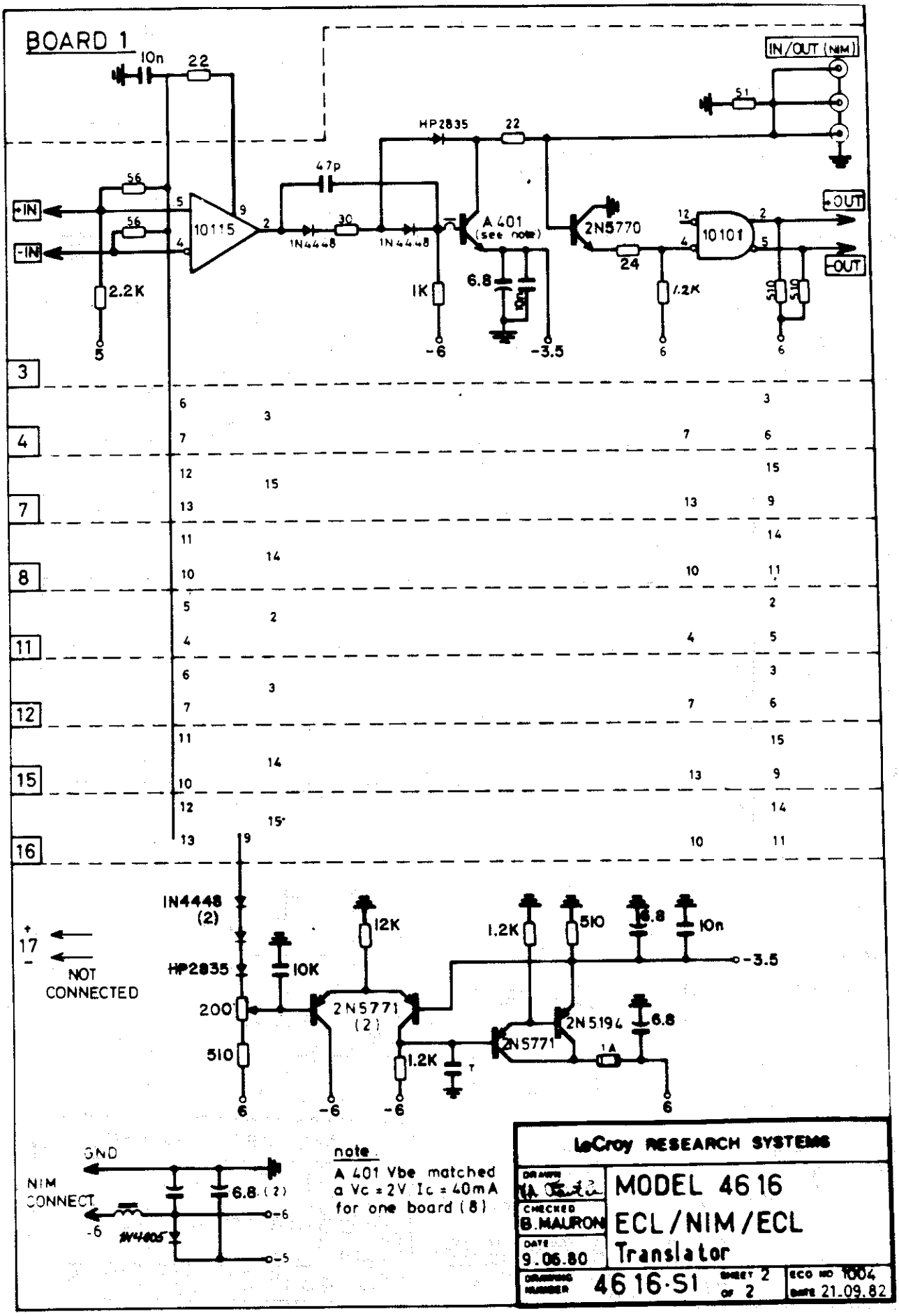


note :

A 401: Vbe matched
a Vc = 2V Ic = 40mA
for one board (8)

LeCroy RESEARCH SYSTEMS

DRAWN	MODEL 4616
CHECKED B.MAURON	ECL/NIM/ECL
DATE 9.06.80	Translator
DRAWING NUMBER 4616-S1	SHEET 1 OF 2
ECO NO 1004 21.09.82	


BOARD 1
10n
22
IN/OUT (NIM)
51
HP2835
22
47p
56
+IN
-IN
56
5
4
9
2
10115
2.2K
5
1N4448
30
1N4448
A 401
(see note)
2N5770
24
12
4
10101
2
5
+OUT
-OUT
1K
-6
6.8
-3.5
4.2K
6
6
3
4
7
12
13
11
10
8
5
2
4
11
6
3
7
12
11
14
10
15
12
13
16
IN4448
(2)
HP2835
200
510
10K
12K
2N5771
(2)
1.2K
510
6.8
10n
-3.5
2N5194
2N5771
6.8
1A
1.2K
6
-6
-6
6
+
17
-
NOT
CONNECTED
GND
NIM
CONNECT
6.8 (2)
-6
-6
1N4005
-5
note.
A 401 Vbe matched
@ Vc = 2V Ic = 40mA
for one board (8)
LeCroy RESEARCH SYSTEMS
DRAWN
CHECKED
B.MAURON
DATE
9.06.80
MODEL 4616
ECL/NIM/ECL
Translator
DRAWING NUMBER
4616-S1
SHEET 2 OF 2
ECO NO 1004
DATE 21.09.82