

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

SCHEDULE 13D

UNDER THE SECURITIES EXCHANGE ACT OF 1934  
(AMENDMENT NO. \_\_\_\_\_)\*

TENCOR INSTRUMENTS

-----  
(Name of Issuer)

COMMON STOCK

-----  
(Title of Class of Securities)

880323100

-----  
(CUSIP Number)

LISA BERRY, VICE PRESIDENT AND GENERAL COUNSEL,

-----  
KLA INSTRUMENTS CORPORATION,  
-----

160 RIO ROBLES

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SAN JOSE, CALIFORNIA 95161  
-----

(Name, Address and Telephone Number of Person Authorized to Receive Notices  
and Communications)

January 14, 1997

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(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition which is the subject of this Schedule 13D, and is filing this schedule because of Rule 13d-1(b)(3) or (4), check the following box [ ].

Check the following box if a fee is being paid with the statement [X]. (A fee is not required only if the reporting person: (1) has a previous statement on file reporting beneficial ownership of more than five percent of the class of securities described in Item 1; and (2) has filed no amendment subsequent thereto reporting beneficial ownership of five percent or less of such class.) (See Rule 13d-7.)

NOTE: Six copies of this statement, including all exhibits, should be filed with the Commission. See Rule 13d-1(a) for other parties to whom copies are to be sent.

\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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1 NAME OF REPORTING PERSON  
S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

KLA INSTRUMENTS CORPORATION

-----  
2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP\* (a) [ ]  
N/A (b) [ ]

-----  
3 SEC USE ONLY  
-----

4 SOURCE OF FUNDS\*

WC

5 CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO  
ITEMS 2(D) OR 2(E) [ ]

N/A

6 CITIZENSHIP OR PLACE OF ORGANIZATION

STATE OF DELAWARE

7 SOLE VOTING POWER

In the event the stock option becomes exercisable and is exercised in full, KLA will have sole voting power with respect to that number of shares equal to 19.9% of the then outstanding shares of Common Stock of Tencor Instruments, which, based upon the 31,073,715 shares of Tencor Common Stock outstanding as of January 10, 1997, currently equals 6,183,669 shares of Common Stock of Tencor.1

NUMBER OF  
SHARES  
BENEFICIALLY  
OWNED BY  
EACH  
REPORTING  
PERSON  
WITH

8 SHARED VOTING POWER  
N/A

9 SOLE DISPOSITIVE POWER

In the event the stock option becomes exercisable and is exercised in full, KLA will have sole dispositive power with respect to that number of shares equal to 19.9% of the then outstanding shares of Common Stock of Tencor Instruments, which, based upon the 31,073,715 shares of Tencor Common Stock outstanding as of January 10, 1997, currently equals 6,183,669 shares of Common Stock of Tencor.1

10 SHARED DISPOSITIVE POWER  
N/A

11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

In the event the stock option becomes exercisable and is exercised in full, KLA will beneficially own that number of shares equal to 19.9% of the then outstanding shares of Common Stock of Tencor Instruments, which, based upon the 31,073,715 shares of Tencor Common Stock outstanding as of January 10, 1997, currently equals 6,183,669 shares of Common Stock of Tencor.1

12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES\*  
[ ]

13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)  
19.9%

14 TYPE OF REPORTING PERSON\*  
CO

\*SEE INSTRUCTIONS BEFORE FILLING OUT!  
INCLUDE BOTH SIDES OF THE COVER PAGE, RESPONSES TO ITEMS 1-7

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ITEM 1. SECURITY AND ISSUER.

This statement on Schedule 13D relates to the Common Stock of Tencor Instruments, a California corporation ("Tencor"). The principal executive offices of Tencor are located at One Technology Drive, Milpitas, California 95035.

ITEM 2. IDENTITY AND BACKGROUND.

The name of the corporation filing this statement is KLA Instruments Corporation, a Delaware corporation ("KLA"). KLA's principal business is design, manufacture, marketing and service of yield management and process monitoring systems for

the semi-conductor industry. The address of the principal executive offices of KLA is 160 Rio Robles, San Jose, California 95161.

No disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e).

ITEM 3. SOURCE AND AMOUNT OF FUNDS OR OTHER CONSIDERATION.

Working Capital

ITEM 4. PURPOSE OF TRANSACTION.

On January 14, 1997, KLA and Tencor entered into an Agreement and Plan of Reorganization (the "Merger Agreement") among KLA, Tencor and Tiger Acquisition Corp., a California corporation and a wholly-owned subsidiary of KLA ("Merger Sub"). Pursuant to the Merger Agreement, and subject to the conditions set forth therein (including approval of the transaction by the stockholders and shareholders, respectively, of KLA and Tencor), Merger Sub will be merged with and into Tencor (the "Merger"). At the effective time of the Merger, the separate existence of Merger Sub will cease and Tencor will continue as the surviving corporation and as a wholly-owned subsidiary of KLA.

As an inducement to KLA to enter into the Merger Agreement, KLA and Tencor entered into a Stock Option Agreement dated January 14, 1997 pursuant to which Tencor granted KLA the right, under certain conditions, to acquire shares of Tencor Common Stock up to a number of shares sufficient to give KLA 19.9% of Tencor's outstanding Common Stock. Tencor's obligation to issue shares pursuant to the exercise of the option is subject to the occurrence of certain events, which may not occur.

The purpose of the transactions under the Stock Option Agreement is to enable KLA and Tencor to consummate the transactions contemplated under the Merger Agreement.

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ITEM 5. INTEREST IN SECURITIES OF ISSUER.

5(a). Beneficial Ownership: In the event the Stock Option becomes exercisable and is exercised in full, KLA will beneficially own that number of shares equal to 19.9% of the then outstanding shares of Common Stock of Tencor Instruments, which, based upon the 31,073,715 shares of Tencor Common Stock outstanding as of January 10, 1997, currently equals 6,183,669 shares of Common Stock of Tencor.

5(b). Sole Voting Power: In the event the stock option becomes exercisable and is exercised in full, KLA will have the sole power to vote that number of shares equal to 19.9% of the then outstanding shares of Common Stock of Tencor Instruments, which, based upon the 31,073,715 shares of Tencor Common Stock outstanding as of January 10, 1997, currently equals 6,183,669 shares of Common Stock of Tencor.

5(c). Transactions: On January 14, 1997, KLA and Tencor entered into the Merger Agreement pursuant to which Merger Sub will be merged with and into Tencor. At the effective time of the Merger, the separate existence of Merger Sub will cease and Tencor will continue as the surviving corporation and as a wholly-owned subsidiary of KLA. Consummation of the Merger Agreement is subject to the satisfaction or waiver of a number of conditions to closing.

5(d). Not applicable

5(e). Not applicable

ITEM 6. CONTRACTS, ARRANGEMENTS, UNDERSTANDINGS OR RELATIONSHIPS WITH

Arrangements: On January 14, 1997, KLA and Tencor entered into the Merger Agreement pursuant to which Merger Sub will be merged with and into Tencor. At the effective time of the Merger, the separate existence of Merger Sub will cease and Tencor will continue as the surviving corporation and as a wholly-owned subsidiary of KLA. Consummation of the Merger Agreement is subject to the satisfaction or waiver of a number of conditions to closing.

As an inducement to KLA to enter into the Merger Agreement, KLA and Tencor entered into a Stock Option Agreement dated January 14, 1997 pursuant to which Tencor granted KLA the right, under certain conditions, to acquire shares of Tencor Common Stock up to a number of shares sufficient to give KLA 19.9% of Tencor's outstanding Common Stock. Tencor's obligation to issue shares pursuant to the exercise of the option is subject to the satisfaction or waiver of certain conditions.

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As an inducement to Tencor to enter into the Merger Agreement, KLA and Tencor entered into a Stock Option Agreement dated January 14, 1997 pursuant to which KLA granted Tencor the right, under certain conditions, to acquire shares of KLA Common Stock up to a number of shares sufficient to give Tencor 19.9% of KLA's outstanding Common Stock. KLA's obligation to issue shares pursuant to the exercise of the option is subject to the satisfaction or waiver of certain conditions.

ITEM 7. MATERIALS TO BE FILED AS EXHIBITS.

Exhibit 1\* Agreement and Plan of Reorganization dated January 14, 1997 by and among KLA, a Delaware corporation, Tiger Acquisition Corp., a California corporation and a wholly-owned subsidiary of KLA, and Tencor Instruments, a California corporation.

Exhibit 2\* Stock Option Agreement dated January 14, 1997 by and between Tencor, a California corporation and KLA, a Delaware corporation.

Exhibit 3\* Stock Option Agreement dated January 14, 1997 by and between KLA, a Delaware corporation and Tencor, a California corporation.

\* Previously filed as Exhibit 2.1, Exhibit 99.2 and Exhibit 99.3, respectively, to the Current Report on Form 8-K of KLA Instruments Corporation filed on January 22, 1997.

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(1) The stock option is not exercisable except upon the occurrence of certain events, which may or may not occur. Due to the contingent nature of the stock option, as of the date of this Schedule 13D, KLA disclaims beneficial ownership of the shares subject to the stock option. The number of shares issuable upon exercise of the option shall be adjusted in the event that any additional shares of Tencor Common Stock are issued. In the event the Merger is consummated, KLA will acquire all of the outstanding Common Stock of Tencor and Tencor will become a wholly-owned subsidiary of KLA.

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SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: January 24, 1997

KLA INSTRUMENTS CORPORATION

By: /s/ Robert J. Boehlke

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Robert J. Boehlke  
Vice President, Finance and  
Chief Financial Officer