For further information on any Teletype Corporation product lines, or for the location of your nearest sales or product service representative, please contact:

Sales headquarters—
3555 W. Touhy Ave.
Skokie, Illinois 60076

Product Service headquarters—
9300 Derby Lane
Westchester, Illinois 60153

or call TERMINAL CENTRAL—(312) 982-2500

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TELETYPE CORPORATION the computerization people

and TELEX: 25-4051 (both have 24 hour automatic answering service)

TELETYPE MODEL 38 DATA TERMINALS
APRIL, 1973 EDITION
CONTENTS

ECONOMY, RELIABILITY AND PERFORMANCE

Teletype Corporation's model 38 line is a continuation of the economical design concepts, proven reliability, and exceptional performance that have made our model 33 the most popular terminal on-line today.

Now, our 38 line lets you combine this economy and reliability with a number of the industry's most sought after performance features. Features such as wide page copy as used for computer print-outs, upper-lower case and two-color printing for maximum clarity of data presentation, and a variety of interface options for plug to plug compatibility with nearly any switched or private line system. Our built-in modem interface, for example, operates over voice-grade channels and provides options for manual originate and manual or automatic answer operation.

This catalog gives you the general and technical information you want to know about the 38 line. There are also easy-to-follow selection guides to help you choose the 38 terminals that meet your specific system requirements.

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This catalog gives you the general and technical information you want to know about the 38 line. There are also easy-to-follow selection guides to help you choose the 38 terminals that meet your specific system requirements.
The model 38 is a standard-duty line of low-cost terminals for entering, transmitting, receiving, and recording data in communication systems. The terminals are available in several configurations with various combinations of keyboard entry, printed page copy, and paper tape facilities.

Pin-fed, wide (14-7/8") page copy and upper-lower case and two-color printing are standard features on all 38 terminals.

The terminals operate at ten characters per second (110 baud) and feature a four-row keyboard capable of generating all of the 128 characters in the American National Standard Code for Information Interchange (ASCII).

Several different interfaces are available. One terminal arrangement provides facilities for either dc current (20 or 60 milliamperes) or voltage (EIA RS-232-C). Another provides a built-in modem with facilities for manual-originate and either manual- or automatic-answer. Another permits the customer to provide his own logic and interface circuitry.

A number of features in the 38 line may be enabled or disabled by the user to meet varying operational requirements. Instructions are furnished with the terminal.

A wide variety of accessories are available including a modification kit that allows the terminal to use either wide, fan-folded, pin-fed paper or 8-1/2-inch wide, friction-fed paper rolls.

Three Basic Configurations

38 ASR
Automatic Send-Receive Terminal

ASR terminals offer the widest range of operational features in the 38 line. They provide keyboard data entry, printed page copy, and paper tape facilities. With the ASR terminal, you can transmit data manually by keyboard or automatically by punched tape, and simultaneously print local page copy for visual reference with or without punched tape. Or you can punch tape off-line from the keyboard or tape reader while printing local page copy. The terminal receives data as printed page copy and (if selected) punched tape. Tape transmitting and receiving can be controlled manually or automatically.

38 KSR
Keyboard Send-Receive Terminal

KSR terminals provide keyboard data entry and printed page copy facilities. You can transmit data manually on the KSR keyboard while printing local page copy. The terminal receives data as printed page copy.
38 DATA TERMINALS

38 RO
Receive-Only Terminal

RO terminals receive data as printed page copy. They have a limited transmitting capability with the optional answer-back feature which enables them to transmit station identification sequences.

CHOICE OF HALF OR FULL DUPLEX

All of the 38 terminal configurations have the option of operating in the half or full duplex transmission mode. In half duplex, the terminal can either send or receive, but it cannot do both at the same time. In full duplex, it can transmit (eg, by keyboard or paper tape) and receive (eg, on page copy or punched tape) simultaneously. Full duplex operation lets you nearly double your traffic volume with only a moderate increase in line charges.

EXPANDABLE CAPABILITIES

A number of accessories, features, and configurations, other than those covered in this catalog, are available. Accessories include a wide variety of paper and tape handling devices to simplify media handling and parity error detectors to improve data accuracy.

If you have a large volume of data to transmit on-line, you can add Teletype® 2410 magnetic tape terminal and increase on-line speed to 1050, 1200, 2000, or 2400 baud.

Model 38's with Teletype 9100 station controllers can be used in private line selective calling systems which save you line charges by having a number of stations share a single communication channel. These controllers provide such functions as motor control, parity error detection and indication, and polling and address recognition and response.

OTHER LOW COST TERMINALS

Teletype model 32 (5 level) and 33 (8 level) data terminal lines offer performance, flexibility, and economy comparable to the 38 line, but print on 8-1/2 x 11-inch paper.

Model 38 terminals are also available with APL features or with a keyboard having a numeric cluster. Or you can have versions of the 38 that use paper 8-1/2-inches wide rather than 14-7/8-inches.

Contact Teletype Corporation for additional information on the above expandable capabilities and low-cost terminals (see back cover).

WIDE PAGE COPY WITH UP-LOW AND TWO-COLOR PRINTING

IMPACT PRINTING AND PIN FEED

38 data terminals use an impact printer with a cylindrical typewheel to produce the same wide copy used in the computer room. Thus you can transmit data generated by your computer to any number of remote locations without time-wasting reformatting problems. And it is ideal for applications where all data for an entry must fit on a single line of printing.

The pin-feed platen is 15 inches wide and accepts 14-7/8-inch fan-folded computer paper stock. Also, it is capable of handling paper 375 mm wide conforming to the ISO Standard. Holes along the edge of the paper engage pins on the printer platen to feed the paper and maintain positive alignment.

38 DATA TERMINALS

MODEL 38 KSR DATA TERMINALS — 50 Hz

<table>
<thead>
<tr>
<th>Type of Paper Feed</th>
<th>Type of Keyboard Arrangements</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-7/8-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45A 3840/45N</td>
</tr>
<tr>
<td>8-1/2-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45B 3840/45P</td>
</tr>
<tr>
<td>14-7/8-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45C 3840/45G</td>
</tr>
<tr>
<td>8-1/2-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45D 3840/45R</td>
</tr>
<tr>
<td>14-7/8-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45E 3840/45S</td>
</tr>
<tr>
<td>8-1/2-inches</td>
<td>1050, 1200, 2000, 2400 baud</td>
<td>20/60 Mo. D.C. Neu. Sig. Line or E.I.A. Interface (E-322-C)</td>
<td>3840/45F 3840/45T</td>
</tr>
</tbody>
</table>

*Customer Activated Option to Disable Keyboard Even Parity and have 8th Level of Keyboard Generated Characters always Mark or always Space.

**Customer Activated Option.
**Customer Activated Option for Automatic Reader Control on DC 1 and DC3.**

**Customer Activated Option for Automatic Perforator Control on DC2 and DC4.**

**Customer Activated Option.**

*Customer Activated Option to Disable Keyboard Even Parity and have 8th Level of Keyboard Generated Characters*.

---

**DATA TERMINALS**

**MODEL 38 ASR DATA TERMINALS — 50 Hz**

<table>
<thead>
<tr>
<th>STANDARD FEATURES</th>
<th>Type of Paper Feed</th>
<th>Typewheel-Keytop Arrangements</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100 ASCII and 72 ASCI/AA/keyboard</td>
<td>A - Type 72/1, A - Type 72/2, A - Type 72/3</td>
<td>20/50 Ma., D.C. Neu. Sig. Line E.I.A. Interface (RS-232-C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B - Type 72/1, B - Type 72/2, B - Type 72/3</td>
<td>B - Type 72/1, B - Type 72/2, B - Type 72/3</td>
<td>Without Electrical Service Unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20/50 Ma., D.C. Neu. Sig. Line E.I.A. Interface (RS-232-C)</td>
<td>3850/6WA/6WP</td>
<td>3850/6WA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3850/6WE/6WQ</td>
<td>3850/6WA/6WP</td>
<td></td>
</tr>
</tbody>
</table>

---

**MULTIPLE COPIES**

The terminal's impact printer will produce an original and a minimum of two carbon copies.

**UPPER/LOWER CASE PRINTING**

(For Text Editing)

A standard feature of 38 data terminals is printing of the upper and lower case alphabet. It is particularly useful for a number of applications such as computerized typesetting and text editing.

**TWO-COLOR PRINTING**

(Two-color printing (typically red/black) is another standard feature of all 38 data terminals. It can be used to distinguish priority information and to separate computer input and output data.

The remote or local color shift is made in response to this two-character sequence:

ESC 3 - RED Printing
ESC 4 - BLACK Printing

**CHOICE OF THREE CHARACTER SETS**

Typewheels contain a maximum of 94 printing characters plus the non-printing graphics space and delete. The three combinations offered in the selection guide are shown on pages 6 and 7. The typewriter character set (the graphics printed on the page) is shown immediately above its associated typewriter arrangement.

Note that the selection includes arrangements with a slash zero or a slash alpha "0", and the latest ASCII arrangement (typewriter AD and Keytop AAW) with a distinct character difference between the zero 0 and alpha D.

**VERSATILE FORMAT CAPABILITY**

A customer-installed modification kit is available that lets the terminal use either pin-fed, fan-folded 14-7/8-inch widepaper or 8-1/2 inch wide friction-fed paper rolls. This provides a simple way of changing the terminal's format capability to meet varying requirements.

---

**CONVENIENT FORM FEED**

For the convenience of the operator, forms can be easily and accurately advanced into printing position by simultaneously depressing the CONTRL (control) and FF (form feed) keys. A standard form (11 inches long) or a half-size sheet (5-1/2 inches long) are accommodated. Customer-installed modification kits are available for a variety of other form sizes.

**END OF LINE INDICATIONS**

The approach of the end of line is signaled by the ringing of a bell. The indication occurs approximately 10 characters from the right-hand margin.

The bell also responds to the on-line control code BEL (CONTRL, O).

**LOCAL CR AND LF**

The local CR and LF keys are provided so your operator can return the print mechanism to the left margin and feed paper thru the terminal without using the regular keyboard as this would cause electrical signals to be transmitted and could affect a remote terminal's page copy alignment.

These controls are located immediately above the keyboard on ASR and KSRs and have the same relative location on RO terminals.

**SELECTABLE AUTOMATIC CR AND LF**

When this customer-selectable feature is activated, completion of the 132nd character causes the automatic return of the printing mechanism to the left-hand margin and brings a new line into printing position. This action prevents "over-typing" at the end of a line. Terminals leave the factory with this feature disabled. You can easily enable it by removing two clips from the typing unit.

Note: Positioning of the 132nd character may be displaced horizontally and vertically.

**PAPER ALARM**

The paper supply is constantly monitored by a low paper sensor. When the end of the paper supply is sensed, an ALARM indicator lights to alert the operator.

**CHARACTER AND LINE SPACING**

Terminals are factory-adjusted for a 132-character line, with 10 characters to-the-inch horizontal spacing. Single or double vertical line spacing (6 or 3 lines per inch) is selectable by the operator. To make this selection, the operator simply moves a lever on the printer.
CONTROL OF NON-PRINTING FUNCTIONS

A function box initiates a number of non-printing actions such as carriage return, line feed, space, etc. in response to specific control codes. It can be arranged to perform certain additional functions such as contact openings or closures to control peripheral equipment.

ASR terminals have function box contacts for the following control codes: DC1, DC3, ENQ and EOT. See page 20 for an explanation of their function.

FULL ASCII KEYBOARD

Keyboards on 38 terminals can generate the full complement of 128 characters in the ASCII code, including the upper and lower case alphabet and non-printing control codes. The characters are generated in even parity but can be optioned for odd parity. The graphics printed in the shift mode are obtained by holding the SHIFT key depressed while operating the associated character key, as with a standard typewriter. Alpha characters are printed in upper case.

To continuously print upper case characters, depress the SHIFT LOCK key.

Control Characters (Non-Printing)

Neither printing nor space occurring when control characters are selected; instead, an electrical signal is generated which results in:

1. Communication Controls (eg, ACK, ENQ)
2. Format Effectors (eg, LF, FF)
3. Device Controls (eg, DC1, DC2)
4. Information Separators (eg, FS, GS)

The 38 keyboard generates all of the ASCII control characters. These are easily identified by the standard ASCII designation in black on the upper-half of the keytop. To generate a control character, you hold the CONTRL key down and press the keytop character.

Lower keytop character
(Unshift Row on layout)

Characters shown on the lower-half of the keytops are printed when the keyboard is in the unshifted mode — just depress the key. Alpha characters are printed in lower case.

Upper keytop character
(Shift Rows on layout)

The graphics printed in the shift mode are obtained by holding the SHIFT key depressed while operating the associated character key, as with a standard typewriter. Alpha characters are printed in upper case. To continuously print upper case characters, depress the SHIFT LOCK key.

PRINTING AND NON-PRINTING CHARACTERS

The 38 keyboard generates both printing and non-printing characters, ie., in some cases a code is transmitted but printing does not occur. It's easy to tell one from the other. Refer to the typewheel layout above the keyboard below and on page 7. Only the characters shown will print.

MODEL 38 RO DATA TERMINALS — 60 Hz

<table>
<thead>
<tr>
<th>Standard Features</th>
<th>Type of Paper Feed</th>
<th>Answer Back Feature</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCII Code</td>
<td>10 char/sec (100 WPM)</td>
<td></td>
<td></td>
<td>3830/2AF 3830/2AG</td>
</tr>
<tr>
<td>11 Unit Code</td>
<td></td>
<td></td>
<td></td>
<td>3830/2AD 3830/2AK</td>
</tr>
<tr>
<td>Upper and Lower Case Printing</td>
<td></td>
<td></td>
<td></td>
<td>3830/2AE 3830/2AL</td>
</tr>
<tr>
<td>Red/black Printing</td>
<td></td>
<td></td>
<td></td>
<td>3830/2AF 3830/2AM</td>
</tr>
<tr>
<td>20 Char. Anc. Feed</td>
<td></td>
<td></td>
<td></td>
<td>3830/4AC 3830/4AJ</td>
</tr>
<tr>
<td>Paper Alarm</td>
<td></td>
<td></td>
<td></td>
<td>3830/4AD 3830/4AK</td>
</tr>
</tbody>
</table>

CONTROLLED by Two Character Sequences.

*Customer Activated Option.

NOTE: 60 Hz pedestal-mount terminals are UL listed (E49631).
# Model 38 KSR Data Terminals — 60 Hz

<table>
<thead>
<tr>
<th>Standard Features</th>
<th>Type of Paper Feed</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington ASCII Code</td>
<td>10 char/sec</td>
<td>20/60, DC, Nu, Sig. Line</td>
<td>3840/4EA</td>
</tr>
<tr>
<td>(100 WPM) 11 Unit Code</td>
<td>Manual Orig.</td>
<td>or EIA Interface</td>
<td>3840/4EG</td>
</tr>
<tr>
<td>Upper and Lower Case Printing</td>
<td>Auto Off/On</td>
<td>(83-232-C)</td>
<td>3840/4EH</td>
</tr>
<tr>
<td>Red/black Printing</td>
<td>8th Level of Keyboard Generated Characters</td>
<td>3840/4EJ</td>
<td></td>
</tr>
<tr>
<td>Even Parity Keyboard*</td>
<td>Auto CR/LF on Answer 0 0</td>
<td>3840/4EK</td>
<td></td>
</tr>
<tr>
<td>Answer Back</td>
<td>Controlled by Two Character Sequence.</td>
<td>3840/4EL</td>
<td></td>
</tr>
<tr>
<td>*Customer Activated Option to Disable Keyboard Even Parity</td>
<td>Paper Alarm</td>
<td>3840/4FM</td>
<td></td>
</tr>
<tr>
<td>and have 8th Level of Keyboard Generated Characters</td>
<td>Always Mark or Always Space.</td>
<td>**Customer Activated Option.</td>
<td></td>
</tr>
</tbody>
</table>

## ASCII Code

### Typewheel-Keypoint

**Position**

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>A B C D E F G H I J K L M N O P Q R S T U V W X Y Z</td>
<td></td>
</tr>
</tbody>
</table>

### Numeric

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td># &amp; * /</td>
<td></td>
</tr>
</tbody>
</table>

### Alpha

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>?</td>
<td></td>
</tr>
</tbody>
</table>

### Control

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>A K N</td>
<td></td>
</tr>
</tbody>
</table>

### Shift

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;</td>
<td></td>
</tr>
</tbody>
</table>

### Unshift

<table>
<thead>
<tr>
<th>Shift</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td></td>
</tr>
</tbody>
</table>

---

**NOTE:** 60 Hz pedestal-mount terminals are UL listed (E49631).
MORE ECONOMY WITH TAPE

INCREASE SYSTEM SPEED AND ACCURACY

A paper tape punch and reader are integral components of 38 ASR terminals. They offer a number of time and labor-saving benefits as well as adding greater flexibility and accuracy to data communication systems. You can prepare error-free data on tape, for example, and send it at maximum terminal speed, and you can send and receive automatically at hours when line charges are lower.

Both units are especially easy to operate and are located beside the keyboard for convenient access by the operator.

ERROR-PREVENTING INTERLOCK

A keyboard interlock prevents errors commonly caused by depressing two keys simultaneously. When one key reaches a certain point in the downstroke, all of the other keys are "locked out" until the depressed key returns to the unshift mode. This feature makes 38 terminals compatible with existing computer programs written in monocase for 33 and 35 terminals. Option is activated by a screw strap on the keyboard circuit card.

SELECTABLE ALL CAPS OUTPUT

The 38 keyboard can be optionally programmed to generate upper case alpha characters only; the lower case characters normally generated in the unshift mode are then converted to upper case. This feature makes 38 terminals compatible with existing computer programs written in monocase for 33 and 35 terminals. Option is activated by a screw strap on the keyboard circuit card.

REPEATABLE CHARACTERS

This feature makes operations such as underscoring and continuous spacing easier and faster by simply depressing the key below its normal stop. It is possible to individually activate (or deactivate) the repeat feature of any key by simply removing the clip associated with it. The following keys are made repeatable at the factory: Line Feed, Space, Null, Delete, Colon (:), Shift and Unshift Period (.), Shift and Unshift Underscore (_), Shift and Unshift (X).

END OF LINE FORMAT

At the end of each line of copy you should insert the three character sequence RETURN, LINE FEED, DELETE. Following this format you are assured that the printing mechanism will have sufficient time to completely return to the left hand margin before the first character of the next line is printed.

SIMPLE ORDERING PROCEDURES

The terminals designated by catalog number on the following pages offer a wide range of operational flexibility. If you have requirements that these configurations do not satisfy, contact Teletype Corporation (see back cover).

The ordering information is divided into two parts according to power frequency (60 or 50 Hz). Each part contains three charts, one for each terminal configuration (ASR, KSR, RO). The charts show various arrangements of standard and optional features and provide a catalog number for each arrangement.

60 Hz

38 ASR ................................ Page 21
38 KSR ................................ Page 22
38 RO ................................ Page 23

50 Hz

38 ASR ................................ Page 24
38 KSR ................................ Page 25
38 RO ................................ Page 26

MODEL 38 ASR DATA TERMINALS — 60 Hz

STANDARD FEATURES

Type of Arrangements

<table>
<thead>
<tr>
<th>Type of Arrangements</th>
<th>10/68 ASCII</th>
<th>10/68 ASCII</th>
<th>10/68 ASCII</th>
<th>ASCII Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typesheet/Keypad Arrangements</td>
<td>10/68 ASCII</td>
<td>A1, A2, A3</td>
<td>A1, A2, A3</td>
<td>ASCII Code</td>
</tr>
<tr>
<td>Furniture Arrangements</td>
<td>10/68 ASCII</td>
<td>A1, A2, A3</td>
<td>A1, A2, A3</td>
<td>ASCII Code</td>
</tr>
<tr>
<td>Catalog Numbers</td>
<td>3850/6/AC</td>
<td>3850/6/AC</td>
<td>3850/6/AC</td>
<td>ASCII Code</td>
</tr>
</tbody>
</table>

WIPED PLATE TEN

<table>
<thead>
<tr>
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<th>WIPED PLATE TEN</th>
<th>WIPED PLATE TEN</th>
<th>WIPED PLATE TEN</th>
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<tr>
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<td>WIPED PLATE TEN</td>
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<td>WIPED PLATE TEN</td>
<td>WIPED PLATE TEN</td>
</tr>
</tbody>
</table>

MANUAL/AUTOMATIC PUNCH

A customer-activated option provides a choice of either manual or automatic punch operation. ASR terminals are shipped with the punch in the manual mode of operation. It can be placed in the automatic mode by simply removing two clips.

The punch is operated manually by a simple control lever. In automatic operation it is controlled by specific on-line codes, but it also can be manually controlled.
**ELECTRICAL REQUIREMENTS**

- **Input Voltages:**
  - Nominal: 115 VAC ±10% 60 Hz ±3/4% single phase
  - 115 VAC ±10% 50 Hz ±3/4% single phase

- **Nominal Power Requirements:**
  - 60 Hz Motor: 50 Hz Motor
  - Running current: 1.9 amperes.
  - 128 watts
  - Starting Surge: 15 amperes maximum
  - Maximum Running Current: 5 amperes

**MAINTENANCE**

- **Initial**
  - After 100 to 200 hours operation
  - Every 750 hours or 6 mos., whichever occurs first.

- **Lubrication**
  - Every 750 hours or 6 mos., whichever occurs first.

**ENVIRONMENTAL REQUIREMENTS**

- **Operating:** 40°F to 110°F ambient measured outside of terminal cover.
- **Storage:** -40°F to 150°F.
- **Relative Humidity:** 90% maximum at 100°F maximum.

**COLOR**

- Charcoal grey cover with ivory colored keyboard
- Pedestal is charcoal grey with satin chrome feet

**WEIGHTS AND DIMENSIONS**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Height (in)</th>
<th>Width (in)</th>
<th>Depth (in)</th>
<th>Approx. Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASR</td>
<td>36</td>
<td>25</td>
<td>21</td>
<td>96</td>
</tr>
<tr>
<td>KSR</td>
<td>36</td>
<td>25</td>
<td>21</td>
<td>90</td>
</tr>
<tr>
<td>RO</td>
<td>36</td>
<td>25</td>
<td>18-1/2</td>
<td>85</td>
</tr>
</tbody>
</table>

**FUNCTION BOX CONTACTS**

- **Contacts**
  - DC1, DC3, ENQ, EOT
- **Purpose**
  - DC Interface—Provides contact closure at interface for customer application
  - EIA Interface—Controls Data Terminal Ready lead and turns set off.
  - Modern Interface—Provides for call disconnect.

**Manual Operation**

- **ON**—Turns punch on. Permits characters received by printer (local or on-line) to be punched in tape.
- **OFF**—Turns punch off.
- **B. SP.**—Primarily used for tape correction.

**Automatic Operation**

- In the automatic mode, the punch will respond to ASCII control codes as follows:
  - **DC2**—Turns the punch on.
  - **DC4**—Turns the punch off.

**Manual/Automatic Reader**

- To meet varying requirements, the reader, like the punch, can be operated either manually or automatically. ASR terminals are shipped with the reader wired for manual operation. The automatic mode can be easily selected by means of a simple wiring change.

**Tape Storage and Chad Collection**

- A tape container (under the terminal cover) can store a standard 8-inch diameter roll of tape.

**Manual Operation**

- **START**—Momentarily moving the control lever to this position starts reader.
- **STEP**—One character is read each time the control lever is moved from ON to STEP.
- **ON**—Control lever is spring-loaded to return to this position from START, STEP or STOP. (Control lever must be in ON position for automatic operation.)
- **STOP**—Momentarily moving control lever to this position stops reader.
- **FREE**—Tape can be positioned in the reader head when the control lever is at FREE. Lever must be manually returned to ON.
Automatic Operation
When the automatic mode has been activated and the control lever is in the ON position, the reader will respond to the receipt of ASCII control codes as follows:

- **DC1** — Turns reader on.
- **DC3** — Turns reader off.
- **ENQ** — Stops the reader and trips the remote answer-back. To automatically start reader after ENQ, the last answer-back character must be DC1.
- **EOT** — Turns reader off.

**TIGHT TAPE AND END OF TAPE FEATURES**

These features guard against tearing the tape and needless reader operation. The reader will automatically stop if the tape becomes tight or tangled or the end of tape is sensed.

**DC CURRENT, EIA, MODEM INTERFACE**

**COMPATIBILITY WITH MOST SYSTEMS**

Several different interfaces are available with 38 terminals to make them compatible with a wide range of system requirements. These are integrated into the electrical service unit (ESU) (see page 14) which houses the terminal's electrical components and logic and provides a convenient area for electrical interconnection.

There are two series of 60-Hertz 38 terminals; one series provides either dc current or EIA voltage interface as a customer-activated option. The other series provides a modem interface with manual-origin/answer or either manual- or automatic-answer, again as a customer option. There are also two series of 50-Hertz terminals: One provides the dc current-EIA voltage configuration described above. The other has no electrical service unit so that the customer can provide his own logic and interface circuitry.

**DC CURRENT OR EIA VOLTAGE INTERFACE**

The dc current interface provides a 20 or 60 milliamperes dc neutral signal. It is often used on local loops and for mini-computer consoles. Terminals are wired for 20 ma at the factory; 60 ma is a customer-activated option. Solid state circuitry permits operation on high or low voltage.

The voltage interface lets you connect to any device specifying the EIA standard RS-232-C, including business machines, common carrier data sets, and customer owned modems. If you choose to use this interface, you should order the separate cable described on page 17 to terminate the interface leads in a standard EIA connector.

**MODEM INTERFACE**

**Choice of Manual or Automatic Answer**

Model 38 built-in modems provides for operation on voice-grade channels in switched network and private line systems. It offers exceptional operational flexibility for computer access and conversational applications. This FSK (frequency shift keying) modem can provide manual originate/answer or manual originate/automatic answer when connected to the appropriate Bell System Data Access Arrangement (DAA). The modem is code insensitive, transmits asynchronously in serial form, and is compatible with Bell System 101, 103, and 113 data sets or their equivalents.

With manual originate/answer, the call is established manually by a telephone handset, and the operators exchange voice communication before going to data mode. They may go back to voice communication at any time during the transmission. The call is terminated manually.

With manual originate/automatic answer, the terminal can receive a call at any time whether an operator is present or not. It will automatically answer, go to data mode, send and/or receive data, and then go "on hook" to await the next call. This gives you the opportunity to use the terminal at night when line charges are lower. As with manual originate/answer, voice communication may be established at any time during the call if an operator is present at the called terminal.

**Total Terminal Arrangement from a Single Source**

Terminals with the built-in modem are performance-tested as a package by Teletype Corporation. This means you can have a com-

---

**Modem Specifications**

- **Mode** — Half Duplex (HDX)
- **Transmission** — Serial by bit
- **Originate**
- **Receive**
- **Transmit**
- **Space**
- **Frequencies (Hz):**
  - **Originate**
  - **Receive**
  - **Transmit**
- **Timing** — Asynchronous
- **Signal Level** — 0 to -12 dBm transmit (adjustable to match transmission network)
- **Echo Suppressor**
- **Carrier Disable**
- **Compartment with**
- **Carrier Defect Indication** — The ORIG or ANS button will light when depressed if received carrier is present.

**Paper Tape Specifications**

- **Type of paper** — oiled stock, rolled
- **Width**
- **Thickness**
- **Max. diameter of roll**
- **Length per roll**
- **Core diameter of roll**

**SPROCKET (PIN) FEED FORMS**

**RIBBON**

Ink impregnated Nylon, two-color (black/red)
Modem Options

The following modem options are available. The factory wired options for the specified data access arrangements are indicated by an asterisk (*).

1. **PAPER ALARM**
   - Only ALARM button lights.
   - Same condition as above, except subsequent data connections are prevented until alarm is cleared.

2. **ANSWER-BACK TRIP**
   - Occurs automatically at called terminal on call connection. (Terminal must have answer-back feature and modem.)
     - *Enabled* (X)
     - *Disabled* (X)

3. **ECHO MODE**
   - Output of distributor and break key in ECHO mode.
     - *Blinded* (X)
     - *Unblinded* (X)

See page 27 for modification kit providing dc current interface with modem.

### Data Access Arrangements (DAA)

The data access arrangements required are:

- **Manual Originate/MANUAL ANSWER** - Bell System 1000A
- **Automatic Answer** - Bell System 1001B

Refer to pages 18 and 19 for modem and DAA specifications.

The terminal provides a 7 conductor cable for interfacing to the data access arrangement. The following leads from the cable connect to the respective DAA's:

<table>
<thead>
<tr>
<th>Interface Cable Lead</th>
<th>Manual Originate/Manual Answer (DAA 1000A CDT or Equivalent)</th>
<th>Manual Originate/Automatic Answer (DAA 1001B CBT or Equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>DR (Data Ring)</td>
<td>DR (Data Ring)</td>
</tr>
<tr>
<td>Orange</td>
<td>DT (Data Tip)</td>
<td>DT (Data Tip)</td>
</tr>
<tr>
<td>Yellow</td>
<td>RI (Ring Indicator)</td>
<td>RI (Ring Indicator)</td>
</tr>
<tr>
<td>Black</td>
<td>DA (Data Transmission)</td>
<td>DA (Data Transmission)</td>
</tr>
<tr>
<td>Green</td>
<td>OH (Off Hook)</td>
<td>OH (Off Hook)</td>
</tr>
<tr>
<td>White</td>
<td>+V (Positive DC Power)</td>
<td>+V (Positive DC Power)</td>
</tr>
<tr>
<td>Blue</td>
<td>-V (Power Return)</td>
<td>-V (Power Return)</td>
</tr>
</tbody>
</table>

The data access arrangement required for connection of a data terminal to the telephone network and the 502-type telephone set must be ordered separately from your local telephone company.

For information on ordering the proper DAA, refer to Teletype model 33 and 38 Technical Reference, Part 2, Article 2, "Data Coupler Arrangements Used with Teletype® Cataloged Model 33 and 38 Terminals with Built-In Modem." Or you can refer to the following two Bell System Technical References for ordering information and the methods of connecting your terminals to the DAA's: "Data Access Arrangement CDT for Manual Originating and Answering Terminals," PUB 41801, May, 1971 and "Data Couplers CBS and CBT for Automatic Terminals," Aug., 1970 and the Addendum 1, March, 1971. There are a number of modem options. Refer to page 18 for a complete listing.

**FULL CONTROL CAPABILITIES**

Pushbuttons located on the right side of the keyboard give you full and easy control of the 38's versatile functions. Terminals with dc current and EIA voltage interfaces have one row of buttons. For those with modem, the ASR and KSR have two rows, and the RO has one row without BREAK and HERE IS. The controls' functions are described on pages 12 and 13.
CONTROL FUNCTIONS
DC — EIA INTERFACES

**PUSH BUTTON**

<table>
<thead>
<tr>
<th>DC INTERFACE</th>
<th>EIA INTERFACE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OFF ALARM</strong> (Red Cap)</td>
<td>Control Function with HDX Option</td>
</tr>
<tr>
<td><strong>LOCAL</strong> (Green Cap)</td>
<td>Control Function with FDX Option</td>
</tr>
<tr>
<td><strong>LINE</strong> (Clear Cap)</td>
<td></td>
</tr>
<tr>
<td><strong>LINE FDX</strong> (Clear Cap)</td>
<td></td>
</tr>
<tr>
<td><strong>BREAK</strong> (Clear Cap)</td>
<td></td>
</tr>
<tr>
<td><strong>HERE IS</strong> (Clear Cap)</td>
<td></td>
</tr>
</tbody>
</table>

Current and EIA Interfaces

Terminal control and signal interface are provided by connector P11 on ESU circuit board.

Current Interface

Connection of dc signal line(s) is interfaced to the terminal thru connector P11 on ESU circuit board.

A J11 connector (188749) and several male and female terminals are provided with the model 38 so the customer can terminate his signal line interface cable at the P11 connector on the circuit board.

Signal line current is factory-wired for neutral, 20 ma dc, half duplex operation. Customer wired options for 60 ma dc and full duplex operation are available on the terminal (see page 16). Solid state circuitry permits operation on high or low voltage (3 to 125 VDC).

The following interface leads are available at connector P20 on the ESU circuit board.

1. Paper alarm contacts
2. Answer-back trip coil leads. Customer must provide a contact closure for operation.
3. ASR terminal’s EOT contact.

Refer to WDP 0320 for circuit connections and wiring options.

EIA Interface

Connection of dc signal line(s) is interfaced to the terminal thru connector P11 on ESU circuit board.

A J11 connector (188749) and several male and female terminals are provided with the model 38 so the customer can terminate his signal line interface cable at the P11 connector on the circuit board.

Signal line current is factory-wired for neutral, 20 ma dc, half duplex operation. Customer wired options for 60 ma dc and full duplex operation are available on the terminal (see page 16). Solid state circuitry permits operation on high or low voltage (3 to 125 VDC).

The following interface leads are available at connector P20 on the ESU circuit board.

1. Paper alarm contacts
2. Answer-back trip coil leads. Customer must provide a contact closure for operation.
3. ASR terminal’s EOT contact.

Refer to WDP 0320 for circuit connections and wiring options.

**EIA Connector**

- 1 (AA) Protective Ground
- 2 (BA) Send Data
- 3 (BB) Receive Data
- 4 (CA) Request to Send*
- 5 (CC) Data Set Ready**
- 6 (AB) Signal Ground
- 7 (CD) Data Terminal Ready†

**EIA Send and Receive:**

(+) = Space, (-) = Mark

*Output held high whenever power is applied to terminal.

**EIA input (+) turns motor on, (-) turns motor off (motor control relay).

†Output held on if all of the following conditions are met.

EOT switch not sensing EOT.
LOCAL button not depressed.
OFF button not depressed.
Paper-alarm switch not sensing paper out condition.
Parity (Keyboard Generated Characters)

Terminals are factory-wired for even parity over the eight bits, but they may be strapped by the customer so that the eighth bit is always marking (state 1) or always spacing (state 0).

Code Structure

Parity (Keyboard Generated Characters)

Transmitting and Receiving Margins

The following design criteria are met by model 38 terminals:

Receiving – Terminals can accept a signal with a maximum of 30% bias distortion, 33% end distortion.

Transmitting – Signals from terminals will have no more than 5% distortion.

SPEED

10 characters/sec, 11 unit code, 110 baud
100 words/min (word consists of 6 characters)
600 operations/minute

CONTROL FUNCTIONS

MODEM INTERFACE

<table>
<thead>
<tr>
<th>POST BUTTON CONTROL</th>
<th>Manual Originate/Manual Answer</th>
<th>Manual Originate/Automatic Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEAR</td>
<td>ALARM</td>
<td>DAA 1001A</td>
</tr>
<tr>
<td>LOCAL</td>
<td></td>
<td>DAA 1001B</td>
</tr>
<tr>
<td>ORIG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECHO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HERE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BREAK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CLEAR turns terminal motor and transmits carrier off. Telephone will automatically disconnect. Terminal responds to the automatic answer routine in the normal manner. Illuminates in ALARM. Terminal will automatically answer an incoming call.

LOCAL turns terminal motor on. Terminal has complete local capability, but cannot send or receive on signal line. Terminal will not automatically answer an incoming call. An incoming call is indicated by ringing of the telephone set and by flashing of the ANS. push button.

ORIG depresses the ANS. push button turns terminal motor and F2m carrier on. Terminal will automatically answer an incoming call when receive carrier is present. Motor and carrier will turn off if carrier is not received within 25 seconds. Answer-back will automatically operate if this feature is enabled. The call will automatically disconnect if carrier is not received within 25 seconds.

ECHO Conditions terminal for error-checking or on-line testing. Originating terminal goes to FDX mode. Called terminal goes to ANS. and ECHO modes. Transmitted data is "echoed" back from answering terminal to originating terminal’s printer. Correct data on originating terminal’s printer gives substantial assurance that the message was received correctly.

HERE When depressed and lighted, this push button electrically separates the send and receive circuits for full duplex operation. When not depressed and unlighted, the terminal is in the half duplex mode.

BREAK Momentary depression of BREAK push button causes the terminal’s answer-back to transmit a programmed message. Note: Terminal’s motor must be on.

INTERFACE

Options (60 Hz Terminals)

NOTE: 50 Hertz Terminals offer choice of DC Current and EIA or terminal without ESU (See pages 24, 25 and 26)
**ANSWER-BACK**

**TRANSMITS STATION IDENTIFICATION**

Answer-back is a simple device that permits a called station to automatically identify itself by transmitting a programmed sequence of characters. This saves time and prevents costly transmission charges due to misdirected data.

**EASY CODING**

You can easily encode the answer-back message on a plastic drum which has a capacity of 20 characters. You can choose either one-, two- or three-cycle operation with 20, 9 or 6 characters per cycle, respectively. If multiple-cycle operation is chosen, the identical message is normally used in each cycle.

**NON-CONTENTION**

The answer-back feature is turned on when the terminal receives ENQ. To prevent two answer-back devices from operating simultaneously, the device at the transmitting terminal is not activated when the ENQ code is sent from its keyboard or reader. You can operate the answer-back locally by pressing the HERE-IS key.

**SELECTABLE OPERATION ON CALL CONNECTION**

Terminals equipped with answer-back and modem have the option of automatically tripping the answer-back on call connection. This feature may be enabled or disabled by the user. Terminals are factory-wired with this feature enabled.

**CHOICE OF DESK OR PEDESTAL MOUNT**

You can choose from either a pedestal mount, which provides a neat, free-standing installation, or a desk mount for use where floor space is at a premium. Both blend perfectly into every modern office decor.

The pedestal mount provides mounting provisions for the electrical service unit and includes storage facilities for auxiliary equipment.

The desk mount requires additional space for installation of the electrical service unit; desk mount ASR terminals also require provision for chad collection.

Refer to page 20 for cabinet colors, weights, and dimensions, and to page 27 for a listing of useful accessories.

**DEPENDABLE CONVENIENT SERVICE**

Teletype Corporation’s products are fully supported by our Product Service Organization. For your convenience, centers are located in various areas across the country. Services include on-site maintenance and repair on a contractual or “on-call” basis, initial installation and check-out, installation of factory approved modification kits, exchange repair, and overhaul. Special services are also available on request. Contact Teletype Corporation for additional information (see back cover).

**USEFUL TECHNICAL FACTS**

**CODE**

1968 ASCII (X3.4-1968, American National Standard Code for Information Interchange)

X3.4-1968

<table>
<thead>
<tr>
<th>Column</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000</td>
<td>NUL</td>
</tr>
<tr>
<td>00011</td>
<td>SOH</td>
</tr>
<tr>
<td>00102</td>
<td>STX</td>
</tr>
<tr>
<td>00113</td>
<td>ETX</td>
</tr>
<tr>
<td>01004</td>
<td>EOT</td>
</tr>
<tr>
<td>01015</td>
<td>ENQ</td>
</tr>
<tr>
<td>01106</td>
<td>ACK</td>
</tr>
<tr>
<td>01117</td>
<td>BEL</td>
</tr>
<tr>
<td>10008</td>
<td>BS</td>
</tr>
<tr>
<td>10019</td>
<td>HT</td>
</tr>
<tr>
<td>10110</td>
<td>LF</td>
</tr>
<tr>
<td>10111</td>
<td>VT</td>
</tr>
<tr>
<td>11001</td>
<td>FF</td>
</tr>
<tr>
<td>11013</td>
<td>CR</td>
</tr>
<tr>
<td>11114</td>
<td>SO</td>
</tr>
<tr>
<td>11115</td>
<td>SI</td>
</tr>
</tbody>
</table>

All characters in these two rows — SP (space) and DEL (delete) are non-printing.

**ASCII (American Standard Code for Information Interchange)**

<table>
<thead>
<tr>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
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<tr>
<td>$</td>
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<tr>
<td>%</td>
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<tr>
<td>&amp;</td>
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<td>-</td>
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<td>/</td>
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<tr>
<td>0</td>
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<tr>
<td>1</td>
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<td>2</td>
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<td>3</td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>6</td>
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<tr>
<td>i</td>
</tr>
<tr>
<td>j</td>
</tr>
<tr>
<td>k</td>
</tr>
<tr>
<td>l</td>
</tr>
<tr>
<td>m</td>
</tr>
<tr>
<td>n</td>
</tr>
<tr>
<td>o</td>
</tr>
<tr>
<td>p</td>
</tr>
<tr>
<td>q</td>
</tr>
<tr>
<td>r</td>
</tr>
<tr>
<td>s</td>
</tr>
<tr>
<td>t</td>
</tr>
<tr>
<td>u</td>
</tr>
<tr>
<td>v</td>
</tr>
<tr>
<td>w</td>
</tr>
<tr>
<td>x</td>
</tr>
<tr>
<td>y</td>
</tr>
<tr>
<td>z</td>
</tr>
</tbody>
</table>

All characters in these two rows — SP (space) and DEL (delete) are non-printing.
DATA TERMINALS

ANSWER-BACK

TRANSMITS STATION IDENTIFICATION

Answer-back is a simple device that permits a called station to automatically identify itself by transmitting a programmed sequence of characters. This saves time and prevents costly transmission charges due to misdirected data.

EASY CODING

You can easily encode the answer-back message on a plastic drum which has a capacity of 20 characters. You can choose either one-, two- or three-cycle operation with 20, 9 or 6 characters per cycle, respectively. If multiple-cycle operation is chosen, the identical message is normally used in each cycle.

NON-CONTENTION

The answer-back feature is turned on when the terminal receives ENQ. To prevent two answer-back devices from operating simultaneously, the device at the transmitting terminal is not activated when the ENQ code is sent from its keyboard or reader. You can operate the answer-back locally by pressing the HERE-IS key.

SELECTABLE OPERATION ON CALL CONNECTION

Terminals equipped with answer-back and modem have the option of automatically tripping the answer-back on call connection. This feature may be enabled or disabled by the user. Terminals are factory-wired with this feature enabled.

CHOICE OF DESK OR PEDESTAL MOUNT

You can choose from either a pedestal mount, which provides a neat, free-standing installation, or a desk mount for use where floor space is at a premium. Both blend perfectly into every modern office decor.

The pedestal mount provides mounting provisions for the electrical service unit and includes storage facilities for auxiliary equipment.

The desk mount requires additional space for installation of the electrical service unit; desk mount ASR terminals also require provision for chad collection.

Refer to page 20 for cabinet colors, weights, and dimensions, and to page 27 for a listing of useful accessories.

DEPENDABLE CONVENIENT SERVICE

Teletype Corporation's products are fully supported by our Product Service Organization. For your convenience, centers are located in various areas across the country. Services include on-site maintenance and repair on a contractual or "on-call" basis, initial installation and check-out, installation of factory approved modification kits, exchange repair, and overhaul. Special services are also available on request. Contact Teletype Corporation for additional information (see back cover).

USEFUL TECHNICAL FACTS

CODE

1968 ASCII (X3.4-1968, American National Standard Code for Information Interchange)

X3.4-1968

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>NUL</td>
<td>DLE</td>
<td>SP</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>SOH</td>
<td>DC1</td>
<td>A</td>
<td>Q</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>STX</td>
<td>DC2</td>
<td>B</td>
<td>R</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>ETX</td>
<td>DC3</td>
<td>C</td>
<td>S</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>EOT</td>
<td>DC4</td>
<td>D</td>
<td>T</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>ENQ</td>
<td>NAK</td>
<td>E</td>
<td>U</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>ACK</td>
<td>SYN</td>
<td>F</td>
<td>V</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>BEL</td>
<td>ETB</td>
<td>G</td>
<td>W</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>BS</td>
<td>CAN</td>
<td>H</td>
<td>X</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>HT</td>
<td>EM</td>
<td>I</td>
<td>y</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>LF</td>
<td>SUB</td>
<td>J</td>
<td>Z</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>VT</td>
<td>ESC</td>
<td>K</td>
<td>(</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>FF</td>
<td>FS</td>
<td>L</td>
<td>\</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>13</td>
<td>CR</td>
<td>GS</td>
<td>M</td>
<td>)</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>14</td>
<td>SO</td>
<td>RS</td>
<td>N</td>
<td>~</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>15</td>
<td>SI</td>
<td>US</td>
<td>O</td>
<td>^</td>
</tr>
</tbody>
</table>

All characters in these two rows are non-printing.
Parity (Keyboard Generated Characters)

Terminals are factory-wired for even parity over the eight bits, but they may be strapped by the customer so that the eighth bit is always marking (state 1) or always spacing (state 0).

Transmitting and Receiving Margins

The following design criteria are met by model 38 terminals:

- Receiving — Terminals can accept a signal with a maximum of 30% bias distortion, 33% end distortion.
- Transmitting — Signals from terminals will have no more than 5% distortion.

SPEED

10 characters/sec, 11 unit code, 110 baud
100 words/min (word consists of 6 characters)
600 operations/minute
### Current and EIA Interfaces

Terminal control and signal interface are provided by connector P11 on ESU circuit card.

A J11 connector (188749) and several male and female terminals are provided with the model 38 so the customer can terminate his signal line interface cable at the P11 connector on the circuit board.

Signal line current is factory-wired for neutral, 20 ma dc, half duplex operation. Customer wired options for 60 ma dc and full duplex operation are available on the terminal (see page 16). Solid state circuitry permits operation on high or low voltage (3 to 125 VDC).

The following interface leads are available at connector P20 on the ESU circuit board.

1. Paper alarm contacts
2. Answer-back trip coil leads. Customer must provide a contact closure for operation.
3. ASR terminal's EOT contact.

Refer to WDP 0320 for circuit connections and wiring options.

---

#### Current Interface

Connection of dc signal line(s) is interfaced to the terminal thru connector P11 on ESU circuit card.

---

<table>
<thead>
<tr>
<th>Push Button</th>
<th>DC Interface</th>
<th>EIA Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OFF ALARM</strong> (Red Cap)</td>
<td>Turns terminal motor off. Motor will not respond to Data Set Ready lead at interface.</td>
<td>Turns terminal motor off. Motor will not respond to Data Set Ready lead at interface.</td>
</tr>
<tr>
<td><strong>LOCAL</strong> (Green Cap)</td>
<td>Turns terminal motor on. Terminal has complete local capability but can not send or receive on the signal line.</td>
<td>Turns terminal motor on. Terminal has complete local capability but can not send or receive on the signal line.</td>
</tr>
<tr>
<td><strong>LINE</strong> (Clear Cap)</td>
<td>Turns terminal motor on. Terminal has complete capability to send or receive in HDX mode with local copy.</td>
<td>Turns terminal motor on in response to Data Set Ready on at interface. If on ALARM conditions exist, it presents Data Terminal Ready on at interface. Terminal has complete capability to send and receive in HDX mode with local copy.</td>
</tr>
<tr>
<td><strong>LINE FDX</strong> (Clear Cap)</td>
<td>Turns terminal motor on. Terminal has complete capability to send or receive in FDX mode with local copy.</td>
<td>Turns terminal motor on in response to Data Set Ready on at interface. If on ALARM conditions exist, it presents Data Terminal Ready on at interface. Terminal has complete capability to send and receive in FDX mode without local copy.</td>
</tr>
<tr>
<td><strong>BREAK</strong> (Clear Cap)</td>
<td>When BREAK push button is depressed, a spacing condition is placed on the signal line in the LINE and LINE FDX modes.</td>
<td></td>
</tr>
<tr>
<td><strong>HERE IS</strong> (Clear Cap)</td>
<td>Momentary depression of HERE IS push button causes the terminal’s answer-back to transmit a programmed message. This control operates in the LOCAL, LINE, and LINE FDX modes.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Terminal's motor must be on.

---

#### EIA Interface

188724 EIA Interface Cable (ordered separately)

**EIA Connector**

- **1 (AA) Protective Ground**
- **2 (BA) Send Data**
- **3 (BB) Receive Data**
- **4 (CA) Request to Send**
- **5 (CC) Data Set Ready**
- **6 (AB) Signal Ground**

**EIA Send and Receive:**

- (+) = Space, (-) = Mark

*Output held high whenever power is applied to terminal.

**EIA input (+) turns motor on, (-) turns motor off (motor control relay).**

1. Paper alarm contacts
2. Answer-back trip coil leads. Customer must provide a contact closure for operation.
3. ASR terminal’s EOT contact.

Refer to WDP 0320 for circuit connections and wiring options.
Modem Options

The following modem options are available. The factory wired options for the specified data access arrangements are indicated by an asterisk (*).

1. **PAPER ALARM**
   - Only ALARM button lights.
   - Same condition as above, except subsequent data connections are prevented until alarm is cleared.

2. **ANSWER-BACK TRIP**
   - Occurs automatically at called terminal on call connection. (Terminal must have answer-back feature and modem.)
   - *Enabled*
   - *Disabled*

3. **ECHO MODE**
   - Output of distributor and break key in ECHO mode.
   - *Blinded*
   - *Unblinded*

See page 27 for modification kit providing complete terminal arrangement — checked-out and simple to install — from a single source. The only installation adjustment that may be required is setting the signal level so that it matches the telephone line.

### Data Access Arrangements (DAA)

The data access arrangements required are:

- Manual Originate/Manual Answer: Bell System 1000A CDT or equivalent
- Manual Originate/Automatic Answer: Bell System 1001B CBT or equivalent

Refer to pages 18 and 19 for modem and DAA specifications.

<table>
<thead>
<tr>
<th>Interface Cable Lead</th>
<th>Manual Originate/Manual Answer (DAA 1000A CDT or Equivalent)</th>
<th>Manual Originate/Automatic Answer (DAA 1001B CBT or Equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>DR (Data Ring)</td>
<td>DR (Data Ring)</td>
</tr>
<tr>
<td>Orange</td>
<td>DT (Data Tip)</td>
<td>DT (Data Tip)</td>
</tr>
<tr>
<td>Yellow</td>
<td>RI (Ring Indicator)</td>
<td>RI (Ring Indicator)</td>
</tr>
<tr>
<td>Black</td>
<td>DA (Data Transmission)</td>
<td>DA (Data Transmission)</td>
</tr>
<tr>
<td>Green</td>
<td>OH (Off Hook)</td>
<td>OH (Off Hook)</td>
</tr>
<tr>
<td>White</td>
<td>+V (Positive DC Power)</td>
<td>+V (Positive DC Power)</td>
</tr>
<tr>
<td>Blue</td>
<td>-V (Power Return)</td>
<td>-V (Power Return)</td>
</tr>
</tbody>
</table>

The terminal provides a 7 conductor cable for interfacing to the data access arrangement. The following leads from the cable connect to the respective DAA’s:

- **COMPLETE TERMINAL ARRANGEMENT — CHECKED-OUT AND SIMPLE TO INSTALL — FROM A SINGLE SOURCE.**
- **THE ONLY INSTALLATION ADJUSTMENT THAT MAY BE REQUIRED IS SETTING THE SIGNAL LEVEL SO THAT IT MATCHES THE TELEPHONE LINE.**

### FULL CONTROL CAPABILITIES

Pushbuttons located on the right side of the keyboard give you full and easy control of the 38's versatile functions. Terminals with dc current and EIA voltage interfaces have one row of buttons. For those with modem, the ASR and KSR have two rows, and the RO has one row without BREAK and HERE IS. The controls' functions are described on pages 12 and 13.
Automatic Operation

When the automatic mode has been activated and the control lever is in the ON position, the reader will respond to the receipt of ASCII control codes as follows:

- **DC1** — Turns reader on.
- **DC3** — Turns reader off.
- **ENQ** — Drops the reader and trips the remote answer-back. To automatically start reader after ENQ, the last answer-back character must be DC1.
- **EOT** — Turns reader off.

TIGHT TAPE AND END OF TAPE FEATURES

These features guard against tearing the tape and needless reader operation. The reader will automatically stop if the tape becomes tight or tangled or the end of tape is sensed.

**DC CURRENT, EIA, MODEM INTERFACE**

**COMPATIBILITY WITH MOST SYSTEMS**

Several different interfaces are available with 38 terminals to make them compatible with a wide range of system requirements. These are integrated into the electrical service unit (ESU) (see page 14) which houses the terminal's electrical components and logic and provides a convenient area for electrical interconnection.

There are two series of 60-Hertz 38 terminals: one series provides either direct current or EIA voltage interface as a customer activated option. The other series provides a modem interface with manual-origin/automatic or automatic-answer, again as a customer option. There are also two series of 50-Hertz terminals: One provides the dc current-EIA voltage configuration described above. The other has no electrical service unit so that the customer can provide his own logic and interface circuitry.

**DC CURRENT OR EIA VOLTAGE INTERFACE**

The dc current interface provides a 20 or 60 milliamperc dc neutral signal. It is often used on local loops and for mini-computer consoles. Terminals are wired for 20 ma at the factory; 60 ma is a customer-activated option. Solid state circuitry permits operation on high or low voltage.

The voltage interface lets you connect to any device specifying the EIA standard RS-232-C, including business machines, common carrier data sets, and customer owned modems. If you choose to use this interface, you should order the separate cable described on page 17 to terminate the interface leads in a standard EIA connector.

**MODEM INTERFACE**

**Choice of Manual or Automatic Answer**

Model 38 built-in modems provide operation on voice-grade channels in switched network and private line systems. It offers exceptional operational flexibility for computer access and conversational applications. This FSK (frequency shift keying) modem can provide manual originate/automatic answer or automatic originate/automatic answer when connected to the appropriate Bell System Data Access Arrangement (DAA). The modem is code insensitive, transmits asynchronously in serial form, and is compatible with Bell System 101, 103, and 113 data sets or their equivalents.

With manual originate/automatic answer, the call is established manually by a telephone handset, and the operators exchange voice communication before going to data mode. They may go back to voice communication at any time during the transmission. The call is terminated manually.

With automatic originate/automatic answer, the modem can receive a call at any time whether an operator is present or not. It will automatically answer, go to data mode, send and/or receive data, and then go "on hook" to await the next call. This gives you the opportunity to use the terminal at night when line charges are lower. As with manual originate/automatic answer, voice communication may be established at any time during the call if an operator is present at the called terminal.

**Total Terminal Arrangement from a Single Source**

Terminals with the built-in modem are performance-tested as a package by Teletype Corporation. This means you can have a com-

---

**Modem Specifications**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Transmit</th>
<th>Receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half Duplex</td>
<td>1270</td>
<td>2225</td>
</tr>
<tr>
<td>Full Duplex</td>
<td>2025</td>
<td>1070</td>
</tr>
</tbody>
</table>

**Frequencies (Hz):**

- **Originate Mode:**
  - Space 1070
  - Mark 2225
- **Answer Mode:**
  - Space 1070
  - Mark 2025

**Timing**

- Asynchronous

**Signal Level**

- 0 to -12 dBm transmit (adjustable to match transmission network)
- 0 to -50 dBm receive (under control of carrier detect circuit)

**Echo Suppressors**

- Receive of answering terminal's carrier disables echo suppressors on transmission facilities.

**Compatible with**

- Bell System 101, 103, 108 and 113 data set or equivalent.

**Carrier Detect Indication**

- The ORG or ANS button will light when depressed if received carrier is present.

---

**PAPER TAPE SPECIFICATIONS**

| Type of paper | oiled stock, rolled |
| Width         | 1 inch              |
| Thickness     | 0.004 inch          |
| Max. diameter of roll | 8 inches  |
| Length per roll (approx.) | 1000 feet |
| Core diameter of roll | 2 inches |

---

**Sprocket (Pin) Feed Forms**

- **Standard Form Length:**
  - 11" or 5-1/2" or
  - 14-3/8" ± 1/64"

- **Rolled Paper**
  - Standard teleprinter roll paper has the following specifications:
    - Outside Diameter: 5 inch maximum
    - Width of page: 8.563 ± .031 inches
    - Length per roll (approx): 400 feet
    - Core Diameter I.D.: 1 inch + .1 -.05 inch

- **Ink Impregnated Nylon**
  - Two-color (black/red)
ELECTRICAL REQUIREMENTS

Input Voltages:
115 VAC ±10% 60 Hz ±3/4% single phase
115 VAC ±10% 50 Hz ±3/4% single phase

Nominal Power Requirements:
60 Hz Motor: 50 Hz Motor
Running current: 1.9 amperes Running current: 1.9 amperes
128 watts: 130 watts
Starting Surge: 15 amperes maximum
Maximum Running Current: 5 amperes

A convenience outlet is available on the electrical service unit which permits up to 100 watts of additional load.

MAINTENANCE

Initial: After 100 to 200 hours operation
Maintenance: Every 750 hours or 6 mos., whichever occurs first.

An optional elapsed timer is available for recording the "terminal on" time (see Accessories).

These publications are shipped with respective terminals:
DC/ELIA Wiring Diagrams — WDP 0320
Modem Wiring Diagrams — WDP 0344

Installation and Servicing Manual
ASR, KSR, RO — No. 341
Operator's Manual
ASR, KSR, RO — No. 342

The following maintenance manuals are available from Teletype Corporation:
Description, Lubrication
Disassembly, Reassembly, Troubleshooting
ASR — No. 543, Vol. 1
KSR, RO — No. 544, Vol. 1
Adjustments
ASR — No. 543, Vol. 2
KSR, RO — No. 544, Vol. 2
Parts
ASR — No. 343, Vol. 3
KSR, RO — No. 344, Vol. 3

FUNCTION BOX CONTACTS

Contacts Purpose
DC1, DC3, ENQ, EOT Automatic Control of Reader
DC Interface—Provides contact closure at interface for customer application
EIA Interface—Controls Data Terminal Ready lead and turns set off.
Modem Interface—Provides for call disconnect.

ENVIRONMENTAL REQUIREMENTS

Operating: 40°F to 110°F ambient measured outside of terminal cover.
Storage: -40°F to 150°F.
Relative Humidity: 90% maximum at 100°F maximum.

WEIGHTS AND DIMENSIONS

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Approx. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASR</td>
<td>36 in.</td>
<td>25 in.</td>
<td>21 in.</td>
<td>96 lbs.</td>
</tr>
<tr>
<td>KSR</td>
<td>36 in.</td>
<td>25 in.</td>
<td>21 in.</td>
<td>90 lbs.</td>
</tr>
<tr>
<td>RO</td>
<td>36 in.</td>
<td>25 in.</td>
<td>18-1/2 in.</td>
<td>85 lbs.</td>
</tr>
</tbody>
</table>

COLOR

Charcoal grey cover with ivory colored keyboard
Pedestal is charcoal grey with satin chrome feet

ENVIRONMENTAL REQUIREMENTS

Starting Surge: 15 amperes maximum
Maximum Running Current: 5 amperes

WEIGHTS AND DIMENSIONS

<table>
<thead>
<tr>
<th>Overall Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Height Width Depth Approx. Weight</td>
</tr>
<tr>
<td>ASR 36 in. 25 in. 21 in. 96 lbs.</td>
</tr>
<tr>
<td>KSR 36 in. 25 in. 21 in. 90 lbs.</td>
</tr>
<tr>
<td>RO 36 in. 25 in. 18-1/2 in. 85 lbs.</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL REQUIREMENTS

Operating: 40°F to 110°F ambient measured outside of terminal cover.
Storage: -40°F to 150°F.
Relative Humidity: 90% maximum at 100°F maximum.
38 DATA TERMINALS

EVEN PARITY (For Error Detection)
The 38 keyboard generates code combinations with even parity, i.e., there are an even number of marking bits over the sum of the 8 bits in the code. This can be used for error control if the receiver is equipped to detect parity. To meet varying system requirements, screw straps are provided on the keyboard circuit card to make the 8th bit of keyboard generated signals either always marking or always spacing.

SELECTABLE ALL CAPS OUTPUT
The 38 keyboard can be optionally programmed to generate upper case alpha characters only; the lower case characters normally generated in the unshift mode are then converted to upper case. This feature makes 38 terminals compatible with existing computer programs written in monocase for 33 and 35 terminals. Option is activated by a screw strap on the keyboard circuit card.

REPEATABLE CHARACTERS
This feature makes operations such as underscoring and continuous spacing easier and faster by simply depressing the key below its normal position. It is possible to individually activate (or deactivate) the repeat feature of any key by simply removing the clip associated with it. The following keys are made repeatable at the factory: Line Feed, Space, Null, Delete, Colon (:), or Asterisk (*). This feature makes operations such as underlining and continuous spacing easier and faster.

ERROR-PREVENTING INTERLOCK
A keyboard interlock prevents errors commonly caused by depressing two keys simultaneously. When one key reaches a certain point in the downstroke, all of the other keys are locked out until the depressed key returns to the unoperated position.

END OF LINE FORMAT
At the end of each line of copy you should insert the three character sequence RETURN, LINE FEED, DELETE. Following this format you are assured that the printing mechanism will have sufficient time to completely return to the left hand margin before the first character of the next line is printed.

MORE ECONOMY WITH TAPE

INCREASE SYSTEM SPEED AND ACCURACY
A paper tape punch and reader are integral components of 38 ASR terminals. They offer a number of time and labor saving benefits as well as adding greater flexibility and accuracy to data communication systems. You can prepare error-free data on tape, for example, and send it at maximum terminal speed, and you can send and receive automatically at hours when line charges are lower.

Both units are especially easy to operate and are located beside the keyboard for convenient access by the operator.

MANUAL/AUTOMATIC PUNCH
A customer-activated option provides a choice of either manual or automatic punch operation. ASR terminals are shipped with the punch in the manual mode of operation. It can be placed in the automatic mode by simply removing two clips.

The punch is operated manually by a simple control lever. In automatic operation it is controlled by specific on-line codes, but it also can be manually controlled.

SIMPLE ORDERING PROCEDURES
The terminals designated by catalog number on the following pages offer a wide range of operational flexibility. If you have requirements that these configurations do not satisfy, contact Teletype Corporation (see back cover).

The ordering information is divided into two parts according to power frequency (60 or 50 Hz). Each part contains three charts, one for each terminal configuration (ASR, KSR, RO). The charts show various arrangements of standard and optional features and provide a catalog number for each arrangement.

60 Hz
- 38 ASR
- 38 KSR
- 38 RO

50 Hz
- 38 ASR
- 38 KSR
- 38 RO

MODEL 38 ASR DATA TERMINALS — 60 Hz

<table>
<thead>
<tr>
<th>STANDARDS FEATURES</th>
<th>Type of Paper Feed</th>
<th>Typewheel/Keypad Arrangements</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCII Code</td>
<td>10 char/sec (100 WPM)</td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBA</td>
</tr>
<tr>
<td>11 Unit Code</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBC</td>
</tr>
<tr>
<td>Upper and Lower</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBD</td>
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<td>Stationary Keypads</td>
<td>3850/6JBE</td>
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<tr>
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<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
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</tr>
<tr>
<td>Even Parity/Keypad</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBG</td>
</tr>
<tr>
<td>Auto*/Man Reader</td>
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<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBH</td>
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<td>Single Step Reader</td>
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<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBI</td>
</tr>
<tr>
<td>Auto CR/LF on</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBJ</td>
</tr>
<tr>
<td>122nd Char. #</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBK</td>
</tr>
<tr>
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<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBL</td>
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<tr>
<td>Answer Back</td>
<td></td>
<td>ASCII 10 char/80 CPM</td>
<td>Stationary Keypads</td>
<td>3850/6JBM</td>
</tr>
</tbody>
</table>

1 Controlled by Two Character Sequence.
* Customer Activated Option to Disable Keyboard Even Parity and have 8th Level of Keyboard Generated Characters always Mark or always Space.
** Customer Activated Option for Automatic Reader Control on DC1 and DC3.$
* Customer Activated Option for Automatic Perforator Control on DC2 and DC4 Code.
# Customer Activated Option.

NOTE: 60 Hz pedestal-mount terminals are UL listed (E4631).
### Model 38 KSR Data Terminals — 60 Hz

#### Standard Features

<table>
<thead>
<tr>
<th>Type of Paper Feed</th>
<th>Typewriter-Keytop Arrangements</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Type</td>
<td>-</td>
<td>-</td>
<td>3840/4EA</td>
</tr>
<tr>
<td>Feature of Paper</td>
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<td>-</td>
<td>3840/4EG</td>
</tr>
<tr>
<td>ASCII Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
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<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 char/sec</td>
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<td></td>
</tr>
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<td>110 WPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/60 Ma.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.C. Neu. Sig. Line</td>
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<td></td>
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<tr>
<td>E.I.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typewriter</td>
<td></td>
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<tr>
<td>Keyboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keytop</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### ASCII Code

- Typewriter
- Numeric
- Alpha

**Typewriter**

<table>
<thead>
<tr>
<th>Position</th>
<th>AD</th>
<th>AF</th>
<th>AG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift</td>
<td>0</td>
<td>#</td>
<td>0</td>
</tr>
<tr>
<td>Unshift</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Numeric**

<table>
<thead>
<tr>
<th>Position</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<tbody>
<tr>
<td>Shift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unshift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Alpha**

<table>
<thead>
<tr>
<th>Position</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
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<tbody>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unshift</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Furniture Catalog Numbers Arrangements

- Signature Line and Manual OR Automatic Answer
- 3840/4EA 3840/4EG
- 3840/4EB 3840/4EH
- 3840/4EC 3840/4EJ
- 3840/4ED 3840/4EK
- 3840/4EE 3840/4EL
- 3840/4EF 3840/4EM

**Note:** 60 Hz pedestal-mount terminals are UL listed (E49631).

#### Typewriter-Keypad Configurations

- AF Typewheel Character Set
- AG Typewheel Character Set
- ABW Keyboard Arrangement
- ACW Keyboard Arrangement

**AF Typewheel Character Set**

<table>
<thead>
<tr>
<th>Shift</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unshift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AG Typewheel Character Set**

<table>
<thead>
<tr>
<th>Shift</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unshift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Controls

- Controlled by two character sequence.
- Customer Activated Option to Disable Keyboard Even Parity and have 8th Level of Keyboard Generated Characters always Mark or always Space.
- Customer Activated Option.

**Note:** 60 Hz pedestal-mount terminals are UL listed (E49631).
CONTROL OF NON-PRINTING FUNCTIONS

A function box initiates a number of non-printing actions such as carriage return, line feed, space, etc. in response to specific control codes. It can be arranged to perform certain additional functions such as contact openings or closures to control peripheral equipment.

ASR terminals have function box contacts for the following control codes: DC1, DC3, ENQ and EOT. See page 20 for an explanation of their function.

FULL ASCII KEYBOARD

Keyboards on 38 terminals can generate the full complement of 128 characters in the ASCII code, including the upper and lower case alphabet and non-printing control codes. The characters are generated in even parity but can be optioned for eight level always mark or always space.

INFORMATION SEPARATORS (EG, FS, GS)

Non-printing control codes. The characters are printed in lower case. The graphics printed in the shift mode are obtained by holding the SHIFT key depressed while operating the associated character key, as with a standard typewriter. Alpha characters are printed in upper case.

CONTROL CHARACTERS (NON-PRINTING)

Neither printing nor spacing occur when control characters are selected; instead, an electrical signal is generated which results in:

1. Communication Controls (eg, ACK, ENQ)
2. Format Effectors (eg, LF, FF)
3. Device Controls (eg, DC1, DC2)
4. Information Separators (eg, FS, GS)

The 38 keyboard generates all of the ASCII control characters. These are easily identified by the standard ASCII designation in black on the upper-half of the typewriter. To generate a control character, you hold the CONTRL key down and press the character key, as with a standard typewriter..Alpha characters are printed in upper case.

Lower keytop character (Unshift Row on Layout)

Characters shown on the lower-half of the keypads are printed when the keyboard is in the unshifted mode — just depress the key. Alpha characters are printed in lower case.

Upper keytop character (Shift Rows on layout)

To continuously print upper case characters, depress the SHIFT LOCK key.

PRINTING AND NON-PRINTING CHARACTERS

The 38 keyboard generates both printing and non-printing characters, ie, in some cases a code is transmitted but printing does not occur. It's easy to tell one from the other. Refer to the typewriter layout below the keyboard below and on page 7. Only the characters shown will print.

AD TYPEWHEEL CHARACTER SET

<table>
<thead>
<tr>
<th>SHIFT</th>
<th>A B C D E F G H I J K L M N O P Q R S T U V W X Y Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNSHIFT</td>
<td>a b c d e f g h i j k l m n o p q r s t u v w x y z</td>
</tr>
</tbody>
</table>

MODEL 38 RO DATA TERMINALS — 60 Hz

<table>
<thead>
<tr>
<th>STANDARD FEATURES</th>
<th>Type of Paper Feed</th>
<th>Answer Back Feature</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCII Code</td>
<td>10 char/sec</td>
<td>Without Ans. Back</td>
<td>Upper and Lower Case Printing</td>
<td>Red/black Printing</td>
</tr>
<tr>
<td>10 char/sec</td>
<td>100 WPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Unit Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto CR/LF on 132nd Char.?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Furniture Catalog Numbers

3830/2AA 3830/2AB 3830/2AC 3830/2AD 3830/2AE 3830/2AF 3830/2AG 3830/2AH 3830/2AI 3830/2AJ 3830/2AK 3830/2AL 3830/2AM 3830/2AN 3830/2AO 3830/2AP 3830/2AQ 3830/2AR 3830/2AS 3830/2AT 3830/2AU 3830/2AV 3830/2AW 3830/2AX 3830/2AY 3830/2AZ 3830/2BA 3830/2BB 3830/2BC 3830/2BD 3830/2BE 3830/2BF 3830/2BG 3830/2BH 3830/2BI 3830/2BJ 3830/2BK 3830/2BL 3830/2BM 3830/2BN 3830/2BO 3830/2BP 3830/2BQ 3830/2BR 3830/2BS 3830/2BT 3830/2BU 3830/2BV 3830/2BW 3830/2BX 3830/2BY 3830/2BZ 3830/2CA 3830/2CB 3830/2CC 3830/2CD 3830/2CE 3830/2CF 3830/2CG 3830/2CH 3830/2CI 3830/2CJ 3830/2CK 3830/2CL 3830/2CM 3830/2CN 3830/2CO 3830/2CP 3830/2CQ 3830/2CR 3830/2CS 3830/2CT 3830/2CU 3830/2CV 3830/2CW 3830/2CX 3830/2CY 3830/2CZ 3830/2DA 3830/2DB 3830/2DC 3830/2DD 3830/2DE 3830/2DF 3830/2DG 3830/2DH 3830/2DI 3830/2DJ 3830/2DK 3830/2DL 3830/2DM 3830/2DN 3830/2DO 3830/2DP 3830/2DQ 3830/2DR 3830/2DS 3830/2DT 3830/2DU 3830/2DV 3830/2DW 3830/2DX 3830/2DY 3830/2DZ 3830/2EA 3830/2EB 3830/2EC 3830/2ED 3830/2EE 3830/2EF 3830/2EG 3830/2EH 3830/2EI 3830/2EJ 3830/2EK 3830/2EL 3830/2EM 3830/2EN 3830/2EO 3830/2EP 3830/2EQ 3830/2ER 3830/2ES 3830/2ET 3830/2EU 3830/2EV 3830/2EW 3830/2EX 3830/2EY 3830/2EZ 3830/2FA 3830/2FB 3830/2FC 3830/2FD 3830/2FE 3830/2FF 3830/2FG 3830/2FH 3830/2FI 3830/2FJ 3830/2FK 3830/2FL 3830/2FM 3830/2FN 3830/2FO 3830/2FP 3830/2FQ 3830/2FR 3830/2FS 3830/2FT 3830/2FU 3830/2FV 3830/2FW 3830/2FX 3830/2FY 3830/2FZ

*Customer Activated Option.

NOTE: 60 Hz pedestal-mount terminals are UL listed (E49631).
**Customer Activated Option for Automatic Reader Control on DC 1 and DC3.**

**Customer Activated Option for Automatic Perforator Control on DC2 and DC4.**

Controlled by Two Character Sequence.

---

### Standard Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Type of Paper Feed</th>
<th>ASCII Code</th>
<th>10 char/sec (100 WPM)</th>
<th>11 Unit Code</th>
<th>Upper and Lower Case Printing</th>
<th>Red/black Printing</th>
<th>Auto**/Man Reader</th>
<th>Single Step Reader Control</th>
<th>Auto 1/Man Punch</th>
<th>Auto CR/LF on 132nd Char.</th>
<th>Paper Alarm</th>
<th>Answer Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Multiple Copies

The terminal's impact printer will produce an original and a minimum of two carbon copies.

### Upper/Lower Case Printing

For text editing:

A standard feature of 38 data terminals is printing of the upper and lower case alphabet. It is particularly useful for a number of applications such as computerized typesetting and text editing.

### Two-Color Printing

Two-color printing (typically red/black) is another standard feature of all 38 data terminals. It can be used to distinguish priority information and to separate computer input and output data.

The remote or local color shift is made in response to this two-character sequence:

ESC 3 - RED Printing
ESC 4 - BLACK Printing

### Choice of Three Character Sets

Typewheels contain a maximum of 94 printing characters plus the non-printing graphics space and delete. The three combinations offered in the selection guide are shown on pages 6 and 7. The typewriter character set (the graphics printed on the page) is shown immediately above its associated keytop arrangement.

Note that the selection includes arrangements with a slash zero or a slash alpha 0, and the latest ASCII arrangement (typewriter AD and Keytop AAW) with a distinct character difference between the zero 0 and alpha O.

### Versatile Format Capability

A customer-installed modification kit is available that lets the terminal use either pin-fed, fan-folded 14-7/8-inch widepaper or 8-1/2-inch wide friction-fed paper rolls. This provides a simple way of changing the terminal's format capability to meet varying requirements.

### Convenient Form Feed

For the convenience of the operator, forms can easily and accurately advanced into printing position by simultaneously depressing the CONTRL (control) and FF (form feed) keys. A standard form (11 inches long) or a half-size sheet (5-1/2/2 inches long) are accommodated. Customer-installed modification kits are available for a variety of other form sizes.

### End of Line Indications

The approach of the end of line is signaled by the ringing of a bell. The indication occurs approximately 10 characters from the right-hand margin.

The bell also responds to the on-line control code BEL (CTRL, O).

### Local CR and LF

The local CR and LF keys are provided so your operator can return the print mechanism to the left margin and feed paper thru the terminal without using the regular keyboard as this would cause electrical signals to be transmitted and could affect a remote terminal's page copy alignment.

These controls are located immediately above the keyboard on ASR and KSR's and have the same relative location on RO terminals.

### Selectable Automatic CR and LF

When this customer-selectable feature is activated, completion of the 132nd character causes the automatic return of the printing mechanism to the left-hand margin and brings a new line into printing position. This action prevents "over-typing" at the end of a line. Terminals leave the factory with this feature disabled. You can easily enable it by removing two clips from the typing unit.

Note: Positioning of the 132nd character may be displaced horizontally and vertically.

### Paper Alarm

The paper supply is constantly monitored by a low paper sensor. When the end of the paper supply is sensed, an ALARM indicator lights to alert the operator.

### Character and Line Spacing

Terminals are factory-adjusted for a 132-character line, with 10 characters to-the-inch horizontal spacing. Single or double vertical line spacing (6 or 3 lines per inch) is selectable by the operator. To make this selection, the operator simply moves a lever on the printer.
38 DATA TERMINALS

38 RO
Receive-Only Terminal

RO terminals receive data as printed page copy. They have a limited transmitting capability with the optional answer-back feature which enables them to transmit station identification sequences.

CHOICE OF HALF OR FULL DUPLEX

All of the 38 terminal configurations have the option of operating in the half or full duplex transmission mode. In half duplex, the terminal can either send or receive, but it cannot do both at the same time. In full duplex, it can transmit (eg, by keyboard or paper tape) and receive (eg, on page copy or punched tape) simultaneously. Full duplex operation lets you nearly double your traffic volume with only a moderate increase in line charges.

EXPANDABLE CAPABILITIES

A number of accessories, features, and configurations, other than those covered in this catalog, are available. Accessories include a wide variety of paper and tape handling devices to simplify media handling and parity error detectors to improve data accuracy.

If you have a large volume of data to transmit on-line, you can add Teletype® 4210 magnetic tape terminal and increase on-line speed to 1050, 1200, 2000, or 2400 baud.

Model 38's with Teletype 9100 station controllers can be used in private line selective calling systems which save you line charges by having a number of stations share a single communication channel. These controllers provide such functions as motor control, parity error detection and indication, and polling and address recognition and response.

OTHER LOW COST TERMINALS

Teletype model 32 (5 level) and 33 (8 level) data terminal lines offer performance, flexibility, and economy comparable to the 38 line, but print on 8-1/2-inch paper.

Model 38 terminals are also available with APL features or with a keyboard having a numeric cluster. Or you can have versions of the 38 that use paper 8-1/2-inches wide rather than 14-7/8-inches.

Contact Teletype Corporation for additional information on the above expandable capabilities and low-cost terminals (see back cover).

WIDE PAGE COPY WITH
UP-LOW AND TWO-COLOR PRINTING

IMPACT PRINTING AND PIN FEED

38 data terminals use an impact printer with a cylindrical typewheel to produce the same wide copy used in the computer room. Thus you can transmit data generated by your computer to any number of remote locations without time-wasting reformatting problems. And it is ideal for applications where all data for an entry must fit on a single line of printing.

The pin-feed platen is 15 inches wide and accepts 14-7/8-inch fan-folded computer paper stock. Also, it is capable of handling paper 375 mm wide conforming to the ISO Standard. Holes along the edge of the paper engage pins on the printer platen to feed the paper and maintain positive alignment.

MODEL 38 KSR DATA TERMINALS — 50 Hz

<table>
<thead>
<tr>
<th>STANDARD FEATURES</th>
<th>Type of Paper Feed</th>
<th>Typewriter-Keypad Arrangements</th>
<th>Furniture Arrangements</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>I P</td>
<td>W</td>
<td>3840/45A</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>P</td>
<td>W</td>
<td>3840/45B</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>I</td>
<td>W</td>
<td>3840/45C</td>
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<td>T E</td>
<td>W</td>
<td>3840/45D</td>
</tr>
<tr>
<td></td>
<td>S A</td>
<td>N</td>
<td>W</td>
<td>3840/45E</td>
</tr>
</tbody>
</table>

*Controlled by Two Character Sequence

*Customer Activated Option to Disable Keyboard Even Parity and have 8th Level of Keyboard Generated Characters always Mark or always Space

**Customer Activated Option.
### Model 38 RO Data Terminals — 50 Hz

#### Standard Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Type of Paper Feed</th>
<th>Answer Back Feature</th>
<th>Furniture Arrangement</th>
<th>Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASCII Code</strong></td>
<td><strong>Pin-fed, wide (14-7/8&quot;) page copy</strong></td>
<td><strong>With or Without Lower Case Printing</strong></td>
<td><strong>With or Without Upper Case Printing</strong></td>
<td><strong>3830/2A</strong></td>
</tr>
<tr>
<td>10 char/sec (100 WPM)</td>
<td></td>
<td></td>
<td></td>
<td>3830/2BQ</td>
</tr>
<tr>
<td>11 Unit Code</td>
<td></td>
<td></td>
<td></td>
<td>3830/2CN</td>
</tr>
<tr>
<td>WIDE PIN FEED</td>
<td></td>
<td></td>
<td></td>
<td>3830/2DN</td>
</tr>
<tr>
<td>PIN FEED</td>
<td></td>
<td></td>
<td></td>
<td>3830/2D</td>
</tr>
<tr>
<td>Upper and Lower Case Printing</td>
<td></td>
<td></td>
<td></td>
<td>3830/2F</td>
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<tr>
<td>Red/Black Printing</td>
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<td>3830/2G</td>
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<td>Paper Alarm</td>
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<td>3830/2H</td>
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*Controlled by Two Character Sequence.*

#### Low-Cost, Multi-Featured Line

The model 38 is a standard-duty line of low-cost terminals for entering, transmitting, receiving, and recording data in communication systems. The terminals are available in several configurations with various combinations of keyboard entry, printed page copy, and paper tape facilities.

- Pin-fed, wide (14-7/8") page copy and upper-lower case and two-color printing are standard features on all 38 terminals.

The terminals operate at ten characters per second (110 baud) and feature a four-row keyboard capable of generating all of the 128 characters in the American National Standard Code for Information Interchange (ASCII).

Several different interfaces are available. One terminal arrangement provides facilities for either dc current (20 or 60 milliamperes) or voltage (EIA RS-232-C). Another provides a built-in modem with facilities for manual-originate and either manual- or automatic-answer. Another permits the customer to provide his own logic and interface circuitry.

A number of features in the 38 line may be enabled or disabled by the user to meet varying operational requirements. Instructions are furnished with the terminal.

A wide variety of accessories are available including a modification kit that allows the terminal to use either wide, fan-folded, pin-fed paper or 8-1/2-inch wide, friction-fed paper rolls.

Terminals are available for operation on either 60 Hz or 50 Hz power frequencies. 60 Hz pedestal-mount terminals are listed by Underwriters' Laboratories (UL). UL and Canadian Standards Association (CSA) listing is pending on 60 Hz table-mounted terminals. CSA listing is also pending on all 50 Hz terminals.

#### Three Basic Configurations

**38 ASR**

*Automatic Send-Receive Terminal*

ASR terminals offer the widest range of operational features in the 38 line. They provide keyboard data entry, printed page copy, and paper tape facilities. With the ASR terminal, you can transmit data manually by keyboard or automatically by punched tape, and simultaneously print local page copy for visual reference with or without punched tape. Or you can punch tape off-line from the keyboard or tape reader while printing local page copy. The terminal receives data as printed page copy and (if selected) punched tape. Tape transmitting and receiving can be controlled manually or automatically.

**38 KSR**

*Keyboard Send-Receive Terminal*

KSR terminals provide keyboard data entry and printed page copy facilities. You can transmit data manually on the KSR keyboard while printing local page copy. The terminal receives data as printed page copy.
ECONOMY, RELIABILITY AND PERFORMANCE

Teletype Corporation's model 38 line is a continuation of the economical design concepts, proven reliability, and exceptional performance that have made our model 33 the most popular terminal on-line today.

Now, our 38 line lets you combine this economy and reliability with a number of the industry's most sought after performance features. Features such as wide page copy as used for computer print-outs, upper-lower case and two-color printing for maximum clarity of data presentation, and a variety of interface options for plug to plug compatibility with nearly any switched or private line system. Our built-in modem interface, for example, operates over voice-grade channels and provides options for manual originate and manual or automatic answer operation.

This catalog gives you the general and technical information you want to know about the 38 line. There are also easy-to-follow selection guides to help you choose the 38 terminals that meet your specific system requirements.

VARIETY OF ACCESSORIES

PAPER AND TAPE HANDLERS

188496 Form Supply Box
Provides convenient storage in its base for a carton of 15 inch wide fan-fold forms. Top is a shelf used to temporarily store forms after processing. Adds 13-1/2 inches to depth of terminal.

188500 Copy Holder
Holds information at a convenient viewing position for the operator.

188388 Low Tape Alarm
Monitors the terminal's tape supply and turns on the ALARM lamp when a low tape condition occurs.

TELETYPE Paper and Tape Handling Catalog
Lists other accessories which may be useful in your particular system.

FURNITURE

343693GF Telephone Shelf
For model 38 equipped with modem. This shelf attaches to the pedestal for convenient support of the 502-type telephone set.

188642 Pedestal
Complete base assembly to convert from desk mount to pedestal for convenient support of the 502-type telephone set.

188501 Copy Holder
Holds information at a convenient viewing position for the operator.

188388 Low Tape Alarm
Monitors the terminal's tape supply and turns on the ALARM lamp when a low tape condition occurs.

TELETYPE Paper and Tape Handling Catalog
Lists other accessories which may be useful in your particular system.

MAINTENANCE

SOP 188661 Elapsed Time Meter
For model 38 equipped with modem. This shelf attaches to the pedestal for convenient support of the 502-type telephone set.

188642 Pedestal
Complete base assembly to convert from desk mount to pedestal for convenient support of the 502-type telephone set.

188501 Copy Holder
Holds information at a convenient viewing position for the operator.

188388 Low Tape Alarm
Monitors the terminal's tape supply and turns on the ALARM lamp when a low tape condition occurs.

TELETYPE Paper and Tape Handling Catalog
Lists other accessories which may be useful in your particular system.

INTERFACE

188724 EIA Interface Cable (Length 6 Feet)
Cabling is required to terminate interface leads in the EIA RS-232-C interface connector. One end mates with the P11 connector on the 303847 circuit card and the other end terminates in a standard EIA connector.

187156 Modification Kit For Current Interface with Modem
A "running time" meter which measures in hours the accumulated time the terminal is turned on.

PAGE COPY

188800 Friction Feed 8-1/2 inch Wide Paper Modification
May be installed in the 38 to accommodate 8-1/2 inch wide rolled paper. When rolled paper is removed the terminal is immediately available for wide, 14-7/8 inch, paper applications. Uses existing paper alarm mechanism.

188944 Modification Kit for "ON-LINE" Backspace
Terminals equipped with this modification will backspace one character position each time the ASCII code BS (backspace) is received.

Feature is especially useful for text editing, underscoring, or overstriking of characters.

326184 Two-Color Ribbon
Nylon base, red/black inked.

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