DOVETRON

SELECTION GUIDE - MPC SERIES

All Dovetron terminal units may be used on either 115 or 230 VAC ±20%, 40 to 400 Hz, single phase power mains. Line voltage and frequency stability are not important. All units contain a phase-continuous AFSK Tone Keyer and an RY Generator that produces Mark-Space Reversals, which also serve as an internal calibrator and provides a Self-Test signal for the terminal unit.

All units, except the Tempest units, contain an internal high level loop power supply. The Neutral loop configuration may be set for 20, 40 or 60 milliamperes at 130 VDC. The Dual Keyer (DK) versions also provide Polar loop configurations of 20, 40 or 60 mils double-current at ±60 VDC. EIA RS232C (±12 VDC) and MIL STD 188C (±6 VDC) outputs are also provided on all units. The TEMPEST units provide only RS232C and MIL STD 188C outputs.

The three-wire power cable is detachable and Dovetron can provide either the American, Western European or Australian type of connector. The detachable cabinet side-plates are available for either rack mount (19") or table top. Specify your preference for power cable type and Cabinet type with order.

The following is offered to help you select the model most useful in your particular application.

MPC-1000C	Good choice where signal quality is good and baud rate constant as in a closed net. Requires high level Neutral or low level Polar printer.
MPC-1000C/DK	Dual Keyer version of MPC-1000C for use with high level Polar printers. Contains BAL-200 option.
MPC-1000CR MARK II	Provides Signal Regeneration, Speed Conversion and Digital Autostart. Also contains BBP-100 Binary Bit Processor with selectable bandwidth. Best commercial choice for long haul HF signals that are susceptible to multipath distortion, noise, selective fades and interference. All options available.
MPC-1000CR/DK Mark II	Dual Keyer version of the MPC-1000CR. Best choice for commercial applications that require high level Polar printers. Also best choice for system houses and OEMs that must be able to interface to any type of teleprinter available at "destination".
MPC-1000R Mark II	Same performance as MPC-1000CR. Contains triple Tone-Pair AFSK Tone Keyer. When equipped with TSR-500D provides 200 character FIFO (First-In, First-Out) buffer memory that may be Preloaded and Recirculated, keyboard-controlled Word Correction and Variable Character Rate. Good choice for net control stations and amateur radio operators.
MPC-1000T Mark II Tempest	As the model number implies, the "T" units are meant for use in "secure" applications. The T does not contain a high level loop power supply. Special optical and power line filters are built-in to prevent radiation of electro-magnetic energy. Not intended for casual or commercial use. Orders will not be accepted by Dovetron for the Tempest unit without prior consultation with customer regards exact requirements.

The TSR-400D and TSR-600D may be substituted for the TSR-200D in all units. The 400D provides simultaneous Baudot to ASCII code conversion and the 600D provides dual Selective Calling On-Off and 16 character Answerback message.

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

MPC-1000CR/DK UNIVERSAL DUAL-KEYER TERMINAL UNIT

E-SERIES

The DK (Dual-Keyer) version of the MPC-1000CR contains both a Polar and a Neutral loop keyer: MPC-1000CR/DK

Selection of either keyer is made via an internal switch.

The proper loop currents in either polar or neutral mode are also switch-selectable.

A third switch selects either Full Duplex or Half Duplex operation.

The programming instructions for these switches are etched permanently on the internal printed circuit board, permitting reprogramming without consulting the (often misplaced) instruction manual.

In this DK version, the TSR-200 Signal Regeneration assembly is replaced by the newer TSR-200D, which provides Character Recognition-Speed Determination DIGITAL Autostart.

This Digital autostart mode is provided in addition to the standard Mark and FSK autostart modes and prevents the local teleprinter from false-starting on non-RTTY signals, up side down RTTY signals and RTTY signals that are operating at an incompatible baud rate.

If the MPC-1000CR/DK is set for 66 WPM (50 Baud), it will not autostart on 75 WPM (57 Baud) or 100 WPM (75 Baud) signals and vice versa.

This feature effectively permits remote call-up of a teleprinter by Baud rate selection. It also prevents an incompatible signal from false-starting a teleprinter and printing unintelligible garble.

As with the TSR-200, the TSR-200D is completely programmable for the number of bits per character (5, 6, 7 or 8), the total number of stop bits, the stop bit requirement, odd-even parity and polarity selection for the output keyers.

The front panel Signal Speed select switch may be used for up-down speed conversion, or it may be used to select the baud rate of straight-thru regeneration.

A rear panel switch selects the power mains requirement: 100-125 VAC or 200-250 VAC. Line frequency tolerance is 40 to 450 Hz.

Real panel connectors are provided for Dual Diversity, Selective Calling and Remote Control. The MPC-1000C makes an ideal dual diversity companion terminal unit, and the SCR-1000 Selective Calling-Recognition unit will provide Sel-Cal and Answer-Back functions.

Price: $1195.00 FOB South Pasadena

Specifications and prices are subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

MPC-1000CR REGENERATIVE RTTY TERMINAL UNIT

E-SERIES

The MPC-1000CR Regenerative RTTY Terminal Unit consists of a MPC-1000C Terminal Unit, a TSR-200 Teleprinter Speed Converter-Regenerator and a front panel Speed Select switch.

This switch permits selection of 60, 67, 75, 100 WPM Baudot and 110 Baud (100 WPM) ASCII communication signal speeds, and is normally used to select the baud rate of the incoming signal.

An 8 pole DIP switch on the TSR-200 is normally used to set the regenerator's output speed to whatever is required by the local teleprinter.

A simple jumper installation on the TSR-200 permits the front panel Speed Switch to simultaneously select both the input and output baud rates for "straight-thru" regeneration.

The Regenerator Section consists of a CMOS Universal Asynchronous Receiver-Transmitter (UART) which may be programmed for Parity, Total Stop Bits (1.0, 1.5 or 2.0 character units) and Stop Bit Verification.

This programming is accomplished by a second 8 pole DIP switch, which also permits selection of EIA RS232C or MIL STD 188C configurations for the regenerated FSK voltage output.

Timing of the input and output clocks is provided by a dual crystal-controlled clock and a pair of BCD/N dividers. Since the separate sections of this clock may be set for different speeds, the TSR-200 will also provide Up-Down Speed Conversion.

Whenever the MPC-1000CR is switched to standby (locally or remotely), the TSR-200 is switched automatically from Receive to Send by solid-state inversion of the two clocks.

When in the Send mode, the signal generated by the local teleprinter is regenerated (and speed converted if necessary) to less than 0.5% bias distortion before being transmitted by the AFSK Tone Keyer.

A third switch on the TSR-200 board permits the MPC-1000CR to be operated as a standard MPC-1000C without regeneration.

The TID-100 Station Identifier, which may be programmed in CW Morse, Baudot or ASCII codes, may also be installed in the MPC-1000CR.

Price: $995.00 FOB South Pasadena

Specifications and prices are subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON MPC-1000CR REGENERATIVE RTTY TERMINAL UNIT

E - SERIES

The MPC-1000CR Regenerative RTTY Terminal Unit is similar to an MPC-1000C, but contains a TSR-200D Speed Converter-Signal Regenerator assembly and a front panel Signal Speed Selection switch.

In addition to the MPC-1000C's MARK and FSK Autostart modes, a Digital Autostart mode is also provided and is front panel selectable.

The Signal Speed switch permits selection of 60, 67, 75 and 100 WPM Baudot and 110 Band (100 WPM) ASCII communication signal speeds, and is used to select the baud rate of the incoming and outgoing signals.

An 8 pole DIP switch on the TSR-200D assembly is normally used to set the Regenerator's output speed to whatever is required by the local teleprinter.

The front panel Signal Speed switch selects the baud rate of the incoming-outgoing signal.

A switch mounted on the TSR-200D assembly permits the front panel switch to simultaneously select both the input and output baud rates for straight-thru (no speed conversion) operation.

Whenever the MPC-1000CR is switched to SEND (locally or remotely), the TSR-200D is switched automatically from Receive to Send by solid state inversion of the two clocks.

When in the Send mode, the signal regenerated by the local teleprinter is regenerated (and speed converted if desired) to less than 0.5% bias distortion before being transmitted by the AFSK Tone Keyer.

The Regenerator Section (TSR-200D) may be programmed for 5, 6, 7 or 8 level operation, with or without Parity and with Total Stop Bit (TSB) selection. The 5 level Baudot code may be programmed for a 1.0 or 1.5 character unit Stop Bit. The 6, 7 and 8 level codes may be programmed for either 1.0 or 2.0 character unit Stop Bits.

The Regenerator Section may also be set to reject any received character that does not include a valid Stop Bit.

When the Regenerator Section is inhibited by another board mounted switch, the MPC-1000CR functions as an asynchronous MPC-1000C.

During severe propagation conditions or very weak signals, the error of the MPC-1000CR is at least 10 times better than MPC-1000C.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

NEW PRODUCT RELEASE

UNIVERSAL DUAL-KEYER
RTTY TERMINAL UNIT

Designed to solve the problems of on-site interfacing between communication systems and existing teleprinters, the DOVETRON MPC-1000CR/DK Terminal Unit offers switch-selectable (S/S) Polar and Neutral Keyers, S/S Baud Rate selection, S/S Loop Currents, S/S Full or Half Duplex operation and S/S 5, 6, 7 or 8 level coding. Programming instructions for all S/S functions are permanently etched on the internal printed circuit boards. Standard features include Signal Regeneration, In-Band Diversity, Multipath Correction, MARK/FSK Autostart and continuously tuneable Mark and Space input channels and phase-continuous AFSK Tone Keyer. A unique Character Recognition-Speed Determination DIGITAL Autostart circuit permits more than one baud rate to be used in a single communication channel. Power mains requirement is also switch-selectable and line frequency tolerance is 40 to 450 Hz. A 2 inch CRT provides a visual tuning display and an internal RY Generator permits system self-test. Provisions for Dual Diversity, Selective Calling and Remote Control are available at the rear panel. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON MPC-1000CR/DK UNIVERSAL DUAL-KEYER TERMINAL UNIT

E-SERIES

The DK (Dual-Keyer) version of the MPC-1000CR contains both a Polar and a Neutral loop keyer: MPC-1000CR/DK

Selection of either keyer is made via an internal switch.

The proper loop currents in either polar or neutral mode are also switch-selectable.

A third switch selects either Full Duplex or Half Duplex operation.

The programming instructions for these switches are etched permanently on the internal printed circuit board, permitting reprogramming without consulting the (often misplaced) instruction manual.

A Digital autostart mode is provided in addition to the standard Mark and FSK autostart modes and prevents the local teleprinter from false-starting on non-RTTY signals, up side down RTTY signals and RTTY signals that are operating at an incompatible baud rate.

If the MPC-1000CR/DK is set for 66 WPM (50 Baud), it will not autostart on 75 WPM (57 Baud) or 100 WPM (75 Baud) signals and vice versa.

This feature effectively permits remote call-up of a teleprinter by Baud rate selection. It also prevents an incompatible signal from false-starting a teleprinter and printing unintelligible garble.

The TSR-200D is completely programmable for the number of bits per character (5, 6, 7 or 8), the total number of stop bits, the stop bit requirement, odd-even parity and polarity selection for the output keyers.

The front panel Signal Speed select switch may be used for up-down speed conversion, or it may be used to select the baud rate of straight-thru regeneration.

A rear panel switch selects the power mains requirement: 100-125 VAC or 200-250 VAC. Line frequency tolerance is 40 to 450 Hz.

Rear panel connectors are provided for Dual Diversity, Selective Calling and Remote Control. The MPC-1000C makes an ideal dual diversity companion terminal unit, and the SCR-1000 Selective Calling-Recognition unit will provide Sel-Cal and Answer-Back functions.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3708

MPC-1000CRA REGENERATIVE RTTY TERMINAL UNI WITH TRI-TONE AFSK TONE KEYER

The MPC-1000CRA Regenerative RTTY Terminal Unit is a MPC-1000CA (MPC-1000C with Tri-Tone TMS-100 Tone Keyer) with a TSR-200 Teleprinter Speed Converter-Regenerator installed internally.

A front-panel switch permits selection of one of the three preset Tone/Shift combinations of the AFSK Tone Keyer.

The TSR-200 Regenerator Assembly provides Signal Regeneration of both the incoming and outgoing signals. Bias distortion is regenerated to less than 0.5%.

Since the Regenerator's Input and Output Clocks are independently programmable, Up-Down Speed Conversion is accomplished by setting the two clocks to different Baud rates.

Programming of the clocks is accomplished via a pair of 8 pole DIP switches mounted on the TSR-200 board. Programming instructions for 45.45, 50.00, 56.88, 75.00 and 110.0 Baud are etched right on the board.

The Regenerator Section consists of a CMOS UART (Universal Asynchronous Receiver-Transmitter) and may be programmed by the operator for 5, 6, 7 or 8 level codes. Parity, TSB (Total Stop Bits) and SBR (Stop Bit Required) are also selectable.

The Regenerated FSK output is available in both EIA and MIL polarities.

For further details, refer to Specifications for MPC-1000C, MPC-1000CA and TSR-200.

Price: $1095.00 FOB So. Pasadena.

Prices and Specifications subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3708

MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

E-SERIES

SINGLE UART REGENERATION AND 80 CHARACTER FIFO MEMORY

In addition to all the features of the MPC-1000C, the MPC-1000R offers Signal Regeneration, Up-Down Speed Conversion and a silastic (FIFO) buffer Memory capable of storing up to 80 characters (TSR-100).

The Regenerator Section consists of a CMOS UART (Universal Asynchronous Receiver-Transmitter) and may be programmed for 5, 6, 7 or 8 level codes. Programming is accomplished by a DIP switch mounted on the Regenerator board.

The input and output clocks are crystal-controlled and front panel switches (SIGNAL SPEED and LOOP SPEED) permit separate selection of 60, 67, 75, 100 WPM Baudot and 110 Baud (100 WPM) ASCII communication signal speeds. Setting these two switches to different speeds provides Up-Down Speed Conversion.

With the Regenerator Section enabled, all incoming and outgoing signals are regenerated to less than 0.5% bias distortion. The total number of Stop Bits affixed to the end of the regenerated character (1.0, 1.5 or 2.0) may be selected internally and Stop Bit Recognition (SBR) on the incoming signal may be inhibited.

Two front panel toggle switches control the Memory Section. One permits the Memory Section to be PRELOADED and RECIRCULATED, and the other provides CLEAR and UNLOAD functions.

A pair of front panel LEDs (MEMORY FULL and MEMORY EMPTY) indicate the status of the Memory Section.

Phasing pulses (BLANK or LTRS character) may be automatically transmitted whenever the Memory Section is Empty and the MPC-1000R is in the Send mode.

The Memory Full state actuates a TD Inhibit circuit that may be used to stop the local TD whenever the Memory is filled, preventing character over-runs during down-speed conversion.

A three position AFSK Tone Keyer switch permits rapid operator selection of one of three preset Tone/Shift combinations. The three combinations are independent of each other and are individually adjusted with separate multi-turn potentiometers mounted on the rear panel.

Additional Regenerator functions are detailed in the TSR-100 Teleprinter Speed Converter-Regenerator specifications.

MPC-1000R: $1195.00 FOB South Pasadena.

Specifications and prices are subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

E-SERIES

DUAL UART REGENERATION, 200 CHARACTER FIFO MEMORY & WORD CORRECTION

The DOVETRON MPC-1000R REGENERATIVE RTTY TERMINAL UNIT is also available with the TSR-500 Teleprinter Speed Converter-Regenerator installed internally in lieu of the Standard TSR-100.

The TSR-500 assembly provides all the functions of the TSR-100, plus:

1) A second Universal Asynchronous Receiver-Transmitter (UART) section has been added that permits the local teleprinter to provide copy from the Memory Section and from the incoming data lines while the MPC-1000R is in Receive-Preload and Send-Recirculate modes.

2) The FIFO buffer Memory Section has been expanded from 80 characters to 200 characters by the addition of three more 40 character Silastic memory elements.

3) Word Correction has been provided in the Input FIFO and is controlled from the local keyboard.

   Complete and correct words are transferred out of the Input FIFO to the main Memory Section upon receipt of a normal SPACE character from the keyboard.

   Incorrect and mis-spelled words may be erased from the Input FIFO by sending a BLANK character from the keyboard prior to sending the SPACE character.

   When cutting tape, it is no longer necessary to back-space the tape and punch out the incorrect word with a string of LTRS. A BLANK character entered at the end of the incorrect word provides automatic erasure when the tape is read from the Tee Dee into the MPC-1000R.

4) A Memory Hold circuit has been added that permits the local teleprinter to copy a received message without disturbing the contents of the memory. This feature permits the same preloaded message (CQ, etc.) to be used over and over again until an answer (QSL) has been received.

The Word Correction circuit is enabled only in the Send (Transmit) mode, which prevents BLANK characters received in the Receive mode from influencing the Memory Section.

If the four FIFOs in the main Memory Section fill to 160 characters, the Input FIFO automatically inhibits the Word Correction circuits and comes on-line as a 5th storage element with an additional 40 characters of memory, effectively making it impossible to over-run the memory section. At the same time, the TD Inhibit circuit is enabled, stopping the TD while the Memory Section is emptied out at machine speed.

MPC-1000R/TSR-500: $1295.00 FOB South Pasadena.

SPECIFICATIONS AND PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

MPC-1000R/BASIC ** MPC-1000R/TSR-200D ** MPC-1000R/TSR-500D

The BASIC MPC-1000R is an expandable version of the MPC-1000C with a TMS-100 Tri-Mode AFSK Tone Selector, which provides three separate sets of front panel selectable AFSK Mark-Space tone pairs for the Phase-Continuous Tone Keyer.

The Standard range of these tone pairs is 1175 Hz. to 3200 Hz. One tone pair may be extended lower in frequency by adding two resistors to the TMS-100 Assembly.

When supplied as a BASIC-R, the internal TSR cables are secured in a TSR Adapter assembly. The front panel Speed Switches and Memory Controls are non-functional. MARK & FSK Autostart are standard.

A TSR-200D Teleprinter Speed Converter-Signal Regenerator Assembly may be mounted above the TSR Adapter and interconnected with a single short cable. In this configuration (MPC-1000R/TSR-200D), the front panel Speed switches select both the signalling baud rate and the output baud rate to the local teleprinter. The Memory Controls are non-functional, since the TSR-200D does not contain a memory section. Digital Autostart is provided by the TSR-200D Assembly.

A TSR-500D Teleprinter Speed Converter-Signal Regenerator Assembly may be mounted in a Basic-R by replacing the TSR Adapter assembly with a TSR-500D assembly.

This configuration (MPC-1000R/TSR-500D) provides Signal Regeneration, Speed Conversion, a 200 Character FIFO Memory, Keyboard-controlled Word Correction, Phasing (BLANK/LTRS Diddle), Variable Character Rate, Character Rate Over-Ride, Automatic Word Storage Over-Ride, Automatic Stop-Bit Length Selection, TEE DEE Inhibit and all the other functions of the TSR-500D Assembly.

The 200 Character Memory may be Preloaded and Recirculated with either off-the-air signals or with data generated from the local teleprinter.

Digital Autostart is available if the DAS-100 Digital Autostart Module has been installed in the TSR-500D.

The RIF-100 Remote Interface Module may be installed in all three of the "R" models to provide automatic switching between Transmit and Receive upon receipt of a keyboard generated ground closure. When used with keyboards that supply a "ground" as each key is depressed, a time constant circuit maintains the terminal unit in the Transmit (Send) mode while a message is being sent.

A KOS-100 (Keyboard Operated Send) module is also available, which puts the MPC-1000R/TSR-500D into Send whenever the TU is receiving data from the local teleprinter. Any keyboard signal actuates the KOS-100 automatically. If a TID-100 Station Identifier Assembly is also installed in the terminal unit, depressing the BREAK button on the keyboard will automatically put the TU into Send, trip off the Identification sequence and switch the TU to Preload, permitting data entry when the TID-100 is sequencing. Pressing the BREAK button during a transmission commands the TID-100 to "identify" at the end of the transmission automatically.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

MPC-1000R MARK II

The latest addition to the Dovetron E-Series is the MARK II version of the ubiquitous MPC-1000R Regenerative RTTY Terminal Unit.

The MARK II is the logical combination of the MPC-1000R and the BBP-100 Binary Bit Processor.

The BBP-100 provides three functions:

1) High performance axis restoration,
2) Selectable Bandwidth, and
3) Hysterisis Multipath Correction.

The combination of these three functions permit operation very close to the theoretical error-rate curve.

Axis restoration is accomplished with a "track and hold" logic circuit that permits accurate zero-crossing determinations on very weak and poor quality signals.

The selectable bandwidth feature permits optimization of the SNR of the terminal unit to the baud rate of the incoming signal.

A three position front panel switch permits operator selection of one of three active bandwidth modules on the BBP-100 assembly. Two additional bandwidth modules are stored in passive sockets.

The active bandwidths are 45.45, 50.0 and 74.2/75.0 baud. The passive bandwidths are 56.88 and 110 Baud. Other bandwidth combinations are available on request.

The design of the bandwidth switching circuit is such that a new bandwidth may be selected during signal reception without introducing errors from switching transients or circuit response time.

The hysterisis-controlled Multipath Corrector circuit is fully automatic and corrects for bias distortion created by time/frequency dispersive multipath distortion.

In addition to the inclusion of the BBP-100, the front panel Mark and Space VFOs have been extended in range to include the commercial tone pair 1070 Hz - 1270 Hz.

A fifth position (marked SBR) on the Signal Speed Select switch normally selects the proper clock frequency for 110 baud (100 WPM) ASCII operation. When an SBR-100 Selectable Baud Rate module is installed on the TSR-500D board, a preset "privacy" Baudot baud rate may be selected. The SBR-100 also permits other than 110 baud ASCII operation.

The original DIGITAL position of the Autostart Select switch has been re-labeled SCL-DAS and provides control of the SCL-100 Selective Calling option and/or the DAS-100 Digital Autostart module.

115/230 VAC mains select switch is mounted internally at the rear panel for rapid mains interface.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

MPC-1000R MARK II ADDENDUM December 1979

The MPC-1000R Mark II RTTY Terminal Unit contains a factory-installed BBP-100 Binary Bit Processor. This device provides front panel selectable bandwidth, a new method of axis restoration and a hysteresis mode of Multipath Correction.

Unless indicated differently on the tag on the top cover of the terminal unit, the three bandwidth positions are:

WIDE: 75.0 Baud, 100 WPM.

MEDIUM: 50.0 Baud, 66 WPM.

NARROW: 45.45 Baud, 60 WPM.

Two extra bandwidth modules are plugged into storage sockets at the left rear of the BBP-100 assembly: 57 Baud and 110 Baud.

The frequency range of the front panel VFOs has been expanded downward to 1000 Hz, permitting the use of 1275 Hz as a center frequency for a ±42.5 and ±85 Hz shift scheme. The landline modem tone frequencies of 1070 Hz and 1270 Hz are also tuneable.

The front panel photocell for CRT intensity control is omitted in the Mark II and the photocell that controls the intensity of the solid state cross display is mounted in the lower left quadrant of the SSD-100 display.

If equipped with a KOS-100 Keyboard Operated Send assembly, a Mark II KOS-100 board is installed. This Mark II version of the KOS permits the use of either a positive or a negative PTT circuit.

Since this KOS-PTT circuit will function with either polarity, it may also be used with current-limited (100 milliamperes maximum) AC circuits.

If equipped with a TID-100 Station Identifier, a Mark II version of the TID-100 is installed.

The new Mark II TID-100 shifts the keyed Mark tone downward, away from the Space tone channel. R8 (47K) determines the amount of downward shift and may be changed by individual operators to suit their own preference.

If upward shift (toward the Space channel) is preferred, move the blue wire connected to KOS E-Point 56 to KOS E-Point C at the middle (rear edge) of the KOS-100 assembly.

The Mark II DAS-100 Digital Autostart Module is AC coupled, which prevents a Space Character left in the output register of the UART from locking-on the Autostart relay.

The Mark II SSD-100 Solid State Cross Display module contains four plug-in 10 segment bargraph display modules.

The Mark II MPC-1000R also contains a 115/230 VAC power mains select switch, which is mounted internally on the rear panel.

DOVETRON

MPC-1000T - MPC-1000T/LCO - MPC-1000CR/T
TEMPEST QUALIFIED RTTY TERMINAL UNITS

The Dovetron MPC-1000T, MPC-1000T/LCO and MPC-1000CR/T TEMPEST RTTY Terminal Units are designed for use in secure radio teleprinter applications.

All input and output signals and remote controls enter and exit thru BNC (single-ended) connectors mounted on the rear panel. Power mains entry is thru a special EMI power line filter. Mating connector is an ITT Cannon MS3106E14S-7S or equivalent.

An EMI optical filter covers the front of the SSD-100 Solid State Cross Display to prevent radiation of internal signals.

The BBP-100 Binary Bit Processor assembly is an integral part of the Tempest unit and provides front panel selection of three different bandwidths, permitting the signal to noise ratio of the unit to be optimized to the baud rate of the incoming signal.

Field testing has shown error rate improvements up to 34 times on weak and poor quality signals. An automatic multipath correction circuit operates when the incoming signal has been distorted by time or frequency dispersive multipath propagation.

The single-ended audio input is transformer-isolated with a nominal impedance of 600 ohms (Ø dbm).

The dual FSK outputs are configured for either MIL 188C or EIA RS232C serial, and may be used simultaneously. Keyboard entry may be either MIL 188C or RS232C (±5 VDC to ±100 VDC).

For AFSK operation, a Ø dbm output is provided from an internal, phase-continuous, sine-wave AFSK Tone Keyer. When the unit is switched to the MS-REV (Mark-Space Reversals) mode, this tone keyer doubles as a built-in self test (BITE).

The MPC-1000T is normally supplied with channel filters optimized for 150 Baud and the plug-in bandwidth modules of the BBP-100 are selected for 50, 75 and 150 baud operation. Two spare bandwidth modules are provided for 45 and 110 baud operation. The variable input channel range is 1250 Hz to 3000 Hz.

The MPC-1000CR/T contains a TSR-200D Signal Regeneration assembly and an SBR-100 Selectable Baud Rate module. A front panel Signal Speed Select switch permits the TSR-200D to also function as a Speed Converter. The TSR-400D and TSR-600D assemblies may be substituted for the TSR-200D if Baudot-ASCII Code Translation or Dual Selcal with Answerback is required.

The MPC-1000T/LCO version contains a pair of LCO-100 Linear Channel Oscillator modules, permitting the terminal unit to cover an input tone frequency range of 300 Hz to 3000 Hz. A TMS-200 Triple Tone-Pair AFSK Tone Keyer assembly permits front panel selection of three different, preset Mark-Space AFSK tone pairs. A second front panel switch permits the "sense" of the tone keyer to be selected independently of the terminal unit's sense. Standard channel bandwidth of the "T/LCO" is 75 baud.

The KOS-100 Keyboard Operate Send option may be used in all T versions.

The calculated MTBF per Mil Handbook 217 is in excess of 6700 hours.

Power requirements are 115/230 VAC ±25%, 40-400 Hz, 12 watts.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

MULTIPATH CORRECTION & IN-BAND DIVERSITY

DEFINITIONS

MULTIPATH CORRECTION: The ability of a terminal unit to re-establish the correct transitions (beginnings and endings) of the incoming Mark and Space pulses, when they have been stretched, smeared and over-lapped on each other by the time delays created by Multipath Propagation.

IN-BAND DIVERSITY: The ability of a terminal unit to automatically copy Single-Channel, i.e., Mark-Only or Space-Only signals, such as caused by Selective Fading, which is a form of Multipath Distortion.

PURPOSE

When a RTTY signal is transmitted thru the HF medium, the Mark and Space pulses are often distorted in TIME and FREQUENCY by a phenomenon known as Multipath Propagation. This simply means that the signals from the transmitter are arriving at the receiver over more than one path.

Since these paths are of different lengths, their propagation or transit times differ significantly. In the case of polar and equatorial side-paths, RTTY pulses can be delayed by as much as 95%.

This time discrepancy creates an apparent stretching of the Mark and Space pulse, because although the Mark pulse on the shortest path has terminated and the Space pulse has begun, the Mark pulse is still arriving (late) via the second (longer) path. When this common condition occurs, a terminal unit without Multipath Correction cannot differentiate between the "right" pulse and the "wrong" pulse, and at best produces a large quantity of bias distortion in its slicer and keyer circuits. Often when the pulses are stretched into an over-lap condition, they cancel each other in the terminal unit, which just contributes further to errors.

The Dovetron MULTIPATH CORRECTOR™ recognizes when a new pulse has started and when the old one should have terminated, even if the old one is still arriving via a longer path. A Multipath Combiner circuit prevents overlapping pulses from cancelling each other within the terminal unit.

Multipath Propagation also produces a form of distortion called Selective Fading. If the Mark Pulse arrives at the receiver over two different paths exactly 180 degrees out of phase, the signal is highly attenuated or even cancelled at the antenna and in the receiver.

Dovetron's IN-BAND DIVERSITY design permits the terminal unit to automatically derive all the necessary information from one channel while the second channel is missing. In fact, a second psuedo channel is generated from the information present in the one remaining channel and both are processed thru the Multipath Corrector, which eliminates the bias distortion in the one remaining channel.

This ability to generate correct information from a single channel has been expanded by AC coupling the Dual-Assessor circuits directly ahead of the MULTIPATH CORRECTOR™ to permit generation of the psuedo channel even when one channel has been invaded by a CONTINUOUSLY interferring tone.

To overcome the FREQUENCY dispersive problems of Multipath Distortion, precise computer-designed Bessell-Function filters with their equal group-delay and transient-response characteristics are used in the channel and low pass filter circuits.

DOVETRON

ASCII OPERATION WITH MPC-SERIES

A high performance terminal unit has its bandwidth tailored for the baud rate at which it is going to operate. Standard Dovetron terminal units are tailored for optimum performance over the range of 45 to 75 baud. This is accomplished in the design of both the channel filters and the low pass filters.

ASCII at 110 baud can be processed thru the Dove with excellent results. The slight distortion caused by the tight bandwidth of the low pass filters is cleaned up with the Multipath Corrector. The Bessel function channel filters restrict some signal power (sideband energy), but if the signal is good, copy will be good.

The biggest problem with 110 (and faster) ASCII is that the Mark and Space pulses are only 9 milliseconds long (compared to 13.5 ms at 75 baud and 22 ms at 45 baud) and multipath propagation tears them apart before the terminal unit has a chance to process them.

If the terminal unit is to be dedicated to ASCII operation, the low pass filters can be opened up by changing the eight 510K resistors at locations R45 thru R48 and R70 thru R73 to:

110 Baud - 330K. 150 Baud - 240K. 300 Baud - 120K. 600 Baud - 62K.

A set of precision resistors are available from Dovetron at $20.00 per set to open up the channel filters for 150, 300 or 600 Baud, but remember that the performance of these channel filters at 45 and 75 baud is very poor. You are better off to maintain the original channel filters and manipulate the bandwidth (Signal to Noise Ratio) at the low pass filters.

The Mark II versions of the Dove contain a BBP-100 Binary Bit Processor, which permits front panel selection of three different bandwidths. Normally, the bandwidth modules supplied are 50, 75 and 110 Baud. Two spare bandwidth modules are stored on the BBP assembly and they are easily changed to any bandwidth (baud rate) required.

Above 150 Baud, the spike suppression cap (C52) in the high level loop circuit should be changed to a 0.05 mfd cap. If the high level neutral loop is not going to be used, C52 can be removed entirely, but Q7 will be damaged by inductive spikes if a mechanical teleprinter is plugged into the loop connectors.

Baud rates above 600 baud are not very practical. At 850 Hertz shift at 1200 baud, assuming Mark-Space Reversals, 65% of the incoming signal power falls at the center frequency, that is, halfway between the Mark and Space tone frequencies, and only 16% of the signal power is processed thru either channel filter.

The TSR Regeneration Assemblies can be used at 110 Baud without modification. The UART Program switch will have to be set for either 7 or 8 level operation, and the Word Correction circuit on the 500D will have to be disabled by inserting a jumper at X6.

Since most high speed peripherals have signal regeneration, it is probably not practical to modify the TSR for higher baud rates, but a 153.6 KHz crystal and a pair of 8PST DIP switches are available from Dovetron for $20.00 to accomplish such a modification.

Due to the spectral dispersion of the Mark and Space tone carriers at the higher baud rates and the flat fades that plague HF signals with less than 400 Hz shift, an 850 Hz shift is recommended for all ASCII Baud rates.

June, 1980

DOVETRON

ADDITIONAL FEATURES - "E-SERIES"

The E-SERIES represents the sixth generation of DOVETRON RTTY Terminal Units and include the following additional features and conveniences.

AUTOMATIC CRT INTENSITY CONTROL A front panel photocell senses the ambient light level at the operating location and adjusts the CRT's intensity automatically to a comfortable viewing level.

AUTOMATIC THRESHOLD LEVEL CONTROL An electronic switch lowers the Threshold Level upon acquisition of a signal to permit "deep-tracking" during flat fades into the noise. A similar circuit compensates for signal power-loss when operating in single channel (Mark Only or Space Only) modes.

KEYBOARD ACTUATED AUTOSTART Depressing the BREAK button at the local keyboard actuates the FSK-Autostart circuit in the terminal unit, turning ON the local teleprinter's motor and permitting retrieval of messages left in the typing-unit during unattended operation.

AUTOSTART DELAYED TIMEOUT Timeout commences with the last character sent and provides approximately 20 seconds for station identification, QSLing or normal reception.

FAST-SLOW AUTOSTART An internal control permits operator selection of autostart sensitivity and noise rejection of the MARK Autostart mode.

GOLD PLATED SOCKETS All Integrated circuits and transistors are socket-mounted for ease of service and maintenance.

INPUT AMPLIFIER PROTECTION High speed diodes protect against high voltage transients generated by external audio switching circuits and comm-center patch panels.

MARK-SPACE CHANNEL CALIBRATION The front panel Channel VFOs are calibrated at 1275, 1360, 1445, 1575, 1700, 1870, 2000, 2125, 2295, 2425, 2550, 2775 and 2975 Hertz. Internal calibration potentiometers permit lower and higher calibration points.

TONE KEYER OUTPUT A balanced or isolated AFSK output is available on special order.

ADJUSTABLE HIGH LEVEL LOOP The 120 volt internal High Level loop supply may be strapped for 20, 40 or 60 milliamperes operation (neutral).

POLAR KEYER OPTION The PKC-100 Polar Keyer is available on special order and may be adjusted for ±50/±60 volt and 20, 40 or 60 mil operation.

REMOTE LOCK The terminal unit may be put into Standby by either an external voltage logic level (+5 to +15 VDC) or a contact closure to ground.

STANDBY INDICATOR The front panel SIGNAL LOSS LED also indicates the Standby (Send) mode.

REGENERATION INPUT-OUTPUT PORTS The REGEN IN and REGEN OUT ports at the rear panel have been buffered to prevent accidental damage to the keying circuits by external peripherals.

Specifications subject to change without notice.

DOVETRON

MPC E-SERIES OPTIONS

RIF-100 REMOTE INTERFACE MODULE

The RIF-100 Remote Interface Module is a 1.0" X 2.0" printed circuit card assembly that may be mounted in all MPC Series terminal units.

Standard E-Series Dovetrons are configured for "systems" operation and require a +5 to +15 VDC to be applied to the rear panel LOCK connector to remotely switch the terminal unit from Receive to Send. On the MPC-1000R, the +15 VDC is provided at a rear panel connector.

When the RIF-100 is installed, a slide switch permits selection of the standard system configuration (+5/+15-Send/Zero-Receive) or an inverted KOS configuration: Ground-Send/Open-Receive.

When set for KOS (Keyboard-Operated-Send) and used with a keyboard that generates a ground signal every time a key is depressed, a time constant circuit on the RIF-100 holds the terminal unit in Send during the short time intervals between the sequential depressing of the keys.

When installed in the MPC-1000R, the RIF-100 in KOS mode will also enable the AFSK Tone Keyer output during Send, effectively permitting VOX control of the companion transmitter.

This combination of VOX control and terminal unit Send/Receive permits keyboard control right at the local teleprinter.

PKC-100 POLAR KEYER CARD

The PKC-100 Polar Keyer option may be installed in lieu of the standard high level Neutral Keyer in the MPC-1000C, MPC-1000CR and MPC-1000R. Generally, if polar keying is required in the C and CR, the C/DK or CR/DK provide greater flexibility since they both contain switch selectable polar and neutral keyer circuits that are also current selectable.

The PKC-100 provides high level polar outputs of ±50/±60 volts at 20 to 60 mils, and polar inputs of ±5 to ±100 VDC.

HVP-100 HIGH VOLTAGE POLAR ADAPTER

The HVP-100 High Voltage Polar Adapter may be installed in an MPC-1000C/DK or MPC-1000CR/DK to provide a ±80 volts polar output at 20 mils for those teleprinters that require a ±80 volts polar drive.

ISOLATED-BALANCED AFSK TONE KEYER OUTPUT

The MPC-1000C/DK and MPC-1000CR/DK provide a transformer AFSK output, nominally Ø dbm (600 ohms). The MPC-1000C, MPC-1000CR and MPC-1000R provide a single-ended, 500 ohm resistive output of approximately 60 millivolts peak to peak, which is suitable to drive SSB transmitters. This output level may be increased up to ±10 dbm upon request. A transformer coupled output is available for the C, CR and R on special order.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3708

OPTIONS FOR E-SERIES

TMS-100 Tri-Mode AFSK Tone Selector assembly.

The TMS-100 is an integral part of the MPC-1000R Regenerative RTTY Terminal Unit and permits front panel selection of three different combinations of Mark/Space/Shift tone combinations.

The TMS-100 is also available in the MPC-1000C terminal unit, and this unit is then identified as the MPC-1000CA.

TSR-200 Teleprinter Speed Converter-Regenerator.

The TSR-200 may be installed in the MPC-1000C or MPC-1000CA terminal units. When installed in these terminal units, the Signal and Loop switches are DIP switches mounted on the TSR-200 card. The purpose of the TSR-200 is to provide regeneration and up-down speed conversion (without buffer storage) of both the incoming signal and the locally generated signal.

The TSR-200 is also available in an MPC-1000C with a front panel Signal speed switch that permits the operator to quickly select 45.45, 50.0, 56.88, 74.2/75.0 or 110 Baud signal speeds. The loop speed is programmed by a DIP switch mounted on the TSR-200 card. This terminal unit is the MPC-1000CR.

PKC-100 Polar Keyer Assembly.

The PKC-100 may be mounted inside the MPC-1000C, MPC-1000CA, MPC-1000CR, MPC-1000CS and MPC-1000R terminal units to provide a polar high level output of ±50/60 volts at 20 to 60 mils.

TSR-300 and TCS-300 Crypto/Scramble Assemblies.

Two crypto peripherals are available, the TSR-300 and the TCS-300. The TSR-300 provides coding and decoding functions. The TCS-300 is a simple code scrambler for low-security applications. Consult Dovetron for details. The MPC-1000CS contains a TSR-300 crypto assembly.

BALANCED OUTPUT: AFSK Tone Keyer.

A 600 ohm balanced output from the internal Tone Keyer is available on special order.

DOVETRON

MPC E-SERIES OPTIONS

AVS-100 AUTOMATIC VOLTAGE SELECT

115/230 VAC

The AVS-100 Automatic Voltage Select (patent pending) assembly permits the Dovetron MPC-Series RTTY Terminal Units to be plugged into either 115 VAC or 230 VAC power mains without presetting a mains-select switch or changing internal jumpers, etc.

When plugged into a 115 VAC power source, the AVS-100 is completely passive (inactive) and the dual primary windings of the power transformer are connected in a parallel configuration.

When connected to a 230 VAC (nominal) power source, the AVS-100 senses the higher voltage and switches the dual primaries into a series configuration, permitting normal operation and preventing any possible over-voltage damage.

If the 230 VAC mains sag below 145 VAC, the AVS-100 automatically switches back to 115 VAC operation, and conversely, if a 115 VAC mains soars to 170 VAC, the AVS-100 protects the terminal unit by switching to the 230 VAC series configuration.

With the AVS-100 installed, normal operation can be expected over the range of 90 VAC to 280 VAC, 40 to 400 Hz.

The AVS-100 may be installed in all Dovetron terminal units with any combination of TSR assemblies and other options.

AVS-200 AUTOMATIC VOLTAGE SELECT

115/230 VAC & 12/24 VDC

The AVS-200 Automatic Voltage Select (patent pending) provides the same functions as the AVS-100, but in addition, permits the MPC-Series terminal units to be operated on either 12 VDC or 24 VDC sources.

With the AVS-200 installed, the power cord of the terminal unit may be plugged into 115 VAC, 230 VAC, 12 VDC or 24 VDC sources without any manual switch selection or internal jumper changes.

With 12 VDC applied, a DC/AC converter generates 115 VAC and the dual primaries of the power transformer are switched to parallel.

When 24 VDC is applied, the converter generates 230 VAC and the dual primaries are switched to a series configuration.

With the AVS-200 installed, the normal AC operating range is 90 VAC to 280 VAC, and the normal DC range is 10 VDC to 28 VDC.

The AVS-200 may be installed in all Dovetron terminal units and with most combinations of TSR assemblies and other options.

Consult Dovetron regards use of the AVS-200 with the MPC-1000T, TSR-400D and TSR-600D.

DOVETRON

BBP-100 BINARY BIT PROCESSOR

December 1, 1978

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

The two weakest links in the signal processing chain in an RTTY Terminal Unit are "bandwidth" and "axis-restoration".

Bandwidth concerns signal to noise ratio (SNR) and axis-restoration pertains to the terminal unit's ability to correctly establish the proper zero-crossings between Mark and Space. Most axis-restorers are baud rate limited and perform poorly when the Mark and Space pulses are stretched over each other by multipath distortion.

Dovetron has developed a new method of axis-restoration that includes automatic Multipath Correction and selectable bandwidth.

This Binary Bit Processor (BBP) is an integral part of the Dovetron Baseband terminal unit, which is an extremely high-performance commercial unit.

Although Dovetron had not planned to offer the BBP concept in the MPC Series, the recent development of the TEMPTEST Model MPC-1000T has made the BBP available on a single PC assembly that can be easily installed in any MPC Series terminal unit. The part number of this assembly is BBP-100.

When tested on weak, noisy signals, an MPC-1000C/BBP-100 combination showed an error rate improvement over a standard MPC-1000C of 34 times (3400%).

Rotten signals that were not readable on the standard TU were easily readable on the MPC-1000C/BBP-100.

The BBP-100 also incorporates selectable bandwidths of 45.45/50.00, 56.88, 74.2/75.0, 110 and 150 Bauds, which optimize the terminal unit for 60, 66, 75, 100, 106 and 200 WPM Baudot and 100 WPM ASCII operation.

Since the new method of Multipath Correction is fully automatic, the front panel (MPC) switch permits operator selection of any two of these bandwidths.

If the front panel switch is replaced with a "center-off" type of switch (Alco Part Number MTA-106E), three bandwidths may be selected, permitting the terminal unit to be optimized to the incoming baud rate.

Installation of the BBP-100 in a D or E Series MPC terminal unit is fairly simple. Remove 14 op-amps from their sockets, remove about a dozen capacitors from the mainboard, and snip out six resistors. The BBP-100 is plugged into the mainboard thru the now empty op-amp sockets.

In the earlier B and C Series units, six of the soldered-in op-amps must be replaced with 8-pin IC sockets to accomplish the plug-in interface between the mainboard and the BBP-100 assembly.**

The BBP-100 will start showing up in production MPC terminal units in early 1979. A BBP-100K retrofit kit for existing units will be available in January 1979.

BBP-100K Retrofit Kit: $145.00 Postpaid USA. ALCO MTA-106E SW: $3.00 PP.

**Note: To determine which Series a particular terminal unit belongs to, remove the bottom cover and check the board ID number. The "Series" is identified by the letter following the board number: A75100-D is D Series, A75100-B is B Series. Kits for B/C Series will include required sockets.

PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

December 1977

DOVETRON

DAS-100 DIGITAL AUTOSTART MODULE

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

Most RTTY Terminal Units that incorporate an autostart circuit use some form of Analog autostart.

The MARK mode of the Dovetron MPC-1000R is pure analog. It is designed to respond to signal energy in the Mark channel.

The FSK mode (probably a Dovetron innovation) is a mixture of analog and digital that senses a "change of state" of the analog energy in either one or both of the channels.

Being analog, both modes are susceptible to false starts from noise, static crashes, CW, AM, SSB, off-speed RTTY and other energy sources.

To overcome the shortcomings of these analog systems and their false starts, Dovetron has designed a DIGITAL AUTOSTART MODULE (DAS-100) that utilizes two purely digital techniques: Character-Recognition and Speed-Determination.

The Character-Recognition circuit "looks" for a Space character, which was chosen as the "enable" signal since it follows every word in normal communications and consequently is very repetitious.

The Speed-Determination logic rejects all Space characters that are not received at the same speed that has been selected by the front panel Signal Speed switch of the MPC-1000R/TSR-500.

In operation, the Word Storage FIFO of the TSR-500 stores the initial incoming word. When the trailing Space character is decoded, the autostart circuit is enabled, which in turn, starts up the local teleprinter.

After a short delay (which permits the teleprinter to get up to operating speed), the stored word is released into the main memory, where it is regenerated, speed-converted and sent on to the teleprinter.

At the same time, the Word Storage FIFO is brought on line as part of the main memory. This permits a smooth continuous flow of data thru the digital system and prevents the last word of a transmission from being left in memory should no Space character be sent at the end of the transmission.

This digital method of autostart virtually eliminates false starts by noise, static crashes, CW, AM, SSB, off-speed RTTY or non-RTTY signals. It does not respond to Marking carriers or CR and LF signals. It may also be used as a method of selective calling, by setting the "start-up" time-constant to require a predetermined minimum number of consecutive Space characters at the beginning of a transmission.

Installation is simple. Remove one IC from its socket on the TSR-500 board and plug in the DAS-100. One wire is attached to the top lug of the front panel MARK/FSK switch and the other is soldered to E-point ØØ directly in front of the autostart relay.

Price: $40.00 PP USA. $45.00 Foreign. Deliveries start in January, 1978.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON

DAS-100 DIGITAL AUTOSTART MODULE

Most RTTY Terminal Units that incorporate an autostart circuit use some form of Analog autostart.

The MARK mode of the Dovetron MPC-1000R is pure analog. It is designed to respond to signal energy in the Mark channel.

The FSK mode (probably a Dovetron innovation) is a mixture of analog and digital that senses a "change of state" of the analog energy in either one or both of the channels.

Being analog, both modes are susceptible to false starts from noise, static crashes, CW, AM, SSB, off-speed RTTY and other energy sources.

To overcome the shortcomings of these analog systems and their false starts, Dovetron has designed a DIGITAL AUTOSTART MODULE (DAS-100) that utilizes two purely digital techniques: Character-Recognition and Speed-Determination.

The Character-Recognition circuit "looks" for a Space character, which was chosen as the "enable" signal since it follows every word in normal communications and consequently is very repetitious.

The Speed-Determination logic rejects all Space characters that are not received at the same speed that has been selected by the front panel Signal Speed switch of the MPC-1000R/TSR-500.

In operation, the Word Storage FIFO of the TSR-500 stores the initial incoming word. When the trailing Space character is decoded, the autostart circuit is enabled, which in turn, starts up the local teleprinter.

After a short delay (which permits the teleprinter to get up to operating speed), the stored word is released into the main memory, where it is regenerated, speed-converted and sent on to the teleprinter.

At the same time, the Word Storage FIFO is brought on line as part of the main memory. This permits a smooth continuous flow of data thru the digital system and prevents the last word of a transmission from being left in memory should no Space character be sent at the end of the transmission.

This digital method of autostart virtually eliminates false starts by noise, static crashes, CW, AM, SSB, off-speed RTTY or non-RTTY signals. It does not respond to Marking carriers or CR and LF signals. It may also be used as a method of selective calling, by setting the "start-up" time-constant to require a predetermined minimum number of consecutive Space characters at the beginning of a transmission.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON KOS-100 KEYBOARD-OPERATED-SEND ASSEMBLY

The KOS-100 assembly is a 5.0" X 6.0" printed circuit board assembly that mounts inside the MPC Series terminal units.

Its function is to monitor the loop line between the terminal unit and the local teleprinter, the status of the Memory Section of the TSR-500D and the stat of the TID-100 Station Identifier.

When the TID-100 is installed with a KOS-100 aseembly, their logic is interconnected thru a 16 pin header assembly.

The KOS-100 normally ignores all space transitions on the loop line that are generated within the terminal unit. When it senses a space transition that was generated outside of the terminal unit by the local keyboard, Tee Dee, etc., it switches the terminal unit into Send. A variable time-out control on the KOS-100 permits a time-out period of 1 to 10 seconds. At the end of the time-out period, the terminal unit is switched back to Receive automatically.

This effectively provides Send/Receive control of the TU right at the local keyboard.

If a TID-100 is also installed, momentarily depressing the BREAK button on the keyboard (or opening the loop line) for 0.5 seconds switches the terminal unit to Send AND to Preload AND sends a start command to the TID-100, which immediately starts its identification sequence. At the end of the ID sequence, the terminal unit is switched back to Operate and any data entered into the memory during the ID sequence is outputted normally. The time-out sequence begins when the Memory Section is empty. If the Phasing Pulse has been enabled, it is automatically turned ON during the time-out period.

During a transmission with data in the Memory Section, the BREAK button may be depressed, entering a stored command in the KOS-100 to enable the TID-100 at the end of the transmission, i.e., when the Memory Section empties.

A momentary contact closure to ground at the rear panel CW ID connector immediately forces the terminal unit into Preload and starts the ID sequence. This feature permits the use of a "timer" to automatically insert ID sequences into transmissions at selected intervals.

The KOS-100 also provides a remote Lock signal to the rear panel LOCK connector whenever it has switched the terminal unit into Send. The standard Lock command is Ground-Send and Open-Receive and is intended for remote operation of a companion transmitter/receiver via their push-to-talk (PTT) lines.

An inverted Lock command may be provided for system's use by inserting the proper components in open locations on the KOS-100 board. This circuitry may be configured for Ground-Receive and for Send: +5VDC, +15VDC, or an Open circuit.

For VOX control of the companion transmitter, the KOS-100 is also capable of enabling the AFSK tone keyer in the terminal unit only during periods of transmission.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

SELECTIVE CALLING (SEL-CAL) OPTIONS

The purpose of Selective Calling is to permit a local teleprinter to be turned on by a coded signal from a remote sending station. This is normally done by establishing a predetermined "turn-on" code, and when this code is received, activating the local teleprinter.

Both of the Dovetron Sel-Cal options provide this type of local turn-on, and in addition, also permit the teleprinter to be turned-off by another predetermined code.

In the event that the sending station forgets to send a turn-off code, or fades away during a transmission, the local teleprinter will be timed-out by the terminal unit's digital autostart circuits.

The digital autostart circuits will also initiate time-out if the sending station inverts "sense" or changes baud rate in the middle of a transmission.

To accomplish Selective Calling in the MPC-1000CR, MPC-1000CR/DK or MPC-1000R/TSR-200(D), the original TSR assembly is replaced with the TSR-200DS.

In the MPC-1000R/TSR-500(D), an SCL-100 module is plugged directly into the TSR assembly, and interconnected to the DAS-100 Digital Autostart module.

Selective Calling may also be installed in the MPC-1000C, MPC-1000C/DK and the Basic-R version of the MPC-1000R by installing the TSR-200DS assembly in the terminal unit.

The Sel-Cal functions of both the TSR-200DS and the SCL-100 may be used even if the signal regeneration and speed conversion features of the TSR unit have been disabled, provided the signal speed switch has been set to the same baud rate as the incoming signal and the Normal-Reverse switch has been set to the proper sense.

The turn-on and turn-off codes are programmed into the Sel-Cal units via board-mounted DIP switches. As an example, the turn-on code of ZCZC may be selected by programming a Z character (MSSSM) into the first DIP switch, a C character (SMMMS) into the second DIP switch and so on for the third and fourth character.

When the ZCZC combination is decoded by the Sel-Cal circuit, a start command is sent to the autostart circuits, which in turn enables the local teleprinter.

The turn-off code is a single character that must be received in a four character sequence. If the N character is selected, four sequential Ns (NNNN) initiate autostart time-out. It is also programmed via a board-mounted DIP switch.

Normal time-out after receipt of a proper turn-off code is 20 seconds. This period may be lengthened or shortened by changing the value of a resistor on the main board of the terminal unit.

Any Baudot character of the CCITT International Telegraph Alphabet No. 2 (Murray Code) may be used in the turn-on/turn-off codes.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

11-6-78

DOVETRON

SSD-100 SOLID STATE CROSS DISPLAY

The SSD-100 Solid State Cross Display replaces the CRT and its high voltage power supplies in the MPC-Series RTTY Terminal Units.

The display is arranged in the traditional cross pattern and consists of high intensity (4.0 millicandelas) red, rectangular LEDs (Light Emitting Diodes). The operation of the display can be best described as a "center-off, dual-bargraph" and has a typical linearity of 0.5%.

The incoming Mark signal is displayed by the horizontal row of LEDs and the Space signal is displayed vertically.

The fast response time of the LEDs provide a truer indication of signal conditions. Weak or low S/NR signals are easier to tune in, since the SSD-100 does not display the "ball of noise" or retrace lines normally seen in a CRT display.

In addition to "Instant-On" operation and greatly increased reliability, there is no degradation with age or duty-cycle. The LEDs selected for the SSD-100 have a life expectancy in excess of 100,000 hours, ten times better than a CRT.

The MTBF (Mean Time Before Failure) of the entire terminal unit is significantly increased by the removal of the heat generating CRT assembly and the high voltage components in the CRT's power supply.

A separate LED in the upper left quadrant of the cross pattern monitors the Mark and Space input channels and "flashes" in the presence of time or frequency dispersive multipath distortion, indicating a probable increase in error rate, and suggesting that the Multipath-Corrector should be turned on.

The two LEDs at the apex of the cross pattern light only if the terminal unit is properly tuned to the incoming signal, and if the sense of the signal (Normal-Reverse) is the same as the terminal unit's sense.

Separate LEDs in two other quadrants indicate the status of the internal loop, the Signal Loss circuit and the Send-Receive mode of the terminal unit, making the SSD-100 more than just a tuning indicator, but also a central display of operator-required information.

A light sensitive photocell in the fourth quadrant monitors the ambient light conditions at the operating position and automatically adjusts the light output level of the SSD-100 to a comfortable viewing level.

The front panel bezel contains an anti-glare optical filter and provides 30% more viewing area than the original CRT bezel. When turned off, the optical filter appears as a black glass window.

The SSD-100 may be viewed easily from 75 feet. Under similar conditions, a CRT display is difficult to view from 10 feet.

Three "Set and Forget" potentiometers on the SSD-100 assembly provide Mark-Gain, Space-Gain and Photocell-Threshold. All integrated circuits, transistors and the photocel plug into gold-plated sockets for ease of maintenance.

A plug-in cable connects the SSD-100 to the terminal unit's main board.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

TBA-1000 BAUDOT-ASCII CODE TRANSLATOR

The TBA-1000 is a self-contained Baudot-ASCII and ASCII-Baudot Code Translator that may be used in either Full-Duplex or Half-Duplex modes. It is packaged in a 17" X 3.5" X 9" cabinet, which may be rack mounted in a standard 19" wide rack, and operated from either 115 or 230 VAC, 40 to 400 Hz mains.

Dual crystal-controlled clocks permit Baudot baud rates of 45.45, 50.00, 56.88, 74.2-75.0 and 110 baud, which are front panel selectable.

ASCII baud rates of 110, 150, 300, 600, 1200, 2400, 4800 and 9600 baud are selectable via an 8 pole DIP switch mounted on the dual clock board.

Internal switches select the various I/O configurations. Baudot I/O may be set for high or low level. The high level, neutral I/O may be selected as either active or passive. In the active mode, loop currents of 20, 40 or 60 mils may be selected. In the passive mode, the loop current is supplied externally.

The low level Baudot I/O may be either EIA RS232C (-12 Mark, +12 Space) or MIL STD 188C (+6 Mark, -6 Space).

The ASCII I/O is also switch-selectable for high or low level neutral. In the active mode, the TBA-1000 provides 20 mils at 28 VDC. The low level interface may be either EIA RS232C, MIL STD 188C or TTL. A parallel ASCII I/O is available thru a removable cover on the rear panel and is configured as TTL.

Signal Regeneration to less than 0.5% bias distortion and up-down speed conversion are accomplished by two CMOS Universal Asynchronous Receiver-Transmitters (UARTs).

A 192 character FIFO buffer memory has been provided in the ASCII-Baudot section to prevent character over-runs when down-converting from ASCII to Baudot. A Data-Inhibit circuit automatically flags when the Memory is two/thirds full (128 characters). This memory section may be preloaded with keyboard control from the local ASCII keyboard.

A variable character rate circuit has been provided with a front panel control to permit slower than machine-speed outputting of the Baudot signal. The Blank-Fill generates BLANK Baudot characters when the Memory section is empty and may be controlled from the front panel or from the local ASCII keyboard.

In the Half-Duplex mode, Transmit-Receive functions may also be controlled from the front panel or the local ASCII keyboard. Certain remote control functions, such as LOCK, PTT, IDENT and PHASING INHIBIT are also keyboard controllable. These lines permit peripheral control.

A front panel switch permits NORMAL, DOWN-SHIFT-ON-SPACE or LTRS ONLY operation. An internal switch permits the outputting of Baudot FIGS ONLY.

Five front panel LEDS monitor the status of the Memory Section: EMPTY, 1/3, 2/3 and FULL. Additional LEDs monitor the other control states and both the ASCII and Baudot high level loops.

An internal switch permits selection of Baudot FIGS/S or FIGS/J for the BELL function in the ASCII-Baudot Section. A ROM change is required to permit FIGS/J (BELL) operation in the Baudot Section (CCITT #2) and is available upon request. A TBA-1000 Bypass option is also available on special order.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

TID-100 TELEPRINTER IDENTIFIER

The TID-100 Teleprinter Identifier is a 5" by 3.5" PC card that is designed to mount inside of the MPC Series RTTY Terminal Unit.

Although intended to be used as a CW IDer, it may be programmed to output either Baudot or ASCII teleprinter codes.

When outputting a teleprinter code, the free-running clock is easily adjusted to the appropriate baud rate.

The TID-100 consists of four socket-mounted CMOS devices and a 128 bit diode-programmable matrix. The matrix is designed so that the programming diodes lay flat on the PC board, making installation and code reading very easy.

Two LEDs on the board monitor the status of the internal counter circuit and the outputted code. The latter permits visual verification of the code during matrix programming.

Although most IDers require about 150 mils of power, the CMOS circuitry in the TID-100 requires less than one mil in standby and less than seven mils during code-transmit.

This low power requirement permits the TID-100 to be operated directly from the TU's internal supplies without additional regulators, filters or heat generation.

Delivery: From Stock.

Price: $50.00 FOB South Pasadena

Specifications and prices are subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON TID-100 TELEPRINTER IDENTIFIER

The TID-100 Teleprinter Identifier is a 5.0" X 3.5" printed circuit board assembly that is designed to mount inside of all MPC Series Rtty Terminal Units.

Although intended to be used as a Morse CW IDer, it may be programmed to output either Baudot or ASCII teleprinter codes.

When outputting a teleprinter code, the free-running clock is easily adjusted to the appropriate baud rate.

The TID-100 consists of four socket-mounted CMOS devices and a 128 bit diode-programmable matrix. The matrix is designed so that the programming diodes lay flat on the printed circuit board, making installation and code reading very easy.

Two LEDs on the board monitor the status of the internal counter circuit and the outputted code. The latter permits visual verification of the code during matrix programming.

When installed in an MPC-1000C or MPC-1000CR, a second transistor keyer displays the transmitted code sequence on the front panel Signal Loss LED.

When installed in an MPC-1000R, the code sequence is displayed on front panel Memory Empty LED. If the Phasing Pulse mode of the TSR-500D is enabled, when the TID-100 is identifying, it automatically interrupts the "diddle" signal which would otherwise interfere with the identification code that was being transmitted.

When installed with a KOS-100 Keyboard-Operate-Send assembly, the TID-100 interfaces to the KOS via a 16 pin header and mounts directly on the KOS assembly.

In this application, when the KOS-100 enables the TID-100, the MPC-1000R terminal unit is switched into Preload, which permits data to be entered into the terminal unit while the TID-100 is "identifying".

At the end of the identification cycle, the terminal unit is switched from Preload to Operate, and the preloaded contents of the Memory Section is transmitted.

If a CW ID command is initiated by the keyboard BREAK button while the Memory Section contains data, the "start" latch in the KOS-100 is held-off until the Memory Section empties, i.e., at the end of the transmission.

Power requirement of the TID-100 is one mil Standby and seven mils in Transmit.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

TSR-100 TELEPRINTER SPEED CONVERTER-REGENERATOR

DOVETRON
627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3708

The DOVETRON TSR-100 is a bilateral, asynchronous code regenerator and UP-DOWN speed converter that is designed to mount inside of the MPC-1000C RTTY Terminal Units. All input and output ports are fully buffered, permitting simple interfacing to other types of terminal units.

The TSR-100 consists of a single 6" X 7" PC card, containing a Uart Regenerator, an 80 character FIFO Ripple Memory, a programmable crystal-control Dual-Clock and a Bilateral Steering section.

Only a total of 18 integrated circuits are required and all are mounted in dual inline sockets. Power is normally supplied by the TU's internal power supplies, since the CMOs design requires only 90 mils at +12 to +15 volts and 15 mils at -12 to -15 volts.

The Regenerator section is fully programmable by a socket-mounted DIP switch. All programming instructions are permanently etched on the PC board adjacent to the switch, which permits selection of 5, 6, 7 and 8 level codes, selection of the number of Stop bits to be affixed to the regenerated character, selection of the Parity option, and whether or not a Stop bit is required on the received character. A variable Character Rate control permits the Stop bit of the regenerated character to be lengthened, permitting normal Baud rates with slower than machine-speed character rates.

Incoming and outgoing signals with as much as 46% distortion are regenerated to less than 1% bias distortion and a logical Stop pulse is provided at the end of each character to maintain machine synchronization.

Start pulse verification is accomplished by center-sampling of the Start pulse and provides immunity to false starts from noise pulses. All data bits are center-sampled sequentially.

The Uart may also be programmed by the DIP switch to automatically self-generate a Start pulse whenever it is in the transmit mode and is not receiving data from the Memory section. This feature automatically outputs a BLANK character at the preset character rate. By utilizing the Uart's tri-state mode in this way, first character and timing errors (when new data is entered from the Memory section) are prevented. When operated at machine speed, this automatic BLANK character may be used as a phasing pulse for crypto peripherals. A simple jumper change on the PC board converts the automatic BLANK character to an automatic LTRS character.

An 80 character FIFO Ripple Memory provides a full line of storage and may be programmed by the DIP switch for PRELOAD and RECIRCULATE functions in both the transmit and receive modes.

The 8 parallel data lines at the output of the Memory section are available via a 16 pin DIP socket-pattern for interfacing to external circuits.

Memory RESET and UNLOAD functions are available and may be controlled by a pair of remote lines.

COVETRON

A unique over-ride circuit prevents character over-runs when operating at a slow character rate by momentarily increasing the character rate to machine-speed when the Memory section "flags" that it has been filled and additional data will create an over-run condition. This over-ride circuit also outputs a signal condition that may be used to inhibit a Tee Dee during tape transmissions.

Two LEDs indicate the status of the Memory section.

The FULL LED indicates when the Memory section has been filled and will stay lit during the period that the TD Inhibit signal is enabled.

The EMPTY LED lights in the transmit mode when the Uart is generating a phasing pulse (BLANK character) and in the receive mode when the memory section is empty.

The Memory UNLOAD function may be used to increase the character rate momentarily to machine-speed to empty-out the Memory at the end of a transmission. When the Memory has been completely emptied, the EMPTY LED indicates the TSR-100 has transmitted all of its stored data and is ready to be put into the receive mode.

The crystal-controlled Dual-Clock consists of a Statek quartz crystal mounted in a three-lead TO-5 can, a Cmos oscillator and two identical, programmable BCD/N divider sections. These two divider sections are independently programmable for 60, 67, 75, 100 WPM Baudot and 110 Baud ASCII communication rates.

The clock programming switches are also DIP switches mounted in separate sockets and may be replaced with remote programming lines.

The proper switch settings for the various communication speeds are permanently etched on the PC board and provide easy reference and fast speed selection.

The Bilateral Steering section provides solid-state switching between transmit and receive modes and is controlled by a single command line: Receive: Zero volts. Transmit: +5 to +15 volts. When installed in a MPC Series Terminal Unit, switching from transmit to receive may be accomplished by the front panel Standby switch or a rear panel connector.

The TSR-100 is available as a factory-installed option in all MPC Series Terminal Units and as a field retrofit to existing terminal units.

TSR-100 Teleprinter Speed Converter-Regenerator: $295.00 FOB So. Pasadena

Specifications and prices subject to change without notice.

DOVETRON

627 FREMONT AVE.
SOUTH PASADENA, CALIFORNIA 91030
213-682-3705

TSR-200 TELEPRINTER SPEED CONVERTER-REGENERATOR

The TSR-200 Teleprinter Speed Converter-Regenerator is a 5" X 5" PC board that is designed to fit inside of the MPC-1000C and MPC-1000CA Rtty Terminal Units.

Its function is to regenerate all incoming and outgoing signals to less than 0.5% bias distortion, thus significantly lowering the error rate of signals badly distorted by HF propagation.

The extremely low bias distortion presented to the teleprinter also permits excellent copy on machines that because of age, wear or misadjustment might not perform well with unregenerated signals.

The TSR-200 consists of a programmable CMOS UART (Universal Asynchronous Receiver-Transmitter), a programmable crystal-controlled Dual-Clock and a CMOS switching section.

The UART may be programmed by a board-mounted 8 pole DIP switch for 5, 6, 7 or 8 level communication codes, with or without Parity, Stop Bit Verification, and the total number of Stop Bits to be attached to the regenerated character. Programming instructions are etched on the board next to the switch.

The Dual-Clock is crystal-controlled by a quartz crystal CMOS oscillator and two identical BCD/N dividers. Each divider may be programmed for baud rates between 37.5 and 3750 baud. Programming is accomplished by a pair of 8 pole DIP switches, and programming instructions for 45.45, 50.0, 56.88 and 75 Baudot and 110 Baud (100 WPM) signal speeds are also etched right on the PC board.

Up-Down Speed Conversion is accomplished by setting the Input and Output clocks to different baud rates. The CMOS switching section automatically interchanges the data and clock lines when the terminal unit is switched from Receive to Send.

A five position rotary speed switch and a 24 inch cable assembly are available if it is desired to control the Signal Speed (Clock 1) externally.

A power interconnecting cable, installation instructions and all necessary mounting hardware are supplied with each TSR-200 for ease of installation within a MPC Series Terminal Unit.

TSR-200: $150.00 FOB South Pasadena.

Speed Switch/Cable assembly: $15.00 Postpaid USA

Specifications and prices are subject to change without notice.

MAILING ADDRESS, BOX 267, SOUTH PASADENA, CALIFORNIA 91030

DOVETRON TSR-200D TELEPRINTER SPEED CONVERTER-REGENERATOR

SIGNAL REGENERATION, SPEED CONVERSION & DIGITAL AUTOSTART

The TSR-200D is a 5.0" X 6.25" printed circuit board assembly that mounts inside of the MPC-1000CR (Neutral Keyer) and MPC-1000CR/DK (Neutral-Polar Keyer) RTTY Terminal Units. It may also be installed in the MPC-1000C, MPC-1000C/DK and MPC-1000R (Basic-R) Terminal Units.

The TSR-200D provides three functions: Signal Regeneration, Speed Conversion and Digital Autostart.

All incoming and outgoing signals are regenerated to less than 0.5% bias distortion, significantly lowering the error rate of badly distorted or weak RTTY signals.

The Dual Crystal-Controlled Clock permits UP-DOWN Speed conversion between the standard communication baud rates (45.45, 50.00, 57.88, 75.0 and 110).

The Digital Autostart section operates on both Character Recognition and Speed Determination principles and prevents false starts on up-side-down signals or on signals operating baud rates other than for which the Signal Speed switch has been set. It is practically impervious to false starts as normally caused by SSB, CW or noise interference.

The Regenerator Section is a CMOS Universal Asynchronous Receiver-Transmitter (UART) and may be programmed by a board-mounted switch for 5, 6, 7 or 8 level codes, with or without Parity, Stop Bit Verification and the total number of Stop Bits to be attached to the end of the regenerated character.

Stop Bit Verification, when enabled, requires that the UART receive a valid stop bit on each received character before the character will be regenerated.

Total Stop Bit (TSB) selection permits a 1.0 or 1.5 character unit Stop Bit to be affixed to the end of each regenerated character when the UART is programmed for 5 level Baudot operation.

When programmed for 6, 7 or 8 level operation, the Stop Bit selection circuit provides either a 1.0 or a 2.0 character unit Stop Bit.

The Speed Conversion feature may be enabled or inhibited with a board-mounted slide switch. When inhibited, both the input and output clock ports of the Regeneration Section are clocked from the Signal Speed section of the Dual Clock.

The Signal Regeneration circuit may be bypassed by a second board-mounted slide switch for straight-thru asynchronous operation.

The Digital Autostart feature functions regardless of the setting of the Signal Regeneration and Speed Conversion switches.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

TSR-300D SIGNAL REGENERATION ASSEMBLY WITH SELECTIVE CALLING (ON-OFF)

The TSR-300D is the Selective Calling version of the TSR-200D Signal Regeneration assembly and replaces the TSR-200D/SCL-100 combination in new Selective Calling applications.

In addition to Signal Regeneration, Speed Conversion and Digital Autostart functions, the TSR-300D may be programmed to automatically turn on with up to a seven character Turn-On code and to turn off with a four character Turn-Off code.

The Turn-On code may be structured for any combination of two to seven Baudot characters.

The Turn-Off code consists of four identical Baudot characters received sequentially, i.e., NNNN, AAAA, 6666, ????, etc.

The Digital Autostart section may be used to issue a Turn-Off command if the coded Turn-Off code is not received, is not sent by the transmitting station at the end of the transmission, if the transmitting station changes baud rate or "sense" during a transmission, etc.

Programming of the Turn-On and Turn-Off codes is accomplished by setting individual 5 pole DIP switches for each Baudot character.

Rectangular LEDs on the TSR-300D assembly indicate the status of the Selective Calling circuits: SEL CAL ON, SEL CAL ENABLED, SEL CAL OFF and DIGITAL AUTOSTART ON-OFF.

Installation of the TSR-300D is accomplished by exchanging the TSR-300D with the standard TSR-200D assembly in the Dovetron MPC-1000CR and MPC-1000CR/DK RTTY Terminal Units.

The TSR-300D may also be installed in the MPC-1000R, and upon special order, in all other MPC-Series terminal units.

Although the SCL-100 may be used to retrofit existing TSR-200D equipped terminal units with Sel Cal, the TSR-300D is definitely preferred in new installations.

Consult the TSR-200D specifications for additional information regards the Signal Regeneration, Speed Conversion and Digital Autostart features.

For Selective Calling applications that require WRU Answer-Back, the TSR-600D should be used. In addition to both Group and Station Turn-On capability, the TSR-600D provides a 16 character Answer-Back Message Generator and a unique Station Sequence Circuit that permits the calling station to receive a printed roll-call of responding stations.

Note: The TSR-300D and TSR-600D are intended for terminal units equipped with the SSD-100 Solid State Cross Display. When installed in a CRT-equipped terminal unit, the CRT display must be replaced with a Solid State Cross display assembly.

DOVETRON TSR-400D SIGNAL REGENERATION, SPEED CONVERSION, DIGITAL AUTOSTART & BAUDOT-ASCII CODE TRANSLATION.

In addition to providing all of the functions of the TSR-200D, the TSR-400D also provides Baudot to ASCII Code Translation.

The primary purpose of the TSR-400D is to permit a Baudot-coded signal to be printed or displayed on an ASCII-coded Receive Only (RO) ASCII teleprinter or video display unit.

A typical application would be where the user has selected a modern ASCII terminal to be used to receive an existing Baudot weather or press circuit.

The ASCII outputs are available (simultaneously) in:

1) TTL: +5 volts Mark, Zero volts Space.

2) EIA RS232C: -12 volts Mark, +12 volts Space.

3) MIL STD 188C: +6 volts Mark, -6 volts Space.

4) Neutral Loop (20 milliamperes-28VDC), Active or Passive.

5) Parallel Seven (7) Wire: +5 volts Mark, Zero volts Space.

All outputs are available on the TSR-400D board in a 14 pin DIP connector.

The TTL, EIA, MIL and Neutral Loop outputs are also available at individual E-Points.

The 20 mil Neutral Loop is switch-selectable for either ACTIVE or PASSIVE operation. In the ACTIVE mode, the TSR-400D provides the 20 mils of loop current. In the PASSIVE mode, the loop current may be provided from an external battery or from the companion terminal.

In both ACTIVE and PASSIVE modes, the neutral loop current is monitored by an internal loop current regulator circuit that disconnects and protects the internal loop keyer circuit if the current exceeds 35 mils.

The Parallel Seven-Wire ASCII output is normally tri-stated (high impedance output) when not in use. A ground on the CONTROL line (eighth wire) provides data output.

When the terminal unit is operated in the Transmit mode, all Baudot characters entered from the local Baudot keyboard are reflected back thru the Baudot-ASCII translation section and displayed on the ASCII terminal.

The TSR-400D may be installed in all Dovetron terminal units, in lieu of the TSR-200D or TSR-500D Regeneration assemblies.

When factory installed, the 20 mil ASCII loop output is connected to the 3-Way loop connector on the rear panel. The 20-60 mil Baudot loop is connected to the 2-Way connector. Both loop outputs may be used simultaneously.

A separate crystal controlled oscillator and digital divider permits ASCII baud rates of 110, 150, 300, 600, 1200, 2400, 4800 and 9600 baud.

Specifications subject to change without notice.

DOVETRON TSR-500D TELEPRINTER SPEED CONVERTER-REGENERATOR

SIGNAL REGENERATION, SPEED CONVERSION & WORD CORRECTION

The TSR-500D is a 6.25" X 7.25" printed circuit board assembly that mounts inside of the MPC-1000R. It provides Signal Regeneration, Speed Conversion and keyboard-controlled Word Correction. With the addition of the DAS-100 Digital Autostart Module, it also provides Digital Autostart.

The 200 Character FIFO Memory Section may be Preloaded and Recirculated with either off-the-air signals or data generated at the local teleprinter.

The Dual-UART Regenerator Section regenerates incoming and outgoing signals to less than 0.5% bias distortion and permits local copy while the Memory Section is being Preloaded or Recirculated. It also permits local copy while retaining the contents of the Memory.

This Regenerator Section may be programmed by a board mounted switch for 5, 6, 7 or 8 level codes, with or without Parity, Stop Bit Verification and the total number of Stop Bits to be attached to the end of the regenerated character.

Total Stop Bit (TSB) selection permits a 1.0 or 1.5 CU Stop Bit to be affixed to the end of a 5 level Baudot character. If the UARTs are programmed for 6, 7 or 8 level codes, the TSB may be either a 1.0 or a 2.0 CU Stop Bit. When enabled, the Stop Bit Required (SBR) function forces the UARTS to reject any character that does not contain a valid Stop Bit.

The Dual Crystal-controlled Clock permits Up-Down Speed Conversion between the standard communication baud rates: 45.45, 50.00, 57.88, 74.20 (75.00) and 110.0 bauds.

Five 40 character FIFO cells comprise the 200 character Memory Section. The Input FIFO is utilized as a Word-Storage Cell for the Word Correction function. A Space character following an acceptable word transfers the word out of the Input FIFO into the main Memory Section. A keyboard generated Blank character erases the contents of the Input FIFO, thus providing a convenient method of correcting each word as it is generated.

An Automatic Word-Storage Over-Ride circuit automatically empties the contents of the Input FIFO into the Main Memory Section whenever the Input FIFO contains 39 characters. In this way, the Input FIFO can not be over-run by data that does not contain Space or Blank Characters, such as RY tapes, etc.

An Automatic Stop-Bit Length Selection circuit permits the Dual-UARTs to be programmed for 1.0 CU Stop-Bits during Receive and automatically to be switched to 1.5 CU Stop-Bits during Send, thus minimizing the error rate between two teleprinters operating with different stop bit lengths.

A Phasing Pulse mode generates either a BLANK or LTRS character when the TSR-500D is in Send and the Memory Section is empty.

Variable Character Rate is provided in the Send mode to create a better balance between the energy levels of the transmitted Mark and Space channels. An Automatic Character Rate Over-Ride circuit prevents the Memory Section from being over-run by machine speed or fast keyboard operation. A Tee Dee Inhibit circuit controls data entry from tape-fulling or memory peripherals.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

DOVETRON

TSR-500 TELEPRINTER SPEED CONVERTER REGENERATOR

The DOVETRON TSR-500 Teleprinter Speed Converter-Regenerator is interchangeable with the TSR-100 as the digital logic section (Memory and Signal Regeneration) of the MPC-1000R Regenerative RTTY Terminal Unit.

It is also available as a separate assembly for interfacing to other terminal units and data peripherals.

In addition to the functions provided by the TSR-100, the TSR-500 also provides:

1) 200 characters of silastic Memory (Five ceramic FIFO elements).

2) A 2nd UART that permits local teleprinter copy during Receive-PRELOAD and Send-RECIRCULATE.

3) WORD CORRECTION has been incorporated in the INPUT FIFO and is controlled by the local keyboard.

Complete words are held in the Input FIFO until the FIFO receives a SPACE character from the local teleprinter or Tee Dee. Incorrect or mis-spelled words may be erased from the INPUT FIFO by sending a BLANK character at the end of the word instead of the normal SPACE character.

When "cutting-tape", it is not necessary to back-space the tape to punch-out an error. A BLANK character punched on the end of the unwanted word will be recognized by the Word Correction circuit when the tape is read into the TU and the unwanted word will be erased.

4) A MEMORY HOLD circuit has been added that permits the second UART to route an incoming signal to the local teleprinter while the Memory Section is left in Recirculate. This feature permits the same preloaded message (CQ, etc.) to be used over and over again until an answer has been received.

The WORD CORRECTION circuit is only enabled when the TSR-500 (or MPC-1000R) is in the SEND mode. If the four FIFOs in the main Memory Section fill to 160 characters, the Word Correction circuit is automatically inhibited and the Input FIFO comes on-line as a 5th storage element with its 40 characters of additional storage capacity. At the same time, the Tee Dee Inhibit circuit is enabled, effectively providing a 40 character buffer against character over-runs when down-converting from one Baud rate to another.

All input and output data lines have been fully buffered and provided with auxiliary inverter circuits, which permit either polarity to be inputted or outputted.

The data output and AFSK Tone Keyer lines have been provided with auxiliary transistor location configured as an open-collector switch, adding flexibility when interfacing to other modems and logic levels.

When supplied as a separate assembly, two power/logic cables and a Signal Speed switch and cable assembly are included. A second Speed cable/switch assembly may be ordered for LOOP SPEED control: $15.00 postpaid.

TSR-500 with 200 characters of Memory, two UARTS and Word Correction:

$395.00 FOB South Pasadena.

Specifications and prices subject to change without notice.

DOVETRON

TSR-600D DUAL SELCAL & WRU ANSWERBACK

The TSR-600D is designed to replace the TSR-200D Signal Regeneration assembly in the MPC-1000CR and CR/DK RTTY Terminal Units. It may also be installed in the MPC-1000C, MPC-1000T TEMPEST and will replace the TSR-500D in the MPC-1000R RTTY Terminal Units.

Like the TSR-200D and TSR-500D, the TSR-600D provides Signal Regeneration, Speed Conversion and Digital Autostart.

In addition, the TSR-600D provides Dual Sel-Cal (Group & Station), Dual WRU (Who Are You) Request, Dual Turn-Off and a 16 Baudot Character Message Generator Answerback section.

All Sel-Cal, WRU, Turn-Off and Answerback coding is accomplished via 5-pole minidip slide switches, which permit easy field reprogramming.

The Group Call Selcal Section also incorporates a Station Sequence Select circuit that permits the net control station to call his Group, request a WRU Answerback and then to standby and receive a complete roll-call as each station in the net answers back in its own time frame.

Any station that did not answerback may be called individually via the Station Call Selcal section.

Both Group and Station Call sections contain their individual WRU and Turn-Off sections, which permits individual stations to be called up, requested for answerback routine and/or to be individually dropped out of the net.

The baud rate of the Answerback Message Generator is front panel selected by the terminal unit's Signal Speed Select switch and is derived from the crystal oscillator section in the signal regenerator portion of the TSR-600D.

The Digital Autostart (DAS) circuit has been retained and may be used in lieu of the Sel-Cal mode if desired.

The DAS circuitry may also be used to shut down the local teleprinter if the net control stations forgets to send the proper Turn-Off code, or if the signal path deteriorates, or if the net control station should shift to some different baud rate, inverts sense of Mark and Space, etc.

E-Points have been provided on the TSR-600D board, which permit additional control switches to be added by the user as required by a particular installation.

Six LED indicators on the main board have been provided to permit quick verification of the programming codes. All testing and verification may be done from the local teleprinter. An external radio signal is not required.

Transmitter control is done by a hard contact relay rated at 6 amps, and both normally-open and normally-closed contacts are available.

Approximate dimensions are 14 inches wide and 7 inches deep, which permits the TSR-600D to be mounted inside of any Dovetron terminal unit.

Power requirements, should the TSR-600D be used separately, are approximately 50 mils at ±15 VDC.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE