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

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.

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

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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-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 ADDITIONAL FEATURES - E-Series

The latest E-Series represents six years of development and refinement and include the following additional features:

SOLID STATE CROSS DISPLAY The SSD-100 Display consists of a plug-in module with a cross pattern of light emitting diodes. Additional LEDs in three quadrants of the cross display indicate Multipath Distortion, loop current and Signal Loss. A photocell in the fourth quadrant automatically controls the light intensity of the display.

AUTOMATIC THRESHOLD LEVEL Upon acquisition of an incoming signal, an electronic tracking circuit sets the threshold level of the terminal unit, permitting "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, turning on the local teleprinter's motor and permitting retrieval of messages left in the typing unit during unattended operation.

AUTOSTART DELAYED TIMEOUT FSK Autostart time-out is automatically inhibited during data entry and provides a 20 second time-out period after the last character is sent, providing adequate time for station identification procedures.

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

TONE KEYER OUTPUT A Ø dbm transformer-coupled AFSK output option is available on special order (Standard in C/DK and CR/DK units).

ADJUSTABLE HIGH LEVEL NEUTRAL LOOP Internal strapping provides either 40/60 or 20 mil 120 VDC neutral loop operation.

POLAR KEYER OPTIONS The DK series offers both Polar and Neutral high level keyers. Polar voltages are ±48, ±50, ±60 and ±80. Polar currents available are 20, 40 or 60 mils. Other levels are available on special order. The PKC-100 Polar Keyer option provides high level polar keying in the C and R Series.

GOLD PLATED SOCKETS All integrated circuits and transistors are socket mounted in side wipe sockets for ease of maintenance and service.

KEYBOARD OPERATED SEND The KOS-100 option permits Send/Receive control of the terminal unit and peripheral transmitters and receivers from the keyboard of the local teleprinter.

SELECTIVE CALLING The SCL-100 Sel-Cal option may be plugged into the TSR-500D and provides four character turn-on and turn-off of local teleprinter.

DIGITAL AUTOSTART The DAS-100 Digital Autostart option provides a character recognition, speed determining form of autostart that is not actuated by non-RTTY interfering signals.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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.

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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

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

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.

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.

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