

DATA SET 402B

RECEIVER

DESCRIPTION AND OPERATION

1.00 INTRODUCTION

1.01 This section covers data set 402B. It does not contain any operating information concerning the business machine equipment used with the data set.

2.00 GENERAL

2.01 Data set 402B may be used in DATA-PHONE service or on private lines (Fig. 1).

2.02 Information concerning data set 402A (transmitter) is covered in Sections 594-016-100 through 594-016-500.

2.03 The data set 402B is the receiver component of a medium-speed parallel data transmission system capable of transmitting 8 data levels at any speed up to 75 characters per second which is the equivalent of 600 bits per second if all 8 channels are used. The system is designed for one-

way transmission of data over a voice channel on a half-duplex basis with provision for answer-back transmission.

3.00 DESCRIPTION

3.01 The data set 402B consists of an automatic volume control circuit, an amplifier, a timing circuit, eight channel detectors with their associated relays, an answer-back transmitter, and a control relay which is used only when an installation consists of both a transmitting and receiving data set bridged on the same line. A mode control circuit, under control of the business machine, is used to connect either the data receiver or the answer-back transmitter to the line. When the data mode lead is closed to ground, the set is in the data receiving mode. When the data mode lead is open, the set is in the answer-back transmission mode.

3.02 The set will be provided in gray only.



Fig. 1 — Data Set 402B with 503B-61 Telephone Set

TABLE A
FREQUENCY RANGE

Channel		1	2	3	4	Timing	5	6	7	8
Freq, cps	MARK	730	900	1070	1240	1410	1580	1750	1920	2090
	SPACE	800	970	1140	1310	1480	1650	1820	1990	2160

3.03 The data set 402B is arranged to detect and respond to frequencies transmitted by the data set 402A over the eight data channels and the timing channel. The data delivered to the business machine is in the form of either a closure between the data lead and the data common lead for MARK, or an open for SPACE, on each channel. These opens or closures are delivered to the business machine each time the timing channel shifts frequency and remain so until the next timing channel shift. The range of frequencies is shown in Table A.

3.04 The timing channel also delivers a short closure (5 msec) to the business machine between the TIMING COMMON and the TIMING leads at the beginning of each character.

3.05 The interface cord between the receiver and the business machine must be supplied by the customer. The jack for this connection is shown in Fig. 2.

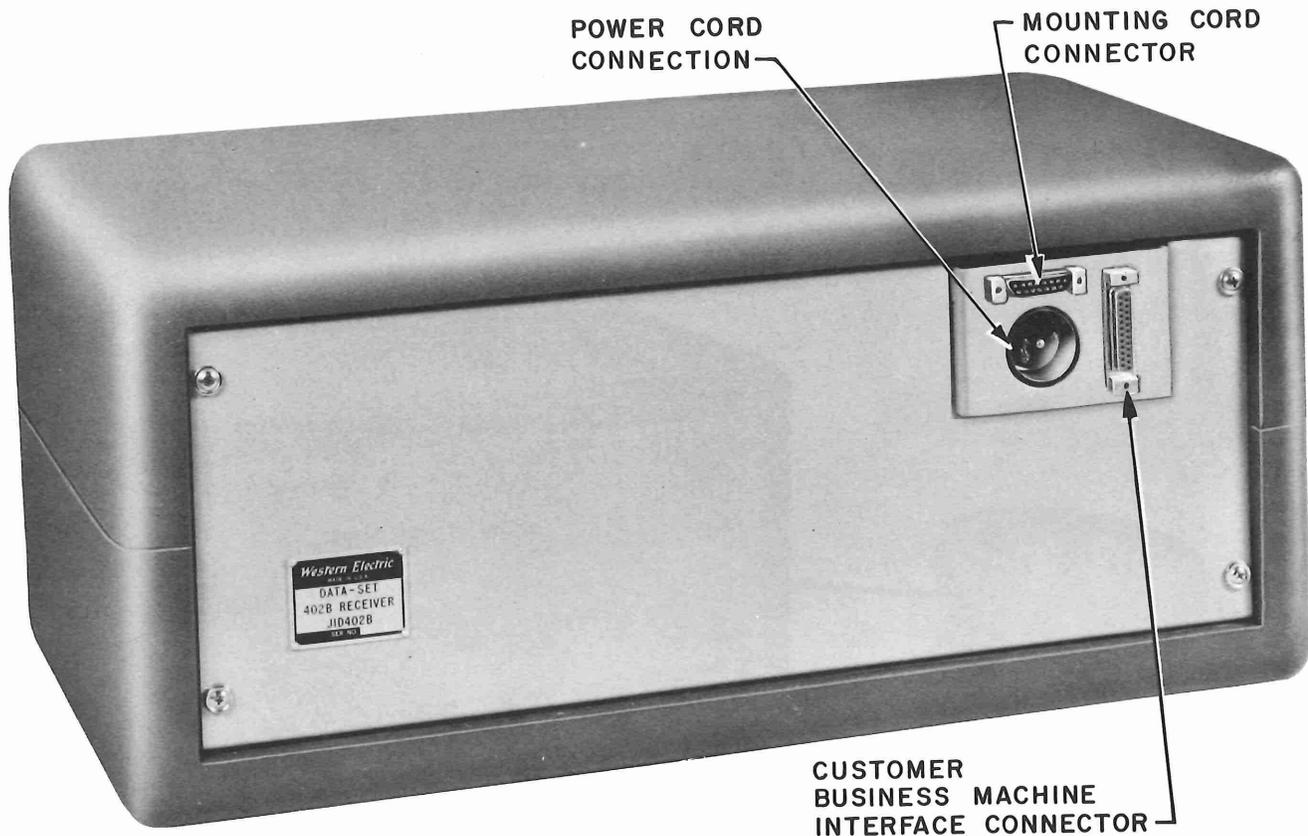


Fig. 2 — Data Set 402B, Rear View

3.06 For DATA-PHONE service, the data set 402B is used with a 503BR-61 telephone set which must be ordered separately.

- When used in private line service, the line may be connected directly to the data set without use of a telephone set.
- Where a telephone set is required for private line service, the circuit must be engineered locally.

3.07 The exclusion key of the telephone set functions as the data key to select voice communication or data reception and answer-back transmission. The functions of the data key are outlined below:

Key in voice position (down)

- Connects the telephone set to the line.
- Places a short across the data receiver and the answer-back transmitter.
- Opens the *INTERLOCK* lead.

Key in data position (up)

- Connects the data receiver or answer-back transmitter to the line.
- Disconnects the telephone set from the line.
- Connects ground to the *INTERLOCK* lead.

4.00 OPERATION

4.01 For detailed operation see CD- and SD-1D006-01.

4.02 To receive data, it is first necessary to establish voice communication with the transmitting station. When the attendant at the distant end signifies he is ready to send data, the data key of the telephone set is pulled up. Operation of the data key disconnects the line from the telephone set and connects it to the data receiver.



The data key at the transmitting station must also be operated. Caution customer not to restore the data key or the handset during data transmission.

4.03 Some installations may specify both a 402A and a 402B at the same location, bridged on the same line. For this feature, the integrated telephone set of the 402A is used, and a separate telephone set is not required. The control relay *D* in the receiver is under control of the customer's receiving business machine by means of the *T-R* control lead when the data key of the telephone set is in the data position (up). When the *D* relay is not operated, the 402A or its integrated telephone set is connected to the line. With the *D* relay operated, the 402B is connected to the line. Therefore, 4.02 applies to either a bridged or single installation.

4.04 Upon completion of data transmission, voice communication can be re-established by restoring the data key to its down position. If voice communication is not desired, the circuit is restored to normal by placing the handset on the switchhook which restores the data key.

4.05 A relay in each data channel circuit operates and releases in response to frequencies transmitted over the channel. The MARK frequency will operate the relay and deliver a contact closure to the business machine. The SPACE frequency will not operate the relay, and an open will be presented to the business machine.

4.06 The answer-back transmitter, when used, will transmit control signals to the distant station using three frequencies. A fourth or rest frequency is provided for protection against noise.

- Three different answer-back signals are available to the business machine.
 - (a) Business machine closes *A* answer-back lead to ground.

- (b) Business machine closes *B* answer-back lead to ground.
- (c) Business machine closes both answer-back leads to ground.

4.07 When all data channels are spacing, a constant closure will be furnished between *SPACE DET* and *SIG GRD* leads. The operation

of the *SPACE DET* circuit is completely independent of the timing channel and, therefore, will operate regardless of the condition of the timing channel.

4.08 Fig. 3 is a block diagram of the data set 402B.

4.09 Fig. 4 shows a block diagram of both the data set 402A and 402B bridged on one line.

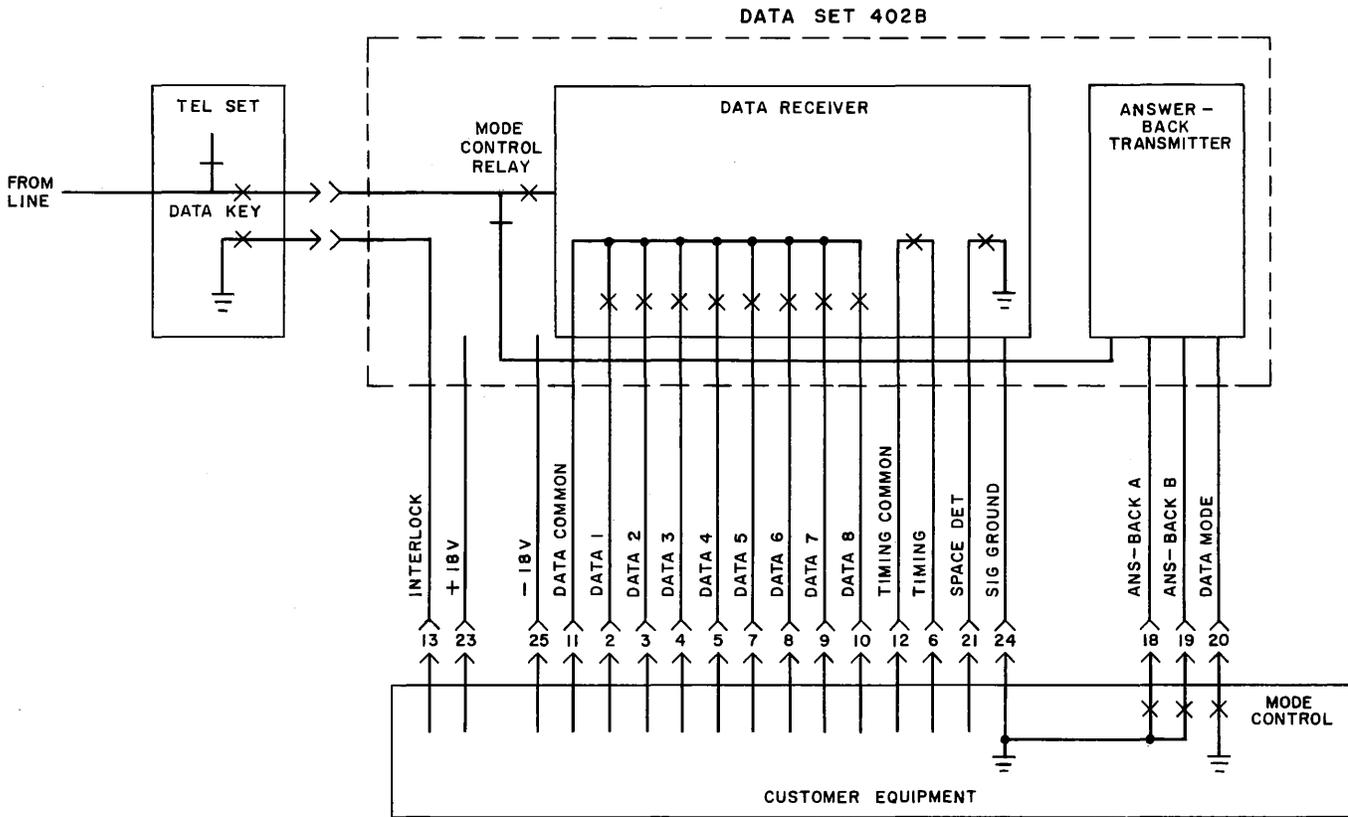


Fig. 3 — Data Set 402B, Block Diagram

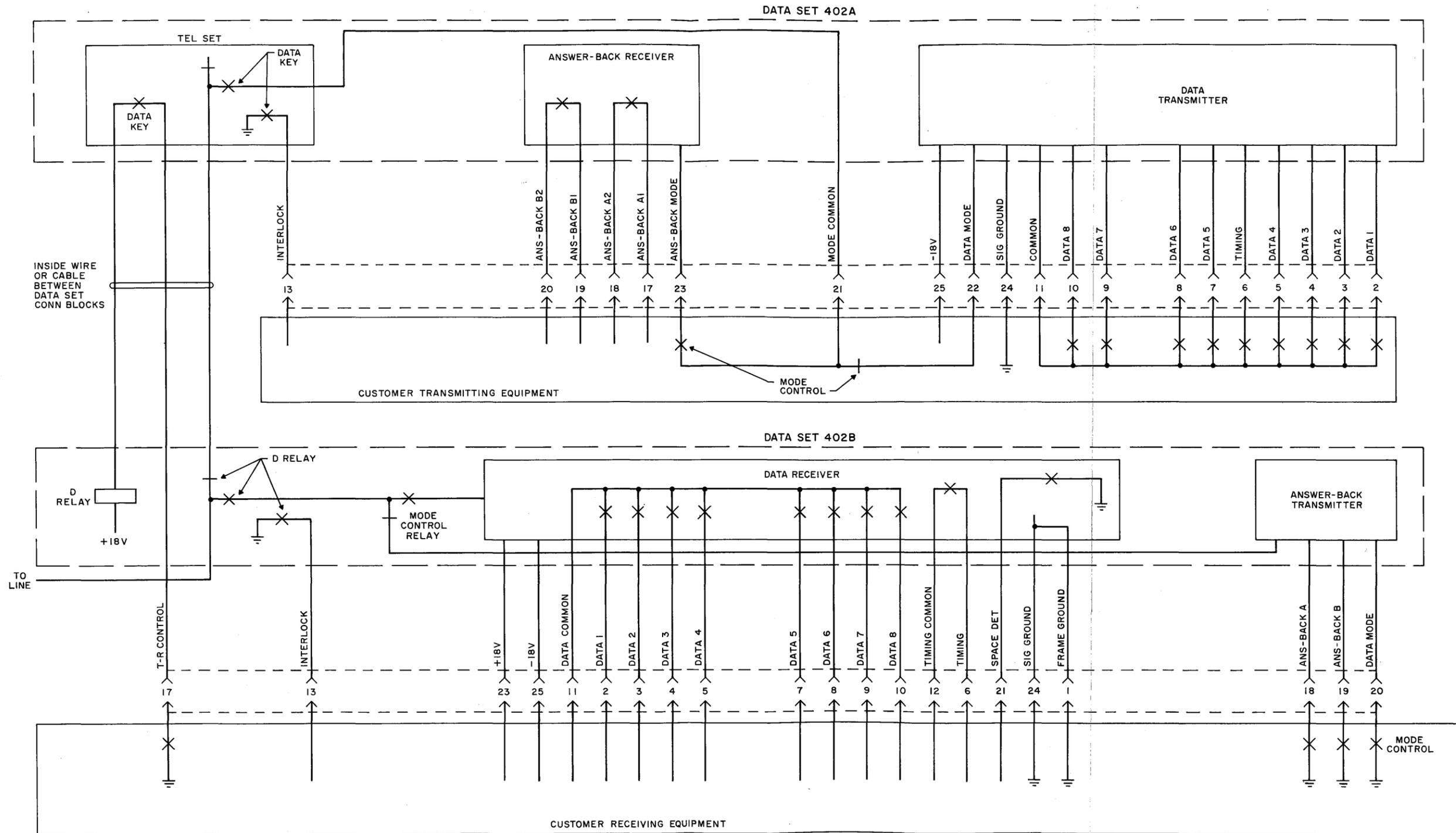


Fig. 4 — Data Sets 402A and 402B Bridged on One Line, Block Diagram