# DATA SET 209A TYPE
# TRANSMITTER-RECEIVER
# SUMMARIZING SPECIFICATION
# DATA SYSTEMS

## 1. GENERAL

### SCOPE

**1.01** This specification, together with the supplementary information listed herein, summarizes for ordering purposes the design requirements for apparatus, assembly, and circuits covering data set 209A type. This information is for use in private line data service in point-to-point, multipoint, or multiplexing applications.

### CAPACITY

**1.02** Data set 209A is a synchronous voiceband transmitter and receiver of binary serial data. It is capable of operating at 9600 bits per second (b/s) over a basic 3002-type 4-wire private line telephone channel with high performance data conditioning (D1). No C-type conditioning is required. A multiplexing feature provides the following combinations of data rates:

9600

7200 + 2400

4800 + 4800

4800 + 2400 + 2400

2400 + 2400 + 2400 + 2400

**1.03** Data set 209A type is intended to provide higher speed capability, and is compatible for use with data sets 208A and 201C. The set includes provision for local and remote tests from a test center. Startup time is 147 milliseconds at 9600 b/s; output level is 0 dBm $\pm$1 dB.

### DESCRIPTION

**1.04** Data set 209A type consists of 19 plug-in circuit packs, a 112A power unit, a fan, and a backplane assembly mounted in an extruded brushed aluminum housing. Front and rear covers are black plastic and snap into the housing. Overall dimensions are 20.5 inches wide, 5.13 inches high (including support feet), and 13.5 inches deep (including pushbuttons). The weight of the complete set is 42 pounds.

**1.05** Data set 209A type is equipped with seven light-emitting diode (LED) status lamps and one test switch (four pushbuttons) mounted on a circuit pack (KD18) immediately behind the front cover. The status lamps monitor the power unit, certain interface leads, and test switch positions. Each lamp illuminates a 2-letter black-out symbol on the front cover indicating the condition being monitored or tested. The test switch has four sections accessed by pushbuttons which protrude through holes in the front cover. Their respective functions are lamp test (LP), analog loop-back (AL), self-test (ST), and digital loop-back (DL).

**1.06** Data set 209A type is also equipped with four multiplex status lamps (LEDs) mounted on a circuit pack (KD19) immediately behind the front cover, which indicate the setting of the multiplex selector switch. Each lamp illuminates a 2-digit black-out number representing the first two digits of a selected data rate or combinations thereof, ie, 96, 72, 48, and 24. The multiplex selector switch, also mounted on circuit pack KD19, has a thumbwheel knob which extends below the front bottom edge of the data set. This switch is a 6-position continuous rotary type.

**1.07** The rear cover of the data set has openings for four 25-pin customer interface connectors (KS-19087 type), one 25-pin telephone interface connector (KS-19088 type), power cord receptacle,

and fan exhaust. The customer data equipment must be equipped with a cable terminated in a Cinch or Cannon DB-19604-432 plug equipped with a hood. Connection to the four data set interfaces is facilitated by referring to the table printed on the rear cover for the various multiplexing arrangements. Connection between the data set and data auxiliary set (DAS) 829A, 828A, or 828C is made with an M8K cord which is included with the data set.

*Note:* Data auxiliary sets must be ordered separately.

**1.08** The circuit packs in data set 209A-L1 are coded KD1 through KD19. They are retained, and in two cases positioned, by means of a locking bar fastened by three screws. Test point jacks are provided on the front of five circuit packs to check data set performance. Options are implemented by means of (insulated) shorting jacks that plug into option blocks mounted on the front of three circuit packs.

**1.09** Data set 209A is primarily cooled by forced convection. An exhaust fan in the rear of the set draws air through the front cover inlet ports and past an extruded aluminum fin, which acts as a heat exchanger for heat conducted from the individual circuit packs. This design precludes the need for an air filter and hence filter maintenance.

**POWER REQUIREMENTS**

**1.10** Power for the data set is provided by the 112A power unit, a regulated rectifier. Output voltages of +12, −12, and +5 and signal and frame ground are provided. The power unit requires 105- to 130-volt ac power at 60 Hz. Maximum power dissipated is 100 watts. A circuit breaker provides overvoltage protection for the +5 volt output. This circuit breaker must be manually reset. The power unit also features an internal self-resetting thermal overload switch which shuts off the unit in case of fan failure at elevated ambient temperatures, preventing damage to the data set. A fuse is provided on the rear of the power unit to protect against short circuits in the fan (not the power unit). A spare fuse is mounted in a clip on the front of the unit. Furnished with the data set is a KS-14532, L24 power cord, 6 feet long (previously a P3BJ power cord, which is also acceptable). The cord is terminated with a Twist-lock connector body at the data set end to prevent inadvertent removal of the cord. If a different power cord is desired, it must be ordered separately and terminated at the data set end with a connector body compatible with the Hubbell BL-12583 Twist-lock receptacle.

**1.11** Data set 209A is delivered with signal and frame grounds connected by means of a shorting strap on the 112A power unit. This should be disconnected by the installer if a different grounding arrangement is specified by the customer.

**OPTIONS**

**1.12** Data set 209A type is provided with a number of options which are factory installed. These should be checked, and rearranged if necessary, prior to placing the data set in service. The options are implemented by inserting shorting jacks into the option blocks mounted on the front of three circuit packs, using the table in front of the power unit as a guide. These options are accessible when the front cover is removed. A pair of spare shorting jacks is provided on the front of the heat exchanger. Options required should be specified on the service order; refer to Sections 592-032-100 and 592-032-200 for description and location of options.

**ENVIRONMENT**

**1.13** The data set is designed to operate in a thermal environment of 40 to 120° F (5 to 49° C) at a relative humidity of 20 to 95 percent for ambient temperatures up to 75° F, and 20 to 40 percent at the maximum operating temperature of 120° F. For intermediate levels, the maximum allowable relative humidity may be determined using a linear interpolation between these limits.

## 2. SUPPLEMENTARY INFORMATION

590-002-115—9600-Bits Per Second (BPS) Multiplexing Service Using Data Set 209A-L1 — Reference Guide

592-032-100—Data Set 209A-L1 — Transmitter-Receiver — Description and Operation

592-032-101—Data Systems — 9600 Bits Per Second Multiplex System Using Data Set 209A-L1 — Description

592-032-200—Data Set 209A-L1 — Transmitter-Receiver — Installation and Connections

592-032-201—Data Systems — 9600 Bits Per Second Multiplex System Using Data Set 209A-L1 — Installation and Connections

592-032-300—Data Set 209A-L1 — Transmitter-Receiver — Maintenance

592-032-301—Data Systems — 9600 Bits Per Second Mulitplex System Using Data Set 209A-L1 — Maintenance

592-032-500—Data Set 209A-L1 — Transmitter-Receiver — Test Procedures

592-032-501—Data Systems — 9600 Bits Per Second Multiplex System Using Data Set 209A-L1 — Tests

598-080-100—Data Auxiliary Set 828A — Description and Operation

598-082-100—Data Auxiliary Set 829-Type — Channel Interface Units — Voiceband Private Line Channels Data Only — Description

598-082-101—Data Auxiliary Set 829-Type — Supplementary Functions for Voiceband and Private Line Channels (Alternate Voice and Switched Network Backup) — Description

800-610-158—Packaged Electronic Products

800-610-159—Printed Wire Board Assemblies — Requirements

999-100-143—Data Set 209A-Type — How to Operate Manual

X-18072—Manufacturing Testing Requirements for Data Set 209A Type

CD-1D249-01—Data Set 209 Type — Circuit Description

TI-388—Trial Instruction No. 388 — Test of Point-to-Point Data Services Provided by Data Set 209A-L1 From a Private Line Test Room

TI-405—Trial Instruction No. 405 — Tests of 9600 Bits Per Second (BPS) Multiplexing Data System Provided by Data Set 209A-L1 From a Private Line Test Room

RS-232C—EIA Standard Interface Between Data Processing Terminal Equipment and Data Communications Equipment

## 3. DRAWINGS

SD-1D249-01—Data Set 209A Type
SD-82235-01—112A Power Unit

## 4. PRODUCT

***Data Set 209A—Transmitter-Receiver***

***List 1***—Assembly and wiring for one data set 209A-L1 per SD-1D249-01.

***D-180555—Spare Parts and Tool Kit for Data Set 209 Type***

***List 1***—Carrying case equipped with spare KD-type circuit packs, test pins, option straps, and miscellaneous components.

***D-180556—Mounting Brackets for Data Set 208 and 209 Types***

***List 1***—Consists of a pair of brackets for mounting one data set on various equipment racks.

***M8M Cord—Data Set Interconnecting Cord***

***List 1***—For use in many-point multiplexing applications, ie, for connection of data set 208A or 201C to data set 209A.

***M23B Cord—Data Set Business Machine Multiplexing Cord***

For use in connecting data set 208A or 201C with the customer terminal equipment (CTE) in remote installations of many-point multiplexing system. Also used with data sets used as DDS outliers.

TABLE A

AUTHORIZED ORDERABLE CODES

| CODE | RATING |
|---|---|
| Data Set 209A-L1 | AT&TCo Std |
| D-18055 Maintenance Kit | — |
| D-180556 Mounting Brackets | — |
| M8M Cord | AT&TCo Std |
| M23B Cord | AT&TCo Std |

## 5. GENERAL NOTES

**5.01** Data set 209A may be installed in multiple arrangements on 23-inch rack mountings or in a cabinet equipped for 23-inch rack mounting. In either arrangement, front and rear access to the data sets is required.