

WESCOM 418 2-WIRE/4-WAY CONFERENCE BRIDGE CIRCUIT DESCRIPTION, INSTALLATION, AND TESTS

1. GENERAL

1.01 This section is a cover sheet for the Wescom 418 2-Wire/4-Way Conference Bridge instruction, Section 418-101/3. GAEL 1365 authorizes the use of this equipment in Pacific Company.

1.02 It is reissued to:

- Revise the section title.
- Transmit the latest issue of the Wescom instruction.
- Include procedures for ordering Wescom equipment.
- Provide maintenance and repair/return information.

Note: Marginal arrows used to designate changes are omitted.

1.03 The Wescom 418 module provides a passive coupling of voice and data circuits via a 2-wire/4-way passive bridge.

1.04 If corrections are required in the manufacturer's instruction, use form E 3973-1PT as described in Section 000-010-901PT to process the correct information.

1.05 If equipment design and/or manufacturing problems should occur, refer to Section 010-700-010PT for procedures on how to file an Engineering Complaint.

1.06 When revised instructions reflect changes due to modification of equipment, retain the superseded information until equipment is modified.

Note: Equipment shall *not* be modified without the approval of the Equipment Maintenance Engineer.

2. MAINTENANCE

2.01 Field repairs that involve replacement of components within this unit are not recommended.

3. ORDERING PROCEDURES

3.01 Order Wescom equipment direct from the manufacturer:

Wescom, Inc.
P.O. Box 1458
Downers Grove, IL 60515

3.02 When ordering Wescom equipment, use the Purchase Order, Form GTP 2, as specified in SI 70, Section 2. Enter Contract No. *ATT 109C* on all orders. Send the blue copy of the Purchase Order as follows:

- For Northern California and Nevada —

ROPSAC
221 W. Winton Avenue, Room 140
Hayward, CA 94544

- For Southern California —

ROPSAC
2420 Yates Avenue, Room 210
Commerce, CA 90040

Note: Additional ordering information is contained in the GTP Catalog.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

Printed in U.S.A.

SECTION 310-405-902PT

4. REPAIR/RETURN

4.01 Return defective units to the Plug-In Maintenance Pool for "like-for-like" exchange as specified in SI 60, Section 6, and Section 005-202-

919PT. The Supplies Superintendent shall forward defective units to the manufacturer for repair and return.

4.02 This Wescom equipment has a warranty period of 18 months from date of shipment.

Attachment:

Wescom, Inc, Circuit Description/Installation Series, Section 418-101/3, Issue 1, April 1976.

418 2-Wire/4-Way Conference Bridge

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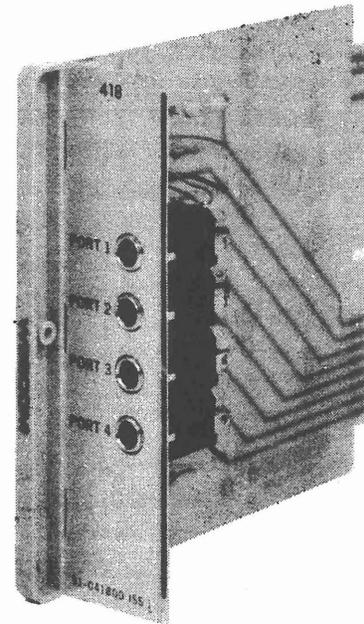


Figure 1. 418 2-Wire/4-Way Conference Bridge

1. GENERAL

1.01 This Practice provides circuit description, installation procedures, and basic testing information for the Wescom[®] 418 2-Wire/4-Way Conference Bridge (Figure 1).

1.02 This Practice has been reprinted to incorporate technical and editorial changes. Significant technical or editorial changes are indicated by a change bar (▬) in the margin adjacent to the affected copy.

1.03 The 418 module provides passive coupling (resistance bridge) of up to four voice or data circuits on a 2-wire facility. It features front panel jacks for easy access to the receive and transmit ports and a modular printed circuit board which plugs into one mounting position of the

Wescom Type 400 Mounting Assembly. This assembly accommodates from 1 to 13 modules and allows for either KTU apparatus-case or relay-rack mounting.

1.04 Electrical connections are made by a 56-pin, wire-wrapped card connector which is provided as part of the mounting assembly.

2. CIRCUIT DESCRIPTION

2.01 The 418 2-Wire/4-Way Conference Bridge provides passive coupling of voice and data circuits by means of a 2-wire/4-way resistive bridge. Refer to the functional diagram in Figure

Section 418-101/3

2 and the schematic diagram in Figure 4 while reading the following circuit description.

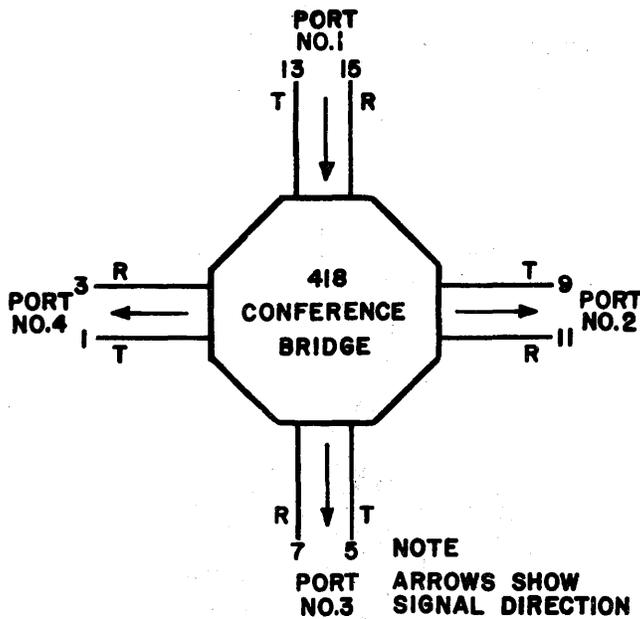


Figure 2. 418 Functional Diagram

2.02 Two-wire signals which are generated from voice or data equipment enter the module through any of the four ports. Once into the bridge, the signal is resistive coupled to the remaining ports. For example, if a signal is received by port 1, it is bridged to ports 2, 3 and 4 where it is transmitted to external voice or data acquisition equipment. To illustrate another application, consider signals being received by three ports. In this application, ports 1, 2 and 3 would receive data and port 4 would transmit this data to external equipment.

3. INSPECTION

3.01 Inspect the equipment thoroughly as soon as possible after delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

3.02 Wescom equipment is identified by a model and issue number imprinted on the front panel. Each time a major engineering design change is made on the equipment, the issue num-

ber is advanced by one number on any following models that are manufactured. Therefore, be sure to include the issue number along with the model number when making inquiries about the equipment.

4. MOUNTING

4.01 The 418 2-Wire/4-Way Conference Bridge is designed to mount in one module position of a Type 400 Mounting Assembly. This assembly can accommodate from 1 to 13 modules and may be equipped and prewired for a variety of modules in the Wescom product line. In addition, Type 400 Mounting Assemblies allow for either Key Telephone Unit (KTU) apparatus-case or relay-rack mounting. For more information on these mounting assemblies, refer to Sections 400-103 and 400-U-101/3.

5. INSTALLER CONNECTIONS

5.01 When the 418 2-wire/4-way module is installed in a Type 400 Mounting Assembly, it makes electrical connection to associated equipment through a 56-pin, wire-wrapped card connector which is provided as part of the mounting assembly. Make all installer connections to this connector in accordance with Table 1.

Table 1. 418 Installer Connections

CONNECT:	TO:
Port 1 T&R	13, 15
Port 2 T&R	9, 11
Port 3 T&R	5, 7
Port 4 T&R	1, 3

6. OPTIONS

6.01 The 418 module is intended for 2-wire/4-way operation. However, if the application only requires 3 port (3-way) operation, connect external equipment to ports 2, 3 and 4; terminate port 1 (unused port) by soldering an

appropriate length of wire across its option posts. When these posts are strapped, a 600-ohm resistor is connected across terminal 13 (T) and 15 (R) of port 1. Refer to Figure 3 for the location of these option posts.

NOTE

If the module is used in an application which requires 4 port (4-way) operation, verify that port 1 is unstrapped and make the appropriate installer connections.

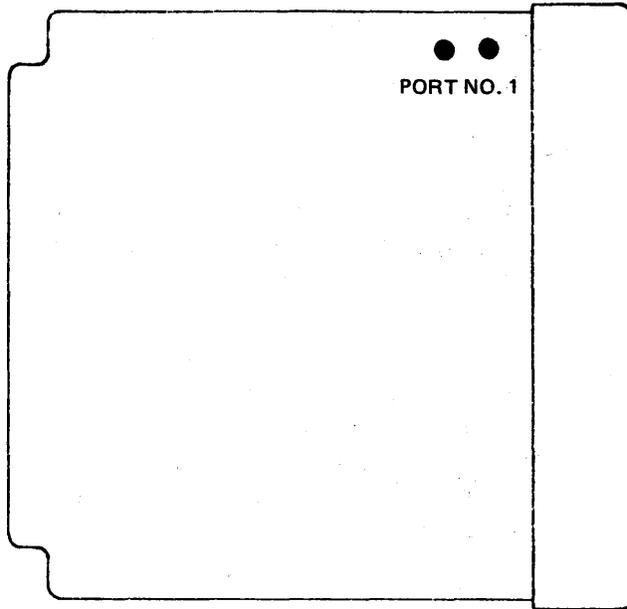


Figure 3. 418 Option Locations

7. TESTING

7.01 If trouble is encountered with the operation of the 418 module, verify that all installer connections have been made in accordance with Table 1 and that the option is added if required. In addition, make certain that the module mates well with the connector. This can be accomplished by removing and reinserting the module several times. If trouble persists, attempt to determine whether the cause of the malfunction exists within the 418 module or elsewhere in the

system. If technical assistance is required, contact the Wescom Technical Services Department by calling:

(312) 971-2010,
TWX 910-695-4735, or
DATAPHONE (312) 971-1698

Canadian Customers:

(416) 453-2222 or
TWX 610-492-2697

8. WARRANTY

8.01 **STANDARD WARRANTY:** Wescom products are warranted to be free from defects in material, workmanship, and design given proper installation and regular maintenance. Wescom's obligations under this warranty are limited to correction and replacement at Wescom's production facility of any defective items received by Wescom, transportation prepaid, for a period of five years from the date of original shipment. Warranty and remedies on products not manufactured by Wescom are in accordance with the warranty of the respective manufacturer. WESCOM MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY WESCOM.

8.02 Field repairs involving the replacement of components within a unit are not recommended. If an item is found to be defective, contact Wescom, Inc., by telephone or TWX, for instructions regarding replacement or repair.

8.03 If a replacement unit is required, it will be shipped in the fastest manner consistent with the urgency of the situation. Upon receipt of a replacement unit, return the defective unit in the carton in which the replacement was shipped, using the shipping label provided, to:

Wescom, Inc.
8245 Lemont Road
Downers Grove, Illinois 60515

Section 418-101/3

Canadian Customers:

Wescom Canada, Ltd.
287 Glidden Road
Brampton, Ontario L6W1H9
Canada

Repair or Exchange Services

8.04 In addition to the standard Wescom Warranty Service, Wescom offers a repair or exchange service for those items out of warranty. Under this arrangement, faulty units may be shipped to Wescom for either complete repair and quality testing or exchanged for a replacement unit. To obtain details of this service and a schedule of prices, contact your local Wescom Sales Representative.

9. SPECIFICATIONS

9.01 Electrical and physical characteristics of the 418 are as follows:

- (a) **FACILITY:** 2-wire.
- (b) **INPUT/OUTPUT PORTS:** Four.
- (c) **INPUT/OUTPUT IMPEDANCE:** 600 ohms nominal, balanced.

- (d) **INSERTION LOSS:** 9.6dB nominal.
- (e) **CROSS COUPLING:** -60dB.
- (f) **FREQUENCY RESPONSE:** 100Hz to 20kHz, ± 0.25 dB.
- (g) **TWO-WIRE RETURN LOSS:** 40dB.
- (h) **MAXIMUM INPUT LEVEL:** +20dBm.
- (i) **ENVELOPE DELAY:** 2us.
- (j) **OPERATING ENVIRONMENT:** Temperature, 35° to 120°F (1.5° to 48°C); humidity to 95% (no condensation).
- (k) **WEIGHT:** 6.5 oz (181g).
- (l) **DIMENSIONS:** Height, 5.6 inches (14.2cm); width, 1.5 inches (3.8cm); depth, 6 inches (15.2cm).
- (m) **MOUNTING:** Module occupies one position in a Type 400 Mounting Assembly which accommodates from 1 to 13 modules and allows for either Key Telephone Unit (KTU) apparatus-case or relay-rack mounting.

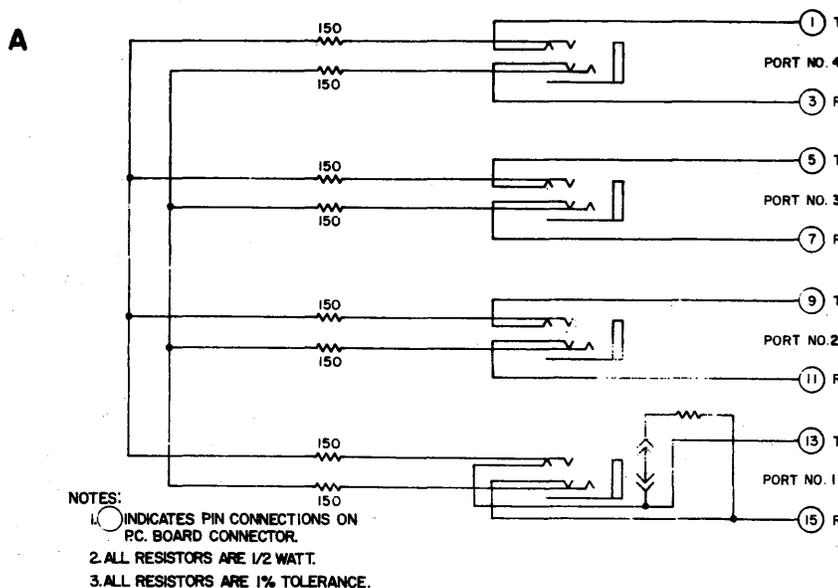


Figure 4. 418 2-Wire/4-Way Conference Bridge Schematic Diagram (Issue 1)