



TC4222 Vacuum Fluorescent Display Installation

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General Information

Description

The TC4222 Vacuum Fluorescent Display ("VFD") may be used as an alternative to the LCD displays of the Telecenter Systems. The TC4222 is larger and brighter than an LCD module and, being wall-mounted, can serve as the display for several nearby administrative phones. It is compatible with Telecenter® IV, Telecenter V, Telecenter TCS, Telecenter System 21, and Telecenter 1100 systems.

Attachments

IL0364 (Installation Diagram).

Parts Enclosed

Qty.	Description	Part No.
1	VFD printed-circuit-board assembly.	VC7461
1	Chassis (without the transformer and the ground wire).	A3614
1	Power transformer (mounted on the chassis).	LP0442
1	Front panel.	QP0992
3	Wire nuts.	QP0488
1	Three-pin connector.	SF0475-3
2	Screws (6-32 x 1/4" panhead) for attaching the chassis to the back- box.	WA57
4	Screws (6-32 x 1" black flathead Phillips) for attaching the front panel.	WA114

Planning

TCIV Installations

The TC4222 connects to one of the two LCD drivers on the Main Input/Output (MIO) module. Each LCD driver accommodates up to three displays (LCD or VFD, in any combination) and a total cable length of 1,000 feet. Refer to the System Wiring Diagram (KM0674) in the main Telecenter IV manual (KI-1435) as well as to the attached drawings.

TCV Installations

The TC4222 connects to the primary display-driver terminals of the Central Input/Output (CIO) module. The primary display-driver can accommodate up to 16 displays (LCD or VFD, in any combination), and a total cable length of 2,000 feet of 22-AWG wire. Refer to the System Wiring Diagram (KM1035) in the main Telecenter V manual (KI-1687) as well as to the attached drawings.

TC2100 Installations

The TC4222 connects to the primary display-driver terminals of the SAC Master-Port punchblock. The primary display-driver can accommodate up to 16 displays (LCD or VFD, in any combination), and a total cable length of 1,000 feet of 22-AWG wire. Refer to the System Wiring Diagram (KM1121) and to the other attached drawings.

Installation

- ① Mount the display in a back-box that has a five-gang opening and a minimum depth of 2½ inches.
- ② Pull through the hole the three-conductor AC power lines and the 22-gauge shielded pair from an LCD driver.
Caution: Do not apply power to the AC lines until this installation has been completed.
- ③ Carefully remove the seven-pin connector from the circuit-board assembly. Put the assembly aside in a safe place.
- ④ Orient the chassis assembly horizontally, with the transformer to the right. Insert it into the electrical box, making sure that the wires are not pinched. Secure the

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chassis to the box by inserting the two supplied #6-32 x 1/4" screws into its top and bottom center holes.

- ⑤ Using the three supplied wire nuts, attach the two black transformer wires to the two main power lines (typically black and white). Then attach the green grounding wire to the third (safety ground) wire of the power line (typically green, also). Press these wires inside the chassis so there will be ample room to insert the VFD assembly.
- ⑥ Orient the three-pin connector so that the larger ends of the holes (containing the insulation-piercing sockets) are to the left and the exposed side is facing upward.
- ⑦ Insert the wires from the LCD driver into the insulation-piercing sockets of the connector. Route the wires into the connector at a right angle from the top; do not strip insulation from the ends of the wires. An insertion tool, such as Rauland's G2522, would be helpful. Refer to the appropriate wiring table on the right.
- ⑧ Orient the VFD assembly horizontally, with the seven-pin terminal ("J5") to the right. Push the seven-wire connector onto this terminal with the red wire coming out from the bottom. Now push the three-wire connector onto the three-pin terminal ("J9") located on the left side of the board; the shield should be at the bottom. The pin designations are marked on the printed circuit board and are referred to on the attached IL0364.
- ⑨ Making sure that all the wires are routed inside the electrical box, carefully insert the VFD assembly into the chassis.
- ⑩ Using the #6-32 x 1" black flathead Phillips screws, carefully install the front panel.

TCIV Wiring

Terminal of LCD driver on MIO "B"	TC4222 3-terminal connector
"+"	Top ("RED")
"-"	Middle ("BLK")
"SHIELD"	Bottom ("SHIELD")

TCV Wiring

Terminal of display driver on CIO "B"	TC4222 3-terminal connector
"B"	Top ("RED")
"Y"	Middle ("BLK")
"SHIELD"	Bottom ("SHIELD")

TC2100 Wiring

TC2100		TC4222 3-terminal connector
Punch Block Pin No.	Color	
49	V/S	Middle ("BLK") GND
50	S/V	Top ("RED") DATA

Setting the DIP Switch

Overview

The eight-position DIP switch on the back of the display configures the unit for different systems.

Important: The TC4222 checks the DIP-switch settings only when it is powered up. Unless its power has been cycled off and back on, it will ignore changes made while it is running.

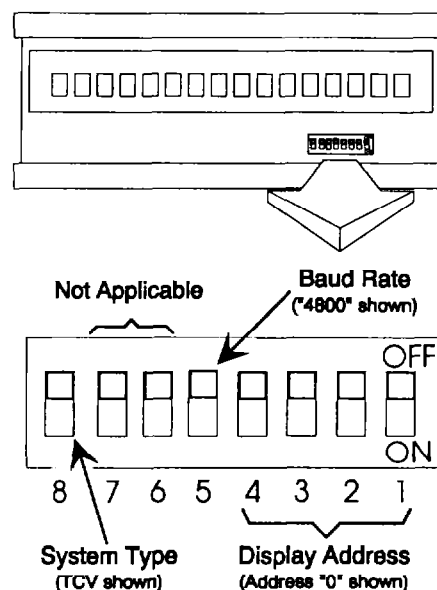
Telecenter V and Telecenter System 21

For TCV or TC2100 operation, push slide switch 8 *Off* and 5 *On*. (This selects the Telecenter V or Telecenter System 21 mode of operation.)

Display Address

Set slide switches 1-4 to give each display a different address (the settings correspond to binary numbers, with the least-significant digit on the right). Refer to the table below.

The Display DIP Switch



TC4221 DIP-Switch Summary		
Function	Switch	Color
Display Address (0-15)	1	TCV and TC2100 systems only. Set to "Off" for other systems (see 1-4 on the table below).
	2	
	3	
	4	
Baud-Rate Selection	5	TCV and TC2100 systems only. On = 9600 baud Off = 4800 baud (factory setting)
Display Type	6	Not Applicable
	7	Not Applicable
System Type	8	Off = TCV & TC2100 On = TCIV, TC TCS, TC 1100

Because the Telecenter V and Telecenter System 21 uses a single-display drive, all displays receive the same messages. However, only the unit with the corresponding address will display an individual message.

Other Systems

For Telecenter IV, Telecenter TCS and Telecenter 1100 operation, set slide switch 8 *On* and switches 1 through 5 *Off*.

Troubleshooting

Diagnostic Mode

To select the diagnostic mode, set all slide switches *On*. This mode works with TCV and TC2100 (tone) or TCIV and ChronoCom (pulse) applications.

The display shows all the characters received from either the pulse or the tone inputs as hexadecimal characters. When the screen is full, the display will pause before showing the next screen of hexadecimal characters. The unit can buffer up to 30 undisplayed characters.

Here is a typical hex message on a Telecenter V system:

01,81,1B,01,[Text]

(81 = address 1; 1B, 01 = Set Cursor 1)

The TCV and TC2100 systems use a 40-kHz carrier to transmit asynchronous ASCII serial data.

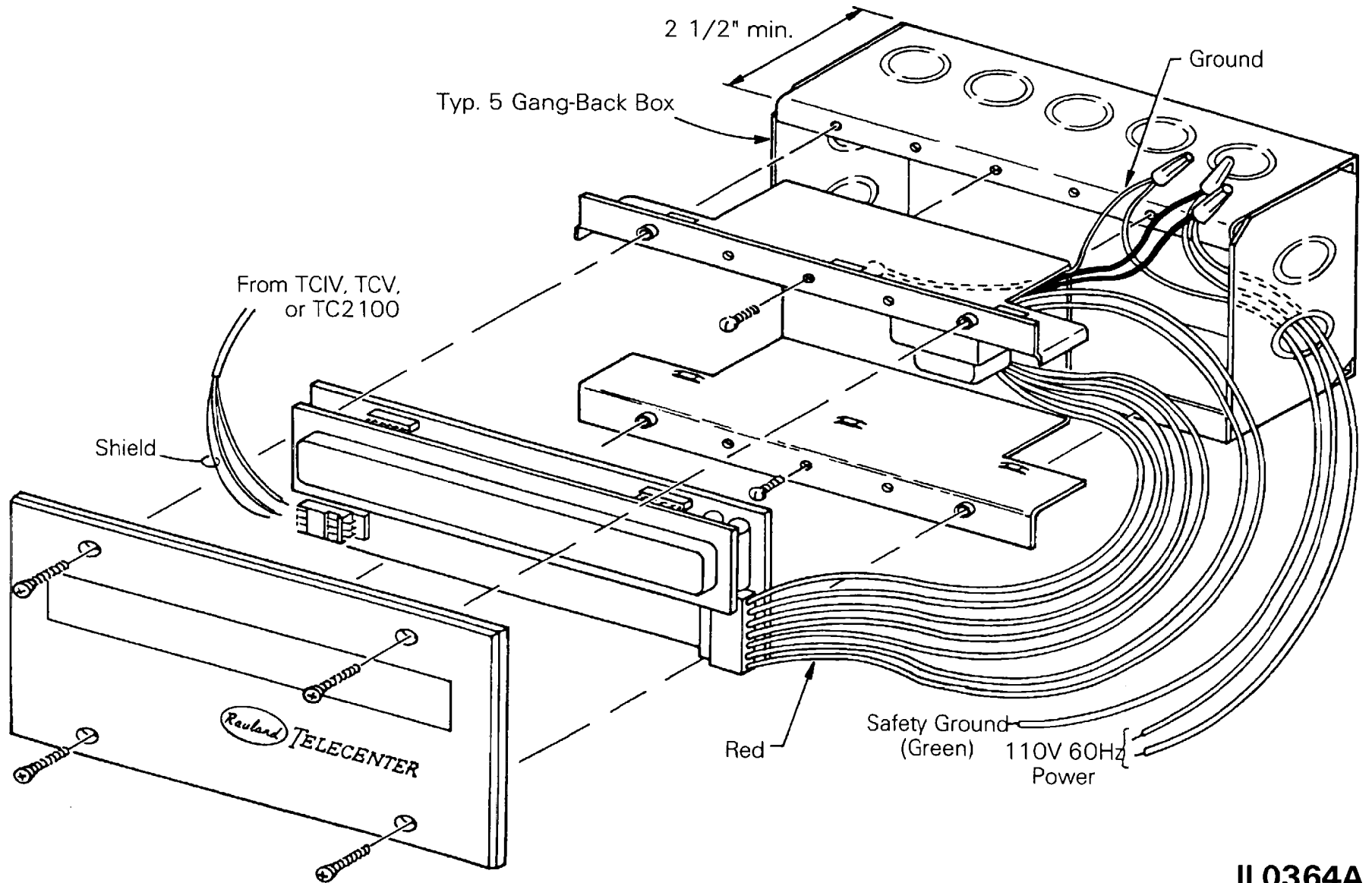
Test Procedures

Use a voltmeter to check the "Display" terminals ("RED" and "BLK" terminals): during normal operation, you should get a reading of 10 to 12 VDC.

Within five seconds of being turned on, the display should show an initial message, such as "VerVVV DD," where "VVV" represents the software version number, and "DD" represents the DIP-switch setting.

Note: The 5th and 6th bits of "DD" are "0" regardless of the DIP-switch settings.

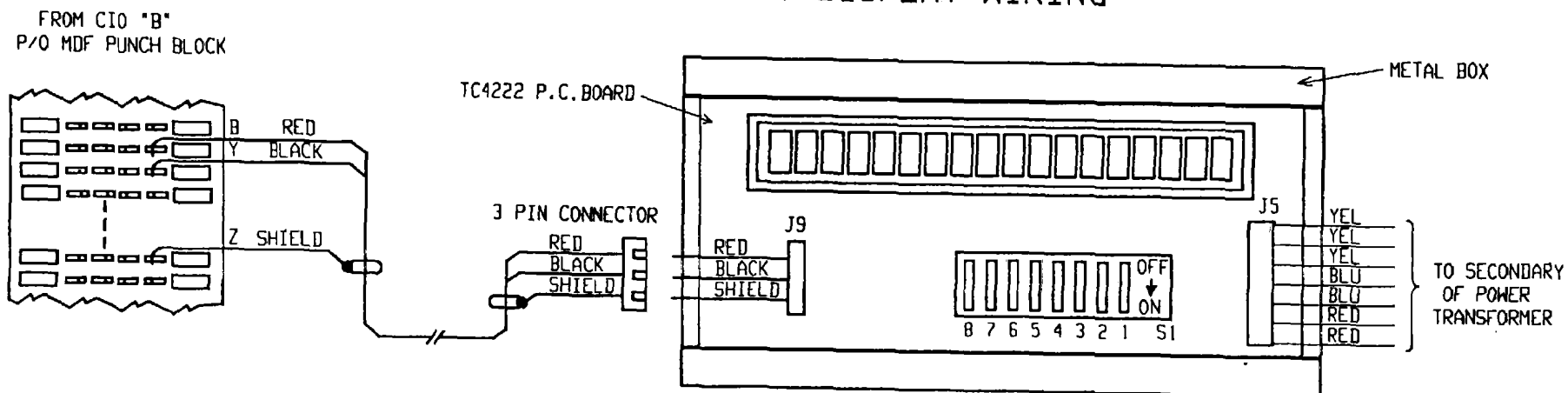
Slide-Switch Settings for Display Addresses				
Display Address	1	2	3	4
0	Off	Off	Off	Off
1	On	Off	Off	Off
2	Off	On	Off	Off
3	On	On	Off	Off
4	Off	Off	On	Off
5	On	Off	On	Off
6	Off	On	On	Off
7	On	On	On	Off
8	Off	Off	Off	On
9	On	Off	Off	On
10	Off	On	Off	On
11	On	On	Off	On
12	Off	Off	On	On
13	On	Off	On	On
14	Off	On	On	On
15	On	On	On	On



TC4222 Vacuum Fluorescent Display Assembly

IL0364A
 Rauland-Borg Corp.
 Skokie, IL USA
 9/28/93

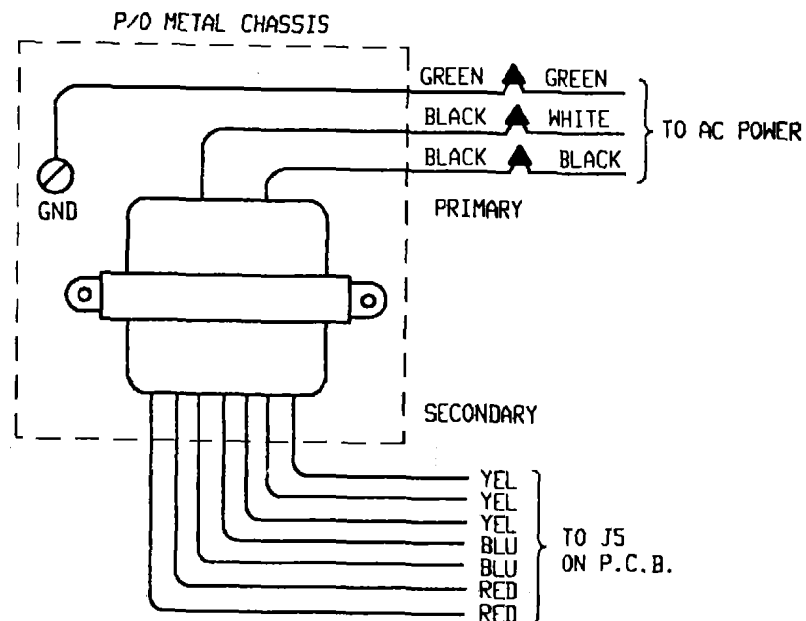
VACUUM FLUORESCENT DISPLAY WIRING



NOTES:

1. TC4222 SHOWN IN TCV APPLICATION WITH FACE PLATE REMOVED.
2. SEE KI1683 TC4222 VACUUM FLUORESCENT DISPLAY MANUAL FOR SI SWITCH SETTING.
3. MAXIMUM CABLE LENGTH 1000 FT.
4. FOR MOUNTING IN RACK WITH SYSTEM, CONNECT VFD AS FOLLOWS:

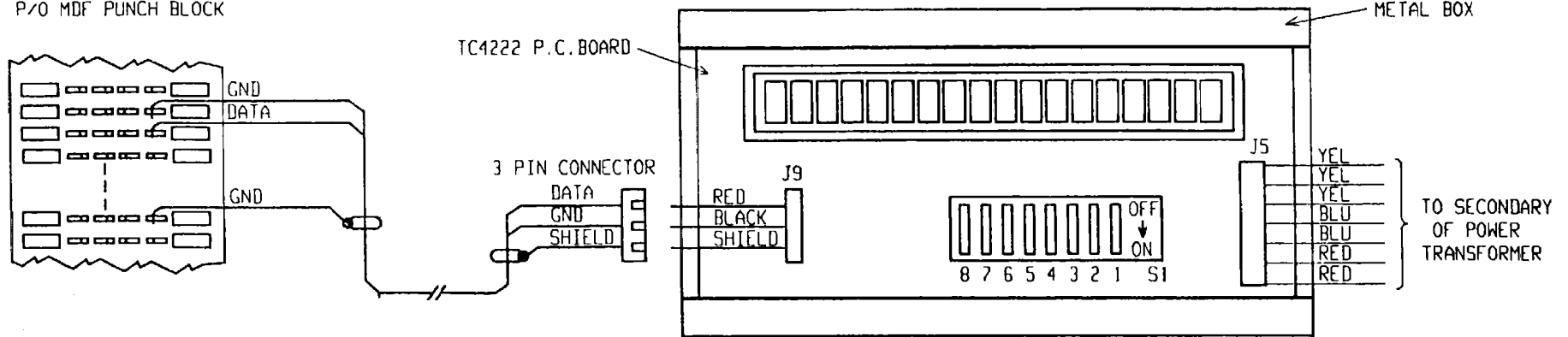
SYSTEM CONNECTION	J9 TERMINALS		
	RED	BLACK	SHIELD
TCIV LCD1 MIO "B" PINS	27 OR 29	31 OR 33	25 OR 35
TCIV LCD2 MIO "B" PINS	39 OR 41	43 OR 45	37 OR 47
TCV PRIMARY CIO "B" PINS	41 OR 47	43 OR 49	45 OR 51



TELECENTER
 TC4222 VFD WIRING
 RAULAND-BORG CORP.
 SKOKIE, ILL, USA
 KM1054 - 0

VACUUM FLUORESCENT DISPLAY WIRING

FROM TC2195 (SAC)
P/O MDF PUNCH BLOCK

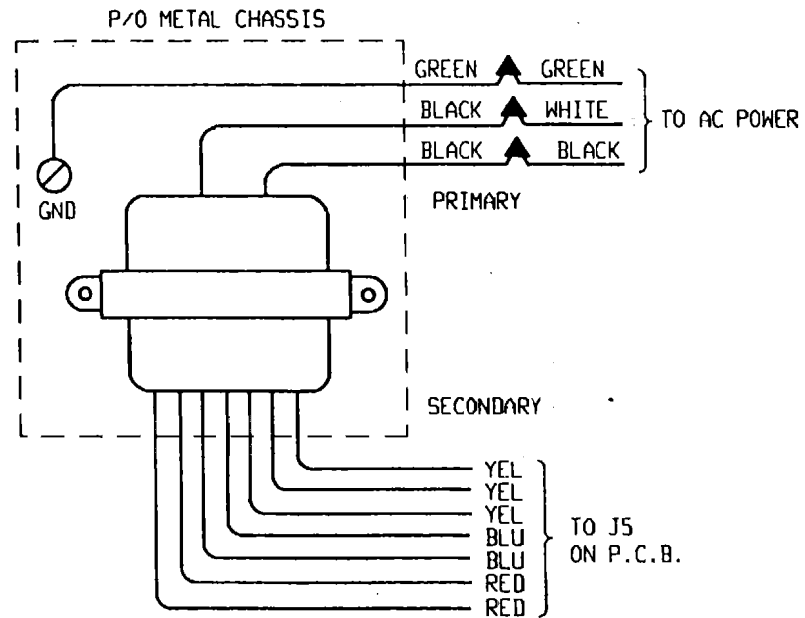


NOTES:

1. TC4222 SHOWN WITH FACE PLATE REMOVED.
2. SEE KI1683 TC4222 VACUUM FLUORESCENT DISPLAY MANUAL FOR S1 SWITCH SETTING.
3. MAXIMUM CABLE LENGTH 1000 FT.

SAC MASTER PORT
PUNCHBLOCK

TC4222	PIN	COLOR
BLACK & SHIELD	49	V/S
RED	50	S/V



TELECENTER SYSTEM 21
TC4222 VFD WIRING
RAULAND-BORG CORP.
SKOKIE, ILL, USA
KM1121 - A



Printed on recycled paper using soy ink.