Upgrading a Discontinued TriMark Keyless Entry System to the TriMark Full-Feature Keyless Entry System

Rewiring Guide

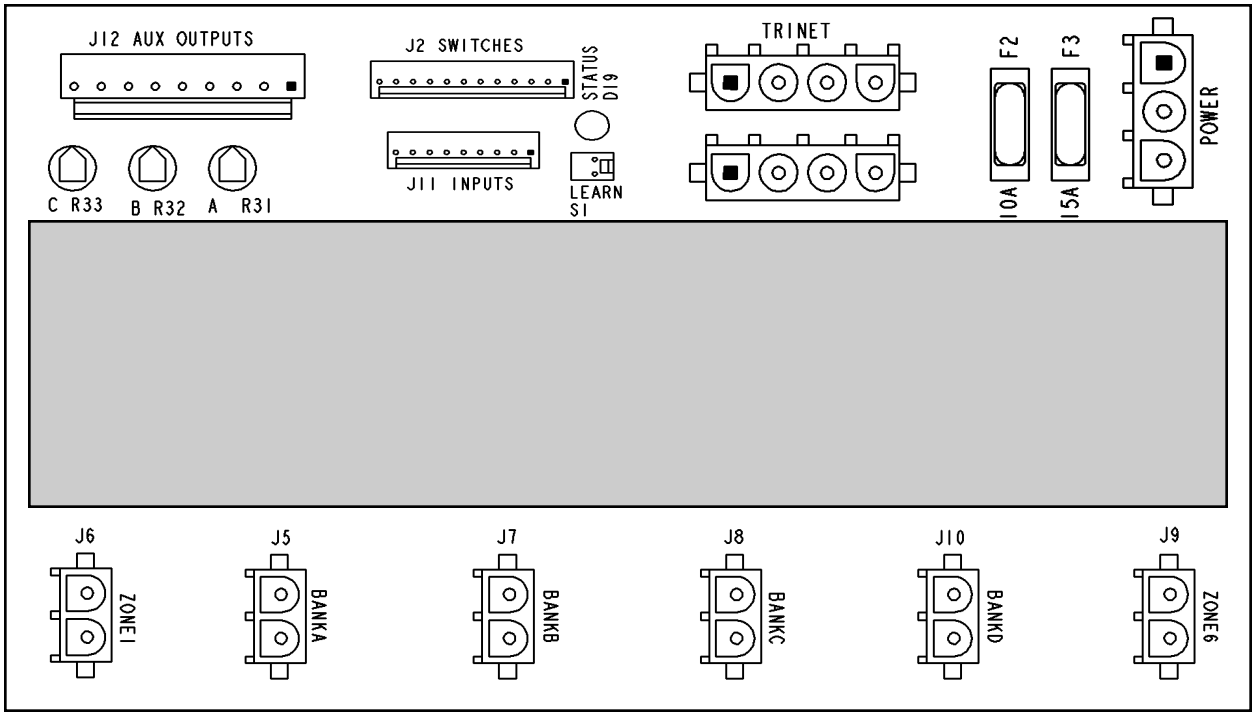
This guide explains how to upgrade from the discontinued TriNET Multiplex (MUX) Controller (18970-XX, 19268-XX, 20431-XX, 20856-XX, or 22796-XX) to the 22310-01 TM-FF Controller. Use the tables explaining each wire's location and purpose for the old and new modules in conjunction with the equivalency spreadsheet and schematic for the recommended retrofit installation. Wire colors for the original installation may not match those mentioned in this guide, so reference only the parent connector and pin location when matching up wires.

In the new module, the RF receiver and I/O controller are all in one module instead of two components bolted or taped together. Depending on how many functions were integrated by your OEM, several listed wires and/or connectors may not be present in your installation. Those can safely be skipped.

TriNET MUX Wiring Definitions

The following diagram and tables detail where each connector is located and what each wire's pin location and purpose is for the original equipment installation. The default factory color is called out, but your installation may differ if the OEM provided integrated harnesses.

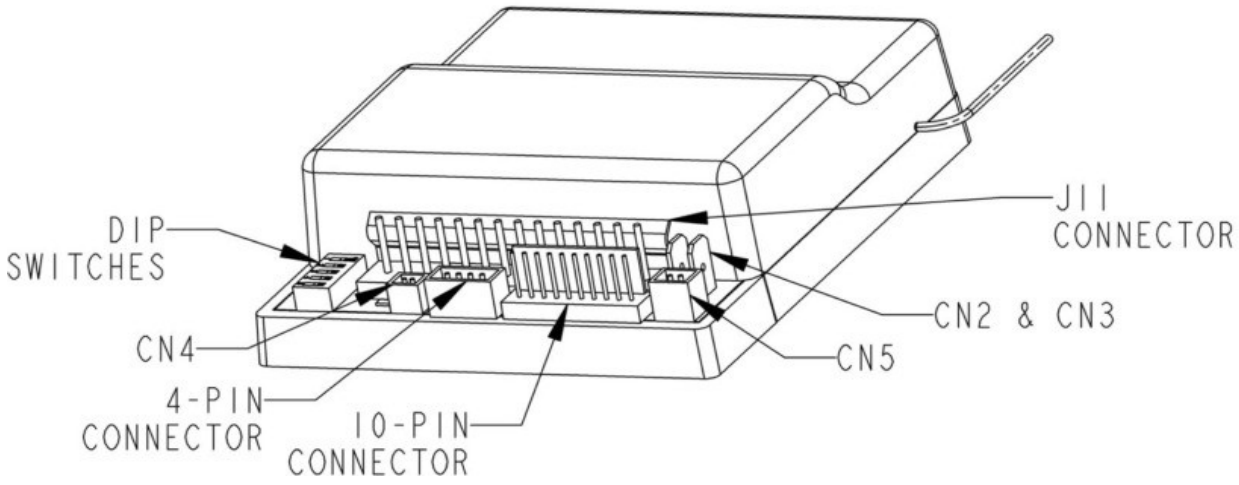
TriNET MUX Module Connector Names and Locations



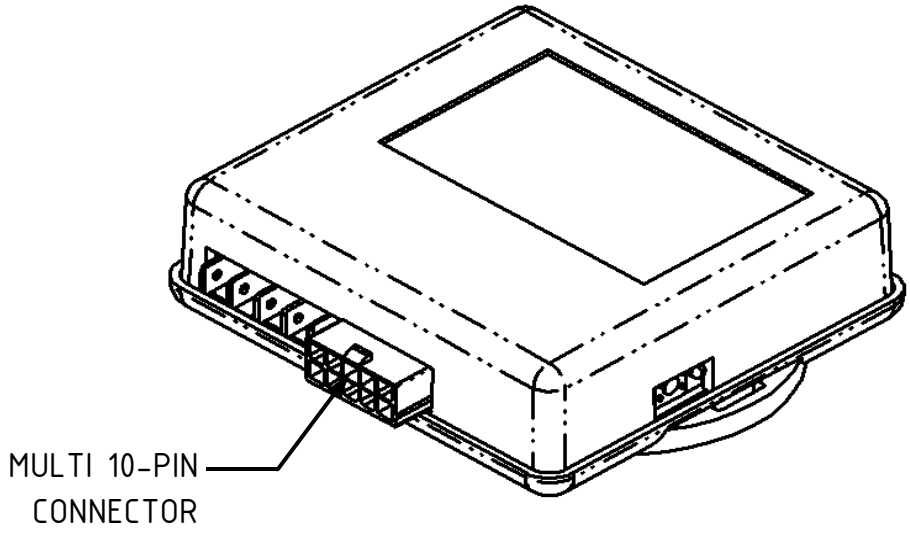
TriNET RF Module Connector Names and Locations

The RF receiver on the OEM installation could be one of 2 devices. The names and connector definitions are shown below. Only one of these two modules will be on your original equipment. Make a note of your best match, and use those connector references for the remainder of the upgrade.

IEI RF Module



TM-Multi RF Module



TriNET MUX Module Wire Definitions

J1 Connector (Power)		Default Wire Color
1	POWER (+12V) Input	RED
2	—-	—-
3	GROUND Input	BLACK
J2 Connector (Switch Inputs)		Default Wire Color
1	**SEE CONFIG TABLE** (-500mA)	OEM Defined
2	**SEE CONFIG TABLE** (-500mA)	OEM Defined
3	**SEE CONFIG TABLE** (-500mA)	OEM Defined
4	**SEE CONFIG TABLE** (-500mA)	OEM Defined
5	**SEE CONFIG TABLE** (-500mA)	OEM Defined
6	**SEE CONFIG TABLE** (-500mA)	OEM Defined
7	ACTUATE ZONE 6 Input (-500mA)	OEM Defined
8	TOGGLE AUX 1 Input (-500mA)	OEM Defined
9	TOGGLE AUX 2 Input (-500mA)	OEM Defined
10	ENTRY DOOR AJAR SIGNAL Input (-500mA)	OEM Defined
11	COMPARTMENT DOOR AJAR SIGNAL Input (-500mA)	OEM Defined
12	TRIGGER SECURITY Input (-500mA)	OEM Defined
J3 & J4 Connectors (Keypads)		Default Wire Color
1	POWER Output (+12V)	BLACK
2	GROUND Output	BROWN
3	TriNET A	BLUE
4	TriNET B	GREEN / YELLOW
J5, J7, J8, & J10 Connectors (Banks A-D or CARGO BAYS)		Default Wire Color
1	LOCK Output	GREEN
2	UNLOCK Output	BLUE
J6 Connector (Zone 1 or ENTRY DOOR)		Default Wire Color
1	LOCK Output	RED
2	UNLOCK Output	BLUE
J9 Connector (Zone 6 Switch)		Default Wire Color
1	ZONE 6 Input	OEM Defined
2	ZONE 6 Output	OEM Defined
J11 Connector (I/O from RF)		Default Wire Color
1	GROUND Output	PURPLE / WHITE
2	+12V Output	WHITE / BLACK
3	LOCK Input	WHITE / GREEN
4	UNLOCK Input	WHITE / RED
5	AUX Input	PURPLE / WHITE
6	PANIC Input	BROWN / WHITE
7	KEY INSERTED SENSOR Output	WHITE / BROWN
8	IGNITION SENSOR Output	GREEN
9	PIN 7 & 8 POLARITY Input	WHITE / BLACK
J12 Connector (AUX Outputs)		Default Wire Color
1	POWER (+12V) Output	OEM Defined
2	HORN Output (-500mA)	OEM Defined
3	HEADLIGHTS / MARKER LIGHTS Output (-500mA)	OEM Defined
4	DOME / PORCH LIGHT Output (-500mA)	OEM Defined
5	AUX 1 Output (-500mA)	OEM Defined
6	AUX 2 Output (-500mA)	OEM Defined
7	ENTRY DOOR AJAR Output (-500mA)	OEM Defined
8	COMPARTMENT DOOR AJAR Output (-500mA)	OEM Defined
9	SIREN Output (-500mA)	OEM Defined

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TriNET MUX Module Configuration Table

The configuration of your module can be determined by removing the cover that the RF module is attached to and examining the 4-Block DIP switch on the PCB. Switches 1 and 2 determine the configuration. Refer to the table below to identify your settings. [CONFIG X (SW1,SW2)]

J2 Connector Pin	CONFIG A (OFF,OFF)	CONFIG B (OFF,ON) Primary, Secondary Control	CONFIG C (ON,OFF) Individual Control	CONFIG D (ON,ON) Typical RV Setting
1	LOCK ALL Input	LOCK ALL Input	LOCK ALL Input	LOCK ALL Input
2	UNLOCK ALL Input	UNLOCK ALL Input	UNLOCK ENTRY DOOR Input	UNLOCK ALL Input
3	*UNASSIGNED*	LOCK ALL BANKS (A-D) Input	UNLOCK BANK A Input	UNLOCK BANKS C-D Input
4	*UNASSIGNED*	UNLOCK ALL BANKS (A-D) Input	UNLOCK BANK B Input	UNLOCK BANKS A-B Input
5	*UNASSIGNED*	LOCK ENTRY DOOR Input	UNLOCK BANK C Input	LOCK ENTRY DOOR Input
6	*UNASSIGNED*	UNLOCK ENTRY DOOR Input	UNLOCK BANK D Input	UNLOCK ENTRY DOOR Input

TriNET RF Module Wire Definitions

IEI RF Module

IEI J11 Connector		Default Wire Color
1	CARGO UNLOCK Input/Output (12A Relay)	PURPLE / WHITE
2	CARGO UNLOCK Input/Output (12A Relay)	PURPLE / WHITE
3	ENTRY LOCK Output (N / C Relay 30)	WHITE / GREEN
4	LOCK Input (N / C Relay 87A)	WHITE / BLACK
5	KEY FOB LEARN WIRE (Not Connected)	YELLOW
6	GROUND Input	BLACK
7	*UNASSIGNED*	—-
8	POWER Input (+12V)	RED
9	ENTRY UNLOCK Input (N / C Relay 87A)	BLUE / WHITE
10	UNLOCK Output (N / C Relay 30)	WHITE / RED
11	LOCK / UNLOCK Polarity (N / O Relay 87)	PINK / BLACK
12	*UNASSIGNED*	—-
13	*UNASSIGNED*	—-
14	*UNASSIGNED*	—-
IEI 10-Pin Connector		Default Wire Color
1	*UNASSIGNED*	—-
2	*UNASSIGNED*	—-
3	CARGO LOCK Output	BROWN / WHITE
4	*UNASSIGNED*	—-
5	*UNASSIGNED*	—-
6	*UNASSIGNED*	—-
7	*UNASSIGNED*	—-
8	*UNASSIGNED*	—-
9	*UNASSIGNED*	—-
10	*UNASSIGNED*	—-
IEI 4-Pin Connector		Default Wire Color
2	(-) UNLOCK SIGNAL Input	WHITE / RED
4	(-) LOCK SIGNAL Input	WHITE / GREEN
IEI 0.25" Male Connectors		
CN2 & CN3	STARTER KILL Relay Non-Polarized, 40A	—-

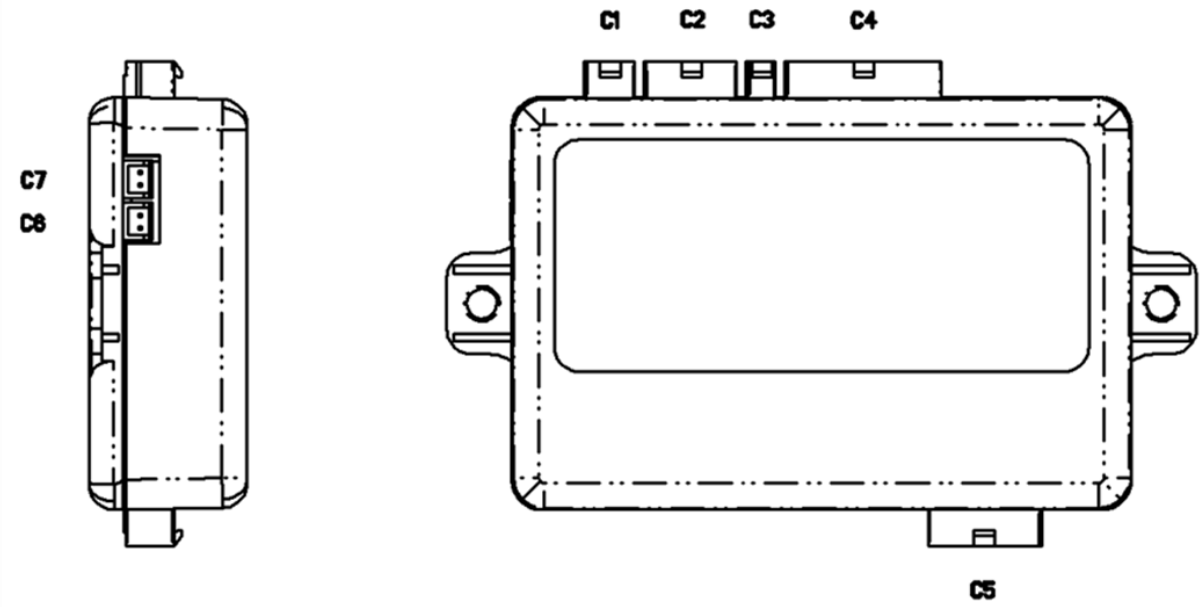
TM-Multi RF Module

TM-Multi 10-Pin Connector		Default Wire Color
1	GROUND Input	BLACK
2	*UNASSIGNED*	—-
3	*UNASSIGNED*	—-
4	PANIC Output	BLUE
5	LOCK Output	ORANGE
6	POWER (+12V) Input	RED
7	*UNASSIGNED*	—-
8	*UNASSIGNED*	—-
9	AUXILLARY Output	PURPLE
10	UNLOCK Output	BROWN

Tri*Mark* Full-Feature (TM-FF) Wiring Definitions

This table details what each wire's purpose, its parent connector, and its pin location for the TM-FF RF Module. The wire colors called out in this table are accurate if you've purchased the kit including pig-tail harnesses. Wire colors will vary if you've purchased an adaptor harness from a manufacturer other than Tri*Mark*.

TM-FF RF Module Connector Names and Locations



TM-FF RF Module Wire Definitions

C1: 4-PIN HARNESS		Default Wire Color
1	---	None
2	IGNITION Input	YELLOW
3	GROUND Input	BLACK
4	POWER (+12V) Input	RED
C2: KEYPAD HARNESS		Default Wire Color
---	Pre-Made Harness (p/n 22305-01 or 23981-01)	---
C3: 2-PIN HARNESS		Default Wire Color
1	(-) LOCK SIGNAL Input	GREEN / WHITE
2	(-) UNLOCK SIGNAL Input	BLUE / WHITE
C4: 14-PIN HARNESS		Default Wire Color
1	(-) SECURITY TRIGGER Input 3	WHITE / PURPLE
2	ARMED Output (-500mA)	ORANGE
3	STARTER KILL Output (-500mA)	BROWN
4	HEADLIGHTS Output (-500mA)	GRAY
5	HORN Output (-500mA)	BROWN / WHITE
6	(-) SECURITY TRIGGER Input 1	WHITE / BLACK
7	SIREN Output (A/C)	WHITE / YELLOW
8	AUX 2 Output (-500mA)	RED / WHITE
9	AUX 1 Output (Relay +15A)	BLACK / WHITE
10	2ND UNLOCK Output (-500mA)	WHITE / ORANGE
11	3RD UNLOCK / STAGGERED LOCK (-500mA)	WHITE / BLUE
12	PARKING LIGHTS Output (Relay +15A)	WHITE
13	(+) SECURITY TRIGGER Input 2	WHITE / RED
14	SIREN Output (A/C)	GREEN
C5: 10-PIN HARNESS		Default Wire Color
1	DOOR LOCK (N/C) (Relay 30A)	GREEN / BLACK
2	---	---
3	DOME LIGHT Output (Relay 15A)	PURPLE
4	DOME LIGHT (N/O) (Relay 15A)	PINK
5	DOME LIGHT (N/C) (Relay 15A)	PINK / BLACK
6	DOOR LOCK (N/O) (Relay 30A)	GREEN / WHITE
7	DOOR LOCK Output (Relay 30A)	GREEN
8	DOOR UNLOCK (N/C) (Relay 30A)	BLUE / BLACK
9	DOOR UNLOCK (N/O) (Relay 30A)	BLUE / WHITE
10	DOOR UNLOCK Output (Relay 30A)	BLUE
C6: LED HARNESS		
1,2	Included with module	---
C7: PUSH-BUTTON HARNESS		
1,2	Included with module	---

Wire Equivalency Spreadsheets and Wiring Diagrams

This table lists which wires are direct replacements between the two keyless entry systems. The two tables list similar information, but organized in different ways. Use both tables to check which wires are relevant to your upgrade, and to double-check your work after rewiring is complete. These tables are meant to be used in conjunction with the diagrams and descriptive tables listed at the beginning of the manual.

Wiring diagrams at the back of the manual are a graphical representation of the information shown in the tables. The wiring diagrams show the original equipment still connected to the RV, but it should be removed when rewiring or after it is completed. Leaving the original installation attached to the RV after rewiring and applying power may cause some unintentional short between power and ground and could cause extensive equipment damage. Completely remove the original installation's modules before powering the new installation.

WIRE EQUIVALENCY SORTED BY NEW CONNECTIONS

New System			REPLACES	Old System LARGE I/O BOARD		
Connector	Pin	Wire Color		Connector	Pin	Wire Purpose
C1	1	---		---	---	---
C1	2	Yellow		J11	7	KEY INSERTED/IGNITION
C1	3	Black		J1	3	GROUND INPUT
C1	4	Red		J1	1	+12V INPUT
C2	ALL	New Keypad Harness				---
C3	1	Green/White		J2	1	ENTRY LOCK INPUT (-)
C3	2	Blue/White		J2	2	ENTRY UNLOCK INPUT (-)
C4	1	White/Purple		J2	10	(-) SECURITY TRIGGER INPUT
				J2	11	(DOORS AJAR)
C4	2	Orange		NO CONNECTION		ARMED OUTPUT (-500mA)
C4	3	Brown		NO CONNECTION		STARTER KILL OUTPUT (-500mA)
C4	4	Gray		NO CONNECTION		LIGHTS OUTPUT (-500mA)
C4	5	Brown/White		J12	2	HORN OUTPUT (-500mA)
C4	6	White/Black		J2	12	(-) SECURITY TRIGGER INPUT
C4	7	White/Yellow		J12	9	SIREN OUTPUT (A/C)
C4	8	Red/White		J12	6	AUX2 OUTPUT (-500mA)
C4	9	Black/White		J12	5	AUX OUTPUT (+15 A)
C4	10	White/Orange		EXTERNAL RELAYS		2ND UNLOCK OUTPUT (-500mA)
C4	11	White/Blue		EXTERNAL RELAYS		STAGGERED LOCK OUTPUT (-500mA)
C4	12	White		J12	3	PARKING LIGHTS (+15A)
C4	13	White/Red		NO CONNECTION		(+) SECURITY TRIGGER INPUT
C4	14	Light Green		NO CONNECTION		SIREN OUTPUT (A/C)
C5	1	Green/Black		GROUND BUS	---	GROUND INPUT
C5	2	---		---	---	---
C5	3	Purple		J12	4	DOME LIGHT OUTPUT (+15A)
C5	4	Pink		12V BUS	---	+12V INPUT
C5	5	Pink/Black		GROUND BUS	---	GROUND INPUT
C5	6	Green/White		12V BUS	---	+12V INPUT
C5	7	Green		J6	1	ENTRY LOCK OUTPUT
C5	8	Blue/Black		GROUND BUS	---	GROUND INPUT
C5	9	Blue/White		12V BUS	---	+12V INPUT
C5	10	Blue		J6	2	ENTRY UNLOCK OUTPUT

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SORTED BY OLD CONNECTIONS

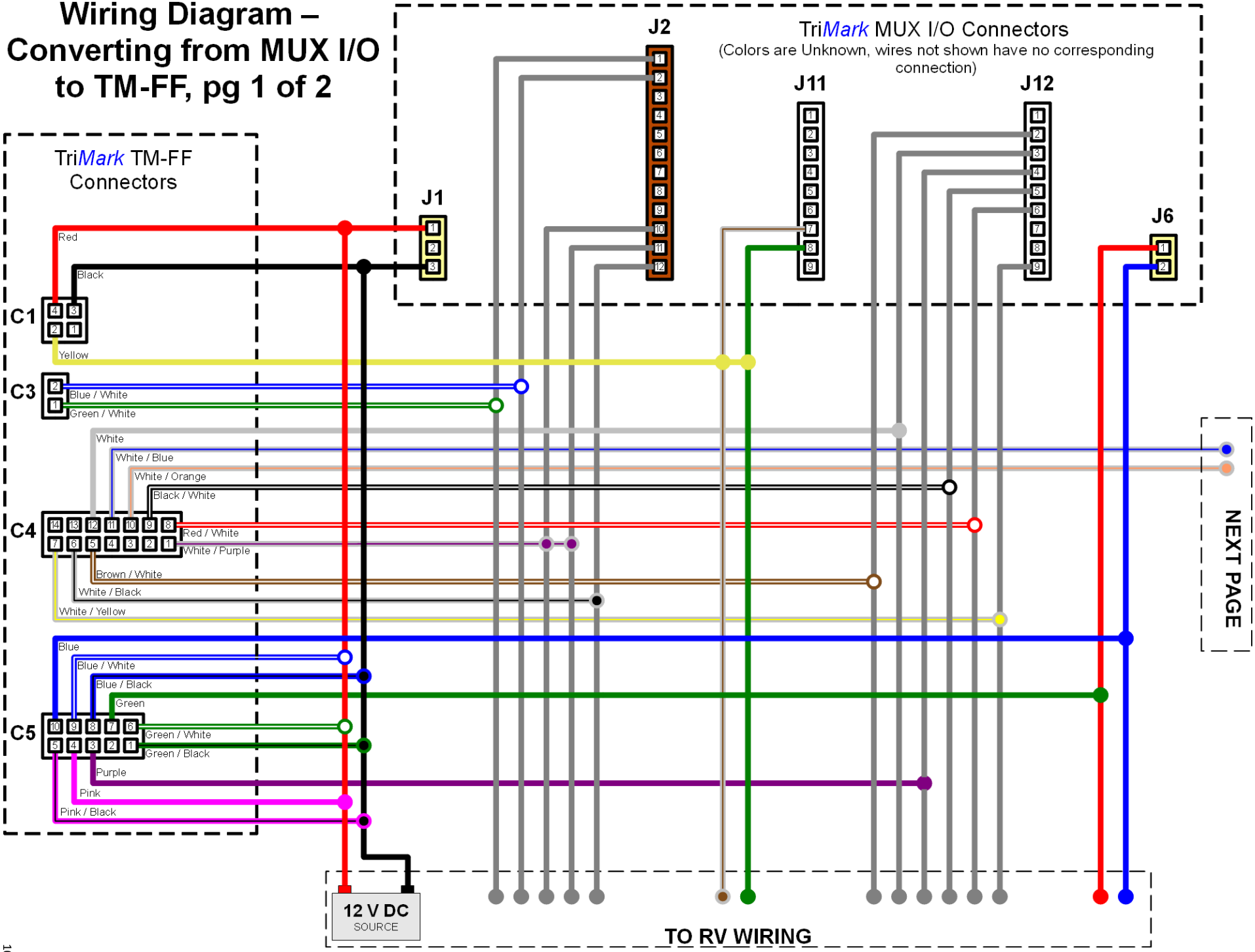
OLD SYSTEM I/O BOARD			REPLACED BY	NEW SYSTEM		
Connector	Pin	Wire Purpose		Connector	Pin	Potential Wire Color
J1	1	+12V BUS		C1	4	RED
J1	2	---		---	---	---
J1	3	GROUND BUS		C1	3	BLACK
J2	1	LOCK ALL INPUT		C3	1	GREEN/WHITE
J2	2	UNLOCK ENTRY DOORS INPUT		C3	2	BLUE/WHITE
J2	3	DEPENDS ON DIP SWITCHES		NO CONNECTION		
J2	4			NO CONNECTION		
J2	5			NO CONNECTION		
J2	6			NO CONNECTION		
J2	7	ACTUATE ZONE 6		NO CONNECTION		
J2	8	AUX 1 INPUT		NO CONNECTION		
J2	9	AUX 2 INPUT		NO CONNECTION		
J2	10	DOOR AJAR INPUT		C4	1	WHITE/PURPLE
J2	11	CARGO AJAR INPUT				
J2	12	SECURITY INPUT		C4	6	WHITE/BLACK
J3	ALL	OLD KEYPAD HARNESS		NO CONNECTION		
J4	ALL	OLD KEYPAD HARNESS		NO CONNECTION		
J5	1	BANK A LOCK OUTPUT		BANK A LOCK RELAY	30	BLUE
J5	2	BANK A UNLOCK OUTPUT		BANK A UNLOCK RELAY	30	BLUE
J6	1	ENTRY LOCK OUTPUT		C5	7	GREEN
J6	2	ENTRY UNLOCK OUTPUT		C5	10	BLUE
J7	1	BANK B LOCK OUTPUT		BANK B LOCK RELAY	30	BLUE
J7	2	BANK B UNLOCK OUTPUT		BANK B UNLOCK RELAY	30	BLUE
J8	1	BANK C LOCK OUTPUT		BANK C LOCK RELAY	30	BLUE
J8	2	BANK C UNLOCK OUTPUT		BANK C UNLOCK RELAY	30	BLUE
J9	1	X		NO CONNECTION		
J9	2	X		NO CONNECTION		
J10	1	BANK D LOCK OUTPUT		BANK D LOCK RELAY	30	BLUE
J10	2	BANK D UNLOCK OUTPUT		BANK D UNLOCK RELAY	30	BLUE
J11	1	GROUND TO RF RECVR		NO CONNECTION		
J11	2	+12V TO RF RECVR		NO CONNECTION		
J11	3	LOCK FROM RF RECVR		NO CONNECTION		
J11	4	UNLOCK FROM RF RECVR		NO CONNECTION		
J11	5	* BUTTON FROM RF RECVR		NO CONNECTION		
J11	6	PANIC FROM RF RECVR		NO CONNECTION		
J11	7	KEY INSERTED		C1	2	YELLOW
J11	8	ENGINE RUNNING				
J11	9	POLARITY FOR P7 AND P8		NO CONNECTION		
J12	1	+12V BUS		NO CONNECTION		
J12	2	HORN OUTPUT		C4	5	BROWN/WHITE
J12	3	HEADLIGHT OR MARKER LIGHT OUTPUT		C4	12	WHITE
J12	4	INTERIOR LIGHT / PORCH LIGHT OUTPUT		C5	3	PURPLE
J12	5	AUXILLARY 1 OUTPUT		C4	9	BLACK/WHITE
J12	6	AUXILLARY 2 OUTPUT		C4	8	RED/WHITE
J12	7	ENTRY DOOR AJAR OUTPUT		NO CONNECTION		
J12	8	CARGO AJAR OUTPUT		NO CONNECTION		
J12	9	SIREN OUTPUT		C4	7	WHITE/YELLOW

No other connections are used from this system

WIRE EQUIVALENCY SORTED BY NEW CONNECTIONS (cont…)

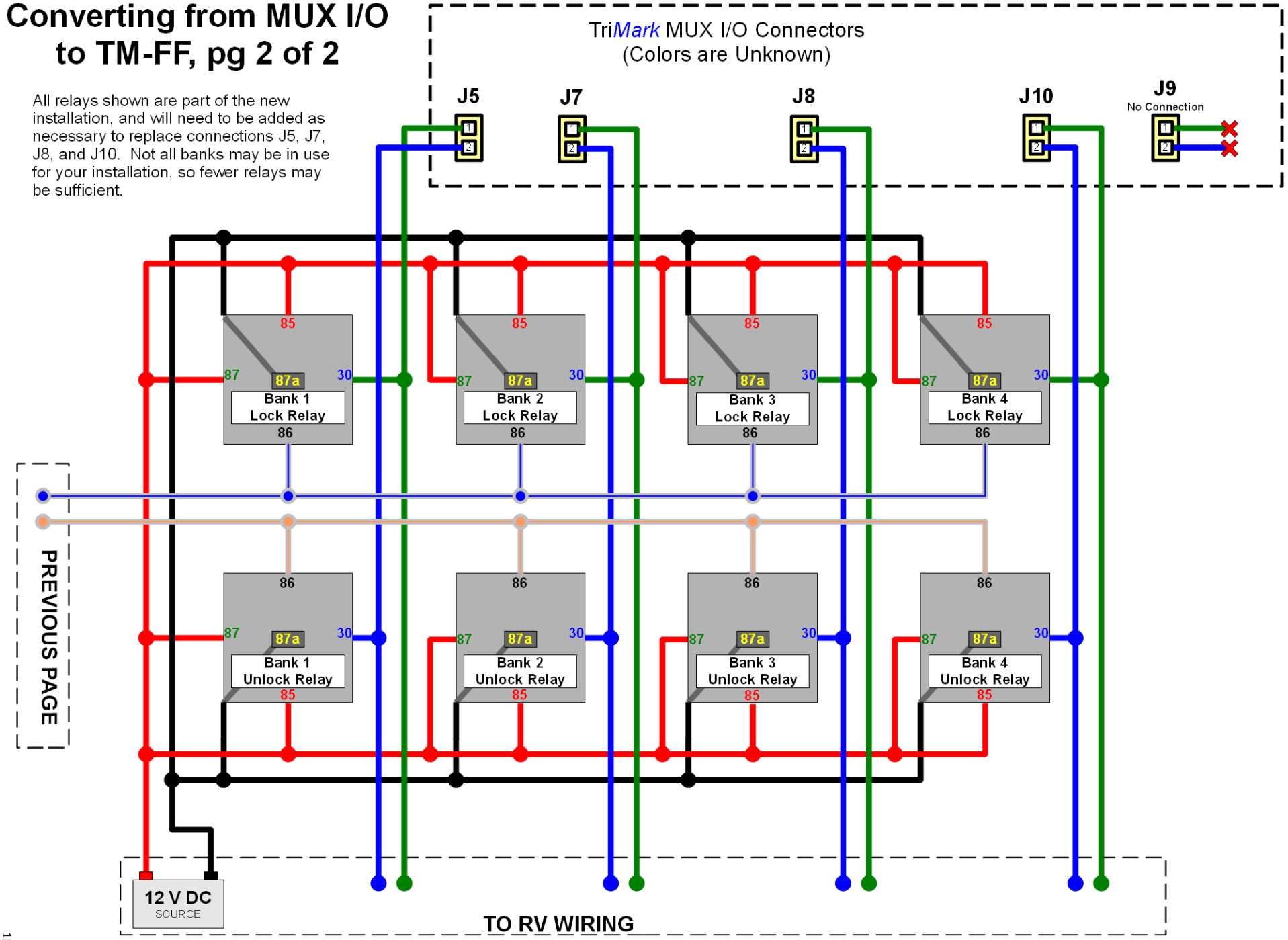
EXTERNAL RELAYS				CONNECT TO…		
Relay Type	Terminal	Typ Wire Color		Connector	Pin	Purpose
BANK A LOCK	85	RED		12V BUS	---	+12V INPUT
BANK A LOCK	86	BLACK		C4	P11	CARGO LOCK GROUND SIGNAL
BANK A LOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK A LOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK A LOCK	30	BLUE		J5	P1	BANK A LOCK OUTPUT
BANK A UNLOCK	85	RED		12V BUS	---	+12V INPUT
BANK A UNLOCK	86	BLACK		C4	P10	CARGO UNLOCK GROUND SIGNAL
BANK A UNLOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK A UNLOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK A UNLOCK	30	BLUE		J5	P2	BANK A UNLOCK OUTPUT
BANK B LOCK	85	RED		12V BUS	---	+12V INPUT
BANK B LOCK	86	BLACK		C4	P11	CARGO LOCK GROUND SIGNAL
BANK B LOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK B LOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK B LOCK	30	BLUE		J7	P1	BANK B LOCK OUTPUT
BANK B UNLOCK	85	RED		12V BUS	---	+12V INPUT
BANK B UNLOCK	86	BLACK		C4	P10	CARGO UNLOCK GROUND SIGNAL
BANK B UNLOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK B UNLOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK B UNLOCK	30	BLUE		J7	P2	BANK B UNLOCK OUTPUT
BANK C LOCK	85	RED		12V BUS	---	+12V INPUT
BANK C LOCK	86	BLACK		C4	P11	CARGO LOCK GROUND SIGNAL
BANK C LOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK C LOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK C LOCK	30	BLUE		J8	P1	BANK C LOCK OUTPUT
BANK C UNLOCK	85	RED		12V BUS	---	+12V INPUT
BANK C UNLOCK	86	BLACK		C4	P10	CARGO UNLOCK GROUND SIGNAL
BANK C UNLOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK C UNLOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK C UNLOCK	30	BLUE		J8	P2	BANK C UNLOCK OUTPUT
BANK D LOCK	85	RED		12V BUS	---	+12V INPUT
BANK D LOCK	86	BLACK		C4	P11	CARGO LOCK GROUND SIGNAL
BANK D LOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK D LOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK D LOCK	30	BLUE		J10	P1	BANK D LOCK OUTPUT
BANK D UNLOCK	85	RED		12V BUS	---	+12V INPUT
BANK D UNLOCK	86	BLACK		C4	P10	CARGO UNLOCK GROUND SIGNAL
BANK D UNLOCK	87	GREEN		12V BUS	---	+12V INPUT
BANK D UNLOCK	87a	YELLOW		GROUND BUS	---	GROUND INPUT
BANK D UNLOCK	30	BLUE		J10	P2	BANK D UNLOCK OUTPUT

Wiring Diagram – Converting from MUX I/O to TM-FF, pg 1 of 2



Wiring Diagram – Converting from MUX I/O to TM-FF, pg 2 of 2

All relays shown are part of the new installation, and will need to be added as necessary to replace connections J5, J7, J8, and J10. Not all banks may be in use for your installation, so fewer relays may be sufficient.



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