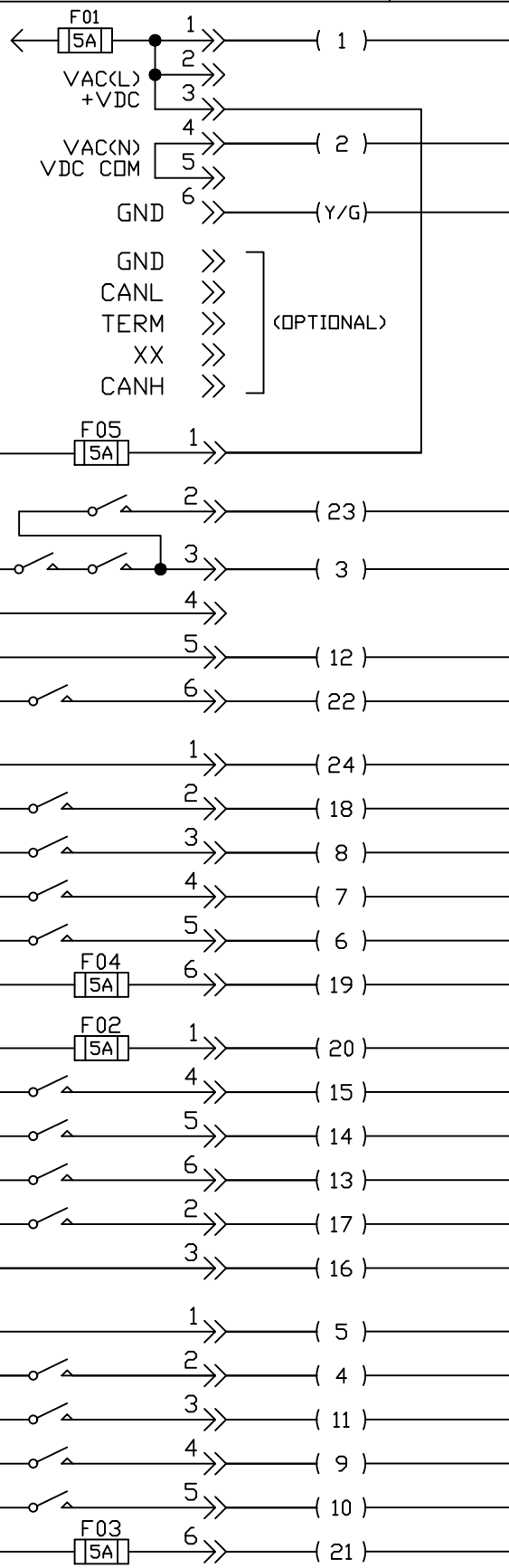


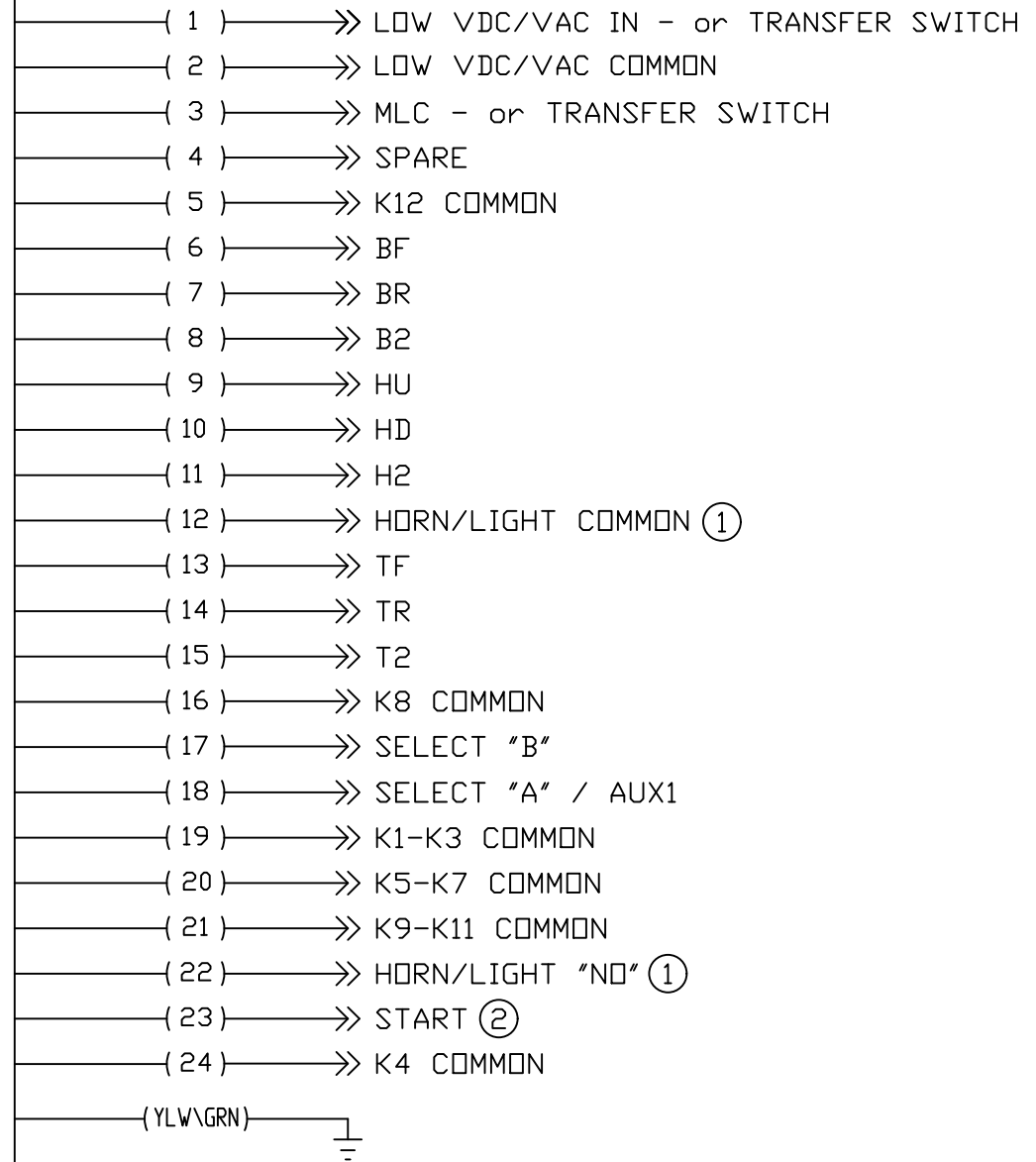
RADIO RECEIVER ENCLOSURE

9 - 36 VDC
OR
10 - 28 VAC



CONTROL CABLE
6 FEET MAX

PIGTAIL WIRING
DESIGNATION



CONTACT RATINGS:
"MLC" RELAY: 8 AMPS @ 250 VAC
CONTROL RELAYS: 8 AMPS @ 250 VAC

- ① K13 WIRES (12) & (22) MUST BE WIRED TO THE CRANES WARNING DEVICE FOR PROPER OPERATOR WARNING AND ANNUNCIATION DURING THE TX ASSOCIATION PROCESS.
- ② FOR USE IN APPLICATIONS WHERE ISOLATED START CONTROLS ARE REQUIRED. DURING COMMANDED FUNCTIONS THIS WIRE WILL HAVE A VAC/VDC POTENTIAL ACROSS IT. TERMINATE WIRE ACCORDINGLY.
- ③ RELAYS ARE SHOWN IN DEFAULT MODE (00), REFER TO PG.5 FOR OPTIONAL RELAY SETTINGS.

-- REVISIONS --

NO.	DATE	DESCRIPTION
0 - 0	03.23.21	DRAWING ISSUED FOR PRODUCTION.
1 - 0	07.27.22	UPDATED DRAWING TO LATEST STANDARD. -GFM


WARRIOR ETHOS-LVU

CUSTOMER: CERVIS, INC.
 DESCRIPTION: MU-9X15-LVU RX WITH PRE-WIRED PIGTAIL
 ASSEMBLY #15104525

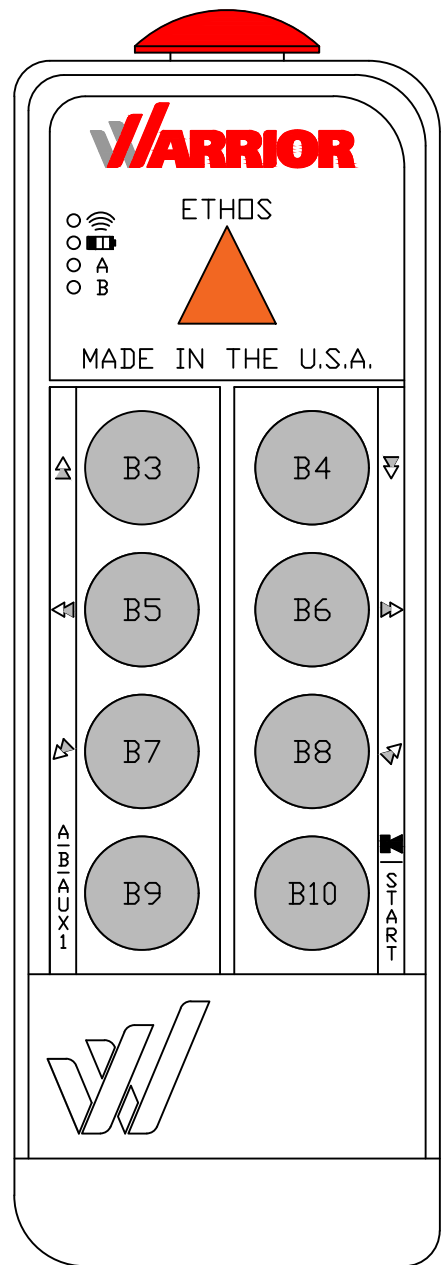
DRAWN: ECJ
 ENGINEER: GFM

SCALE: N/A
 SHEET: 1 OF 5

SIZE: B
 DWG NO. #A100067
 REV: 1 - 0



STOP  PULL START



HOIST UP

TROLLEY REV

BRIDGE REV

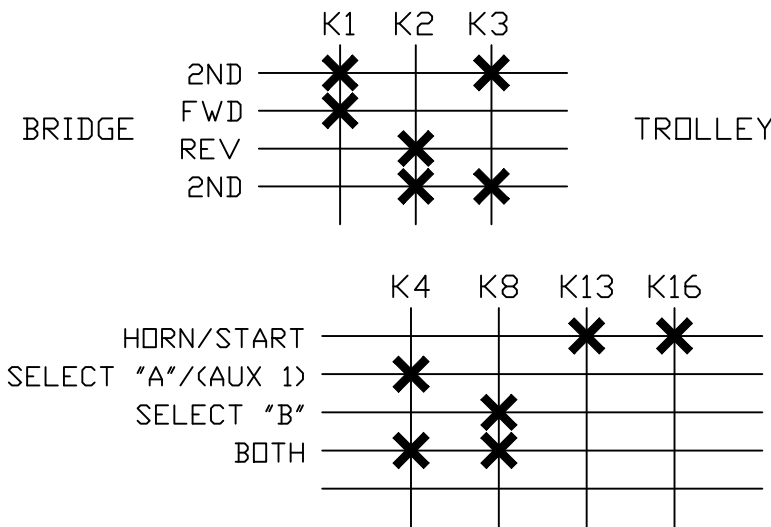
T/H SELECT
AUX 1

HOIST DWN

TROLLEY FWD

BRIDGE FWD

HORN/START



START PROCEDURE:

1. PULL STOP SWITCH UP TO "WAKE" TX.
2. WAIT FOR TX/RX LED TO START FLASHING.
3. PRESS HORN/START PUSHBUTTON (B10) TO ENERGIZE THE "MLC" RELAY.

STOP:

1. PRESS STOP BUTTON TO DE-ENERGIZE "MLC" RELAY & ALL OTHER OUTPUTS.

PROGRAMMING NOTES:

1. FIRST COME - FIRST SERVE SOFTWARE.
2. PRESS A/B SELECT (B9) TO ENERGIZE SELECT RELAYS.
 - * "A" SELECT (K4), "B" SELECT (K8), BOTH ...
 - ** LED'S WILL INDICATE SELECTION MADE
3. IN CERTAIN MODES B9 ACTS AS AN AUX FUNCTION. REFER TO PG.5 FOR OPTIONAL RELAY SETTINGS.

TX/RX = COMM
BATT = LOW BAT
A = SEL "A"
B = SEL "B"

1. TX TIMEOUT = 10 MINUTES
2. B3 - B10 ARE 2-STEP PUSHBUTTONS

CERVIS
Model: HHMS-xS9Xxx
Cervis 915 MHz
XXXXX
XXXXX
Input: 1.6-3.2V Rev 0
Serial #

ASSOCIATION PROCEDURE	
1.	B9/B10: INITIATES MAINTENANCE MODE.
2.	B3/B4: INITIATES ASSOCIATION MODE (HOLD FOR 5 SEC'S)
3.	PRESS B9 TO SEARCH FOR TARGET RX.
4.	PRESS B10 TO SELECT THE TARGET RX.
5.	B3/B4 + B5: CLEARS ID.
** REFER TO MANUAL FOR DETAILS	

Software: Warrior Ethos 32 CFG - [68A7DEFE]

CUSTOMER: CERVIS, INC.

DESCRIPTION: HHMS-9XW08-ND PROGRAMMING DETAILS



DRAWN: ECJ
ENGINEER: GFM

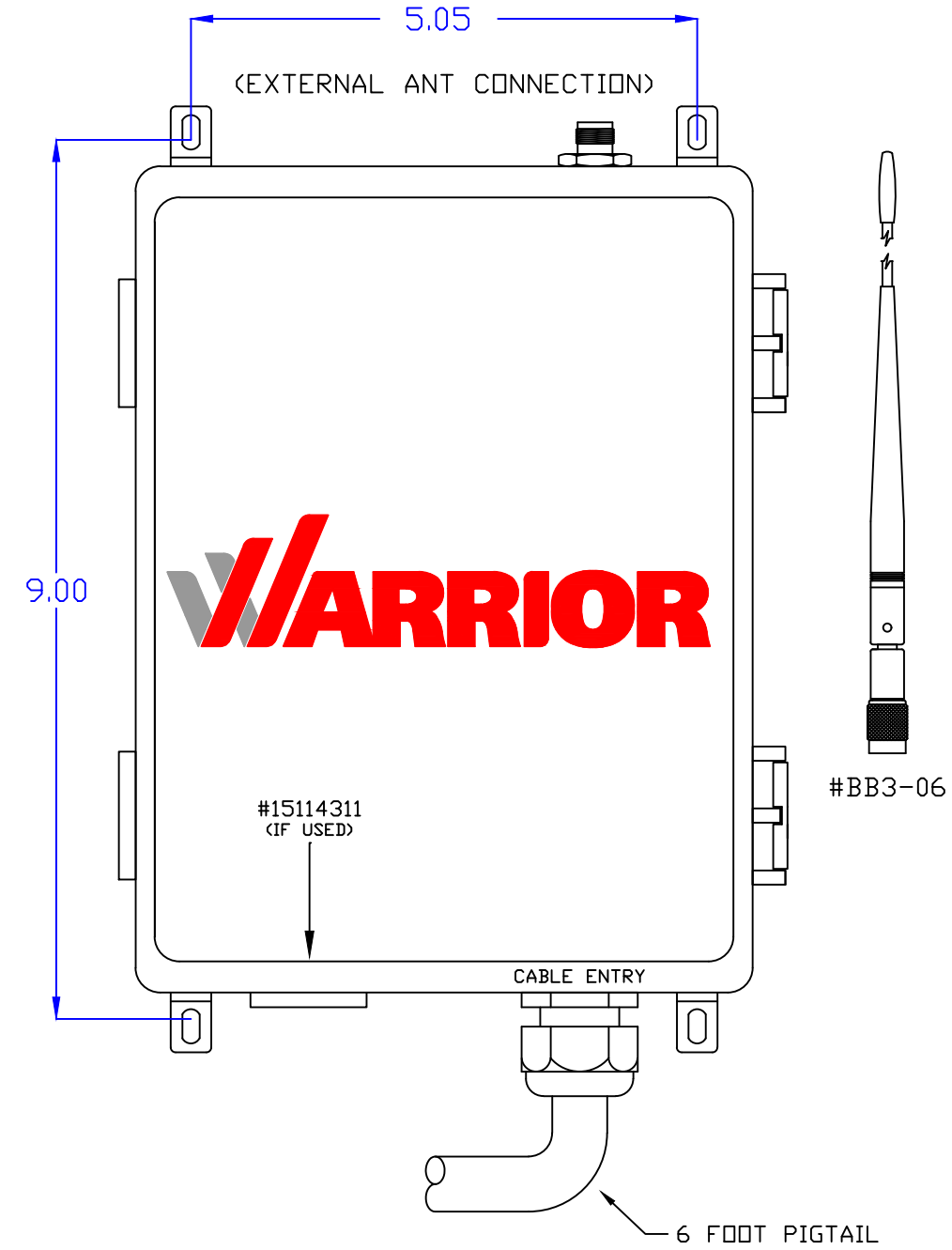
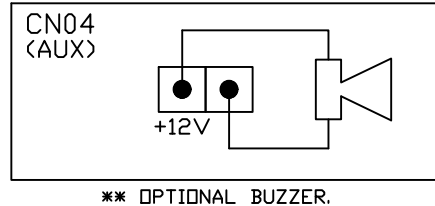
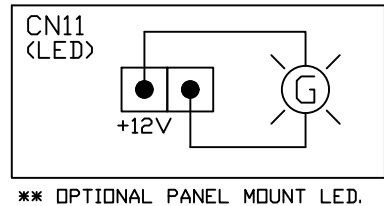
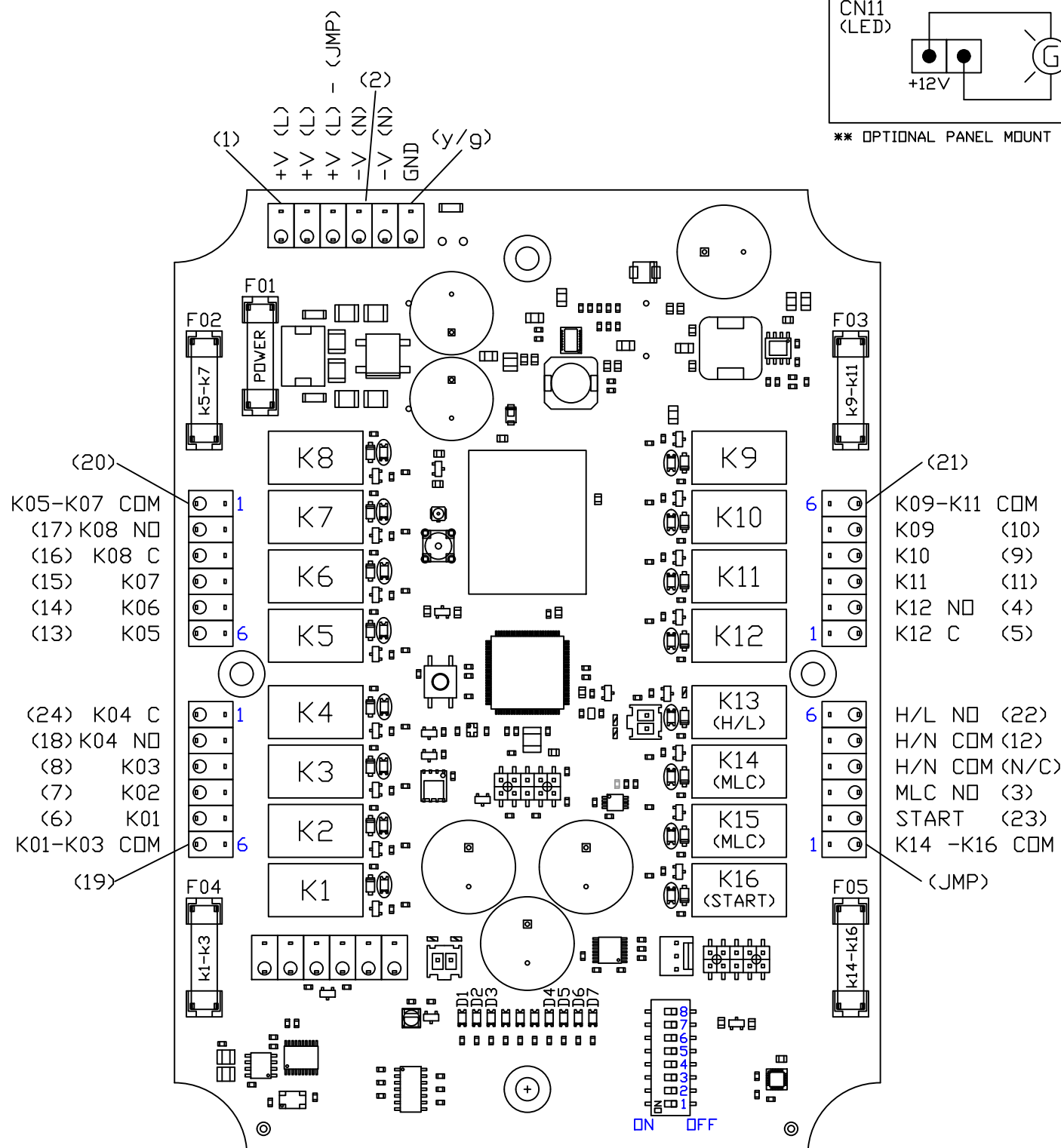
SCALE: N/A

SHEET: 2 OF 5

SIZE: B
DWG NO. #A100067

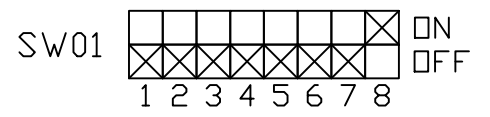
REV: 1-0

<XX> - PIGTAIL WIRE NUMBERS



DIAGNOSTIC LED'S:

D1	HEALTH/OPERATIONAL
D2	TX
D3	RX
D4	LOGIC 3.3V
D5	SYSTEM 3.3V
D6	RF 3.3V
D7	SYSTEM 12V



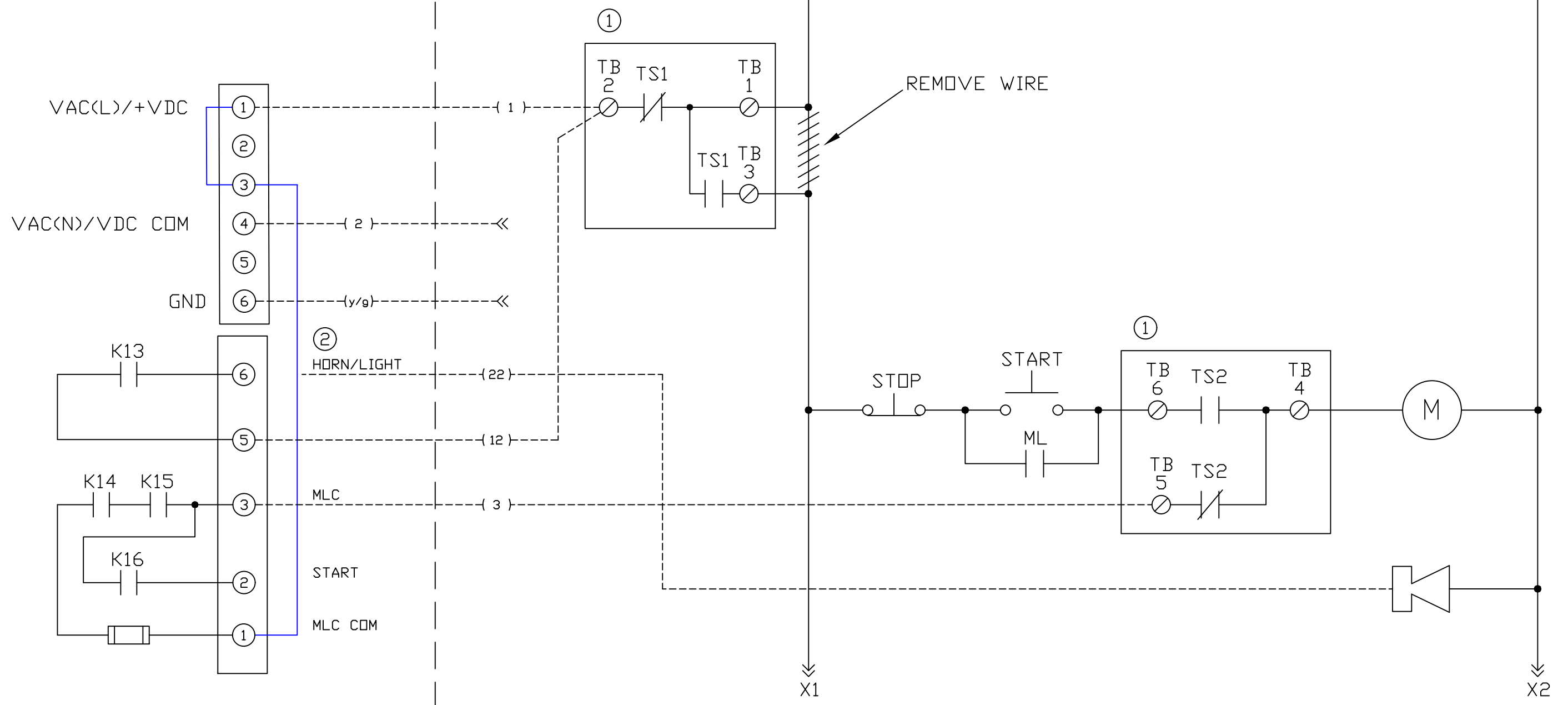
1. DIP SWITCHES SHOWN IN DEFAULT MODE <00>.
2. DIP SWITCH 8 SHOULD BE "OFF" WHEN THE SYSTEM IS SHIPPED.

"PCB LAYOUT"

CUSTOMER: CERVIS, INC.					
DESCRIPTION: BOARD/ENCLOSURE DETAILS					
DRAWN: ECJ	SCALE: N/A	SHEET: 3 OF 5	SIZE: B	DWG NO. #A100067	REV: 1-0
ENGINEER: GFM					

CERVIS RADIO RECEIVER

TYPICAL MAINLINE

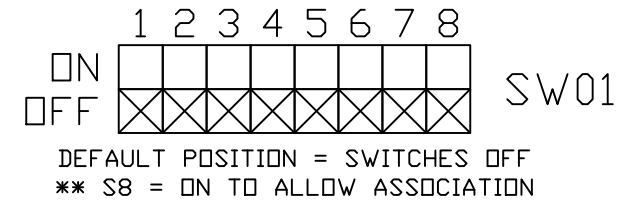


- ① TRANSFER SWITCH SHOWN IN "RADIO" MODE - FOR REFERENCE ONLY. TRANSFER SWITCH IS SUPPLIED BY CUSTOMER.
- ② TYPICAL WIRING OF THE HORN/LIGHT (ASSOCIATION) RELAY. FOR PROPER OPERATOR WARNING AND ANNUNCIATION DURING THE TX ASSOCIATION PROCESS.

CUSTOMER: CERVIS, INC.					
DESCRIPTION: TYPICAL MAINLINE INTERFACE					
DRAWN: ECJ	SCALE: N/A	SHEET: 4 OF 5	SIZE: B	DWG NO. #A100067	REV: 1-0
ENGINEER: GFM					

"MU" DIP SWITCH -- SW01 --

1	2	3	4	5	6	7	** 8
MODE		A-B BOTH/OFF	A-B CYC/IND	A-B MOM/LAT	AUX MOM/LAT	UNUSED	ASSOCIATION



APPLIES TO ALL MODES & ALL TX TYPES

MODE (SWITCHES 1 & 2)		
0	0	3-MOTION; BR-TR-HOIST 3-RELAY; A/B & AUX RELAYS.
0	1	3-MOTION; BR-TR 3-RELAY; HOIST 4-RELAY; A/B RELAYS; NO AUX.
1	0	3-MOTION; BR-TR-HOIST 4-RELAY; NO A/B or AUX RELAYS.
1	1	4-MOTION; BR-TR-HOIST-4TH, 3-RELAY; NO A/B or AUX RELAYS.

** IN MODES '00' & '01' K4 IS AVAILABLE FOR AN AUX OUTPUT (BASED ON SWITCH 4).

APPLIES TO ALL MODES & ALL TX TYPES

"A-B BOTH / OFF" (SWITCH 3)		
	RELAY OPERATION	MCB NOTES
0	CYCLES: A, B, BOTH, A, B, BOTH	S1 MIDDLE = BOTH
1	CYCLES: A, B, OFF, A, B, OFF	S1 MIDDLE = OFF

APPLIES ONLY TO HH2S; HHMS. APPLIES TO MODES 00 or 01.

"A-B CYCLE / INDEPENDENT" (SWITCH 4)		
	RELAY OPERATION	MCB NOTES
0	HH: BUTTON 9 CYCLES A/B RELAYS (see A-B BOTH/OFF SWITCH)	MCB: NO EFFECT
1	HH: BUTTON 9 ACTIVATES RELAY K4 "A" (see A-B MOM/LAT SWITCH)	MCB: NO EFFECT
	HH: BUTTON 10 ACTIVATES RELAY K12 "B" (see A-B MOM/LAT SWITCH)	

APPLIES ONLY TO HH2S; HHMS. APPLIES TO MODES 00 or 01. ONLY APPLIES IF A-B CYC/IND = 1.

"A-B MOM / LATCH" (SWITCH 5)		
	RELAY OPERATION	MCB NOTES
0	A & B ARE MOMENTARY OUTPUTS	MCB: NO EFFECT
1	A & B ARE LATCHING OUTPUTS	MCB: NO EFFECT

APPLIES ONLY IN MODE 00 AND WHEN A-B CYC/IND = 0 (or 10 BUTTON WON'T WORK)

"AUX MOM / LATCH" (SWITCH 6)		
	RELAY OPERATION	MCB NOTES
0	AUX RELAY IS MOMENTARY	S7 UP = AUX
1	AUX RELAY IS LATCHING	S7 UP = AUX

** AFTER ANY DIP SWITCH CHANGE, POWER OFF TRANSMITTER. ONCE TX IS TURNED BACK ON, RELAY CONFIG WILL CHANGE.

MU RELAY OUTPUT ASSIGNMENT (BASED ON DIP SW SETTINGS)																
MODE	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16
00	BF	BR	B2	A	TF	TR	T2	B	HD	HU	H2	AUX	H/L	MLC	MLC	STRT
01	BF	BR	B2	A	TF	TR	T2	B	HD	HU	HD2	HU2	H/L	MLC	MLC	STRT
10	BF	BR	BF2	BR2	TF	TR	TF2	TR2	HD	HU	HD2	HU2	H/L	MLC	MLC	STRT
11	BF	BR	B2	4th-R	TF	TR	T2	4th-F	HD	HU	H2	4th-2	H/L	MLC	MLC	STRT

H/L = HORN/LIGHT (ASSOCIATION) RELAY.
 XX = NO OUTPUT.
 MLC = "MLC" RELAY - MAINLINE CONTACTOR

STRT = START RELAY.
 N/A = NOT AVAILABLE.

CUSTOMER: CERVIS, INC.					
DESCRIPTION: WARRIOR DIP SWITCH SETTING CHART					
DRAWN: ECJ	SCALE: N/A	SHEET: 5 OF 5	SIZE: B	DWG NO. #A100067	REV: 1-0
ENGINEER: GFM					