Installation and Operation Manual
for
MPC CONTROL RECEIVER

Technical Manual No. 6X-836(A)

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GENERAL DESCRIPTION

The microprocessor camera control system consists of a Master Control Panel, Remote Control Panels, and Control Receivers. The receivers are packaged in NEMA-4 weatherproof enclosures. These units can be arranged to meet the needs of virtually any CCTV control application.

The system transmits control signals over either a single twisted pair (RS-485) or dual twisted pair (RS-422). DTMF is available as an option. Control receivers are compatible with existing systems that use these transmission formats.

A design offering many optional features allows a system to be assembled from off-the-shelf components to meet the specific needs of nearly any application.

The system controls up to 223 cameras and, if required, pan/tilt units. Up to 31 remote control sites and 1 master can be employed in the system.

Up to 10 preset positions for each camera/lens, and pan/tilt unit are available as an option. These positions are programmed and selected using the Preset Control Unit.

Receivers and remote control panels may be located up to 8 km (5 miles) from each other in a daisy-chain arrangment, using Belden 9182 twisted-pair wire. By using an MPC RS-422 Distribution Unit, the receivers may also be hooked in a star pattern, with each point of the star having up to 31 receivers.

Receivers obtain data from the Master Control Panel. This data is decoded to generate all drive signals for the pan/tilt, camera, and lens. If the preset option is used, the preset positions are stored in non-volatile RAM to prevent loss of memory during power interruptions.

The receiver processes the commands, then responds appropriately via the serial link and performs necessary control functions to the camera, lens, and pan/tilt unit. The receiver enclosure has multi-pin MS-type connectors for interconnecting with the camera and pan/tilt unit. In addition to normal camera site functions (pan, tilt, zoom, focus, iris, camera power, lens speed), other functions can be performed. These optional functions include contact closure, logic level input/output, ac/dc drive voltages, or dc analog voltage output or measurement. The receiver board jumper table details the configurations available for these functions.

INSTALLATION

Control receiver installation consists of installing the receiver at the desired location, setting an internal address, and connecting cables. Use four bolts, one at each corner, to secure the receiver. If units are to be daisy-chained together, use the wiring arrangement shown in the figure for the plug that interconnects with the receiver. Note that the last unit in the chain must be terminated with a 1/4 watt resistor with a value between 150 and 600 ohms. Daisy-chained refers to a method of connection that passes the control signals from unit to unit in a series arrangement (see figure). A wire-pair (or two pairs) enters the receiver and then exits again through the same connector to the next receiver in the chain.

The equipment may also be interconnected using a star arrangement, where each unit receives its own data line from a distribution unit (see figure).

Each receiver must have a unique address. This address is established by an 8-pole DIP switch on the receiver board. These switch settings are read by the microcomputer only when power is applied. If an address is changed while the receiver is powered up, be sure to power down and back up again to read in the new address.

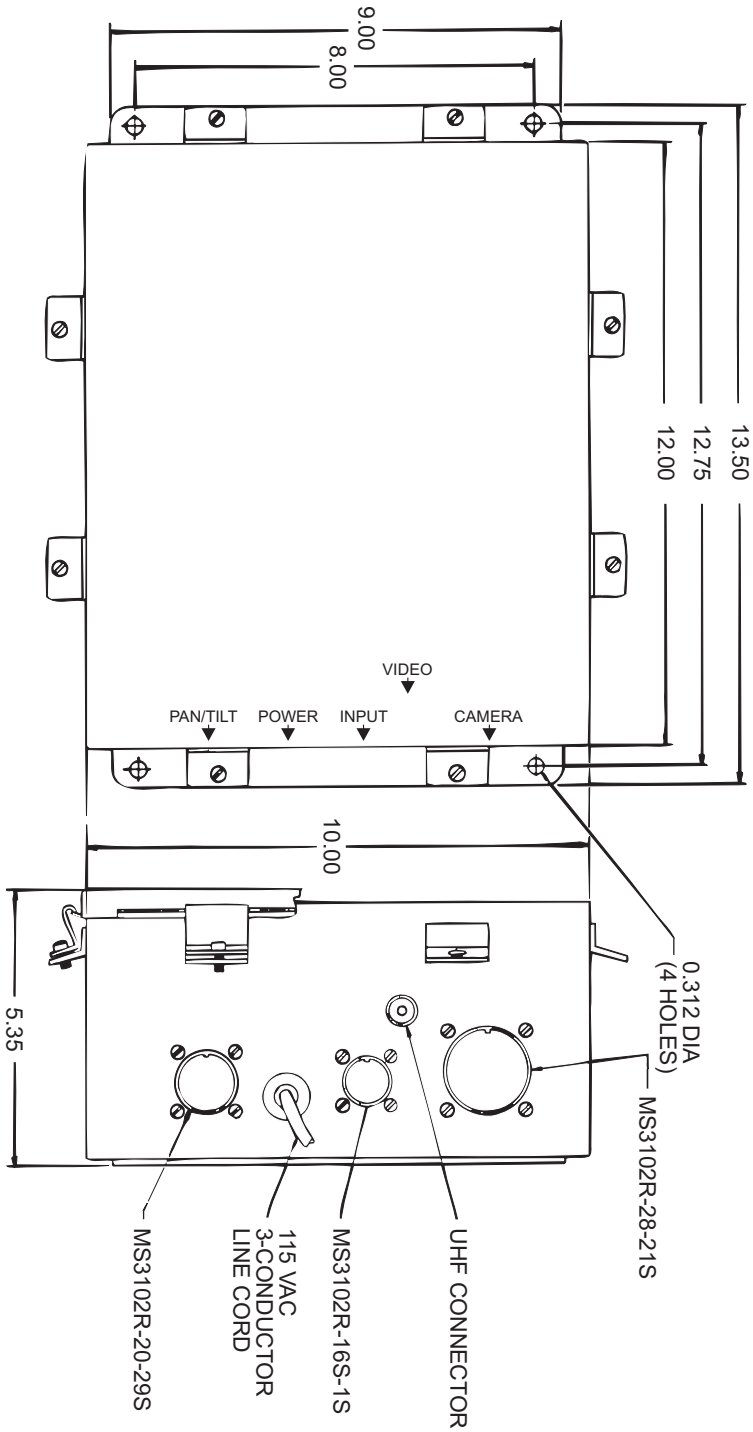
To set the address, remove the cover by loosening the eight clamp screws securing the cover. Slide the clamps off of the cover and remove it. Switch S1 is located at the top of the receiver board. Refer to the receiver board adjustments and jumpers figure and the decimal-hex-binary conversion table to determine the desired setting.

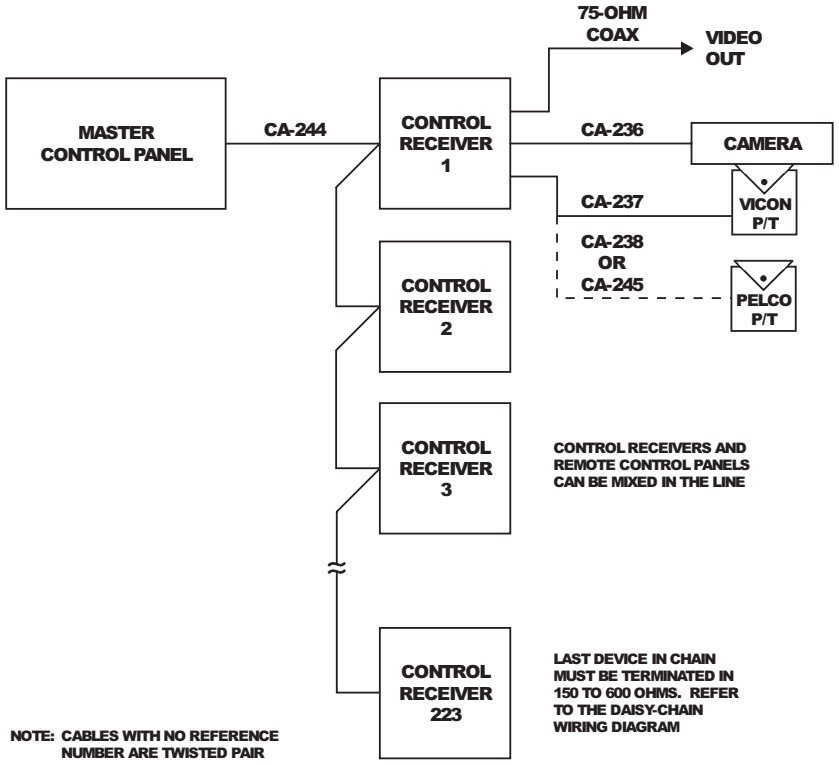
Replace the cover and slide the clamps back into position. Install the eight screws and tighten a little at a time in an alternating cross-pattern to evenly pull the cover down onto the gasket. This ensures that the receiver enclosure is properly sealed. Make sure that all cable connections are made to the receiver before applying power.

OPERATION

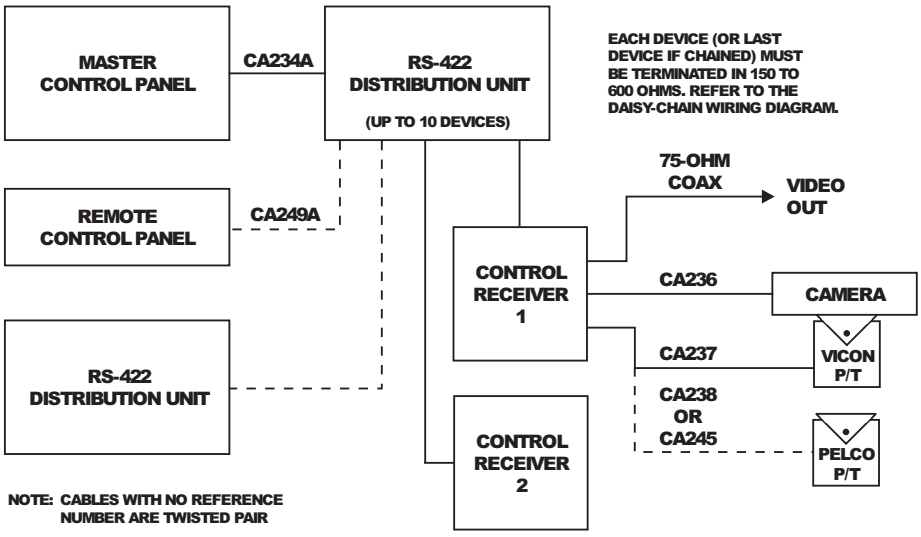
All operating characteristics of the receiver are controlled by an MPC Master or Remote Control Panel. Refer to the control panel manual for operating instructions.

Dimensions

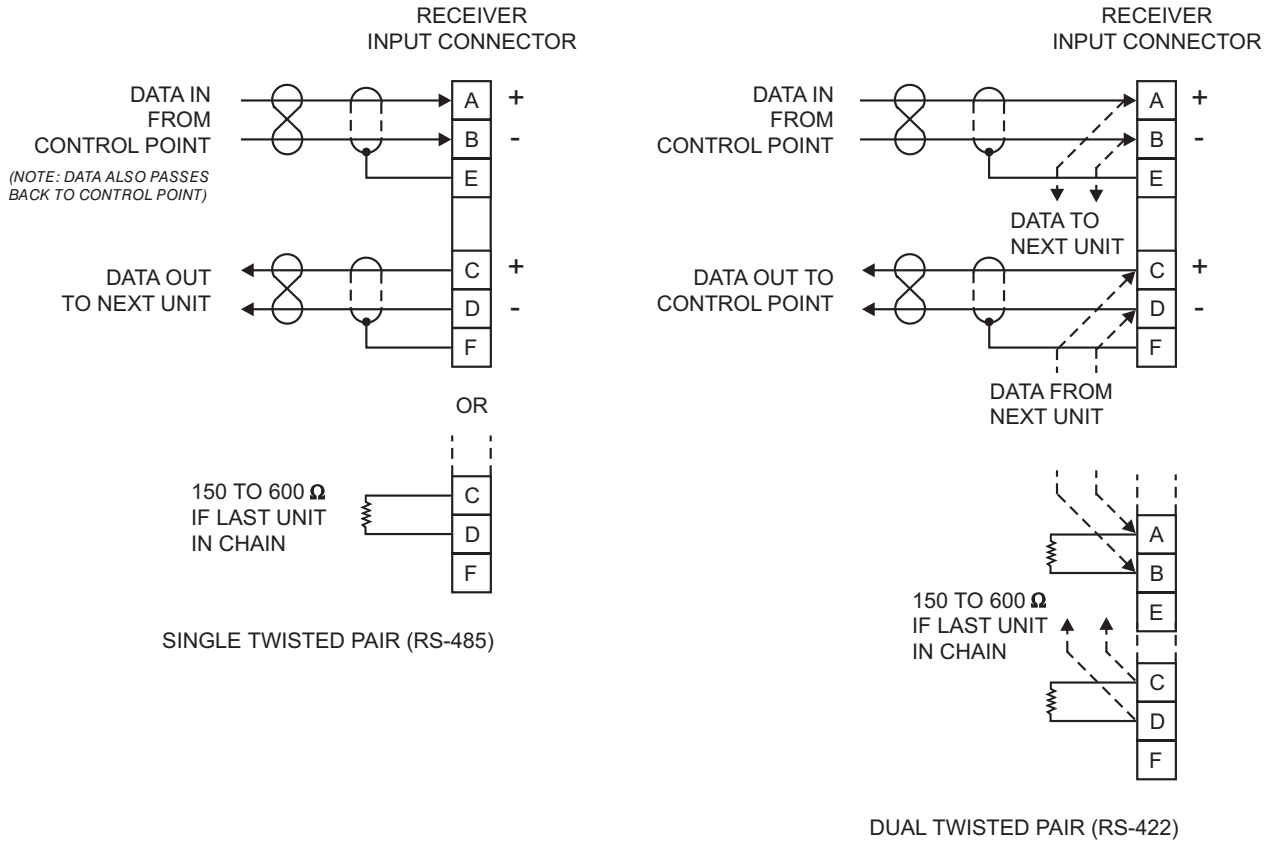

9.00
8.00
13.50
12.75
12.00
VIDEO
PAN/TILT
POWER
INPUT
CAMERA
10.00
5.35
0.312 DIA
(4 HOLES)
MS3102R-28-21S
MS3102R-20-29S
115 VAC
3-CONDUCTOR
LINE CORD
MS3102R-16S-1S
UHF CONNECTOR



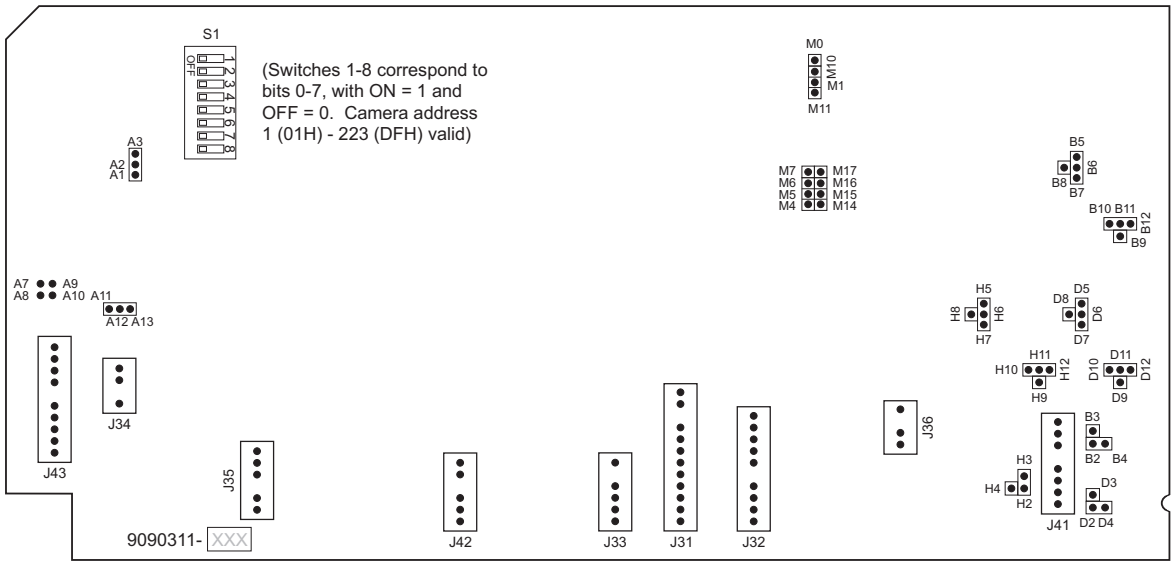
Typical Daisy-Chain Interconnection



Typical Star Interconnection



Daisy-Chain Wiring Diagram



Adjustments and Jumpers, Receiver Board

JUMPER	DESCRIPTION	SETTINGS
A1/A2/A3	Watchdog timer enable/disable	A2/A1 — enabled A2/A3 — disabled
A11/A12/A13	TXEN (Transmit Enable)	A12/A11 — Use if receiver has opto-isolated surge protector A12/A13 — Use if receiver has non-opto-isolated surge protector or for 2-wire mode
B2/B3/B4	Relay K402 out	B2/B4 — Direct connection from relay output to J41-3 B2/B3 — Voltage divider from relay output to J41-3
B5/B6/B7/B8	Relay K402 connection (relay OFF)	B6/B5 — Open B6/B7 — -12 V dc B6/B8 — +12 V dc
B9/B10/B11/B12	Relay K402 connection (relay ON)	B11/B9 — Ext. in from J41-1 B11/B10 — Ground B11/B12 — +12 V dc
D2/D3/D4	Relay K404 out	D2/D4 — Direct connection from relay output to J41-8 D2/D3 — Voltage divider from relay output to J41-8
D5/D6/D7/D8	Relay K404 connection (relay OFF)	D6/D5 — Open D6/D7 — -12 V dc D6/D8 — +12 V dc
D9/D10/D11/D12	Relay K404 connection (relay ON)	D11/D9 — Ext. in from J41-7 D11/D10 — Ground D11/D12 — +12 V dc
H2/H3/H4	Relay K403 out	H2/H4 — Direct connection from relay output to J41-6 H2/H3 — Voltage divider from relay output to J41-6
H5/H6/H7/H8	Relay K403 connection (relay OFF)	H6/H5 — Open H6/H7 — -12 V dc H6/H8 — +12 V dc
H9/H10/H11/H12	Relay K403 connection (relay ON)	H11/H9 — Ext. in from J41-5 H11/H10 — Ground H11/H12 — +12 V dc

Decimal - Hex - Binary Conversion Table

DEC	HEX	BINARY	DEC	HEX	BINARY
00	00	00000000	32	20	00100000
01	01	00000001	33	21	00100001
02	02	00000010	34	22	00100010
03	03	00000011	35	23	00100011
04	04	00000100	36	24	00100100
05	05	00000101	37	25	00100101
06	06	00000110	38	26	00100110
07	07	00000111	39	27	00100111
08	08	00001000	40	28	00101000
09	09	00001001	41	29	00101001
10	0A	00001010	42	2A	00101010
11	0B	00001011	43	2B	00101011
12	0C	00001100	44	2C	00101100
13	0D	00001101	45	2D	00101101
14	0E	00001110	46	2E	00101110
15	0F	00001111	47	2F	00101111
16	10	00010000	48	30	00110000
17	11	00010001	49	31	00110001
18	12	00010010	50	32	00110010
19	13	00010011	51	33	00110011
20	14	00010100	52	34	00110100
21	15	00010101	53	35	00110101
22	16	00010110	54	36	00110110
23	17	00010111	55	37	00110111
24	18	00011000	56	38	00111000
25	19	00011001	57	39	00111001
26	1A	00011010	58	3A	00111010
27	1B	00011011	59	3B	00111011
28	1C	00011100	60	3C	00111100
29	1D	00011101	61	3D	00111101
30	1E	00011110	62	3E	00111110
31	1F	00011111	63	3F	00111111

DEC	HEX	BINARY	DEC	HEX	BINARY
64	40	01000000	96	60	01100000
65	41	01000001	97	61	01100001
66	42	01000010	98	62	01100010
67	43	01000011	99	63	01100011
68	44	01000100	100	64	01100100
69	45	01000101	101	65	01100101
70	46	01000110	102	66	01100110
71	47	01000111	103	67	01100111
72	48	01001000	104	68	01101000
73	49	01001001	105	69	01101001
74	4A	01001010	106	6A	01101010
75	4B	01001011	107	6B	01101011
76	4C	01001100	108	6C	01101100
77	4D	01001101	109	6D	01101101
78	4E	01001110	110	6E	01101110
79	4F	01001111	111	6F	01101111
80	50	01010000	112	70	01110000
81	51	01010001	113	71	01110001
82	52	01010010	114	72	01110010
83	53	01010011	115	73	01110011
84	54	01010100	116	74	01110100
85	55	01010101	117	75	01110101
86	56	01010110	118	76	01110110
87	57	01010111	119	77	01110111
88	58	01011000	120	78	01111000
89	59	01011001	121	79	01111001
90	5A	01011010	122	7A	01111010
91	5B	01011011	123	7B	01111011
92	5C	01011100	124	7C	01111100
93	5D	01011101	125	7D	01111101
94	5E	01011110	126	7E	01111110
95	5F	01011111	127	7F	01111111

Decimal - Hex - Binary Conversion Table (continued)

DEC	HEX	BINARY	DEC	HEX	BINARY
128	80	10000000	160	A0	10100000
129	81	10000001	161	A1	10100001
130	82	10000010	162	A2	10100010
131	83	10000011	163	A3	10100011
132	84	10000100	164	A4	10100100
133	85	10000101	165	A5	10100101
134	86	10000110	166	A6	10100110
135	87	10000111	167	A7	10100111
136	88	10001000	168	A8	10101000
137	89	10001001	169	A9	10100001
138	8A	10001010	170	AA	10101010
139	8B	10001011	171	AB	10101011
140	8C	10001100	172	AC	10101100
141	8D	10001101	173	AD	10101101
142	8E	10001110	174	AE	10101110
143	8F	10001111	175	AF	10101111
144	90	10010000	176	B0	10110000
145	91	10010001	177	B1	10110001
146	92	10010010	178	B2	10110010
147	93	10010011	179	B3	10110011
148	94	10010100	180	B4	10110100
149	95	10010101	181	B5	10110101
150	96	10010110	182	B6	10110110
151	97	10010111	183	B7	10110111
152	98	10011000	184	B8	10111000
153	99	10011001	185	B9	10111001
154	9A	10011010	186	BA	10111010
155	9B	10011011	187	BB	10111011
156	9C	10011100	188	BC	10111100
157	9D	10011101	189	BD	10111101
158	9E	10011110	190	BE	10111110
159	9F	10011111	191	BF	10111111

DEC	HEX	BINARY	DEC	HEX	BINARY
192	C0	11000000	224	E0	11100000
193	C1	11000001	225	E1	11100001
194	C2	11000010	226	E2	11100010
195	C3	11000011	227	E3	11100011
196	C4	11000100	228	E4	11100100
197	C5	11000101	229	E5	11100101
198	C6	11000110	230	E6	11100110
199	C7	11000111	231	E7	11100111
200	C8	11001000	232	E8	11101000
201	C9	11001001	233	E9	11101001
202	CA	11001010	234	EA	11101010
203	CB	11001011	235	EB	11101011
204	CC	11001100	236	EC	11101100
205	CD	11001101	237	ED	11101101
206	CE	11001110	238	EE	11101110
207	DF	11001111	239	EF	11101111
208	D0	11010000	240	F0	11110000
209	D1	11010001	241	F1	11110001
210	D2	11010010	242	F2	11110010
211	D3	11010011	243	F3	11110011
212	D4	11010100	244	F4	11110100
213	D5	11010101	245	F5	11110101
214	D6	11010110	246	F6	11110110
215	D7	11010111	247	F7	11110111
216	D8	11011000	248	F8	11111000
217	D9	11011001	249	F9	11111001
218	DA	11011010	250	FA	11111010
219	DB	11011011	251	FB	11111011
220	DC	11011100	252	FC	11111100
221	DD	11011101	253	FD	11111101
222	DE	11011110	254	FE	11111110
223	DF	11011111	255	FF	11111111

AC PAN/TILT BOARD (9084-8)

GENERAL DESCRIPTION

The AC Pan/Tilt board allows an MPC Receiver to control an ac-powered pan/tilt unit. The board is supplied with the necessary connectors and cables for installation into an MPC receiver. The standard version of the board controls a 115-VAC pan/tilt unit. An optional transformer is available to allow the board to control a 230-VAC unit.

INSTALLATION

CAUTION

Remove power from the MPC receiver before removing the cover.

To install the board in an MPC receiver, remove the cover by loosening the eight clamp screws securing the cover. Slide the clamps off of the cover and remove it.

Locate connectors P21 through P24 and plug into connectors J21 through J24 on the board (J25 and J26 are not used). Note that the connectors are keyed.

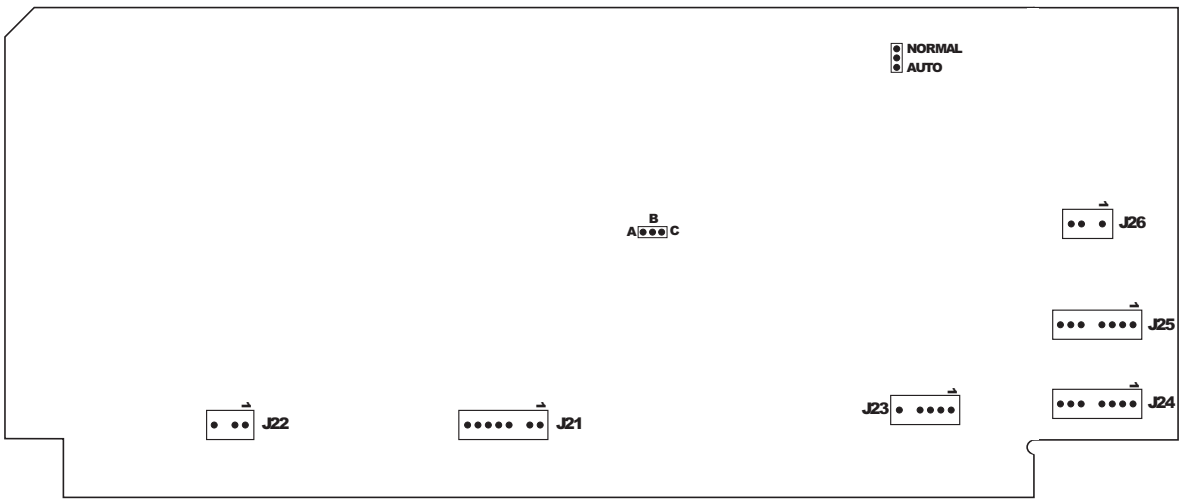
The chamfered end of the board slides into the guide on the side of the receiver card cage opposite the main I/O connectors. The bottom cutout on the opposite end of the board fits into the cutout on the bottom of the card cage. The board is held in place by the receiver housing lid. Ensure that the connector wiring is routed correctly to prevent them from being pinched underneath the board.

Check that the NORMAL/AUTO jumper is in the NORMAL position, and that the A/B/C jumper is in the A/B position.

Replace the cover and slide the clamps back into position. Install the eight screws and tighten a little at a time in an alternating cross-pattern to evenly pull the cover down onto the gasket. This ensures that the receiver enclosure is properly sealed. Make sure that all cable connections are made to the receiver before applying power.

OPERATION

All operating functions of the ac pan/tilt board are controlled from an MPC Master or Remote Control Panel. Refer to the control panel manual for operating instructions.



Connector and Jumper Locations, AC Pan/Tilt Board

DC PAN/TILT BOARD (9098-9)

GENERAL DESCRIPTION

The DC Pan/Tilt board allows an MPC Receiver to control a 115-VDC pan/tilt unit.

INSTALLATION

CAUTION

Remove power from the MPC receiver before removing the cover.

A DVM will be necessary to set the dc output pan and tilt voltages.

To install the board in an MPC receiver, remove the cover by loosening the eight clamp screws securing the cover. Slide the clamps off of the cover and remove it.

Locate connectors P21 through P24 and plug into connectors J21 through J24 on the board (J25, J48, and J50 are not used). Note that the connectors are keyed.

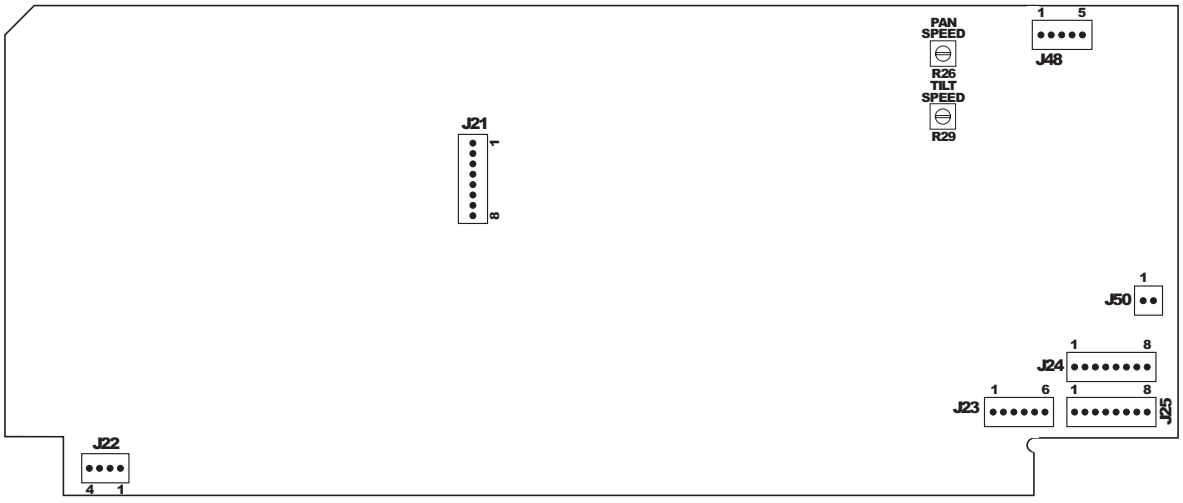
The chamfered end of the board slides into the guide on the side of the receiver card cage opposite the main I/O connectors. The bottom cutout on the opposite end of the board fits into the cutout on the bottom of the card cage. The board is held in place by the receiver housing lid. Ensure that the connector wiring is routed correctly to prevent them from being pinched underneath the board.

Connect the DVM to J21-2 and -6. Apply power to the receiver and activate the TILT UP function from the control panel and set R29 (TILT SPEED) for 115 VDC. Repeat for J21-5 and -6, PAN RIGHT, and R26 (PAN SPEED). Remove power from the receiver.

Replace the cover and slide the clamps back into position. Install the eight screws and tighten a little at a time in an alternating cross-pattern to evenly pull the cover down onto the gasket. This ensures that the receiver enclosure is properly sealed. Make sure that all cable connections are made to the receiver before applying power.

OPERATION

All operating functions of the dc pan/tilt board are controlled from an MPC Master or Remote Control Panel. Refer to the control panel manual for operating instructions.



Connector and Jumper Locations, DC Pan/Tilt Board