RHIC Accelerator Controls Section
Bldg. 1012A HJET
BNL Drawing Number xxxxxxx

Brookhaven National Laboratory, Upton, New York 11973

Created By: Ralph Schoenfeld
Last Updated 12/1/03

Power Distribution

📖 Location of HJET setup (Sheet 1)
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📖 Real Time Data Link (Sheet 5)
📖 Reset Link (Sheet 5)
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VME Chassis CFE-12A-HJET

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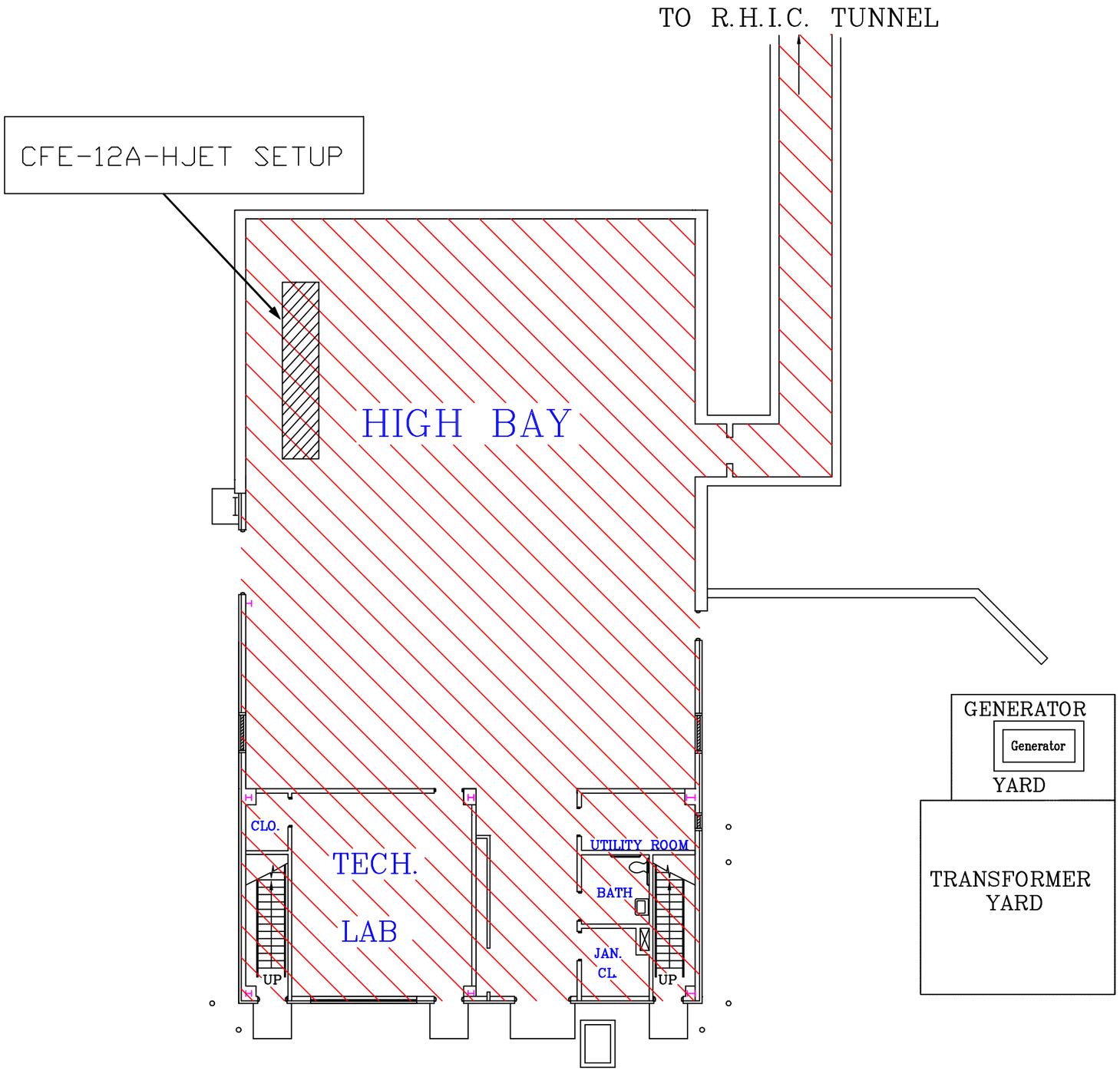
REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 11/25/2003 1:31 PM HJET_location.dwg



-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M–1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

NA FINISH

BREAK SHARP EDGES MAX. XX MIN. XX

OUTSTANDING ECN

Q.A. CATEGORY	A–3	DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS DIAGRAM
SERVICE BLDG. 1012A
HJET LOACATION

SIZE	DRAWING NUMBER	REV.
D	HJET_location.dwg	A

MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 1

*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:32 AM HJET_racks.dwg

R1

R2

1U PANEL (1 3/4")
14.5Mhz RF SOURCE
1U PANEL (1 3/4")
14.5Mhz RF SWITCHES
1U PANEL (1 3/4")
CHOPPER MOTOR SWITCH
1U PANEL (1 3/4")
GAUGE CONTROLLER
O'SCOPE
1U PANEL (1 3/4")
ABS SWFT MATCHBOX
1U PANEL (1 3/4")
BRP SWFT MATCHBOX
1U PANEL (1 3/4")
INSTRUMENT
RF TRANSITION CONTROLLER
MF OSC
PWR SUPPLY BIPOLAR
3U FAN ASSEMBLY

R3

1U PANEL (1 3/4")
KEPCO POWER SUPPLY
1U PANEL (1 3/4")
KEPCO POWER SUPPLY
1U PANEL (1 3/4")
KEPCO POWER SUPPLY
1U PANEL (1 3/4")
KEPCO POWER SUPPLY
1U PANEL (1 3/4")
THERMOCOUPLE CONTROL POWER
DIGITAL READOUTS
2U BLANK PANEL (3 1/2")
1U PANEL (1 3/4")
POWER TEN INNER
1U PANEL (1 3/4")
POWER TEN OUTTER
1U PANEL (1 3/4")
3U FAN ASSEMBLY

R4
CONTROLS

1U PANEL (1 3/4")
4U BLANK PANEL (7.0")
4U BLANK PANEL (7.0")
NIM CHASSIS
3U BLANK PANEL (5 1/4")
1U PANEL (1 3/4")
CFE-12A-HJET
2U BLANK PANEL (3 1/2")
4U BLANK PANEL (7.0")
4U BLANK PANEL (7.0")
BUFFERED MADC ID POWER SUPPLY
3U FAN ASSEMBLY

R5

1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
DUAL TURBO V-1000HT CONTROLLERS
1U PANEL (1 3/4")
3U FAN ASSEMBLY

R6

1U PANEL (1 3/4")
DIGITAL READOUTS
DISASSOCIATOR
1U PANEL (1 3/4")
MKS INSTRUMENTS
1U PANEL (1 3/4")
1U PANEL (1 3/4")
3U BLANK PANEL (5 1/4")
2U BLANK PANEL (3 1/2")
4U BLANK PANEL (7.0")
A-500 RF POWER AMP
1U PANEL (1 3/4")
3U FAN ASSEMBLY

R7

1U PANEL (1 3/4")
DUAL MKS CONTROLLER
1U PANEL (1 3/4")
DUAL MKS CONTROLLER
1U PANEL (1 3/4")
DUAL MKS CONTROLLER
1U PANEL (1 3/4")
DUAL MKS CONTROLLER
1U PANEL (1 3/4")
3U BLANK PANEL (5 1/4")
6U BLANK PANEL (10 1/2")
PLC EQUIPMENT
3U FAN ASSEMBLY

-3	-2	-1 QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BML NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M–1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

OUTSTANDING ECN

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

Q.A. CATEGORY A–3

DRAWN BY	Ralph Schoenfeld	11-23-03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973
RHIC CONTROLS
SERVICE BLDG. 1012A
HJET RACK LAYOUT

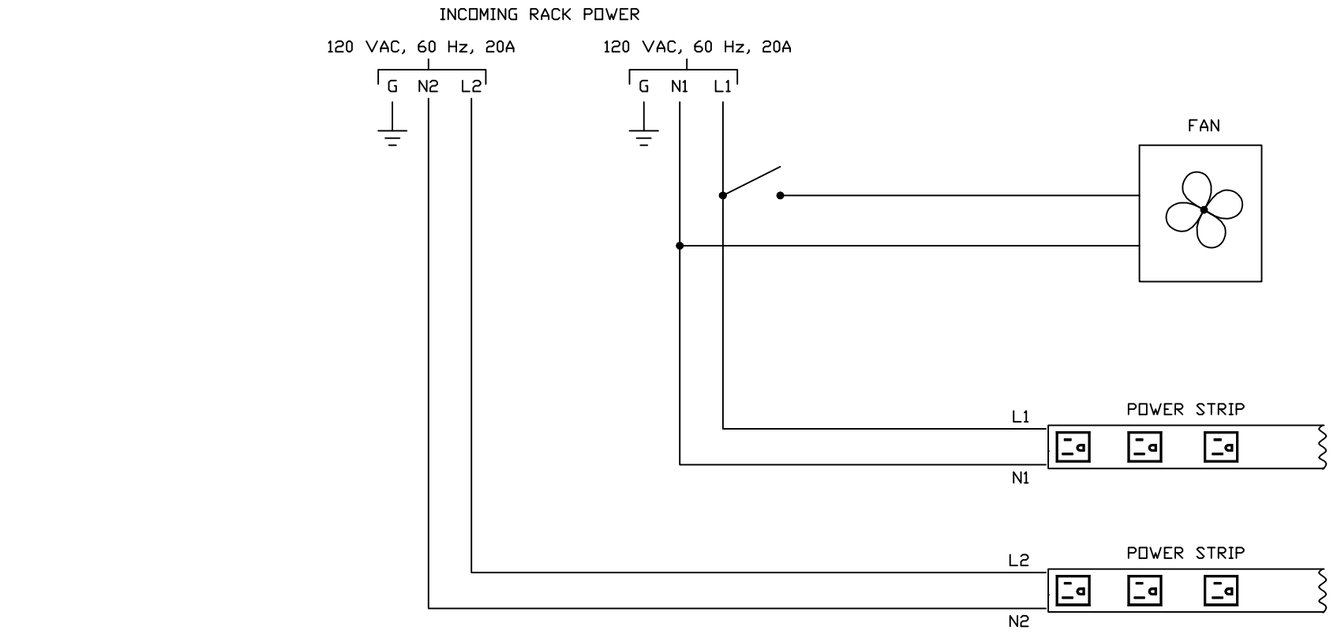
SIZE D | HJET_racks_dwg (DRAWING NUMBER) | REV. A

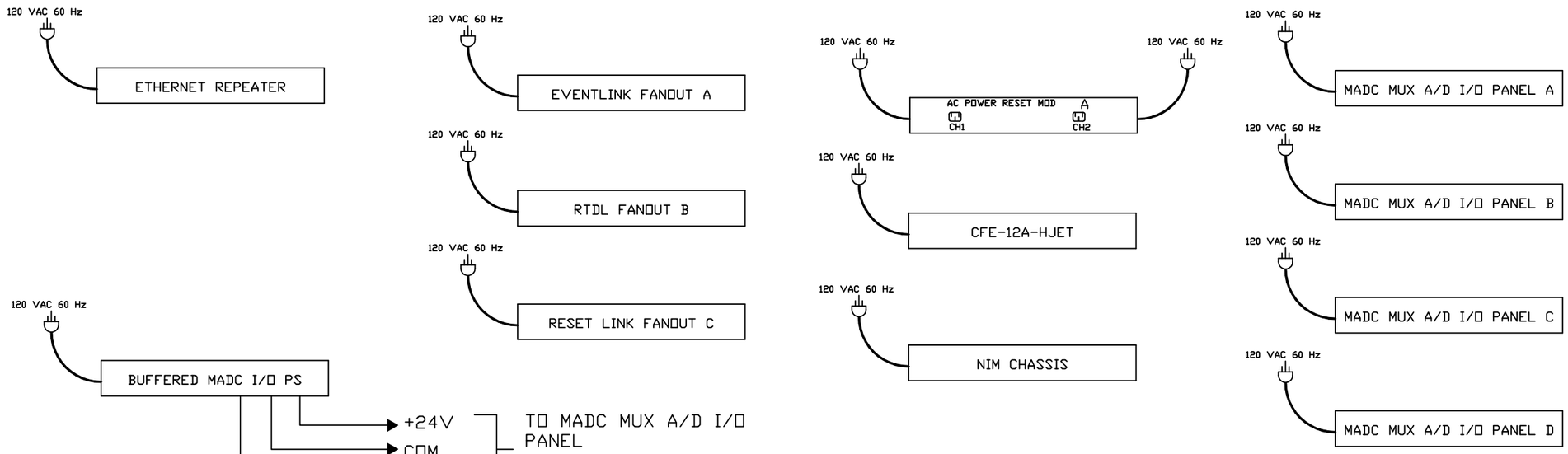
MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 2

*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 1:08 PM HJET_pwr_dis.dwg





RACK R4

NOTE: ALL 120 VAC, 60 Hz POWER CORDS PLUG INTO POWER STRIP OUTLETS

-3 -2 -1 QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MATL DWG NO./DWG NO.

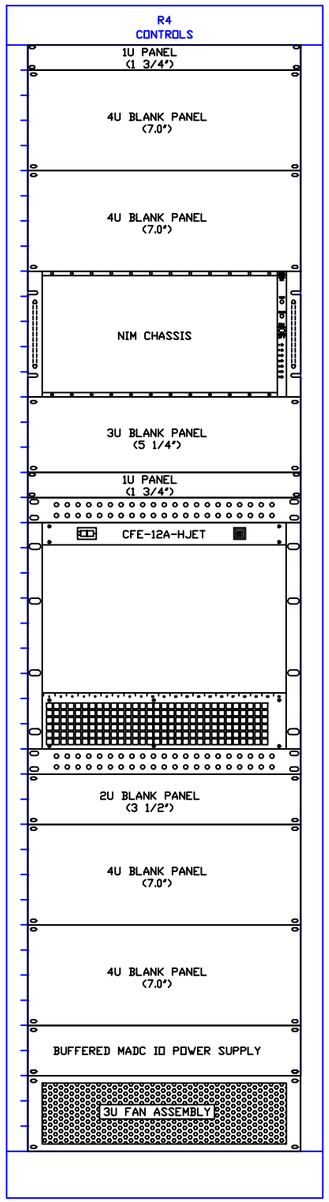
INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY	
	DRAWN BY Ralph Schoenfeld	11/23/03	UPTON, N.Y. 11973	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	CHECKED BY		RHIC CONTROLS WIRING DIAGRAM	
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005 ANGULAR TOLERANCE ± .5°	DESIGN APPROVAL		BLDG. 1012A HIGHBAY, HJET RACK R4	
	ENGINEER APPROVAL R. MICHNOFF	6/23/98	POWER DISTRIBUTION	
	SUPVR. APPROVAL		SIZE D — HJET_pwr_dis.dwg — REV. A	
OUTSTANDING ECN	NA FINISH — BREAK SHARP EDGES MAX. XX MIN. XX	NEXT ASSEMBLY	MATERIAL: ——— SCALE: NA WEIGHT: – SHEET 3	

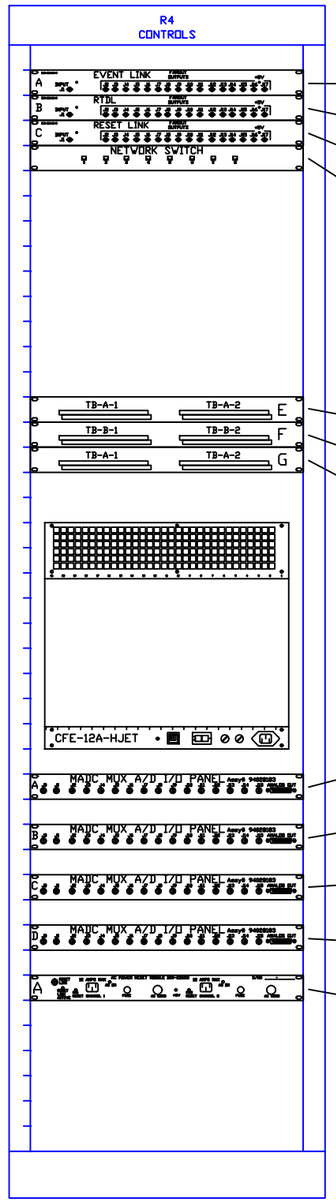
DRAWING NUMBER

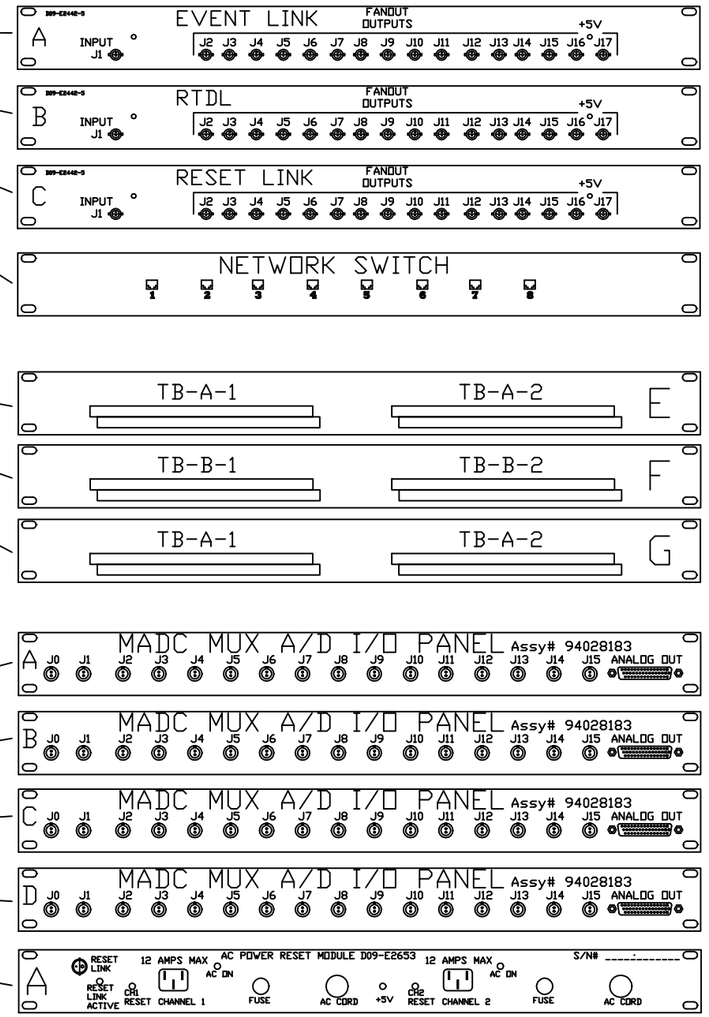
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:33 AM HJET_R4.dwg







-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DRAWN BY Ralph Schoenfeld	11-23-03	UPTON, N.Y. 11973
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005 ANGULAR TOLERANCE ± .5°	CHECKED BY		RHIC CONTROLS
	DESIGN APPROVAL		SERVICE BLDG. 1012A
	ENGINEER APPROVAL		HJET RACK LAYOUT
	SUPVR. APPROVAL		SIZE D — HJET_R4_dwg — REV. A
NA FINISH — BREAK SHARP EDGES MAX. XX MIN. XX	NEXT ASSEMBLY		DRAWING NUMBER
OUTSTANDING ECN			MATERIAL: —— SCALE: FULL WEIGHT: – SHEET 4

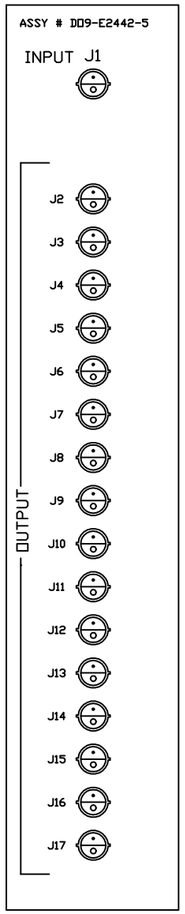
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 1:10 PM FANOUT_all.dwg

EVENT LINK

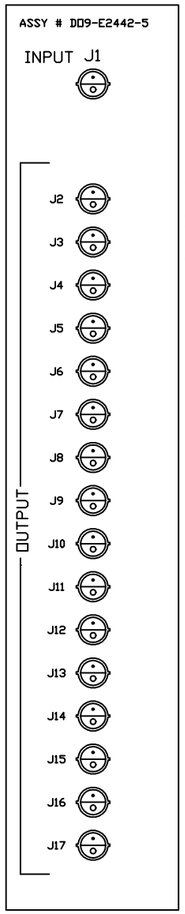
BLDG # 1012A
RACK # R4
FANOUT # A



- J2 → TO CFE-12A-HJET, V113, RACK R4, REF SHEET 15
- J3 → TO CFE-12A-HJET, V108, RACK R4, REF SHEET 8
- J4 → TO CFE-12A-HJET, V102, RACK R4, REF SHEET 17

RTDL

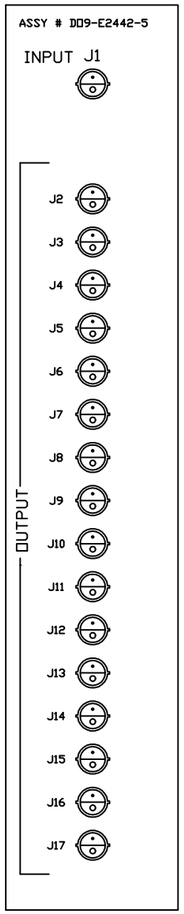
BLDG # 1012A
RACK # R4
FANOUT # B



- J2 → TO CFE-12A-HJET, V108, RACK R4, REF SHEET 8
- J3 → TO AC RESET MODULE A, RACK R4

RESET LINK

BLDG # 1012A
RACK # R4
FANOUT # C



- J2 → TO CFE-12A-HJET, V108, RACK R4, REF SHEET 8

-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE
± .5°

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

OUTSTANDING ECN

Q.A. CATEGORY A-3		DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL	R. MICHNOFF	3/5/98
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
EVENT, RESET, RTDL

SIZE D | FANOUT_all.dwg | REV. A
DRAWING NUMBER

MATERIAL: ——— SCALE: NA WEIGHT: – SHEET 5

1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 1:11 PM Digi_R7.dwg

MDS-12A-TERM2

BLDG # 1012A HIGHBAY
RACK # R7
IP # 130.199.110.125

ASSY # 50001185-01

ETHERNET

PORTSERVER TS 16

1	TO V-1000HT TMP 1-1 RACK R5
2	TO V-1000HT TMP 1-2 RACK R5
3	TO V-1000HT TMP 1-3 RACK R5
4	TO V-1000HT TMP 1-4 RACK R5
5	TO V-1000HT TMP 2-1 RACK R5
6	TO V-1000HT TMP 2-2 RACK R5
7	TO V-1000HT TMP 3-1 RACK R5
8	TO V-1000HT TMP 3-2 RACK R5
9	TO V-1000HT TMP 4-1 RACK R5
10	TO V-1000HT TMP 4-2 RACK R5
11	TO V-1000HT TMP 5-1 RACK R5
12	TO V-1000HT TMP 5-2 RACK R5
13	TO V-1000HT TMP 6-1 RACK R5
14	TO V-1000HT TMP 6-2 RACK R5
15	TO V-1000HT TMP 7-1 RACK R5
16	TO V-1000HT TMP 7-2 RACK R5

MDS-12A-TERM3

BLDG # 1012A HIGHBAY
RACK # R7
IP # 130.199.108.138

ASSY # 50001185-01

ETHERNET

PORTSERVER TS 16

1	TO V-1000HT TMP 8-1 RACK R5
2	TO V-1000HT TMP 8-2 RACK R5
3	TO V-1000HT TMP 9-1 RACK R5
4	TO V-1000HT TMP 9-2 RACK R5
5	TO MKS 937A VC1 RACK R7
6	TO MKS 937A VC2 RACK R7
7	TO MKS 937A VC3 RACK R7
8	TO MKS 937A VC4 RACK R7
9	TO MKS 937A VC5 RACK R7
10	TO MKS 937A VC6 RACK R5
11	TO MKS 937A VC7 RACK R7
12	TO MKS 937A VC8 RACK R7
13	SPARE
14	SPARE
15	SPARE
16	TO CFE-12A-HJET, SLOT 1 DEBUG RACK R4, REF SHEET 8

-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BML NO.
QTY REQD						

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5'

OUTSTANDING ECN

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

Q.A. CATEGORY A-3

DRAWN BY	Ralph Schoenfeld	11-23-03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

DATE

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM
SERVICE BLDG. 1012A HIGHBAY
DIGI TERM2 AND TERM3

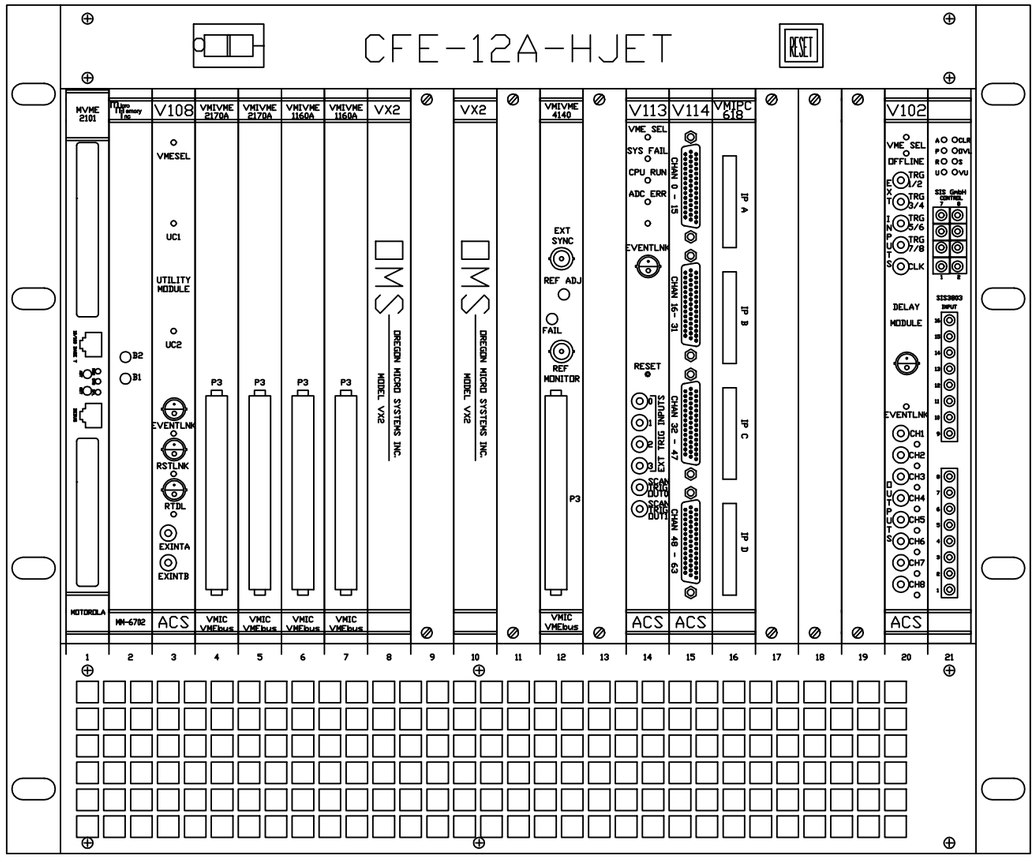
SIZE D
HJET_R4_dwg
DRAWING NUMBER
REV. A

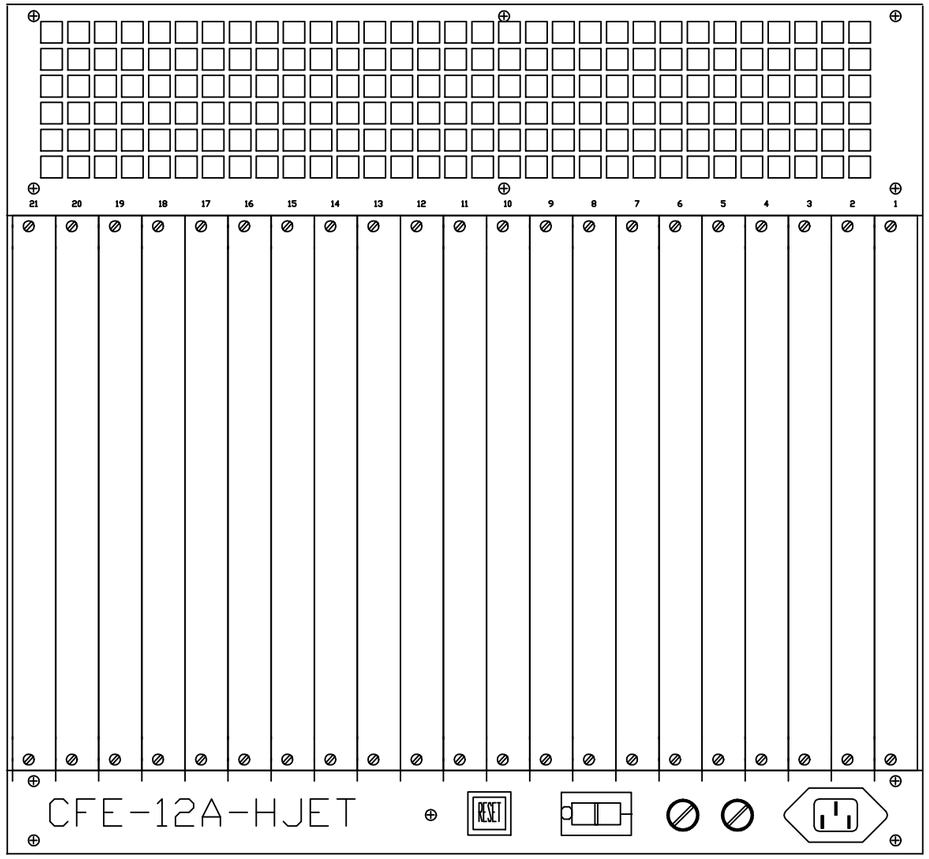
MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 6

*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:36 AM cfe-12a-hjet.dwg





QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BMI NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M–1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

OUTSTANDING ECN

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

Q.A. CATEGORY A–3

DRAWN BY Ralph Schoenfeld 11/23/03

CHECKED BY

DESIGN APPROVAL

ENGINEER APPROVAL

SUPVR. APPROVAL

NEXT ASSEMBLY

DATE

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM

1012A, VME CHASSIS CFE–12A–HJET

VME CHASSIS CFE–12A–HJET

SIZE D

CFE–12A–HJET.dwg

DRAWING NUMBER

REV. A

MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 7

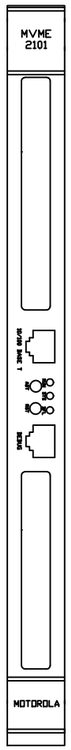
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:37 AM Frontend.dwg

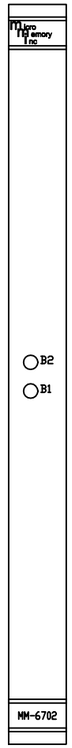
FRONT END COMPUTER

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT#: 1
FEC NAME: cfe-12a-hjet



DEVICE: MEMORY BOARD

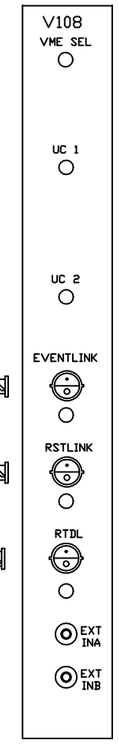
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 2
A24 BASE ADDRESS:



JUMPER LIST
1. REMOVE E1.
2. INSTALL E15.
3. SW3 CLOSE ALL POSITIONS.
4. SW2 CLOSE POSITIONS 7 AND 8.
5. SW1 CLOSE POSITIONS 2-8.
6. INSTALL E14 AND E25 TO ENABLE BATTERIES

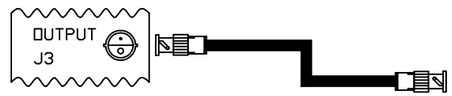
DEVICE: V108 UTILITY MODULE

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 3
A24 BASE ADDRESS: 004000



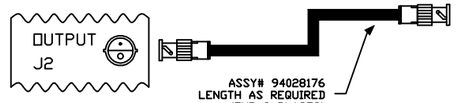
ASSY# 94028094

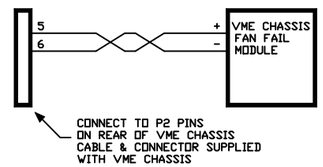
EVENT LINK
BLDG #: 1012A
RACK #: R4
FANOUT #: A



RESET LINK
BLDG #: 1012A
RACK #: R4
FANOUT #: C

RTDL
BLDG #: 1012A
RACK #: R4
FANOUT #: B





JUMPER LIST

E25 through E50 are configured for remote reset address at the time of board acceptance test.
DO NOT MODIFY!

Remote reset pulls VME SYS Reset.
E58-E60, E59-E61

A24 BASE ADDRESS= 4000h
E57-E13, E2-E14, E3-E15, E4-E16, E5-E17, E6-E18
E7-E19, E8-E20, E9-E21, E10-E22, E11-E24, E57-E23
SW1=OPEN
SW2=CLOSED
SW3=OPEN
SW4=OPEN

-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNK NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005
ANGULAR TOLERANCE ± .5°
FINISH: NA
BREAK SHARP EDGES MAX. XX MIN. XX
OUTSTANDING ECN

Q.A. CATEGORY	A-3	DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL	R. MICHNOFF	6/26/98
SUPVR. APPROVAL		
NEXT ASSEMBLY		

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
FT END COMP/V108 UTIL MODULE

SIZE D | Frontend.dwg | REV. A
DRAWING NUMBER
MATERIAL: ——— SCALE: NA WEIGHT: — SHEET 8

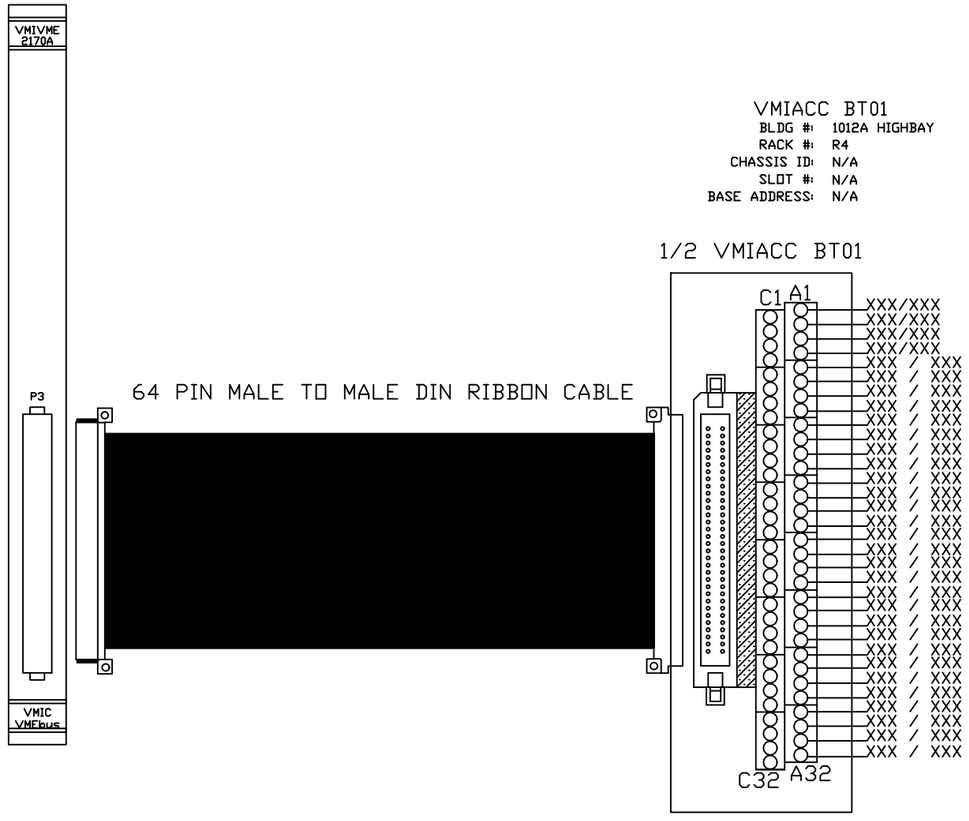
1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:38 AM 2170_digout_Ea.dwg

Ea-Digital Out-2170

VMIVME 2170A-200E
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 4
A16 BASE ADDRESS: 0XE100



VMIACC BT01
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: N/A
SLOT #: N/A
BASE ADDRESS: N/A

1/2 VMIACC BT01

JUMPERS:A15-OUT,A14-OUT,A13-OUT
A12-IN,A11-IN,A10-IN,A9-IN,A8-OUT
A7-IN,A6-IN,A5-IN,A4-IN,A3-IN,A2-IN
JA1-OUT

-3	-2	-1 QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DRAWN BY Ralph Schoenfeld	11/23/03	UPTON, N.Y. 11973
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005 ANGULAR TOLERANCE ± .5°	CHECKED BY		RHIC CONTROLS WIRING DIAGRAM
	DESIGN APPROVAL		1012A, VME CHASSIS CFE-12A-HJET
	ENGINEER APPROVAL		VMIVME 2170A-200E
	SUPVR. APPROVAL		SIZE D — 2170_digout_Ea.dwg — REV. A
NA FINISH — BREAK SHARP EDGES MAX. XX MIN. XX	NEXT ASSEMBLY		DRAWING NUMBER
OUTSTANDING ECN			MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 9

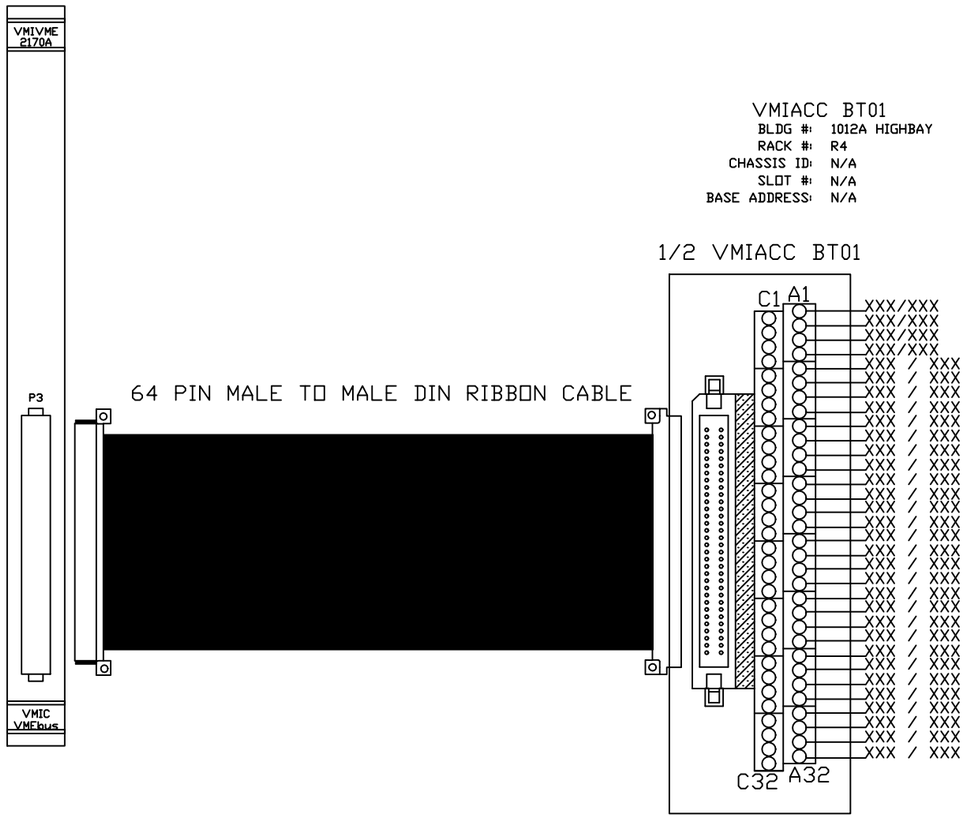
1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:39 AM 2170_digout_Eb.dwg

EB-Digital Out-2170

VMIVME 2170A-200E
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 5
A16 BASE ADDRESS: 0XE104



VMIACC BT01
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: N/A
SLOT #: N/A
BASE ADDRESS: N/A

1/2 VMIACC BT01

JUMPERS:A15-OUT,A14-OUT,A13-OUT
A12-IN,A11-IN,A10-IN,A9-IN,A8-OUT
A7-IN,A6-IN,A5-IN,A4-IN,A3-IN,A2-OUT
JA1-OUT

-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005
ANGULAR TOLERANCE ± .5'
NA FINISH
BREAK SHARP EDGES MAX. XX MIN. XX
OUTSTANDING ECN

Q.A. CATEGORY A-3

DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973
RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
VMIVME 2170A-200E
SIZE D
2170_digout_Eb.dwg
DRAWING NUMBER
REV. A
MATERIAL: ——— SCALE: FULL WEIGHT: - SHEET 10

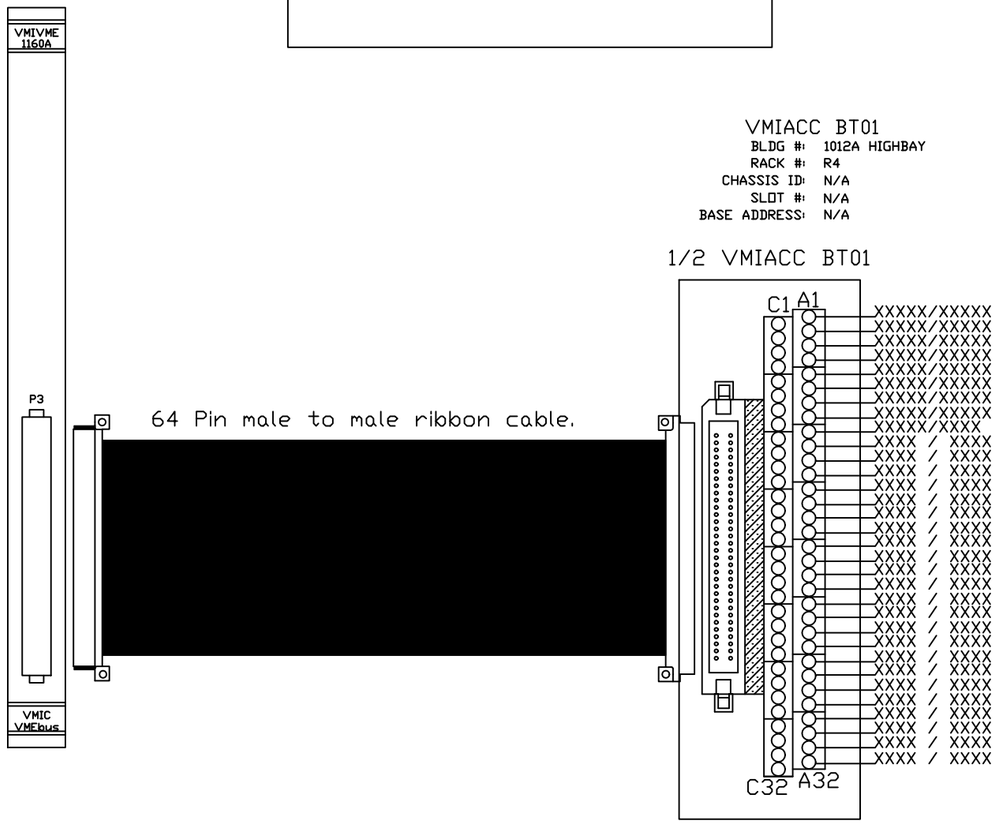
8 7 6 5 4 3 2 1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:40 AM 1160_digin_Fa.dwg

Fa-Digital In-1160

VMIVME 1160A
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 6
BASE ADDRESS: 0XE000



VMIACC BT01
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: N/A
SLOT #: N/A
BASE ADDRESS: N/A

1/2 VMIACC BT01

The following jumpers are installed:
J1, J3, J5, J7, J9, J11, J13, J15, J17, J19, J21, J23, J25,
J27, J29, J31, J33, J35, J37, J39, J41, J43, J45, J47,
J49, J51, J53, J55, J57, J59, J61, J63

U35
SW 1-3 OFF
SW 4-8 ON

U34
SW 1-8 ON

J65 /AM2 short Nonpriviledge I/O access

-3 -2 -1 QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005
ANGULAR TOLERANCE ± .5°
NA FINISH
BREAK SHARP EDGES MAX. XX MIN. XX
OUTSTANDING ECN

Q.A. CATEGORY A-3
DRAWN BY Ralph Schoenfeld DATE 11/23/03
CHECKED BY
DESIGN APPROVAL
ENGINEER APPROVAL
SUPVR. APPROVAL
NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973
RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
VMIVME 1160A INPUT BOARD

SIZE D | 1160_digin_Fa.dwg | REV. A
DRAWING NUMBER
MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 11

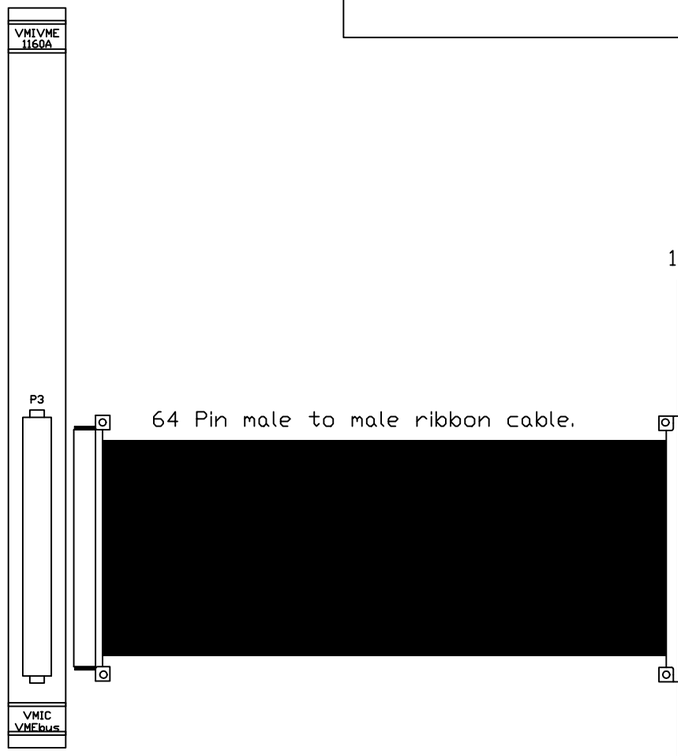
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:41 AM 1160_digin_Fb.dwg

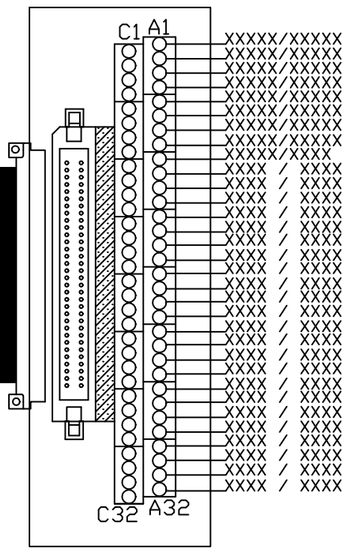
Fb-Digital In-1160

VMIVME 1160A
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 7
BASE ADDRESS: 0XE020



VMIACC BT01
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: N/A
SLOT #: N/A
BASE ADDRESS: N/A

1/2 VMIACC BT01



The following jumpers are installed:
J1, J3, J5, J7, J9, J11, J13, J15, J17, J19, J21, J23, J25,
J27, J29, J31, J33, J35, J37, J39, J41, J43, J45, J47,
J49, J51, J53, J55, J57, J59, J61, J63

U35
SW 1-3 OFF
SW 4-8 ON

U34
SW 1-ON,2-ON,3-OFF,4-ON,5-ON,6-ON,7-ON,8-ON

J65 /AM2 short Nonpriviledge I/O access

-3	-2	-1 QTY REQD	REF. DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L. DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005
ANGULAR TOLERANCE ± .5°
OUTSTANDING ECN
NA FINISH
BREAK SHARP EDGES MAX. XX MIN. XX

Q.A. CATEGORY A-3		DATE	BROOKHAVEN NATIONAL LABORATORY
DRAWN BY	Ralph Schoenfeld	11/23/03	UPTON, N.Y. 11973
CHECKED BY			RHIC CONTROLS WIRING DIAGRAM
DESIGN APPROVAL			1012A, VME CHASSIS CFE-12A-HJET
ENGINEER APPROVAL			VMIVME 1160A INPUT BOARD
SUPVR. APPROVAL			SIZE D — 1160_digin_Fb.dwg — REV. A
NEXT ASSEMBLY			DRAWING NUMBER

MATERIAL: —— SCALE: FULL WEIGHT: — SHEET 12

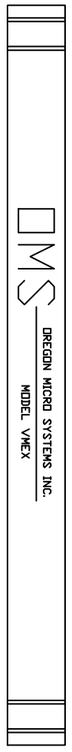
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:41 AM Motorcontrol.dwg

OMS MOTOR CONTROL MODULE VX-2

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 8
A16 BASE ADDRESS: 0Xfc40



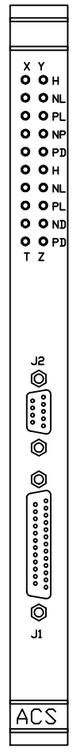
P2 INTERFACE RIBBON CABLE

ASSY# XXXXXX

NOT INSTALLED

MOTOR CONTROL MODULE

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 9
Axx BASE ADDRESS: NA



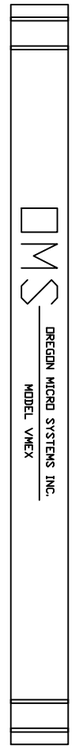
JP1 OUT
JP2 IN
JP3 OUT
JP4 IN
JP5 OUT
JP6 IN
JP7 OUT
JP8 IN
JP9 OUT
JP10 IN
JP11 OUT
JP12 IN
JP13 OUT
JP14 IN
JP15 OUT
JP16 IN
JP17 OUT
JP18 IN
JP19 OUT
JP20 IN
JP21 OUT
JP22 IN
JP23 OUT
JP24 IN

BUS GRANT & IACK JUMPERS MUST BE INSTALLED

VX-2 JUMPER LIST
S1=ALL ON
S2=1 TO 6 ON, 7 & 8 OFF
S3=1 TO 5 OFF, 6 ON, 7 & 8 OFF
S5=1 OFF, 2 ON, 3 TO 8 OFF
S6=1 OFF, 2 ON, 3 OFF, 4 & 5 ON, 6 TO 8 OFF
S7=1 ON, 2 OFF, 3 TO 8 ON
S8=1 TO 6 OFF, 7 & 8 ON
S9=1 TO 8 OFF

OMS MOTOR CONTROL MODULE VX-2

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 10
A16 BASE ADDRESS: 0XFC50



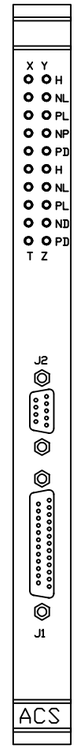
P2 INTERFACE RIBBON CABLE

ASSY# XXXXXX

NOT INSTALLED

MOTOR CONTROL MODULE

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 11
Axx BASE ADDRESS: NA



JP1 OUT
JP2 IN
JP3 OUT
JP4 IN
JP5 OUT
JP6 IN
JP7 OUT
JP8 IN
JP9 OUT
JP10 IN
JP11 OUT
JP12 IN
JP13 OUT
JP14 IN
JP15 OUT
JP16 IN
JP17 OUT
JP18 IN
JP19 OUT
JP20 IN
JP21 OUT
JP22 IN
JP23 OUT
JP24 IN

BUS GRANT & IACK JUMPERS MUST BE INSTALLED

VX-2 JUMPER LIST
S1=ALL ON
S2=1 TO 6 ON, 7 & 8 OFF
S3=1 TO 5 OFF, 6 ON, 7 & 8 OFF
S5=1 OFF, 2 ON, 3 TO 8 OFF
S6=1 OFF, 2 ON, 3 OFF, 4& 5 ON, 6 TO 8 OFF
S7=1 ON, 2 OFF, 3 ON, 4 OFF, 5-8 ON
S8=1 TO 6 OFF, 7 & 8 ON
S9=1 TO 8 OFF

-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY
	DRAWN BY Ralph Schoenfeld	11/23/03	UPTON, N.Y. 11973
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	CHECKED BY		RHIC CONTROLS WIRING DIAGRAM
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005 ANGULAR TOLERANCE ± .5°	DESIGN APPROVAL		1012A, VME CHASSIS CFE-12A-HJET
	ENGINEER APPROVAL		OMS MOTOR CONTROLLER
	SUPVR. APPROVAL		SIZE D — Motorcontrol.dwg — REV. A
NA FINISH — BREAK SHARP EDGES MAX. XX MIN. XX	NEXT ASSEMBLY		DRAWING NUMBER
OUTSTANDING ECN		MATERIAL:	SCALE: NA — WEIGHT: — SHEET 13

8 7 6 5 4 3 2 1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

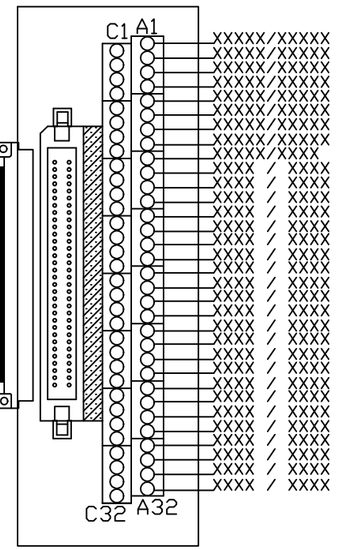
Schoenfeld, Controls 12/1/2003 11:42 AM 4140_anaout_Ga.dwg

GA-ANALOG OUT-4140

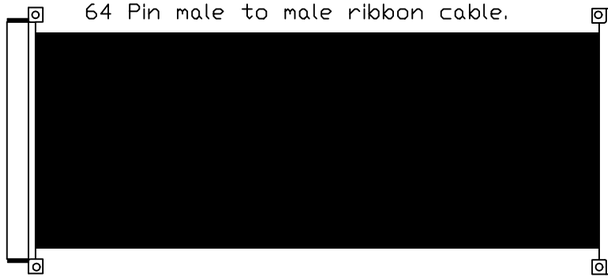
VMIVME 4140
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 12
A24 BASE ADDRESS: 0x003000

VMIACC BT01
BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: N/A
SLOT #: N/A
BASE ADDRESS: N/A

1/2 VMIACC BT01



64 Pin male to male ribbon cable.



JUMPERS:ADD0=OUT
ADD1=OUT,ACC0=OUT
ACC1=OUT
A12=OUT,A13=OUT
ALL OTHERS=IN

-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

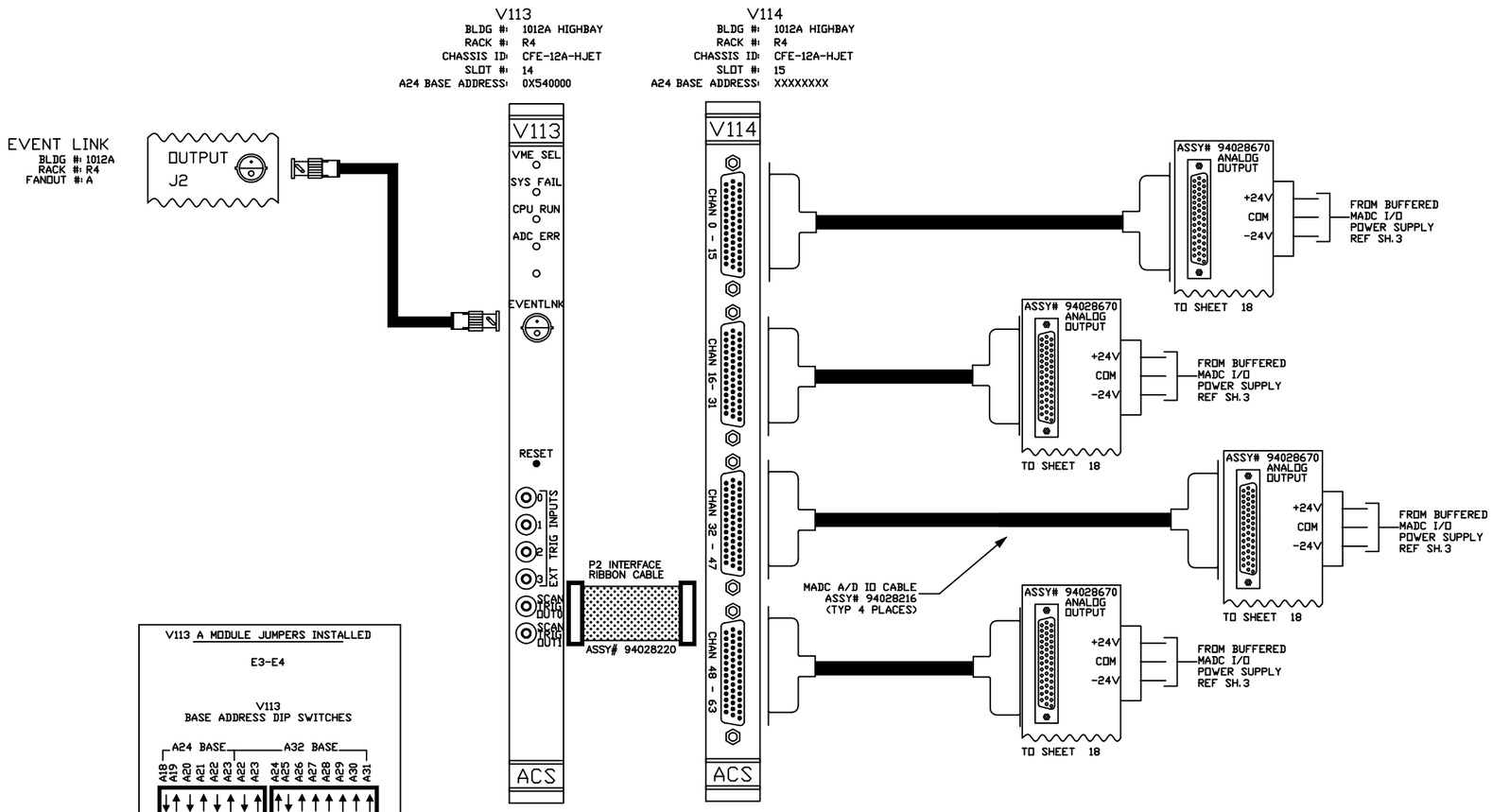
INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005
ANGULAR TOLERANCE ± .5°
NA FINISH
BREAK SHARP EDGES MAX. XX MIN. XX
OUTSTANDING ECN

Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY
DRAWN BY Ralph Schoenfeld	11/23/03	UPTON, N.Y. 11973
CHECKED BY		RHIC CONTROLS WIRING DIAGRAM
DESIGN APPROVAL		1012A, VME CHASSIS CFE-12A-HJET
ENGINEER APPROVAL		VMIVME 4140-ANALOG OUT
SUPVR. APPROVAL		SIZE D — 4140_anaout_Ga.dwg — REV. A
NEXT ASSEMBLY		DRAWING NUMBER
MATERIAL: ———	SCALE: FULL	WEIGHT: – SHEET 14

*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

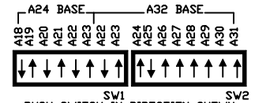
Schoenfeld, Controls 12/1/2003 11:43 AM MADC_sys.dwg



V113 A MODULE JUMPERS INSTALLED

E3-E4

V113
BASE ADDRESS DIP SWITCHES



PUSH SWITCH IN DIRECTION SHOWN

V114 A MODULE JUMPERS INSTALLED

J1, J2, J4, J5, J9
J19, J15, J21

ALL OTHER JUMPERS OUT

-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.
QTY REQD						

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

FINISH: NA

BREAK SHARP EDGES MAX. XX MIN. XX

OUTSTANDING ECN

Q.A. CATEGORY A-3

		DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM

1012A, VME CHASSIS CFE-12A-HJET

V113, V114 MADC SYSTEM HJET

SIZE D | MADC_sys.dwg DRAWING NUMBER | REV. A

MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 15

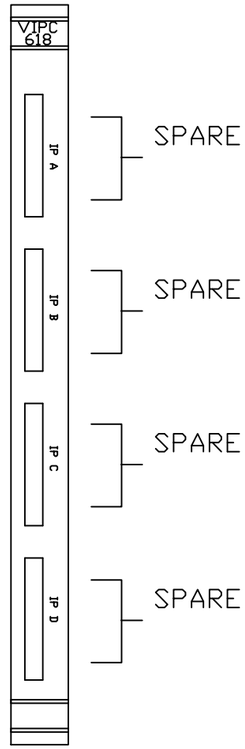
*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:44 AM vipc_618.dwg

VIPC-618

BLDG #: 1012A HIGHBAY
RACK #: R4
CHASSIS ID: CFE-12A-HJET
SLOT #: 16
AXX BASE ADDRESS: XXXXXXXX



-3	-2	-1	QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE
± .5°

NA FINISH

BREAK SHARP EDGES
MAX. XX MIN. XX

OUTSTANDING ECN

Q.A. CATEGORY A-3		DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL	R. MICHNOFF	3/5/98
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
VIPC-618

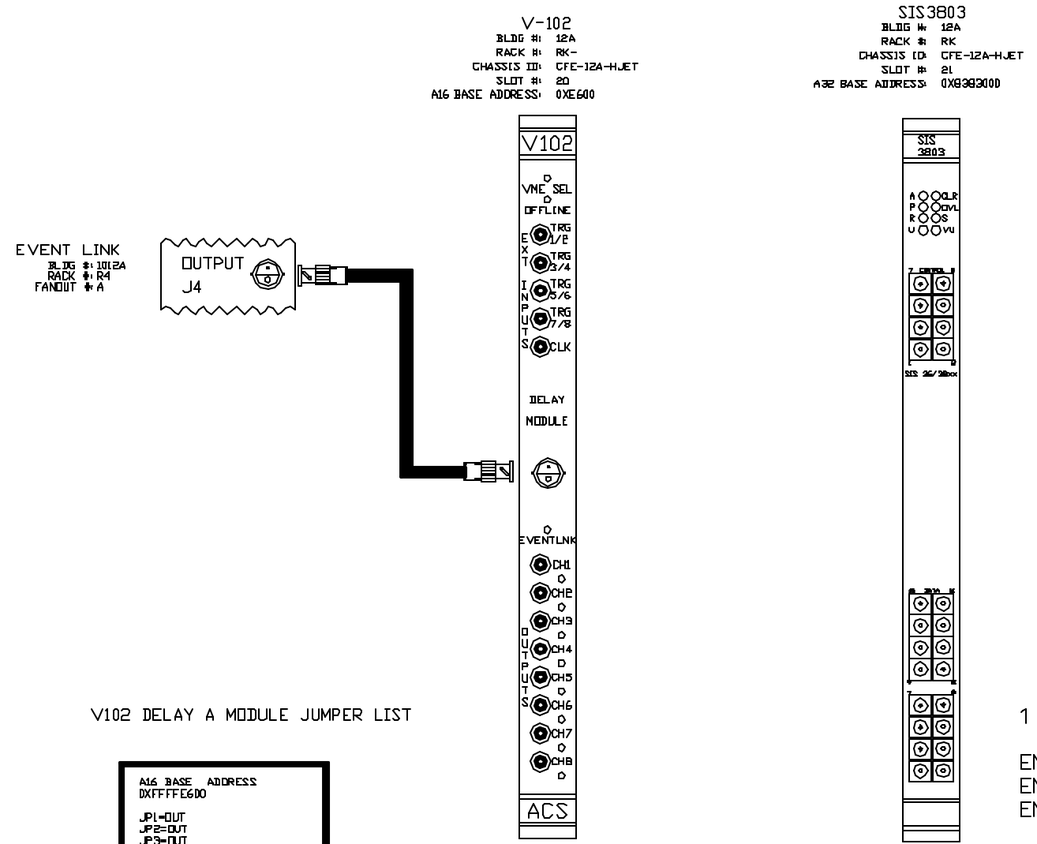
SIZE D | VIPC_618.dwg | REV. A
DRAWING NUMBER

MATERIAL: ——— SCALE: NA WEIGHT: – SHEET 16

*AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 11/5/2004 2:47 PM V102_SCALER.dwg



V102 DELAY A MODULE JUMPER LIST

A16 BASE ADDRESS
0XFFFFE600

JP1=OUT
JP2=OUT
JP3=OUT
JP4=IN
JP5=IN
JP6=OUT
JP7=OUT

EVENT LINK INPUT FREQ.

JP8=IN
JP9=OUT
JP10=OUT

JP11=IN
JP12=IN
JP13=OUT
JP14=IN

1 ST. BOARD ADDRESS JUMPERS

EN_A16:	OUT	J101-108:	IN
EN_A24:	OUT	J115:	OUT
EN_A32:	IN	J500:	IN
		J520:	IN

SW_A32U: 0
SW_A32L: 8
SW_A24U: 3
SW_A24L: 8
SW_A16U: 3

J_A11: IN

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	Q.A. CATEGORY A-3	DATE	BROOKHAVEN NATIONAL LABORATORY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DRAWN Ralph Schoenfeld	11/25/03	UPTON, N.Y. 11973
DECIMAL TOLERANCES .X ±.030 .XX ±.015 .XXX ±.005 ANGULAR TOLERANCE ± .5°	CHECKED BY		RHIC CONTROLS WIRING DIAGRAM
	DESIGN APPROVAL		1012A, VME CHASSIS CFE-12A-HJET
	ENGINEER APPROVAL		V102 & SCALER MODULES
NA FINISH	BREAK SHARP EDGES MAX XX MIN XX	SUPVR. APPROVAL	SIZE D — V102_SCALER.dwg — REV. A
OUTSTANDING ECN	NEXT ASSEMBLY		MATERIAL: —— SCALE: FULL WEIGHT: - SHEET 17

1 *AUTOCAD

REV.	ZONE	ECN NO.	DATE	BY	CKR	APP.

Schoenfeld, Controls 12/1/2003 11:45 AM MADC_panel.dwg

MADC MUX A/D IO PANEL

BLDG #: 1012A
RACK #: R4
PANEL #: MADC A/D IO PANEL A

FR SHEET15

J0	CHAN A SPARE
J1	CHAN B SPARE
J2	CHAN C SPARE
J3	CHAN D SPARE
J4	CHAN E SPARE
J5	CHAN F SPARE
J6	CHAN G SPARE
J7	CHAN H SPARE
J8	CHAN I SPARE
J9	CHAN J SPARE
J10	CHAN K SPARE
J11	CHAN L SPARE
J12	CHAN M SPARE
J13	CHAN N SPARE
J14	CHAN O SPARE
J15	CHAN P SPARE

MADC MUX A/D IO PANEL

BLDG #: 1012A
RACK #: R4
PANEL #: MADC A/D IO PANEL B

FR SHEET15

J0	CHAN A SPARE
J1	CHAN B SPARE
J2	CHAN C SPARE
J3	CHAN D SPARE
J4	CHAN E SPARE
J5	CHAN F SPARE
J6	CHAN G SPARE
J7	CHAN H SPARE
J8	CHAN I SPARE
J9	CHAN J SPARE
J10	CHAN K SPARE
J11	CHAN L SPARE
J12	CHAN M SPARE
J13	CHAN N SPARE
J14	CHAN O SPARE
J15	CHAN P SPARE

MADC MUX A/D IO PANEL

BLDG #: 1012A
RACK #: R4
PANEL #: MADC A/D IO PANEL C

FR SHEET15

J0	CHAN A SPARE
J1	CHAN B SPARE
J2	CHAN C SPARE
J3	CHAN D SPARE
J4	CHAN E SPARE
J5	CHAN F SPARE
J6	CHAN G SPARE
J7	CHAN H SPARE
J8	CHAN I SPARE
J9	CHAN J SPARE
J10	CHAN K SPARE
J11	CHAN L SPARE
J12	CHAN M SPARE
J13	CHAN N SPARE
J14	CHAN O SPARE
J15	CHAN P SPARE

MADC MUX A/D IO PANEL

BLDG #: 1012A
RACK #: R4
PANEL #: MADC A/D IO PANEL D

FR SHEET15

J0	CHAN A SPARE
J1	CHAN B SPARE
J2	CHAN C SPARE
J3	CHAN D SPARE
J4	CHAN E SPARE
J5	CHAN F SPARE
J6	CHAN G SPARE
J7	CHAN H SPARE
J8	CHAN I SPARE
J9	CHAN J SPARE
J10	CHAN K SPARE
J11	CHAN L SPARE
J12	CHAN M SPARE
J13	CHAN N SPARE
J14	CHAN O SPARE
J15	CHAN P SPARE

-3	-2	-1 QTY REQD	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MAT'L DWG NO./BNL NO.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

DECIMAL TOLERANCES
.X ±.030
.XX ±.015
.XXX ±.005
ANGULAR TOLERANCE ± .5°

NA FINISH

BREAK SHARP EDGES MAX. XX MIN. XX

OUTSTANDING ECN

Q.A. CATEGORY A-3		DATE
DRAWN BY	Ralph Schoenfeld	11/23/03
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPVR. APPROVAL		

NEXT ASSEMBLY

BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

RHIC CONTROLS WIRING DIAGRAM
1012A, VME CHASSIS CFE-12A-HJET
MADC MUX I/O PANEL

SIZE	DRAWING NUMBER	REV.
D	MADC_panel.dwg	A

MATERIAL: ——— SCALE: FULL WEIGHT: – SHEET 18

*AUTOCAD