| REV. | DESCRIPTION | DRAWN | DATE |
|---|---|---|---|
| | | APPD. | DATE |
| A | ADDED OPTICAL DOUBLE NOTCH FILTER COMPONENTS | WMUELLER | 8/16/07 |

**PIN SWITCH GATES**
**On event - D:DPPSON**
**Off event - D:DPPSOF**

**PBAR TUNNEL**
**A30 STUB ROOM**

**AP30 SERVICE BUILDING**

A33R07 CAMAC C190 CRATE 33 SLOT 20
B33R02 TROMBONE POWER SUPPLY
B33R01 CAMAC 057 CRATE 32 SLOT 8
A33R07 MADC #38 60-61
B33R02 TROMBONE CONTROLLER 8000-ED-266245 8000-EC-266105 0664.00-ED-70322 J1 M13 P13 M14 P14

4-8GHz Debuncher Momentum Optical Filter Equalizer A30 Stubroom
CH1 S21 LOG 1dB/REF -11dB 18 July 2008
Markers 1) -12.130 dB 4GHz 2) -10.947 dB 6 GHz 3) -10.227 dB 8 GHz
CH2 S21 PHASE 3/"Ref 0"
Markers 1) 1.0858° 4GHz 2) 509.49 ns° 6 GHz 3) 6.1236° 8 GHz
Freq. 3.8 - 8.2 GHz

Narda 4324-4 0.085" Flexline Narda 4324-4 20dB 10dB 6dB 4dB 2dB 1dB length
Leg1 = 603.3ps
Leg2 = 370.3ps
Leg3 = 464.4ps
Leg4 = 594.6

D:PTMF

FROM A10-2 STUBROOM MOMENTUM BANDS 3 & 4 8000-EE-288113
DITOM ISOLATOR D3I3783
0 DB SMA
3 DB SMA
325PS COLBY INST. PDL-1A 'SPECIAL' SCALING
0.5-3.5 DB WEINSCHEL 953-3
EQ
0.085" FLEXLINE
TRI. YF-45N
NARDA 4314-2
DITOM ISOLATOR D3I3783
+8 dBm MAX
0.141" FLEXLINE
D:P1BX2
D:P2BX2
50 Ω
TELEDYNE CCS-37S6E (2)
0.085" FLEXLINE
10 DB SMA
10 DB SMA
TELEDYNE CCR-33S6E
G ~ 30DB 1W DBS uWAVE DB97-1788
BAND 1 BAND 2
FROM A10-1 STUBROOM MOMENTUM 8000-EE-288112

PENETRATIONS

PLC 10 Nom +1.5V to +2.5V D:PXOPWR OPTICAL PWR
PLC 10 Nom -0.5V to +0.5V D:PXLTMP LASER TEMP
MITEQ LASER TRANSMITTER MDDT-100M11G-28-10-M14
RTD HEATER RTD D:POVTMP
OPTICAL SMF-28 LINE ON ALUM SPOOL
FILTER OVEN CHASSIS LB-288343
OPTICAL SMF-28 LINE ON ALUM SPOOL
GENERAL PHOTONICS NSW-001-FC/PC
D:PO2T1
LO (OFF) = PORT 3 THRU
HI (ON) = PORT 2 THRU

B33R01 +24V/30A POWER SUPPLY EC-266136
B33R02 TEMPERATURE CONTROLLER OMEGA ENG., INC. #6002-P2-F1-A2 RTD +24V A B
REG OVEN SETTING = **120° F**
READBACK TEMP = **119° F**
BYPASS OVEN SETTING = **110° F**
READBACK TEMP = **109° F**
RACK B33R03 PBAR PLC07 PbarH40092 131.225.134.135
**A:PLC07S**

D:POTMF
uCONTROLLER TEST BOARD/ 8000-EB-288109
MDL-002 CONTROLLER BOX
GENERAL PHOTONICS MDL-002-35-25-FC/PC-SS
250 PS
D:POTMF
GENERAL PHOTONICS NSW-001-FC/PC
D:PO2T2
LO (OFF) = PORT 2 THRU
HI (ON) = PORT 3 THRU
*BOTH SWITCHES ALWAYS SWITCH TOGETHER*
0-28DB F-VAT-FC-SM
***SWITCHES OFF = SINGLE NOTCH***
***SWITCHES ON = DOUBLE NOTCH***

D:PO2TDL Delay (in sec) from Pin Sw Gate D:DPPSON
D:PO2T1 D:PO2T2 +24V
VOLTAGE DIVIDER KLUGE CARD +5V +5V
D:PO2T1
D:PRPDI (1.3V/mW, Nom 1-8V)
PHOTO DIODE I MON
MITEQ PHOTODIODE RECEIVER MDDR-100M11G-20-20-10
D:PXFL
50 Ω 50 Ω
TELEDYNE CCS-37S6E
D:PXFS
50 Ω 50 Ω
TELEDYNE CCS-37S6E
NARDA 4314-2

FOR AMP REGULATORS +20V/10A POWER SUPPLY EC-266134
PLC BREAKOUT PANELS
FOR RF SWITCHES +28V/1.5A POWER ONE MAP42-1024
PLC BREAKOUT PANELS
AC RESET
**A:PLC10S**
PBAR PLC10 PbarH4000bf 131.225.134.138 A30SR PLC

PLC10 D:PAMP1 1.5A REG. EC-266083
0.085" FLEXLINE
G ~ 30DB 1W DBS uWAVE DB97-1788
TRI. YF-45N
0 DB SMA
*SEE GRAPH BELOW DING FILTER DITOM ISOLATOR D3I3783 (2)

SWITCH MUX D:S6D309-J4 DP4-FIL ED-170256
PIN ATTENUATOR/ PIN SWITCH CHASSIS 8000-ED-216741
D:P4PA D:P4PS
20DB KDI/TRIANGLE CA-752
GT uWAVE A3P-58N-0DF ~5.5dB LOSS RANGE 0-32dB
MITEQ N136ANM1
*SEE COOLING PERSONNEL FOR PAD VALUES
GAIN ADJUST PADS FOR MAX PLATE OUTPUT
0 DB SMA TRIANGLE MH-46 IN 1 180 ISOL 2 0 50 Ω 50 Ω
0.085" FLEXLINE
*See Chart note
PLC10 D:P4AM8 1.5A REG. EC-266083 G ~ 30DB 1W DBS uWAVE DB97-1788
PLC10 D:P4AD1 ADVANCED CONTROL COMPONENTS ACSP-2524NZ 10 DB TRIANGLE QH-45 IN 1 0 ISOL 2 -90 50 Ω
*See Chart note
TO MOMENTUM HIGH LEVEL BAND 4 8000-EE-288116

SWITCH MUX D:S6D309-J3 DP3-FIL ED-170256
D:P3PA D:P3PS
20DB KDI/TRIANGLE CA-752
GT uWAVE A3P-58N-0DF ~5.5dB LOSS RANGE 0-32dB
MITEQ N136ANM1
0 DB SMA TRIANGLE MH-46 IN 1 180 ISOL 2 0 50 Ω 50 Ω
0.085" FLEXLINE
*See Chart note
PLC10 D:P3AM8 1.5A REG. EC-266083 G ~ 30DB 1W DBS uWAVE DB97-1788
PLC10 D:P3AD1 ADVANCED CONTROL COMPONENTS ACSP-2524NZ 10 DB TRIANGLE QH-45 IN 1 0 ISOL 2 -90 50 Ω
*See Chart note
TO MOMENTUM HIGH LEVEL BAND 3 8000-EE-288117

SWITCH MUX D:S6D309-J2 DP2-FIL ED-170256
PIN ATTENUATOR/ PIN SWITCH CHASSIS 8000-ED-216741
D:P2PA D:P2PS
20DB KDI/TRIANGLE CA-752
GT uWAVE A3P-58N-0DF ~5.5dB LOSS RANGE 0-32dB
NARDA S213D
0 DB SMA TRIANGLE MH-46 IN 1 180 ISOL 2 0 50 Ω 50 Ω
0.085" FLEXLINE
*See Chart note
PLC10 D:P2AM8 1.5A REG. EC-266083 G ~ 30DB 1W DBS uWAVE DB97-1788
PLC10 D:P2AD1 ADVANCED CONTROL COMPONENTS ACSP-2524NZ 10 DB TRIANGLE QH-45 IN 2 -90 ISOL 1 0 50 Ω
*See Chart note
TO MOMENTUM HIGH LEVEL BAND 2 8000-EE-288114

SWITCH MUX D:S6D309-J1 DP1-FIL ED-170256
D:P1PA D:P1PS
20DB KDI/TRIANGLE CA-752
GT uWAVE A3P-58N-0DF ~5.5dB LOSS RANGE 0-32dB
NARDA S213D
3 DB SMA TRIANGLE MH-46 IN 2 0 ISOL 1 180 50 Ω 50 Ω
0.085" FLEXLINE
*See Chart note
PLC10 D:P1AM8 1.5A REG. EC-266083 G ~ 30DB 1W DBS uWAVE DB97-1788
PLC10 D:P1AD1 ADVANCED CONTROL COMPONENTS ACSP-2524NZ 10 DB TRIANGLE QH-45 IN 1 0 ISOL 2 -90 50 Ω
*See Chart note
TO MOMENTUM HIGH LEVEL BAND 1 8000-EE-288115

DITOM ISOLATOR D3I3783 *SEE GRAPH BELOW DING FILTER DITOM ISOLATOR D3I3783
PLC10 50 Ω TELEDYNE CCS-37S6E **D:P2BX3**
SWITCH MUX D:S6D309-J5 DP14-FIL ED-170256
20DB KDI/TRIANGLE CA-752
DITOM ISOLATOR D3I3783 DITOM ISOLATOR D3I3783 DING FILTER *SEE GRAPH BELOW
PLC10 50 Ω TELEDYNE CCS-37S6E **D:P1BX3**

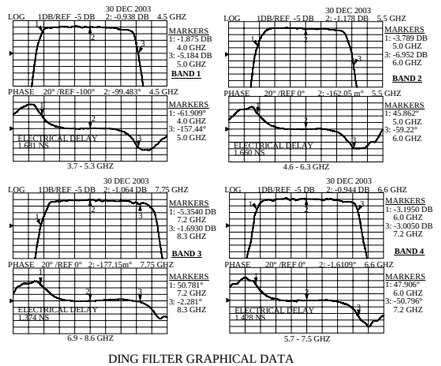
PLC10 D:PBAM01 1.5A REG. EC-266083 0.141" FLEXLINE
BAW OVEN CHASSIS EB-288310 DELAY DEVICE TELEDYNE MBG-1194 S/N 005
D:BOVTMP RTD HEATER RTD 1/4" HELIAX
D:PBTMF 325PS COLBY INST. PDL-1A 'SPECIAL' SCALING
D:PBXFL 50 Ω 50 Ω TELEDYNE CCS-37S6E
D:PBXFS 50 Ω 50 Ω TELEDYNE CCS-37S6E
0.5-3.5 DB WEINSCHEL 953-3 (PHASE-FREE)
2 DB SMA 50 DB SMA
MERRIMAC PDM-21M-6G 0.085" FLEXLINE MERRIMAC PDM-21M-6G
PLC10 D:PBAM02 0.3A REG. EC-266083 G ~ 30DB DBS uWAVE DB97-1789
PLC10 D:PBAM03 0.3A REG. EC-266083 6 DB SMA G ~ 30DB DBS uWAVE DB97-1789

PLC10 D:PB2T02
TELEDYNE CCR-33S6E 0.085" FLEXLINES

**PBAR TUNNEL**
**A30 STUB ROOM**

**BYPASS SWITCHES NOTE:**
THESE SWITCHES ARE TIED TOGETHER IN SOFTWARE TO BE THROWN SIMULTANEOUSLY -
-TRANSFER SWITCHES, D:P1BX2 & D:P1BX3
(NORMAL MODE = POS. 2)
-TRANSFER SWITCHES, D:P2BX2 & D:P2BX3
(NORMAL MODE = POS. 2)
-TWO THROW SWITCHES D:PB2T01 & D:PB2T02 (BOTH SWITCHES TO BE IN POS. 1 WHEN D:P1BX2 & D:P1BX3 ARE IN POS. 1 [BYPASS MODE], AND IN POS. 2 WHEN D:P2BX2 & D:P2BX3 ARE IN POS. 1 [BYPASS MODE]

***THE BYPASS NOTCH FILTER ALLOWS BEAM STABILIZATION FOR COOLING MEASUREMENTS. IT IS PUT IN BOTH BANDS 1 & 2 BECAUSE THEY HAVE DELAY TO SPARE. THIS IS DUE TO OPTICAL NOTCH FILTER BEING COMMON TO ALL 4 MOMENTUM BANDS.**



DING FILTER GRAPHICAL DATA
(FILTER ONLY, NOT CIRCULATORS)

**NOMINAL Fo NOTCH FILTERS**
OPTICAL, 1 Turn = 590018Hz
OPTICAL, 2 Turn = 295009Hz
BAW = 590018Hz

HYBRID ORIENTATION CHART

| 180° Hybrid | 90° Hybrid | Output |
|---|---|---|
| In - Out2 | thru In - Out1 | = 0° |
| In - Out2 | thru In - Out2 | = -90° |
| In - Out1 | thru In - Out1 | = -180° |
| In - Out1 | thru In - Out2 | = -270° |
| Isol-Out1 | thru In - Out1 | = +90° |

*BOTH HYBRIDS ARE FLIPPABLE
ACTUAL ORIENTATION MAY VARY
SEE COOLING PERSONNEL

**7/29/08**

| ITEM NO. | PART NO. | DESCRIPTION OR SIZE | QTY. REQ. |
|---|---|---|---|
| | | PARTS LIST | |

| | | | | | |
|---|---|---|---|---|---|
| UNLESS OTHERWISE SPECIFIED | | | ORIGINATOR | RALPH PASQUINELLI | |
| FRACTIONS | DECIMALS | ANGLES | DRAWN | WESLEY J MUELLER | 2/26/04 |
| +/- | +/- | +/- | CHECKED | | |
| 1. BREAK ALL SHARP EDGES 1/64 MAX. | | | APPROVED | | |
| 2. DO NOT SCALE DRAWING | | | USED ON | | |
| 3. DIMENSIONING IN ACCORD WITH ANSI Y14.5 STD'S | | | MATERIAL- | | |
| MAX. ALL MACHINED SURFACES | | | | | |

**FERMI NATIONAL ACCELERATOR LABORATORY**
UNITED STATES DEPARTMENT OF ENERGY

# ANTI-PROTON SOURCE DEBUNCHER MOMENTUM A30 MEDIUM LEVEL ELECTRONICS

| SCALE | FILMED | DRAWING NUMBER | REV. |
|---|---|---|---|
| | | 8000-ED-288274 | A |