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Livingston Site DAQS Rack Layouts and Signal Connections
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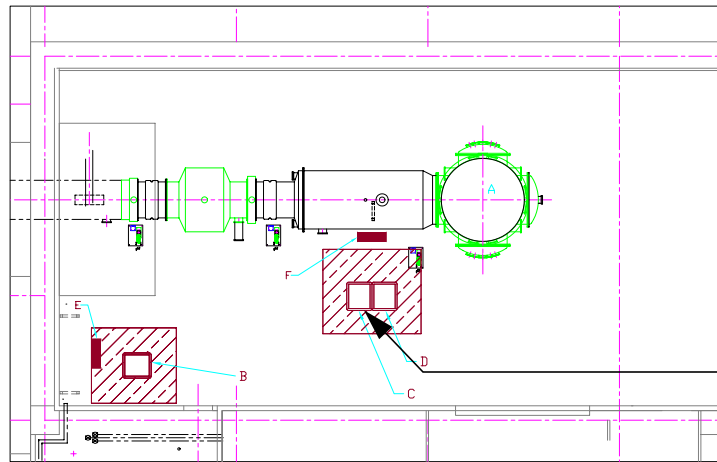
1 PURPOSE

This document is intended to describe the Livingston site Data Acquisition System (DAQS) equipment layouts and signal connections. It is a supplement to the DAQS Final Design Document LIGO-T980028-00-C Data Collection Units (DCU) are described in section 2, the DAQS controller and EPICS data units in section 3, and the data storage equipment in section 4..

2 DATA COLLECTION UNITS (DCU) AND RACK LOCATIONS

DCU assignments and rack locations are shown in Figure 1:Rack Locations and DCU Locator Table. The Livingston site has five DCU, three located in the LVEA and one in each end station. Individual rack layouts and DCU signal connections are shown in the following subsections.

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END STATION

<i>DCU</i>	<i>Rack</i>	<i>Bldg</i>
L4KDAQS-1	1X22	LVEA
L4KDAQS-2	1X22	LVEA
L4KDAQS-3	1X20	X End
L4KDAQS-4	1Y21	Y End
LPEM-1	1X10	LVEA

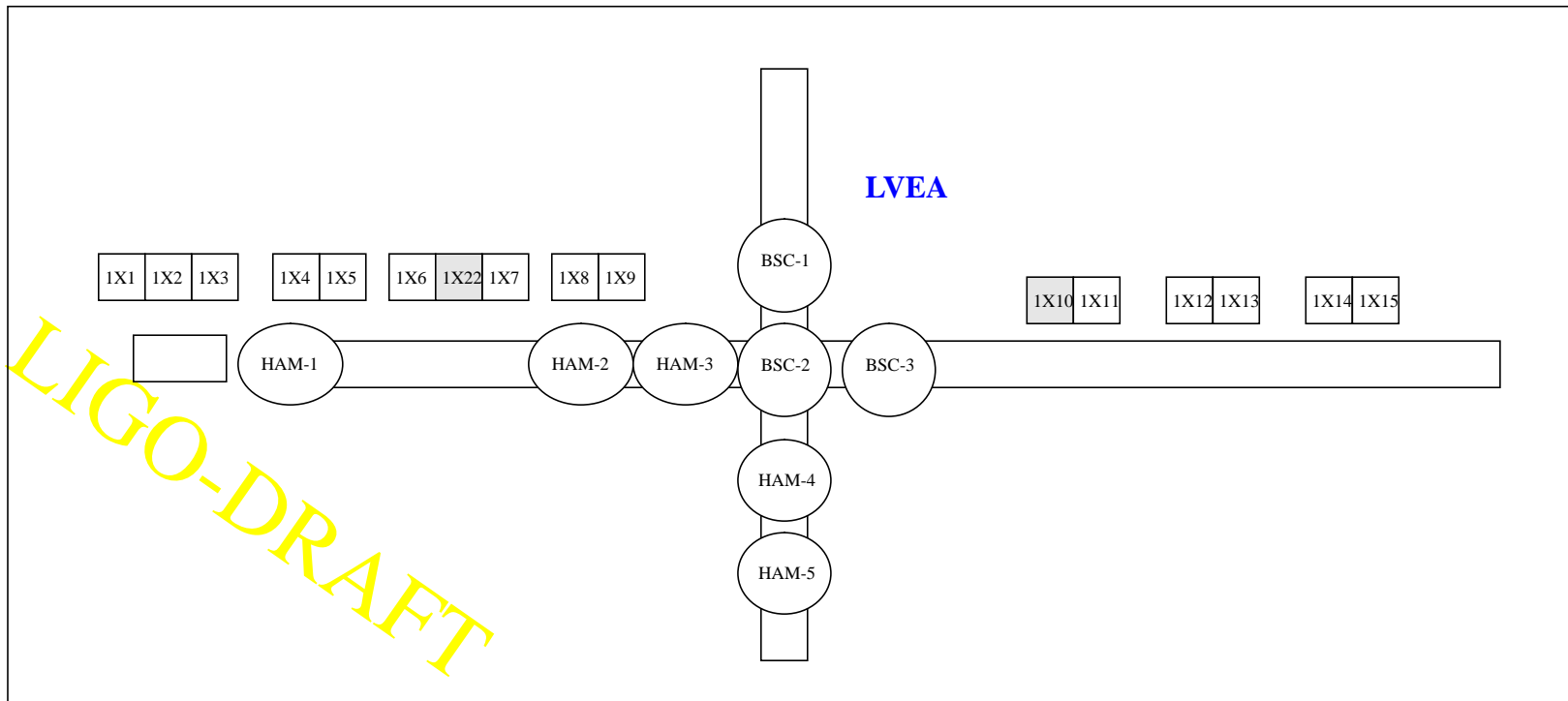


Figure 1: Rack Locations and DCU Locator Table

2.1. Rack 1X10, LPEM

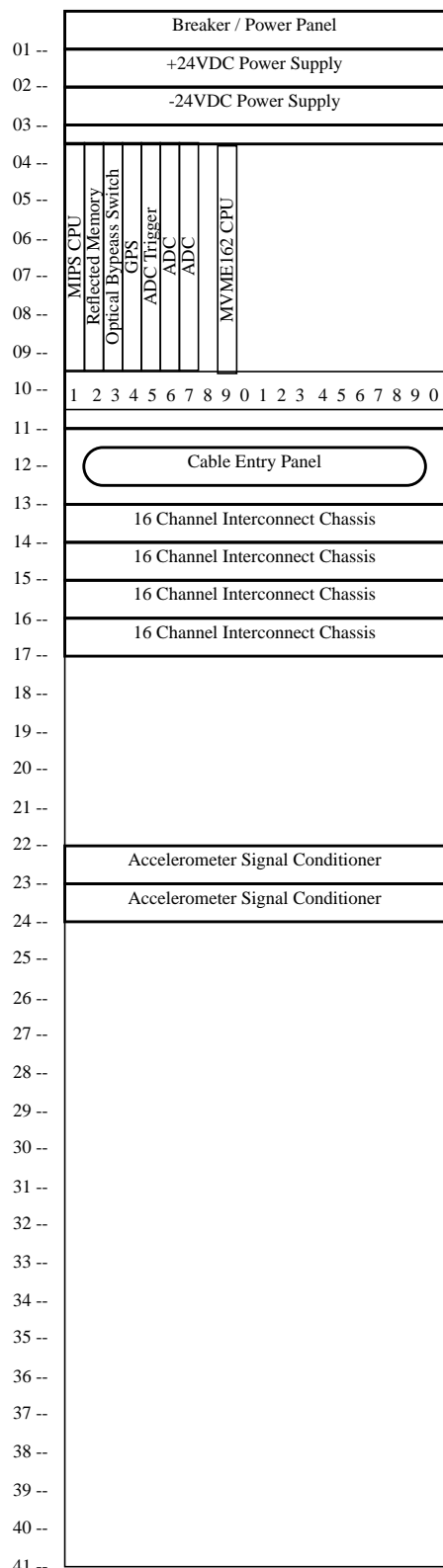


Table 1: DAQS PEM Rack Parts List / Cost

Description	Vendor	Unit	Qty	Extd
Breaker Panel		\$600	1	\$600
24 VDC Power Supply	Power 10	\$1,050	2	\$2,100
VME Crate		\$3,200	1	\$3,200
Cable Entry Panel		\$50	1	\$50
16 Channel Interconnect	LIGO	\$500	4	\$2,000
MIPS Processor	Heurikon	\$6000	1	\$6,000
Reflected Memory (2Mbyte)	VMIC	\$7,400	1	\$7,400
Optical Bypass Switch	VMIC	\$1,200	1	\$2,400
GPS		\$1,200	1	\$1,200
ADC Trigger	LIGO	\$400	1	\$400
32 Channel ADC	ICS	\$16,000	2	\$32,000
MVME-162-333 Processor	Motorola	\$4500	1	\$4,500
NB Rcvrs / Cabling		\$15,000	1	\$15,000
Total				\$76,850

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LPEM1-1

Rack: 1X10
DCU: LPEM-1
ADC: 1

CH# -----		Rate	Frame	Description
0	LPM :: PEM - SEIS_C_X	256	yes	corner station seismometer, x direction
1	LPM :: PEM - SEIS_C_Y	256	yes	corner station seismometer, y direction
2	LPM :: PEM - SEIS_C_Z	256	yes	corner station seismometer, z direction
3	LPM :: PEM - TILT_C_X	256	yes	corner station tiltmeter, about x
4	LPM :: PEM - TILT_C_Y	256	yes	corner station tiltmeter, about y
5	LPM :: PEM - ACC_BSC1_1X	2048	yes	accelerometer signal, BSC1, triaxial unit 1, x
6	LPM :: PEM - ACC_BSC1_1Y	2048	yes	accelerometer signal, BSC1, triaxial unit 1, y
7	LPM :: PEM - ACC_BSC1_1Z	2048	yes	accelerometer signal, BSC1, triaxial unit 1, z
8	LPM :: PEM - ACC_BSC3_1X	2048	yes	accelerometer signal, BSC3, triaxial unit 1, x
9	LPM :: PEM - ACC_BSC3_1Y	2048	yes	accelerometer signal, BSC3, triaxial unit 1, y
10	LPM :: PEM - ACC_BSC3_1Z	2048	yes	accelerometer signal, BSC3, triaxial unit 1, z
11	LPM :: PEM - ACC_BSC2_X	2048	yes	accelerometer signal, BSC2, x
12	LPM :: PEM - ACC_BSC2_Y	2048	yes	accelerometer signal, BSC2, y
13	LPM :: PEM - ACC_BSC2_Z	2048	yes	accelerometer signal, BSC2, z
14	LPM :: PEM - ACC_HAM1_X	2048	yes	accelerometer signal, HAM1, x
15	LPM :: PEM - ACC_HAM1_Y	2048	yes	accelerometer signal, HAM1, y
16	LPM :: PEM - ACC_HAM1_Z	2048	yes	accelerometer signal, HAM1, z
17	LPM :: PEM - ACC_HAM2_X	2048	yes	accelerometer signal, HAM2, x
18	LPM :: PEM - ACC_HAM2_Y	2048	yes	accelerometer signal, HAM2, y
19	LPM :: PEM - ACC_HAM2_Z	2048	yes	accelerometer signal, HAM2, z
20	LPM :: PEM - ACC_HAM3_X	2048	yes	accelerometer signal, HAM3, x
21	LPM :: PEM - ACC_HAM3_Y	2048	yes	accelerometer signal, HAM3, y
22	LPM :: PEM - ACC_HAM3_Z	2048	yes	accelerometer signal, HAM3, z
23	LPM :: PEM - ACC_HAM4_X	2048	yes	accelerometer signal, HAM4, x
24	LPM :: PEM - ACC_HAM4_Y	2048	yes	accelerometer signal, HAM4, y
25	LPM :: PEM - ACC_HAM4_Z	2048	yes	accelerometer signal, HAM4, z
26	LPM :: PEM - ACC_HAM5_X	2048	yes	accelerometer signal, HAM5, x
27	LPM :: PEM - ACC_HAM5_Y	2048	yes	accelerometer signal, HAM5, y
28	LPM :: PEM - ACC_HAM5_Z	2048	yes	accelerometer signal, HAM5, z
29	LPM :: PEM - ACC_HAM6_X	2048	yes	accelerometer signal, HAM6, x
30	LPM :: PEM - ACC_HAM6_Y	2048	yes	accelerometer signal, HAM6, y
31	LPM :: PEM - ACC_HAM6_Z	2048	yes	accelerometer signal, HAM6, z

LPEM1-2

Rack: 1X10
DCU: LPEM-1
ADC: 2

CH# -----		Rate	Frame	Description
0	LPM :: PEM - ACC_PSL_X	2048	yes	accelerometer signal, PSL, x
1	LPM :: PEM - ACC_PSL_Y	2048	yes	accelerometer signal, PSL, y
2	LPM :: PEM - ACC_PSL_Z	2048	yes	accelerometer signal, PSL, z
3	LPM PEM - MIC_BSC1	2048	yes	microphone, BSC1
4	LPM PEM - MIC_BSC2	2048	yes	microphone, BSC2
5	LPM PEM - MIC_BSC3	2048	yes	microphone, BSC3
6	LPM PEM - MIC_HAM1	2048	yes	microphone, HAM1
7	LPM PEM - MIC_HAM2	2048	yes	microphone, HAM2
8	LPM PEM - MIC_HAM3	2048	yes	microphone, HAM3
9	LPM PEM - MIC_HAM4	2048	yes	microphone, HAM4
10	LPM PEM - MIC_HAM5	2048	yes	microphone, HAM5
11	LPM PEM - MIC_HAM6	2048	yes	microphone, HAM6
12	LPM PEM - MIC_PSL	2048	yes	microphone, PSL table
13	LPM PEM - MAG_C_X	2048	yes	magnetometer, site, x direction
14	LPM PEM - MAG_C_Y	2048	yes	magnetometer, site, y direction
15	LPM PEM - MAG_C_Z	2048	yes	magnetometer, site, z direction
16	LPM PEM - RFR_1	16384	yes	RF receiver, channel 1
17	LPM PEM - RFR_2	16384	yes	RF receiver, channel 2
18	LPM PEM - RFR_3	16384	yes	RF receiver, channel 3
19	LPM PEM - RFR_4	16384	yes	RF receiver, channel 4
20	LPM PEM - NB_RFR_1	16384	yes	narrow band RF receiver, 4km ifo
21	LPM PEM - TEMP_C1	1	yes	temperature sensor, corner station NE
22	LPM PEM - TEMP_C2	1	yes	temperature sensor, corner station SE
23	LPM PEM - TEMP_C3	1	yes	temperature sensor, corner station SW
24	LPM PEM - TEMP_C4	1	yes	temperature sensor, corner station NW
25				
26				
27				
28				
29				
30				
31				

2.2. Rack 1X22, L4KDAQS1 & L4KDAQS2

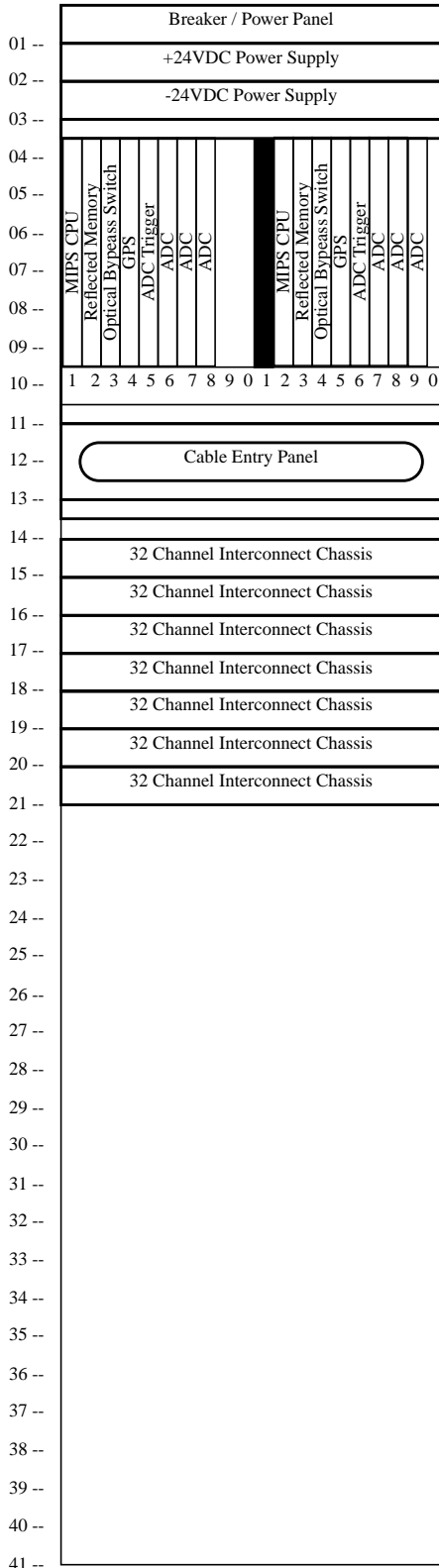


Table 2: DAQS Rack 1X22 Parts List / Cost

Description	Vendor	Unit	Qty	Extd
Breaker Panel		\$200	1	\$200
24 VDC Power Supply	Power 10	\$1050	2	\$2,100
VME Crate		\$3,200	1	\$3,200
Cable Entry Panel		\$50	1	\$50
32 Channel Interconnect	LIGO	\$800	5	\$4,000
MIPS Processor	Heurikon	\$6000	2	\$12,000
Reflected Memory (2Mbyte)	VMIC	\$7,400	2	\$14,800
Optical Bypass Switch	VMIC	\$1,200	2	\$2,400
GPS		\$1,200	2	\$2,400
ADC Trigger	LIGO	\$400	2	\$800
32 Channel ADC	ICS	\$16,000	6	\$96,000
Total				\$137,950

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Rack: 1X22
DCU: L4KDAQS1
ADC: 1

CH#	-----	Rate	Frame	Description
0	L1 :: SUS - COIL_ITMX_UL	2048	yes	coil current readback, ITM X, upper-left
1	L1 :: SUS - COIL_ITMX_UR	2048	yes	coil current readback, ITM X, upper-right
2	L1 :: SUS - COIL_ITMX_LL	2048	yes	coil current readback, ITM X, lower-left
3	L1 :: SUS - COIL_ITMX_LR	2048	yes	coil current readback, ITM X, lower-right
4	L1 :: SUS - COIL_ITMX_S	2048	yes	coil current readback, ITM X, side
5	L1 :: SUS - COIL_ITMX_SUM	16384	yes	coil current readback, ITM X, sum
6	L1 :: SUS - COIL_ITMY_UL	2048	yes	coil current readback, ITM Y, upper-left
7	L1 :: SUS - COIL_ITMY_UR	2048	yes	coil current readback, ITM Y, upper-right
8	L1 :: SUS - COIL_ITMY_LL	2048	yes	coil current readback, ITM Y, lower-left
9	L1 :: SUS - COIL_ITMY_LR	2048	yes	coil current readback, ITM Y, lower-right
10	L1 :: SUS - COIL_ITMY_S	2048	yes	coil current readback, ITM Y, side
11	L1 :: SUS - COIL_ITMY_SUM	16384	yes	coil current readback, ITM Y, sum
12	L1 :: SUS - COIL_RM_UL	2048	yes	coil current readback, RM, upper-left
13	L1 :: SUS - COIL_RM_UR	2048	yes	coil current readback, RM, upper-right
14	L1 :: SUS - COIL_RM_LL	2048	yes	coil current readback, RM, lower-left
15	L1 :: SUS - COIL_RM_LR	2048	yes	coil current readback, RM, lower-right
16	L1 :: SUS - COIL_RM_S	2048	yes	coil current readback, RM, side
17	L1 :: SUS - COIL_RM_SUM	16384	yes	coil current readback, RM, sum
18	L1 :: SUS - COIL_BS_UL	2048	yes	coil current readback, BS, upper-left
19	L1 :: SUS - COIL_BS_UR	2048	yes	coil current readback, BS, upper-right
20	L1 :: SUS - COIL_BS_LL	2048	yes	coil current readback, BS, lower-left
21	L1 :: SUS - COIL_BS_LR	2048	yes	coil current readback, BS, lower-right
22	L1 :: SUS - COIL_BS_S	2048	yes	coil current readback, BS, side
23	L1 :: SUS - COIL_BS_SUM	16384	yes	coil current readback, BS, sum
24	L1 :: SUS - COIL_MC1_UL	2048	yes	coil current readback, mode cleaner 1, upper-left
25	L1 :: SUS - COIL_MC1_UR	2048	yes	coil current readback, mode cleaner 1, upper-right
26	L1 :: SUS - COIL_MC1_LL	2048	yes	coil current readback, mode cleaner 1, lower-left
27	L1 :: SUS - COIL_MC1_LR	2048	yes	coil current readback, mode cleaner 1, lower-right
28	L1 :: SUS - COIL_MC1_S	2048	yes	coil current readback, mode cleaner 1, side
29	L1 :: SUS - COIL_MC1_SUM	16384	yes	coil current readback, mode cleaner 1, sum
30				
31				

Rack: 1X22
DCU: L4KDAQS-1
ADC: 2

CH#	-----	Rate	Frame	Description
0	L1 :: SUS - COIL_MC2_UL	2048	yes	coil current readback, mode cleaner 2, upper-left
1	L1 :: SUS - COIL_MC2_UR	2048	yes	coil current readback, mode cleaner 2, upper-right
2	L1 :: SUS - COIL_MC2_LL	2048	yes	coil current readback, mode cleaner 2, lower-left
3	L1 :: SUS - COIL_MC2_LR	2048	yes	coil current readback, mode cleaner 2, lower-right
4	L1 :: SUS - COIL_MC2_S	2048	yes	coil current readback, mode cleaner 2, side
5	L1 :: SUS - COIL_MC2_SUM	16384	yes	coil current readback, mode cleaner 2, sum
6	L1 :: SUS - COIL_MC3_UL	2048	yes	coil current readback, mode cleaner 3, upper-left
7	L1 :: SUS - COIL_MC3_UR	2048	yes	coil current readback, mode cleaner 3, upper-right
8	L1 :: SUS - COIL_MC3_LL	2048	yes	coil current readback, mode cleaner 3, lower-left
9	L1 :: SUS - COIL_MC3_LR	2048	yes	coil current readback, mode cleaner 3, lower-right
10	L1 :: SUS - COIL_MC3_S	2048	yes	coil current readback, mode cleaner 3, side
11	L1 :: SUS - COIL_MC3_SUM	16384	yes	coil current readback, mode cleaner 3, sum
12	L1 :: SUS - COIL_FM1_UL	2048	no	coil current readback, folding mirror 1, upper-left
13	L1 :: SUS - COIL_FM1_UR	2048	no	coil current readback, folding mirror 1, upper-right
14	L1 :: SUS - COIL_FM1_LL	2048	no	coil current readback, folding mirror 1, lower-left
15	L1 :: SUS - COIL_FM1_LR	2048	no	coil current readback, folding mirror 1, lower-right
16	L1 :: SUS - COIL_FM1_S	2048	no	coil current readback, folding mirror 1, side
17	L1 :: SUS - COIL_FM1_SUM	16384	no	coil current readback, folding mirror 1, sum
18	L1 :: SUS - COIL_MMT1_UL	2048	no	coil current readback, mode matching 1, upper-left
19	L1 :: SUS - COIL_MMT1_UR	2048	no	coil current readback, mode matching 1, upper-right
20	L1 :: SUS - COIL_MMT1_LL	2048	no	coil current readback, mode matching 1, lower-left
21	L1 :: SUS - COIL_MMT1_LR	2048	no	coil current readback, mode matching 1, lower-right
22	L1 :: SUS - COIL_MMT1_S	2048	no	coil current readback, mode matching 1, side
23	L1 :: SUS - COIL_MMT1_SUM	16384	no	coil current readback, mode matching 1, sum
24	L1 :: SUS - COIL_MMT2_UL	2048	no	coil current readback, mode matching 2, upper-left
25	L1 :: SUS - COIL_MMT2_UR	2048	no	coil current readback, mode matching 2, upper-right
26	L1 :: SUS - COIL_MMT2_LL	2048	no	coil current readback, mode matching 2, lower-left
27	L1 :: SUS - COIL_MMT2_LR	2048	no	coil current readback, mode matching 2, lower-right
28	L1 :: SUS - COIL_MMT2_S	2048	no	coil current readback, mode matching 2, side
29	L1 :: SUS - COIL_MMT2_SUM	16384	no	coil current readback, mode matching 2, sum
30				
31				

Rack: 1X22
DCU: L4KDAQS1
ADC: 3

CH#	-----	Rate	Frame	Description
0	L1 :: SUS - COIL_MMT3_UL	2048	no	coil current readback, mode matching 3, upper-left
1	L1 :: SUS - COIL_MMT3_UR	2048	no	coil current readback, mode matching 3, upper-right
2	L1 :: SUS - COIL_MMT3_LL	2048	no	coil current readback, mode matching 3, lower-left
3	L1 :: SUS - COIL_MMT3_LR	2048	no	coil current readback, mode matching 3, lower-right
4	L1 :: SUS - COIL_MMT3_S	2048	no	coil current readback, mode matching 3, side
5	L1 :: SUS - COIL_MMT3_SUM	16384	no	coil current readback, mode matching 3, sum
6	L1 :: SUS - SENSOR_ITMX_UL	64	yes	local sensor, ITM X, upper-left
7	L1 :: SUS - SENSOR_ITMX_UR	64	yes	local sensor, ITM X, upper-right
8	L1 :: SUS - SENSOR_ITMX_LL	64	yes	local sensor, ITM X, lower-left
9	L1 :: SUS - SENSOR_ITMX_LR	64	yes	local sensor, ITM X, lower-right
10	L1 :: SUS - SENSOR_ITMX_S	64	yes	local sensor, ITM X, side
11	L1 :: SUS - SENSOR_ITMY_UL	64	yes	local sensor, ITM Y, upper-left
12	L1 :: SUS - SENSOR_ITMY_UR	64	yes	local sensor, ITM Y, upper-right
13	L1 :: SUS - SENSOR_ITMY_LL	64	yes	local sensor, ITM Y, lower-left
14	L1 :: SUS - SENSOR_ITMY_LR	64	yes	local sensor, ITM Y, lower-right
15	L1 :: SUS - SENSOR_ITMY_S	64	yes	local sensor, ITM Y, side
16	L1 :: SUS - SENSOR_RM_UL	64	yes	local sensor, RM, upper-left
17	L1 :: SUS - SENSOR_RM_UR	64	yes	local sensor, RM, upper-right
18	L1 :: SUS - SENSOR_RM_LL	64	yes	local sensor, RM, lower-left
19	L1 :: SUS - SENSOR_RM_LR	64	yes	local sensor, RM, lower-right
20	L1 :: SUS - SENSOR_RM_S	64	yes	local sensor, RM, side
21	L1 :: SUS - SENSOR_BS_UL	64	yes	local sensor, BS, upper-left
22	L1 :: SUS - SENSOR_BS_UR	64	yes	local sensor, BS, upper-right
23	L1 :: SUS - SENSOR_BS_LL	64	yes	local sensor, BS, lower-left
24	L1 :: SUS - SENSOR_BS_LR	64	yes	local sensor, BS, lower-right
25	L1 :: SUS - SENSOR_BS_S	64	yes	local sensor, BS, side
26	L1 :: SUS - SENSOR_MC1_UL	64	yes	local sensor, mode cleaner 1, upper-left
27	L1 :: SUS - SENSOR_MC1_UR	64	yes	local sensor, mode cleaner 1, upper-right
28	L1 :: SUS - SENSOR_MC1_LL	64	yes	local sensor, mode cleaner 1, lower-left
29	L1 :: SUS - SENSOR_MC1_LR	64	yes	local sensor, mode cleaner 1, lower-right
30	L1 :: SUS - SENSOR_MC1_S	64	yes	local sensor, mode cleaner 1, side
31				

Rack: 1X22
DCU: L4KDAQS2
ADC: 1

CH# -----				Rate	Frame	Description
0	L1	::	SUS - SENSOR_MC2_UL	64	yes	local sensor, mode cleaner 2, upper-left
1	L1	::	SUS - SENSOR_MC2_UR	64	yes	local sensor, mode cleaner 2, upper-right
2	L1	::	SUS - SENSOR_MC2_LL	64	yes	local sensor, mode cleaner 2, lower-left
3	L1	::	SUS - SENSOR_MC2_LR	64	yes	local sensor, mode cleaner 2, lower-right
4	L1	::	SUS - SENSOR_MC2_S	64	yes	local sensor, mode cleaner 2, side
5	L1	::	SUS - SENSOR_MC3_UL	64	yes	local sensor, mode cleaner 3, upper-left
6	L1	::	SUS - SENSOR_MC3_UR	64	yes	local sensor, mode cleaner 3, upper-right
7	L1	::	SUS - SENSOR_MC3_LL	64	yes	local sensor, mode cleaner 3, lower-left
8	L1	::	SUS - SENSOR_MC3_LR	64	yes	local sensor, mode cleaner 3, lower-right
9	L1	::	SUS - SENSOR_MC3_S	64	yes	local sensor, mode cleaner 3, side
10	L1	::	SUS - SENSOR_FM1_UL	64	yes	local sensor, folding mirror 1, upper-left
11	L1	::	SUS - SENSOR_FM1_UR	64	yes	local sensor, folding mirror 1, upper-right
12	L1	::	SUS - SENSOR_FM1_LL	64	yes	local sensor, folding mirror 1, lower-left
13	L1	::	SUS - SENSOR_FM1_LR	64	yes	local sensor, folding mirror 1, lower-right
14	L1	::	SUS - SENSOR_FM1_S	64	yes	local sensor, folding mirror 1, side
15	L1	::	SUS - SENSOR_MMT1_UL	64	yes	local sensor, mode matching 1, upper-left
16	L1	::	SUS - SENSOR_MMT1_UR	64	yes	local sensor, mode matching 1, upper-right
17	L1	::	SUS - SENSOR_MMT1_LL	64	yes	local sensor, mode matching 1, lower-left
18	L1	::	SUS - SENSOR_MMT1_LR	64	yes	local sensor, mode matching 1, lower-right
19	L1	::	SUS - SENSOR_MMT1_S	64	yes	local sensor, mode matching 1, side
20	L1	::	SUS - SENSOR_MMT2_UL	64	yes	local sensor, mode matching 2, upper-left
21	L1	::	SUS - SENSOR_MMT2_UR	64	yes	local sensor, mode matching 2, upper-right
22	L1	::	SUS - SENSOR_MMT2_LL	64	yes	local sensor, mode matching 2, lower-left
23	L1	::	SUS - SENSOR_MMT2_LR	64	yes	local sensor, mode matching 2, lower-right
24	L1	::	SUS - SENSOR_MMT2_S	64	yes	local sensor, mode matching 2, side
25	L1	::	SUS - SENSOR_MMT3_UL	64	yes	local sensor, mode matching 3, upper-left
26	L1	::	SUS - SENSOR_MMT3_UR	64	yes	local sensor, mode matching 3, upper-right
27	L1	::	SUS - SENSOR_MMT3_LL	64	yes	local sensor, mode matching 3, lower-left
28	L1	::	SUS - SENSOR_MMT3_LR	64	yes	local sensor, mode matching 3, lower-right
29	L1	::	SUS - SENSOR_MMT3_S	64	yes	local sensor, mode matching 3, side
30						
31						

Rack: 1X22
DCU: L4KDAQS2
ADC: 2

CH#	-----	Rate	Frame	Description
0	L1 :: PSL - REFCAV_I	16384	yes	reference cavity, I-phase
1	L1 :: PSL - REFCAV_DC	16	yes	reference cavity, DC signal
2	L1 :: PSL - REFCAV_TRANS	16	yes	reference cavity, transmitted signal
3	L1 :: PSL - LASER_FREQUENCY_EOM	16384	yes	control signal for frequency stabilization, electro-opt.
4	L1 :: PSL - LASER_FREQUENCY_FAST	16384	yes	control signal for frequency stabilization, fast PZT
5	L1 :: PSL - LASER_FREQUENCY_SLOW	256	yes	control signal for frequency stabilization, slow PZT
6	L1 :: PSL - LASER_FREQUENCY_AOM	16384	yes	control signal for frequency stabilization, acousto-opt.
7	L1 :: PSL - LASER_POWER	16384	yes	laser power monitor
8	L1 :: PSL - PMC_I	16384	yes	pre-mode cleaner, I-phase
9	L1 :: PSL - PMC_DC	16	yes	pre-mode cleaner, DC signal
10	L1 :: PSL - PMC_TRANS	16	yes	pre-mode cleaner, transmitted signal
11	L1 :: PSL - LASER_POWER_RAW	16384	yes	raw laser power going to IOO
12	L1 :: PSL - LASER_FREQUENCY_AOM_OFS	16384	no	stimulus for laser frequency offset, AOM
13	L1 :: PSL - LASER_POWER_OFS	16384	no	stimulus for laser power modulation
14	L1 :: IOO - WFS_MM1_D_I	256	no	mode matching sensor 1, disk, I-phase
15	L1 :: IOO - WFS_MM1_R1_I	256	no	mode matching sensor 1, ring segment 1, I-phase
16	L1 :: IOO - WFS_MM1_R2_I	256	no	mode matching sensor 1, ring segment 2, I-phase
17	L1 :: IOO - WFS_MM1_R3_I	256	no	mode matching sensor 1, ring segment 3, I-phase
18	L1 :: IOO - WFS_MM1_D_Q	256	no	mode matching sensor 1, disk, Q-phase
19	L1 :: IOO - WFS_MM1_R1_Q	256	no	mode matching sensor 1, ring segment 1, Q-phase
20	L1 :: IOO - WFS_MM1_R2_Q	256	no	mode matching sensor 1, ring segment 2, Q-phase
21	L1 :: IOO - WFS_MM1_R3_Q	256	no	mode matching sensor 1, ring segment 3, Q-phase
22	L1 :: IOO - WFS_MM2_D_I	256	no	mode matching sensor 2, disk, I-phase
23	L1 :: IOO - WFS_MM2_R1_I	256	no	mode matching sensor 2, ring segment 1, I-phase
24	L1 :: IOO - WFS_MM2_R2_I	256	no	mode matching sensor 2, ring segment 2, I-phase
25	L1 :: IOO - WFS_MM2_R3_I	256	no	mode matching sensor 2, ring segment 3, I-phase
26	L1 :: IOO - WFS_MM2_D_Q	256	no	mode matching sensor 2, disk, Q-phase
27	L1 :: IOO - WFS_MM2_R1_Q	256	no	mode matching sensor 2, ring segment 1, Q-phase
28	L1 :: IOO - WFS_MM2_R2_Q	256	no	mode matching sensor 2, ring segment 2, Q-phase
29	L1 :: IOO - WFS_MM2_R3_Q	256	no	mode matching sensor 2, ring segment 3, Q-phase
30				
31				

Rack: 1X22
DCU: L4KDAQS2
ADC: 3

CH# -----			Rate	Frame	Description
0	L1	:: IOO - LENGTH_MODECLEANER	256	yes	control signal for mode cleaner length
1	L1	:: IOO - TEST_IN1	256	no	stimulus after servo feedback split: MC path
2	L1	:: IOO - TEST_IN2	16384	no	stimulus after servo feedback split: laser path
3	L1	:: IOO - TEST_OUT1	16384	no	servo test signal after error signal summing junction
4	L1	:: IOO - TEST_OUT2	16384	no	servo test signal before feedback split MC/laser
5	L1	:: IOO - MODECLEANER	16384	yes	mode cleaner length sensor, I-phase
6	L1	:: IOO - MODECLEANER_Q	16384	yes	mode cleaner length sensor, Q-phase
7	L1	:: IOO - LASER_FREQUENCY_MC	16384	yes	control signal for laser frequency
8	L1	:: IOO - MODECLEANER_I_OFS	16384	no	stimulus for mode cleaner length error signal
9	L1	:: IOO - LENGTH_MODECLEANER_OFS	16384	no	stimulus for control signal for mode cleaner length
10	L1	:: LSC - LASER_FREQUENCY	16384	yes	control signal for laser frequency
11	L1	:: LSC - POWER_ANTISYMM	16384	yes	beam intensity at the antisymmetric port
12	L1	:: LSC - POWER_REFLECTION	16384	yes	beam intensity in reflection
13	L1	:: LSC - POWER_PICKOFF	16384	yes	beam intensity inside the recycling cavity
14	L1	:: LSC - MODULATION_SB	16384	yes	modulation depth of res. sidebands
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31					

2.3. End Stations, Rack 1X20, 1Y21

01 --	Breaker / Power Panel
02 --	+24VDC Power Supply
03 --	-24VDC Power Supply
04 --	
05 --	Fiber Optic Patch Panel
06 --	
07 --	
08 --	Cable Entry Panel
09 --	
10 --	ES-3810 Ethernet Switch / ATM UpLink
11 --	
12 --	
13 --	
14 --	Cable Entry Panel
15 --	
16 --	MIPS CPU
17 --	Reflected Memory
18 --	Optical Bypass Switch
19 --	SM / MM Converter
20 --	GPS
21 --	ADC Trigger
22 --	ADC
23 --	MVME162-333
24 --	1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
25 --	Cable Entry Panel
26 --	32 Channel Interconnect Chassis
27 --	
28 --	Accelerometer Signal Conditioner
29 --	
30 --	
31 --	
32 --	
33 --	
34 --	
35 --	
36 --	
37 --	
38 --	
39 --	
40 --	
41 --	

Table 3: DAQS Mid/End Station Rack Parts List / Cost

Description	Vendor	Unit	Qty	Extd
Breaker Panel		\$600	1	\$600
24 VDC Power Supply	Power 10	\$1050	2	\$2,100
VME Crate		\$3,200	1	\$3,200
Cable Entry Panel	LIGO	\$50	1	\$50
GPS		\$1,200	1	\$1,200
32 Channel Interconnect	LIGO	\$900	2	\$1,800
MIPS Processor	Heurikon	\$6000	1	\$6,000
Reflected Memory (2Mbyte)	VMIC	\$7,400	1	\$7,400
Optical Bypass Switch	VMIC	\$1,200	1	\$1,200
Single Mode to Multi-mode Fibre Converter	VMIC	\$6,400	1	\$6,400
ADC Trigger	LIGO	\$400	1	\$400
32 Channel ADC	ICS	\$16,000	1	\$16,000
MVME162-333 Processor	Motorola	\$4,500	1	\$4,500
Total				\$50,850

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Rack: 1X17
DCU: L4KDAQS3
ADC: 1

CH# -----			Rate	Frame	Description
0	L1	:: SUS - COIL_ETMX_UL	2048	yes	coil current readback, ETM X, upper-left
1	L1	:: SUS - COIL_ETMX_UR	2048	yes	coil current readback, ETM X, upper-right
2	L1	:: SUS - COIL_ETMX_LL	2048	yes	coil current readback, ETM X, lower-left
3	L1	:: SUS - COIL_ETMX_LR	2048	yes	coil current readback, ETM X, lower-right
4	L1	:: SUS - COIL_ETMX_S	2048	yes	coil current readback, ETM X, side
5	L1	:: SUS - COIL_ETMX_SUM	16384	yes	coil current readback, ETM X, sum
6	L1	:: SUS - SENSOR_ETMX_UL	64	yes	local sensor, ETM X, upper-left
7	L1	:: SUS - SENSOR_ETMX_UR	64	yes	local sensor, ETM X, upper-right
8	L1	:: SUS - SENSOR_ETMX_LL	64	yes	local sensor, ETM X, lower-left
9	L1	:: SUS - SENSOR_ETMX_LR	64	yes	local sensor, ETM X, lower-right
10	L1	:: SUS - SENSOR_ETMX_S	64	yes	local sensor, ETM X, side
11	L1	:: LSC - POWER_ARMX	16384	yes	beam intensity in transmission of ETM X
12	L1	:: LSC - CALIBRATION_ETMX	16384	yes	photon calibrator photodiode, ETM X
13	LPM	:: PEM - SEIS_Ea_X	256	yes	end station 'a' seismometer, x direction
14	LPM	:: PEM - SEIS_Ea_Y	256	yes	end station 'a' seismometer, y direction
15	LPM	:: PEM - SEIS_Ea_Z	256	yes	end station 'a' seismometer, z direction
16	LPM	:: PEM - TILT_Ea_X	256	yes	end station 'a' tiltmeter, about x
17	LPM	:: PEM - TILT_Ea_Y	256	yes	end station 'a' tiltmeter, about y
18	LPM	:: PEM - ACC_BSC4_1X	2048	yes	accelerometer signal, BSC4, triaxial unit 1, x
19	LPM	:: PEM - ACC_BSC4_1Y	2048	yes	accelerometer signal, BSC4, triaxial unit 1, y
20	LPM	:: PEM - ACC_BSC4_1Z	2048	yes	accelerometer signal, BSC4, triaxial unit 1, z
21	LPM	PEM - MIC_BSC4	2048	yes	microphone, BSC4
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23					
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29					
30					
31					

Rack: 1Y18
DCU: L4KDAQS4
ADC: 2

CH# -----				Rate	Frame	Description
0	L1	::	SUS - COIL_ETMY_UL	2048	yes	coil current readback, ETM Y, upper-left
1	L1	::	SUS - COIL_ETMY_UR	2048	yes	coil current readback, ETM Y, upper-right
2	L1	::	SUS - COIL_ETMY_LL	2048	yes	coil current readback, ETM Y, lower-left
3	L1	::	SUS - COIL_ETMY_LR	2048	yes	coil current readback, ETM Y, lower-right
4	L1	::	SUS - COIL_ETMY_S	2048	yes	coil current readback, ETM Y, side
5	L1	::	SUS - COIL_ETMY_SUM	16384	yes	coil current readback, ETM Y, sum
6	L1	::	SUS - SENSOR_ETMY_UL	64	yes	local sensor, ETM Y, upper-left
7	L1	::	SUS - SENSOR_ETMY_UR	64	yes	local sensor, ETM Y, upper-right
8	L1	::	SUS - SENSOR_ETMY_LL	64	yes	local sensor, ETM Y, lower-left
9	L1	::	SUS - SENSOR_ETMY_LR	64	yes	local sensor, ETM Y, lower-right
10	L1	::	SUS - SENSOR_ETMY_S	64	yes	local sensor, ETM Y, side
11	L1	::	LSC - POWER_ARMY	16384	yes	beam intensity in transmission of ETM Y
12	L1	::	LSC - CALIBRATION_ETMY	16384	yes	photon calibrator photodiode, ETM Y
13	LPM	::	PEM - SEIS_Eb_X	256	yes	end station 'b' seismometer, x direction
14	LPM	::	PEM - SEIS_Eb_Y	256	yes	end station 'b' seismometer, y direction
15	LPM	::	PEM - SEIS_Eb_Z	256	yes	end station 'b' seismometer, z direction
16	LPM	::	PEM - TILT_Eb_X	256	yes	end station 'b' tiltmeter, about x
17	LPM	::	PEM - TILT_Eb_Y	256	yes	end station 'b' tiltmeter, about y
18	LPM	::	PEM - ACC_BSC5_1X	2048	yes	accelerometer signal, BSC5, triaxial unit 1, x
19	LPM	::	PEM - ACC_BSC5_1Y	2048	yes	accelerometer signal, BSC5, triaxial unit 1, y
20	LPM	::	PEM - ACC_BSC5_1Z	2048	yes	accelerometer signal, BSC5, triaxial unit 1, z
21	LPM		PEM - MIC_BSC5	2048	yes	microphone, BSC5
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

3 DAQS CONTROLLER AND EPICS DATA COLLECTION (EDCU) / EPICS DATA SERVER UNITS (EDSU)

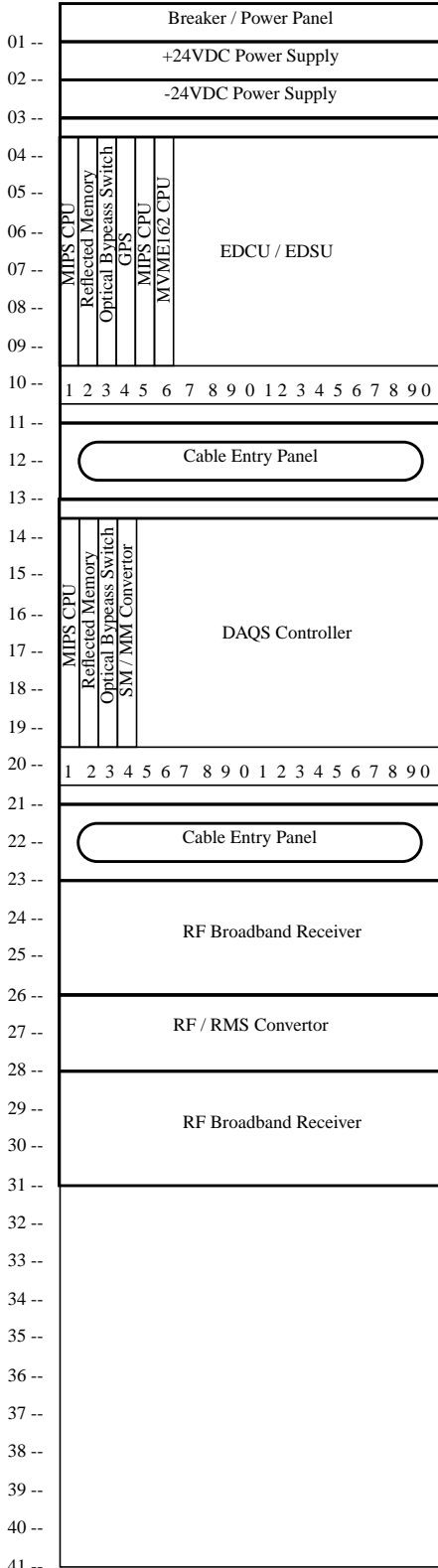


Table 4: DAQS Controller / EDCU /EDSU Parts List / Cost

Description	Vendor	Unit	Qty	Extd
Breaker Panel		\$600	1	\$600
24 VDC Power Supply	Power 10	\$1,050	2	\$2,100
Cable Entry Panel		\$50	1	\$50
MIPS Processor	Heurikon	\$6000	3	\$18,000
Reflected Memory (4Mbyte)	VMIC	\$9,200	2	\$18,400
Optical Bypass Switch	VMIC	\$1,200	2	\$2,400
SM / MM Convertor	VMIC	\$6,400	1	\$6,400
MVME-162-333 Processor	Motorola	\$4500	1	\$4,500
RF / RMS Convertor	LIGO	\$5,000	1	\$5,000
Total				\$57,450

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4 DAQS DATA STORAGE SYSTEM

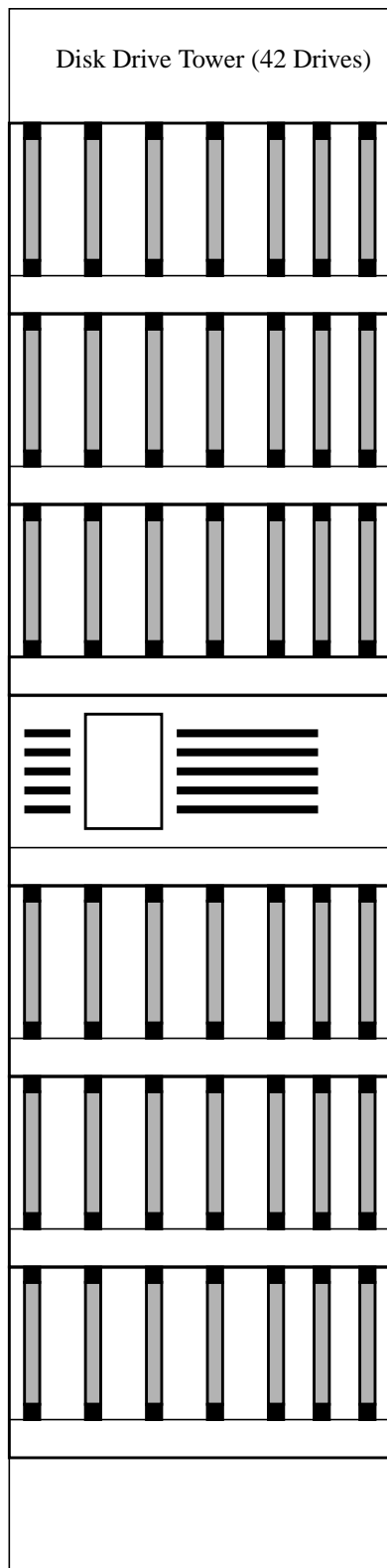
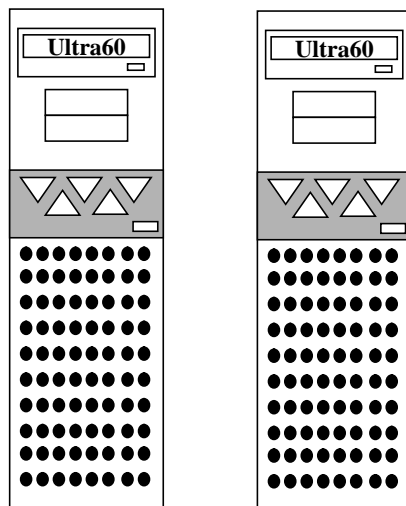


Table 5: DAQS Data Storage System Components / Cost

Description	Vendor	Unit	Qty	Extd
372GB RAID	Cybernetics	\$93,370	1	\$93,370
Ultra 60	Sun	\$23,000	2	\$46,000
Reflected Memory (4Mbyte)	VMIC	\$9,200	2	\$18,400
Total				\$157,770



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