CABLE LENGTHS, CORNER STATION, H1 & H2

Cable lengths are based on D1002404-v4

D1002704, Rack and Cable Tray Layout, LVEA, H1 H2

Cable lengths to racks are the worksheets are to the bottom of the rack (coming in from above the rack).

Lengths are given from the 3 entry/exit points for cable trays into/out-of the LVEA (points A & B for H1 and point C for H2).

Lengths from racks in the LVEA to their associated chamber or equipment are not (yet) listed, but can be obtained from looking at Drawing D1002704

Cable lengths have an added margin of 10 feet, or 5%, whichever is largest.

The chamber designations for aLIGO are given in the files for LHO and LLO respectively:

D0901477-v2 file, Vacuum Chamber Designations for LHO aLIGO

D0901490-v1 file, Vacuum Chamber Designations for LLO aLIGO

The designations (naming conventions) for the feedthrough ports (optical and electrical) are given in these drawings:

D980227-x0, Naming Conventions, BSC Ports

D980226-x0, Naming Conventions for Ports on HAM Chamber

D980228-x0, Naming Conventions for Ports on Adapter

The orientation of the chambers (0 degree and support tubes for BSC chambers; orientation of the large bellows on the HAM chamber), is given in the following iLIGO drawings for LHO:

D961165-v1, LIGO Vacuum Equipment Arrangement Plan, Corner Station, Washington Site

D961169-v1, LIGO Vacuum Equipment Arrangement Plan, X-End Station, Washington Site

D961171-v1, LIGO Vacuum Equipment Arrangement Plan, Y-End Station, Washington Site

and for iLIGO LLO in these drawings:

D970383-v1, LIGO Vacuum Equipment Arrangement Plan, Corner Station, Louisiana Site

D970384-v1, LIGO Vacuum Equipment Arrangement Plan, X-End Station, Louisiana Site

D970385-v1, LIGO Vacuum Equipment Arrangement Plan, Y-End Station, Louisiana Site

In aLIGO, the BSC chambers in the corner stations and end stations of both observatories are not moved, so the orientation is the same as in iLIGO. However, at LHO the chambers from the mid-station are relocated to the end stations as H2 end test mass chambers. The orientation of these H2 end chambers will be the same as the H1 end chambers.

The HAM chambers are all oriented so that the large bellows is always toward the vertex.

See also

D0901469-v5, aLIGO LHO X-End Layout

D0901467-v5, aLIGO LHO Y-End Layout

H1 - POINT A TO LVEA LOCATIONS

		LENGTH (ft)	
POINT	**RACK or PORT or SITE**	**BASIC**	**with margin**
A	SUS-H1-R1	56	66
A	WMCA1 ports	61	70
A	WHAM2, port D1	59	69
A	WHAM2, port D2	62	71
A	WHAM2, port D3	65	74
A	WHAM2, port D4	72	82
A	WHAM2, port D5	75	84
A	WHAM2, port D6	78	87
A	WHAM1, port D1	67	77
A	WHAM1, port D2	69	79
A	WHAM1, port D3	73	82
A	WHAM1, port D4	81	90
A	WHAM1, port D5	83	92
A	WHAM1, port D6	86	96
A	ISC-H1-R2	97	106
A	ISC-H1-R1	102	111
A	PSL-H1-R2	107	117
A	PSL-H1-R1	112	122
A	SEI-H1-G1	117	127
A	PSL-H1-T1	117	126
A	SUS-H1-R2	41	50
A	WMCB1 ports	45	54
A	WHAM3, port D1	57	67
A	WHAM3, port D2	59	69
A	WHAM3, port D3	62	72
A	WHAM3, port D4	49	59
A	WHAM3, port D5	51	61
A	WHAM3, port D6	55	64
A	WBSC2, far side, E & F ports	65	74
A	WBSC2, far side, G ports	69	79
A	WBSC3, far side, E & F ports	86	95
A	WBSC3, far side,G ports	90	100
A	SUS-H1-R5	101	111
A	TCS-H1-R1	76	85
A	TCS-H1-R2	90	99
A	SUS-H1-R6	91	101
A	SEI-H1-G3	95	105
A	WBSC1, far side, E & F ports	78	87
A	WBSC1, far side, G ports	82	92
A	OPLEV-H1-Y1	193	202

H1 - POINT A TO RACK ROOM

		LENGTH (ft)	
POINT	**RACK**	**BASIC**	**with margin**
A	H1-PSL-C1	21	31
A	H1-UNK-C4	23	33
A	H1-UNK-C5	25	35
A	H1-AOS-C1	27	37
A	H1-SEI-C1	33	42
A	H1-SEI-C2	35	44
A	H1-SEI-C3	37	46
A	H1-SEI-C4	39	48
A	H1-SEI-C5	41	50
A	H1-SEI-C6	43	52
A	H1-SUS-C4	21	30
A	H1-SUS-C3	23	32
A	H1-SUS-C2	25	34
A	H1-SUS-C1	27	36
A	H1-SUS-C5	35	45
A	H1-SUS-C6	33	43
A	H1-SUS-C7	32	41
A	H1-SUS-C8	33	43
A	H1-PEM-C1	42	51
A	H1-UNK-C3	40	49
A	H1-UNK-C2	38	48
A	H1-UNK-C1	40	49
A	H1-ISC-C1	49	59
A	H1-ISC-C2	47	57
A	H1-ISC-C3	46	55
A	H2-LDR-C1	54	64
A	H1-LDR-C2	53	62
A	H1-LDR-C1	54	64
A	H1-VDC-C1	33	43
A	H1-VDC-C2	35	45
A	H1-VDC-C3	37	47
A	H1-VDC-C4	39	49

H1 - POINT B TO LVEA LOCATIONS

		LENGTH (ft)	
POINT	**RACK or PORT or SITE**	**BASIC**	**with margin**
B	SUS-H1-R3	34	44
B	WMCB2 ports	38	47
B	WHAM4, port D1	57	66
B	WHAM4, port D2	53	63
B	WHAM4, port D3	51	61
B	WHAM4, port D4	43	53
B	WHAM4, port D5	46	55
B	WHAM4, port D6	49	58
B	TCS-H1-R1	53	63
B	WBSC2, far side, E & F ports	58	68
B	WBSC2, far side, G ports	63	72
B	WBSC3, far side, E & F ports	71	81
B	WBSC3, far side,G ports	76	85
B	SUS-H1-R5	87	96
B	H1-TCS-CHILLER	95	104
B	WMCA2 ports	59	68
B	WHAM5, port D1	67	77
B	WHAM5, port D2	64	73
B	WHAM5, port D3	62	71
B	WHAM5, port D4	70	79
B	WHAM5, port D5	72	82
B	WHAM5, port D6	75	85
B	WHAM6, port D1	75	85
B	WHAM6, port D2	72	82
B	WHAM6, port D3	70	79
B	WHAM6, port D4	78	88
B	WHAM6, port D5	80	90
B	WHAM6, port D6	84	93
B	ISC-H1-R3	86	95
B	SUS-H1-R4	88	98
B	SEI-GND-H1-2	92	102
B	OPLEV-H1-X1	207	217

H1 - POINT B TO RACK ROOM

		LENGTH (ft)	
POINT	**RACK**	**BASIC**	**with margin**
B	H1-PSL-C1	25	34
B	H1-UNK-C4	23	32
B	H1-UNK-C5	21	30
B	H1-AOS-C1	19	29
B	H1-SEI-C1	24	34
B	H1-SEI-C2	26	36
B	H1-SEI-C3	28	38
B	H1-SEI-C4	30	40
B	H1-SEI-C5	32	42
B	H1-SEI-C6	34	44
B	H1-SUS-C4	32	41
B	H1-SUS-C3	34	43
B	H1-SUS-C2	35	44
B	H1-SUS-C1	37	46
B	H1-SUS-C5	26	36
B	H1-SUS-C6	28	38
B	H1-SUS-C7	30	40
B	H1-SUS-C8	32	42
B	H1-PEM-C1	33	42
B	H1-UNK-C3	35	44
B	H1-UNK-C2	37	46
B	H1-UNK-C1	39	48
B	H1-ISC-C1	40	50
B	H1-ISC-C2	42	52
B	H1-ISC-C3	44	54
B	H2-LDR-C1	46	56
B	H1-LDR-C2	45	54
B	H1-LDR-C1	46	56
A	H1-VDC-C1	37	46
A	H1-VDC-C2	35	44
A	H1-VDC-C3	33	42
A	H1-VDC-C4	31	41

H1 - LVEA RACK TO CHAMBER/TABLE

		LENGTH (ft)	
RACK	**CHAMBER/TABLE**	**BASIC**	**with margin**
ISC-H1-R1	H1-ISCHT1	32	41
ISC-H1-R1	WHAM1, port D1	49	59
ISC-H1-R1	WHAM1, port D2	52	61
ISC-H1-R1	WHAM1, port D3	55	64
ISC-H1-R1	WHAM1, port D4	47	56
ISC-H1-R1	WHAM1, port D5	43	53
ISC-H1-R1	WHAM1, port D6	41	51
ISC-H1-R2	H1-ISCHT1	27	36
ISC-H1-R2	WHAM1, port D1	44	54
ISC-H1-R2	WHAM1, port D2	46	56
ISC-H1-R2	WHAM1, port D3	50	59
ISC-H1-R2	WHAM1, port D4	41	51
ISC-H1-R2	WHAM1, port D5	38	48
ISC-H1-R2	WHAM1, port D6	36	45
SUS-H1-R1	WHAM2, port D1	30	39
SUS-H1-R1	WHAM2, port D2	32	41
SUS-H1-R1	WHAM2, port D3	35	45
SUS-H1-R1	WHAM2, port D4	44	53
SUS-H1-R1	WHAM2, port D5	40	50
SUS-H1-R1	WHAM2, port D6	38	48
SUS-H1-R2	WHAM3, port D1	37	46
SUS-H1-R2	WHAM3, port D2	39	48
SUS-H1-R2	WHAM3, port D3	42	52
SUS-H1-R2	WHAM3, port D4	34	43
SUS-H1-R2	WHAM3, port D5	30	40
SUS-H1-R2	WHAM3, port D6	28	38
TCS-H1-R1	H1-TCSHT4R	29	39
TCS-H1-R1	H1-TCSX	50	59
SUS-H1-R3	WHAM4, port D1	42	52
SUS-H1-R3	WHAM4, port D2	39	48
SUS-H1-R3	WHAM4, port D3	37	46
SUS-H1-R3	WHAM4, port D4	29	38
SUS-H1-R3	WHAM4, port D5	31	40
SUS-H1-R3	WHAM4, port D6	34	44
ISC-H1-R3	WHAM6, port D1	42	52
ISC-H1-R3	WHAM6, port D2	39	48
ISC-H1-R3	WHAM6, port D3	37	46
ISC-H1-R3	WHAM6, port D4	29	38
ISC-H1-R3	WHAM6, port D5	31	40
ISC-H1-R3	WHAM6, port D6	34	44
SUS-H1-R4	WHAM5, port D1	53	62
SUS-H1-R4	WHAM5, port D2	50	59
SUS-H1-R4	WHAM5, port D3	47	57

H1 - LVEA RACK TO CHAMBER/TABLE

		LENGTH (ft)	
RACK	**CHAMBER/TABLE**	**BASIC**	**with margin**
SUS-H1-R4	WHAM5, port D4	39	49
SUS-H1-R4	WHAM5, port D5	41	51
SUS-H1-R4	WHAM5, port D6	45	54
SUS-H1-R4	WHAM6, port D1	45	54
SUS-H1-R4	WHAM6, port D2	41	51
SUS-H1-R4	WHAM6, port D3	39	49
SUS-H1-R4	WHAM6, port D4	31	40
SUS-H1-R4	WHAM6, port D5	33	42
SUS-H1-R4	WHAM6, port D6	36	46
SUS-H1-R5	WBSC2, far side, E & F ports	69	79
SUS-H1-R5	WBSC3, far side, E & F ports	40	49
SUS-H1-R6	WBSC1, far side, E & F ports	37	47
SUS-H1-R6	WBSC2, far side, E & F ports	66	76
TCS-H1-R2	H1-TCSY	20	30

H2 - POINT C TO LVEA LOCATIONS

		LENGTH (ft)	
POINT	**RACK or PORT or SITE**	**BASIC**	**with margin**
C	SUS-H2-R1	155	164
C	WMCA3 ports	159	168
C	WHAM8, port D1	164	174
C	WHAM8, port D2	166	176
C	WHAM8, port D3	170	179
C	WHAM8, port D4	178	188
C	WHAM8, port D5	175	184
C	WHAM8, port D6	173	182
C	WHAM7, port D1	173	182
C	WHAM7, port D2	175	184
C	WHAM7, port D3	178	188
C	WHAM7, port D4	186	196
C	WHAM7, port D5	183	193
C	WHAM7, port D6	181	190
C	ISC-H2-R2	195	204
C	ISC-H2-R1	200	209
C	PSL-H2-R2	205	215
C	PSL-H2-R1	210	220
C	SEI-H2-G3	216	226
C	PSL-H2-T1	215	225
C	SUS-H2-R2	122	132
C	WMCB3 ports	116	126
C	WHAM9, port D1	107	117
C	WHAM9, port D2	109	119
C	WHAM9, port D3	113	122
C	WHAM9, port D4	121	130
C	WHAM9, port D5	118	127
C	WHAM9, port D6	115	125
C	WBSC4, far side, E & F ports	99	109
C	WBSC4, far side, G ports	104	113
C	WBSC7, far side, E & F ports	122	131
C	WBSC7, far side,G ports	126	136
C	SUS-H2-R5	104	114
C	TCS-H2-R1	199	208
C	TCS-H2-R2	70	80
C	SUS-H2-R6	85	95
C	SEI-H2-G3	116	125
C	WBSC8, far side, E & F ports	68	77
C	WBSC8, far side, G ports	72	82
C	OPLEV-H2-Y1	92	102
C	SUS-H2-R3	77	86
C	WMCB4 ports	82	91
C	WHAM10, port D1	95	104

H2 - POINT C TO LVEA LOCATIONS

		LENGTH (ft)	
POINT	**RACK or PORT or SITE**	**BASIC**	**with margin**
C	WHAM10, port D2	97	106
C	WHAM10, port D3	100	110
C	WHAM10, port D4	92	101
C	WHAM10, port D5	88	98
C	WHAM10, port D6	86	96
C	TCS-H2-R3	72	81
C	TCS-H2-XC	18	27
C	TCS-H2-YC	18	27
C	WMCA4 ports	79	88
C	WHAM11, port D1	81	90
C	WHAM11, port D2	83	92
C	WHAM11, port D3	86	96
C	WHAM11, port D4	95	104
C	WHAM11, port D5	91	101
C	WHAM11, port D6	89	99
C	WHAM12, port D1	89	99
C	WHAM12, port D2	91	101
C	WHAM12, port D3	95	104
C	WHAM12, port D4	103	113
C	WHAM12, port D5	100	109
C	WHAM12, port D6	98	107
C	ISC-H2-R3	104	113
C	SUS-H2-R4	106	115
C	SEI-GND-H2-2	110	119
C	OPLEV-H2-X1	222	233

H2 - POINT C TO RACK ROOM

		LENGTH (ft)	
POINT	**RACK**	**BASIC**	**with margin**
C	H2-PSL-C1	32	42
C	H2-UNK-C4	34	44
C	H2-UNK-C5	36	46
C	H2-AOS-C1	38	48
C	H2-SEI-C1	43	53
C	H2-SEI-C2	45	55
C	H2-SEI-C3	47	57
C	H2-SEI-C4	49	59
C	H2-SEI-C5	51	61
C	H2-SEI-C6	53	63
C	H2-SUS-C4	25	35
C	H2-SUS-C3	23	33
C	H2-SUS-C2	21	31
C	H2-SUS-C1	23	33
C	H2-SUS-C5	33	43
C	H2-SUS-C6	31	41
C	H2-SUS-C7	29	39
C	H2-SUS-C8	31	41
C	H2-PEM-C1	40	49
C	H2-UNK-C3	38	47
C	H2-UNK-C2	36	45
C	H2-UNK-C1	38	47
C	H2-ISC-C1	47	57
C	H2-ISC-C2	45	55
C	H2-ISC-C3	43	53
C	H2-VDC-C1	73	83
C	H2-VDC-C2	75	85
C	H2-VDC-C3	77	87
C	H2-VDC-C4	79	89

H2 - LVEA RACK TO CHAMBER/TABLE

		LENGTH (ft)	
RACK	**CHAMBER/TABLE**	**BASIC**	**with margin**
ISC-H2-R1	H2-ISCHT7L	31	40
ISC-H2-R1	WHAM7, port D1	51	60
ISC-H2-R1	WHAM7, port D2	53	62
ISC-H2-R1	WHAM7, port D3	56	66
ISC-H2-R1	WHAM7, port D4	48	57
ISC-H2-R1	WHAM7, port D5	44	54
ISC-H2-R1	WHAM7, port D6	42	52
ISC-H2-R2	H2-ISCHT7L	26	35
ISC-H2-R2	WHAM7, port D1	45	55
ISC-H2-R2	WHAM7, port D2	47	57
ISC-H2-R2	WHAM7, port D3	51	60
ISC-H2-R2	WHAM7, port D4	43	52
ISC-H2-R2	WHAM7, port D5	39	49
ISC-H2-R2	WHAM7, port D6	37	47
SUS-H2-R1	WHAM8, port D1	31	41
SUS-H2-R1	WHAM8, port D2	33	43
SUS-H2-R1	WHAM8, port D3	37	46
SUS-H2-R1	WHAM8, port D4	45	55
SUS-H2-R1	WHAM8, port D5	42	51
SUS-H2-R1	WHAM8, port D6	40	49
SUS-H2-R2	WHAM9, port D1	41	51
SUS-H2-R2	WHAM9, port D2	43	53
SUS-H2-R2	WHAM9, port D3	47	56
SUS-H2-R2	WHAM9, port D4	38	48
SUS-H2-R2	WHAM9, port D5	35	44
SUS-H2-R2	WHAM9, port D6	33	42
TCS-H2-R1	H2-TCSX	30	40
SUS-H2-R3	WHAM10, port D1	40	50
SUS-H2-R3	WHAM10, port D2	43	52
SUS-H2-R3	WHAM10, port D3	46	55
SUS-H2-R3	WHAM10, port D4	38	47
SUS-H2-R3	WHAM10, port D5	34	44
SUS-H2-R3	WHAM10, port D6	32	42
TCS-H2-R3	H2-TCSHT10	33	43
ISC-H2-R3	H2-ISCHT12R	36	45
ISC-H2-R3	WHAM12, port D1	36	46
ISC-H2-R3	WHAM12, port D2	38	48
ISC-H2-R3	WHAM12, port D3	42	51
ISC-H2-R3	WHAM12, port D4	34	43
ISC-H2-R3	WHAM12, port D5	30	40
ISC-H2-R3	WHAM12, port D6	28	38
SUS-H2-R4	WHAM11, port D1	47	56
SUS-H2-R4	WHAM11, port D2	49	59

H2 - LVEA RACK TO CHAMBER/TABLE

		LENGTH (ft)	
RACK	**CHAMBER/TABLE**	**BASIC**	**with margin**
SUS-H2-R4	WHAM11, port D3	52	62
SUS-H2-R4	WHAM11, port D4	44	54
SUS-H2-R4	WHAM11, port D5	41	50
SUS-H2-R4	WHAM11, port D6	39	48
SUS-H2-R4	WHAM12, port D1	39	48
SUS-H2-R4	WHAM12, port D2	41	50
SUS-H2-R4	WHAM12, port D3	44	54
SUS-H2-R4	WHAM12, port D4	36	45
SUS-H2-R4	WHAM12, port D5	32	42
SUS-H2-R4	WHAM12, port D6	30	40
SUS-H2-R5	WBSC4, far side, E & F ports	52	62
SUS-H2-R5	WBSC7, far side, E & F ports	40	50
SUS-H2-R6	WBSC8, far side, E & F ports	68	78
SUS-H2-R6	WBSC4, far side, E & F ports	41	51
TCS-H2-R2	H2-TCSY	21	30

TRAY SIZING

	dia (in)	0.637	0.514	0.411	0.375
Tray	# conductors	25 pin	15 pin	9 pin	3 pin
		164	61	24	61
		33	17	8	30
		23	26	8	8
		99	26	8	8
		111	0	0	0
		20	7	4	15
		45	28	12	38

incomplete!

Area (in^2)	height	width
299.375876	12	24.94799
73.67608742	12	6.139674
58.67914196	5	11.73583
155.5609711	6	25.92683
141.4984609	6	23.58308
40.05471257	6	6.675785
103.7601923	6	17.29337