

HPA PRODUCTS FOR MEDICAL APPLICATIONS

Example Applications

Medical Imaging

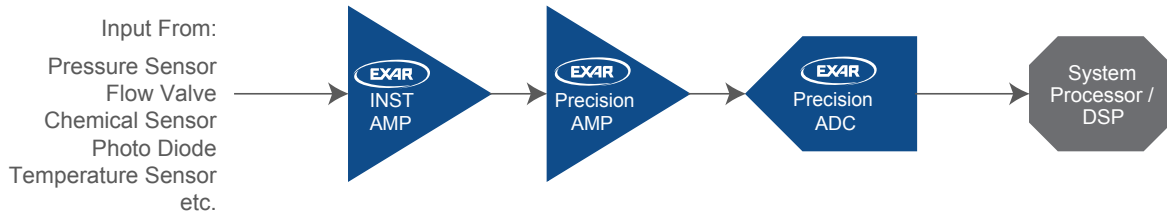
- Ultrasound
- MRI
- Patient monitors

Medical Diagnostics

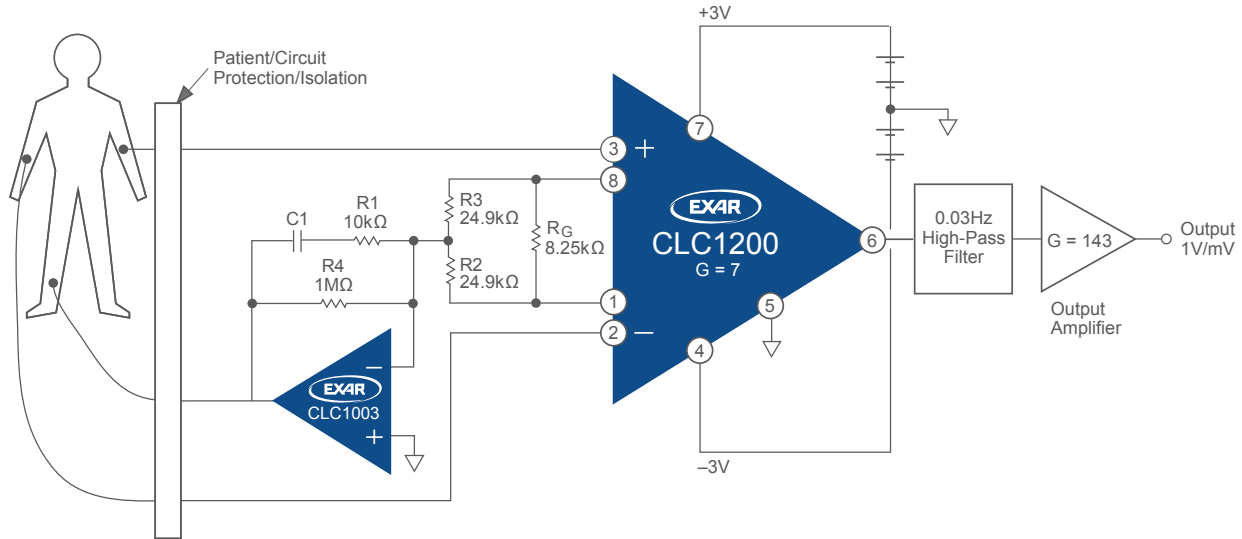
- Blood analyzer
- Thermometer
- Pulse oximetry

- Blood pressure monitor
- ECG / EKG

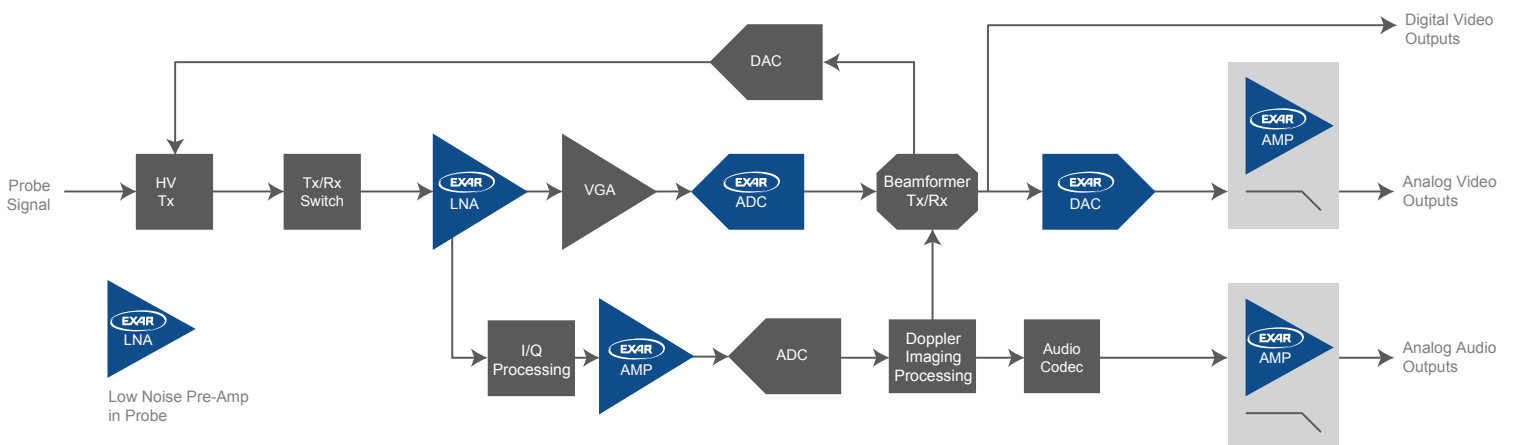
Medical Diagnostics Signal Path Block Diagram



Typical ECG Application Circuit



Medical Imaging Signal Path Block Diagram



High Performance Amplifiers

Name	# of Ch	Power Down	Rail-to-Rail	GBW (MHz)	SR (V/ μ s)	Is per Ch (mA)	en (nV/ \sqrt Hz)	Vio Max (\pm) (mV)	AOL (dB)	PSRR (dB)	CMRR (dB)	THD (dBc)	Min Vs (V)	Max Vs (V)
CLC1001	1	Yes	Out	2100	410	12.5	0.6	1	83	83	90	74	4	12
CLC1002	1	Yes	Out	965	170	13	0.6	1	83	83	90	65.5	4	12
CLC1003	1	No	In / Out	35	12	2.2	3.5	1	115	100	95	123	2.5	12
CLC1008	1	No	Out	33	50	0.505	12	5	80	66	74	60	2.5	5.5
CLC1020	1	No	Out	1	>1	0.13	39	7	80	60	65	110	2.7	5.5
CLC1050	1	No	No	0.84	0.285	0.65	40	5	100	100	70	76.5	3	36
CLC2008	2	No	Out	33	50	0.505	12	5	80	66	74	60	2.5	5.5
CLC2011	2	No	In / Out	2.5	9	0.16	22	8	80	85	80	71	2.5	5.5
CLC2023	2	No	In / Out	35	12	2.2	3.5	6	115	100	85	123	2.5	12
CLC2050	2	No	No	0.84	0.285	0.65	40	5	100	100	70	76.5	3	36
CLC2058	2	No	No	5.5	2.8	2.5	10	5	100	95	100	94	4	36
CLC2059	2	No	No	15	7	1.5	4	3	110	110	110	106	4	36
CLC4011	4	No	In / Out	2.5	9	0.16	22	8	80	85	80	71	2.5	5.5
CLC4050	4	No	No	0.84	0.285	0.65	40	5	100	100	70	76.5	3	36

Instrumentation Amplifiers

Name	# of Ch	Gain Range	Gmin (V/V)	BW @ Gmin (MHz)	Is per Ch (mA)	Max Vio (\pm) (μ V)	CMRR (dB)	en (nV/ \sqrt Hz)	Min Vs (V)	Max Vs (V)
CLC1200	1	1 to 10,000	1	0.7	1.3	125	130	6.6	4.6	36
CLC1206*	1	1 to 10,000	1	6	0.8	50	100	9	4.6	36

Note: *Available Q1 2014

Medical Imaging ADCs

Name	# of Ch	Resolution (bits)	Sample Rate (MSPS)	SNR (dBFS)	ENOB (bits)	Power Consumption per Ch (mW)	Power Dissipation (mW)	Input Type
CDK1307B	1	12	40	72.7	11.7	33	33	Diff
CDK1307C	1	12	65	72.6	11.6	50	50	Diff
CDK1308B	1	10	40	61.6	9.9	25	25	Diff
CDK1308C	1	10	65	61.6	9.9	38	38	Diff
CDK2307B	2	12	40	72.7	11.7	28	55	Diff
CDK2307C	2	12	65	72.6	11.6	43	85	Diff
CDK2308B	2	10	40	61.6	9.9	22	43	Diff
CDK2308C	2	10	65	61.6	9.9	33	65	Diff
CDK8307B	8	12	40	72.2	11.6	34	272	Diff
CDK8307C	8	12	65	72.2	11.6	40	321	Diff

Triple Video DACs

Name	# of Ch	Resolution (bits)	Conversion Rate (MWPS)	DLE (%/FS)	ILE (%/FS)	Power Dissipation (mW)	Min Vs (V)	Max Vs (V)
CDK3400	3	10	100	\pm 0.1	\pm 0.1	655	4.75	5.25
CDK3401	3	10	150	\pm 0.1	\pm 0.1	655	4.75	5.25
CDK3402	3	8	100	\pm 0.2	\pm 0.2	655	4.75	5.25
CDK3403	3	8	150	\pm 0.2	\pm 0.2	655	4.75	5.25
CDK3404	3	8	180	\pm 0.5 max (LSB)	\pm 0.5 max (LSB)	300	3.0	3.6
CDK3405	3	8	180	\pm 0.5 max (LSB)	\pm 0.5 max (LSB)	300	3.0	3.6