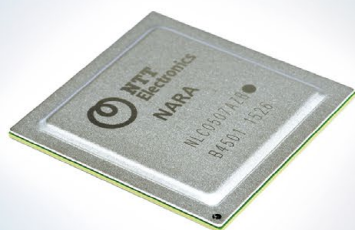
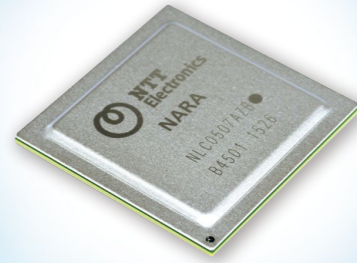


Video Codec LSIs





Encode	Decode	Transcode
H.265/HEVC	H.264/AVC	MPEG-2
4:2:2	4:2:0	RoHS

H.265/HEVC 4Kp60 4:2:2 Encoder LSI Series

NARA series

NARA Series is 4K video encoder LSI, which is suitable for high video quality applications such as broadcasting. It supports both H.265/HEVC and H.264/AVC. It allows users to use their encoder combined with current H.264/AVC decoders, and users will get a chance to upgrade the encoder to H.265/HEVC compatible in the future.

Features

- H.265/HEVC 4K 4:2:2 encoding
- H.264/AVC 4:2:2 encoding
- Excellent video quality proved by 2+ decades of experience in broadcast market
- Wide range bitrate for various applications
- 100 msec super low delay at 4K, 33 msec at 2K *1
- Multi channel encoding *2

*1 Decoder box product (HC11000D, HC10000D or MVD7000) of NTT Electronics needs to be used as a pair to achieve super low delay.

*2 Multi-channel encoding cannot be used in super low latency.

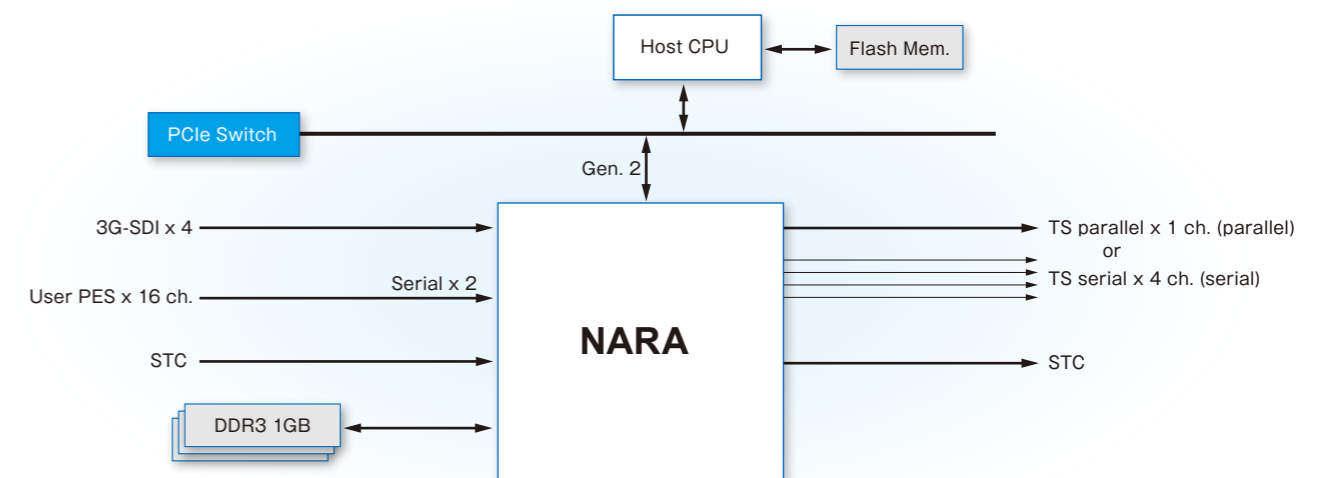
Applications

- Field Pickup Unit (FPU)
- Satellite News Gathering (SNG)
- Electronic News Gathering (ENG)
- IP transmission
- Video distribution, Over The Top (OTT)
- Public viewing
- High reality viewing of live event
- Remote control and remote communication

Specifications

Item	Description
Compression	ITU-T H.265 ISO/IEC 23008-2 High Efficiency Video Coding, and ITU-T H.264 ISO/IEC 14496-10 Advanced Video Coding
Video Input Interface	3G-SDI/HD/SD-SDI (SMPTE ST 424, 292, 259) x4 (SDI0-3)
PES Input Interface	Serial (8 PESs per 1 port) x2 ports (Up to 16 PESs)
TS Output Interface	MPEG-2 TS (8-bit parallel x1 or Serial x4)
Host CPU Interface	PCI Express (Gen2 x1 lane)
Package	FCLBGA 1152-ball (size: 35mm x 35mm, ball pitch: 1mm)
External Memories	DDR3-2133 (CL=14, 4Gbit, x16bits) x6 or 2 (DDR3L is available.)
Power consumption	1.8V, 1.5V, 0.9V

Configuration



Product lineup of NARA series

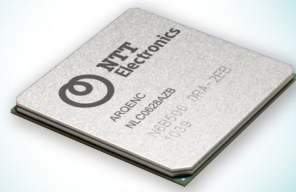
- **NARA-H41** H.265/HEVC, 4:2:2, 4K to SDTV
- **NARA-H40** H.265/HEVC, 4:2:0, 4K to SDTV
- **NARA-A21** H.264/AVC, 4:2:2, HDTV to SDTV
- **NARA-A20** H.264/AVC, 4:2:0, HDTV to SDTV

* For details and optional functions, please contact to your sales representatives.

Encode	Decode	Transcode
H.265/HEVC	H.264/AVC	MPEG-2
4:2:2	4:2:0	RoHS

H.264/AVC
HDTV 4:2:2 Encoder LSI Series

ARQENC Series



ARQENC series are single chip H.264/AVC HDTV encoder LSI series of superior video quality utilizing sophisticated encoding algorithms of NTT Electronics Corporation. It supports 4:2:2 chroma and achieves high 4:2:2 profile encoding for the applications which request high video quality.

Features

- Support for HDTV high 4:2:2 profile and 1080/60p 4:2:0
- Excellent video quality endorsed by more than a decade of experience in video codec technologies
- Scene adaptive rate control for various application
- Super low latency *
* SARADEC2 should be used as a pair in order to achieve 33 msec latency

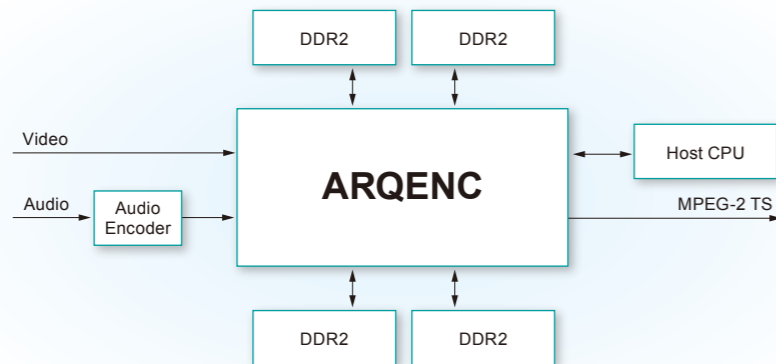
Applications

- Satellite News Gathering (SNG)
- Electronic News Gathering (ENG)
- Field Pick up Units (FPU)
- IP transmission
- Wireless camera
- Video server
- IPTV

Specifications

Compression technology	ISO/IEC14496-10 (H.264/AVC), High422 (8 bit), High, Main Profile up to Level 4.1
Video Input Interface	SMPTE 274M/SMPTE 296M/ITU-R BT.656
PES Input Interface	Serial x 5 ports
TS Output Interface	MPEG-2 TS (ISO/IEC 13818-1), 8 bit parallel
Host CPU Interface	32 bit/16 bit data bus (selectable)
Package	900 pin HFCBGA, 31.0 mm x 31.0 mm
External Memories	4 or 2 x 16 bit DDR2 SDRAM (DDR2-800)
Power Supply	3.3 V, 2.5 V, 1.8 V, 1.0 V
Power Consumption	2.0 W (typ.)/2.2 W (typ. for 1080/60p)

Configuration



ARQENC Series

ARQENC	Regular latency HDTV 1080/60i 4:2:2/4:2:0	ARQENC-S1	Super low latency at 33 msec HDTV 1080/60i 4:2:2/4:2:0
ARQENC-P	Regular latency HDTV 1080/60p 4:2:0 HDTV 1080/60i 4:2:2/4:2:0	ARQENC-S1P	Super low latency at 33 msec HDTV 1080/60p 4:2:0 HDTV 1080/60i 4:2:2/4:2:0

Encode	Decode	Transcode
H.265/HEVC	H.264/AVC	MPEG-2
4:2:2	4:2:0	RoHS

10 bit H.264/AVC MPEG-2
HDTV 4:2:2 1080/60p Decoder LSI

SARADEC2



H.264/AVC MPEG-2 Decoder LSI for professional applications.
Support H.264/AVC 4:2:2 10bit 60p and MPEG-2 4:2:2 Profile.

Features

- Support H.264/AVC 4:2:2 10 bit and MPEG-2 4:2:2 Profile
- 1080/60p Support H.264/AVC
- Maximum TS bitrate: 320 Mbps
CAVLC: 200 Mbps
CABAC: 100 Mbps

Applications

- Transmission from field pickup unit
- Satellite news gathering
- Transmission systems using dedicated line
- IP transmission
- Broadcast server
- Payout server

Specifications

H.264/AVC Specifications

Profile and Level High422, High, Main Profile up to Level 4.2

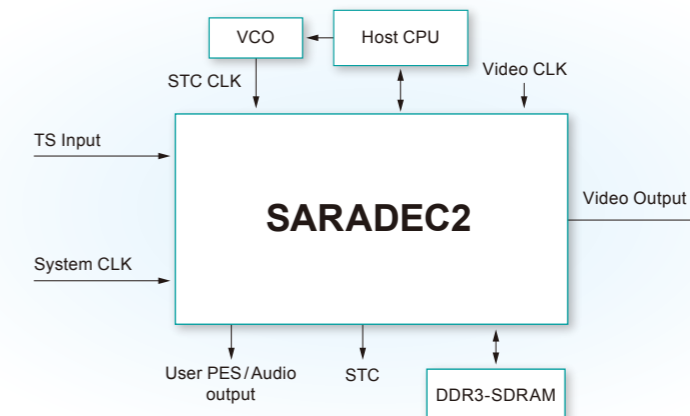
MPEG-2 Specifications

Profile and Level 422P@HL, MP@HL, MP@H14L, 422P@ML, MP@ML

Common Specifications

Video Output Interface	Y/C Separated Output (HDTV) Y/C Multiplexed Output (SDTV)
PES Output Interface	Audio PES and User PES Output 4 line serial Mode Output
Streaming Input Interface	MPEG-2 TS (8 bit Parallel)
TS Input Bitrate	Max. 320 Mbps
Host CPU Interface	Data Bus: 32 bit Address Input: 17 bit
Memory Interface	DDR3-800 2 Gbit x 4
Package	FCBGA 780 pin (29 mm x 29 mm, Ball pitch 1.0 mm)
Power Supply	Internal 1.0 V I/O 3.3 V, 1.5 V Analog 2.5 V
Video Output Format	1080p 1920 x 1080 (59.54/50 fps) 1080i 1920 x 1080 (29.97/25 fps) 720p 1280 x 720 (59.54/50 fps) 480i 720 x 480 (29.97 fps) 576i 720 x 576 (25 fps)
Post Filter	Horizontal up-sample filter Chroma 4:2:0 - 4:2:2 filter

Configuration



USA

- NEL America, Inc.

EUROPE

- NTT Electronics Europe S.r.l

JAPAN

- Head Office/Yokohama Branch
- Atsugi Branch
- Atsugi Center
- Ibaraki Branch
- NTT Electronics Techno Corporation
- NTT Electronics COPRO Corporation
- NTT Electronics Optech Corporation

ASIA

- NTT Electronics Hong Kong Limited
- NTT Electronics Shenzhen Limited

NTT Electronics Company Profile

- **Established** : **June 1982**
- **Capital** : **US\$65 million (\$1=¥100)**
- **President & CEO** : **Yoshiaki Sato**
- **Numbers of Employees** : **543 (as of March 31, 2020)**
- **Annual Sales** : **Annual Sales (FY 2019) US\$235million (\$1=¥100)**

Head Office /Yokohama Branch	New Stage YOKOHAMA, 1-1-32 Shin-urashimacho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0031, Japan
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Atsugi Center	3-1 Wakamiya, Morinosato, Atsugi-shi, Kanagawa, 243-0198, Japan
Ibaraki Branch	6700-2 to, Naka-shi, Ibaraki, 311-0122, Japan
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NTT Electronics Hong Kong Limited	Unit No.1518, 15 / F., The Metropolis Tower, No.10 Metropolis Drive, HungHom, Kowloon
NTT Electronics Shenzhen Limited	Room 1408, Excellence Century Center Tower 4, Fuhua 3 Road, Futian District, Shenzhen,Guangdong Province 518046, The People's Republic of China
NTT Electronics Europe S.r.l	Via Crescenzago 55, 20134 Milano, Italy
NTT Electronics Techno Corporation	New Stage YOKOHAMA, 1-1-32 Shin-urashimacho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0031, Japan
NTT Electronics COPRO Corporation	6700-2 to, Naka-shi, Ibaraki, 311-0122, Japan
NTT Electronics Optech Corporation	6700-2 to, Naka-shi, Ibaraki, 311-0122, Japan



NTT Electronics Corporation

Digital Video Component Business Group

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TEL : +81-50-9000-6004

E-mail: dev-info-w@ntt-el.com

URL: <http://www.ntt-electronics.com/en>

Sales Agent



245-P/P20-11-06

* Please use our products in accordance with the instructions provided in the manual, user's guide or specifications attached.

* Our company may change specifications and the appearance for improvement that are incidental to the product without providing prior notice. At the purchase and the use of the product, please confirm the latest information.

* Exporting our products or technologies may be subject to the Foreign Exchange and Foreign Trade Law of Japan and export control acts and regulations of other related countries.