

mREC Densu io



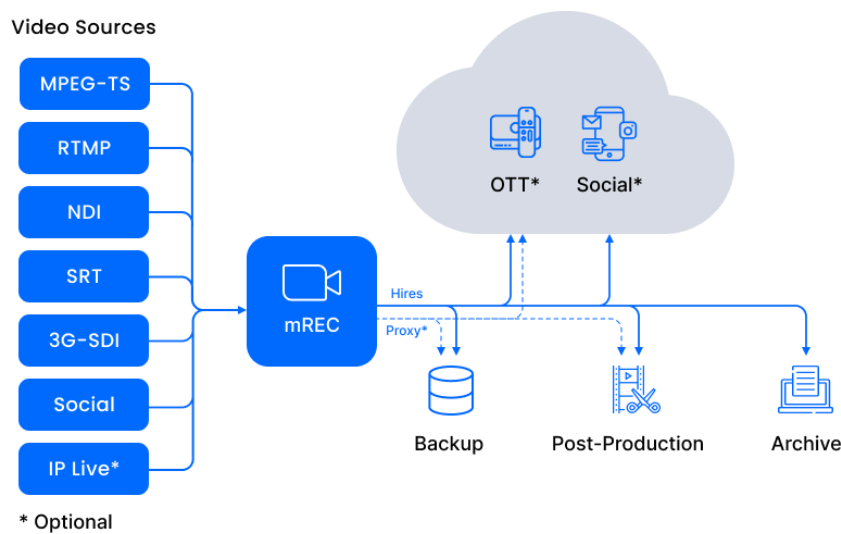
Overview

mREC Densu io is a powerful and flexible multi-format recording dual-node compact appliance.

Optimize media creativity for enterprise, digital media, sports, and broadcast markets with a streamlined file-based capture system, with full support for recording FHD and HDR live video channels in different file formats.

It supports simultaneous media operations that can be a combination of recording and previewing files.

Additionally, it has a redundant power supply with the option for local storage of 6 or 12TB and can be pre-configured to support IP Live workflows.



Highlights

- **mSWITCH** - Remote live switching and compositing
- **mTALK** - Audio communication between users
- **Baseband ingest - multiple simultaneous recordings:** multicamera recording, loop recording, crash recording, schedule recording, batch recording
- Video server for multiple destinations of any storage, NAS, or SAN
- Burnt-in options: text, timecode, overlays (images and videos), and LUT
- Full featured remote and local user interface
- Multi-configuration metadata management
- Flexible file naming engine
- Enable edit while ingest
- Artificial engine

Specially Designed For

- Educational/Government
- Live Entertainment/Worship
- Corporate
- Sports
- Film/TV Studio/Scripted
- Mobile Studios/OB Vans
- Digitalization
- Post-Production
- Broadcast/Digital News
- System Integrators/Rentals

Features

Features
Timecode support
LTC (SMPTE 12M)
VITC (SMPTE RP188)
Time of Day
From VTR (BVW) - Serial
Multiple LIVE and simultaneous records
Crash Record operations
Gang Capture operations
Independent workflow selection in Gang Captures
Unique workflow for gang captures while using clipnaming with counters
Hide unused Capture Instances
Synchronized gang captures
Ability to choose which channels are present in the gang
Frame Chase editing
Unlimited capture duration support
Loop record support
Extend playlist maximum duration in Loop Record workflows
Perform Loop record captures through automatic jobs
Growing files support
Growing file support for Grass valley Edius Workgroup v.9 and X
Growing XDCAM MXF OP1a file support on Avid Media Composer *required Nablet AMA Plugin
Automatic Stream Control - Detect input streams and start recording automatically
Continuous recording support
Recording timer for captures
Abort or force stop a capture or a stream
Frame rate conversion option on Capture workflows
High Dynamic Range (HDR) support - HLG (arib std-b67) / PQ (SMPTE 2084)
High Frame Rate (HFR) up to 120fps (ST2081-10, ST2081-11, ST2082-10, ST2082-11 and ST2082-30)
Generation of MP4 files as fragmented MP4 with DCP packager
Generate XML sidecars with WAV file as output while recording
Perform "Run after completion" scripts
Live Probing option
Stream Closed Captions
Edit a Workflow directly from the Player
Option to start timecode recording from 00:00:00:00
Export MOG playlist (.XML Sidecar containing information about the chunks of the recorded media)
Batch record support
Deck control through Serial Ports
Pre-roll and post-roll options
LiveU NewsML batch capture
LiveU NewsML metadata import
LiveU NewsML - support XML from devices (Live U, Android and iPhone)
LiveU include subfolder browse
Contribution Web Video Player - Aspect marker, Safe Area Marker, and Center marker
Operation modes
Automatic
Manual
Scheduled
Clipnaming
Clipnaming based under metadata profiles
Field numeric representation of the day of the week
Drag and Drop support
Restore auto numbering on capture abort in naming templates
Time Zone Support when the "CreationDate" field is selected
Support to append "_p" to proxy clip names
Multi-Configuration metadata management and enrichment
Metadata management
Metadata generation on capture operations
Metadata fields - prevent overwrite
Protection of metadata fields
Delete custom metadata
Edit group clip metadata
Edit source metadata based on a metadata profile
"Description" field editable in metadata widget
"Description" field as a column in the asset explorer list view
Send metadata to Gang Captures
Favorite metadata fields
Create custom metadata fields
Rating metadata field
Metadata source update directly in the metadata widget
Add asset tags insertion in preset list
Support re-using lists of possible values
Update Metadata in Media Central/Interplay using AMT-3 library
Ability to rename media in Interplay after capture began
Take field (counter)
Support for "Reel" metadata field using Apple ProRes Wrapper

Features

Read metadata from cloud storage (Amazon S3 / Google Cloud Storage / Tencent / IBM Cloud Object Storage)

Preserve Arri specific fields

Asset management Check-in

AVID AAF

AVID interplay

XML support

XSLT transformation - XML sidecar

Edit share flow

Vizzi OTT check in

Audio support

Input and output PCM support

Input support for Dolby E-AC-3, Dolby TrueHD, and DTS

Input and output Dolby-E support

DTS Coherent Acoustics (DCA)

Independent audio encoder for hires and proxy

Individual audio mapping by output target

Record audio only streams

Playback audio only streams

Audio downmixing & upmixing

External audio files support (.WAV)

MPEG-4 Audio (M4A) audio format as output

Mute proxy option in output

Close captions

CEA/EIA - 608

Add sidecar - SubRip (SRT)

Add sidecar - Fragmented WebVTT

Add sidecar - ISMT/CMFT subtitles

Support DVB-S captions in streams

Support captioning for OTT (CMFT, SubRip, and WebVTT)

Stream Closed Captions

Locators

Create locators with shortcut keys

Edit locators description

Insertion and viewing

Action fields creation and customization

Comments insertion in a markers widget tab

Order asset locators by timecode

Absolute timecode for source locators

Enter Timecode without the need of entering colons

Eject locators using the player eject button

Support for locators with AMT captures

Send locators to gang captures

Send locators to playout

Scheduler (Calendar View)

Scheduled Record

Edit individual events

Allow editing of settings for each occurrence/repetition

Configure the number of events repetitions

Check collision between events with repetitions

Placeholder when editing an occurrence name

Enable field event name as AVID Interplay clipname by default

Pre-set naming templates

Independent targets and multiple outputs support

Capability to set a maximum capture duration

Configurable number of iterations when using maximum capture duration

Use AVID Interplay clip name as event name on crash record events

Pre-roll and post-roll options for scheduled events

Define events to be triggered on any day, on working days only or only on weekends

Possibility to use the calendar notion option in order to adjust for daylight saving time automatically

Ability to edit Start Time field after the first recording

Visualize scheduled events in a List View

Export activity events

Perform captures from a MOG S1000

Perform captures from an Airspeed 5000

Perform captures from a Softron Movie Recorder

Signal error detection and related recovery actions

Signal error detection

Drop frame detection

Timecode breaks support

Configurable capture resume methodology

Automatic streaming (headless) - Restart capture after stopping/crashing or rebooting

Checksum media

MD5 hash file

MDL - Media hash list

Live to Live

Delete artifacts on abort

Multiple resolutions check-in

Support Time of Day in input streams (RTMP, MPEG-TS, RTP, SRT, RTSP, HLS, LLDASH, MSS, MPEG-DASH, CMAF)

Features

Variable Frame Rate Input

Support IGMPv3 multicast

MPEG-TS Support

Capture of MPEG-Transport Streams

Support of MPEG-TS program IDs

NDI

NDI audio and video synchronized mechanism

NDI discovery mechanism

Capture multiple NDI sources

Time of day and embedded timecode options in NDI input

RTMP

RTMP recording with absolute timecode

RTMP Push Mode in input and output

RTMP Pull Mode in input and output

Native RTMP listener capability

Multiple audio channels in RTMP Output

SRT

Input modes: Caller, Listener, and Rendezvous

SRT listener mode as stream output

Stream ID support

Configurable latency settings

Configurable overhead bandwidth

Configurable passphrase

WebRTC

Live-m stream input *Optional

h.264 Support

VP8 Support

VP9 Support

File ingest

Generation of MP4 files as fragmented MP4 with DCP packager

IMF (Netflix Compliant) output metadata

Burn-In Video options

Graphic burn-in while recording

Text (Position, Text color, Box Color, Font Size)

Timecode (Position, Text color, Box Color, Font Size)

Overlays support (images and videos positioning)

LUT (Look-Up Table) - Save particular color grades as a template

File playback

Timecode and metadata overlaying on SDI out

Playback

Print to tape

Input/output social media *Optional

Google Chrome Social-m Plugin

Social-m - Add support for live stream capture

Metadata in Chrome Social-m Plugin

Capture to Facebook Live

Stream to Facebook Live

Stream to Twitch Live

Capture to YouTube Live

File based YouTube Upload

Capture Twitter Live

Stream to Twitter Live

Upload to Vimeo

Metadata social annotation and enhancement

mTALK

Audio communication between users

QR code implementation

WebApp (requires Android smartphone)

Toggle Mode

Analytics

Google Analytics and Tag Manager integration

Option to enable and disable Analytics

Track menu events

Video metrics

Track job control widget events

Track asset explorer widget events

Improved security

Support for Windows UAC

Support for HTTP/HTTPS Ingress

HTTPS (Hypertext Transfer Protocol Secure) for REST API

Secure login

User Impersonation

Token based authentication

Two-factor authentication

Remote services, system restart, and settings recovery features

"Keep me signed in" login option

Hardware acceleration *If Hardware is installed or available

Intel QSV

Features

General Purpose IN/OUT

- GPI triggers supported
- GPO triggers supported

Additional Highlights

- REST API - allows interaction with RESTful web services
- Change Aspect Ratio (4:3 / 16:9 / 1.9:1 / 2:1 or use same as source)
- Active Format Description (Option to Preserve, Discard or Override)
- Notify user upon connection lost with the Server
- Manage via web interface or REST APIs for integration with automation system
- Configurable quality and target latency of the preview stream
- Logging - Human readable information on Services logs
- Support an external Database
- Microsoft Edge / Firefox and Chrome Support

Unified Interface User Experience

- Web-Based Interface with video preview
- Dashboards based experience where users can create their own personalized view
- Dashboards presets for ease-of-use deployment
- Create custom dashboard templates
- Import and export of users Dashboards
- Associate same dashboards to multiple users
- LDAP user authentication
- User profile management
- Users permissions control
- Widget based modular interface
- Lock/Unlock widgets permission
- High contrast theme
- Touch screen mode
- Monitoring - Advanced metrics
- Multi Language Support
- User tour
- Show/Hide player overlays
- Notifications of required actions needed to resume a workflow
- View which servers in a group are running Capture and Ingest Operations in a Group activity widget
- Possibility to remove quick edit button from Job Control widget
- Permissions to activate or deactivate settings of Gang Capture widget

Multiviewer

- Configurable quality and target latency of the preview stream
- Ability to control to up to 4 players in a single dashboard

Maintenance

Scheduler

- Reboot host or group
- Export database (backup) as a scheduled task
- Export logs as a scheduled task

Activity

- Export last activity
- Export all activity
- Export activity from a date range
- Clear all activity

Logs

- Export logs

Backup

- Export full backup - A full backup will create an archive of all the files and configurations
- Import full backup

Dashboards

- Export dashboards from one user or all users
- Import dashboards

Data

- Clean data usage
- Clean assets, flows and notifications
- Factory data reset
- Erase all data and reset the system
- Force clear cache

Technical Specifications

Supported Live Inputs

Inputs	
Live	SD/HD/FHD-SDI
	SD-SDI (SMPTE 259M)
	3G-SDI (SMPTE 292M, SMPTE296M, SMPTE372M, SMPTE425M)
	Streams
	Video Content Hyperlinks
	HLS
	MPEG-TS
	MPEG-DASH
	RTMP
	RTP
	RTSP
	NewTek NDI
	UDP
	Haivision SRT
	WebRTC
	Social Media
	Facebook
	Twitch
	Twitter
	YouTube
	Vimeo
	IP Live *Optional
	ST2022-6
ST2022-7	
ST2110-10, ST2110-20, ST2110-21, ST2110-30, ST2110-31	
ST2110-40	

Supported Live Outputs

Outputs	
Live	Social Media *Optional
	Facebook
	Twitch
	Twitter
	Vimeo
	YouTube
Multiple and Adaptive bitrates for the OTT *Optional	

Supported File Outputs

Outputs	
OnPrem	Avid ISIS / Nexis
	Avid Unity™ MediaNetwork
	DDP – Dynamic Drive Pool
	Facilis TerraBlock
	Harmonic MediaGrid
	Editshare EFS
	NAS / SAS (SMB 2.0 and 3.0)
	Quantum StorNext
	ScaleLogic NX2 & ZX NAS Storage
	EMC Isilon
	QNAP
	Studio Network Solutions EVO
	Oracle Storage
	Netapp
	FTP Servers (List on request)
	Generic File Shares

Outputs

Cloud	Consumer Cloud Storages
	Apple I Cloud Drive
	Dropbox
	Google Drive
	Microsoft One Drive
	Multiple and Adaptive bitrates for the OTT *Optional
	Professional Cloud Storages
	Adobe Creative Cloud
	Amazon S3 Glacier
	Microsoft Azure Storage
	Tencent
	Lucidlink Cloud NAS
	Google Cloud Storage
	IBM Cloud Object Storage
	Generic S3 storages
	Social Media *Optional
	Facebook
	Twitter
	Vimeo
	YouTube

Formats

Output Formats

Output Formats

IMX 30/40/50 Mbps
MPEG2 LGOP 18/25/35 Mbps 4:2:0
MPEG2 LGOP 50/70 Mbps 4:2:2
MPEG2 LGOP 422 50 Mbps
MPEG2 LGOP 420 1440x1080 35 Mbps
MPEG2 LGOP 420 (FULL) 35 Mbps
DVCAM 25 Mbps
XAVC Intra 50 / 100 Mbps
XAVC LGOP 25 / 35 / 50 Mbps
DVCPRO 25/50 Mbps / DVCPRO HD 100 Mbps
AVC-Intra 50 / 100 / 200 Mbps
AVC Ultra (LGOP 6/12/25/50 Mbps)
DNxHD (SQ/HQ/HQX/LB)
H.264 1080p 8 - 12 Mbps High Profile
H.264 720p CBR - 6.5 Mbps High Profile
H.264 720p 5 - 7.5 Mbps High Profile
H.264 480p 2.5 - 4 Mbps High Profile
H.264 360p 1 - 1.5 Mbps High Profile
H.264 1080p 3 - 9 Mbps High Profile (Live)
H.264 720p 1.5 - 6 Mbps High Profile (Live)
H.264 480p 0.5 - 2.0 Mbps High Profile (Live)
H.264 360p 0.4 - 1.0 Mbps High Profile (Live)
H.264 240p 0.3 - 0.7 Mbps High Profile (Live)
H.264 1080p CBR 15 Mbps MAIN Profile
H.264 480p CBR 2.3 Mbps MAIN Profile
H.264 15-30 Mbps MAIN Profile
H.264 L10 10 Mbps
H.264 WebRTC Baseline
H.265/HEVC LGOP 4:2:2
H.265/HEVC 10 / 25 / 50 / 100 Mbps LGOP
ProRes 422 (SQ/HQ/LT)
Google® VP6 / VP7 / VP8

Proxy Formats *

Proxy Formats
H.264 @ 500 Kbps Flash
H.264 @ 486p 1 / 1.5 Mbps Flash
H.264 360p @ 1.6 Mbps Flash
H.264 720 480p @ 8 / 10 Mbps Flash
H.264 720p @ 8 / 15 / 16 / 20 / 24 / 25 Mbps Flash
H.264 854 480p @ 8 / 10 Mbps Flash
H.264 960 540p @ 3 Mbps Flash
H.264 1080p @ 8 / 15 / 16 / 20 / 24 / 25 Mbps Flash
H.264 SD @ 4 / 8 / 15 / 20 / 25 Mbps
H.264 480p @ 0.5 - 2 Mbps High Profile (Live)
H.264 360p @ 0.4 - 1 Mbps High Profile (Live)
H.264 240p @ 0.3 - 0.7 Mbps High Profile (Live)
ProRes Proxy 1920x1080
ProRes Proxy 1280x720
ProRes Proxy 960x540
ProRes Proxy SD (16:9 Raster)
ProRes Proxy SD
MPEG-1 (layer 2) @ 1.5 Mbps
Avid MPEG-2 (SIF @ 2Mbps)
H.264 Interplay Web (SD, 800 Kbps, and 2 Mbps)
Sony Proxy AV (MPEG-4 Part-2) @1.5 Mbps

* Optional output

OTT Formats *

OTT Formats
H.264 1080p 8 - 12 Mbps High Profile
H.264 720p 5 - 7.5 Mbps High Profile
H.264 480p 2.5 - 4 Mbps High Profile
H.264 360p 1 - 1.5 Mbps High Profile
H.264 1080p 3 - 9 Mbps High Profile (Live)
H.264 720p 1.5 - 6 Mbps High Profile (Live)
H.264 480p 0.5 - 2.0 Mbps High Profile (Live)
H.264 360p 0.4 - 1.0 Mbps High Profile (Live)
H.264 240p 0.3 - 0.7 Mbps High Profile (Live)
H.265/HEVC 10 Mbps LGOP
H.265/HEVC 25 / 50 / 100 Mbps LGOP
H.265/HEVC LGOP 4:2:2

* Optional output

Product Integrations

Editing Sytems	MAM / PAM / DAM	Stream	CDN's
Adobe Premiere Pro	CatDV MAM, PAM, DAM	Newtek NDI	Lumen
AVID Media Composer	eMAM Media Asset Management	Haivision SRT	Fastly
AVID Media Central UX	Telestream: Masstech	WebRTC mLIVE	Akamai Technologies
AVID Media Central Cloud UX	AVID Interplay	Consumer Cloud Storages	Microsoft Azure
Apple Final Cut Pro X	AVID Media Central UX	Dropbox	Cloudflare
Edius: Pro 8, Workgroup 9	AVID Media Central Cloud UX	Google Drive	Limelight Networks
BlackMagic: DaVinci Resolve Studio	AXLE MAM	Microsoft One Drive	Amazon CloudFront
Autodesk: Flame	Editshare Flow	Apple I Cloud Drive	BootstrapCDN
Storage	MOG Vizzi	VTR Decks	StackPath
AVID ISIS Storage	Medialoopster MAM	XDCAM HD: Disc (PDW 1500)	KeyCDN
AVID Nexis Storage	Professional Cloud Storages	XDCAM HD: Disc (PDW HD1500)	Rackspace
Avid UnityTM MediaNetwork	Adobe Creative Cloud	XDCAM HD: Disc (PDW F70)	Alibaba Cloud Content Delivery Service
Dynamic Drive Pool SAN Storage	Amazon EC2	XDCAM Station (XDS1000)	CacheFly
Facilis Terrablock	Amazon S3	Cameras	Verizon
Harmonic MediaGrid	Amazon S3 Glacier	Panasonic PTZ Cameras	Hypervisors
Quantum: Storenext	Microsoft Azure Storage	NewTek PTZ3 UHD Camera	Microsoft HyperV
Scalelogic: NX2 & ZX NAS Storage	Microsoft Azure Virtual Machines	NewTek PTZ3 Camera	VMWare ESX
Editshare EFS	Tencent: Cloud Storage	Social Media *Optional	
EMC: Isilon	Lucidlink Cloud NAS	Facebook	
QNAP	Google Cloud Storage	Twitch	
Studio Network Solutions: EVO	IBM Cloud Object Storage	Twitter	
Oracle Storage	Peripheral Devices	YouTube	
Netapp	Countour Shuttle Pro V2	Vimeo	
	Elgato Stream Deck		

Server Options

Features		Specs	
System	Platform	Densu 2U	
	Video IO	1x DeckLink miniDuo2*	
	Storage Drive	6TB or 12TB SSD**	
	Operating System Drive	240GB*	
	Operating System	Windows 10 Enterprise (LTSC)	
Connectivity	Networking	1Gb Ethernet Port 2*	
	Video	Display Port	1*
		HDMI	1*
	USB	2.0	2*
		3.0	4*
	HD BNC In	4*	
	Ref. In	1*	
	Live IP Port**	1*	
	LTC Input	1*	
	Audio Output	1*	
	Breakout Connector	1*	
	Power Requirements	Dual 300W	
Breakout Cable	RS422	4*	
	GPO branch with 4 outputs	1*	
	GPI branch with 4 inputs	1*	
Other	Dimensions & Weight	2RU, 245x484x89mm (D, W, H), ~14Kg	
	Delivery Packaging	580x380x250mm (D, W, H), ~15Kg	
	Temperature	Storage**	-40°C to 65°C (-40°F to 149°F)
		Continuous Operation	10°C to 32°C (50°F to 89.6°F)
	What is Included	Power Cable	2x C13 to C14
Other		4x rack mount screws	

* Per node

** Not included by default

Concurrent Media Operations

With mREC Densu io, it is possible to run different media operations simultaneously, thus guaranteeing a universe of distinct arrangements to meet the challenging media day-to-day activities.

Media operations include recording, file preview, live channel switching, and intercom.

mREC Densu io supports up to 4 media operations per node at the same time. Within this margin, you can combine the operations shown in the table below:

Concurrent Media Operations			
Record	File Preview	Live Switch	Intercom
Up to 4 live channels per node	Up to 5 files preview	Up to 1 operation	Up to 1 operation

Product

Part Number	Product	Description
mrdnio	mREC Densu io	Compact dual-node video file recording appliance of up to 4 combined media operations per node

Available Options

Choose from the products below to customize the mREC Densu io according to your business rules.

Production Tools

Tools for asset management and workflow orchestration.



mPAM

Benefit from a state-of-the-art content and production asset manager tool with mPAM. Streamline daily operations and empower your creative teams with the right tools to find, manage, track, enhance and deliver media files throughout the entire production ecosystem from a single interface.



mPLAN

Setup scheduled events not only from the standard scheduler but through a unique roll out view interface. mPLAN is a tool that maintains a single rollout view of all scheduled events, allowing the management of the ingests process very efficiently. It manages multiple scheduled events across a variety of recording platforms in a multichannel environment using router control cross-points.

Part Number	Product	Description
mpam4u	mPAM	Content and production asset manager for up to 4 users
mpla8c	mPLAN	Scheduler & Router Control of up to 8 channels

Note: Adding optional features might affect the number of simultaneous operations.

Add-ons

Output options to complement your workflows.

Part Number	Product	Description
s2ioiplk	IP live kit	IP media production infrastructure
dnpa	Proxy generation	Simultaneous proxy creation
dnoa	OTT live ingest	Multiple output resolutions for OTT
dnsa	Social media sharing	Simultaneous social media shares

Note: Adding optional features might affect the number of simultaneous operations.

Plugins

Complement any media production and distribution workflow with turnkey plugins and extensions.



Live-m

Create powerful, engaging videos from any location with your mobile device.

Live-m makes it easy to send streams from and to any mobile device directly into mREC. Configure your rooms, and invite as many users as you want, from anywhere on the globe.



Screen-m

Quickly capture and deliver your screen contents to your production environment.

Easily record your screen in its entirety or choose one of the open windows. You can even enable the capture of a microphone and the mouse cursor to make it easier to explain any presentation.

Part Number	Product	Description
lmpi	Live-m plugin	Mobile acquisition & Streaming
smpi	Screen-m plugin	Screen capture & Delivery

Note: Adding optional features might affect the number of simultaneous operations.

Storage

Option for local storage.

Part Number	Description
r2ssd6x1	6TB of SSD storage
r2ssd6x2	12TB of SSD storage

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