DIGITAL VIDEO RECORDING SYSTEM

Single-Channel Digital Video Recorders and Multiplexers **NTSC**

Basic Single-Channel Digital Video Recorder

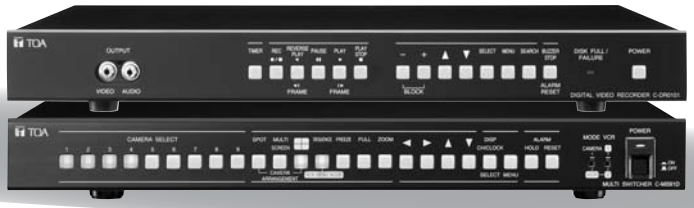


C-DR0105
(HDD 500GB)

C-DR0101
(HDD 240GB)

C-DR0100
(HDD 120GB)

9-Channel Digital Video Recording System

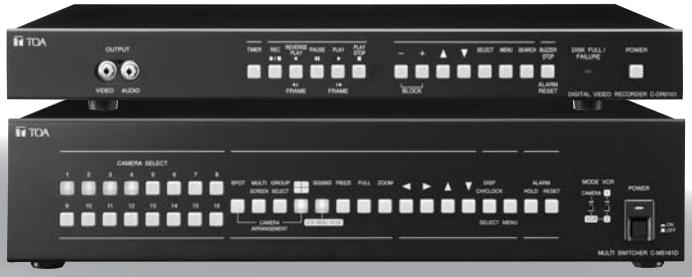


C-DR0105/
C-DR0101/
C-DR0100

C-MS91D

C-DR0105: HDD 500GB (2 X 250GB)
C-DR0101: HDD 240GB (2 X 120GB)
C-DR0100: HDD 120GB

16-Channel Digital Video Recording System



C-DR0105/
C-DR0101/
C-DR0100

C-MS161D

C-DR0105: HDD 500GB (2 X 250GB)
C-DR0101: HDD 240GB (2 X 120GB)
C-DR0100: HDD 120GB

TOA

C-DR0105/C-DR0101/C-DR0100

SINGLE-CHANNEL DIGITAL VIDEO RECORDER FUNCTIONS



The C-DR0100 incorporates a 120GB HDD while the C-DR0101 is equipped with 240GB (2 X 120GB) HDDs and C-DR0105 is equipped with 500GB (2 X 250GB) HDDs. Large capacity hard disk drives such as these make it easy to achieve extended recording times for effective monitoring.The use of large hard disk drives eliminates having to change tapes and perform periodical maintenance as such tasks are essential when using conventional time-lapse VCRs. In addition, only digital recording can offer such high picture quality, extended recording periods and effective high-speed searching.In order to achieve the most extended recording times while maintaining picture and audio quality for recording and playback, digital compression is utilized. Motion JPEG compression is employed for pictures of 720 x 240 pixel resolution.

Recording Functions

500GB storage with 2 250GB HDDs built-in (C-DR0105)

An immense storage capacity of 500GB is provided in the C-DR0105 that features two 250GB disk drives built-in. This allows recording over many hours, raising overall system effectiveness and significantly adding to ease of use for monitoring applications. If less recording capacity is desired, the C-DR0101 equipped with two 120GB disk drives built-in and the C-DR0100 equipped with a single120GB hard drive can be used.

High picture quality

Advanced digital compression technology provides picture quality with a resolution that exceeds 400 lines.
Full digital operation means picture quality with clarity that easily surpasses S-VHS.
Since all video is recorded directly to the HDD, there is no picture deterioration even with repeated playback.

Versatile recording with a choice of three modes: general recording, internal timer recording and alarm recording.

- Picture quality from a choice of levels and recording interval from can be set independently in each mode.
- Picture quality can be selected from 5 different file sizes ranging from a standard picture quality file size of 16KB to a high picture quality file size of 64KB.

File Size and Picture Quality

Setting value	Angle of view	File size	Picture quality	
LEVEL 1	720 × 240	64KB	S-VHS or much greater	High
LEVEL 2	720 × 240	40KB	S-VHS or greater	↑ Picture quality ↓
LEVEL 3	720 × 240	32KB	S-VHS	
LEVEL 4	720 × 240	24KB	VHS	
LEVEL 5	720 × 240	16KB	VHS-like	Low

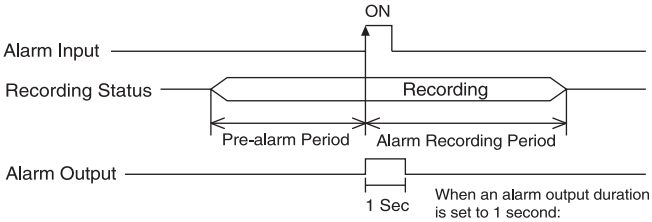
- Internal timer recording allows setting up to 10 different timer programs.
- Alarm recording offers two different alarm input modes, each allowing different items to be set to suit different monitoring requirements.

Pre- and Post-Alarm recording

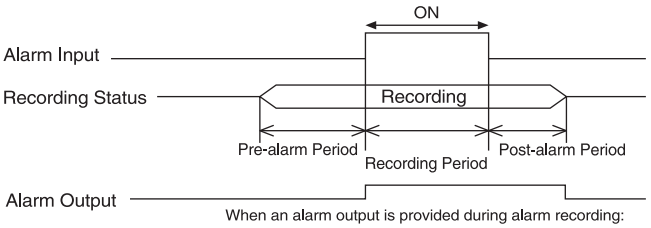
Since the C-DR0101/C-DR0100/C-DR0105 are all digital units, they are able to offer advantages that analog systems cannot such as the pre-alarm feature which allows setting a time in eight increments from 0 second to 5 minutes. If an alarm is generated, the unit has already been recording from the preset time period. This makes sure nothing is missed when viewing footage from the alarm. A post-alarm function with similar time increments is also provided.

Alarm Input Mode
The Alarm Input mode for alarm recording can be set to “Edge” or “Level.” Each input mode operates as follows:

Recording period when input mode is set to “Edge”

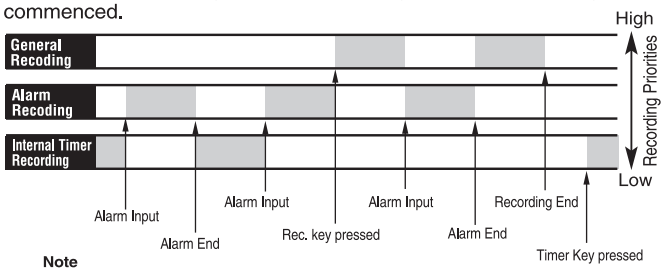


Recording period when input mode is set to “Level”



Note
Pre-alarm recording is operated by the Alarm recording setting. It does not operate even if an alarm is activated during General recording or Internal Timer Recording since they are operated by their own settings.

Lower-priority recording stops whenever higher-priority recording is commenced.



Note
Internal Timer recording does not operate even if the Timer key is pressed during General or Alarm recording.

Time Lapse recording

The C-DR0105/C-DR0101/C-DR0100 digital recorders offer versatile time-lapse recording with recording intervals that can be set in 15 different steps from 1/60th second to 60 seconds.

Audio recording

Audio recording during video recording can be enabled or disabled as required. An audio output terminal is provided on the rear panel for dubbing recorded audio signals.

Mirroring enhances reliability (C-DR0105/C-DR0101)

The C-DR0105/C-DR0101 includes two hard disk drives that can be used to record simultaneously, significantly increasing reliability and preserving important data. Even if one HDD should fail, the other will continue to record and playback.

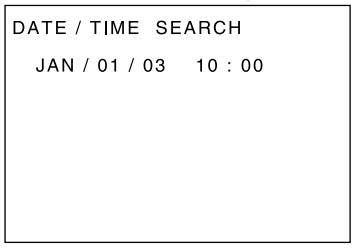
Playback Functions

Comprehensive high-speed search functions

Because the hard disks can store a significant amount of recorded data, it is important that sophisticated search functions provided:

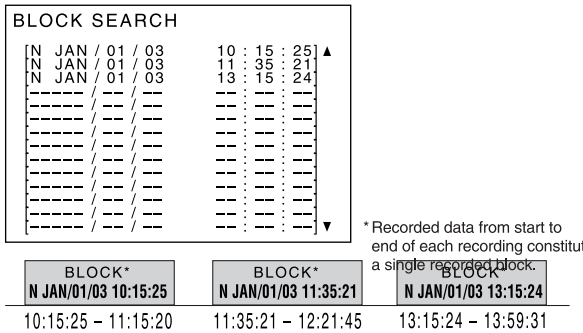
Time Search

Inputting the date and time desired activates searching by date/time. Once a value is input, the frame starting at the time selected will be displayed. This makes it easy to search forward and backward from that point.



Block Search

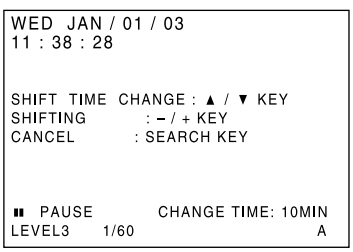
Selecting a block* of dates/times performs searching by block. Once a block is selected, it will playback repeatedly.



* Recorded data from start to end of each recording constitutes a single recorded block.

Time Shift Search

Increasing or decreasing the amounts of time as desired from a designated time activates searching by time shift. The frame at the designated time will be displayed, facilitating searching.



Flexible playback modes enhance system operation

- Forward and reverse playback modes
- Fast forward and fast reverse playback modes with selectable X2, X4 and X8 speeds
- Forward Frame Playback and Reverse Frame Playback
- Forward Block and Reverse Block Playback

Convenient simultaneous recording and playback

While the C-DR0105/C-DR0101/C-DR0100 are recording, they are also capable of playing back recorded images without any interruption to the recording process.

C-DR0105/C-DR0101/C-DR0100

SINGLE-CHANNEL DIGITAL VIDEO RECORDER

Other Functions

Network connectability

A 100 BASE-TX ethernet port is built-in to make it easy to distribute recorded images via LAN and WAN systems such as the Internet.

*requires dedicated software

Logging

Logging options for general recording, alarm recording and failure are provided.

Useful status indication

When an alarm is activated, a buzzer will sound for notification. It can be muted if desired. A built-in indicator will provide notification for various conditions such as HDD almost full with less than an hour of recording remaining, recorder malfunctioning including hard disk failure, cooling fan failure and video loss.

Summer Time (Daylight Savings Time)

The timer function can be adjusted for daylight savings time and can also be adjusted to automatically switch times as well. When a TOA digital recorder is used together with a TOA multiplexer, there is no need to adjust both units, as the adjusted unit will synchronize with the other unadjusted TOA unit.

Key-lock function

A useful key lock can be activated to prevent unauthorized access to unit controls and keeps the digital recorder tamper-proof.

Compact single rackmount (1U) size

Each of the 1-channel digital recorder models feature a space-saving 1U size to facilitate installation while incorporating multiple useful features.

Recording Time Table

unit: hours

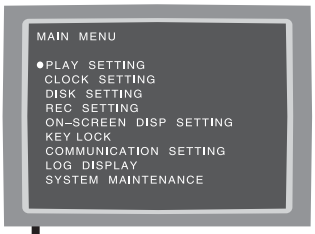
	Recording Intervals (sec) \ Picture quality	Disk Mode: Extended														
		C-DR0100 (120GB)					C-DR0101 (240GB)					C-DR0105 (500GB)				
		Level 1	Level 2	Level 3	Level 4	Level 5	Level 1	Level 2	Level 3	Level 4	Level 5	Level 1	Level 2	Level 3	Level 4	Level 5
Audio Recording: ON	1/60	8	13	17	22	32	17	27	33	44	64	34	54	67	89	129
	1/30	17	26	33	43	62	34	53	65	86	124	68	108	133	174	252
	1/15	33	52	64	84	120	67	105	129	168	240	136	213	263	342	490
	1/10	50	78	95	124	176	100	155	191	247	351	203	316	389	504	716
	1/5	97	150	183	234	325	195	300	365	468	651	397	612	746	955	1,328
	1/3	158	239	289	364	494	315	478	577	729	988	643	976	1,179	1,488	2,017
	1/2	227	337	402	498	654	454	674	804	996	1,308	926	1,375	1,640	2,032	2,670
	1	409	580	674	804	996	818	1,160	1,347	1,607	1,991	1,670	2,368	2,751	3,281	4,064
	2	681	901	1,011	1,150	1,334	1,361	1,803	2,021	2,300	2,668	2,779	3,680	4,126	4,695	5,447
	3	878	1,112	1,220	1,352	1,516	1,755	2,223	2,440	2,704	3,032	3,583	4,539	4,982	5,520	6,189
	5	1,134	1,356	1,450	1,558	1,684	2,269	2,711	2,900	3,117	3,369	4,631	5,535	5,920	6,363	6,877
	10	1,460	1,631	1,697	1,769	1,848	2,919	3,262	3,394	3,538	3,695	5,959	6,658	6,930	7,224	7,544
	20	1,704	1,815	1,855	1,898	1,942	3,407	3,630	3,711	3,795	3,884	6,956	7,410	7,575	7,748	7,928
	30	1,803	1,884	1,913	1,943	1,973	3,605	3,768	3,826	3,885	3,947	7,360	7,693	7,811	7,932	8,057
	60	1,916	1,961	1,976	1,992	2,008	3,832	3,922	3,953	3,984	4,016	7,822	8,006	8,069	8,133	8,199
Audio Recording: OFF	1/60	9	14	17	22	33	17	27	34	44	65	34	55	68	90	133
	1/30	17	27	34	44	65	34	54	67	89	131	69	110	137	181	267
	1/15	34	54	67	89	131	68	108	135	178	262	139	221	275	363	534
	1/10	51	81	101	133	196	103	163	202	267	392	209	332	412	544	801
	1/5	103	163	202	267	392	205	325	404	534	785	419	664	825	1,089	1,602
	1/3	171	271	337	445	654	342	542	674	889	1,308	698	1,107	1,375	1,815	2,670
	1/2	257	407	505	667	981	513	813	1,011	1,334	1,962	1,047	1,660	2,063	2,723	4,005
	1	513	813	1,011	1,334	1,962	1,026	1,627	2,021	2,668	3,924	2,095	3,321	4,126	5,447	8,010
	2	1,026	1,627	2,021	2,668	3,924	2,052	3,254	4,042	5,336	7,847	4,190	6,642	8,253	10,894	16,020
	3	1,539	2,440	3,032	4,002	5,885	3,078	4,881	6,064	8,004	11,771	6,285	9,964	12,379	16,341	24,031
	5	2,565	4,067	5,053	6,670	9,809	5,131	8,134	10,106	13,340	19,618	10,475	16,606	20,632	27,235	40,051
	10	5,131	8,134	10,106	13,340	19,618	10,262	16,268	20,212	26,680	39,236	20,950	33,213	41,265	55,470	80,103
	20	10,262	16,268	20,212	26,680	39,236	20,523	32,537	40,425	53,360	78,471	41,900	66,427	82,531	108,941	160,207
	30	15,392	24,403	30,318	40,020	58,853	30,785	48,805	60,637	80,041	117,707	62,850	99,641	123,796	163,411	240,311
	60	30,785	48,805	60,637	80,041	117,707	61,570	97,610	121,274	160,081	235,413	125,701	199,282	247,593	326,123	480,622

Note: Recording time is given as a guideline reference.

C-DR0105/C-DR0101/C-DR0100
SETTING GUIDE

SETTING GUIDE

The menu screens are comprised of the following setting item screens.



Main Menu Item

Menu Item

Setting Item

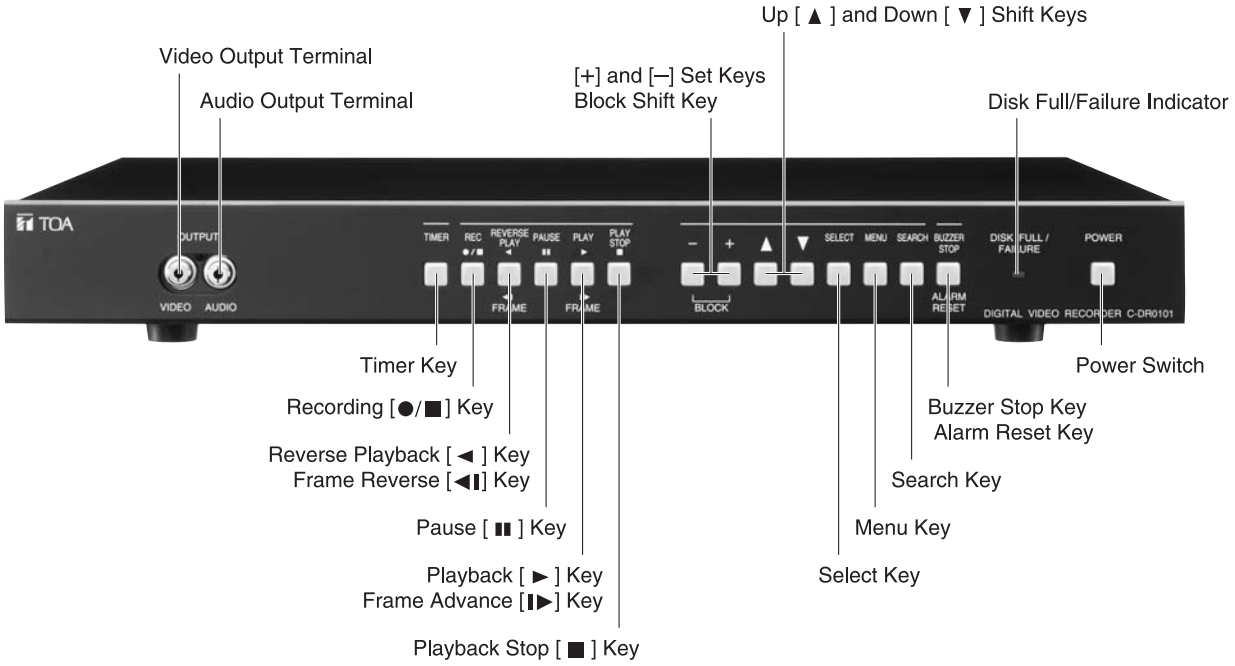
- **Playback Settings**
  - Playback Mode *
  - Simultaneous Recording/Playback
- **Clock Settings**
  - Year/Month/Day
  - Time Synchronization
  - Synchronization Time
  - Summer Time
- **Disk Settings**
  - Disk Mode *
  - Recording Mode
- **Recording Settings**
  - General Recording Settings
    - Picture Quality
    - Audio
    - Recording Intervals
    - Switcher Control Period
  - Internal Timer Recording Settings
    - Timer Setting List
      - Timer Setting 01–10
        - Recoding Start Date
        - Preset Time
        - Picture Quality
        - Audio
        - Recording Intervals
        - Recording Pattern
        - Motion Detection Pattern
  - Alarm Recording Settings
    - Alarm Settings
    - Alarm Input Modes
    - Pre-Alarm Recording Periods
    - Alarm Recording Periods
    - Post-Alarm Recording Periods
    - Picture Quality
    - Audio
    - Recording Intervals
    - Buzzer Sound
    - Alarm Output Time
- **Screen Display Settings**
  - Picture Quality Indication
  - Audio ON/OFF Indication
  - Recording Mode Indication
  - Recording Indication
  - Playback Indication
  - Remaining Time Indication
  - Date Indication
  - Time Indication
  - Date/Time Display Position
  - Disk Mode Indication *
- **Key Lock**
- **Communication Settings**
  - RS232C Baud Rate
  - RS232C Flow Control
  - Network Settings
    - IP Address
    - Subnet Mask
    - Default Gateway
  - Switcher Synchronization
- **Log Display**
  - General/Timer Recording Log
  - Alarm Recording Log
  - Failure Log
- **System Maintenance**
  - Menu Default Settings
  - Disk Formatting
    - Disk Selection

* This setting item is only applicable to the C-DR0105/C-DR0101 Recorders, and not displayed on the screen when the C-DR0100 Recorder is used.

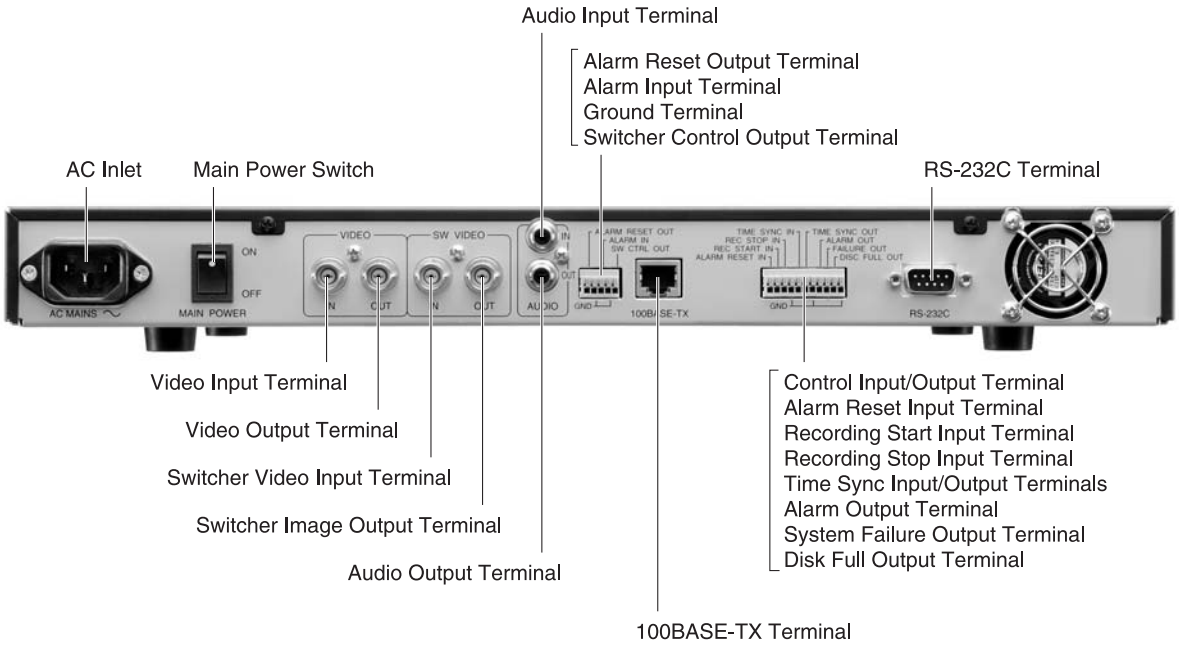
C-DR0105/C-DR0101/C-DR0100

NOMENCLATURE

Front Panel



Rear Panel



C-DR0105/C-DR0101/C-DR0100

SPECIFICATIONS/APPEARANCE AND DIMENSIONAL DIAGRAMS

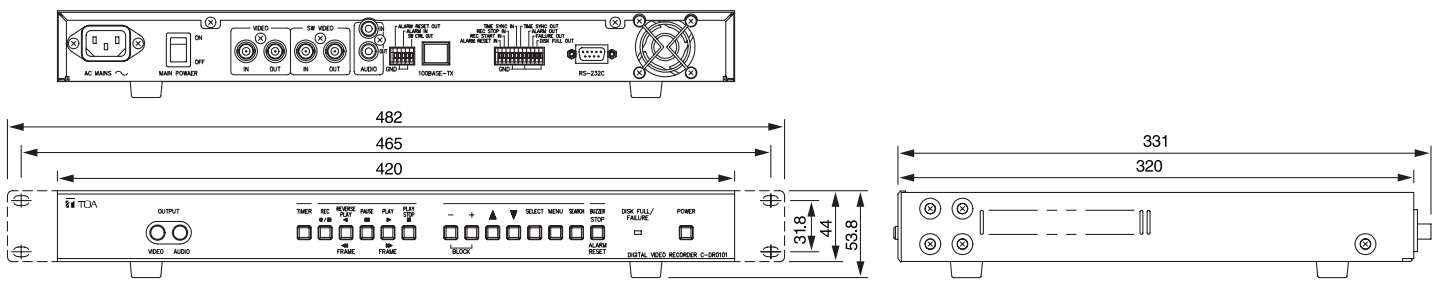
SPECIFICATIONS

Model No.	**C-DR0105** (NTSC) 1 Channel Digital Video Recorder	**C-DR0101** (NTSC) 1 Channel Digital Video Recorder	**C-DR0100** (NTSC) 1 Channel Digital Video Recorder
Power Source	110 – 120V AC, 50/60Hz		
Power Consumption	36W	35W	24W
Image Compression System	Motion JPEG		
Recording Medium	E-IDE Hard Disk 500GB (250GB × 2)	E-IDE Hard Disk 240GB (120GB × 2)	E-IDE Hard Disk 120GB (120GB × 1)
Video Input	1 input, VBS 1.0V (p-p), 75Ω, BNC		
Video Output	Front: 1 output, VBS 1.0V (p-p), 75Ω, RCA pin jack/Rear: 1 output, VBS 1.0V (p-p), 75Ω, BNC		
Switcher Video Input	1 input, VBS 1.0V (p-p), 75Ω, BNC		
Switcher Video output	1 output, VBS 1.0V (p-p), 75Ω, BNC		
Audio Recording System	8 bits, Linear PCM, sampling frequency: 16kHz		
Audio Input	1 input, -10dB*1, 10kΩ, RCA pin jack		
Audio Output	Front: 1 output, -10dB*1, 600Ω, RCA pin jack Rear: 1 output, -10dB*1, 600Ω, RCA pin jack		
Frequency Response	300 – 6,000Hz		
Alarm Input	1 input (EDGE, LEVEL), no-voltage make contact input, open voltage: 2V DC, short-circuit current: 0.5mA, loop resistance: under 100Ω, screwless connector		
Alarm Output	1 output, open collector output, withstand voltage: 30V DC, control current: 20mA, screwless connector		
Picture Quality	Changeable in 5 steps File size: 64kB (LEVEL 1), 40kB (LEVEL 2), 32kB (LEVEL 3), 24kB (LEVEL 4), 16kB (LEVEL 5)		
Pixels	720 × 240 (fixed)		
Recording Intervals	15 steps (1/60, 1/30, 1/15, 1/10, 1/5, 1/3, 1/2, 1, 2, 3, 5, 10, 20, 30, 60 sec)		
Pre-Alarm Recording	0 sec, 10 sec, 15 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min		
Alarm Recording	10 sec, 15 sec, 20 sec, 30 sec, 1 min, 2 min, 3 min, 4 min, 5 min, 10 min (Edge mode)		
Post Alarm Recording	0 sec, 10 sec, 15 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min (Level mode)		
Date/Time	Year/month/date/hour/minute/sec, 24-hours format display Monthly deviation of within ±30 seconds (25°C) Can be operated until the leap year 2099 Summertime (daylight saving t time) setting		
Internal Timer Recording	10 independent programs (date, daily, weekly, designated day-of-the-week) Recording interval, start and end times, picture quality, and audio on-off can be set.		
Search Function	Date/Time search, block search, time shift search		
System Failure Output	1 output (HDD failure, Video loss, Fan failure) open collector output, Withstand voltage: 30V DC, control current: 20mA, screwless connector		
Control Input Terminal	Alarm reset, Recording start, Recording stop, Clock synchronization No-voltage make contact input, open voltage: 2V DC, short-circuit current: 0.5mA Loop resistance: under 100Ω, screwless connector		
Control Output Terminal	Alarm reset, Clock synchronization, Disk full: Open collector output, withstand voltage: 30V DC, Control current: 20mA, screwless connector Switcher control: TTL level negative logic pulse, pulse width over 17ms, Screwless connector		
Communication Function	RS-232C (External control function)*2, D-sub connector (9 P, male) 100BASE-TX Ethernet terminal		
Memory Backup	720 hours (full charge), clock date retention		
Operating Temperature	+5˚C to +40˚C		
Operating Humidity	Under 80% RH (no dew condensation)		
Finish	Panel: Aluminum extrusion, black, 30% gloss Case: Surface-treated steel plate, black, 30% gloss		
Dimensions	420 (W) × 53.8 (H) × 331 (D) mm		
Weight	5.3kg	5.3kg	4.5kg
Accessory	Power supply cord (2m) × 1		
Option	Rack mounting bracket: MB-15B		

*1 0dB = 1V

*2 Control software is not supplied as standard.

APPEARANCE AND DIMENSIONAL DIAGRAMS (C-DR0105/C-DR0101/C-DR0100)



Unit: mm

DIGITAL VIDEO RECORDING

DIGITAL VIDEO RECORDERS & MULTIPLEXERS

Multi-Channel Digital Video Recording System

Cost-effective and high-performance digital video recorder systems to meet a user's specific requirements can be assembled. A maximum 16 channel recording system can be flexibly configured by combining a C-DR0105/C-DR0101/ C-DR0100 single-channel recorder with a TOA multiplexer such as the C-MS91D and C-MS161D model by utilizing the RS-232C interface to link the units. Such a system comprising TOA digital video recorders and multiplexers offer significant system advantages such as automatic mode switching by the multiplexer on playback and automatic time synchronization between the digital video recorder and multiplexer.



9-Channel Digital Video Recording System



16-Channel Digital Video Recording System

Multiple Split Screen Display

Live monitoring and digital video recorder playback can be seen in all split screen options (16 segment only with C-MS161D).

16-segment

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

10-segment

1		2	
1	2	3	4
5	6	7	8

(only when real time monitoring)

9-segment

1	2	3
4	5	6
7	8	9

4-segment

1	2
3	4

1-segment

1

For live camera monitoring segments, cameras can be assigned to the desired position.

1		2	
3	4	5	6
7	8	9	10

▶

By using shift up/down and shift left/right function keys, the user can select the desired multi-segment screen.



▶

Then the 1-16 camera keys can be used to assign cameras to the segments in the multi-segment screen selected earlier.



▶

10		2	
3	4	5	6
1	7	8	9

In a 4-segment screen, live cameras can be selected in sequence.

Group 1

1	2
3	4

▶

Group 2

5	6
7	8

▶

Group 3

9	10
11	12

▶

Group 4

13	14
15	16

With camera selection, a required camera can be assigned priority to always be shown (camera 1 selected).

Group 1

1	2
3	4

▶

Group 2

1	5
6	7

▶

Group 3

1	8
9	10

▶

Group 4

1	11
12	13

SYSTEM

Display Configuration Table

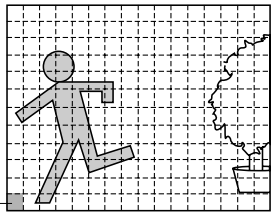
	Live		DVR Playback	
	C-MS161D	C-MS91D	C-MS161D	C-MS91D
Sequence	√	√	–	–
Split(4)-screen sequence	√	√	–	–
Full-Screen display	√	√	√	√
Split(4)-screen display	√*	√*	√	√
Split(9)-screen display	√*	√*	√	√
Split(10)-screen display	√*	√*	–	–
Split(16)-screen display	√*	–	√	–
Zoom display (2x)	√	√	√	√
Auto-panning and tilt display	√	√	√	√
Freeze	√	√	√	√

* Robotic motion

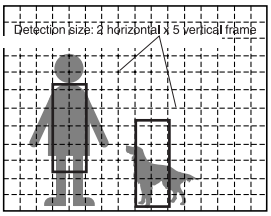
Motion Detection Mode

TOA's new multiplexers incorporate an extremely useful function of smart image detection. The object size and detection areas can be set for each camera individually.

Object Size Settings
The full screen is divided into 192 frames (16 horizontal x 12 vertical) which do not appear on the screen. Size of the object for detected can be set by selecting horizontal and vertical frames and inputting these values.

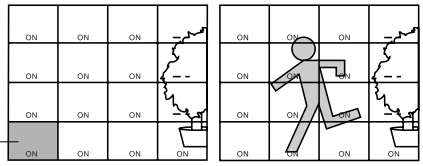


For example, when wishing to detect a person but not wishing to detect a dog, set the object size to be larger than the dog and smaller than a person. If the object size is set for 2 horizontal x 5 vertical frames, such as in the figure at right, a person's motion can be detected, but motion of the dog will not be detected.



Motion Detection Area setting
The full screen is divided into 16 areas (4 horizontal x 4 vertical) and motion detection can be set to activate in any of the 16 areas.

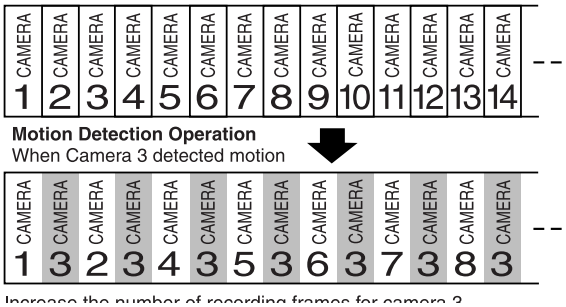
For example, when wishing to eliminate constantly moving portions such as trees swayed by wind from the motion detection area, set the corresponding area to OFF(- -).



The multiplexer detect the change of brightness in the area that is larger than the set object size in the activated areas.

Sensitivity Setting
To minimize detection errors, five levels of sensitivity settings are provided to allow fine adjustment control.

Alarm Recording
The number of recording frames for the camera that detected motion can be set to increase.

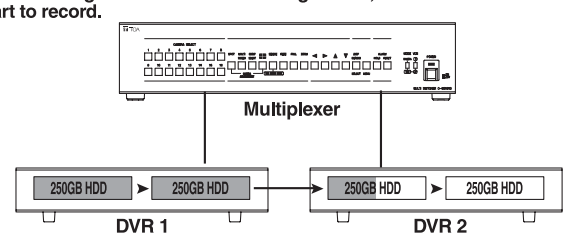


Increase the number of recording frames for camera 3

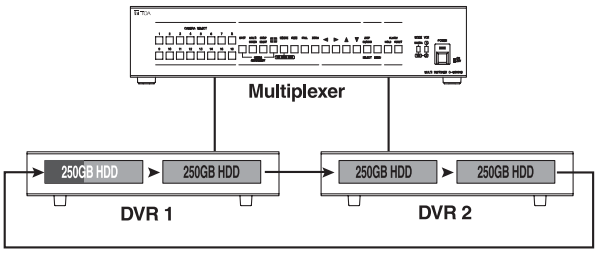
Maximum 1,000GB recording time possible.

To gain the very maximum recording time possible, two TOA C-DR0105 digital video recorders can be set up for serial recording in conjunction with a TOA multiplexer. Connected in this manner, a digital recorder will signal the second digital video recorder when its hard disk drive is full, automatically starting the second recorder so nothing will be missed.

When first digital video recorder storage is full, the second unit will start to record.



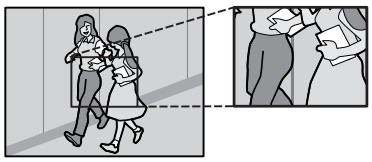
When the second digital recorder storage is full, recording starts again on the first unit by recording over what was previously recorded.



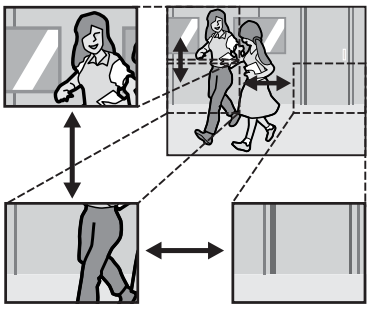
Electronic Zoom, Auto Tilt and Auto Panning Features Included.

TOA multiplexers enable electronic 2X zooming to be selected along with desired position. In addition, electronic Auto Pan and Auto Tilt functions enhance monitoring and surveillance capability.

• 2x Zoom (adjustable zoom position)



• The auto-panning and-tilt functions electronically simulate eye-movement of a sentry



DIGITAL VIDEO RECORDING

DIGITAL VIDEO RECORDERS & MULTIPLEXERS

Versatile Alarm Functions

TOA multiplexers offer many alarm functions that are easily set in the setup menu.

Sensor Alarm: Each camera connected is equipped with a sensor input terminal. Alarm activation triggers a buzzer while onscreen display warning and video recording speed is automatically set to standard speed. Multiple Alarm Inputs allow prioritizing cameras when an alarm is generated. When multiple alarms are generated, video image switching is suspended and the alarms are put on hold so that the operator can select the alarm's corresponding camera's images to view in desired order. In addition, each alarm terminal can be set to notify on a break-or-make or make basis.

Digital Video Recorder Reproduction Alarm: A buzzer sounds when playing back the part of a recording that contains a sensor alarm event.

Video Loss Alarm: Alerts when power or signal from a particular camera is lost. Letters "VL" and the camera ID number will be displayed.

Alarm Information: Dates, times and camera ID number of sensor and video loss alarms can be reviewed on an independent alarm information screen. A maximum of 64 events will be recorded and a new event will record over the oldest event.

Multi-Language Ability

Offering flexible use for multi-language environments, TOA multiplexers will show onscreen information and allow menu-driven set-up and operation in English, French, and Spanish.

Summer Time (daylight savings)

The timer function can be adjusted for summer time and can also be set to adjust automatically for it.

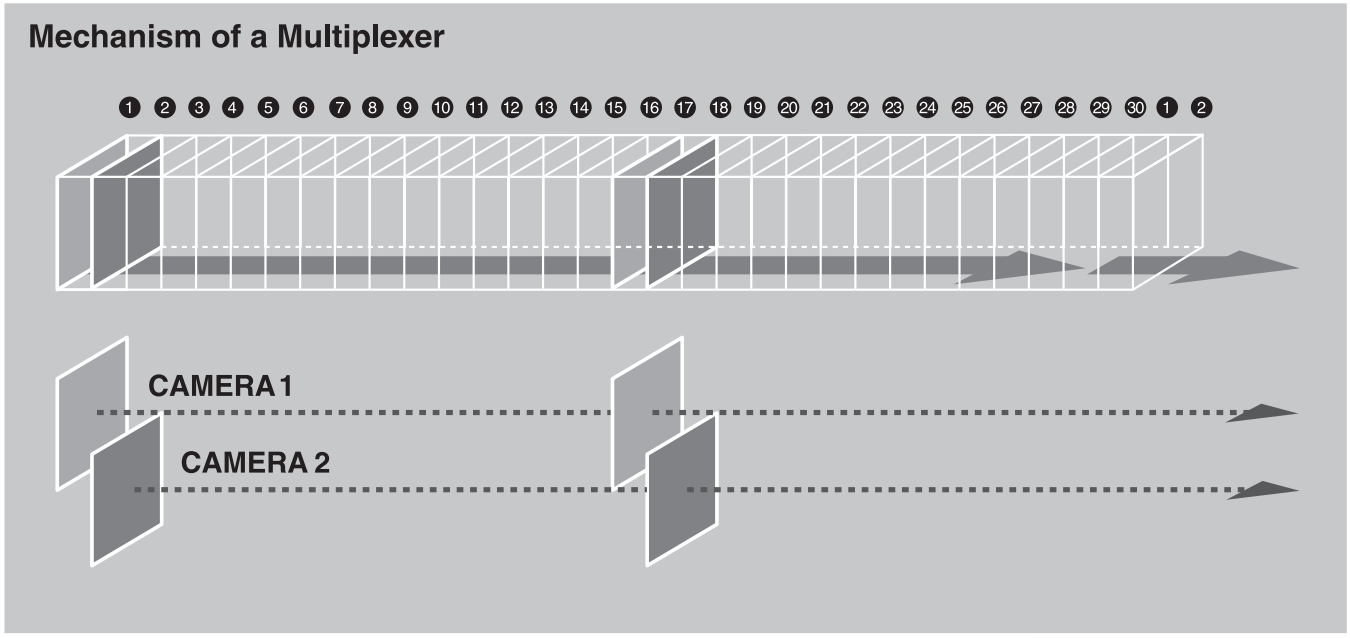
Remote control

Each multiplexer is equipped with an RS-232C port on the rear panel so that it can be linked for control externally from a remote location. The C-RM500 Remote Controller can be used to switch and select cameras individually or by group, sequence-display, multi-split screen modes. It connects to the multiplexer via the remote control terminal on the rear panel.

Key-lock function

A key-lock function can be set to prevent unauthorized access to unit controls and tampering.

Frame Recording Function



The frame recording system switches cameras for each frame while recording. For every frame, a multiplexer sends a different picture taken by a different camera to a Digital Video Recorder so that a single Digital Video Recorder is able to make recordings for multiple cameras.
Continuous images can be reproduced during replay by reading corresponding frames for each camera. Recorded images may be viewed as full-screen display for each independent camera or in a split-screen display that shows multiple camera views at the same time. A conventional sequential switcher changes camera feeds every few seconds,making continuous motion replay impossible. Allocating a Digital Video Recorder for each camera is also prohibitive in terms of costs. Multiplexers that use the frame recording system records images from all cameras and are cost-effective.

SYSTEM

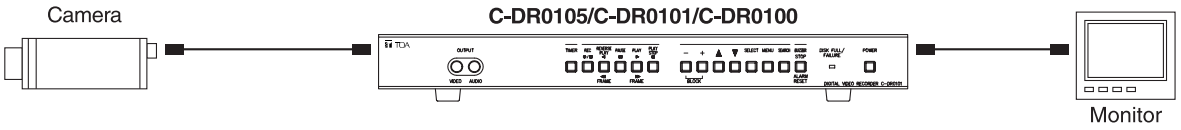
SPECIFICATIONS

		C-MS161D (NTSC)	C-MS91D (NTSC)
Power source		110 – 120V AC, 50/60Hz	
Power consumption		18W	
Video Input	Camera input	16 channels, VBS 1.0V(p-p) 75Ω, BNC, 2:1 interlace*2	9 channels, VBS 1.0V(p-p) 75Ω, BNC, 2:1 interlace*2
	VCR input	2 channels, VBS 1.0V(p-p) 75Ω, BNC	
Video output	Camera output	16 channels, VBS 1.0V(p-p) 75Ω, BNC, loop-through output	9 channels, VBS 1.0V(p-p) 75Ω, BNC, loop-through output
	Monitor output	2 channels (Either channel can be set as spot output.), VBS 1.0V(p-p) 75Ω, BNC	
	VCR output	2 channels, VBS 1.0V(p-p) 75Ω, BNC	
Alarm	Alarm Input	16 channels, no-voltage make contact input, open voltage: 5V DC short-circuit current: 5mA, D-sub connector (25 P) make/break is selectable by menu setting	9 channels, no-voltage make contact input, open voltage: 5V DC, short-circuit current: 5mA, D-sub connector (25 P) make/break is selectable by menu setting
	Alarm output	1 channel, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
	Video loss alarm output	1 channel, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
	Alarm hold output	1 channel, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
	Alarm cancel output	1 channel, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
	Motion detection output	1 channel, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
	Alarm time	MANUAL, 10s, 15s, 20s, 30s, 1 – 5min (adjustable in 1-minute steps), Infinite	
	Buzzer	ON or OFF (selectable)	
Remote	Remote input	12 channels (6 channels: binary input), no-voltage make contact input, open voltage: 5V DC, short-circuit current: 5mA, D-sub connector (25 P)	
	Remote output:	10 channels (6 channels: binary output) NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, D-sub connector (25 P)	
Other Function		Motion detection, Selection of the motion detection pattern, Key lock, Automatic recognition on time-lapse recording, Selection of the recording pattern, Selection of the language (English/Spanish/French) on the menu screen	
VCR Control	Switcher control input	2 channels, no-voltage make contact input, open voltage: 5V DC, short-circuit current: under 0.3mA, Screwless connector	
	Alarm output	2 channels, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, Screwless connector	
	Alarm cancel output	2 channels, NPN open collector output, withstand voltage: 20V DC, control current: under 20mA, Screwless connector	
Audio	VCR input:	2 channels, –10dB*1, over 50kΩ, RCA pin jack	
	Monitor output	1 channel, –10dB*1, low impedance, RCA pin jack	
External control	RS-232C	1 channel, D-sub connector (9 P, male)	
	Remote control terminal	1 each of input and output, screwless connector	
Dedicated Remote Controller		Controlled by dedicated remote controller C-RM100 (option), C-RM500 (option)	
Recording Output		At least 1 frame intervals	
Screen display	**[Camera screen]**		
	Full screen selection	Selection of the desired camera	
	Multiple-split screen	4-, 9-, 10- and 16-segment screen (all intermittent displaying, changeable positioning on the segment screen.)	4- 9- and 10-segment screen (all intermittent displaying, changeable positioning on the segment screen.)
	Zoom	Electronic 2x zoom for the desired camera (zooming position changeable, auto tilt, panning possible)	
	Freeze	Freeze screen for individual cameras	
	Automatic sequence	Full screen (individual cameras), 4-segment screen (camera groups), switching time intervals of 0 – 99 sec. that can be set in 1 sec. units.	
	[VCR reproduction screen]		
	Full screen selection	Selection of the desired camera	
	Multiple-split screen	4-, 9-, and 16-segment screen	4- and 9-segment screen
	Zoom	Electronic 2x zoom for the desired camera (zooming position changeable, auto tilt, panning possible)	
	Freeze	Freeze screen for individual cameras	
	[Spot screen]		
	Full screen selection	Selection of the desired camera	
	Automatic sequence	Full screen (individual cameras), switching time intervals of 0 – 99 sec. that can be set in 1 sec. units.	
Indication	Camera title	Up to 8 characters (alphanumeric and symbols) camera No. and time/date can be displayed.	
Number of Effective Pixels		720 × 464 pixels	
Operating Temperature		0° to +40°C	
Finish	Panel:	aluminum extrusion, black, 30% gloss	
	Case:	Surface-treated steel plate, black, 30% gloss, paint	
Dimensions		420 (W) × 96.6 (H) × 333.9 (D) mm	420 (W) × 51.8 (H) × 334.1 (D) mm
Weight		4.3kg	3.5kg
Accessory		Power cord (2m) × 1	
Option		Rack mounting bracket: MB-23B	Rack mounting bracket: MB15B

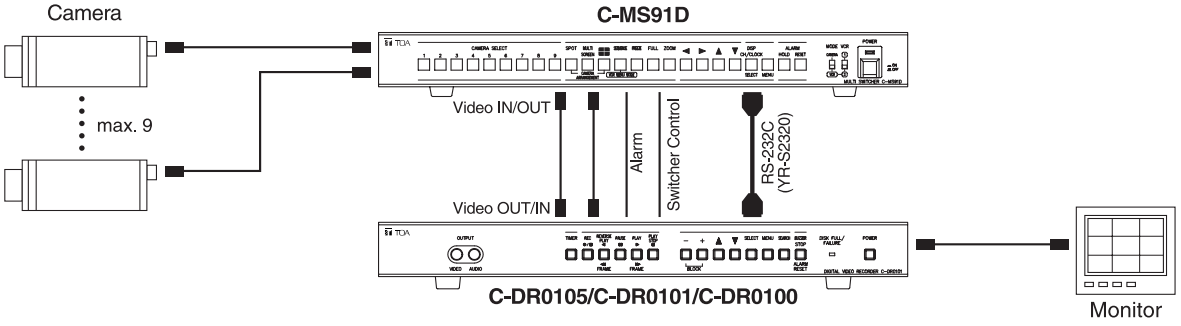
*1 0dB = 1V

*2 That line-locked cameras cannot be connected to the C-MS161D and C-MS91D.

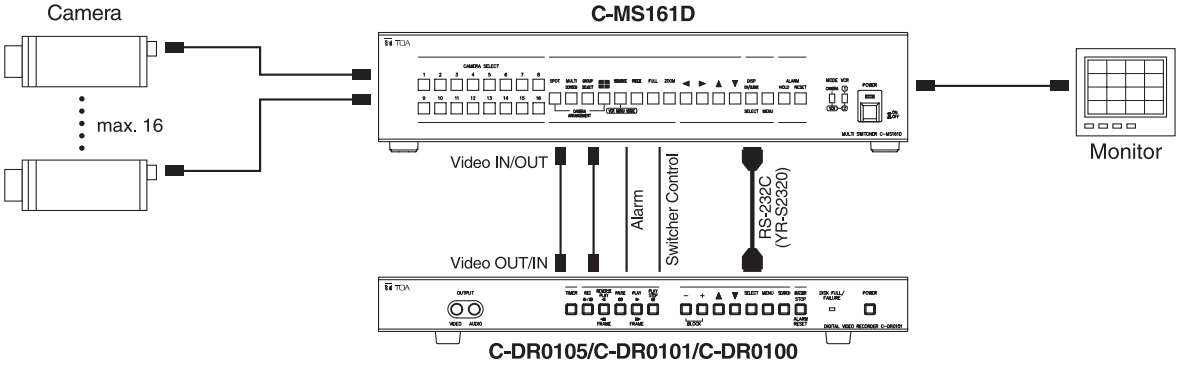
1-Channel System Example



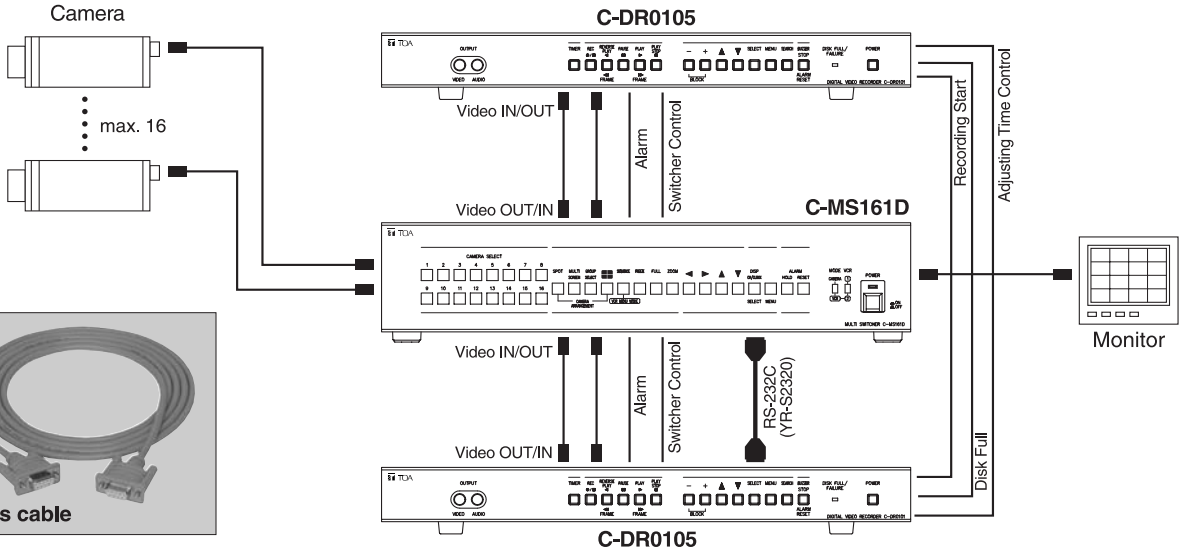
9-Channel System Example



16-Channel System Example



16-Channel System Example (Series Recording 1,000GB HDD)



TOA Corporation
URL : http://www.toa.jp/
Specifications are subject to change without notice.
Printed in Japan (0604) 833-53-017-6B u