Desktop Amplifier FA Plus2 Series

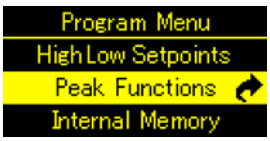
-Ideal for integration into facilities due to the box-shaped design
-Easy to combine with external devices such as PLC using the equipped output functions
-High sampling rate (2000Hz) for accurate results by following rapid changes of force
-High RS232C data output speed (continuous data rate: 100 data/sec)
-Option of industrial power supply DC+24V is available

Features	
Control Functions	- Adjustable baud rate to fit to your facilities such as PLC - Easy output of continuous data to your facilities such as PLC due to high RS232C data output speed (continuous data rate: 100 data/sec) - Accurate and quick force judgement due to high comparator data rate (2000 data/sec)
Management Functions	- Enables detection of load cell using A/D (Analog to Digital) value display - Reduces risks in operation by keeping a spare load cell using eZ Connect series

[Main Functions]

[Clear display]
-Reduces risk of misreading values with easy-to-read high luminance organic EL display

[Easy operation]
-Easy select of menu



[Pass-fail judgement]
-Enables to judge by the LED light for the pass-fail results using comparator
-Alarm sounds for the fail result

[Quick force judgement]
-Quick force judgement with 2000 data/sec comparator data rate
-Allows quick communication with other devices

[Various output functions]
-Easy combining with external devices with various output functions
*Refer to P7 for the details of I/O connector
- High RS232C data output speed (continuous data rate: 100 data/sec)
-Adjustable baud rate to fit to your facilities such as PLC

[USB output function]
-Saves single and continuous data to USB flash drive and supplied software Force Logger

Front

Back

[Box-shaped design for easy integration]
Fits to your application

1. Standard use

Standard type

2. Integration into facilities

Optional mounting stay MSFF-A is mounted

Optional mounting stay MSFF-B is mounted

[Industrial power supply option available]
-Option: -DC
(Power: DC +24V, 500mA)

*AC adaptor is not included.

Supplied software: Force Logger

Main functions
-You can continuously transfer data to PC at 10Hz with ease.
-It automatically calculates Maximum, Minimum, and Average values.
-You can store data in CSV format.
-You can resister measurement conditions and measurer's name.
-You can setup the force gauge's function.

Operation environment
-OS : Windows 7/8/8.1/10 (32/64bit)
-Hardware: CPU Pentium4(1GHz or more), Memory 2GB, Hard Disk 10GB or more are recommended
-Platform: .NET Framework4 or later
-Execute environment: Internet Explorer6.0, Windows Installer 3.1 or later
-Connection Port: USB1.1, USB2.0

Specifications		
Model	**FA Plus2**	**eFA Plus2**
Features	Adjustment is required when change the load cell	Load cell interchangeable eZ Connect series (no need for adjustment)
Accuracy	The accuracy of connected load cell	The accuracy of connected load cell ＋ ±0.2% F.S. (*1)
Unit of measurement	Depends on load cell and settings (N, kN, kgf, lbf N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in) (*2)	
Display	4-digit	
Display update	16 / sec	
Sampling rate	2000 data / sec at maximum (*3)	
Battery	AC adapter (AC100～240V) (*4)	
Operating environment	Temperature: 0～40 degree Celsius Humidity: 20～80%RH	
Functions	Customized display (header and footer), Peak hold (tension and compression), Comparator (judgment of OK or NG), Display of AD value, Reversible display, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, 1st/2nd peak, Displacement detection at force peak value, Displacement zero reset at selected force, setting lock	
Output	RS232C (baud rate available from 57600bps to 9600bps), USB, 2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm, Sub comparator 2 steps (output of large or small judgment), USB flash drive, Displacement.	
Overload warning	Approx.110%F.S. (Warning message and alarm)	
Available liner scales	- Online driver output (a line receiver according to RS422/485 must be built in.) - Open collector output (Voltage drop between contacts must be smaller than 0.5V.)	
Weight	1100g	
Dimensions	Refer to dimensions	
Accessories	AC adapter (only for standard model), Force Logger (software for data logging) (*5), USB cable, Adapter for USB flash drive (*6), Instruction manual	
	Inspection certification (when connecting load cell is purchased)	- (*7)

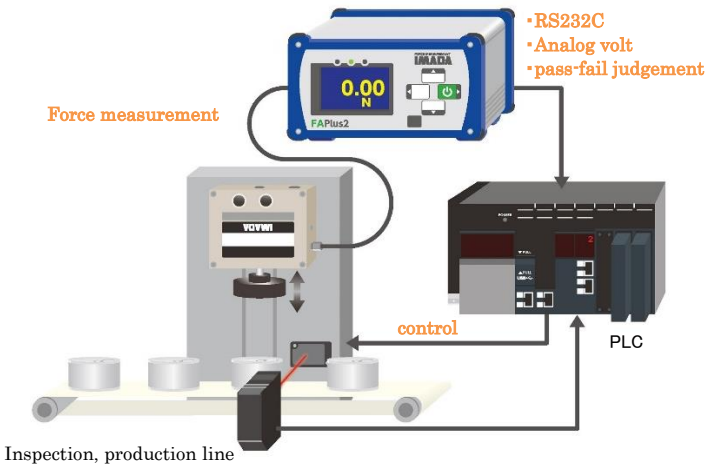
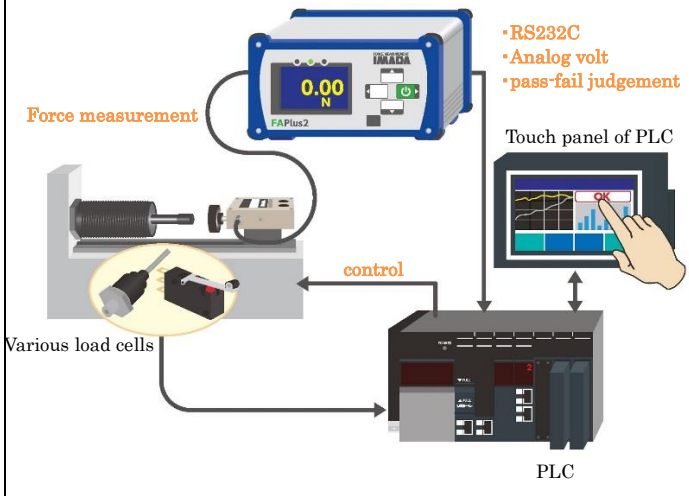
*1 Accuracy ±0.2% F.S. is added.
*2 The available units are different from Japanese domestic model and international one.
*3 When you save data in USB memory stick, the sampling rate is selectable among 1, 50 and 100/sec.
*4 Option of industrial power DC+24V is available. (option: -DC)
*5 Refer to the details on page 2.
*6 USB flash drive is not included.
*7 We offer calibration certification for eFA Plus2 connected with the load cell at extra charge. Please contact us for details.

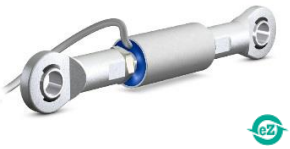
Main Options			
Option	**Model**	**Description**	**Product model**
Industrial Power Supply (*1)	**-DC**	Industrial power supply: DC+24V, 500mA Enables to use in industrial power environment. (*1)	FA Plus2 eFA Plus2
Analog Volt	**-AN**	It outputs sensor data through analog voltage without conversion. (*2) Analog Cable CB-118 is required. (*3)	FA Plus2
High Accuracy (*4)	**-HP□□**	The accuracy is higher than standard type. Please input the accuracy of the load cell to □□ which you require. Please contact us for details.	FA Plus2

*Model with option follows the rules: FAP2-[load cell model]-[option model].
Example 1: FAP2-DPU-50N **-DC** **-AN** Example 2: eFA Plus2**-DC** Example 3: Accuracy of 0.2% is required FAP2–DPU-50N **-HP0.2**
*1 AC adapter is not included.
*2 The speed is higher than the standard type. But zero reset is not possible, and it gets many noises
*3 Cables are required when connected to multiple devices.
*4 Some load cells are not available for it. Please contact us for details.

Cables and linear scale			
Cable with Terminal Block **CTB-A**	Open End Cable **CB-908**	RS232C Cable **CB-208**	Built-in linear Scale **DMK series**
Allows for connection with liner scale and external equipment such as PLC (*1, *2, *3) (37 pin cable is included)	Allows for connection with external equipment such as PLC with 37-pin (*1, *2)	Enables data recording and operation from PC or PLC (*1, *4)	Enables the force-displacement testing by integrating into facilities (*1, *4)
			

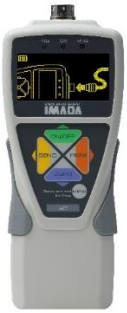
*1 There is only one connector for one cable.
*2 Refer to P7 for the details of I/O connector.
*3 Specifications of terminal block is as follow.
-Length of Supplied cable: approx.1m
-Insertable Cable Size: single cable φ0.5 to 1.6 , stranded cable 0.08 to 1.255 ㎟ / AWG28 to 16
*4 37-pin connector is the standard type. However, we also offer special type without connector if you need use cable with terminal block. Please contact us for details.

Examples of Connection with External Facilities	
Integration into facilities	Connection with load cell
	

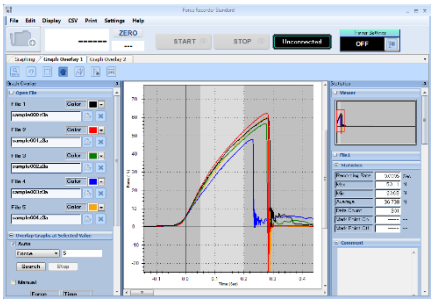
Load Cells				
Model	Standard Type **DPU series**	Waterproof and Dust-proof **SW series**	Extra Small **LMU series**	Small Type **LU series**
Features	Ideal for integration into facilities as it can be screwed directly by the threaded holes	Enables measurement applications in dusty or wet environment due to IP67 approval	Easy integration due to equipped male screws on both sides of the sensor	Easy integration with equipped threaded holes on both sides of the sensor
Force	Tension and Compression	Tension and Compression	Tension and Compression	Tension and Compression
Capacity	2N～20kN	100N～20kN	50N～500N	50N～2000N
Accuracy	±0.2%F.S.	±0.5%F.S.	±1.0%F.S.	±1.0%F.S.
Image				
Model	Pen shaped **PN-50N**	High Accuracy **SK series**	High Capacity **ZD series**	Coin Shaped **LM series**
Features	Enables force testing of small space by applying force by hand	Ideal for integration into facilities as its cuboid shape body; IP67 approval	Enables to be used in narrow space due to the compact design; IP67 approval	Facilitates the testing in narrow space due to its thin and compact design
Force	Tension and Compression	Tension or Compression	Tension or Compression	Compression
Capacity	50N	2000N～20kN	1000N～20kN	10N～20kN
Accuracy	±2.0%F.S.	±0.25%F.S.	±0.5%F.S.	10N～10kN : ±2.0%F.S. 20kN : ±3.5%F.S.
Image				
Model	High Accuracy Coin Shaped **LC series**	High Accuracy and High Capacity **DD2 series**	Wide Temperature Range **LMT-1000N**	Crane Scale Type **ZW1-10kN**
Features	Facilitates the testing in narrow space due to its thin and compact design; stainless	Allows various precision testing due to its high accuracy and high capacity; IP67 approval	Can be used in the testing environment from -40 up to +150 degree Celsius.	Easy to hang a sample through the hook; IP67 approval
Force	Compression	Compression	Compression	Tension
Capacity	500N～20kN	5000N～20kN	1000N	10kN
Accuracy	±0.5%F.S.	±0.5%F.S.	±1.0%F.S.	±1.0%F.S.
Image				
Model	High Capacity Type **ZU series**	Load cell for Two-wheeler Handbrakes **PK1-500N**	Load cell for Vehicle Foot Pedals **PK2-1500N**	Torque Load Cell **eHT series**
Features	Easy to fix due to its two rod ends; IP67 approval	Used for force testing of two-wheeler handbrakes	Used for force testing of automotive' s foot pedals	Can be widely used in various torque testing
Force	Tension	For special sample	For special sample	Torque
Capacity	10kN～20kN	500N	1500N	0.5N･m～10N･m
Accuracy	±1.0%F.S.	±1.0%F.S.	±1.0%F.S.	±0.5%F.S.
Image				

Related Products

Mounting Stay A Type **MSFF-A**	Mounting Stay B Type **MSFF-B**	Signal Tower Light **PLU-03**	Foot Switch **FSU-01R**
Mounting to the panel	Mounting to the bottom	It shows the pass-fail results clearly. It can also alarm if the sensor is overloaded. (*1)	It can zero reset. (*1, *2)
They are useful for integration into facilities. Please select the suitable type for your application.			
Refer to P8 /P9 for the dimensions.		37-pin connector Length of cable: 3m	37-pin connector Length of cable: 1.5m
			

RS232C Printer	Separated Sensor Model Digital Force Gauge **ZT series**	Sensor Interchangeable Indicator **eZT**
It can print measuring conditions, measuring results, pass-fail results etc. by connecting with RS232C. Please purchase Model BL2-58 from SANEI ELECTRIC INC. *Cable CB-208 is required (*1)	Indicator for hand use can be used in various testing environments with high accuracy and repeatability.	Indicator for eZ Connect series load cells and no need of adjustment when change load cell.
		

Graphing Software **Force Recorder**



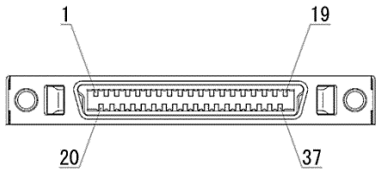
Enables accurate graphing with high sampling rate of max. 2000Hz.
3 versions are available.

Main functions	Professional	Standard	Light
Force-time graphing	○	○	○
Force-Displacement graphing (*1)	○	-	-
Force gauge function setting	○	○	○
CSV format saving	○	○	○
Graphs overlaying (5 graphs)	○	○	

*1 Professional version is designed to be used with ZTA and a test stand with liner scale
* Please refer to each specification sheet for details.

*1 37-pin connector is the standard type. However, we also offer special type without connector if you need use cable with terminal block. Please contact us for details.
*2 Please contact us for details if you have special requirements of output signal.

[I/O Connector]



Connector Pin Arrangement		
Pin No.	**Signal name**	**Description**
1	-NG	High low setpoints of comparator output, wither signal is output depending on comparator judgement. (*1) (*4)
2	OK	
3	+NG	
4	SC1	Output depending on set high/low output values (*1) (*5)
5	SC2	
6	OVL	Overload output, Output when warning overload. (*1)
7	READY	Measurement-ready signal, Output when the display is ready to start measurement. (*1)
8	OUT GND	Grand common through pin #1 to 7.
9	ANALOG RAW +	Analog output (RAW) (*2) (*3)
10	ANALOG RAW –	
11	ANALOG D/A +	Analog output (D/A) (*2) (*3) Approx. +/-2V is output when max. force applied.
12	ANALOG D/A –	
13	232C_TxD	RS232C signal
14	232C_RxD	
15	232C_GND	
16	NC	N/A
17	NC	
18	NC	
19	NC	

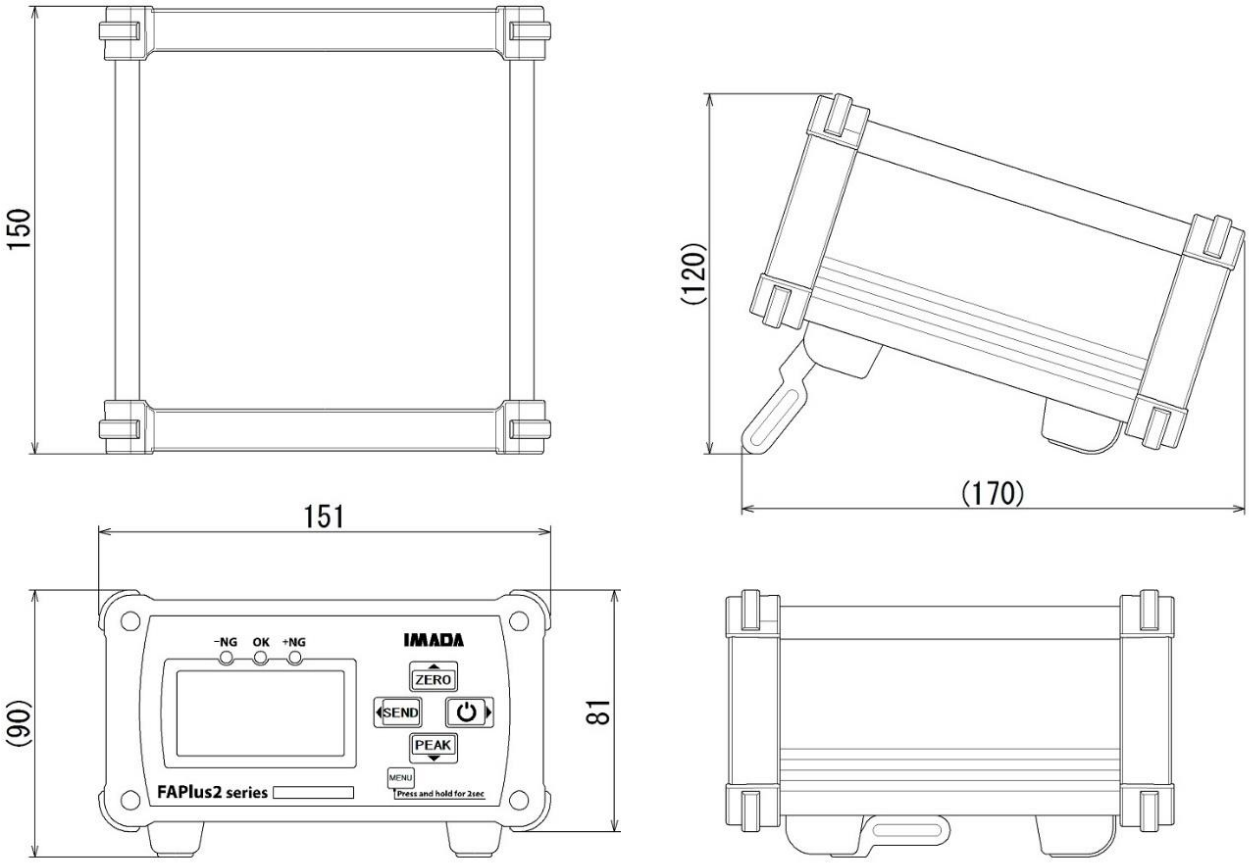
Pin No.	**Signal name**	**Description**
20	NC	N/A
21	NC	
22	NC	
23	NC	
24	EXSW1:POWER	Input signal The functions differ depending on signal of Shift, Refer to the bottom of page of the page for details. (Detect edge signal when each pin connected to GND pin #30) (*6)
25	EXSW2: ZERO	
26	EXSW3: SEND	
27	EXSW4: PEAK	
28	Rec	
29	Shift	
30	GND	Input grand common through pin #24 to 29 and 32.
31	Mark Input	Input mark point
32	Scale A+	Displacement input (*7) Connectable linear scale and rotary encoder. (Corresponds to line driver output and open collector output.
33	Scale A- (OC1)	
34	Scale B+	
35	Scale B- (OC2)	
36	+5V	External power supply +5V (*8)
37	GND	External power supply Grand

*1 Open collector output. (Please keep source voltage less than 30V and current of 10mA.)
*2 Please keep resistance 1kΩ and more.
*3 Differential voltage output between 2 wires.
*4 The judgement done based on the displayed value.
*5 Real-time value is referred for judgement at all times.
*6 Pin #24-29 and #30 are short-circuited: ON.
*7 Connect pin #32 (A+) and #34(B+) / #35(B-) in case of line driver output.
Connect pin #33(OC1) / #35(OC2) in case of open collector output. (Keep voltage drop 0.5V and less.)
*8 Enable to supply 5V 200mA at max. Make sure to charge with AC adapter when supply power to external equipment.

Input signal depending on Shift signal		
	Shift Input invalid	**Shift Input valid**
EXSW1	Turn on	Shut off
EXSW2	Same operation with ZERO button	Zero measuring displacement
EXSW3	Same operation with SEND button	(RESERVE)
EXSW4	Same operation with PEAK button	(RESERVE)
Rec	Control recording on software Force-Recorder series.	

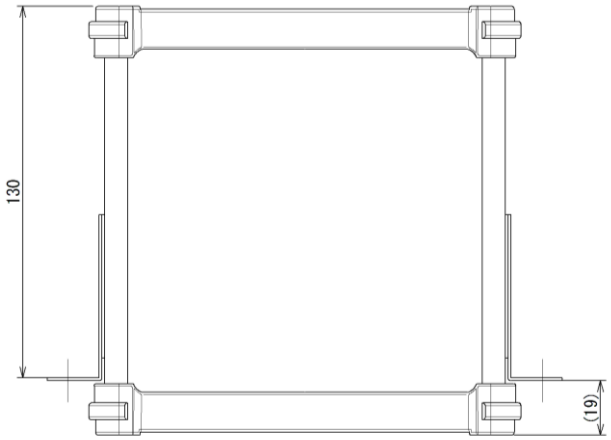
[Dimensions]

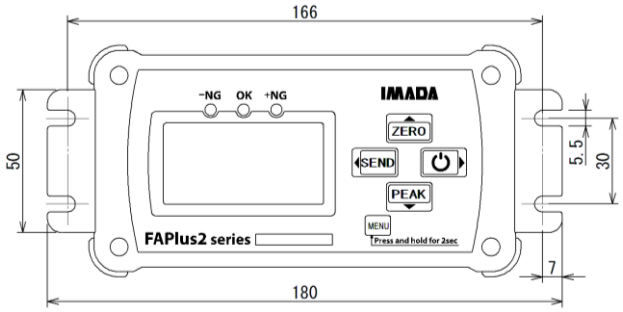
FA Plus2



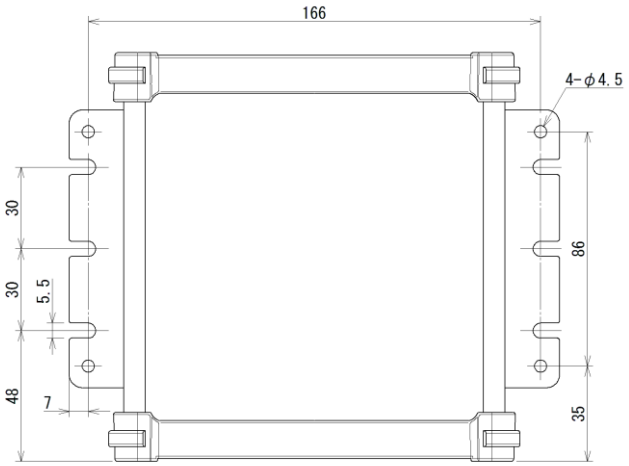
Unit: mm

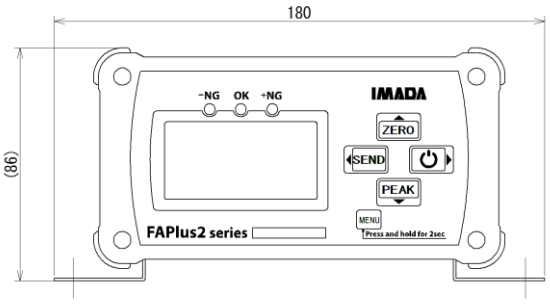
When MSFF-A is mounted



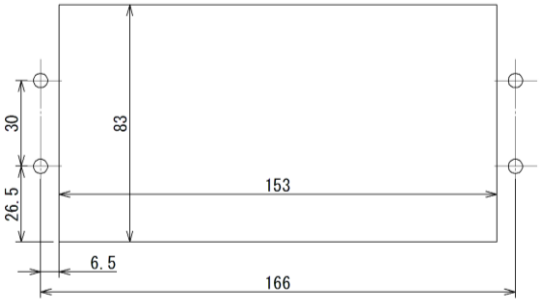


When MSFF-B is mounted





Panel



Unit: mm

[Calibration Certification and ISO/IEC17025 calibration service]

-We can offer calibration certification for FA Plus2 connected with the load cell.
-We offer calibration certification for eFA Plus2 connected with the load cell at extra charge.
-We also offer ISO/IEC17025 calibration service at extra charge.

* Please contact us or your local distributor for detailed information.

[Cautions]

- Specifications are subject to change without prior notice.
- A force gauge (sold separately) is required to use this product.
- This product is designed for force testing only. Do not use it for any other purposes.
- The sensor breaks down when apply force to bend or twist the measuring shaft.

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Visit our website for more information on wide product specifications, measurement applications and videos.