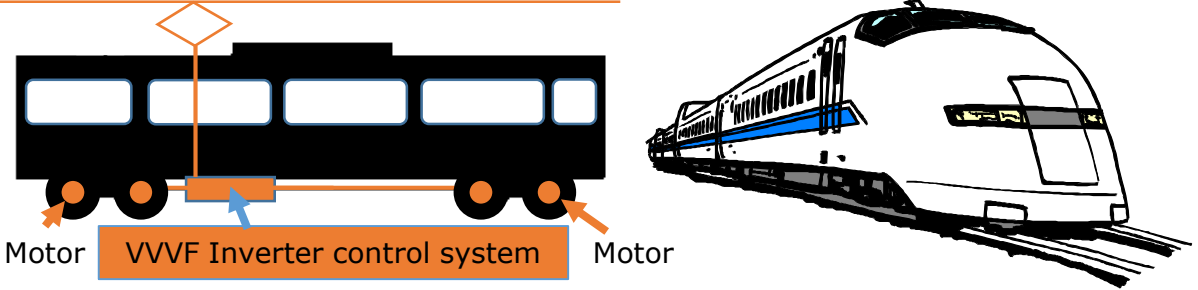


Isolation System DM-8000

Measurement of Railway inverters waveforms

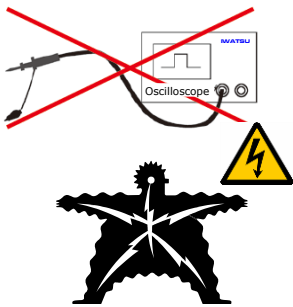
Elevated tracks (DC 1500V)



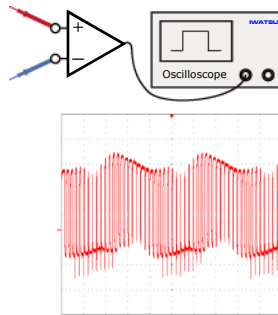
A railway inverter generates an electromagnetic big noise with ultra-high voltage 1.5kV through 6.5kV as well as the normal waves.

Under this surroundings,

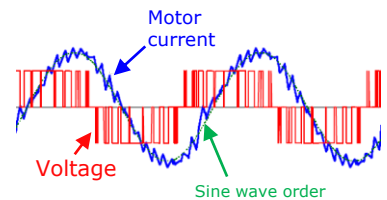
Can you measure it safely?



Can you monitor waveforms accurately?



Noise overlapping Sine wave



The Isolation system solves this problem.

Battery-powered Isolation Unit

Input: 2 channels,
Wide bandwidth: 500MHz, 2GS/S, 16Mpoints,
12hours of continuous use

Direct control by Power electro analysis software "IS Viewer"



Optical Fiber cable Digital Transmission:
Safe, Wide bandwidth, Maintenance free, wide varieties
of cables to be used from 2m to 200m.



Isolated completely by
Optical Fiber cable



Ethernet



Synchronous
connections to
Up to 12 units.

Insulation case preventing electric shock



Optical Fiber cable

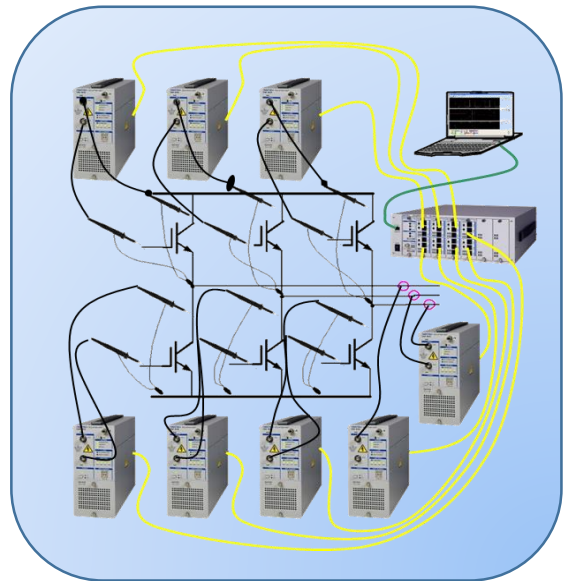


2m ~ 200m

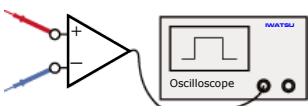
Max. 12 units, 24 channels synchronization measurement

An isolation unit equips 2 channels to measure the same voltage. With these channels, maximum 12 units are connectable at the same time.

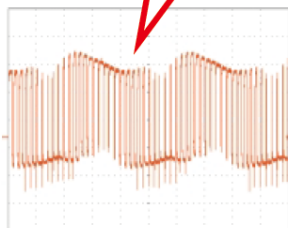
Vce & Vge of 3-phase, 2-level inverters and output current can be measured simultaneously.



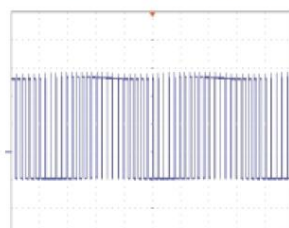
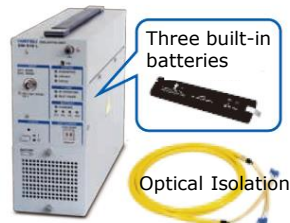
Measuring Vge of the upper arm with differential input



The common mode noise prevents accurate measurement.

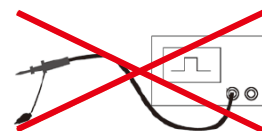


Measuring Vge of the upper arm with isolation input



The Isolation system eliminates noises that Differential probes hardly do, and measures at 500MHz bandwidth continuously.

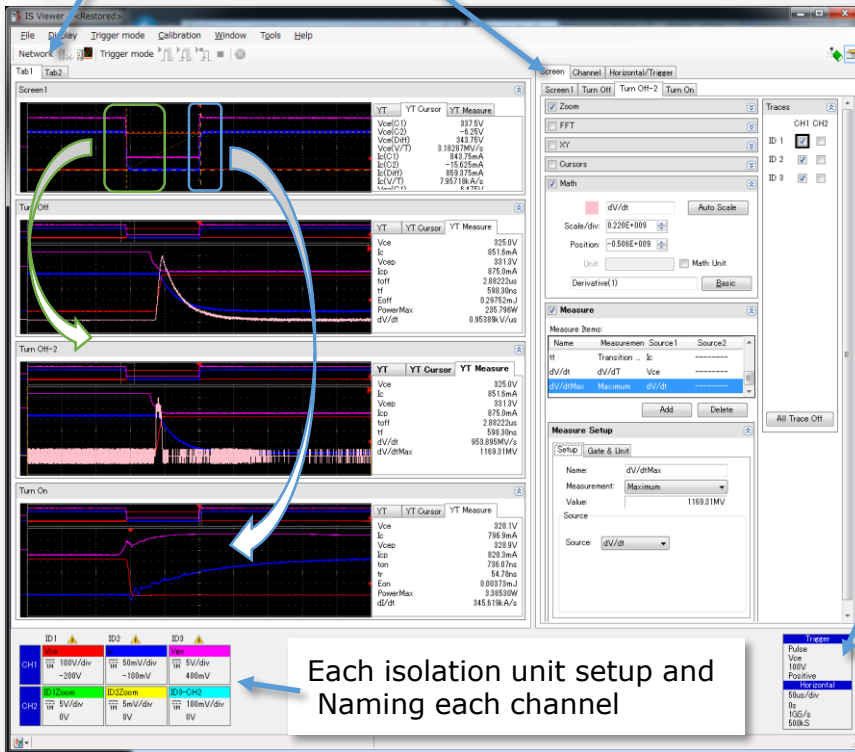
Please be sure not to connect the earth lead to the inverter output because it shorts out with the oscilloscope grounds.



The software "IS Viewer" supports Power Electronics analysis.

The software IS Viewer can analyze turned-on and turned-off of the waveform at the same time by zooming any part of the waveform on the Multiple Screens.

Setting multiple screens per tab



This software has edge search function, which is used to count the number of edges and zoom the edge you want to monitor.

Trigger setup and Time axis setup

YT	YT Cursor	YT Measure
Vce		325.0V
Ic		851.6mA
Vcep		331.3V
Icp		875.0mA
toff		2.88222us
tf		598.30ns
dV/dt		953.895MV/s
dV/dtMax		1169.31MV

Each isolation unit setup and Naming each channel

Power Loss and Slope also can be measured automatically. Conditions per measurement item and naming of each item can be setup.

Automatic measurement specified to the operation of power electronics analysis

--- Operation ---

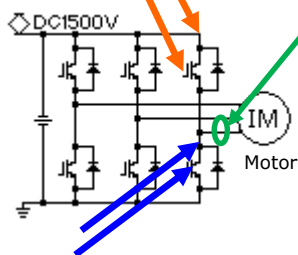
Multistage operation(nesting) support

- Addition
- Subtraction
- Multiplication
- Division
- Integral
- Differential
- Absolute value
- Absolute value multiplication
- Absolute value division
- Inversion
- Waveform synthesis

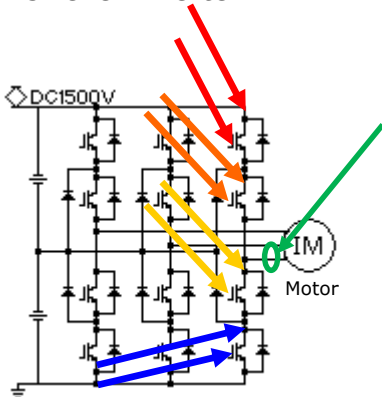
--- Automatic measurement items ---

- Maximum
- Minimum
- Peak-Peak
- Top
- Base
- Top-Base
- RMS
- CyclicRMS
- Mean
- CyclicMean
- +Overshoot
- Overshoot
- Transition Time
- dV/dT
- Freq
- Period
- +PluseCount
- PluseCount
- +PulseWidth
- PulseWidth
- Duty
- Integral
- Integral(Absolute)
- Integral(Positive)
- Integral(Negative)
- Skew(%)
- Skew(Level)

— 2-level inverter -----



— 3-level inverter -----



— An example of the configuration -----

Product	Unit name	2-Level	3-Level
Main unit	DM-8000H	1	1
Control card	DM-601	1	1
Transceiver card	DM-600	2	3
Isolation unit	DM-900	3	5
	DM-900L		
	DM-910		
Optical fiber cable (lightweight without sheath)	DM-910L	3	5
	DM-002(2m)		
	DM-004(5m)		
Optical fiber cable	DM-005(5m)	3	5
	DM-006(10m)		
	DM-007(20m)		
	DM-008(50m)		
	DM-009(100m)		
	DM-101(200m)		
Backup battery pack	DM-551		
	DM-553(3pcs)		
Battery charger	DM-560		



----- Voltage probes -----

PHV4002-3



PHV6xxL



SS-101R

Attenuation ratio	Peak	DC + ACpk	Length	Bandwidth	Model
10:1		600V	1.2m	500MHz	SS-101R
100:1	4kV	3kV	1.2m	380MHz	PHV641-LRO
			2m	300MHz	PHV642-LRO
			3m	150MHz	PHV643-LRO
	6kV	4kV	1.2m	380MHz	PHV661-LRO
			2m	400MHz	SS-0171R
			2m	300MHz	PHV662-LRO
3m			150MHz	PHV663-LRO	
6kV	6kV	2m	400MHz	SS-0170R	
1000:1	6kV	4kV	2m	400MHz	PHVS662-LRO
			3m	250MHz	PHVS663-LRO
	40kV	20kV	3m	100MHz	PHV4002-3-RO
			30kV	3m	50MHz
2000:1	80kV	60kV	4m	50MHz	HV-P60