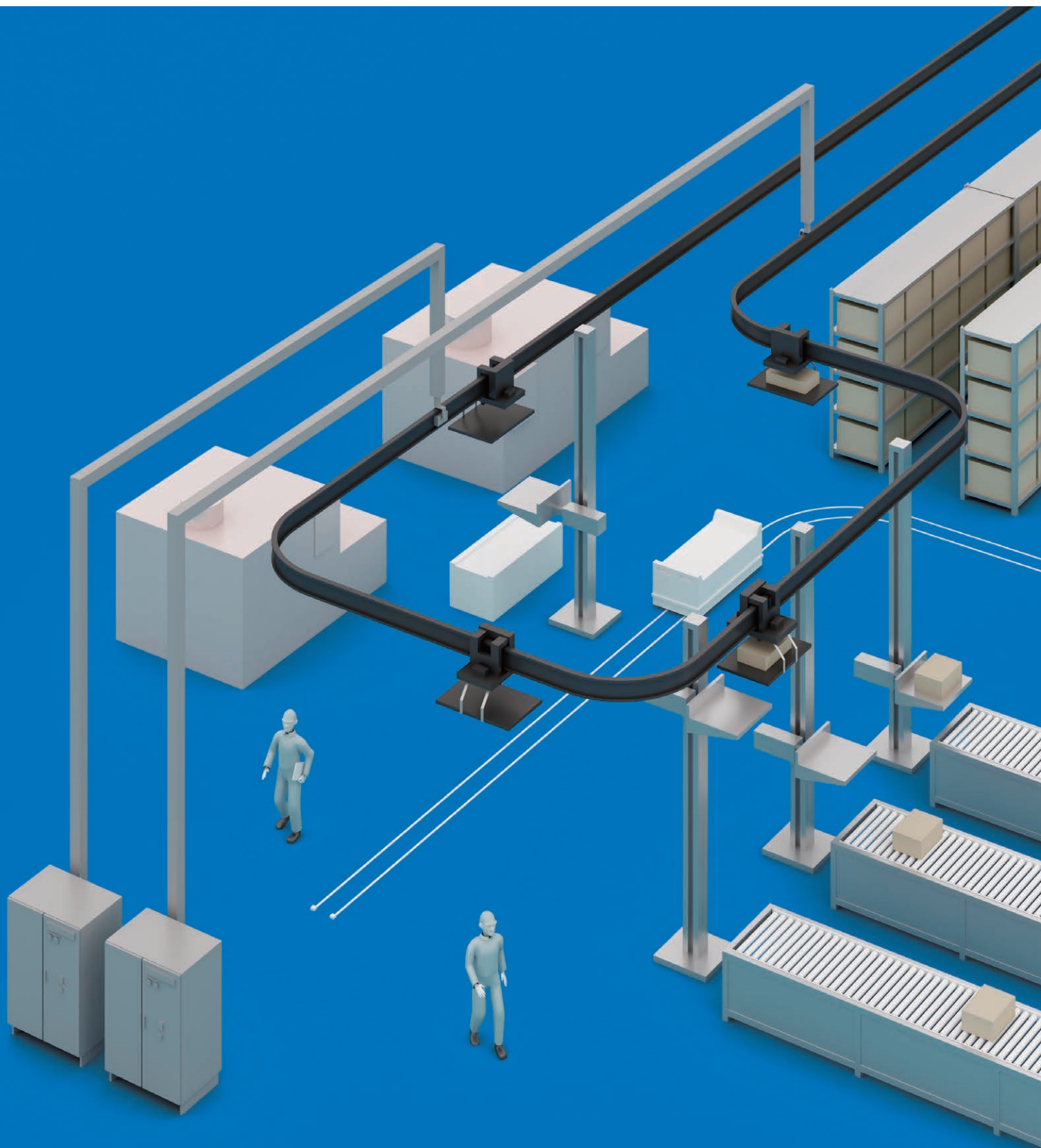


Panasonic

Contactless Trolley System

Luftro-reel









Before Use

1. Periodic maintenance of this product is necessary.
Please be sure to inspect and replace parts according to the maintenance schedule.
For replacement parts, be sure to use parts specified by us.
2. This product can not be used for applications that require extremely high reliability because of the risk of short circuits, etc. (Do not use for equipment with high impact from circuit interruption such as earth leakage current, medical equipment, and other application that directly affect human life.)
3. When you design a system using this product, please take appropriate safety measures against mal-functions during use.
4. In order to use this system in Japan, notification of the Radio Act is required. For legal restrictions in countries other than Japan, please check local regulation where you will use this system.
5. Since this product uses the principle of electromagnetic induction at high frequencies, high voltages are applied to the component parts and sections between components. Please be sure to follow the instruction manual, installation manual, and product specifications.
6. Since this product uses the principle of electromagnetic induction at high frequencies, a strong magnetic field is generated around the products and wiring (construction site). Please be sure to follow below.







- ①Use non-magnetic aluminum (Al) rails for fixing litz cables, which are unaffected by magnetic fields - there is a risk of burnout and fire.
- ②Do not place any metals or other objects between the wires of the litz cable - metallic objects may generate heat and cause a fire!
7. Conductive dust, foreign objects, etc. nearby may cause deterioration of the insulation of this product, resulting in ignition or heat generation. Please be sure to follow the usage and maintenance procedures described in the instruction manual and installation manual.
8. The product will eventually reach a state (life span) where its continuous use becomes difficult due to deterioration of its components. In the worst case, deterioration may lead to burnout or fire, so we recommend early inspection and replacement.
9. This product has limitations on the environment in which it can be used. In particular, it cannot be used in environments with the following conditions.
 - ①Environment where flammable gas or dust (explosive or combustible) is generated, etc. - There is a risk of explosion.
 - ②Ambient temperatures other than -10°C to +40°C and locations where condensation may occur due to sudden temperature changes, etc. - There is a risk of electric shock, fire, or falling (Luftfrost: 0°C to 40°C)
 - ③Humid environment, environment where corrosive gas or oil fumes are generated, etc. - There is a risk of electric shock, fire, or contact failure of the product due to corrosion.
10. The performance of this product is greatly affected by the accuracy of installation (horizontal and vertical levels of litz cables), so be sure to follow the instructions in the installation manual for design and installation.

■ Precautions on installation

<div>Warning</div>			
<div><div>Prohibited</div></div>	<div><ul style="list-style-type: none">●Do not modify the product in any way. Electric shock, fire or falling may occur.●Do not use in places where condensation may occur. Electric shock, fire or falling may occur.</div>	<div><div>Compulsory</div></div>	<div><ul style="list-style-type: none">●Use at ambient temperatures of 0°C to 40°C. For use other than the above, please contact us.●This product shall be installed in accordance with the Electrical Equipment Technology Standards (laws). Use an appropriate overcurrent circuit breaker on the primary side of the power supply.●Installation shall be performed exactly as described in the installation and operation manual included with the product. Improper installation may cause electric shock, fire, or falling of the product.</div>
<div>Caution</div>			
<div><div>Prohibited</div></div>	<div><ul style="list-style-type: none">●This product is for general indoor use only. Do not use this product in places with high humidity, a place where corrosive gas is generated or a place where cutting oil may be directly splashed. Electric shock, fire, or falling of the product may occur.●Do not place metal objects or magnetic body near this product (track power litz cable, pickup). Metals may generate heat, resulting in a fire hazard.</div>	<div><div>Compulsory</div></div>	<div><ul style="list-style-type: none">●Persons who are using heart pacemakers should carefully consult with a physician. The operations of this system may affect pacemakers.●The rails on which the track power litz cables are installed shall be firmly secured without distortion or tilting. Otherwise falling the equipment or fire may occur.●Use aluminum (Al) for the rails which secure litz cables. Burnouts and fire may occur.●When doing cutting, or drilling holes, use protective gear such as goggles, etc. Not doing so may cause injury.●Be sure to remove burrs using file after cutting, drilling. Not doing so may cause injury.●Use products only within the specified rating and load capacity. Exceeding specified ranges may cause burning or fire.</div>
	<div><ul style="list-style-type: none">●Installation shall be carried out exactly as described in the installation manual. Improper installation may cause electric shock, fire, or falling of the product.●Be sure to do a pre-use test run of equipment and do periodic inspections. Otherwise, electric shock, fire or damage due to falling of equipment may occur.</div>		

■ Precautions on use To prevent injury or accidents, always pay attention to the following points.

Panasonic is endeavoring to improve quality and reliability, however due to the degradation of components ultimately ongoing usage will generate challenging circumstances (lifespan). Progress varies depending upon usage conditions such as utilization rates, and ambient environments, etc., however degradation will progress every year. In the worst case scenario, since burnouts and fires may result due to degradation, we recommend that early inspecting and replacing be carried out. In order to use this product for a long time, the customers themselves must at the very least carry out inspections once every six months based upon the "Maintenance Table." When there is any problem regarding the inspections, please contact the electrician. This product is an important asset of customers. Please check and the following things must be observed. In addition, safety precautions, to the extent expected by the company are listed.

<div>Warning</div>			
<div><div>Prohibited</div></div>	<div><ul style="list-style-type: none">●Do not modify the product in any way. Electric shock, fire or falling may occur.●Do not use in places where condensation may occur. It may cause an electric shock, fire, or fall.</div>	<div><div>Compulsory</div></div>	<div><ul style="list-style-type: none">●The replacement product is required for electrical worker qualifications. Otherwise, electric shock may occur.●Be sure to turn off the power before starting any inspection. Otherwise, electric shock may occur.●Be sure to do a pre-use test run of equipment, do periodic inspections and always carry out a test run after inspection. Otherwise, electric shock, fire or damage due to falling of equipment may occur.</div>
	<div><ul style="list-style-type: none">●Use at ambient temperatures of 0°C to 40°C For use other than the above, please contact us.●If any abnormalities occur, turn off the power immediately and contact a qualified electrician for inspection and repair. In this case, please show the installation/operation manual to the electrician. Otherwise, electric shock, fire or damage due to falling of equipment may occur.</div>		
<div>Caution</div>			
<div><div>Prohibited</div></div>	<div><ul style="list-style-type: none">●This product is for general indoor use only. Do not use this product in places with high humidity, a place where corrosive gas is generated or a place where cutting oil may be directly splashed. Electric shock, fire, or falling of the product may occur.</div>	<div><div>Compulsory</div></div>	<div><ul style="list-style-type: none">●Be sure to apply to the local telecommunications bureaus as it is subject to the Radio Act. Failure to file an application is illegal.</div>

■ Precautions for inspection To prevent injury or accidents, always pay attention to the following points.

⚠ Warning			
Prohibited	<ul style="list-style-type: none"> ●Do not modify the product in any way. Electric shock, fire or falling may occur. 	Compulsory	<ul style="list-style-type: none"> ●Be sure to turn off the power before starting any inspection. Otherwise, electric shock may occur. ●Be sure to conduct test runs after installation and inspection. Otherwise, electric shock, fire or falling may occur.
⚠ Caution			
Prohibited	<ul style="list-style-type: none"> ●Do not place metal objects or magnetic body near this product (track power litz cable, pickup). Metals may generate heat, resulting in a fire hazard. 	Compulsory	<ul style="list-style-type: none"> ●Use protective equipment such as gloves and glasses when working on truck power litz cables, and coaxial cables. If not, you may get injured.
Compulsory	<ul style="list-style-type: none"> ●When inspecting, wear protective equipment such as a helmet and gloves. If not, you may get injured. 		

Contactless Trolley System

The contactless trolley system utilizes the principle of electromagnetic induction, in which the magnetic flux generated in the litz cable is converted by the power incoming coil of the pickup to extract electric power.

This system provides a safe and clean power supply to moving equipment lines, such as conveyors used in factories.

Cleanness

The system never generates dust that contact type conductor often produce. It is applicable to clean environment, such as clean rooms.

Easy-Maintenance

Contact type collector worn out and need to replace, but thanks to contactless system, no need to replace the collector.

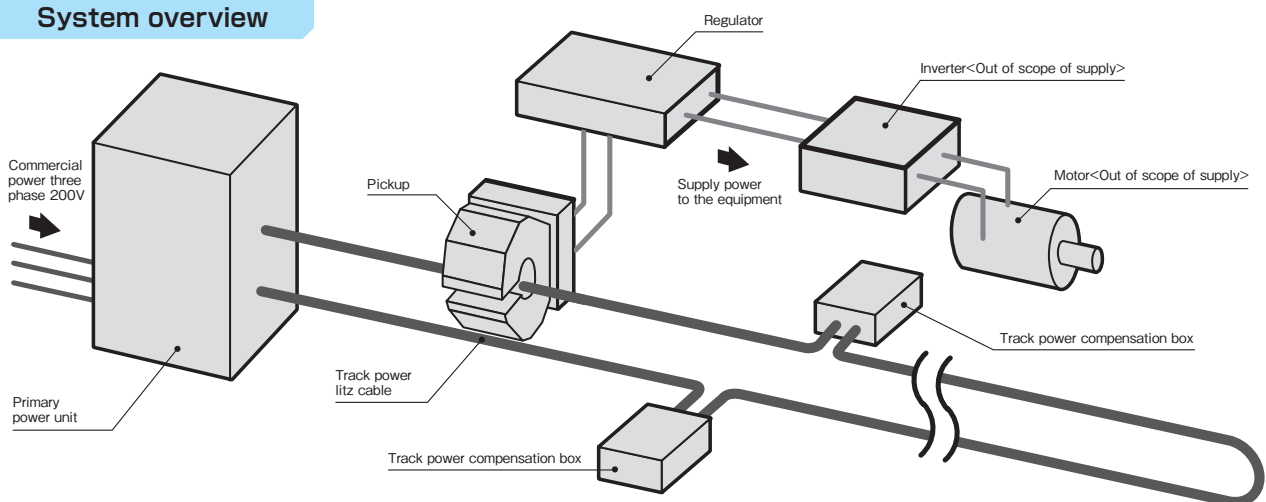
Ensured safety

No exposed conductor parts and no sparking. It allows stable power supply since there is no risk of wire separation.

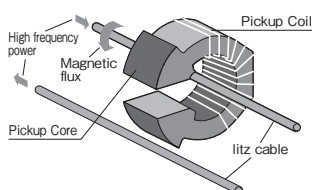
Quietness

No noise generated by the contact between the conductor and the collector in contact-type conductor power supply.

System overview

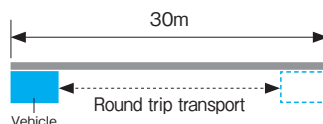


Contactless Power Supply Principle



Application Sample(Luftro-reel)

Line type: Straight
Line length: 30m
The number of vehicle: 1 unit
Peak Power: 8kW

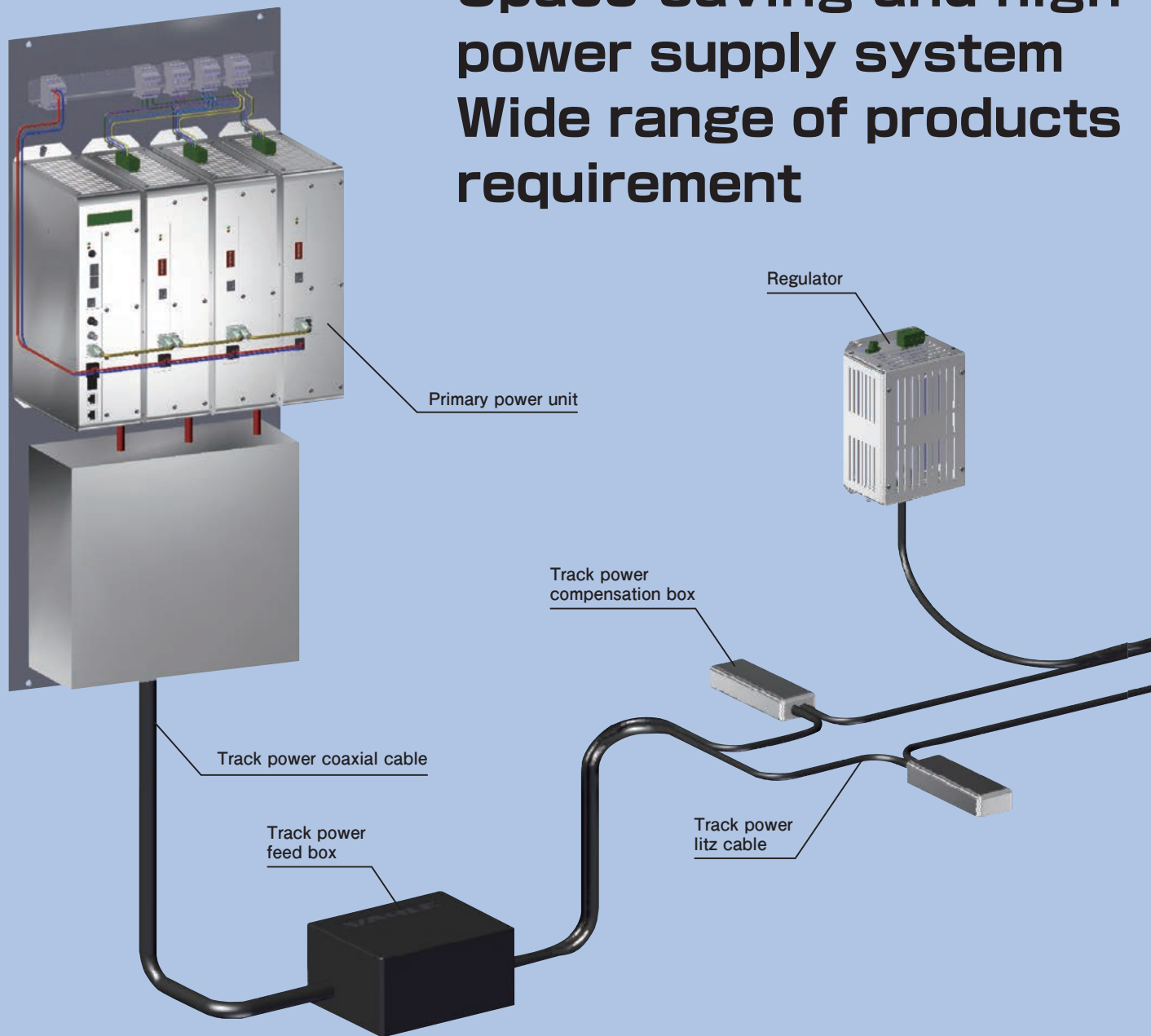


System components	Product Name	Cat.NO.	Quantity
Primary power unit	Primary power unit Ethernet 10kw	DHV1701	1 set
Step-up transformer # 1	Step-up transformer 10kw	DHV1735	1 set
Track power coaxial cable	Track power coaxial cable 20 m	DHV1102	1 set
Track power litz cable	Track power litz cable 30 m	DHV1101	2 sets
Feed box	Track power feed box	DHV1801	1 pc
Compensation box	Track power compensation box	DHV1811	1 pc
Compensation box mounting bracket	Compensation box mounting bracket	DHV1812	1 pc
Cable clamps	Cable clamps for E type 2 m	DHV1211	30 pcs
Hanger	Compact hanger for E type, Short	DHV1312	91 pcs
Spacer	Space holder for E type, 1	DHV1313	91 pcs
	Space holder for E type, 2	DHV1314	91 pcs
Cable guide	Cable guide for E type	DHV1411	6 pcs
Pickup	Pickup E type DC283V 4.0kW	DHV1511	2 pcs
Pickup cable	Pickup cable E type 1.5 m	DHV1542	2 pcs
Regulator	Regulator E type DC283V 4.0kW	DHV1611	2 pcs

※ 1 When using 200V AC, 200V/400V conversion step-up transformer is required.

Luftro-reel

Space-saving and high
power supply system
Wide range of products
requirement



Feature
1

Modular design (Primary power unit)

Thanks to the modular structure, many diverse combinations of power ranges can be assembled.(10,20kW)



Primary power unit
10kW

Feature
2

Space-saving and compact design

Thanks to space-saving compact design,
the mounting space of the vehicle can be minimized.

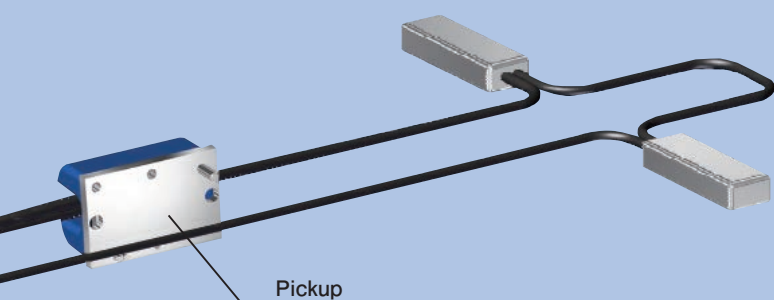


Pickup U type



Regulator U type

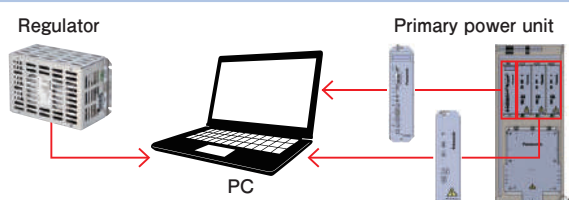
capacity contactless to meet your power



Feature
3

Easy to use service and diagnostic module

Service and diagnostic module allow for whole-system performance control and monitoring



Recommend application

Clean Room

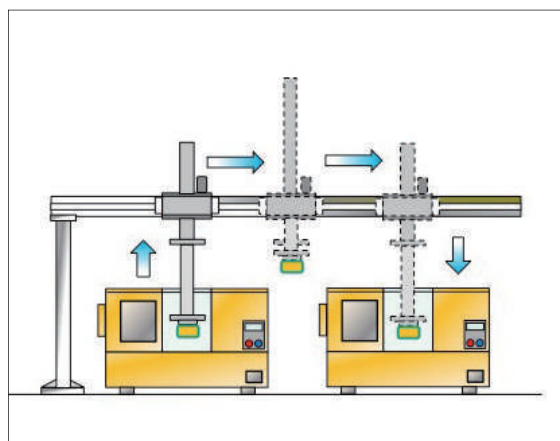


- No maintenance from wear components and unaffected by environmental conditions
- Maintenance free
- High-efficiency
- No wear components

Sortation



Gantry Loader



- No limit to running speed
- Maintenance free
- High-efficiency
- No wear components

Luftro-reel system overview

Primary power unit master • Primary power unit slave

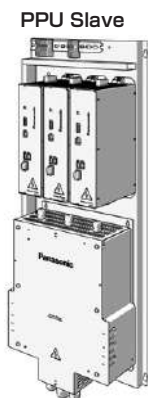
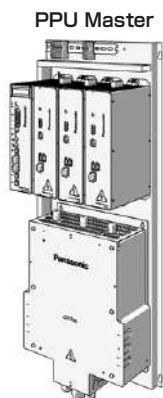
The primary power unit converts commercial power source into 140kHz high-frequency current and supplies a 45A current to primary power cable.

Note1) When using 200V AC, 200V/400V conversion step-up transformer is required.

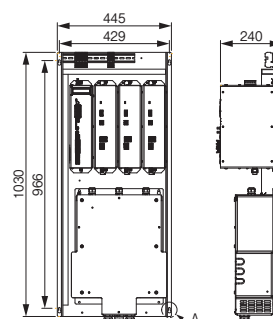
We also have line up of step-up transformers (DHV1735, DHV1736)

Note2) Electric panel board is required separately.

Please contact to our sales representative for detail.

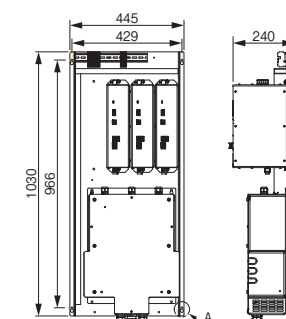


DHV1701 • DHV1702



Enlarged drawing of A(2:1) M6

DHV1703



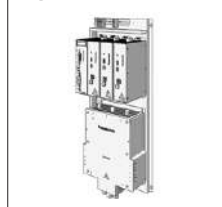
Enlarged drawing of A(2:1) M6

Primary power unit

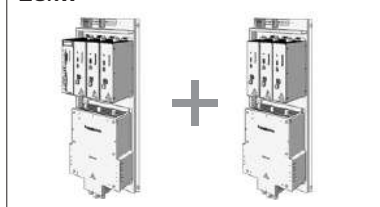
Cat.NO.	Capacity	Type	Rating	Weight (kg)	Quantity	
					Inner box	Outer box
DHV1701	10kW	Master:Ethernet	Input : 3 ϕ AC400V Output : 140kHz/45A	39	—	1
DHV1702	10kW	Master:Digital I/O	Input : 3 ϕ AC400V Output : 140kHz/45A	39	—	1
DHV1703	10kW	Slave	Input : 3 ϕ AC400V Output : 140kHz/45A	38	—	1

Note) Build to order products (Meeting is necessary before order)

10kW



20kW



Track power litz cable • Track power coaxial cable

Litz cable laid in the running line to supply power from the primary power unit to the vehicle.

Track power litz cable



Track power litz cable
(Cable for laying running line)

- Rating : 45A/140kHz
- Specification : Diameter 10.6mm,
Cross-section 20mm².

Track power coaxial cable



Track power coaxial cable
(Cable between primary power unit
and track power feed box)

- Rating : 45A/140kHz
- Specification : Diameter 17.3mm,
Cross-section 2×20mm².

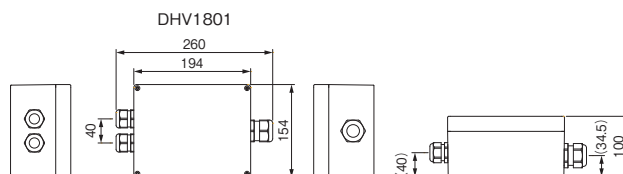
Track power litz cable • Track power coaxial cable

Cat.NO.	Type	Length	Rating	Weight (kg)	Quantity	
					Inner box	Outer box
DHV1101	Litz cable	30m	140kHz/45A	11	—	1
DHV1102	Coaxial cable	20m	140kHz/45A	8.2	—	1

Note) Build to order products (Meeting is necessary before order)

Track power feed box

Connection box between track power coaxial cable from primary power unit and track power litz cable.



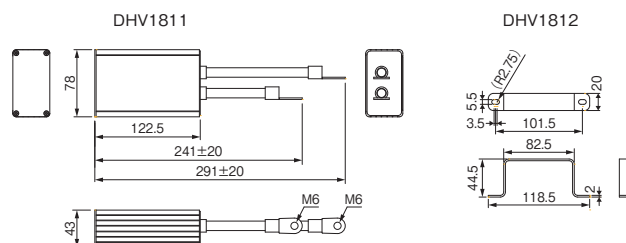
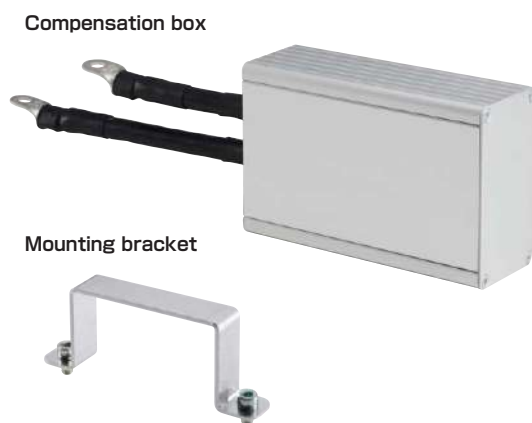
Track power feed box

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1801	Feed box	140kHz/45A	0.8	—	1

Note) Build to order products (Meeting is necessary before order)

Track power compensation box

Compensation boxes are required to compensate for inductance in long running lines.



Track power compensation box

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1811	Compensation box	140kHz/45A	1.0	—	1
DHV1812	Mounting bracket	—	0.07	1	5

Note) Build to order products (Meeting is necessary before order)

Cable clamp and Cable clip

Components to fix track power litz cables in the running line.

Cable clamp for U type



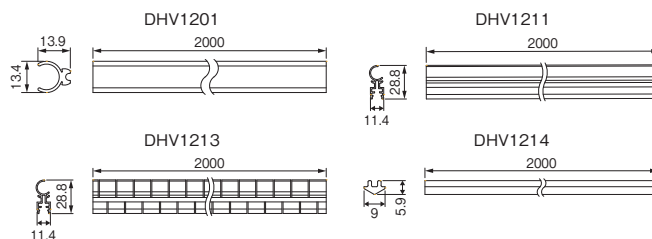
Cable clamp for E type



Cable clamp of curve line for E type



Cable clip for E type



Cable clamps

Cat.NO.	Type	Length	Rating	Weight (kg)	Quantity	
					Inner box	Outer box
DHV1201	U type	2m	140kHz/45A	0.14	—	20
DHV1211	E type	2m	140kHz/45A	0.22	—	20
DHV1213	Curve line for E type	2m	140kHz/45A	0.21	—	20

Note) Build to order products (Meeting is necessary before order)

Cable clips

Cat.NO.	Type	Length	Rating	Weight (kg)	Quantity	
					Inner box	Outer box
DHV1214	E type	2m	140kHz/45A	0.1	—	20

Note) Build to order products (Meeting is necessary before order)

Compact hanger • Space holder • Hanger spacer

Components supporting track power cables and cable clamps in the running line.

Compact hanger



Space holder



Hanger spacer



Compact hanger

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1301	U type	140kHz/45A	0.02	50	100
DHV1311	E type, long	140kHz/45A	0.06	50	100
DHV1312	E type, Short	140kHz/45A	0.05	50	100

Note) Build to order products (Meeting is necessary before order)

Space holder

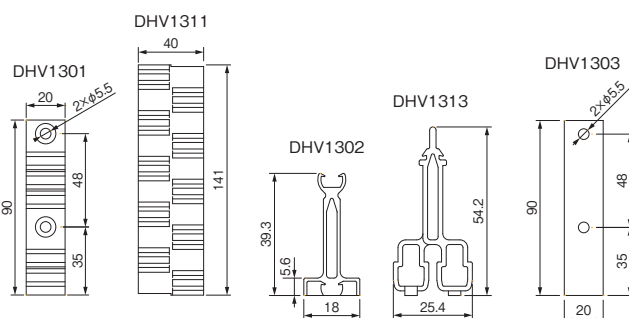
Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1302	U type	140kHz/45A	0.01	50	100
DHV1313	E type, 1	140kHz/45A	0.01	50	100
DHV1314	E type, 2	140kHz/45A	0.01	50	100

Note) Build to order products (Meeting is necessary before order)

Hanger spacer

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1303	U type	140kHz/45A	0.05	50	100

Note) Build to order products (Meeting is necessary before order)



Cable guide • Spacer for cable guide

This component is used to connect track power cable to track power compensation box in the running line or to turn back the track cable at end of the line.

Cable guide for U type Passive



Cable guide for U type Active



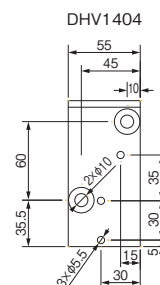
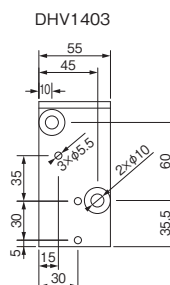
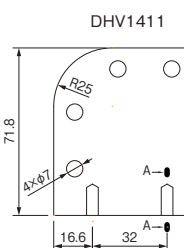
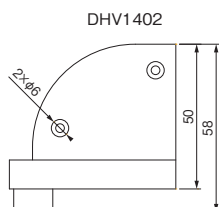
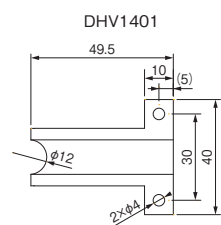
Cable guide for E type



Spacer for cable guide for U Type L



Spacer for cable guide for U type R



Cable guide

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1401	U type Passive	140kHz/45A	0.02	10	50
DHV1402	U type Active	140kHz/45A	0.03	10	50
DHV1411	E type	140kHz/45A	0.08	10	50

Note) Build to order products (Meeting is necessary before order)

Spacer for cable guide

Cat.NO.	Type	Rating	Weight (kg)	Quantity	
				Inner box	Outer box
DHV1403	U type L	140kHz/45A	0.13	10	50
DHV1404	U type R	140kHz/45A	0.13	10	50

Note) Build to order products (Meeting is necessary before order)

Pickup • Pickup cable

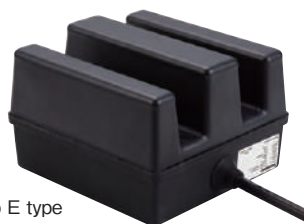
Install to the vehicle, energize from track-power lits cable and supply regular voltage power.

Pickup U type



Pickup U type
 ● Rating : 0.6kW
 ● Peak output : 1.5kW

Pickup E type

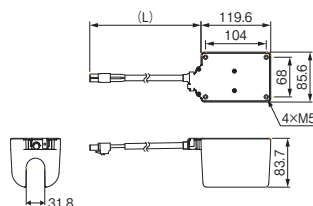


Pickup E type
 ● Rating : 1.6kW
 ● Peak output : 4.0kW

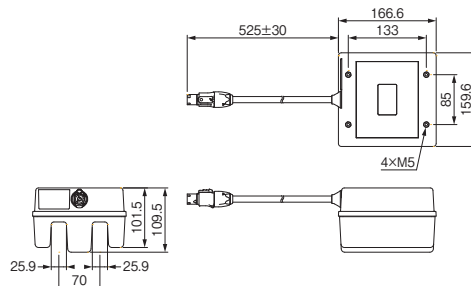
Pickup cable E type



DHV1501•1502•1503•1504



DHV1511



DHV1541•1542•1543•1544



Pickup

Cat.NO.	Type	Output capacity	Cable length (L)	Rating	Weight (kg)	Quantity	
						Inner box	Outer box
DHV1501	U type	1.5kW	0.5m	140kHz/45A	2.0	—	1
DHV1502	U type	1.5kW	1m	140kHz/45A	2.1	—	1
DHV1503	U type	1.5kW	1.5m	140kHz/45A	2.1	—	1
DHV1504	U type	1.5kW	2m	140kHz/45A	2.2	—	1
DHV1511	E type	4.0kW	—	140kHz/45A	5.3	—	1

(Note) Build to order products (Meeting is necessary before order)

Pickup cable

Cat.NO.	Type	Cable length (L)	Rating	Weight (kg)	Quantity	
					Inner box	Outer box
DHV1541	E type	0.5m	140kHz/45A	0.16	1	10
DHV1542	E type	1.5m	140kHz/45A	0.33	1	10
DHV1543	E type	3.5m	140kHz/45A	0.68	1	5
DHV1544	E type	5.5m	140kHz/45A	1.02	1	5

(Note) Build to order products (Meeting is necessary before order)

Regulator

It controls the power input from the pickup to a constant voltage and supply power to the vehicle.

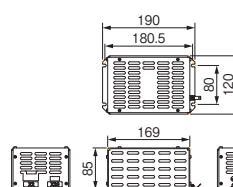


DHV1601

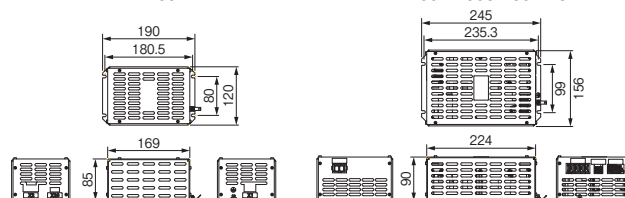


DHV1611

DHV1601



DHV1602•1603•1604•1611



Regulator

Cat.NO.	Type	Output capacity		Voltage	Pickup Cat. No.	Weight (kg)	Quantity	
		Rating	Peak output				Inner box	Outer box
DHV1601	U type	0.6kW	1.5kW	DC283V	DHV1501 DHV1502 DHV1503 DHV1504	1.0	—	1
DHV1602	U type	0.6kW	1.5kW	DC48V		1.5	—	1
DHV1603	U type	0.3kW	0.75kW	DC24V		1.5	—	1
DHV1604	U type	0.6kW	1.5kW	DC72V		1.5	—	1
DHV1611	E type	1.6kW	4.0kW	DC283V	DHV1511	1.6	—	1

(Note) Build to order products (Meeting is necessary before order)

Primary power unit

General information	
MTBF	116767h
Supply-Logic	
Voltage	DC24V $\pm 10\%$
Current	1.1A(Only master unit, without digital outputs)
Power consumption	>27 W
Circuit breaker protection	Must be externally fused (DC6A)
Terminal bar	Cage Clamp(WAGO)
Cross-section	Max. 1.5 mm ²
Reverse voltage protection	Yes
Supply-Power	
Voltage	3/PE/PEN AC 400~480V $\pm 10\%$ 3 phase symmetric
Frequency	50/60 Hz
Power supply system	TT, TN
Continuous current	15A (400V), 12A (480V)
Peak power	10.8kW
Continuous power	10.0kW
Efficiency	95%

Supply specifications (Circuit breakers are out of scope of supply)	
SCCR(Short-circuit protection)	10kA at 400/480V AC
Supply line	Three-phase + PE, 4mm ²
Fuse protection	3x25A(Three-phase circuit breaker)
Circuit Breaker Characteristics	C
Switch off	All poles
Terminal bar	Cage Clamp(WAGO)
Cross-section	Max. 4mm ²
Primary feeder	
Minimum length	20m
Maximum length	200m
Communication	
Interface	Pre-set in advance
Fieldbus	Ethernet/IP (Identification:EI)
Without fieldbus	Digital I/O (Identification: I/O)
LAN cable category	Cat.5e
Data rate	500k bit/s
FOC-synchronization	
Cable	50/125multimode. min.0M2
Plug	St

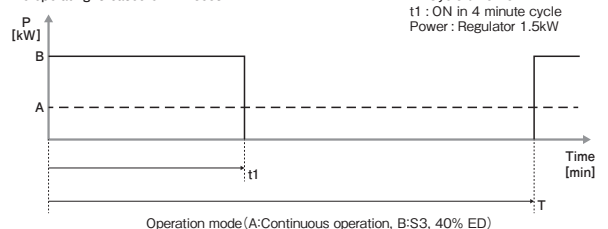
Installation	
Number of installation plates	1
Dimensions	Installation plates: H1030×W445×D240mm
	Installation space: H1030×W445×D290mm (Includes internal wiring of PPU)
Grid dimension fastening holes	H966×W429mm
Hole type	Key hole
Type of fixing screws	M6
Fastening material	Out of scope of supply
Weight	38kg
Ambient conditions	
Temperature during transport	-25 ~ +55°C, No condensation
Temperature during storage	-25 ~ +55°C, No condensation
Temperature during operation	0 ~ +40°C, No condensation
Relative humidity	Max. 95 %, No condensation
Environment	Industry
Cooling	Convection
Protection class	EN60529 IP20

Pickup U type

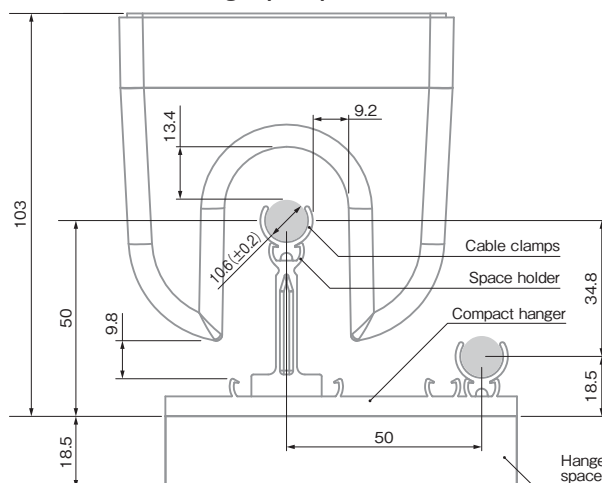
Power curve

Specification	Unit	Value
Power supply line	-	Straight
Temperature	[°C]	20
Vertical offset	[mm]	Optimal distance (depends on pickup type)
Horizontal offset	[mm]	0
Other	-	No limitation due to aluminum protection plate
	-	Adjusted primary-side
	-	No metal contaminants in metal-free zone

The operating is based on EN 60034-1.



Distance of installing U-pickup

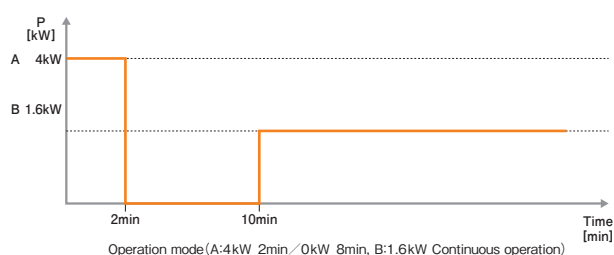


※ Refer to the power curve

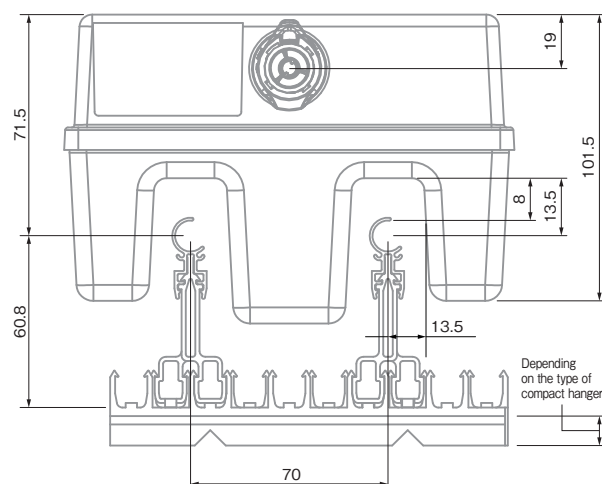
Pickup E type

Power curve

Specification	Unit	Value
Power supply line	-	Straight
Temperature	[°C]	20
Vertical offset	[mm]	Optimal distance (depends on pickup type)
Horizontal offset	[mm]	0
Other	-	Adjusted primary-side
	-	No metal contaminants in metal-free zone



Distance of installing E-pickup



Please contact

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