

**YASKAWA**

# R1000

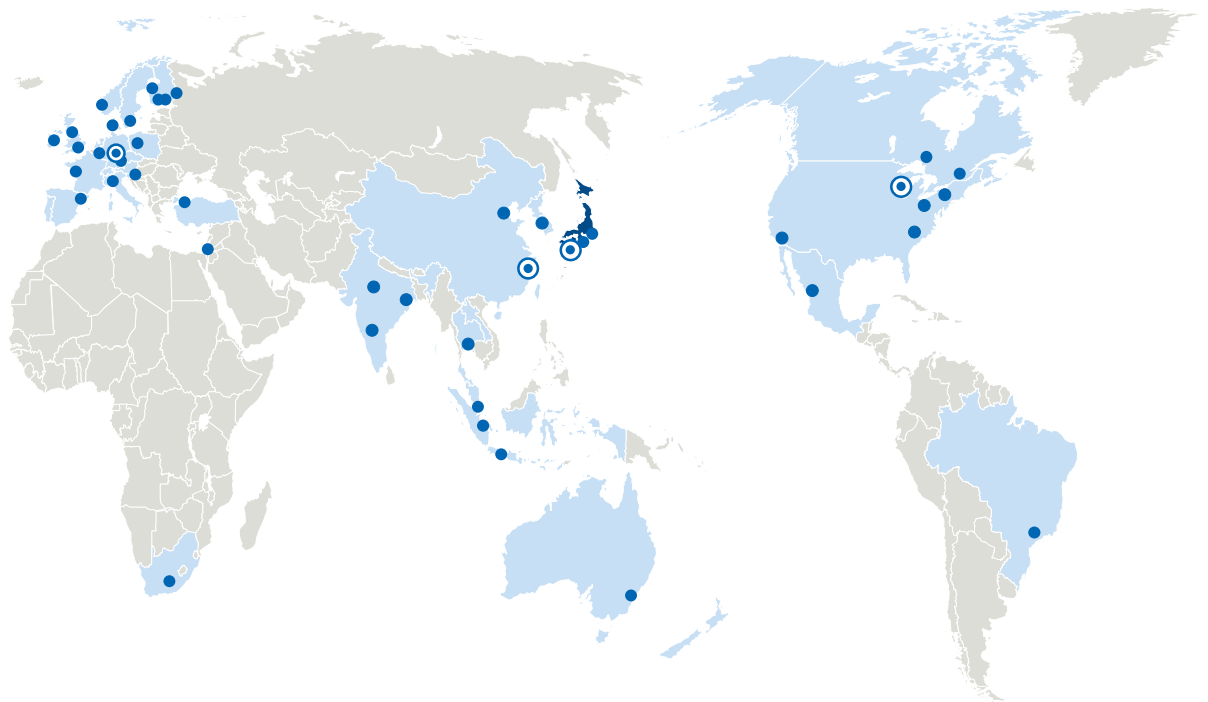
Regenerative Unit



# The power regenerative unit

The R1000 regenerative braking unit is a smart and efficient alternative to dynamic braking for single or multi-axis drive installations with high amounts of regenerative motor operation. Instead of wasting it as heat, the R1000 feeds excessive braking energy back to the grid, thus reducing the energy consumption of the installation.

Wherever you are -  
Our support team is always close to you



More than **14,500** employees worldwide

More than **1,350** employees in our global service network

More than **1,600** employees in europe



### Energy efficient four-quadrant

R1000 saves energy by making excessive braking energy available to other consumers in the same grid instead of wasting it as heat. R1000 provides high duty cycle braking capability, thus it can shorten machine cycles and increase productivity of machinery.



### Smart system design

R1000 is purely selected by braking power and can therefore be selected smaller than the drive it is connected to. Thus it allows to minimize system space, optimize cost and maximize efficiency.



### Save energy cost

Especially in high duty braking applications such as cranes, escalators or lifts the R1000 provides numerous advantages. The small installation space and low heat generation impact installation cost, while using the regenerated energy reduces the running cost so that the R1000 pays back in a short period.



### Cool operation

R1000 eliminates the need for safely located braking resistors, thus saving valuable space and reducing the risk of fire. Less heat is generated so that the demand for ventilation is greatly reduced. Maintenance, e.g. for resistor cleaning, is not necessary.



### Compatible

R1000 regenerative units can be used with any conventional drive that has full access to the DC bus.



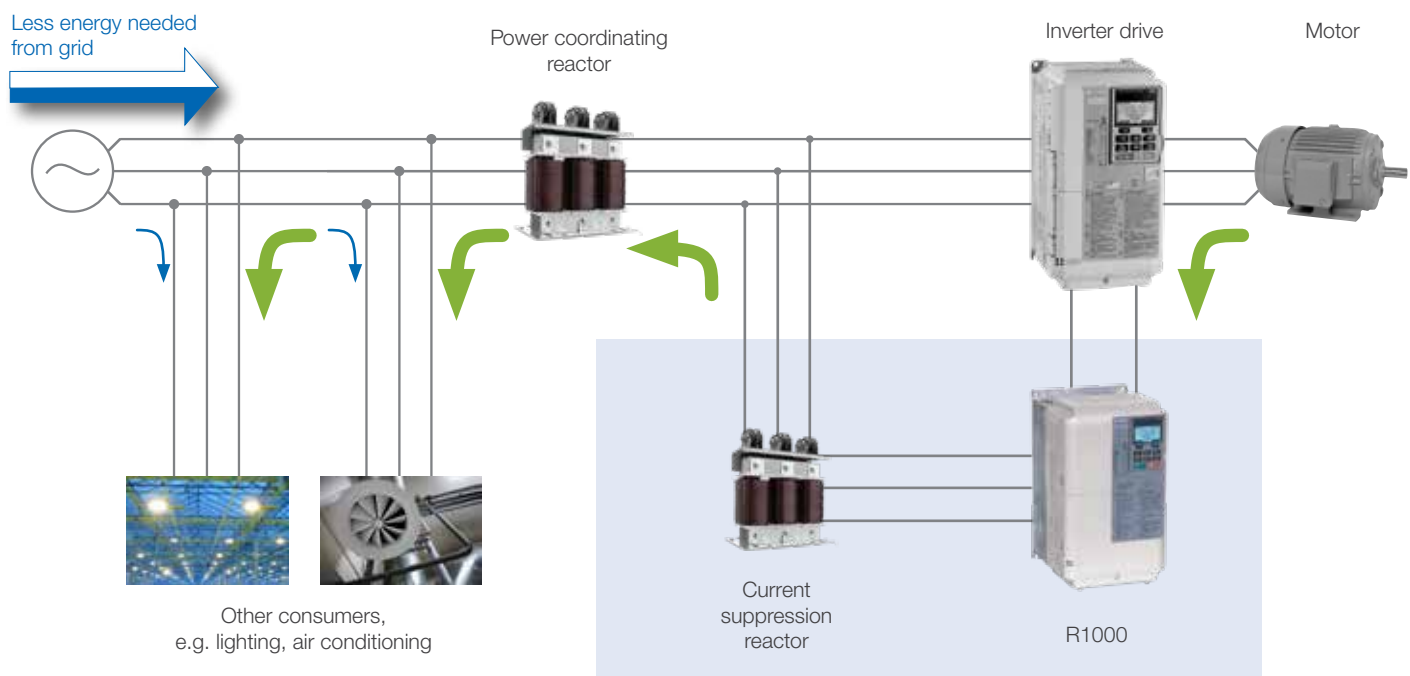
### Easy to handle package

R1000 comes in an easy to handle package. Only one material number for all components makes procurement simple and assures completeness and parts compatibility.



# Save energy with power regeneration

The R1000 avoids wasted energy by delivering it back to the power source for use by other loads. R1000 can be used to maximize efficiency of single- and multi-axis systems.



## Economical dynamic braking

The R1000 provides the most economical way of dynamic braking by

- Selection purely by braking power – R1000 can be smaller than the drive
- Less energy consumption from grid as other consumers in the same installation can use braking energy
- Less space and heat by removed braking choppers and resistors
- Reduced ventilation requirements by less heat emission

## Flexible application

The R1000 can be used on single drives as well as in drives, servo or other systems that have an interconnected DC bus.

## Compatible

The R1000 can work with all conventional drives having full power access to DC bus. By that it is the perfect match when planning energy efficient new installations or upgrading existing ones.

# For a wide range of applications



- Elevators, lifts, escalators
- Centrifuges, winders, downhill conveyors
- Cranes, hoists

- Saws, large fans, machine tool spindles
- Presses, dryers, vibratory equipment
- and many other applications

# Package selection

Use one of the following methods to determine what you need for your application.

## 1a. Determine braking power

- Select a kit using the maximum regenerative (braking) power.  
Select an R1000 kit with a power rating higher than the calculated braking power, keeping in mind the R1000 duty cycle and overload capability (150 % for 30 seconds).

Max. regenerative power [kW]	3.5	5	7	10	14	17	20	28	35	43	53	73	105	150	210	300
R1000 Kit R1KIT4____AA□AA	0003	0005	0007	0010	0014	0017	0020	0028	0035	0043	0053	0073	0105	0150	0210	0300
Braking Torque	150 % braking torque for 30 s 100 % braking torque for 30 s with 25 % ED 80 % braking torque continuous															

## 1b. If the braking power is unknown

- Select a kit using the motor/drive capacity.

Motor/Drive capacity [kW]	4.0 or less	5.5	7.5	11	15	18.5	22	30	37	45	55	75	110	160	220	315
R1000 Kit R1KIT4____AA□AA	0003	0005	0007	0010	0014	0017	0020	0028	0035	0043	0053	0073	0105	0150	0210	0300

## 2. Power coordinating reactor

- Select a power coordinating reactor and EMC filter according to the drive used.

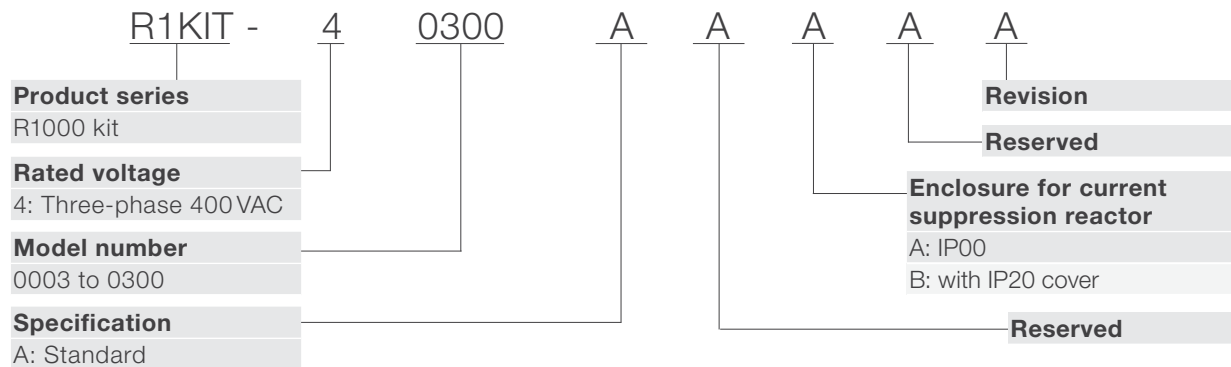
### A1000 and V1000 general inverter

A1000 drive CIMR-AC4A	V1000 drive CIMR-VC4A	Power coordinating reactor	EMC filter
0002	0002	LR3 40-4/2	HLD 110-500/8
0004	0004	LR3 40-4/4	HLD 110-500/8
0005	0005	LR3 40-4/6	HLD 110-500/8
0007	0007	LR3 40-4/10	HLD 110-500/8
0009	0009	LR3 40-4/10	HLD 110-500/12
0011	0011	LR3 40-4/16	HLD 110-500/16
0018	0018	LR3 40-4/20	HLD 110-500/30
0023	0023	LR3 40-4/25	HLD 110-500/30
0031 / 0038	0031 / 0038	LR3 40-4/45	HLD 110-500/42
0044 / 0058		LR3 40-4/63	FB-40060A
0072		LR3 40-4/70	FB-40072A
0088		LR3 40-4/90	FB-40105A
0103		LR3 40-4/115	FB-40105A
0139 / 0165		LR3 40-4/160	FB-40170A
0208		LR3 40-4/200	FB-40250A
0250		LR3 40-4/250	FB-40250A
0296		LR3 40-4/300	FB-40414A
0362 / 0414		LR3 40-4/400	FB-40414A
0515		LR3 40-4/500	FB-40675A
0675		LR3 40-4/710	FB-40675A
0930 / 1200		LR3 40-4/1200	FB-41200A

### L1000A and L1000V lift inverter

L1000A drive CIMR-LC4F	L1000V drive CIMR-LC4V	EN12015 compliant power coordinating reactor	EMC filter
0005	0009	B 1103136	HLD 110-500/8
0006	0015	B 1103136	HLD 110-500/8
0009	0018	B 1103136	HLD 110-500/8
0015	0024	B 1103138	HLD 110-500/8
0018	0031	B 1103138	HLD 110-500/12
0024		B 1103139	HLD 110-500/16
0031		B 1103140	HLD 110-500/30
0039		B 1103141	HLD 110-500/30
0045		B 1103141	HLD 110-500/42
0060		B 1103142	HLD 110-500/42
0075		B 1103142	FB-40105A
0091		B 0910013	FB-40105A
0112		B 0910013	FB-40170A
0150		B 1411053	FB-40170A
0180		B 1411053	FB-40250A
0216		2 x B 0910013	FB-40250A

# Model designation



Model number	Ratings			Part numbers		
	Regenerative power	Max. applicable motor capacity	Rated current AC / DC	R1000 unit	Current suppression reactor (1 %)	Optional IP20 Cover for current suppression reactor (optional)
0003	3.5kW	3.7kW	5A / 7A	CIMR-RC4A03P5FAA	B1509105	IP20-Box31
0005	5kW	5.5kW	8A / 11A	CIMR-RC4A0005FAA	B1509105	IP20-Box31
0007	7kW	7.5kW	11A / 15A	CIMR-RC4A0007FAA	B1509106	IP20-Box31
0010	10kW	11kW	16A / 22A	CIMR-RC4A0010FAA	B1509107	IP20-Box31
0014	14kW	15kW	22A / 30A	CIMR-RC4A0014FAA	B1509108	IP20-Box31
0017	17kW	18.5kW	27A / 36A	CIMR-RC4A0017FAA	B1509108	IP20-Box31
0020	20kW	22kW	32A / 43A	CIMR-RC4A0020FAA	B1509109	IP20-Box31
0028	28kW	30kW	43A / 58A	CIMR-RC4A0028FAA	B1509110	IP20-Box32
0035	35kW	37kW	54A / 73A	CIMR-RC4A0035AAA	B1504118	IP20-Box32
0043	43kW	45kW	66A / 89A	CIMR-RC4A0043AAA	B1509111	IP20-Box32
0053	53kW	55kW	81A / 109A	CIMR-RC4A0053AAA	B1509112	IP20-Box33
0073	73kW	75kW	110A / 149A	CIMR-RC4A0073AAA	B1509113	IP20-Box35
0105	105kW	110kW	161A / 217A	CIMR-RC4A0105AAA	B1509114	IP20-Box35
0150	150kW	160kW	237A / 320A	CIMR-RC4A0150AAA	B1505002	IP20-Box39
0210	210kW	220kW	326A / 440A	CIMR-RC4A0210AAA	B1505008	IP20-Box39
0300	300kW	315kW	466A / 629A	CIMR-RC4A0300AAA	B1505011	IP20-Box39

## Package content

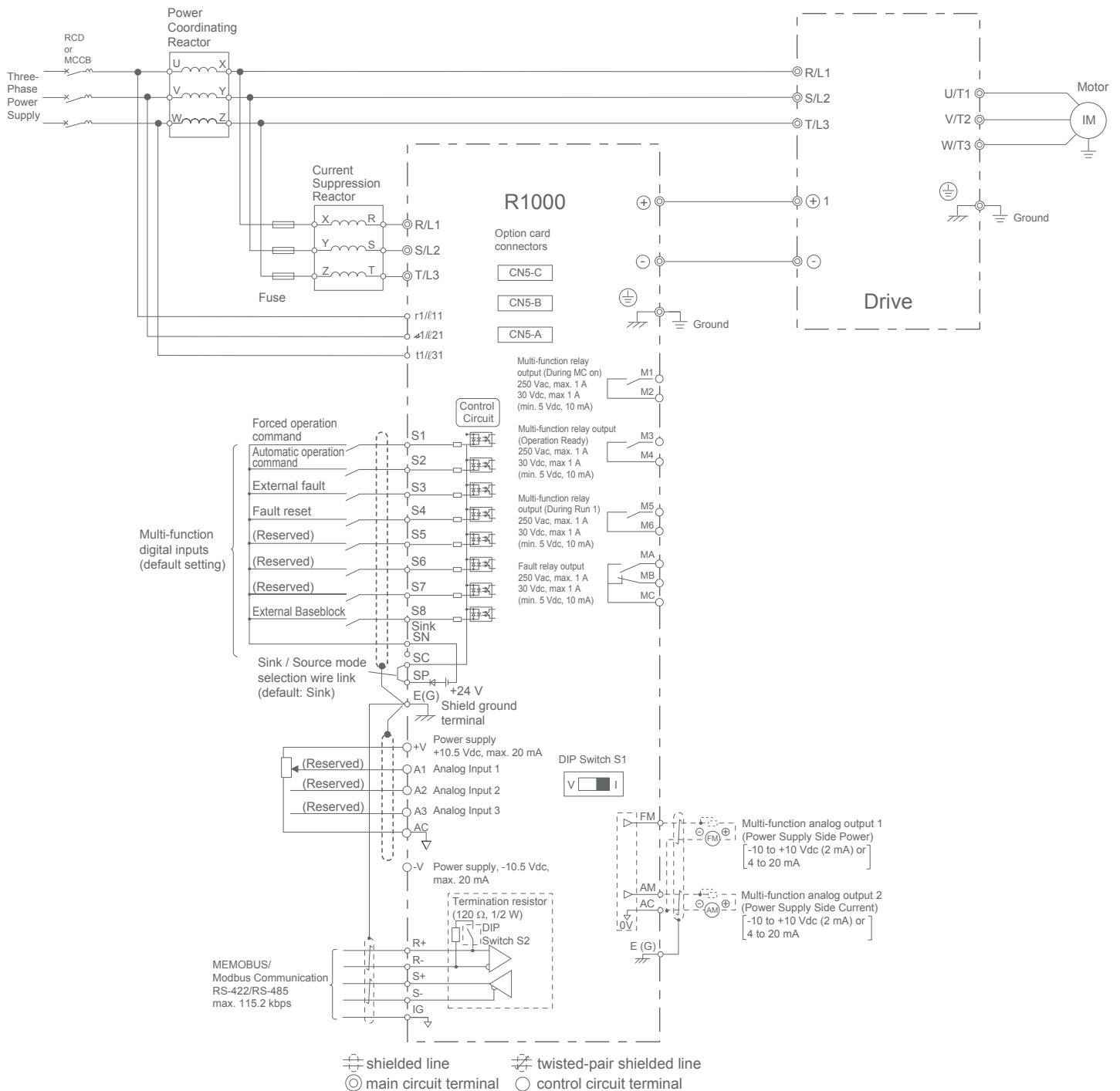
- R1000 regenerative unit
- Current suppression reactor
- Optional IP20 cover for current suppression reactor

# Specifications and options

Operating environment		
<b>Ambient temperature</b>	-10 to +50 °C (open chassis)	
<b>Storage temperature</b>	-20 to +60 °C	
<b>Humidity</b>	95 % RH or less (non-condensing)	
<b>Altitude</b>	Up to 1,000 m without derating, up to 3,000 m with derating	
<b>Vibration/Shock</b>	Model 4A03P5 to 4A0073: 10 to 20 Hz: 9.8 m/s <sup>2</sup> , 20 to 55 Hz: 5.9 m/s <sup>2</sup> Model 4A0105 to 4A0300: 10 to 20 Hz: 9.8 m/s <sup>2</sup> , 20 to 55 Hz: 2.0 m/s <sup>2</sup>	
<b>Protection design</b>	IP00 open type enclosure, Indoor use (Protected from corrosive gases and dust)	
<b>Standards</b>	UL508C, IEC 61800-5-1, IEC 61800-3, RoHS	
Power ratings		
<b>Rated voltage/ Rated frequency</b>	380 to 480 VAC -15 to +10 % / 50/60 Hz ±2 %	
<b>Control method</b>	120° excitation method	
<b>Input power factor</b>	0.9 min (for rated load)	
<b>Overload protection</b>	30 s at approx. 150 % of rated current	
<b>Regenerative torque</b>	150 % braking torque for 30 s 100 % braking torque for 30 s with 25 % ED 80 % braking torque continuous	
Options		Model code
<b>Communication</b>	CC-Link	SI-C3
	DeviceNet	SI-N3
	EtherCAT	SI-ES3
	Ethernet/IP	SI-EN3 / SI-EN3/D
	MECHATROLINK-II	SI-T3
	Modbus/TCP	SI-EM3 / SI-EM3/D
	PROFIBUS-DP	SI-P3
<b>Input/Output</b>	Analog output: 2-channel, -/+10 VDC (Res. 1/2048)	AO-A3
	Digital output: 6 photocoupler (48 V, 50 mA or less), 2 relay contacts (250 VAC/30 VDC, 1 A max.)	DO-A3
<b>Other</b>	24 V power supply: For control circuit and option boards, when main circuit power is off	PS-A10LB/ PS-A10HB
	USB copy unit: For easy parameter setup duplication and backup	JVOP-181
	IP65 operator mounting frame: A simple way to install the LCD operator of the drive on a cabinet wall or door	JVOP-V11001
	DriveWizard Plus: Software used for parametrization	
	Heatsink outside mounting kit: To mount the drive with heatsink outside of the panel	Models 03P5 to 0007: EZZ020800B Models 0010 to 0014: EZZ020800C Models 0017 to 0028: EZZ020800D
	IP20/NEMA1 Kit	Models 0035 to 0043: DACT36126 Models 0053 to 0073: DACT36186 Models 0105 to 0150: DACT36662



# Connection diagram



# Dimensions

## R1000 regenerative unit

Kit number	R1000 Model CIMR-RC4A	Regenerative capacity	IP protection	Figure	Dimensions [mm]			Weight [kg]
					W	H	D	
R1KIT40003AA□AA	03P5	3.5kW	IP20/NEMA1, UL Type1	1	140	260	167	4
R1KIT40005AA□AA	0005	5kW						
R1KIT40007AA□AA	0007	7kW						
R1KIT40010AA□AA	0010	10kW						
R1KIT40014AA□AA	0014	14kW						
R1KIT40017AA□AA	0017	17kW	Open-Chassis IP00	2	220	365	197	8
R1KIT40020AA□AA	0020	20kW						
R1KIT40028AA□AA	0028	28kW						
R1KIT40035AA□AA	0035	35kW						
R1KIT40043AA□AA	0043	43kW						
R1KIT40053AA□AA	0053	53kW	3 (IP00), 4 (IP20)	3	275	450	258	20
R1KIT40073AA□AA	0073	73kW						
R1KIT40105AA□AA	0105	105kW						
R1KIT40150AA□AA	0150	150kW						
R1KIT40210AA□AA	0210	210kW						
R1KIT40300AA□AA	0300	300kW	1	500	800	350	85.6	
							87	

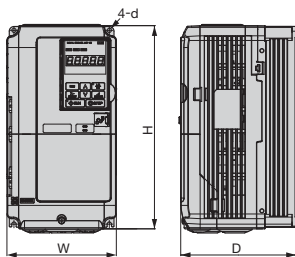


Figure 1

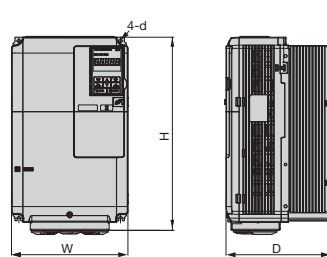


Figure 2

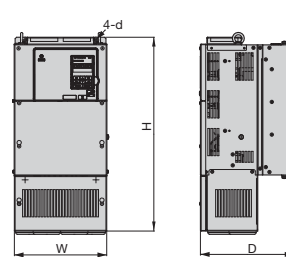


Figure 3

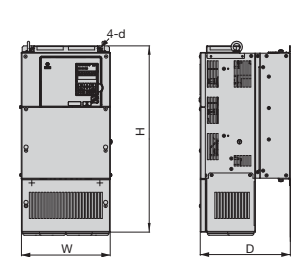


Figure 4

## Current suppression reactor

Kit number	Current suppression reactor (1%)	Figure	Dimensions [mm]			Weight [kg]	IP20 cover (optional)	Dimensions [mm]			Weight [kg]
			W	H	D			W	H	D	
R1KIT40003AA□AA	B1509105	5	78	102	63	0.85	IP20-Box31	170	130	170	0.9
R1KIT40005AA□AA	B1509105		78	102	63	0.85	IP20-Box31	170	130	170	0.9
R1KIT40007AA□AA	B1509106		96	118	60	1.31	IP20-Box31	170	130	170	0.9
R1KIT40010AA□AA	B1509107		96	118	60	1.32	IP20-Box31	170	130	170	0.9
R1KIT40014AA□AA	B1509108		120	150	90	1.9	IP20-Box31	170	130	170	0.9
R1KIT40017AA□AA	B1509108	6	120	150	90	1.9	IP20-Box31	170	130	170	0.9
R1KIT40020AA□AA	B1509109		120	150	90	1.93	IP20-Box31	170	130	170	0.9
R1KIT40028AA□AA	B1509110		155	195	102	3.8	IP20-Box32	190	155	220	1.25
R1KIT40035AA□AA	B1504118		155	175	95	4.0	IP20-Box32	190	155	220	1.25
R1KIT40043AA□AA	B1509111		155	195	102	4.43	IP20-Box34	210	188	220	1.4
R1KIT40053AA□AA	B1509112	7	155	195	110	5.95	IP20-Box33	205	170	280	1.5
R1KIT40073AA□AA	B1509113		185	160	125	6.9	IP20-Box35	225	145	250	1.45
R1KIT40105AA□AA	B1509114		185	160	140	10.8	IP20-Box35	225	145	250	1.45
R1KIT40150AA□AA	B1505002		220	205	115	17.0	IP20-Box39	240	210	330	2.2
R1KIT40210AA□AA	B1505008		230	215	140	22.0	IP20-Box39	240	210	330	2.2
R1KIT40300AA□AA	B1505011	240	235	150	29.0	IP20-Box39	240	210	330	2.2	

## Power coordinating reactor for L1000A/L1000V lift drive

AC input reactor (8% IP00)	Figure	Dimensions [mm]			Weight [kg]	IP20 cover (optional)	Dimensions [mm]			Weight [kg]
		W	H	D			W	H	D	
B1103136	5	155	110	170	6.0	IP20-Box32	190	155	220	1.25
B1103138	6	185	102	196	7.1	IP20-Box35	225	145	250	1.45
B1103139		210	125	220	9.6	IP20-Box36	240	165	275	1.75
B1103140	7	210	135	220	10.7	IP20-Box37	240	175	275	1.8
B1103141		230	166	205	12.5	IP20-Box39	240	210	330	2.2
B1103142		263	166	205	25.0	IP20-Box39	240	210	330	2.2
B0910013	7	330	180	270	36.4	IP20-Box42	290	220	395	2.9
B1411053		412	220	320	61.5	on request				
2 x B0910013		660	360	540	72.8	2 x IP20-Box42	580	440	190	5.8

## Power coordinating reactor for A1000/V1000 general AC drive

AC input reactor (4% IP00)	Figure	Dimensions [mm]			Weight [kg]	IP20 cover (optional)	Dimensions [mm]			Weight [kg]
		W	H	D			W	H	D	
LR3 40-4/2	5	78	56	100	0.53	IP20-Box31	170	130	170	0.9
LR3 40-4/4		96	60	117	1.31	IP20-Box32	190	155	220	1.25
LR3 40-4/6		96	69	117	1.45	IP20-Box32	190	155	220	1.25
LR3 40-4/10		120	85	140	2.0	IP20-Box32	190	155	220	1.25
LR3 40-4/16		120	95	140	2.7	IP20-Box32	190	155	220	1.25
LR3 40-4/20	6	155	95	162	3.8	IP20-Box32	190	155	220	1.25
LR3 40-4/25		155	110	177	5.8	IP20-Box33	205	170	280	1.5
LR3 40-4/45		185	112	210	8.25	IP20-Box35	225	145	250	1.45
LR3 40-4/63		185	122	210	9.65	IP20-Box36	240	165	275	1.75
LR3 40-4/70		210	117	240	10.8	IP20-Box37	240	175	275	1.8
LR3 40-4/90		267	149	200	16.0	IP20-Box39	240	210	330	2.2
LR3 40-4/115		291	179	210	21.0	IP20-Box41	280	240	400	2.75
LR3 40-4/160		291	189	210	25.5	IP20-Box41	280	240	400	2.75
LR3 40-4/200		352	194	260	32.0	IP20-Box41	280	240	400	2.75
LR3 40-4/250		7	352	207	260	41.0	IP20-Box44	430	250	420
LR3 40-4/300	352		219	260	48.0	IP20-Box44	430	250	420	4.2
LR3 40-4/400	352		234	260	56.0	IP20-Box44	430	250	420	4.2
LR3 40-4/500	352		245	260	62.0	IP20-Box45	460	250	420	4.4
LR3 40-4/710	180		235	380	102.0	IP20-Box46	630	472	650	15.3
LR3 40-4/1200		555	330	445	186.2	IP20-Box46	630	472	650	15.3

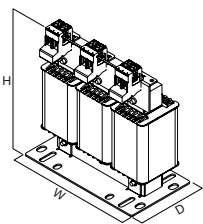


Figure 5\*

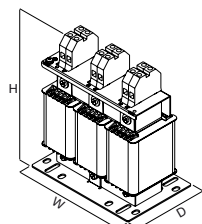


Figure 6\*

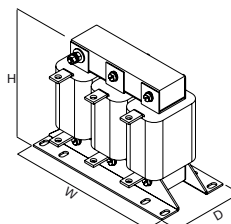
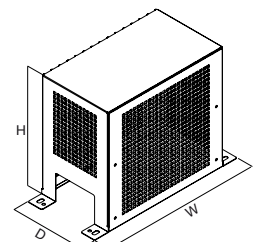


Figure 7\*



IP20 cover

\* Appearance might change with capacity.

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