

LDG Electronics

Z-100A Antenna Tuner

For 100W HF Transceivers

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Introducing the Z-100A Automatic Tuner

The Z-100A 100-watt automatic HF antenna tuner is similar to other LDG tuners you may already be familiar with; it is a precision instrument that will provide many years of quality service.

What makes this tuner different is that it is specifically designed for modern 100 watt transceivers. With ease-of-operation in mind, this tuner is powered directly by the interface on the back of the radio; no need to worry about any additional power connections. Also, a single push button switch is usually all that's needed to complete the tuning process!

The Z-100A also features low power consumption since it uses latching relays which require no power once it's tuned.

Be sure to read the entire manual to ensure safe operation and long life of the Z-100A. With proper care this tuner will provide many hours of enjoyable operation.

Welcome Notes

Welcome to the LDG Electronics family of amateur radio equipment! Starting in 1995 and based in St. Leonard, Maryland, LDG defines state of the art equipment for the Amateur ("Ham") radio community.

In addition to offering established equipment we're continuing to grow our product line. Check our web site (<https://www.ldgelectronics.com>) often to learn about new developments! We also offer complete product support through our web site, and we're here for you for any questions that you might have. All of our products are supported with a two-year transferrable warranty. When you sell your LDG product provide the new owner with a copy of the original sales receipt and the two-year warranty transfers to the new owner.

There is no need to complete a warranty card or to register our products. Your product receipt establishes eligibility for warranty service; save that receipt! Send your receipt copy with the product when you ship your product to us for repair. Products sent to LDG without a receipt are considered requests for out-of-warranty repair.

LDG does not warranty against product damage or abuse. This means that a product failure, as determined by LDG, to be caused by the customer or by other natural calamity (e.g. lightning) is not covered under the two-year warranty. Damage can be caused by failure to heed the product's published limitations and specifications or by not following good Amateur practice.

OUT OF WARRANTY SERVICE

We will gladly provide service any time a product fails after the warranty. Send the product to us for repair. We will determine what needs to be done, and, based on your prior instruction, either contact you with an estimate or fix it and contact you with a request to pay any repair charges. Please contact LDG with any questions before you send us an out-of-warranty product for repair.

RETURNING YOUR PRODUCT FOR SERVICE

Returning a product to LDG is easy. We do not require a return merchandise authorization, and there is no need to contact LDG to return your product. Visit the Customer Support Center on our web site and download the LDG Product Repair Form. On the Repair Form tell us exactly what happened (or didn't happen) and why you believe the product needs servicing. The technician will attempt to duplicate the problem(s) you had based on how well you describe it so please be accurate and complete.

Ask your shipper for a tracking number or delivery verification. Please include your email address so our shipper can alert you when your product is being returned to you. Be assured that our staff makes every effort to complete repairs ahead of our published wait time. Your patience is appreciated.

Repairs can take four to eight weeks, but are usually faster. The most recent information is found at the LDG Customer Support Center. Send your carefully packaged unit with the Repair Form to:

LDG Electronics, Inc.
Attn: Repair Department
1445 Parran Rd
St. Leonard, MD 20685

PRODUCT FEEDBACK

We encourage product feedback! Tell us what you think of your LDG product. In a card, letter, or email (preferred) tell us how you use the product and how well it worked in your application. Send along a photo or even a schematic or drawing to illustrate your narrative. We like to share your comments with our staff, our dealers, and even other customers at the LDG website.

Connecting the Z-100A tuner

The Z-100A tuner is designed for indoor operation only; it is not weather proof / water resistant. If you use it outdoors (Field Day, for example), ensure it is properly protected from rain, dust, etc.

The Z-100A is designed for use with coax-fed antennas. If operating with long-wire or ladder-line-fed antennas, an external balun is required. The LDG RBA-4:1 or RBA-1:1 is ideal, depending on the antenna and transmission line used.

1. Make sure your radio is turned off.
2. Connect the HF/50 MHz antenna jack on the transceiver to the “RADIO” jack on the Z-100A, using a 50Ω jumper.
3. Connect a 50Ω coax antenna feedline to the “ANT” jack on the Z-100A.
4. Connect one end of the supplied radio interface cable to the tuner port on the back of your radio.
5. Connect the other end of the supplied radio interface cable to the “INTERFACE” jack on the rear of the Z-100A.
6. Turn on the radio.
7. Select the desired operating frequency and mode.
8. Key and hold the radio in CW or FM mode, then press and release the TUNE button on the front of the tuner.
9. The transceiver will transmit with a minimal amount of power as the Z-100A begins. You may hear the relays chatter as the tuner searches for a match. At the end of the tuning cycle, the SWR has been lowered.
10. You are now ready to operate!

Specifications & Ratings

To ensure proper operation and to avoid equipment failure, the following specifications and ratings must be observed:

Frequency Range: 1.8 to 54 MHz

Maximum Input Power: 125W PEP (CW / SSB), 30W (Digital / RTTY/ FM)

Input Impedance: 50 Ω

Tuning Range: 10:1 SWR, 20uH, 1300pF.

Memories: 2000

Retune Time: < 1.0 sec.

Voltage: 13.8 VDC \pm 15%

Current Draw: 250 mA tuning, 20 mA idle

Size: 6.3"x6.3"x1.5" (160x160x40mm)

Weight: 1.5 lbs (680 g)

Mobile Operation

The Z-100A is also perfectly suited to mobile operation. It can be installed under the dashboard along with the transceiver or mounted remotely. The only requirement is that the tuner remain dry.

MARS/CAP Coverage

The Z-100A provides continuous coverage over its specified range; not just in the ham bands. This makes it useful for MARS or CAP operation, or any other legal HF operation.

Important Safety Warning

Never install antennas or transmission lines over or near power lines. You can be seriously injured or killed if any part of the antenna, support or transmission line touches a power line. Always follow this antenna safety rule: the distance to the nearest power line should be at least twice the length of the longest antenna, transmission line or support dimension. Also be aware of and follow electrical and safety codes of your municipality.

OPERATION

To start a full tuning cycle press and hold the **TUNE** button on the front panel of the Z-100A until the red **STATUS LED** lights up, and continue holding until the **STATUS LED** goes out. The **TUNE** button can be released once the **STATUS LED** has gone out. A full tuning cycle will begin.

Most of the time the Z-100A's memory tuning will allow a good match to be found quickly if transmitting on the same frequency as a previously stored match. Under certain circumstances, especially when using a different antenna, the memory tuning will recall a previous match which is acceptable, but isn't the best match possible for this situation. In this case, forcing a full tune will cause the Z-100A to seek a better match than the match already stored in memory.

The **SWR LED** and **STATUS LED** are used to indicate both operating modes, tuning status, and error codes.

LED Indication	Meaning
STATUS LED on.	Tuner is tuning.
STATUS LED goes out, SWR LED comes on solid.	Tuner has completed a tuning cycle; a good SWR match was found.
STATUS LED goes out, SWR LED blinks 5 times.	Tuning cycle is complete, tuning match is between 1.5:1 and 3.0:1 SWR.
STATUS LED goes out, no SWR LED.	Tuning cycle is complete, tuning match is greater than 3.0:1 SWR.
STATUS LED blinks 4 times.	Tuning cycle failed, no RF was detected.
STATUS LED blinks 5 times.	Tuning cycle failed, RF was lost in the middle of the tune.

Your Z-100A tuner

Front Panel

On the front panel there is one pushbutton and two LED indicator lights.



TUNE Button: Initiates either a memory tune or a full tune, and also toggles the tuner between “active” and “bypass” modes.

SWR LED: Lights or blinks to indicate SWR condition.

STATUS LED: Lights to give feedback on button activation; lights during tuning; provides tuning status at the end of a tuning cycle.

Rear Panel Connectors



The rear panel of the Z-100A features four connectors.

ANT: Connect the 50 Ω coax antenna feedline to the standard SO-239 connector.

GND (wing nut): Connect to antenna system ground if needed.

RADIO: Connect the 50 Ω coax jumper cable from this standard SO-239 connector to the Antenna jack on the rear of the transceiver.

INTERFACE: This 6-pin mini-DIN connector connects to the radio interface cable. DC power is also supplied via this connector. Be sure to turn off the transceiver before connecting or removing cables.

Operating Hints

Transceiver Tuner Status Indication

Different models of ICOM transceivers indicate the status of the external tuner with slight variation. Most will show a graphical or textual icon on the screen to indicate that the tuner is active and has properly tuned. For example, the IC-7000 displays a blinking **TUNE** icon while tuning, and a solid **TUNE** icon when tuning is complete. This icon disappears when the tuner is bypassed, and blinks if a tuning cycle failed to find a good match. Other ICOM transceivers behave similarly. Consult your transceiver operating manual's external tuner section for more information. When in doubt key the radio in AM and press the Tune button on the LDG tuner.

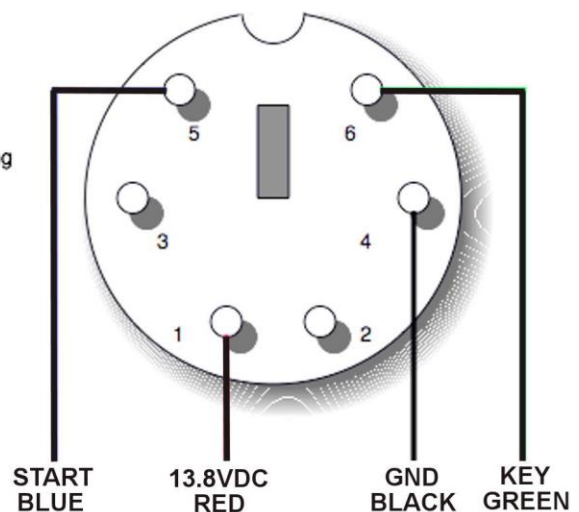
Radio Interface Cables

There are a variety of three foot interface cables available.

- Press Button on Tuner or Radio
 - IC-100 ICOM AH-3 or AH-4 Compatible
- Press Button on Tuner
 - IC-105 ALINCO EDX-2 Compatible, DX-70, DX-77
 - IC-108 YAESU FT-100, 857, 897, 891, 991
 - IC-109 YAESU FT-450, 950, 1200, FTdx10
 - IC-115 YAESU FTdx101, 3000
- Key Radio and Press Button on Tuner
 - IC-105 ALINCO SR8T, SR9T
 - IC-106 KENWOOD AT-300 Compatible
- Power Only
 - IC-104 Power, Ground, Key, Start

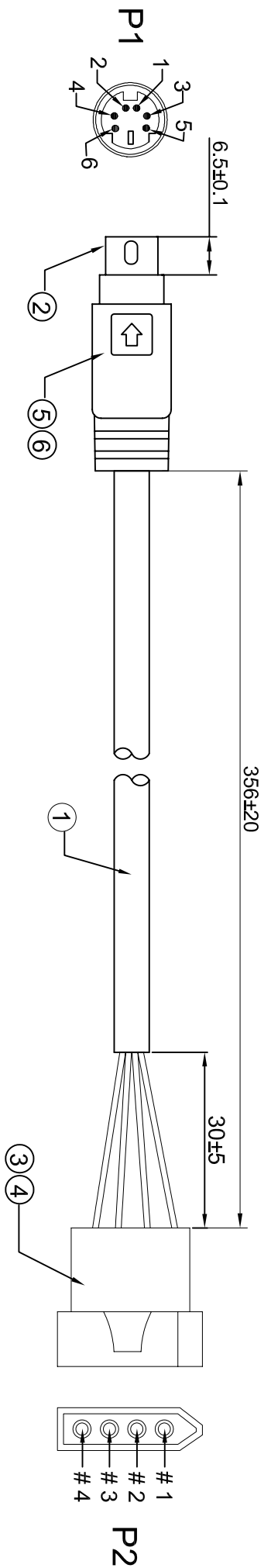
6-pin DIN male connector, looking into the pins.

Mouser Part Number
806-KMDAX-6P



IM06M5030HMA4P20040012NA-RH:MINI DIN 6PIN MALE TO 4P HOUSING FEMALE, NICKEL PLATED.

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			



WIRE ADDRESS

P1	P2
6 GREEN	1
5 BLUE	2
4 RED	3
3 BLACK	4
2 DRAIN	NC
1	
7	

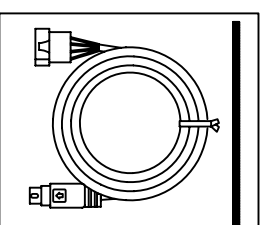
CABLE CONSTRUCTION

ITEM	SPEC
CENTER MATERIAL	CCA
CONDUCTOR CONSTRUC T	mm/NO. 0.18*21
MATERIAL	PVC/4C
INSULATION O.D.	mm 1.75±0.05
MATERIAL	CCA
SHIELD CONSTRUC T	mm/NO. 0.18*21
FOIL MATERIAL	FOIL
PVC JACKET O.D.	mm 6.0±0.1
COLOR	BLACK

ELECTRICAL TEST

- 1)100% OPEN SHORT&MISS WIRE TEST
- 2)INSULATION RESISTANCE:DC300V 50M OHM
- 3)CONDUCTOR RESISTANCE:5 OHM

PACKAGE



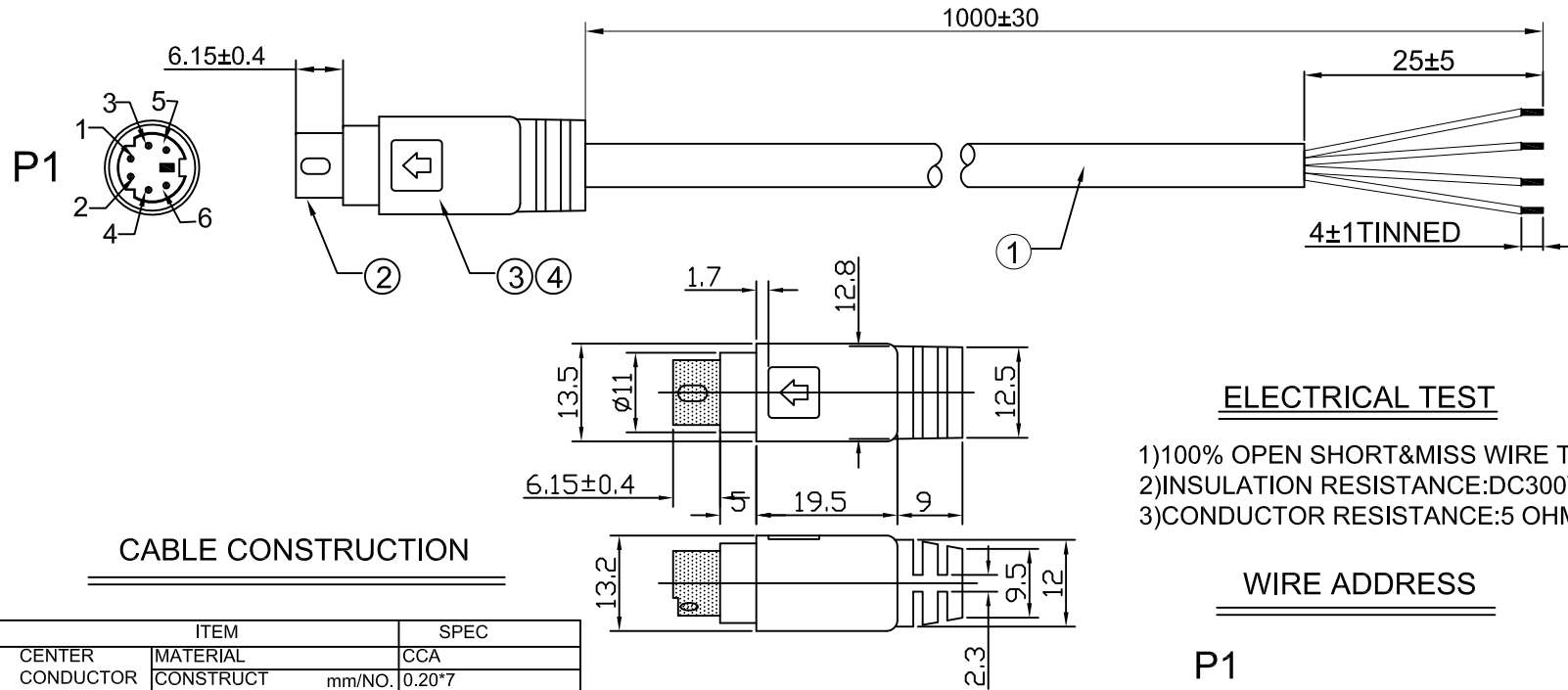
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⑥	XXXXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	2	G
⑤	XXXXXXXXXXXX	INNER MOLD	PE TRANSPARENT	2	G
④	XXXXXXXXXXXX	TERMINAL	TIN PLATED	4	PCS
③	XXXXXXXXXXXX	4P HOUSING	PH:5.03MM, 1*4P HOUSING FEMALE, WHITE	1	PCS
②	XXXXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM

單位	MM	比例	1:1
圖法	比例	頁數	1/1
文件編號	客戶	產品料號	IM06M5030HMA4P 20040012NA-RH
康力訊料號	客戶	產品料號	IM06M5030HMA4P 20040012NA-RH
發行日期	2009.02.09	版次	0.1
STANDARD TOLERANCE LIMITS			
UNLESS OTHER SPECIFIED			
PANAGE	TOLERANCE		
>0-6	±0.08	±0.14	
>6-30	±0.10	±0.20	
>30-120	±0.20	±0.30	
>120-300	±0.30	±0.40	
>300-500	±0.40	±0.50	

Connexions Technology Corp
康力訊科技股份有限公司

客戶 曜磊
產品料號 IM06M5030HMA4P 20040012NA-RH
製圖 審核
Lucky

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			



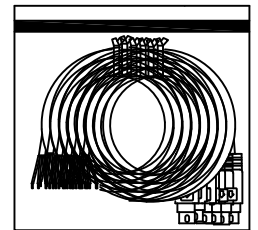
CABLE CONSTRUCTION

ITEM	SPEC
CENTER CONDUCTOR	MATERIAL CCA CONSTRUCT mm/NO. 0.20*7
INSULATION	MATERIAL PVC/4C O.D. mm 1.75±0.05
SHIELD	MATERIAL CCA CONSTRUCT mm/NO. 0.18*21
FOIL	MATERIAL FOIL
PVC JACKET	MATERIAL PVC O.D. mm 6.0±0.1 COLOR BLACK

ELECTRICAL TEST

- 1)100% OPEN SHORT&MISS WIRE TEST
- 2)INSULATION RESISTANCE:DC300V 50M OHM
- 3)CONDUCTOR RESISTANCE:5 OHM

PACKAGE



200PCS/PE BAG

WIRE ADDRESS

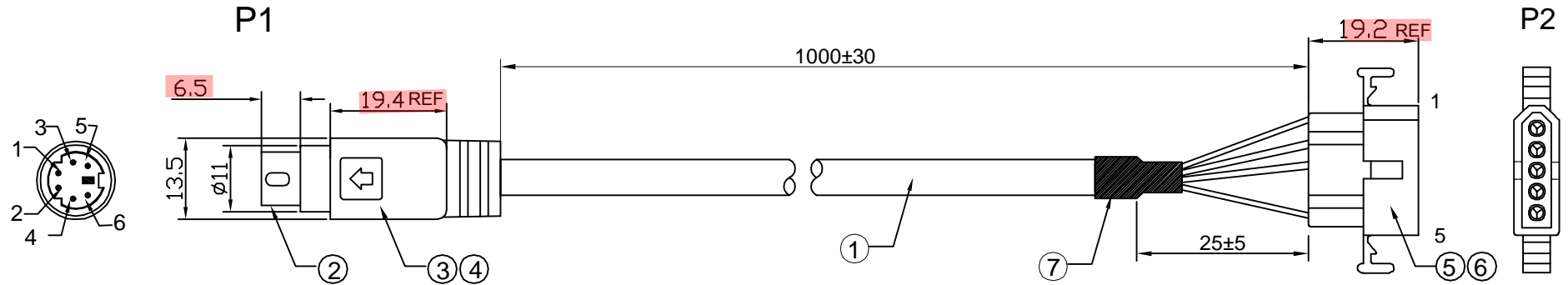
- P1
- 6 _____ GREEN
 - 5 _____ BLUE
 - 1 _____ RED
 - 4 _____ BLACK
 - 7 _____ DRAIN

④	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	2	G
③	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	2	G
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

單位	MM	比例	1:1				
圖法	第一	頁數	1/1				
文件編號				客戶	A608	制圖	HU
康力訊料號				產品料號	RFQ-IC-104HG	審核	
發行日期	2020.6.23	版次	0.2	核准			

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED		
PANGE	TOLERANCE	
>0-6	±0.08	±0.14
>6-30	±0.10	±0.20
>30-120	±0.20	±0.30
>120-300	±0.30	±0.40
>300-600	±0.40	±0.50

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			



CABLE CONSTRUCTION

ITEM	SPEC
CENTER CONDUCTOR	MATERIAL: CCA CONSTRUCT: mm/NO. 0.20*7
INSULATION	MATERIAL: PVC/4C O.D. mm: 1.30±0.05
SHIELD	MATERIAL: CCA CONSTRUCT: mm/NO. 0.20*7
FOIL	MATERIAL: FOIL MATERIAL: PVC
PVC JACKET	O.D. mm: 6.0±0.2 COLOR: BLACK

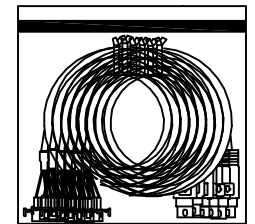
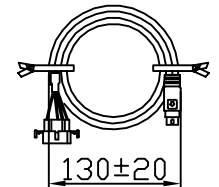
WIRE ADDRESS

P1	WIRE ADDRESS	P2
1	RED	2
4	BLACK	1
5	BLUE	5
6	GREEN	3

ELECTRICAL TEST

- 1)100% OPEN SHORT&MISS WIRE TEST
- 2)INSULATION RESISTANCE:DC300V 50M OHM
- 3)CONDUCTOR RESISTANCE:5 OHM

PACKAGE

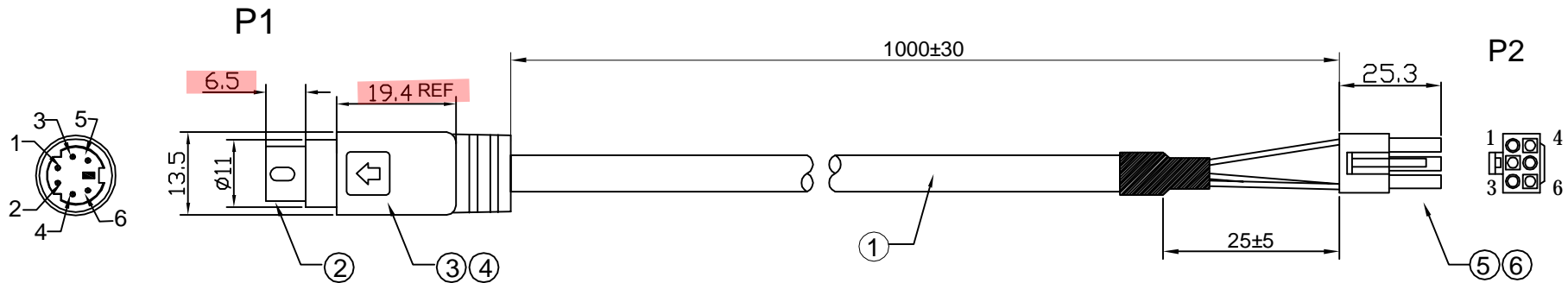


⑦	XXXXXXXXXX	SHIRNK TUBE	OD:7.0MM BLACK L=15MM	1	PCS
⑥	XXXXXXXXXX	TERMINAL	TIN PLATED	4	PCS
⑤	XXXXXXXXXX	HOUSING	1*5P HOUSING	1	PCS
④	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	2	G
③	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	2	G
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED	
PANGE	TOLERANCE
>0-5	±0.14
>6-30	±0.20
>30-120	±0.30
>120-300	±0.40
>300-600	±0.50

單位	MM	比例	1:1				
圖法	第一頁	頁數	1/1				
文件編號				客戶	A608	制圖	Hu
康力訊料號				產品料號	IC-105HG	審核	
發行日期	2020.8.7			版次	0.1	核准	

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			



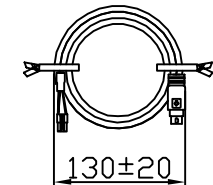
CABLE CONSTRUCTION

ITEM			
CENTER CONDUCTOR	MATERIAL		CCA
	CONSTRUCT	mm/NO.	0.18/21
INSULATION	MATERIAL		PVC
	O.D.	mm	1.75±0.05/2C
SHIELD	MATERIAL		CCA
	CONSTRUCT	mm/NO.	0.18/21
FOIL	MATERIAL		AL/MY
PVC JACKET	MATERIAL		PVC
	O.D.	mm	4.7±0.2
	COLOR		BLACK

ELECTRICAL TEST

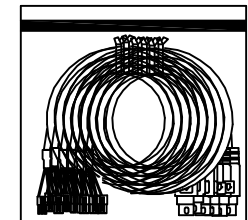
- 100% OPEN SHORT&MISS WIRE TEST
- INSULATION RESISTANCE:DC300V 50M OHM
- CONDUCTOR RESISTANCE:5 OHM

PACKAGE



WIRE ADDRESS

P1		P2
1	RED	1
4	BLACK	3
6	SPIRAL	6



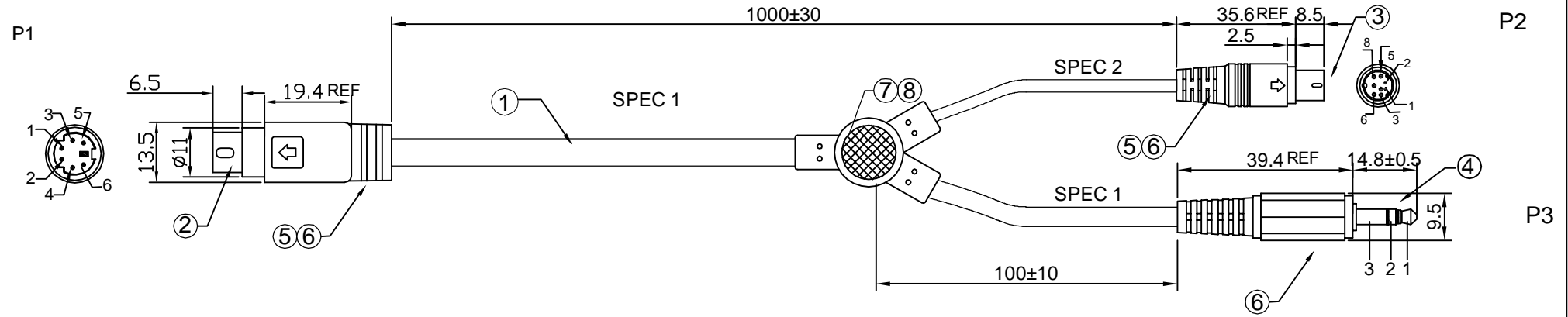
100PCS/PE BAG

⑥	XXXXXXXXXX	TERMINAL	TIN PLATED(E130T2)	3	PCS
⑤	XXXXXXXXXX	HOUSING	2*3P HOUSING MALE, (E130H-2*3)	1	PCS
④	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	2	G
③	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	2	G
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED	
RANGE	TOLERANCE
>0-6	±0.14
>6-30	±0.20
>30-120	±0.30
>120-300	±0.40
>300-600	±0.50

單位	MM	比例	1:1			
圖法	第一頁	頁數	1/1			
文件編號				客戶	A608	制圖 Hu
康力訊料號				產品料號	IC-106HG	審核
發行日期	2020.08.14			版次	0.1	核准

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037	▲		
3.5 PLUG	CT3002	▲		
SR	CTS021			
MINI DIN 8PIN PLUG	CTP011/068			



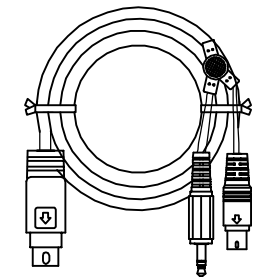
WIRE ADDRESS

P1	P3	P2
1	RED	1
6	BLACK	2
4	SPIRAL	3
	SPIRAL	3

CABLE CONSTRUCTION

ITEM		SPEC 1	SPEC 2
CENTER CONDUCTOR	MATERIAL	CCA	CCA
	CONSTRUCT	mm/NO. 0.18/21	0.18/21
INSULATION	MATERIAL	PVC	PVC
	O.D.	mm 1.75±0.05/2C	1.75±0.05/1C
SHIELD	MATERIAL	CCA	CCA
	CONSTRUCT	mm/NO. 0.18/21	0.12*45
FOIL	MATERIAL	AL/MY	/
PVC JACKET	MATERIAL	PVC	PVC
	O.D.	mm 4.7±0.1	3.0±0.1
	COLOR	BLACK	BLACK

PACKAGING



100PCS/CARTON

ELECTRICAL TEST

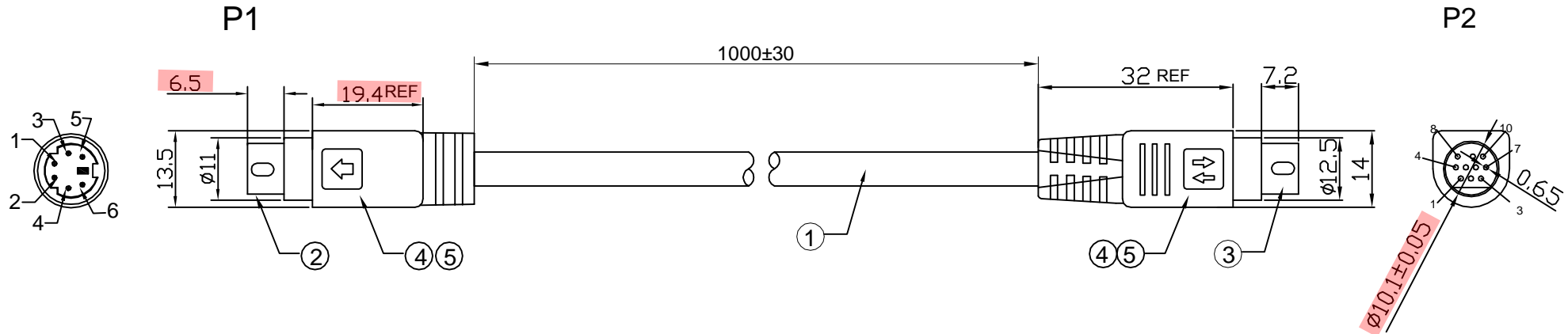
- 1)100% OPEN SHORT&MISS WIRE TEST
- 2)INSULATION RESISTANCE:DC300V 50M OHM
- 3)CONDUCTOR RESISTANCE:5 OHM

⑧	XXXXXXXXXX	PCB	6.5*8*1.0mm PCB	1	PCS
⑦	XXXXXXXXXX	SR MOLD	45P PVC BLACK	4	G
⑥	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	4	G
⑤	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	4	G
④	XXXXXXXXXX	3.5 ST PLUG	3.5MM STEREO NICKEL PLATED	1	PCS
③	XXXXXXXXXX	MINI DIN 8PIN PLUG	MINI DIN8 PIN NICKEL PLATED,BLACK	1	PCS
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6 PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED	
PANGE	TOLERANCE
>0-6	±0.14
>6-30	±0.20
>30-120	±0.30
>120-300	±0.40
>300-600	±0.50

單位	MM	比例	1:1				
圖法	第一角	頁數	1/1				
文件編號		客戶	A608	制圖	peter		
康力訊料號		產品料號	IC-108HG	審核			
發行日期	2020.09.29	版次	0.1	核准			

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			
MINI DIN 10PIN PLUG	CTP069/070			



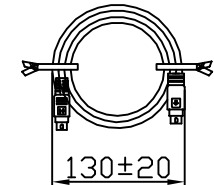
CABLE CONSTRUCTION

ITEM			
CENTER CONDUCTOR	MATERIAL	CCA	
	CONSTRUCT	mm/NO.	0.18/21
INSULATION	MATERIAL	PVC	
	O.D.	mm	1.75±0.05/2C
SHIELD	MATERIAL	CCA	
	CONSTRUCT	mm/NO.	0.18/21
FOIL	MATERIAL	AL/MY	
PVC JACKET	MATERIAL	PVC	
	O.D.	mm	4.7±0.2
	COLOR	BLACK	

ELECTRICAL TEST

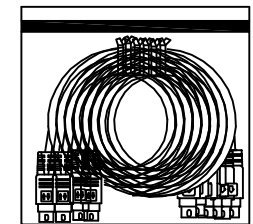
- 100% OPEN SHORT&MISS WIRE TEST
- INSULATION RESISTANCE:DC300V 50M OHM
- CONDUCTOR RESISTANCE:5 OHM

PACKAGE



WIRE ADDRESS

P1		P2
1	RED	1
4	BLACK	3
6	SPIRAL	10

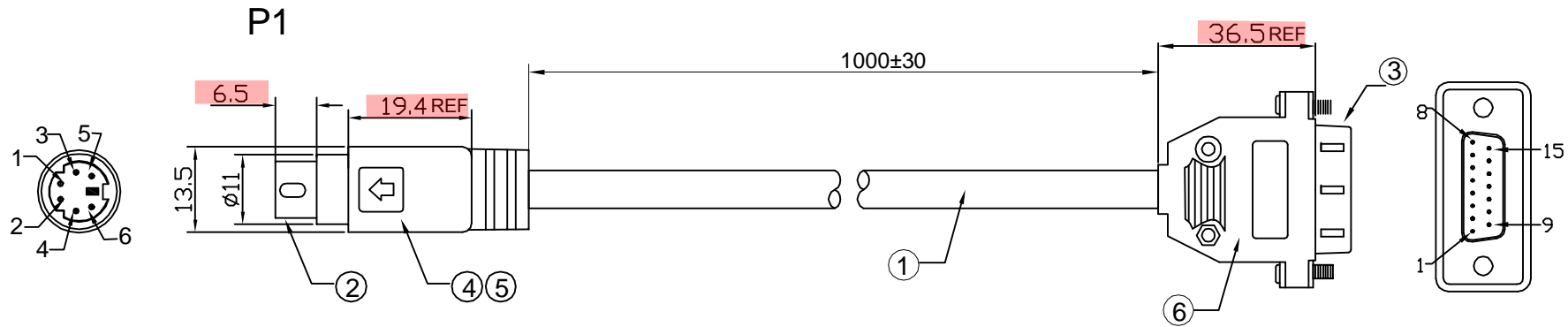


⑤	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	4	G
④	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	4	G
③	XXXXXXXXXX	MINI DIN 10PIN PLUG	MINI DIN 10PIN PLUG,NICKEL PLATED,	1	PCS
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED	
RANGE	TOLERANCE
>=0-6	±0.14
>6-30	±0.20
>30-120	±0.30
>120-300	±0.40
>300-600	±0.50

單位	MM	比例	1:1				
圖法	第一角	頁數	1/1				
文件編號				客戶	A608	制圖	Hu
康力訊料號				產品料號	IC-109HG	審核	
發行日期	2020.8.7			版次	0.1	核准	

PART	MOLD NO	REV NO	DATE	REVISION NOTE
MINI DIN 6PIN PLUG	CTP036/037			



CABLE CONSTRUCTION

ITEM			
CENTER CONDUCTOR	MATERIAL		CCA
	CONSTRUCT	mm/NO.	0.18/21
INSULATION	MATERIAL		PVC
	O.D.	mm	1.75±0.05/2C
SHIELD	MATERIAL		CCA
	CONSTRUCT	mm/NO.	0.18/21
FOIL	MATERIAL		AL/MY
PVC JACKET	MATERIAL		PVC
	O.D.	mm	4.7±0.2
	COLOR		BLACK

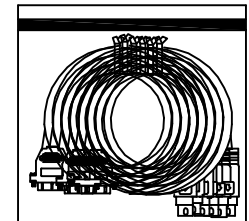
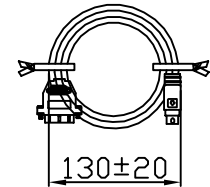
WIRE ADDRESS

P1		P2
1	RED	1
4	BLACK	3
6	SPIRAL	11

ELECTRICAL TEST

- 100% OPEN SHORT&MISS WIRE TEST
- INSULATION RESISTANCE:DC300V 50M OHM
- CONDUCTOR RESISTANCE:5 OHM

PACKAGE



100PCS/PE BAG

⑥	XXXXXXXXXX	SHIELD	ABS SHIELD,GREY COLOR	12	G
⑤	XXXXXXXXXX	OUTTER MOLD	45P PVC BLACK	4	G
④	XXXXXXXXXX	INNER MOLD	PE TRANSPARENT	4	G
③	XXXXXXXXXX	DB PLUG	DP15PIN PLUG,NICKEL PLATED, PIN G/F	1	PCS
②	XXXXXXXXXX	MINI DIN 6PIN PLUG	MINI DIN 6PIN PLUG,NICKEL PLATED	1	PCS
①	XXXXXXXXXX	CABLE	SEE" CABLE CONSTRUCTION"		MM
NO.	MATERIAL NO	PART NAME	MATERIAL/FINISH	Q'TY	UNIT

STANDARD TOLERANCE LIMITS UNLESS OTHER SPECIFIED	
RANGE	TOLERANCE
>0-6	±0.14
>6-30	±0.20
>30-120	±0.30
>120-300	±0.40
>300-600	±0.50

單位	MM	比例	1:1				
圖法	第一角	頁數	1/1				
文件編號				客戶	A608	制圖	HU
康力訊料號				產品料號	IC-115HG	審核	
發行日期	2020.8.7	版次	1.0	核准			

G6A

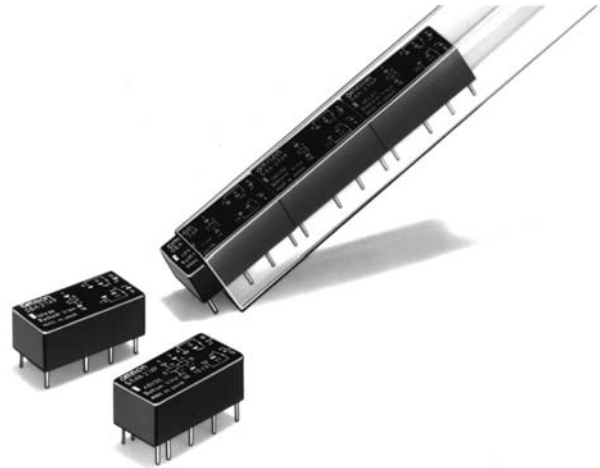
Low Signal Relay



World's Standard Model G6A!

- Resistant to electromagnetic interference, enables high-density mounting.
- Impulse withstand voltage of 1,500V meets FCC requirements.
- Gold-clad twin-contacts provide short contact bounce in addition to its high contact reliability.
- A variety of products that cover a wide range of use.

RoHS Compliant



Model Number Legend

G6A \square - \square \square \square \square - \square - \square
 1 2 3 4 5 6 7

1. Relay Function

- None : Single-side stable
- U : Single-winding latching
- K : Double-winding latching

2. Contact Form

2: DPDT (2c)

3. Contact Type

7: Bifurcated crossbar Ag (Au-Alloy)

4. Protective Structure

4: Fully sealed

5. Terminal Shape

P: PCB Terminals

6. Classification

- None : Standard
- ST : Stand-off 0.64 mm
- 15 : High-sensitivity (150 mW)
- 40 : Low-sensitivity
(Single-side Stable: 400 mW
Double-winding Latching: 360 mW)

7. Approved Standards

- None : Standard
- US : UL/C-UL

Application Examples

- Telecommunication equipment
- Security equipment
- Test & measurement equipment

G
6
A

Ordering Information

UL/C-UL Certified Models

Relay Function	Classification	Contact form	Model	Rated coil voltage (VDC)	Minimum packing unit
Single-side Stable Type	Standard	DPDT (2c)	G6A-274P-ST-US	3, 4.5, 5, 6, 9, 12, 24 48	25 pcs/tube
	Low-sensitivity		G6A-274P-ST40-US	3, 5, 6, 9, 12, 24 48	
	High-sensitivity		G6A-274P-ST15-US	3, 5, 6, 9, 12, 24 48	
Single-winding Latching Type	Standard		G6AU-274P-ST-US	3, 4.5, 5, 6, 9, 12, 24 48	
	Double-winding Latching Type		Standard	G6AK-274P-ST-US	
Low-sensitivity			G6AK-274P-ST40-US	3, 5, 6, 9, 12, 24 48	

Note: When ordering, add the rated coil voltage to the model number.

Example: G6A-274P-ST-US DC3

\square Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as \square VDC.

■ Ratings

● Coil: Single-side Stable (Standard Models)

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	66.7	45	70% max.	10% min.	200% (at 23°C)	Approx. 200
	4.5 VDC	44.6	101				
	5 VDC	40.0	125				
	6 VDC	33.3	180				
	9 VDC	22.2	405				
	12 VDC	16.7	720				
	24 VDC	8.3	2,880				
48 VDC	4.9	9,750	Approx. 235				

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
 2. Operating characteristics are measured at a coil temperature of 23°C.
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

● Coil: Single-side Stable (Low-sensitivity Models)

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	133.3	22.5	70% max.	10% min.	150% (at 23°C)	Approx. 400
	5 VDC	80	62.5				
	6 VDC	66.7	90				
	9 VDC	44.3	203				
	12 VDC	33.3	360				
	24 VDC	16.7	1,440				
	48 VDC	8.3	5,760				

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
 2. Operating characteristics are measured at a coil temperature of 23°C.
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

● Coil: Single-side Stable (High-sensitivity Models)

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	50	60	80% max.	10% min.	200% (at 23°C)	Approx. 150
	4.5 VDC	33.3	135				
	5 VDC	30	167				
	6 VDC	25	240				
	9 VDC	16.7	540				
	12 VDC	12.5	960				
	24 VDC	6.3	3,840				
48 VDC	3.2	15,000					

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
 2. Operating characteristics are measured at a coil temperature of 23°C.
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

● Coil: Single-winding Latching

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Set voltage (V)	Reset voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	33.7	89	70% max.	70% max.	200% (at 23°C)	Approx. 100
	5 VDC	20	250				
	6 VDC	16.7	360				
	9 VDC	11.1	810				
	12 VDC	8.3	1,440				
	24 VDC	4.2	5,760				
	48 VDC	2.5	19,000				Approx. 120

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
 2. Operating characteristics are measured at a coil temperature of 23°C.
 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

●Coil: Double-winding Latching (Standard Models)

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Set voltage (V)	Reset voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	66.7	45	70% max.	70% max.	200% (at 23°C)	Approx. 200
	4.5 VDC	40.2	112				Approx. 180
	5 VDC	36	139				
	6 VDC	30	200				
	9 VDC	20	450				
	12 VDC	15	800				
	24 VDC	7.5	3,200				
	48 VDC	4.2	11,520				Approx. 200

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

2. Operating characteristics are measured at a coil temperature of 23°C.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

●Coil: Double-winding Latching (Low-sensitivity Models)

Contact form	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Set voltage (V)	Reset voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
DPDT (2c)	3 VDC	120	25	70% max.	70% max.	150% (at 23°C)	Approx. 360
	4.5 VDC	79.9	56.3				
	5 VDC	72.5	69				
	6 VDC	60	100				
	9 VDC	40	225				
	12 VDC	30	400				
	24 VDC	15	1,600				
	48 VDC	7.5	6,400				

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

2. Operating characteristics are measured at a coil temperature of 23°C.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

●Contacts

Item	Load	
	Resistive load	Inductive load ($\cos\phi = 0.4;$ $L/R = 7 \text{ ms}$)
Contact type	Bifurcated crossbar	
Contact material	Ag (Au-Alloy) contact	
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC	0.3 A at 125 VAC; 1 A at 30 VDC
Rated carry current	3 A	
Max. switching voltage	250 VAC, 220 VDC	
Max. switching current	2 A	1 A

■ Characteristics

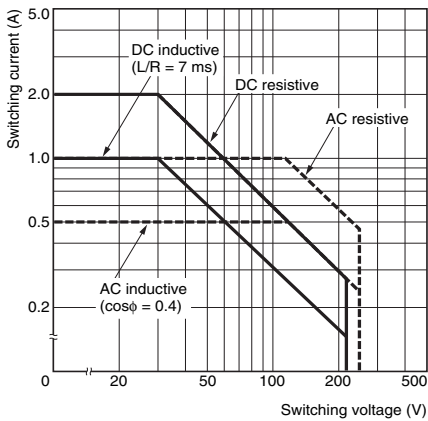
Item	Classification	Single-side Stable	Single-winding Latching	Double-winding Latching
Contact resistance *1		50 mΩ max.		
Operate (set) time		5 ms max.	5 ms max.	
Release (reset) time		3 ms max.	5 ms max.	
Min. set/reset signal width		–	10 ms	
Insulation resistance *2		1,000 MΩ min. (at 500 VDC); except for set-reset		
Dielectric strength	Between coil and contacts	1,000 VAC, 50/60 Hz for 1 min		
	Between contacts of the same polarity	1,000 VAC, 50/60 Hz for 1 min		
	Between contacts of different polarity	1,000 VAC, 50/60 Hz for 1 min		
	Between set and reset coils	–	–	250 VAC, 50/60 Hz for 1 min
Impulse withstand voltage		1,500 V (10 × 160 μs) (conforms to FCC Part 68)		
Vibration resistance	Destruction	10 to 55 to 10 Hz, 2.5 mm single amplitude (5 mm double amplitude)		
	Malfunction	10 to 55 to 10 Hz, 1.65 mm single amplitude (3.3 mm double amplitude)		
Shock resistance	Destruction	1,000 m/s ²		
	Malfunction	500 m/s ²	300 m/s ²	
Durability	Mechanical	100,000,000 operations min. (at 36,000 operations/hr)		
	Electrical	500,000 operations min. (at 1,800 operations/hr)		
Failure rate (P level) *3		10 μA at 10 m VDC		
Ambient operating temperature		-40°C to 70°C (with no icing or no condensation)		
Ambient operating humidity		5% to 85%		
Weight		Approx. 3.5 g		

Note: The data shown above are initial values.

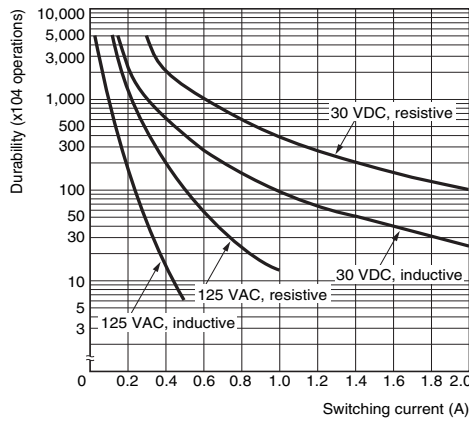
- *1. The contact resistance was measured with 10 mA at 1 VDC with a voltage drop method.
- *2. The insulation resistance was measured with a 500 VDC megohmmeter applied to the same parts as those used for checking the dielectric strength (except between the set and reset coil).
- *3. This value was measured at a switching frequency of 60 operations/min and the criterion of contact resistance is 50 Ω. This value may vary, depending on switching frequency, operating conditions, expected reliability level of the relay, etc. It is always recommended to double-check relay suitability under actual load conditions.

Engineering Data

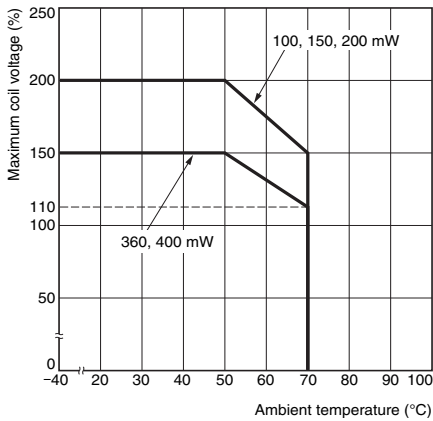
Maximum Switching Power



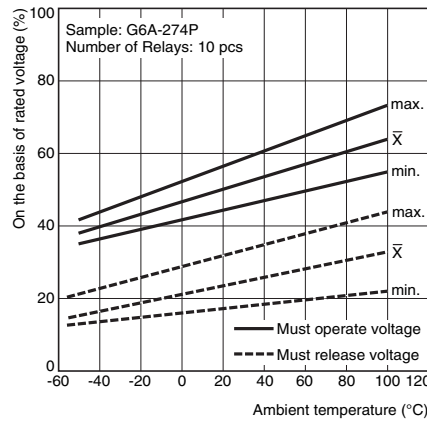
Durability



Ambient Temperature vs. Maximum Coil Voltage



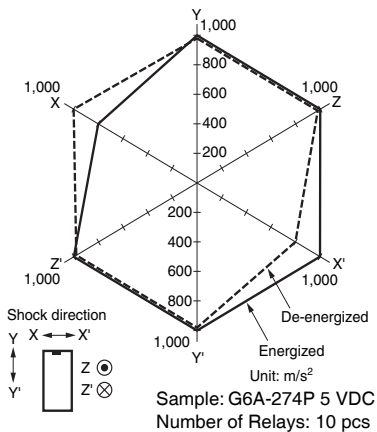
Ambient Temperature vs. Must Operate or Must Release Voltage



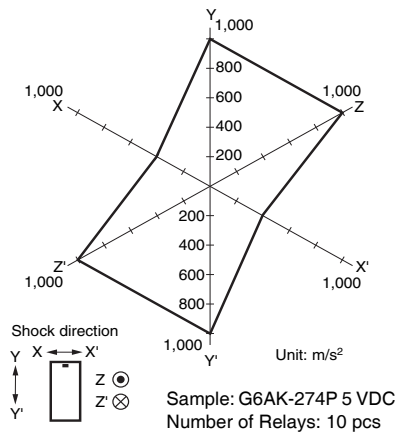
Note: "Maximum voltage" is the maximum voltage that can be applied to the Relay coil.

Shock Malfunction

G6A-274P



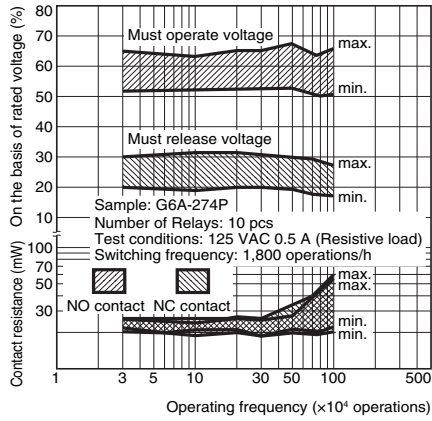
G6AK-274P



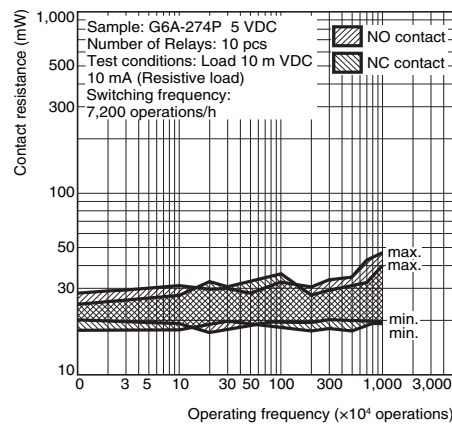
Test Conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with and without energizing the Relays to check the number of contact malfunctions.

G6A

●Electrical Durability Test *1



●Contact Reliability Test *1, *2

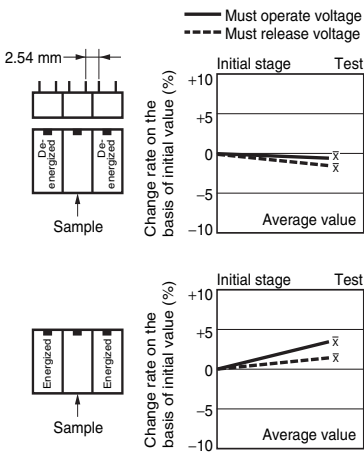


*1. The tests were conducted at an ambient temperature of 23°C.

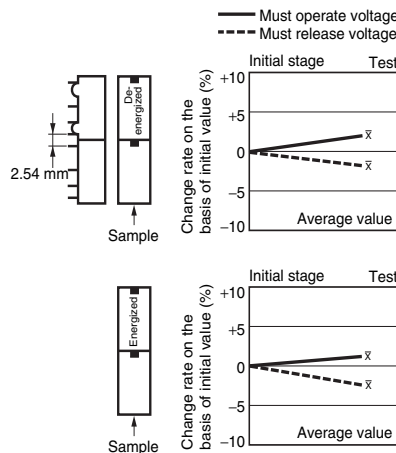
*2. The contact resistance data are periodically measured reference values and are not values from each monitoring operation. Contact resistance values will vary according to the switching frequency and operating environment, so be sure to check operation under the actual operating conditions before use.

●Mutual Magnetic Interference

G6A-274P



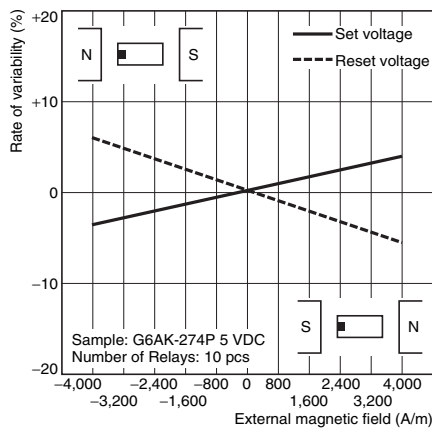
G6A-274P



●External Magnetic Interference

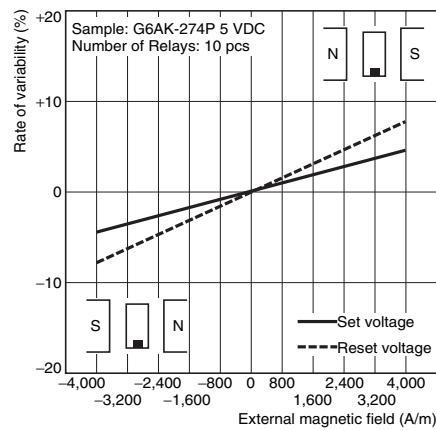
G6AK-274P

(Average value)



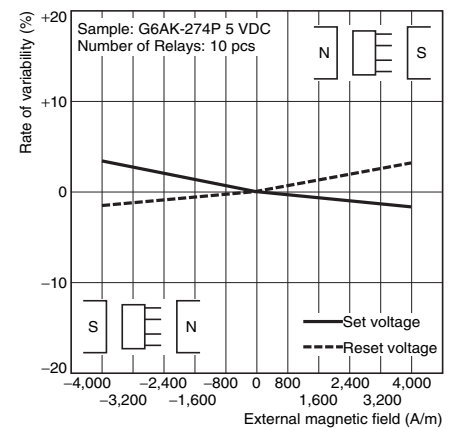
G6AK-274P

(Average value)



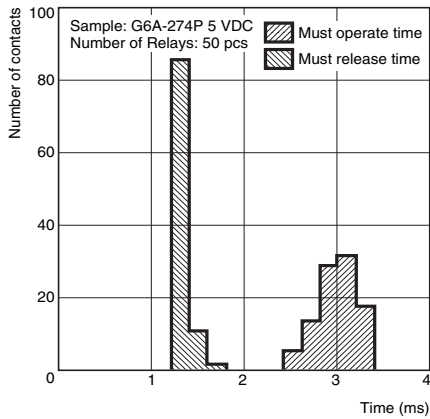
G6AK-274P

(Average value)

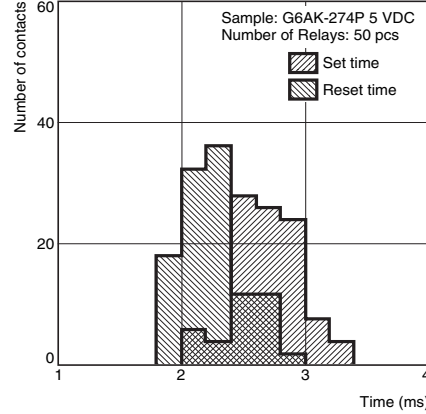


●Time distribution of Operating and Release/Set and Reset *1

G6A-274P

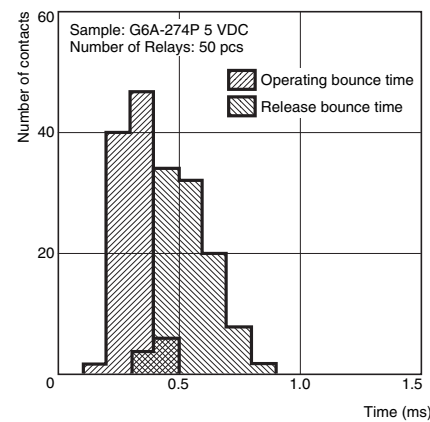


G6AK-274P

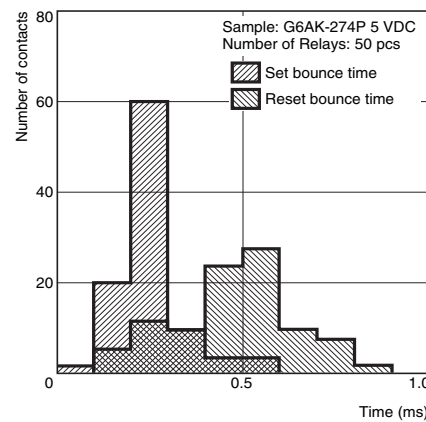


●Bounce Time distribution of Operating and Release/Set and Reset *1

G6A-274P

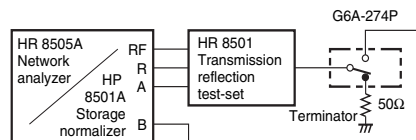


G6AK-274P



●High-frequency Characteristics

• Measurement Conditions

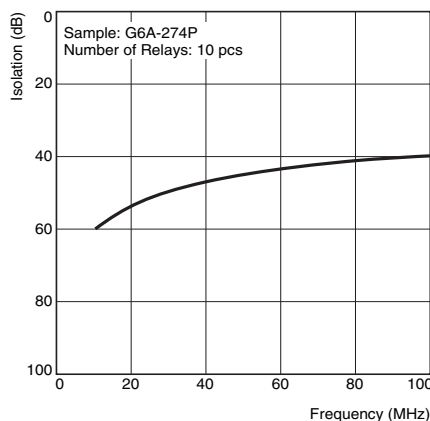


Terminals which were not being measured were terminated with 50 Ω.
Measuring impedance: 50 Ω

Note: The high-frequency characteristics data were measured using a dedicated circuit board and actual values will vary depending on the usage conditions. Check the characteristics of the actual equipment being used.

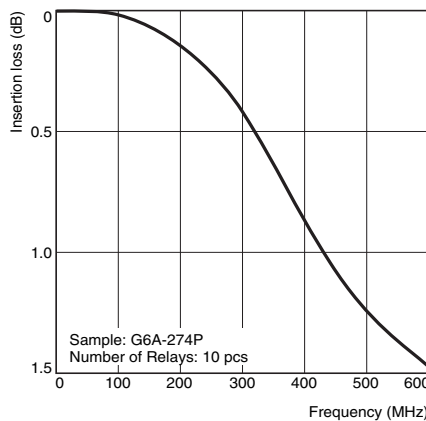
●High-frequency Characteristics (Isolation) *1, *2

(Average value (initial))



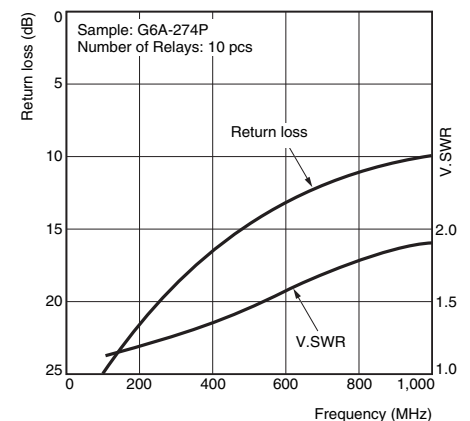
●High-frequency Characteristics (Insertion Loss) *1, *2

(Average value (initial))



●High-frequency Characteristics (Return Loss, V.SWR) *1, *2

(Average value (initial))

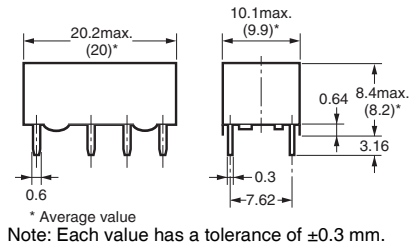
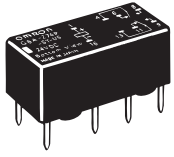


*1. The tests were conducted at an ambient temperature of 23°C.

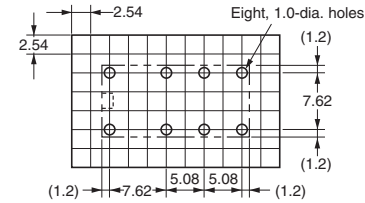
*2. High-frequency characteristics depend on the PCB to which the Relay is mounted. Always check these characteristics, including durability, in the actual machine before use.

■Dimensions

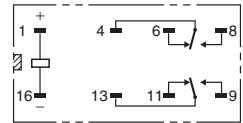
Single-side stable
G6A-274P-ST-US
G6A-274P-ST40-US
G6A-274P-ST15-US



PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1

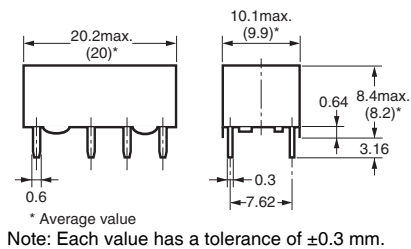
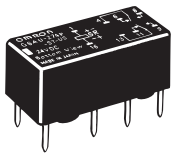


Terminal Arrangement/
Internal Connections
(BOTTOM VIEW)

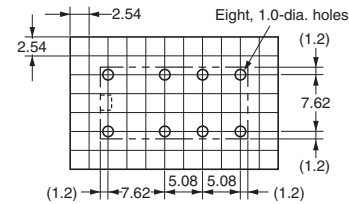


Note: Check carefully the coil polarity of the Relay.

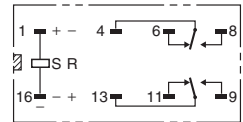
Single-winding latching
G6AU-274P-ST-US



PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1

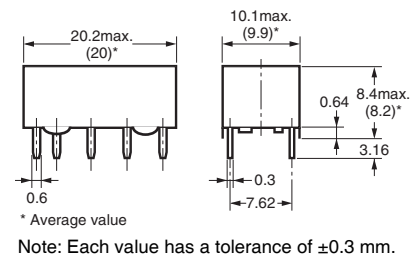
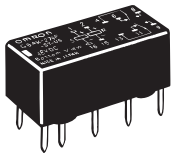


Terminal Arrangement/
Internal Connections
(BOTTOM VIEW)

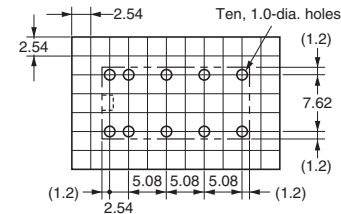


Note: Check carefully the coil polarity of the Relay.

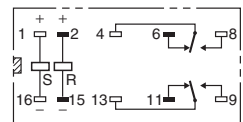
Double-winding latching
G6AK-274P-ST-US
G6AK-274P-ST40-US



PCB Mounting Holes
(BOTTOM VIEW)
Tolerance: ±0.1



Terminal Arrangement/
Internal Connections
(BOTTOM VIEW)



Note: Check carefully the coil polarity of the Relay.

Approved Standards

To order the model that is certified for the UL/C-UL standards, add “-US” to the end of the model number.

UL/C-UL Recognized.  US (File No.E41515)

Classification	Contact form	Coil ratings	Model	Contact ratings	Number of test operations
Single-side stable	DPDT (2c)	3 to 48 VDC	G6A-274P-ST-US	0.6 A, 125 VAC at 40°C 2 A, 30 VAC at 40°C 0.6 A, 110 VAC at 40°C	6,000
Latching			G6AK-274P-ST-US G6AU-274P-ST-US		
Low-sensitivity			G6A(K)-274P-ST40-US		
High-sensitivity			G6A-274P-ST15-US		

Precautions

●Please refer to “PCB Relays Common Precautions” for correct use.

Correct Use

●Long-term Continuously ON Contacts

Using the Relay in a circuit where the Relay will be ON continuously for long periods (without switching) can lead to unstable contacts because the heat generated by the coil itself will affect the insulation, causing a film to develop on the contact surfaces. We recommend using a latching relay (magnetic-holding relay) in this kind of circuit. If a single-side stable model must be used in this kind of circuit, we recommend using a fail-safe circuit design that provides protection against contact failure or coil burnout.

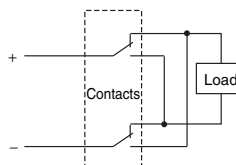
●Relay Handling

When washing the product after soldering the Relay to a PCB, use a water-based solvent or alcohol-based solvent, and keep the solvent temperature to less than 40°C. Do not put the Relay in a cold cleaning bath immediately after soldering.

●Double-switching load in two poles

Double-switching in two poles as shown in the figure below, one pole and two pole interval may become MBB (Make Before Break) mechanically according to the timing of the point of contact switching (By the short-circuit mode), and the malfunction might be caused.

In such a circuit, direct electric switching should be avoided, and concern for contact to be carried after the contact of Relay absolutely switches in condition of no load.



• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
 • Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

Radio Interface Cables for LDG Z-100A

There are a variety of three foot interface cables available.

- Press Button on Tuner or Radio
 - IC-100 ICOM AH-3 or AH-4 Compatible
- Press Button on Tuner
 - IC-105 ALINCO EDX-2 Compatible, DX-70, DX-77
 - IC-108 YAESU FT-100, 857, 897, 891, 991
 - IC-109 YAESU FT-450, 950, 1200, FTdx10
 - IC-115 YAESU FTdx101, 3000
- Key Radio and Press Button on Tuner
 - IC-105 ALINCO SR8T, SR9T
 - IC-106 KENWOOD AT-300 Compatible
- Power Only
 - IC-104 Power, Ground, Key, Start