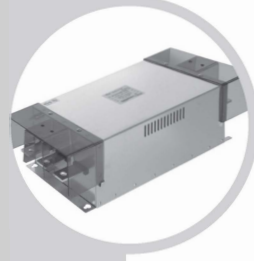


# 노이즈필터

## Noise Filter 滤波器 Woonyoung



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# DIGITAL PROTECTIVE RELAY

## 안전을위한주의사항 Guidelines for Safety

- “안전을위한 주의사항” 은 제품을 안전하고 올바르게 사용하여 사고나 위험을 미리 막기 위한 것이므로 반드시 지켜 주십시오.
- 주의사항은 “경고”와 “주의”의 두 가지로 구분되어 있으며 “경고”와 “주의”의 의미는 다음과 같습니다.

**⚠ 경고** 지시사항을 위반하였을 때 심각한 상해나 사망이 발생할 가능성이 있는 경우입니다.

**⚠ 주의** 지시사항을 위반하였을 때 경미한 상해나 제품손상이 발생할 가능성이 있는 경우입니다.

- 제품과 사용설명서에 표시된 ⚠ 그림기호의 의미를 특정 조건 하에서 위험이 발생할 우려가 있으므로 주의하라는 기호입니다.

### ⚠ 경고

1. 인명이나 재산상에 영향이 큰 기기 (예: 원자력 제어, 의료기기, 차량, 철도, 항공, 연소장치, 오락기기 등 또는 안전장치)에 사용할 경우 반드시 2중으로 안전장치를 부착한 후 사용하여 주십시오.
  - 화재, 인명사고, 재산상의 손실이 발생할 수 있습니다.
2. 반드시 패널에 취부 하여 사용하고 FG 또는  $\perp$  단자는 접지하여 주십시오.
  - 감전의 우려가 있습니다.
3. 전원이 인가된 상태에서 결선 및 점검, 보수를 하지 마십시오.
  - 감전의 우려가 있습니다.
4. 자사 수리가술자 이외에는 제품을 개조하지 마십시오.
  - 감전의 화재의 우려가 있습니다.
5. 입력 전원시양을 반드시 확인하시고 전원 연결 시 반드시 단자번호를 확인하시고 연결하십시오.
  - 화재의 우려가 있습니다.
6. 전원을 차단한 직후에 부하측 단자를 만지지 마십시오.
  - 감전의 우려가 있습니다.

### ⚠ 주의

1. 실외에서 사용하지 마십시오.(옥외용은 별도주문)
  - 제품의 수명이 짧아지는 원인이 되어 감전의 우려가 있습니다.
2. 전원 및 부하배선 연결 시에는 부하전류에 따른 전선의 굵기에 유의하여 주십시오.
  - 전류에 비하여 전선의 굵기가 가늘면 화재의 위험이 있습니다.
3. 단자대의 나사는 규정토크로 조여 주십시오.
 

규정토크(TORQUE) - M 3.5 : 0.6 ~ 1.2 N(6~12Kgf.cm), M 4 : 1.3 ~ 1.5 N(10~14Kgf.cm), M 5 : 2.1 ~ 3.0 N(15~25Kgf.cm)

나사가 풀리면 접촉불량으로 화재의 우려가 있습니다.
4. 반드시 정격과 성능 범위내에서 사용하여 주십시오.
  - 제품의 수명이 단축되고 고장 발생의 원인이 됩니다.
5. 청소시 물, 유기용제 등의 사용을 금합니다
  - 감전 및 화재와 제품변형의 우려가 있습니다.
6. 가연성가스, 폭발성가스, 습기, 직사광선, 복사열, 진동, 충격이 있는 장소에서의 설치 및 운전을 금합니다.
  - 제품수명 단축 및 고장, 화재, 폭발의 위험이 있습니다.
7. 제품의 내부로 먼지나 배선찌꺼기 등의 유해한 도체가 유입되지 않도록 하여주십시오.
  - 고장 및 화재의 우려가 있습니다.
8. 동작 중 방열판류에는 고열이 발생하므로 절대 만지지 마십시오.
  - 감전 및 화상의 우려가 있습니다.
9. 제품폐기 시에는 산업폐기물로서 처리하여 주십시오.

**⚠ Warning** When there is the possibility that serious injury or death can occur when violating directions.

**⚠ Caution** When there is the possibility that slight injury or the damage of products can occur when violating directions.

- The meaning of ⚠ lexigram indicated on the products and instructions is to handle with care as any danger can occur under specific conditions.

### ⚠ Warning

1. When using in instruments that have great influence on lives or properties(for examples: nuclear energy control, medical equipment, vehicles, railroad, aviation, combustion apparatus, entertainment systems or safety device), use after being sure to attach duplex safety device.
  - There may be fire, loss of lives, or property damages.
2. Use after being sure to attach to panel, and ground FG or  $\perp$  a terminal.
  - There may be the possibility of electric shock.
3. Don't connect, inspect and repair under the power-up.
  - There may be the possibility of electric shock.
4. Don't remodel products except by the company's engineers.
  - There may be the possibility of fire or electric shock.
5. Be sure to check input power source options, and connect after checking terminal number when connecting power sources.
  - There may be the possibility of fire.
6. Don't touch the terminal of load side immediately after power source is cut off.
  - There may be the possibility of electric shock.

### ⚠ Caution

1. Don't use outdoors (for outdoor, separate order)
  - It can be a cause of product's life becoming short, and there may be the possibility of electric shock.
2. When connecting power source and load wiring, pay attention to the thickness of cables according to load current.
  - There may be the danger of fire if the thickness of cables is thin for the current.
3. Tighten the screw of port by the regulated torque.
 

The regulated torque - M 3.5 : 0.6 ~ 1.2 N(6~12Kgf.cm), M4 : 1.3~1.5 N(10~14Kgf.cm), M 5 : 2.1 ~ 3.0 N(15~25Kgf.cm)

- If the screw comes loose, there may be the possibility of fire because of bad contact.
4. Be sure to use within the range of rating and performance.
  - Product's life is shortened, and it may be a cause of troubles.
5. Don't use water or organic solvent when cleaning.
  - There may be the possibility of electric shock, fire and product deformation.
6. Don't install or operate in places with inflammable gas, explosive gas, direct ray of light, radiation heat, vibration and shock.
  - There may be the possibility of troubles and fire.
7. Make sure that harmful conductors such as dust or fragments of cables may not be flowed into the inside of product.
  - There may be the possibility of trouble or fire.
8. Never touch during operation as there is superheat on the radiator board.
  - There may be the possibility of trouble or fire.
9. Dispose as industrial waste when discarding products.

# 주문시 확인 승낙 사항

## Items to be verified and approved when ordering products

### 운영 제품을 구입하는 고객 여러분께!

저희 운영 제품을 이용해 주셔서 대단히 감사합니다.  
본 카탈로그에서 당사 제품을 주문하실 경우, 견적서, 계약서, 사양서 등에 특기사항이 없는 경우에는 다음의 적합 용도조건, 보증내용등을 적용합니다.  
아래 내용을 확인하시고 승낙하신 후 주문해 주십시오.

#### 1. 보증 내용

- ① 보증기간  
당사 제품의 보증기간은 구입 후 또는 지정 장소 납입 후 1년으로 합니다.
- ② 보증 범위  
상기 보증 기간 중에 당사측의 책임으로 당사 제품에 고장이 발생한 경우 대체품 제공 또는 수리를 제품 구입 장소에서 무상으로 실시합니다. 단, 고장의 원인이 다음에 해당하는 경우에는 이 보증 대상 범위에서 제외됩니다.
  - a) 본 카탈로그 또는 사양서에 기재되어 있는 이외의 조건, 환경, 취급 및 사용에 의한 경우
  - b) 당사 제품 이외의 원인에 의한 경우
  - c) 당사 이외에 의한 개조 또는 수리에 의한 경우
  - d) 당사 제품의 본래 사용법 이외의 사용에 의한 경우
  - e) 당사 출하 당시의 과학, 기술 수준으로는 예측 할 수 없었던 경우
  - f) 기타 천재지변, 재해 등 당사측의 책임이 아닌 원인에 의한 경우
 참고로 여기서의 보증은 당사 제품 단품의 보증을 의미하는 것이며, 당사 제품 고장에 의해 유발되는 손해는 보증 대상에서 제외됩니다.

#### 2. 책임의 제한

- ① 당사 제품에 기 인해 발생한 특별손해, 간접손해, 또는 소극적 손해에 대해 당사는 일체의 책임을 지지 않습니다.
- ② 프로그래밍 가능한 당사제품에 대해 당사 이외의 자가 실시한 프로그램 또는 그에 의해 발생한 결과에 대해 당사는 일체의 책임을 지지 않습니다.

#### 3. 적합 용도의 조건

- ① 당사 제품을 다른 제품과 조합해서 사용하는 경우에 적합해야 할 규격, 법규 및 규제는 고객이 직접 확인해 주십시오.  
또 고객이 사용하는 시스템, 기 계, 장치에 대한 당사제품의 적합성은 고객이 직접 확인해 주십시오.  
이 것이 실시되지 않는 경우 당사는 당사 제품의 적합성에 대해 책임을 지지 않습니다.
- ② 다음 용도에 사용하는 경우, 당사 영업 담당자와 상담하고 사양서 등을 통해 확인하는 한편 정격, 성능에 대해 여유를 주거나 만일 고장이 발생해도 위험을 최소화 할 수 있는 안전 회로 등의 안전 대책을 2중으로 강구해 주십시오.
  - a) 실외, 잠재적인 화학적 오염 또는 전기적 방해를 받는 용도 또는 본 카탈로그에 기 재되지 않는 조건이나 환경에서 사용.
  - b) 원자력 제어설비, 소각설비, 철도, 항공, 차량설비, 의료용 기계, 반도체 제조장비, 오락기 계, 안전장치 및 행정 기 관 이나 개별 업계의 규제에 따른 설비
  - c) 인명이나 재산에 위험이 미칠 수 있는 시스템, 기 계, 장치
  - d) 가스, 수도, 전기의 공급 시스템, 24시간 연속 운전 시스템 등 높은 신뢰성이 필요한 설비
  - e) 자동차(2륜차 포함) 탑재 설비
  - f) 기 타상기a)~e) 에 준하며 고도의 안전성이 필요한 용도
- ③ 고객이 당사 제품을 인명이나 재산에 중대한 위험을 미치는 용도에 사용하는 경우에는 시스템 전체적으로 위험을 알리거나 여유 있는 설계에 의해 필요한 안전성을 확보할 수 있도록 설계되어 있는지 당사 제품이 전체 적으로 의도한 용도에 적절히 배전, 설치 되어 있는지 반드시 고객이 직접 사전에 확인해 주십시오.
- ④ 본 카탈로그에 기 재되어 있는 용도는 참고용이므로 채택 시에는 기기, 장치의 기능과 안전성을 확인 한 후에 사용해 주십시오.
- ⑤ 당사 제품의 잘못된 사용으로 고객 또는 제 3자에게 예 기 차않은 손해가 발생하지 않도록 사용상의 금지 사항 및 주의 사항을 완전히 숙지 한 후 반드시 지켜 주십시오.

#### 4. 사양변경

본 카탈로그에 기 재된 제품의사양 및 동봉품은 개선 또는 기타 사유에 의해 필요에 따라 변경될 수 있습니다.  
당사 영업 담당자와 상담하고 당사 제품의 실제 사양을 확인해 주십시오.

#### 5. 서비스의 범위

당사 제품의 가격에는 기술자 파견 등의 서비스 비용은 포함되어 있지 않습니다.  
원하실 경우에는 당사 영업 담당자와 상담해 주십시오.

#### 6. 적용 범위

상기 사항은 대한민국 내에서의 거래 및 사용을 전제로 합니다.  
해외에서의 거래 및 사용에 대해서는 당사 영업 담당자와 사전에 상담해 주십시오.

### Dear customers who purchase Woon Young products!

Thank you for purchasing Woon Young products.  
If there is no particular information on estimates, contracts or specifications when you order products from this catalog, the following conditions of use and warranty shall apply. Please place orders after you read and approve the following items.

#### 1. Content of Warranty

- ① Warranty period  
The warranty period of this product shall be 1 year from the date of purchase or from the day the product is delivered to a designated place.
- ② Scope of warranty  
If failure occurs due to reasons attributable to this company during the above-said warranty period, this company will provide substitute products or repair the product free of charge at the place of purchase. However, if the cause of failure is one of the following, it shall be excluded from being eligible for warranty benefits.
  - a) Products were handled or used under the conditions and environment not entered in this catalog or in specification.
  - b) Failure occurred due to reasons other than those caused by this product.
  - c) Failure occurred due to modification or repairs performed by persons other than this company.
  - d) Failure occurred because the product was used based on the method other than the original usage of this product.
  - e) Failure was not expected by the scientific and technical levels prevailing at the time of shipment.
  - f) Failure occurred due to causes beyond the control of this company, e.g. natural disasters and accidents.
 Warranty as specified herein means the warranty covering only the product of this company, and any damage caused by the failure of this product shall be excluded from being eligible for warranty coverage.

#### 2. Limitations on responsibility

- ① This company shall not be held liable whatsoever for any special damage, indirect damage or passive damage caused by this product of this company.
- ② This company shall not be held liable whatsoever for any programming performed by persons other than this company on the programmable products or for the results of such programming.

#### 3. Conditions of compatibility

- ① Please check the standards, laws and regulations applicable when this product is used in combination with other products.  
In addition, be sure to check the compatibility of this product covering the systems, machines and devices used by you.  
If you fail to take actions as above, this company shall not be held liable for the compatibility of the product.
- ② If the product is used for the following purposes, discuss details with the sales manager of this company based on the provided specifications. At the same time, allow sufficient rating and performance, or take appropriate safety measures through the safety circuits that can minimize risks even if failure occurs.
  - a) Using the product outside or under environment exposed to potential chemical pollution or electric interference, or using the products under the conditions or environment not specified in this catalog.
  - b) Nuclear controllers, incinerators, railways, aviation, vehicles, medical equipment, semiconductor manufacturing equipment, game machines, safety devices and equipment regulated by administrative agencies or individual maker.
  - c) Systems, machines and devices that can cause personal or property damage.
  - d) Equipment requiring high degree of reliability, e.g. gas, water and electricity supply systems, and 24-hour continuous operation systems.
  - e) Automobile (including two-wheeled vehicles) mounted equipment
  - f) Other purposes equivalent to the above-said paragraph a) through e) requiring high degree of safety.
- ③ If the product is used for purposes that might induce serious personal or property damage, be sure that you inform risks covering the entire system in advance or verify whether the product is designed to ensure required safety or whether the product is properly connected and installed to suit the intended overall purposes
- ④ The purposes of the products shown in this catalog are only for reference purposes. Apply such purposes only after you check the functions and the safety of the equipment and devices.
- ⑤ To prevent unexpected damage to you or to third parties resulting from improper use of this product, be sure to use the product after you thoroughly read and understand items related to prohibitions and caution during use.

#### 4. Changing specifications

The products and specifications entered in this catalog are subject to change as needed for improvement or for other reasons. Discuss with the sales manager of this company and verify actual specifications of the products.

#### 5. Range of service

The product prices do not contain any service expenses, e.g. dispatch of technicians. If you need any services, discuss with the sales manager of this company.

#### 6. Scope of application

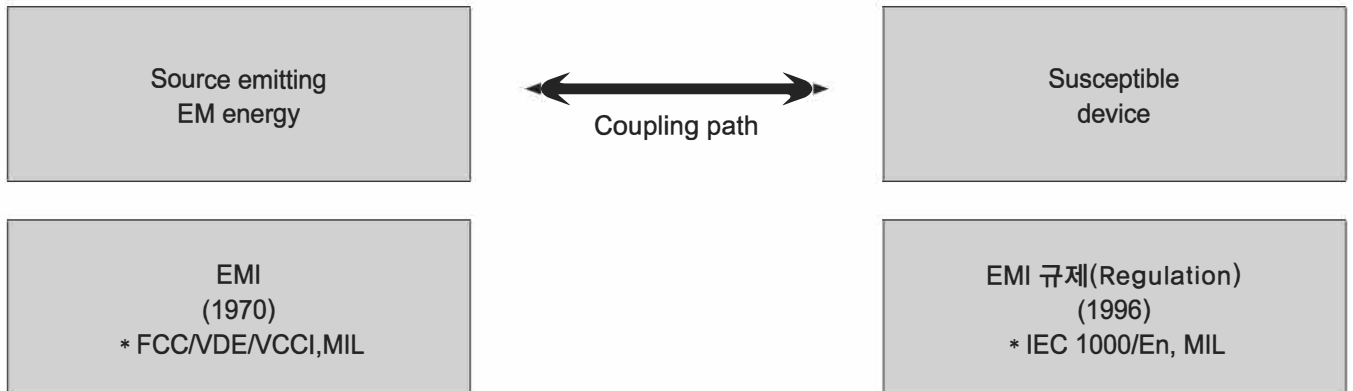
Items described above are on the premise that the products are traded and used in the Republic of Korea. Discuss with the sales manager of this company regarding overseas transactions and uses.

## 1. 전자파 장애 개요 (EMI)

최근의 디지털 기술과 반도체 기술 등의 급속한 발달에 따라 전자산업 및 컴퓨터 기술에 눈부신 발전을 가져왔습니다 따라서 전기·전자장치의 경량화, 소형화, 고속화와 광대역화가 가능하게 되고, 또한 이들을 적은 구동 에너지로도 동작시킬수 있는 반면 이들은 인위적인 제어가 어려운 자연 현상 을 원인 으로 하므로 낮은 전자파장애 에도 민감하게 반응하여 오동작을 잘 일으키게 되고, 또 많은 전기·전자장치가 사회 각 분야에 보급됨에 따라 전자파 밀집도가 증가하고 전자파환경을 나쁘게 만드는 경우가 늘어나 나쁜 환경에 설치된 기기가 원래의 목표대로 동작치 않아 사회에 혼란을 일으키거나, 인 체장애의 가능성 이 제시되고 있는 등 많은 문제점들이 나타나고 있습니다.

우리의 생활환경에서도 전기면도기를 사용할 때 ,텔레비전 수상기의 화

Electronic industry and technology of computer have faced brilliant development because of recent dramatic advance of digital technology and semiconductor etc. it is therefore possible to see lighter, smaller, speedy electric and electronic devices in a large area. On one hand, these can be operated by small energy to start. On the other hand, there are many problems caused by it. It operates so sensitively even by minute electromagnetic and causes error of operation, density of electromagnetic is increased as so many electric and electronic products are distributed to every corner of society which also causes worse environment of electronic wave. Devices which are installed under the environment mentioned above operate wrongly enough to cause confusion in the society or increase concern about the bad effect



(Fig1)

면에 노이즈가 발생하는 경우를 비롯하여, 전기톱을 사용하는 제재소 근처에서 차량 오디오가 잡음을 일으키는 경우, 화려한 장미전구 아래에서 무선 리모콘 이 동작되지 않는 경우 등, 대수롭지 않게 무시되는 것으로 부터, 자동차 전자제어장치의 전자파장애로 급출발, 급정지, 급가속에 의한 교통사고가 일어난 경우, CNC 선반의 전자파장애로 인 해 선반헤드나 갑자기 이동하면서 치구작업을 하고 있던 작업자가 사망한 경우, 원자력 발전소의 전자제어부의 전자파장애로 인한 원자로 비상정지 사태 발생, 무선단말기 사용자의 전자파 인체장애 가능성 등, 매우 심각한 사회문제를 일으키는 것까지 매우 다양한 형태로 전자파장애 현상 이 나타나고 있습니다. 이러한 현상들은 과거에 구체적인 원인이 모를 때는 원인 불명으로 처리되거나, 어느 정도 성가신 정도로 그냥 그렇게 넘어갔으나, 전자 파장애 현상 에 대한 체계적인 연구 시작되면서 그 원인이 밝혀지고 따라서 피해측에서의 강력한 대책이 요구되고 있는 실정입니다.

on human body.

There are many interception of electromagnetic in our society. With regard to trivial occasions occur in our daily life, there are when electronic shaving machine is used, noise occurs on TV screen, audio of vehicle is interfered by neighboring saw milling, wireless remote controller does not work under the flamboyant lamp etc.

The examples of more serious occasions are traffic accident occurs from unprepared start, stop, acceleration by interception of electronic wave of electronic controller, operator is killed as shelf head all of sudden operates because of electromagnetic interception of CNC shelf, emergent stop of nuclear reactor happens due to electromagnetic interception at electronic controller of atomic power station and possible harm on human body from electromagnetic etc. Though these phenomena were treated with unknown reason or regarded forgettable, they are now clarified in detail and fundamental measure from the victims.

## 1. Overview of interception of electromagnetic (EMI)

전자파장해 문제가 성립하기 위해 서는 그림 1과 같이 기본적으로 장해원(source), 결합경로(coupling path), 감응체(susceptor) 가 동시에 존재해야 합니다. 이러한 전자파장해 현상은 장해원으로 부터의 과도한 불요전자파의 방출에 의해 서도 발생하지만, 피해장치 자체의 약한 전자파내 성에 의해서도 발생합니다. 이러한 전자파장해 문제를 줄이기 위해서는 우선 장해원의 수나 출력 등을 줄여 다른 장치에 방해를 주지 않도록 하여야 하고, 또한 어느 정도의 전자기적 환경 내에 서도 장치가 의도된 동작을 할 수 있도록 내성을 강화시켜 주어야 합니다. 사회에 보급되는 다양한 전기·전자장치들이 서로 조화를 이루어 공존할 수 있는 것을 "전자파환경의 양립성"이라 하고 이러한 능력을 갖게 하는 것이 EMI/EMC 연구의 궁극적인 목표입니다. 세계각국은 이러한 목표를 달성하기 위해 '70년대 후반부터 불요전자파 방출 규제(흔히 EMI 규제라 부른다)를 시행하고 있으며, '96년 1월 1일부터 유럽연합을 중심으로 전자파내성 규제(흔히 EMS 규제라 부른다)가 본격적으로 시작되고 있습니다. 현대적 개념의 전자파양립성은 우리가 동작시키려는 장치의 입장에서 보는 것으로, 전기·전자 장치나 시스템을 설치하려는 위치의 전자파환경에서 설계상에 의도된 성능을 가지고 제대로 동작할 수 있는 능력을 뜻하며, 이에 서한 단계 더 나아가서 장치나 시스템이 새로 추가될 때 기존의 전자파환경에 변화를 가져와 거기에 이미 있었던 다른 기기에 영향을 주지 않아야 하는 것도 의도하는 것으로 매우 적극적이고, 포괄적인 개념으로 발전되고 있습니다. 이렇게 발전되어온 EMI/EMC의 정의를 최근의 IEEE 사전(ANSI/IEEE Std. 100-1988)은 다음과 같이 내 리고 있습니다.

위의 정의로부터 단순히 EMC 라고 부르는 경우는 포괄적인 의미의 두 번째 용어 정의로 해석할 있으며, 흔히 EMI/EMC 라고 부르는 경우의 EMC 는 첫 번째 용어 정의로서 EMS 와 같은 의미를 가지는 것으로 이해할 수 있습니다.

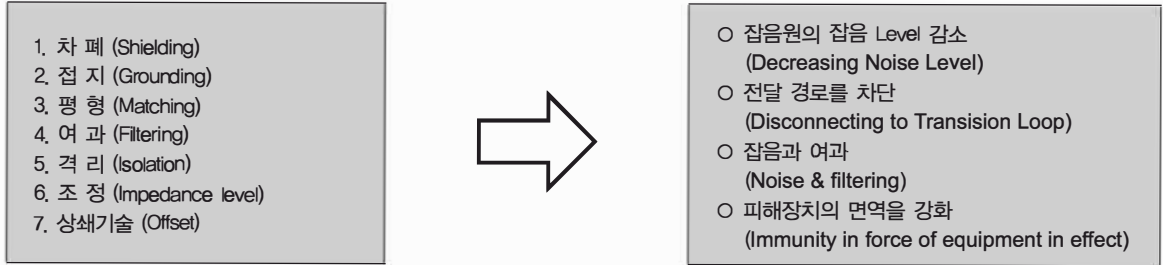
In order to establish the issue of electromagnetic interception, source, coupling path and susceptor etc. basically must be available at the same time as per Picture 1. Though phenomena of electromagnetic interception occur from excessive electromagnetic from the source, they are also caused from insufficient tolerance of devices. In order to reduce the problem of electromagnetic, number or output of source must be decreased in order not to intercept other devices, strengthening the tolerance of electromagnetic of the devices so that they can operate as intended under the electromagnetic environment to some extent. Compatibility of electronic wave environment indicates that various electric and electronic devices coexist harmoniously and it is the ultimate objective of EMI/EMC study. Each country in the world have implemented EMI, restriction of electromagnetic since late 1970s to achieve the objective and more seriously started its regulation as EMS regulation mainly led by EU was announced in 1 Jan.1996. Modern concept of compatibility of electronic has been developed very proactively and comprehensively from the perspective of the devices which we intent to operate. Particularly, it means the ability of electric and electronic devices operate as designed under the electromagnetic environment where the devices are planned to install and further, additional electromagnetic of new device or system do not impact on the existing electromagnetic environment without influencing the adjacent existing devices. Definition of EMI/EMS which have been developed as mentioned above are now redefined by IEEE(ANSI/IEEE Std. 100-1988) as below.

- EMI : A measure of electromagnetic radiation from equipment
- EMC : 1) A measure of equipment tolerance to external electro magnetic fields.
- 2) The ability of a device to function satisfactorily in its electro magnetic environment without introducing intolerable disturbance to that environment (or to other devices)

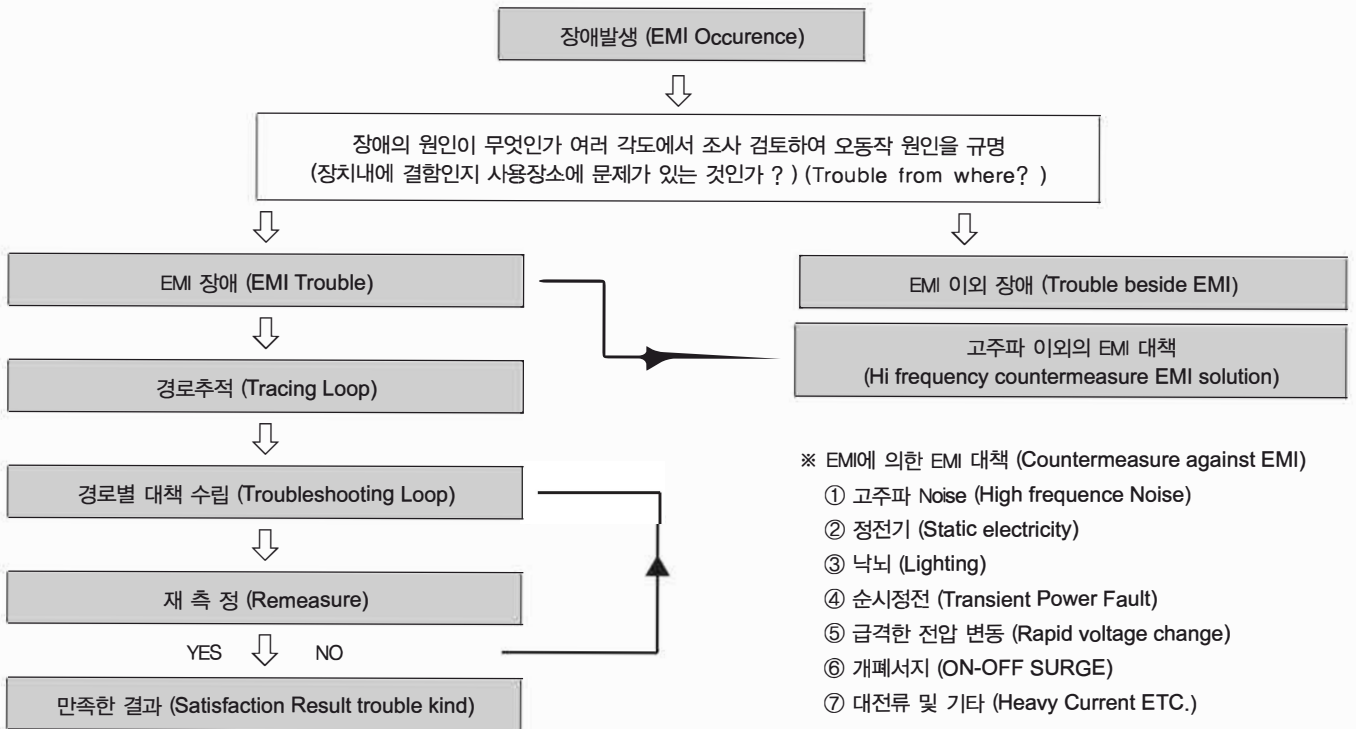
트랜스폼터  
REACTOR 리액터  
무정전압레일  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈 필터  
NIF  
하모닉 필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELAY  
누전경보기  
ELD-GF  
영상변류기  
ZCT  
판넬메타  
METE  
계기용 변형기  
CT-VT  
선택 팬  
SHUNT-FAN

## 1. 전자파 장애 개요 (EMI) Overview of interception of electromagnetic (EMI)

### 1 - 1. EMI 해결방법 (Solution for EMI)



### 1 - 2. EMI 대책 수립절차와 발생 요인 (Countermeasure against EMI)



NOISE 종류 (Noise Mode)		오동작 현상 (Trouble Kind)	NOISE 와 오동작의 상관관계 (Relation between Noise & Trouble)
A	직류적 Noise (DC Noise)	<ul style="list-style-type: none"> <li>Analogue 입력의 Data Shift (Analog input is Data Shift)</li> <li>Analogue 입력 Data의 흐트러짐 (Disturbance of analog input Data)</li> <li>Digital 입력의 변화 (Digital input change)</li> <li>Pulse 입력의 변화 (Pulse input change)</li> <li>Pulse 입력의 Data Shift (Pulse input data shift)</li> <li>CPU 정지 (CPU stop)</li> <li>메모리에 잘못된 기록됨 (Wrong writing to memory)</li> <li>Data 전송에러 (Data Transmission error)</li> <li>잘못된 출력 (Wrong output)</li> <li>부품파손</li> <li>CRT화면의 찌그러짐 (CRT screen distortion)</li> </ul>	→ A, B, C
B	상용주파수 Noise (Frequency Noise)		→ B, C, D
C	RFI(EMI)		→ A, B, D
D	EFT		→ A, B
E	SURGE or ESD		→ E, F
F			→ D, E, F
F	순시정전 (Transient Power Fault)		→ D, E
G	자계 (magnetic fields)	→ C, D, E	
		→ A, B, D, E	
		→ G	

## 2. NOISE 발생의 3대 요소 Three factors of noise generation

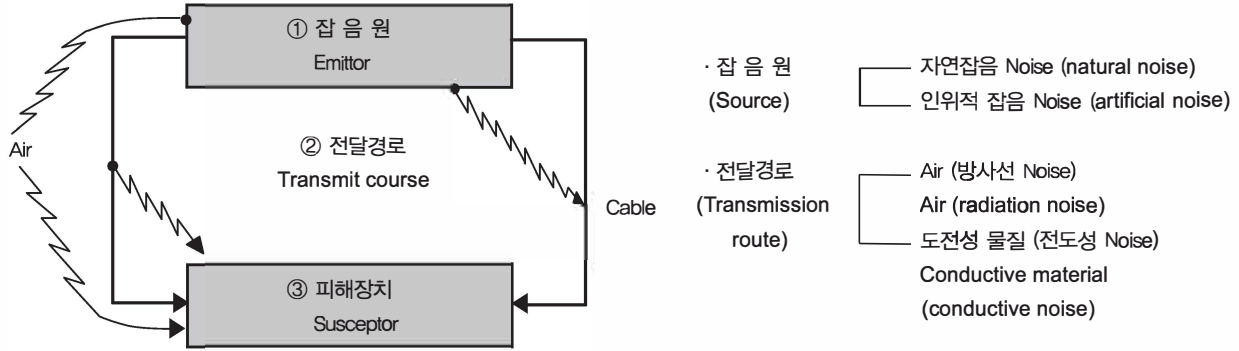


TABLE 1

### 2 - 1. 전기제어 장치의 Noise 경로 (Noise channel of electronic controller)

NOISE의 전달 경로는 공중으로 전달되는 복사 Noise와 주전원 Line 으로 전달되는 전도 Noise 2 종류가 있습니다.  
(There are two types including radiation noise which is transferred to the air and conductive noise which is delivered to the major electric power line.)

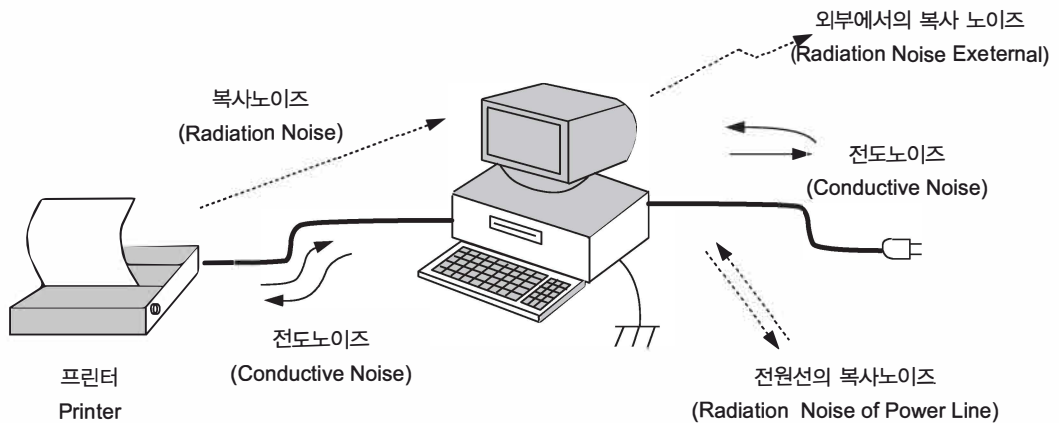


TABLE 2

트랜스포머  
REACTOR  
리액터  
무선충전블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈필터  
N/F  
하모닉필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELAY  
누전경보기  
ELD-GFR  
영상변류기  
ZCT  
판넬메타  
METER  
계기용변성기  
CT-VT  
선편  
SHUNT-FAN

**3. 전도 노이즈 Conductive noise**

3 - 1. Common Mode, Normal Mode Noise

전도 노이즈는 표 3 과 같이 Line과 어스간을 전달하는 Common Mode Noise(비대칭잡음)과 Line 간을 왕복하는 Normal Mode Noise(대칭잡음)가 있습니다. 특수한 경우를 제외한 이 2 종류의 노이즈가 항상 존재합니다.

Concerning conductive noise, there are two types as manifested in Table 3 such as common mode noise which delivers between line and us and normal mode which moves around between lines. Other than exceptional case, these two type of noise always exist.

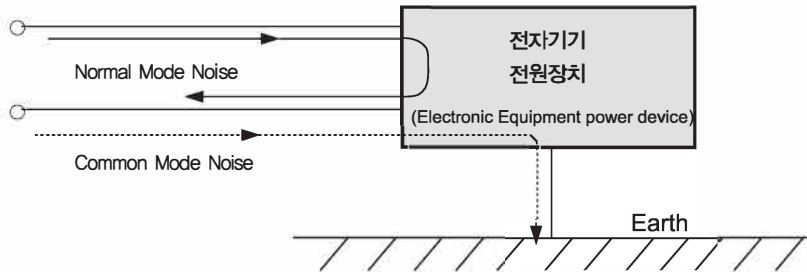


TABLE 3

3 - 2. Noise Filter의 원리 (Principle of noise filter)

가장 일반적인 Noise Filter의 회로는 표4와 같습니다.  
The most common circuit of noise filter is indicated in Table 4.

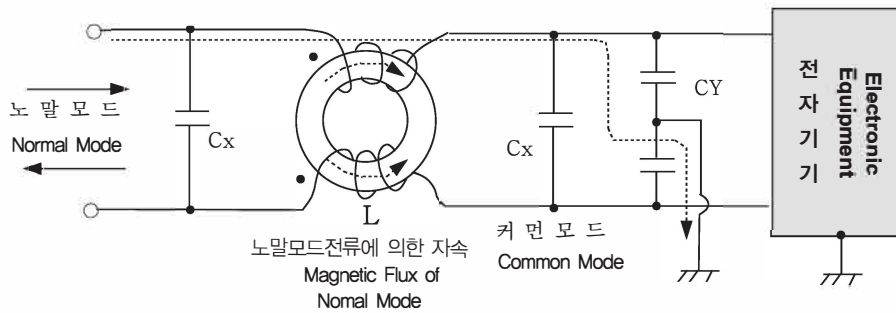


TABLE 4

노이즈 필터는 일종의 저감 Filter이며 또 차단 주파수는 높은 주파수에서 감쇄 효과가 있습니다. 노이즈 필터용으로 사용하는 코일은 Common Mode Choke Coil이며 1개의 Core에 2개의 권선이 동상에 있습니다. 이 때문에 통상 전원 전류에서는 내부의 자속이 없어지게 됩니다. 인덕턴스는 대부분 없어서 노말모드 노이즈의 감쇄효과는 그다지 없습니다. Common Mode 전류에 대해서는 커다란 인덕턴스를 얻도록 된 제품입니다. 이에 對地콘덴서 Cy와 함께 콤먼모드 노이즈의 감쇄에 크게 기여합니다. 또한 노말모드 노이즈에 대해서는 콘덴서 Cx 를 삽입 하므로써 감쇄 효과를 얻도록 된 제품입니다. 위와 같이 표4의 필터는 Normal Mode, Common Mode의 양 노이즈의 저지에 효과가 있습니다. 각각의 모드에서 등가회로는 표5와 같습니다.

Noise filter is kind of low pass filter and frequency of interception is reduced at the high frequency. Coil of noise filter is common mode choke coil and there are two coils in one core at the same phase. Because of it, magnetic flux electricity disappears at the electric current in general frequency. Because inductance mostly disappears, the effect of reduction of normal noise is not great. It is a product which obtains large inductance for common mode current. It reduces substantially common mode noise with condenser CY to the ground. Reduction can be obtained by inserting condenser Cx in terms of normal mode noise. Filter at the Table 4 intervenes noise of both normal mode and common mode. Equivalent circuit of each mode is as indicated in Table 5.

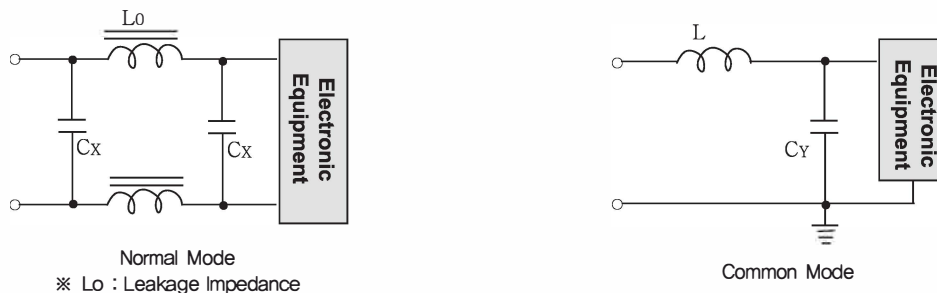


TABLE 5



**4. 전자파 규제에 대한 규격 및 참고자료** Specification relevant to the regulation of electromagnetic and references

1990년 전기, 전자기기의 사용 급증으로 이들 기기에서 발생하는 불요전자파에 의한 통신 장애 및 기기 오 동작으로 인한 산업재해 유발을 예방하고 선진국 보호무역주의에 적극 대처 하므로써 국내 전파 환경 보호 및 국내 제품의 국제 경쟁력을 제고하기 위해 국내 EMI 검정 규칙이 시행되어 오고 있다.

EMI regulation has been implemented since 1990 in order to prevent industrial accident resulted from impediment of communication and error of devices by electromagnetic of electric and electronic devices and to cope with the protective trade regime of developed countries so that domestic environment can be protected and international competitiveness of domestic products can be strengthened.

**4 - 1. 전자파 적합등록 / 세부대상 기기 (Detailed item)**

대 상 기 기 (Relevant device)	EMI std.	EMS std.	세 부 사 항 기 기 류 (Detailed item)
1) 산업과학, 의료용 등 고주파 이용기기류 - 약사법에 의한 의료 용구 · 호흡보조기, 내장기능대용기, 보육기등 · 방사선 진료장치, 비전리 진단장치, 전기 수술기등 · 전자파 관련 모든 의료용구  1) Device to use high frequency such as industrial science and medical - Medical devices by pharmaceutical and medical law, · Breathing assistance, device to replace organ, device to care child · Radiation device, diagnosis of non ionization, electric operating device etc. · All medical devices relevant to electromagnetic,	1997. 7. 1 1998. 1. 1 1999. 1. 1 2000. 1. 1	2000. 1. 1 1998. 1. 1 1999. 1. 1 2000. 1. 1	산업,과학의료 및 가정용으로 고주파 에너지를 발생하거나 이를 부분적으로 이용하도록 설계된 장치 및 기기로서 전기용품 안전관리법 및 약사법에 의한 형식승인 및 품목허가 대상기기  Equipment or devices for industrial, scientific/medical and housing application which are designed to create high frequency energy or partly use. They are governed by safety control law of electric devices and application and permission regulation of pharmaceutical law.
2) 자동차 및 불꽃 점화 엔진 구동기기류 · 승용자동차 · 4.5톤 이하 승합, 화물 및 특수자동차 · 모든 자동차  2) Engine machine for automobile and ignition · Automobile vehicle of below 4.5ton, truck / special vehicle · All automobiles	1997. 1. 1 1997. 1. 1 2000. 1. 1	1997. 1. 1 1999. 1. 1 2000. 1. 1	전파통신이나 방송수신등에 방해가 되는 기기로서 자동차 관리법의 규정에 의하여 형식승인을 얻어야 하는 기기로 한다. 다만 이륜자동차와 자동차의 최고속도가 매시 25Km 이하인 자동차는 제외  Devices which intercept electronic communication or broadcasting and must be approved according to law of automobile control except vehicle of two wheels and automobile of which max. speed per hour is less than 25Km.
3) 방송 수신 기류 Receiver device for broadcast	1997. 1. 1	2000. 1. 1	9KHz부터 1GHz까지의 주파수 범위내의 방송 또는 유사 정보를 수신하기 위한 음성 및 텔레비전 수신기와 이에 직접 연결되어 음성 또는 시각정보를 생성하거나 재생하기 위한 기기로서 전기용품 안전관리법에 의한 형식승인 대상 기기로 한다.  Voice and TV receiver to receive broadcast from 9KHz to 1GHz or similar data. And devices to create or renew voice or visual data by direct connect to them. They are governed by safety control law of electric goods in terms of specification.

트랜스포머  
REACTOR  
리액터  
무선충전블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMPs  
노이즈 필터  
H/F  
하모닉 필터  
SPD  
서지보호기  
RELA  
보호계전기  
E  
LED=GF  
R  
영상변류기  
ZCT  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FA  
선택팬

**4. 전자파 규제에 대한 규격 및 참고자료** Specification relevant to the regulation of electromagnetic and references

대 상 기 기 (Relevant device)	EMI std.	EMS std.	세 부 사 항 기 기 류 (Detailed item)
4) 가정용 전기기기 및 전동기기류 Electronic devices and motor at home appliance	1997. 7. 1	2000. 1. 1	가정용 전기기기, 휴대용 전동공구, 전기가 열장치 및 기타 전기기기로서 전기용품 안전관리법에 의한 형식승인 대상 기기기로 한다.  Electric device for home, portable tool, electric heating device and other electric devices. They are governed by safety control law of electric goods in terms of specification.,
5) 형광등 등 조명기기류 Fluorescent light and lighting etc.	1997. 7. 1	2000. 1. 1	9KHz부터 400GHz까지 주파수대에서의 형광등 및 조명 기능을가지는기구또는장치로서전기용품안전관리법에 의한 형식승인 대상기기으로 한다  Devices or equipment with the function of fluorescent light and lighting etc, for in 9KHz to 400GHz. They are governed by safety control law of electric goods in terms of specification.,
6) 고전압 설비 및 그 부속기기류 Facility of high voltage and annexed devices	To be determine	2000. 1. 1	추후 결정 (It is subject to be decided later.)
7) 정보기기류 Information device etc.	1997. 7. 1	2000. 1. 1	전자파 적합등록 및 규칙 제2조 제3호의 규정(데이터 및 통신 메시지의 입력,출력,저장,검색,전송 또는 제어 등의 주요기능과 정보 전송용으로 작동되는 1개 이상의 터미널 포트를 갖춘 기기로서 600볼트 이하의 공급전압을 가진 기기중 전파법 제2조 제4호의 규정에 의한 무선설비를 제외 한기기)에 의한 기기로서 컴퓨터와 그 주변기기,터미널 포트가 있는 내장 구성품 및 유선통신 단말기 등으로 한다  Device governed by registration of electromagnetic and article 2 and 3 (device which has a function of d a t a / c o m m u n i c a t i o n , input/output/save/search/transmit or control of message and operates for information transmission with more than one terminal port and has less than 600 volt supply other than wireless facility which is governed by article 2 and 4 frequency law) and components which have computer, relevant equipment and terminal port and wire communication terminal etc.,

**4. 전자파 규제에 대한 규격 및 참고자료** Specification relevant to the regulation of electromagnetic and references

**4 - 2. 정보기기류의 세부 품목 (Detailed item of information devices)**

(전자파 적합 등록 규칙 제2조 제2호의 규정에 의한 정보기기)

(Information devices in accordance with Article 2 .2 of registration of electromagnetic)

대상 기기 (Relevant device)	세부 적용 품목 (Detailed item)	내용 (Note)
1) 컴퓨터 (Computer)	대형, 중형, 소형, 퍼스널 컴퓨터 워크스테이션, POS단말기 및 워드프로세서등 모든 컴퓨터 All computers such as large, medium and small sized personal computer workstation, POS terminal and word processor	
2) 컴퓨터 주변기기 Miscellaneous device of computer	<ul style="list-style-type: none"> <li>· 외장형 기억장치 (External Memory)</li> <li>· 외장형 디스크 드라이브 (External disk drive)</li> <li>· 스캐너 (Scanner)</li> <li>· 마우스 (Mouse)</li> <li>· 키보드 (Key board)</li> <li>· 프린터 (Printer)</li> <li>· 프린터, 모니터등의 공유기(Common device of printer and monitor)</li> <li>· 터미널 (Terminal)</li> <li>· 기타 (Others)</li> <li>· 디지털타이저 (Digitizer)</li> <li>· 디지털 카메라 (Digital camera)</li> <li>· 플로터 (Floater)</li> <li>· 전자게임기 (Electronic game)</li> </ul>	
3) 터미널 포트가 있는 Components contained in internal computer with terminal port	<ul style="list-style-type: none"> <li>· 마더보드 (Mother board)</li> <li>· 입출력 인터페이스카드 (Input/output interface card)</li> <li>· 비디오카드 (Video card)</li> <li>· 멀티미디어 카드(MPEG, Sound, TV카드 등)</li> <li>· 디스크 드라이브 (하드, 플로피, CD등) Disk drive (hard, floppy, CD etc.)</li> <li>· 기타 (Others)</li> <li>· 전원공급기 (Power supplier )</li> </ul>	
4) 유선통신 단말기기 Wire communication terminal device	<ul style="list-style-type: none"> <li>· 근거리 통신용 통신기기 (Short distance communication device)</li> <li>· 랜(LAN)카드 (LAN card)</li> <li>· 브릿지(BRIDGE)</li> <li>· 기타 (Others)</li> <li>· 트랜시버(LAN)용 Transceiver</li> <li>· 허브 (HUB)</li> </ul>	<p>전기통신 기본법에 의한 형식승인을 받은 기기는 제외 형식승인 신청 시 성적서에 적합 등록 성적서 첨부 Other than the device which has been approved for specification according to the basic law of electric communication, Proper to the score in case of application of spec. Enclosing score of registration.</p>

TRANS-NCT  
리액터  
리액터  
무선전송장치  
SRR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈 필터  
NF/F  
하모닉 필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELA  
누전경보기  
ELD-GFR  
영상변류기  
ZCT  
패널메타  
METER  
계기용 변성기  
CT-VT  
선택트랜  
SHUNT-FAN

**4. 전자파 규제에 대한 규격 및 참고자료** Specification relevant to the regulation of electromagnetic and references

4 - 3. 전자파 방지기준 (방사 / 전도) Standard to prevent electromagnetic (Radiation / Conduction)

Part		제 / 개정 (Regulation / Revision)		
		Distance(m)	Frequency(MHz)	Strength (dBuV/m)
1) 산업,과학,의료용 등 고주파 이용 기기류 Devices of high frequency such as industrial, scientific and medical	방사기준 Standard of radiation	30	30 ~ 230 230 ~ 1000	30 37
	전도기준 Standard of conduction	-	0,15 ~ 5 5 ~ 30	56 ~ 46 50
2) 자동차류 (Automobiles etc.) · 광대역기준 (Wide area) · 협대역기준 (Narrow area)		10	30 ~ 1000 30 ~ 1000	34 ~ 45 24 ~ 35
3) 방송수신기기류 Receiver of broadcast	방사기준 Standard of radiation	3	3000이하 300 ~ 1000	57 56
	전도기준 Standard of conduction	-	0,15 ~ 30	56 ~ 46
4) 가정용 전기기기 및 전동기기류 Electric devices appliance at home	방사기준 Standard of radiation	3	30 ~ 300	35 ~ 45 (dBpW)
	전도기준 Standard of conduction	-	0,15 ~ 30	59 ~ 46
5) 형광등 등 조명기기류 (Fluorescent light and lighting etc.)		· 형광등의 삽입 손실 기준 등 4개 기준 (4 standards loss of insertion of fluorescent light)		
6) 고전압 설비 및 그부속기기류 High voltage facility and components		-	-	추후 제정 (To be decided)

4 - 3 - 1. 정보기기류 (Information Devices)

I) 전도기준 (Standard Conduction)

Part	Frequency (MHz)	한계치(dBμV) (Limit)		주1) 준 첨두치로 측정된 값이 평균치의 허용기준 이내 이면 평균치의 허용기준에 만족하는 것으로 봄 It is content with the permission standard of the average if it measures within the permission standard of the average in quasi peak.
		준첨두치(Quasi peak)	평균치(Average)	
A급기기 Class : A	0,15 ~ 0,5	79	66	
	0,5 ~ 30	73	60	
B급기기 Class : B	0,15 ~ 0,5 0,5 ~ 5 5 ~ 30	66 ~ 56	56 ~ 46	주2) 주파수의 대수적 증가에 따라 직선적으로 감소 It decreases in a linear line according to the logarithmic increase of frequency.
		(주2) Refer,2	(주2) Refer,2	
		56	46	
		60	50	

II) 방사기준 (Standard of radiation)

Frequency (MHz)	준첨두치 한계치 (dBμV/m/m) Quasi peak limit	
	Class : A (10cm)	Class : B (10cm)
30 ~ 230	40	30
230 ~ 1000	47	37

## 4. 전자파 규제에 대한 규격 및 참고자료 Specification relevant to the regulation of electromagnetic and references

### 4 - 4. 전자파 내성기준 (EMS/Electromagnetic Susceptibility)

Part	Test Part	Frequency (MHz)	Standard	Remark
① 산업,과학,의료용 등 고주파 이용기기류 일반내성기준 General EMS standard Devices of high frequency such as industrial, scientific and medical	정전기방전 (ESD) 전자파방사 (REF)	30 ~ 500	4KV 3V/m	-
② 자동차 (Automobiles etc.)	전자파방사 (REF)	20 ~ 1000	20V/m	-
③ 방송수신기기류 (Receiver of broadcast)	전자파방사 (REF) RF전도전류 (RF-CC)	0.15 ~ 150 26 ~ 30	Audio, Video S/N 40dB	Apply Level 125dB $\mu$ V
④ 가정용전기기기류 Electric devices/motor at home appliance	정전기방전 (ESD) 전자파방사 (REF) 서지 (Surge)	80 ~ 1000	4KV 3V/m 1KV	-
⑤ 형광등 등 조명기기류 Fluorescent light and lighting etc.	정전기방전 (ESD) 전자파방사 (REF)	- 30 ~ 500	4KV 3V/m	-
⑥ 고전압설비 및 그부속 기기류 High voltage facility and components	정전기방전 (ESD) 전자파방사 (REF)	- 30 ~ 500	4KV 3V/m	-

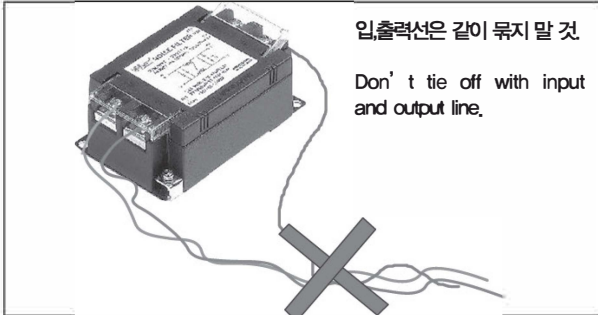
### 4 - 4 -1. 정보기기류 (Information Devices)

Test Part	Test Terminal	Std.	Unit	Class	Remark
정전기 방전 (ESD)	표면 단자 Terminal	8(None Touch) 4(Touch)	KV	B	-
전자파 방사 (REF)	표면 단자 Terminal	80 ~ 1000	MHz V/m	A	-
전기적 빠른 과도현상 (Burst)	입출력 교류 전원 단자 Power Terminal	1 5 / 50 5	KV (Peak) Tr / Th ns KHz (Repeated)	B	-
	입출력 교류 전원 단자 외 Control Terminal	0.5 5 / 50 5	KV (Peak) Tr / Th ns KHz (Repeated)	B	-
서지 (Surge)	적용단자 Application Ter.	1 1.2 / 50	KV (Peak) Tr / Th ns	B	-

TRANS=NOISE  
리액터  
REACTOR  
무선전달블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈 필터  
N/F  
하모닉 필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELAY  
E=LD=GF  
영상변류기  
ZCT  
METER  
계기용 변류기  
CT=VT  
SHUNT=FA  
선트팬

**5. NOISE FILTER 사용상 주의 Precaution in using noise filter**

- 1) Noise Filter의 입,출력은 분리하고 가깝게 붙이지 않도록 하여 주십시오.  
Please separate input and output wire of noise filter not to be loser each other.



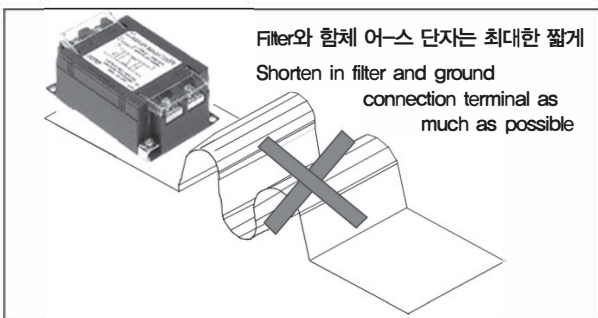
입출력선을 가까이 붙이거나 또는 묶으면 Coupling에 의하여 Filter로 제거한 노이즈를 재차 걸러내야 합니다. 또 가깝게 붙이지 않더라도 입력선을 함체내에 같이 배선되면 함체내에 Noise가 방사됩니다. Noise Filter는 기기의 입구에 설치하고 입출력 배선은 가능한 차폐를 하여 주십시오. When input and output line are closer or combined, noise must be screened repeatedly by coupling of filter. If input line is wired together in the container though not combined, noise is radiated. Noise filter must be installed at the entry of device and wiring of input and output are required to be shield if possible.

- 2) Noise Filter의 접지단자는 함체에 최단거리에 접속하여 주십시오.  
Please connect ground earth terminal of noise filter in the shortest distance



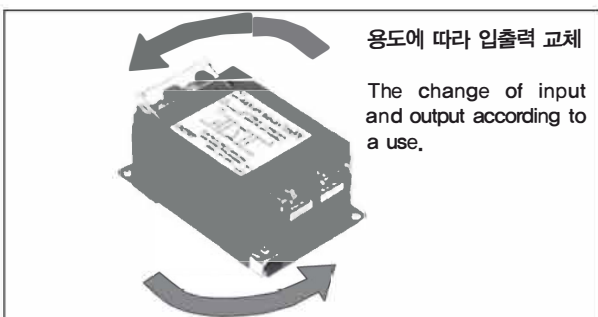
Common Mode Noise는 Noise Filter속에 Condenser를 통하여 어스로 흐릅니다. 어스 Line을 길게 엮어놓으면 어스 임피던스가 높아지든지 감쇄 특성이 저하 됩니다. Filter의 금속 Case가 접지단자를 겸하는 것이므로 필터를 함체에 전기적으로 밀착하여 주십시오. Common mode noise flows to earth through condenser in the noise filter. If earth line is tied long, either earth impedance is higher or effect of decrease is weakened. Because metal case of filter is also earth terminal, filter must be close to electrically the panel as much as possible.

- 3) Noise Filter의 접지점(취부점) 과 함체의 접지점은 최대한 짧게 하여 주십시오.  
Please shorten the earth point between earth point of noise filter and that of panel as much as possible.



Noise Filter의 어스에는 Noise 전류와 Line주파수에 의하여 누설전류가 흐릅니다. 따라서 함체내를 전기적으로 빈틈없이 밀착 고정하여 주십시오. Common mode noise and leakage current of power flows to earth terminal therefor must electrically close filter and in the panel.

- 4) Noise Filter의 삽입방향에 주의하여 주십시오.  
Please be aware of the direction to insert at the noise filter



NOISE FILTER는 외래 NOISE에 대해서도 유출 노이즈와 같이 효과가 있습니다만 내부회로는 입출력 대칭일 경우가 보통입니다. 일반적으로 입출력 임피던스는 주파수에 의해 일치하지 않습니다. 또 사용하는 LINE의 기기 임피던스도 각각 다릅니다. NOISE FILTER에는 입력 방향을 표시합니다만 보다 효과를 높이기 위해서는 반대 방향도 비교하여 좋은 결과를 얻는 방향으로 설치하여 주십시오.

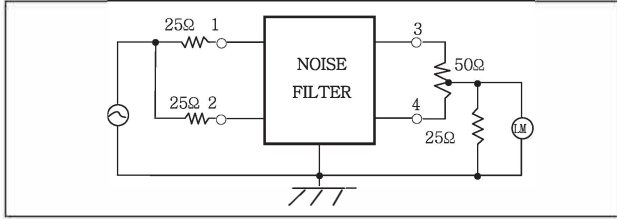
Though noise filter has an similar effect of leaking noise for external noise, internal circuit is commonly symmetry between input and output. Impedance of input and output are in general inconsistent with the frequency. Impedance of device of line to be used is also different. Though direction of input is indicated at noise filter, it is recommended to install in a consideration of the opposite direction.

트랜스포머 REACTOR 리액터  
 무전선블레이드 SSR  
 전압조정기 TPR  
 스위칭파워 SPS  
 노이즈 필터 NF/F  
 하모닉 필터 H/F  
 서지보호기 SPD  
 보호계전기 RELAY  
 누전경보기 ELD=GFBR  
 영상변류기 ZCT  
 판넬메타 EITER  
 계기용변성기 CT=VT  
 섀시트판 SHUNT=FAF

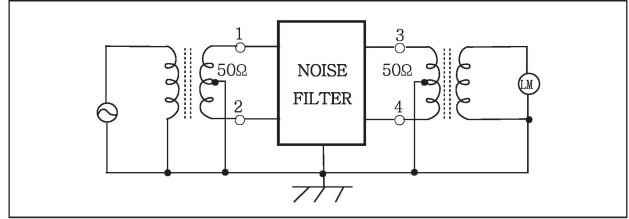
## 6. NOISE FILTER 의 측정방법 Noise Filter Test Method

### 6 - 1. 감쇄특성, 정특성 (Attenuation character and static characteristic)

• 커먼 모드(Common Mode)비대칭파 (Asymmetrical)

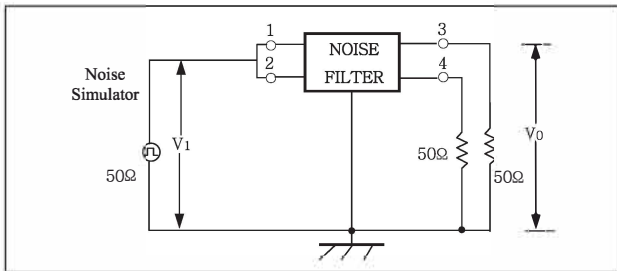


• 노말 모드(Normal Mode)대칭파 (Symmetrical)

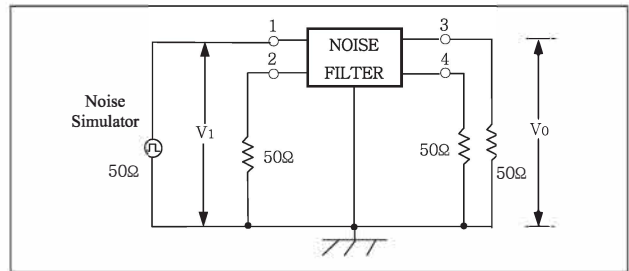


### 6 - 2. PULSE 감쇄특성, 정특성 (Attenuation character, static characteristic)

• 커먼 모드(Common Mode)비대칭파 (Asymmetrical)

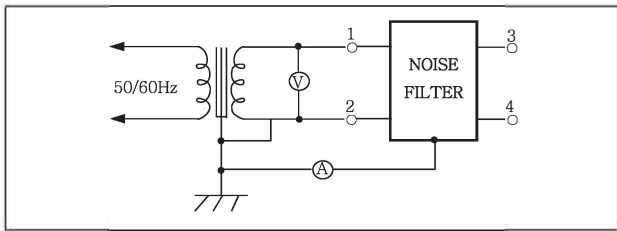


• 노말 모드(Normal Mode)대칭파 (Symmetrical)

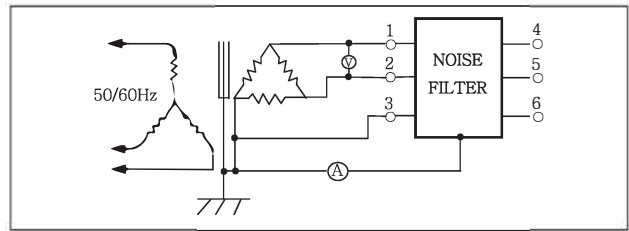


### 6 - 3. 대지(對地)누설전류 (Ground Leakage Current)

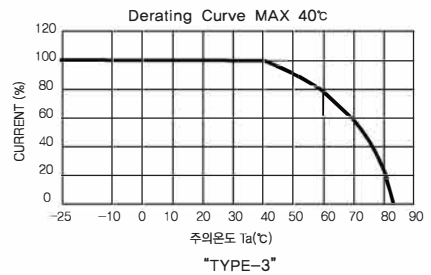
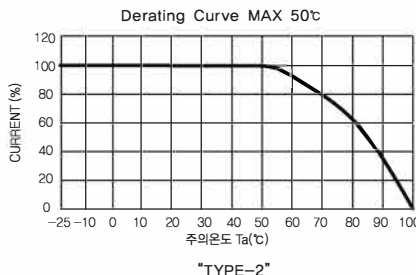
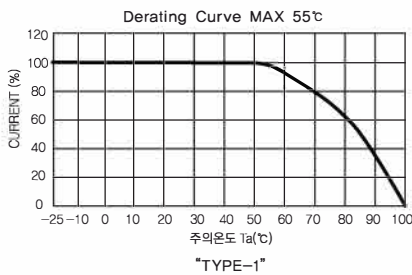
• 단상 (1Phase)



• 삼상 (3Phase)



### 6 - 4. Derating Curve



## 7. 인버터 후단용 NOISE FILTER (Noise filter at the output stage of inverter)

현재 산업용 기계장치의 주류를 이루는 제품에 있어 EMI는 설비가 올바르게 동작을 수행 하는데 치명적인 방해요소가 되고있다. 정상동작을 방해하고 프로그램 등을 파괴시킨다. 특히 인버터를 채용한 장비이거나 모터를 제어하는 기능을 가진 장비는 자체적인 오동작의 피해뿐만 아니라 인접한 설비까지도 피해를 준다. 인버터의 경우와 같이 스위칭을 통해 전원을 변환하는 장치의 출력을 동작 전원으로 사용하거나 그 가까이에 위치한 전자기기는 출력을 따라 유출되는 EMI의 영향을 받게 된다. 특히, PWM방식인 인버터의 경우 출력이 펄스 방식인 PWM파형으로 그 자체가 매우 큰 EMI를 가지게 된다. 전자기기를 EMI로부터 보호하기 위하여 인버터 후단용 전용 노이즈 필터를 전원 장치등의 후단에 장치 하므로써 출력선을 따라서 유출되는 EMI의 크기를 줄여 주어 장비의 안전한 동작에 도움을 주는 역할을 하게 된다.

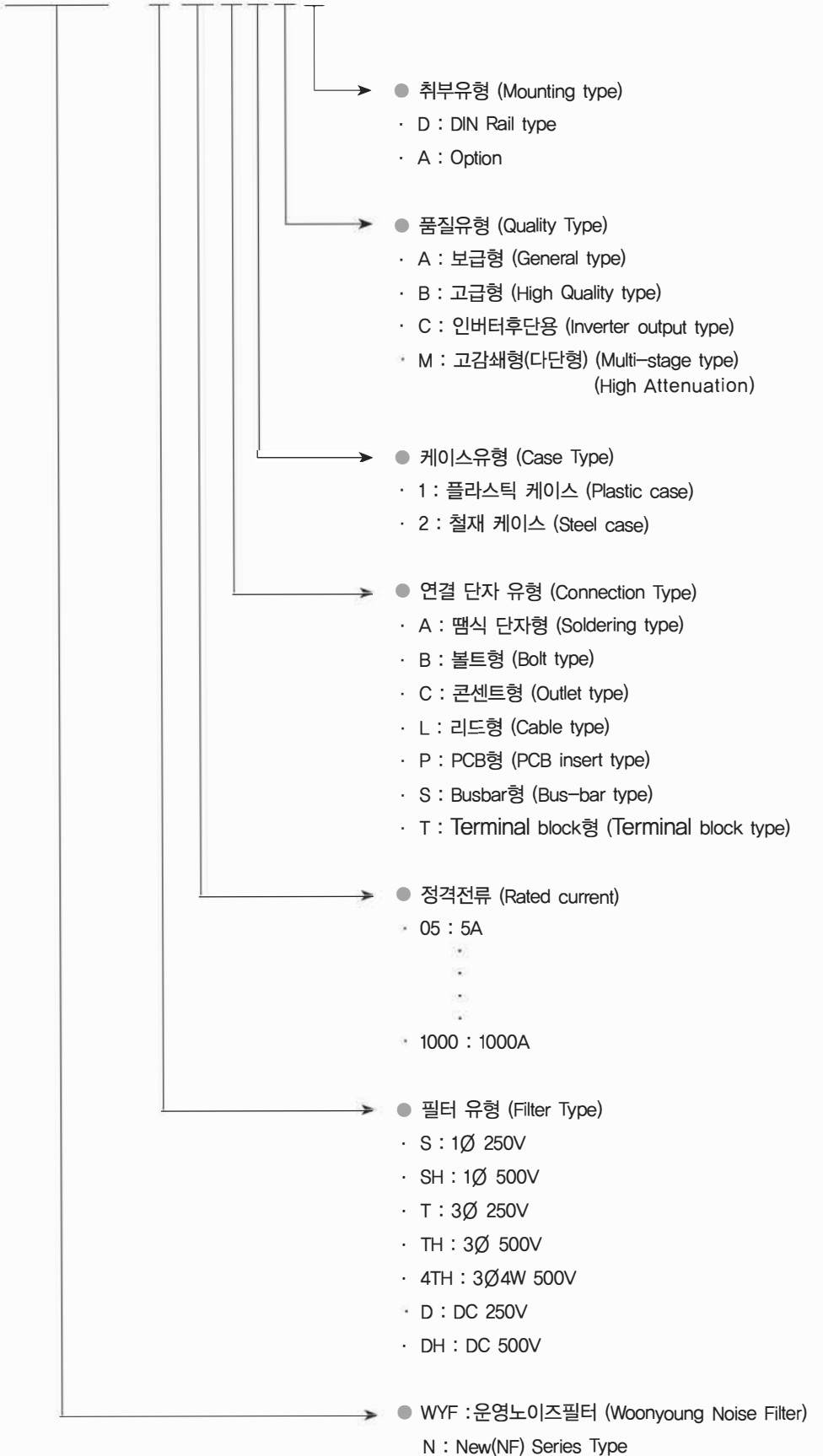
For most industrial machines and devices, EMI poses as a critical interference to the successful operation of equipment. It hinders normal operation and destroys programs. If an error occurs, an equipment which uses an inverter or an equipment carrying an ability to control motor causes damage not only to itself but also to other adjacent equipment. As in the case of an inverter, an electric equipment which uses, as its operating power supply, the output of the device which converts power supply through switching or an electronic equipment located nearby will be affected by EMI discharged along the output line. In the case of PWM inverter in particular, output is PWM waveform, the pulse system which in itself carries extremely large level of EMI. To protect electronic equipment from EMI, noise filters designed for installing at the output stage of the inverter are mounted at the back of the power supply system to reduce the amplitude of EMI discharged along the output line helping equipment operate in a safe way.

# NOISE FILTER 모델 설명 (MODEL EXPLANATION)

## NOISE FILTER

### 노이즈 필터

WY N F - S 06 T 1 A(D)





## 1Ø AC 250V 고감쇄형 Multi-stage type

● 1Ø AC 250V

AC 250V	고감쇄형(경제형) 1Ø Multi-Stage Type	<table border="1"> <thead> <tr> <th>MODEL</th> <th>CURRENT (A)</th> <th>VOLTAGE (V)</th> <th>SAFETY STANDARDS</th> <th>PAGE</th> </tr> </thead> <tbody> <tr> <td>WYFS06T1M(D)</td> <td>6</td> <td rowspan="5">250</td> <td>☑☑☑</td> <td rowspan="5">490</td> </tr> <tr> <td>WYFS10T1M(D)</td> <td>10</td> <td>☑☑☑</td> </tr> <tr> <td>WYFS15T1M(D)</td> <td>15</td> <td>☑☑☑</td> </tr> <tr> <td>WYFS20T1M(D)</td> <td>20</td> <td>☑☑☑</td> </tr> <tr> <td>WYFS30T1M(D)</td> <td>30</td> <td>☑☑☑</td> </tr> </tbody> </table>	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE	WYFS06T1M(D)	6	250	☑☑☑	490	WYFS10T1M(D)	10	☑☑☑	WYFS15T1M(D)	15	☑☑☑	WYFS20T1M(D)	20	☑☑☑	WYFS30T1M(D)	30	☑☑☑																							
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TRANS=NCCT 트랜스포머  
 REACTOR 리액터  
 SSR 무전선릴레이  
 TPR 전압조정기  
 SMPSS 스위칭파워  
 NF/F 노이즈필터  
 H/F 하모닉필터  
 SPD 서지보호기  
 RELAY 보호계전기  
 ELD=GFRR 누전경보기  
 ZCT 영상변류기  
 METER 판넬메타  
 CT=VT 계기용변성기  
 SHUNT=FAAN 션트팬



● 3Ø AC 250V

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● 3Ø AC 500V

AC 500V	N형 고감쇄형 3Ø Multi-Stage Type	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE
		WYNFTH05T2M	5	500	CE	507
WYNFTH10T2M	10	CE				
WYNFTH15T2M	15	CE				
WYNFTH20T2M	20	CE				
WYNFTH30T2M	30	CE				
WYNFTH40T2M	40	CE	508			
WYNFTH50T2M	50	CE				
WYNFTH60T2M	60	CE				
WYNFTH80T2M	80	CE				
WYNFTH100T2M	100	CE				
WYNFTH120T2M	120	CE				
WYNFTH150T2M	150	CE				
WYNFTH200T2M	200	CE				
WYNFTH250T2M	250	CE				
AC 500V	고감쇄형 3Ø Multi-Stage Type	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE
		WYFTH05T2M	5	500	CE	509
WYFTH10T2M	10	CE				
WYFTH15T2M	15	CE				
WYFTH20T2M	20	CE				
WYFTH30T2M	30	CE				
WYFTH40T2M	40	CE	510			
WYFTH50T2M	50	CE				
WYFTH60T2M	60	CE				
WYFTH80T2M	80	CE				
WYFTH100T2M	100	CE				
WYFTH120T2M	120	CE				
WYFTH150T2M	150	CE				
WYFTH200T2M	200	CE				
WYFTH250T2M	250	CE				
WYFTH300T2M	300	CE	511			
WYFTH400T2M	400	CE	512			
WYFTH500T2M	500	CE	513			
WYFTH600T2M	600	CE				
WYFTH800T2M	800	CE				
WYFTH1000T2M	1000	CE				
WYFTH1200T2M	1200	CE				

트랜스포머  
REACTOR  
리액터  
무정전블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMPS  
노이즈필터  
N/F  
하모닉필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELAY  
누전경보기  
ELD-GFR  
영상변류기  
ZCT  
판넬메타  
METER  
계기용변류기  
CT-VT  
셧트팬  
SHUNT-FAN

## 3P4W 전용 Noise Filter

● 3P4W Series 500V

AC 500V	3P4W 전용	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE
		WYF4TH20T2M	20	500	CE	524
		WYF4TH30T2M	30		CE	
		WYF4TH40T2M	40		CE	
		WYF4TH50T2M	50		CE	525
		WYF4TH60T2M	60		CE	
		WYF4TH80T2M	80		CE	
		WYF4TH100T2M	100		CE	526
		WYF4TH120T2M	120		CE	
		WYF4TH150T2M	150		CE	
		WYF4TH200T2M	200		CE	527
		WYF4TH250T2M	250		CE	
		WYF4TH300T2M	300		CE	
		WYF4TH400T2M	400		CE	
		WYF4TH500T2M	500		CE	
		WYF4TH600T2M	600		CE	

## DC Noise Filter

● DC 50V, 125V, 400V

DC 12V ~ 400V	50VDC 보급형	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE	
		WYFD06T1A(D)	6	12VDC ~ 50VDC	CE	556	
		WYFD10T1A(D)	10		CE		
		WYFD15T1A(D)	15		CE		
	WYFD20T1A(D)	20	CE				
	125VDC 보급형	WYFD30T1A(D)	30	60VDC ~ 125VDC	CE	557	
		WYFD06T1A(D)	6		CE		
		WYFD10T1A(D)	10		CE		
		WYFD15T1A(D)	15		CE		
	400VDC 보급형	WYFD20T1A(D)	20	150VDC ~ 400VDC	CE	558	
		WYFD30T1A(D)	30		CE		
		WYFD06T1A(D)	6		CE		
		WYFD10T1A(D)	10		CE		
			WYFD15T1A(D)	15		CE	
			WYFD20T1A(D)	20		CE	
			WYFD30T1A(D)	30		CE	



● 1Ø, 3Ø AC 250 & 500V

AC 250 · 500V	고급형(EMI Filter) 1Ø High Quality Type	<table border="1"> <thead> <tr> <th>MODEL</th> <th>CURRENT (A)</th> <th>VOLTAGE (V)</th> <th>SAFETY STANDARDS</th> <th>PAGE</th> </tr> </thead> <tbody> <tr> <td>WYFS03C2M</td> <td>3</td> <td rowspan="5">250</td> <td>CE</td> <td rowspan="5">590</td> </tr> <tr> <td>WYFS06C2M</td> <td>6</td> <td>CE</td> </tr> <tr> <td>WYFS10C2M</td> <td>10</td> <td>CE</td> </tr> <tr> <td>WYFS15C2M</td> <td>15</td> <td>CE</td> </tr> <tr> <td>WYFS30C2M</td> <td>30</td> <td>CE</td> </tr> </tbody> </table>	MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE	WYFS03C2M	3	250	CE	590	WYFS06C2M	6	CE	WYFS10C2M	10	CE	WYFS15C2M	15	CE	WYFS30C2M	30	CE																																
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	WYFS30C2M	30		CE																																																				
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	WYFS50T1B(D)	50		CE																																																				
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MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE																																																				
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WYFTH50T2B	50		CE																																																					

TRANS=INCT  
 리액터  
 REACTOR  
 무전선블레이  
 SSR  
 전압조정기  
 TPR  
 스위칭파워  
 SMPS  
 노이즈필터  
 N/F  
 하모닉필터  
 H/F  
 서지보호기  
 SPD  
 보호계전기  
 RELAY  
 누전경보기  
 ELD=GF  
 R  
 영상변류기  
 ZCT  
 판넬메타  
 METER  
 계기용변성기  
 CT=VT  
 셉트팬  
 SHUNT=FA  
 N



**1Ø AC 250 보급형 General type**

● 1Ø AC 250 & 500V

AC 250, 500V	1Ø PCB Type	<b>MODEL</b>	<b>CURRENT (A)</b>	<b>VOLTAGE (V)</b>	<b>SAFETY STANDARDS</b>	<b>PAGE</b>		
		WYFS01P1	1	250	CE	548		
		WYFS02P1	2					
		WYFS03P1	3					
		WYFS06P1	6					
		WYFS01P3	1					
		WYFS02P3	2					
		1Ø Wire Type	1Ø PIN Type	WYFS03P3	3	250	CE	549
				WYFS06P3	6			
				WYFS03L1	3			
		경제형 1Ø General Type	1Ø General Type	WWYFS06L1	6	250	CE	550
				WYFS03A3	3			
				WYFS06A3	6			
				WYFS03A2	3			
		N형 보급형 1Ø General Type	1Ø General Type	WYFS06A2	6	250	CE	551
WYFS06TD	6							
WYFS10TD	10							
WYFS15TD	15							
WYFS20TD	20							
보급형 1Ø General Type	1Ø General Type	WYNFS40T2A	40	250	CE	552		
		WYNFS50T2A	50					
		WYNFS60T2A	60					
		WYNFS80T2A	80					
		WYNFS100T2A	100					
		WYNFS120T2A	120					
		WYNFS150T2A	150					
보급형 1Ø General Type	1Ø General Type	WYFS03TM	3	250	CE	554		
		WYFS06TM	6					
		WYFS06T1A(D)	6	250	CE	555		
		WYFS10T1A(D)	10					
		WYFS15T1A(D)	15					
		WYFS20T1A(D)	20					
		WYFS30T1A(D)	30					
		WYFS40T1A(D)	40	250	CE	556		
		WYFS50T1A(D)	50					
		WYFS60T2A	60					
		WYFS80T2A	80	250	CE	558		
		WYFS100T2A	100					
		WYFS120T2A	120					
		WYFS150T2A	150					
		WYFS200T2A	200					
		WYFSH06T1A(D)	6	500	CE	559		
		WYFSH10T1A(D)	10					
		WYFSH15T1A(D)	15					
		WYFSH20T1A(D)	20					

# NOISE FILTER

노이즈 필터

3Ø AC 250, 500V 보급형 General type



● 3Ø AC 250 & 500V

MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE		
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">AC 250, 500V</div> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">                     N형 보급형 3Ø General Type                 </div> </div>						
WYNFT40T2A	40	250	CE	573		
WYNFT50T2A	50		CE			
WYNFT60T2A	60		CE			
WYNFT80T2A	80		CE			
WYNFT100T2A	100		CE			
WYNFT120T2A	120		CE			
WYNFT150T2A	150		CE			
WYNFT200T2A	200		CE			
WYNFT250T2A	250		CE			
WYNFTH40T2A	40		CE			
WYNFTH50T2A	50	500	CE	579		
WYNFTH60T2A	60		CE			
WYNFTH80T2A	80		CE			
WYNFTH100T2A	100		CE			
WYNFTH120T2A	120		CE			
WYNFTH150T2A	150		CE			
WYNFTH200T2A	200		CE			
WYNFTH250T2A	250		CE			
WYFT05T1A(D)	5		250		CE, UL	572
WYFT10T1A(D)	10				CE, UL	
WYFT15T1A(D)	15	CE, UL				
WYFT20T1A(D)	20	CE, UL				
WYFT30T1A(D)	30	CE, UL				
WYFT40T2A	40	250	CE	574		
WYFT50T2A	50		CE			
WYFT60T2A	60		CE			
WYFT80T2A	80		CE			
WYFT100T2A	100		CE			
WYFT120T2A	120		CE			
WYFT150T2A	150		CE			
WYFT200T2A	200		CE			
WYFT250T2A	250		CE			
WYFT300T2A	300		CE			
WYFT400T2A	400	250	CE	575		
WYFT500T2A	500		CE			
WYFT600T2A	600	250	CE	577		
WYFT800T2A	800		CE			
WYFT1000T2A	1000		CE			
WYFT1200T2A	1200	500	CE	578		
WYFTH05T1A(D)	5		CE, UL			
WYFTH10T1A(D)	10		CE, UL			
WYFTH15T1A(D)	15		CE, UL			
WYFTH20T1A(D)	20		CE, UL			
WYFTH30T1A(D)	30	500	CE, UL	580		
WYFTH40T2A	40		CE			
WYFTH50T2A	50		CE			
WYFTH60T2A	60		CE			
WYFTH80T2A	80		CE			
WYFTH100T2A	100		CE			
WYFTH120T2A	120		CE			
WYFTH150T2A	150		CE			
WYFTH200T2A	200		CE			
WYFTH250T2A	250		CE			
WYFTH300T2A	300	500	CE	581		
WYFTH400T2A	400		CE			
WYFTH500T2A	500	500	CE	582		
WYFTH600T2A	600		CE			
WYFTH800T2A	800		CE			
WYFTH1000T2A	1000		CE			
WYFTH1200T2A	1200		CE			

보급형  
3Ø General Type

TRANS=NCCT 트랜스포머  
REACTOR 리액터  
SSR 무접점블레이  
TPR 전력조정기  
SMPSS 스위칭파워  
N/F 노이즈필터  
H/F 하모닉필터  
SPD 서지보호기  
RELAY 보호계전기  
ELD=GFRL 누전경보기  
ZCT 영상변류기  
METER 판넬메타  
CT=VT 계기용변성기  
SHUNT=FAAN 션트팬



● 3Ø AC 250 & 500V

인버터후단용  
3Ø Inverter output type

AC 250 · 500V

MODEL	CURRENT (A)	VOLTAGE (V)	SAFETY STANDARDS	PAGE
WYNFT40T2C	40	250	CE	573
WYNFT50T2C	50		CE	
WYNFT60T2C	60		CE	
WYNFT80T2C	80		CE	
WYNFT100T2C	100		CE	
WYNFT120T2C	120		CE	
WYNFT150T2C	150		CE	
WYNFT200T2C	200		CE	
WYNFT250T2C	250		CE	
WYNFTH40T2C	40	500	CE	579
WYNFTH50T2C	50		CE	
WYNFTH60T2C	60		CE	
WYNFTH80T2C	80		CE	
WYNFTH100T2C	100		CE	
WYNFTH120T2C	120		CE	
WYNFTH150T2C	150		CE	
WYNFTH200T2C	200		CE	
WYNFTH250T2C	250		CE	
WYFT05T1C(D)	5	250	CE, EN	572
WYFT10T1C(D)	10		CE, EN	
WYFT15T1C(D)	15		CE, EN	
WYFT20T1C(D)	20		CE, EN	
WYFT30T1C(D)	30		CE, EN	
WYFT40T2C	40	250	CE	574
WYFT50T2A	50		CE	
WYFT60T2C	60		CE	
WYFT80T2C	80		CE	
WYFT100T2C	100		CE	
WYFT120T2C	120		CE	
WYFT150T2C	150		CE	
WYFT200T2C	200		CE	
WYFT250T2C	250		CE	
WYFT300T2C	300	250	CE	575
WYFT400T2C	400		CE	
WYFT500T2C	500	250	CE	576
WYFT600T2C	600	250	CE	577
WYFT800T2C	800		CE	
WYFT1000T2C	1000		CE	
WYFT1200T2C	1200		CE	
WYFTH05T1C(D)	5	500	CE, EN	578
WYFTH10T1C(D)	10		CE, EN	
WYFTH15T1C(D)	15		CE, EN	
WYFTH20T1C(D)	20		CE, EN	
WYFTH30T1C(D)	30		CE, EN	
WYFTH40T2C	40	500	CE	580
WYFTH50T2C	50		CE	
WYFTH60T2C	60		CE	
WYFTH80T2C	80		CE	
WYFTH100T2C	100		CE	
WYFTH120T2C	120		CE	
WYFTH150T2C	150		CE	
WYFTH200T2C	200		CE	
WYFTH250T2C	250		CE	
WYFTH300T2C	300	500	CE	581
WYFTH400T2C	400		CE	
WYFTH500T2C	500	500	CE	582
WYFTH600T2C	600	500	CE	583
WYFTH800T2C	800		CE	
WYFTH1000T2C	1000		CE	
WYFTH1200T2C	1200		CE	



# 노이즈필터

## Noise Filter

### 1Ø 고감쇄형(Multi-Stage Type)

• 1Ø 250V 6~150A



# NOISE FILTER

1Ø 250V 고감쇄형 Multi-Stage Type



### ● Features

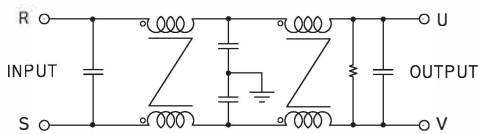
- 2 Mounting Option
  - WYF\*\*\*\*D : Din Rail Mounting
  - WYF\*\*\*\* : Screw Mounting
- Wide Band : High Attenuation
- Band Width : 150KHz~30MHz
- Low Leakage
- RoHS Compliant
- KC(HK03001-18007A)

### ● Specifications

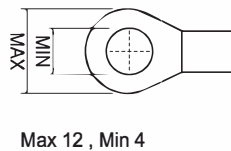
ITEM	MODEL	SYMBOL	WYFS06T1M (D)	WYFS10T1M (D)	WYFS15T1M (D)	WYFS20T1M (D)	WYFS30T1M (D)
Rated Voltage	V		250				
Rated Current	A		6	10	15	20	30
Frequency	Hz		50/60				
Dielectric Withstand	V		2000				
Insulation Resistance	MΩ		500				
Leakage Current	mA		1.8				
Operating Temperature	°C		-25°C ~ +100°C [Refer to Derating Curve TYPE-1]				
Operating Humidity	RH		35~85%RH				
Weight	kg		0.2				

※ "D" : DIN-Rail type of page 184 / Derating Curve of page 103

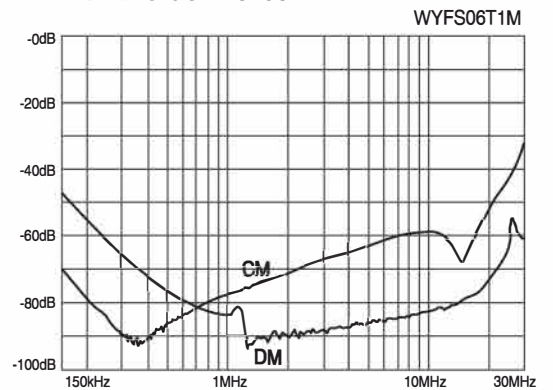
### ● Circuit Diagram



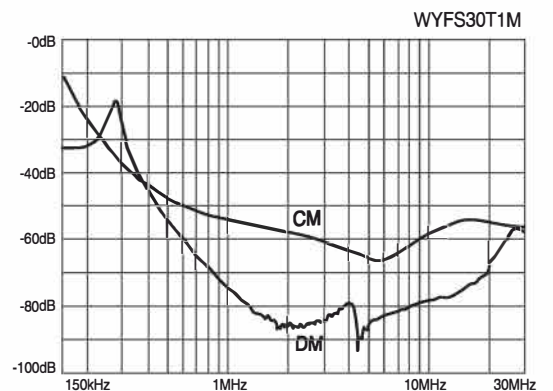
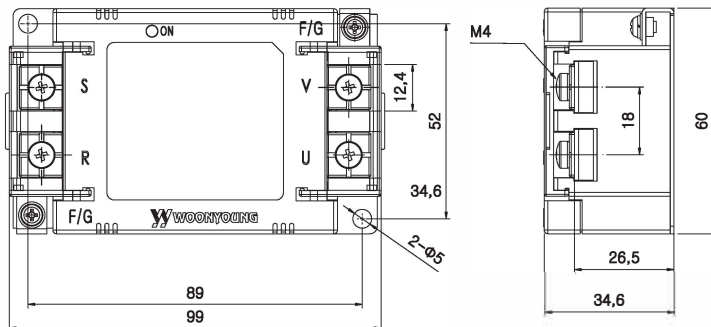
### ● Terminal

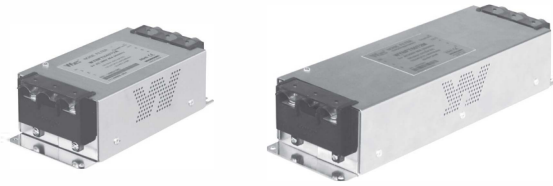


### ● Characteristics



### ● Dimension





● **Features**

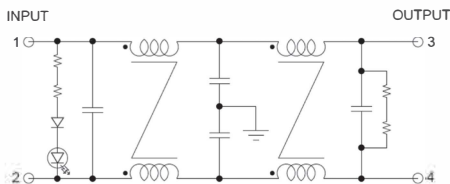
- Wide Band : High Attenuation
- Band Width : 150KHz~30MHz
- RoHS Compliant

● **Specifications**

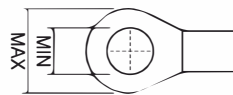
ITEM	MODEL	SYMBOL	WYNF S06T2M	WYNF S10T2M	WYNF S15T2M	WYNF S20T2M	WYNF S30T2M	WYNF S40T2M	WYNF S50T2M
Rated Voltage	V		250Vac						
Rated Current	A		6A	10A	15A	20A	30A	40A	50A
Frequency	Hz		50/60						
Dielectric Withstand	V		1500Vac for one 1minute						
Insulation Resistance	MΩ		DC 100MΩ at the 500Vdc						
Leakage Current	mA		≤9mA at the 250Vac						
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-1]						
Operating Humidity	RH		35~85%RH						
Weight	kg		2.4						

※ Derating Curve of page 103

● **Circuit Diagram**

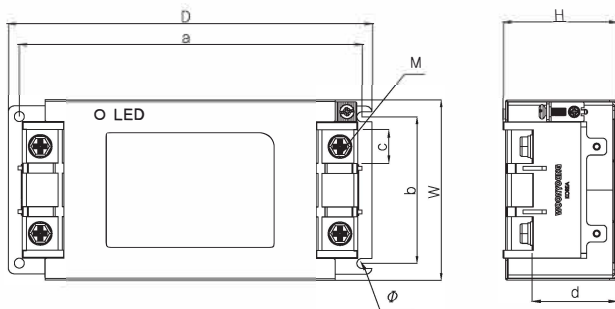


● **Terminal**



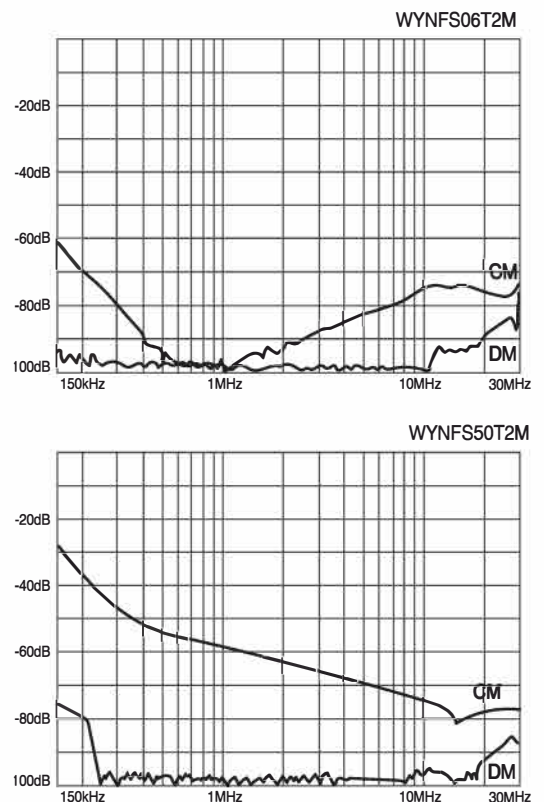
Max 10, Min 4 (6~20A)  
Max 16, Min 5 (30~50A)

● **Dimension**



MODEL	W	H	D	a	b	c	d	M	Ø
WYNFS06~20T2M	70.5	45	202	194	51.5	10.5	33	4	5
WYNFS30~50T2M	79.2	48.3	242	232	60	13	33.5	5	5

● **Characteristics**



트랜스포머  
REACTOR  
리액터  
무선충전블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈필터  
H/F  
하모닉필터  
SPD  
서지보호기  
RELAY  
보호계전기  
ELD=GF  
누전경보기  
ZCT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FAN  
선풍기

# NOISE FILTER

노이즈 필터

## N Series 1Ø 250V 고감쇄형 Multi-Stage Type

 RoHS



### ● Features

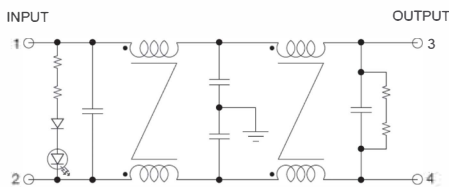
- Wide Band : High Attenuation
- Band Width : 150kHz~30MHz
- RoHS Compliant

### ● Specifications

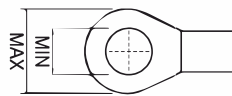
ITEM \ MODEL	SYMBOL	WYNFS60T2M	WYNFS80T2M	WYNFS100T2M	WYNFS120T2M	WYNFS150T2M
Rated Voltage	V	250Vac				
Rated Current	A	60A	80A	100A	120A	150A
Frequency	Hz	50/60				
Dielectric Withstand	V	1500Vac for one 1minute				
Insulation Resistance	MΩ	DC 100MΩ at the 500Vdc				
Leakage Current	mA	≤9mA at the 250Vac				
Operating Temperature	℃	-25℃ ~ +100℃ [Refer to Derating Curve TYPE-1]				
Operating Humidity	RH	35~85%RH				
Weight	kg	4.5		5.2		

※ Derating Curve of page 103

### ● Circuit Diagram

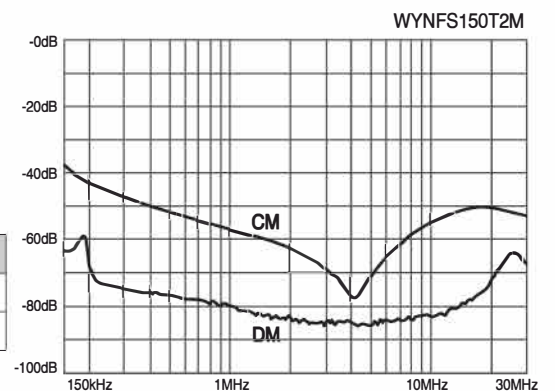
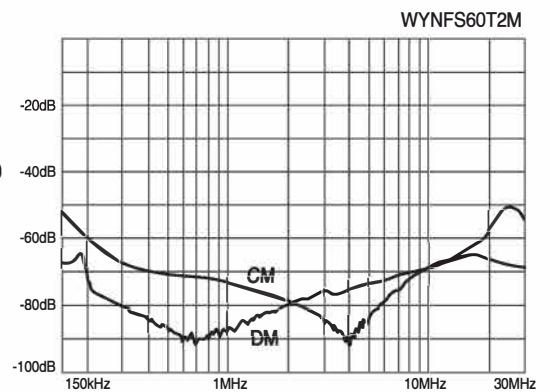


### ● Terminal

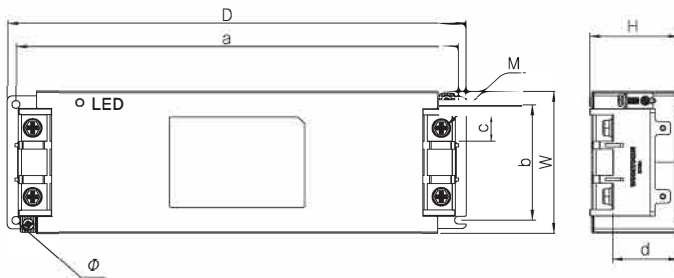


Max 16, Min 6 (60~80A)  
Max 23, Min 8 (100~150A)

### ● Characteristics



### ● Dimension



MODEL	W	H	D	a	b	c	d	M	Ø
WYNFS60~80T2M	91	57.2	295	284.5	74	17	42.3	6	5
WYNFS100~150T2M	115	75	384.7	368	96	24	58	8	5

# NOISE FILTER

노이즈 필터

CE RoHS

1Ø 250V 고감쇄형 Multi-Stage Type



### ● Features

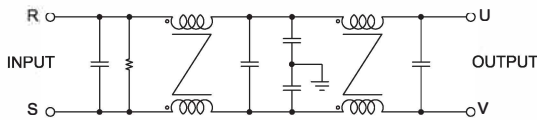
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant

### ● Specifications

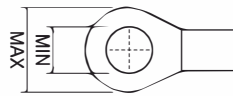
ITEM \ MODEL	SYMBOL	WYFS06T2M	WYFS10T2M	WYFS15T2M	WYFS20T2M	WYFS30T2M	WYFS40T2M	WYFS50T2M
Rated Voltage	V	250						
Rated Current	A	6	10	15	20	30	40	50
Frequency	Hz	50/60						
Dielectric Withstand	V	1500						
Insulation Resistance	MΩ	500						
Leakage Current	mA	9						
Operating Temperature	℃	-25℃ ~ +100℃ [Refer to Derating Curve TYPE-1]						
Operating Humidity	RH	35~85%RH						
Weight	kg	0.8			1.7			

※ Derating Curve of page 103

### ● Circuit Diagram

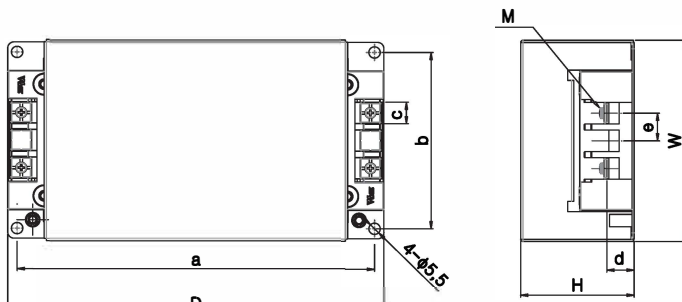


### ● Terminal



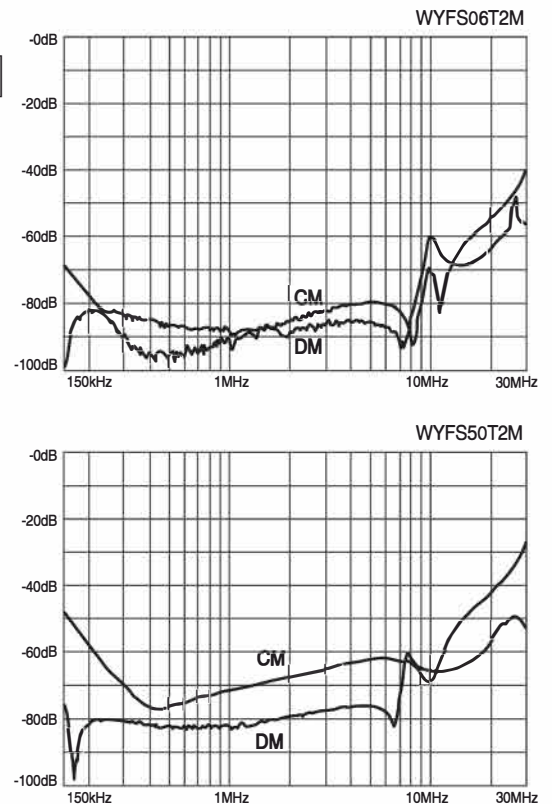
Max 10, Min 4 (6~20A)  
Max 14, Min 4 (30~50A)

### ● Dimension



MODEL	W	H	D	a	b	c	d	e
WYFS06~20T2M	98	55	184	175	86	10.5	13	13.5
WYFS30~50T2M	116	75	234	219	98	15	18	27.5

### ● Characteristics



트랜스포머  
REACTOR  
리액터  
무선전송블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈필터  
H/F  
하모닉필터  
SPD  
서지보호기  
RELAY  
보통계전기  
E/LD=GF  
누전경보기  
ZCT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FA  
선택팬



● Features

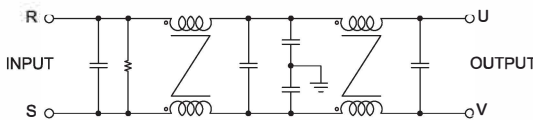
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant

● Specifications

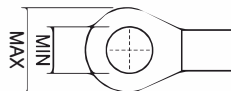
ITEM	MODEL	SYMBOL	WYFS60T2M	WYFS80T2M	WYFS100T2M
Rated Voltage	V		250		
Rated Current	A		60	80	100
Frequency	Hz		50/60		
Dielectric Withstand	V		1500		
Insulation Resistance	MΩ		500		
Leakage Current	mA		9		
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-1]		
Operating Humidity	RH		35~85%RH		
Weight	kg		2.8		

※ Derating Curve of page 103

● Circuit Diagram

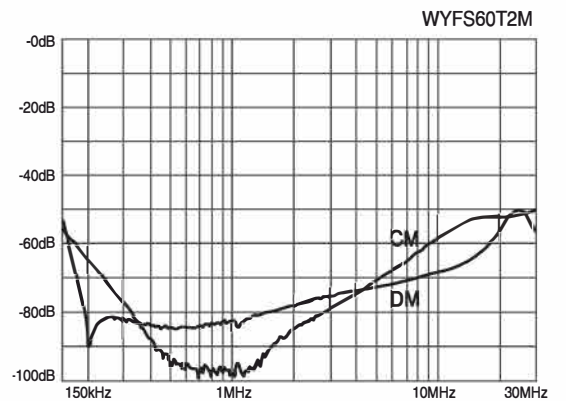


● Terminal

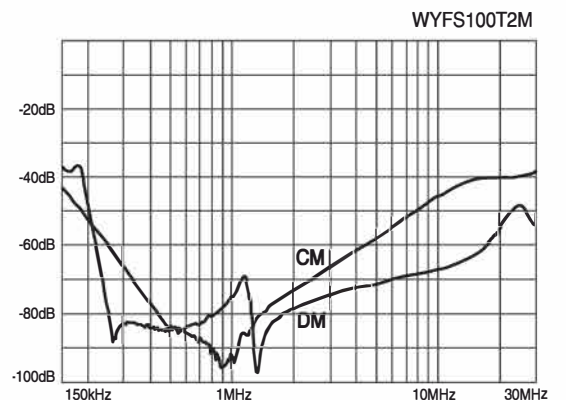
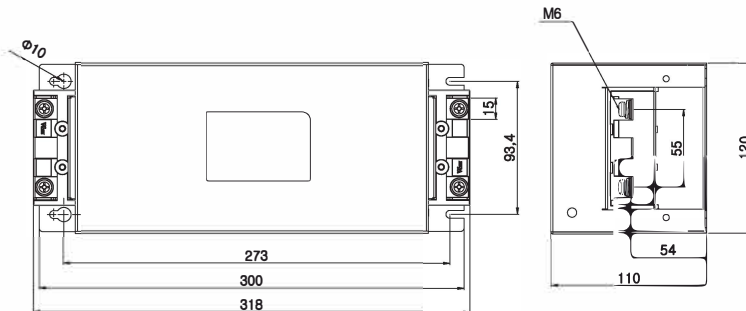


Max 14 , Min 6

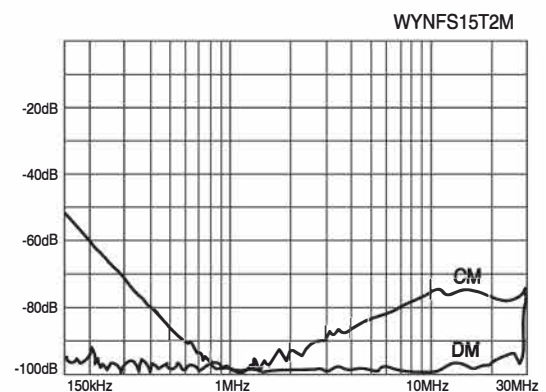
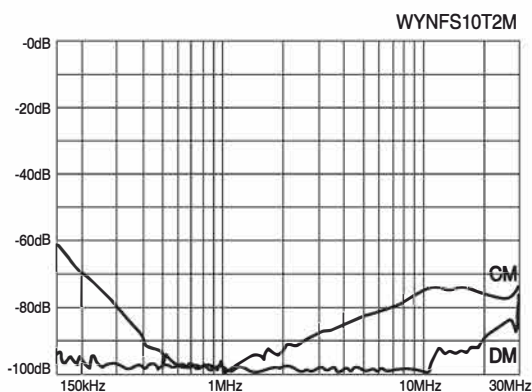
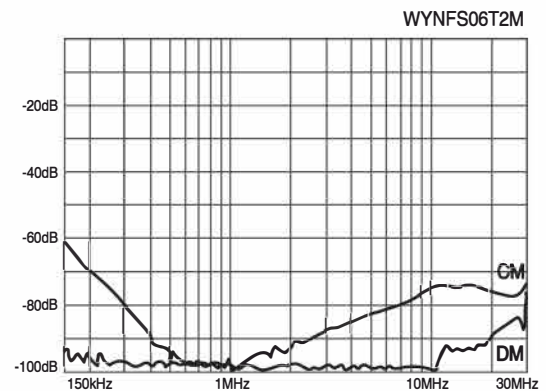
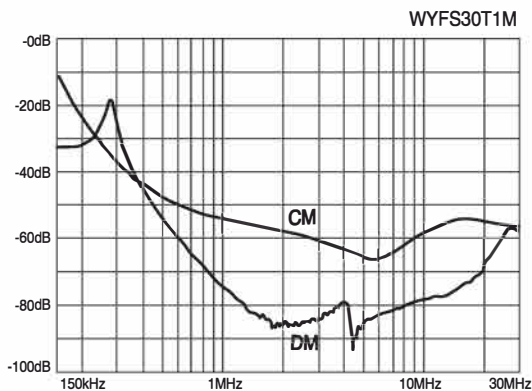
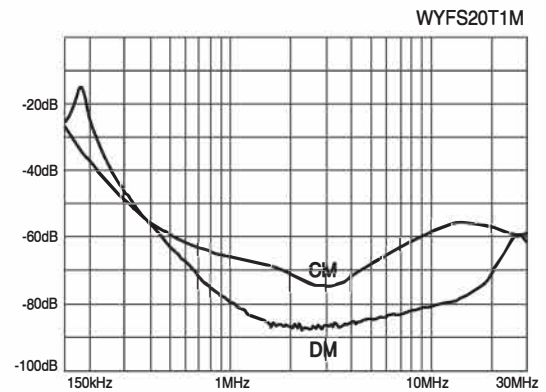
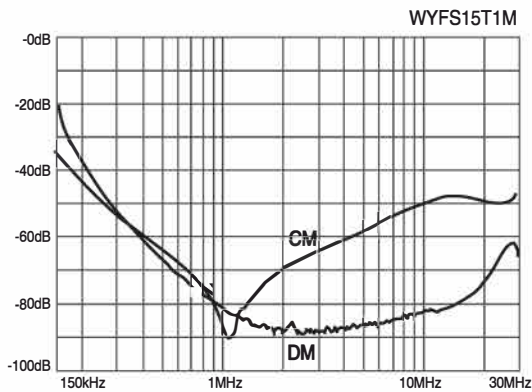
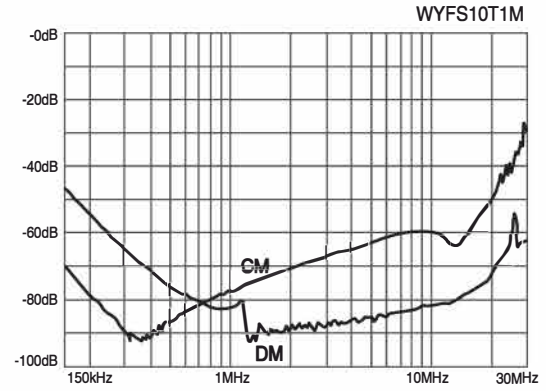
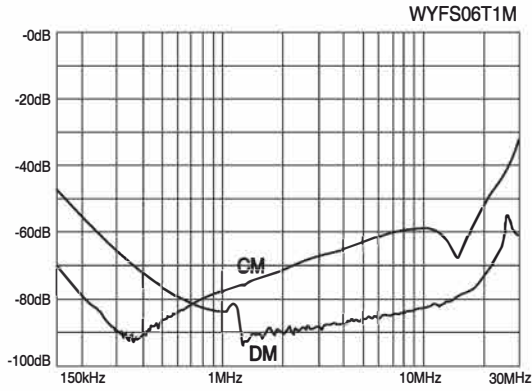
● Characteristics



● Dimension



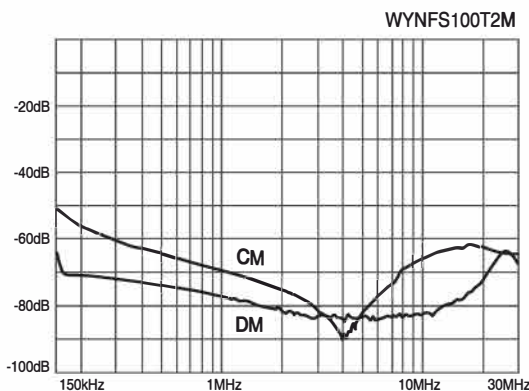
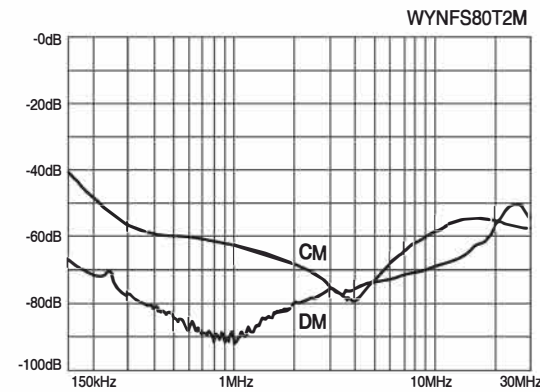
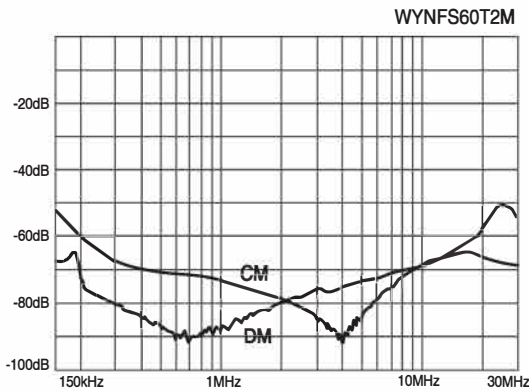
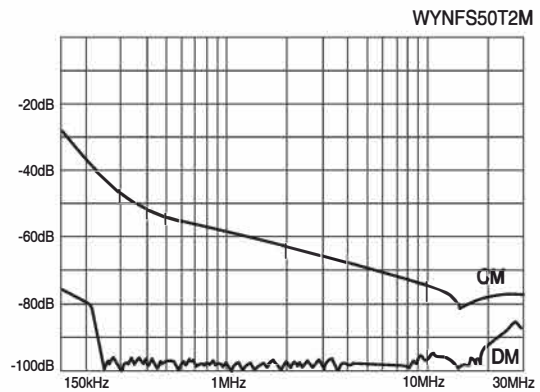
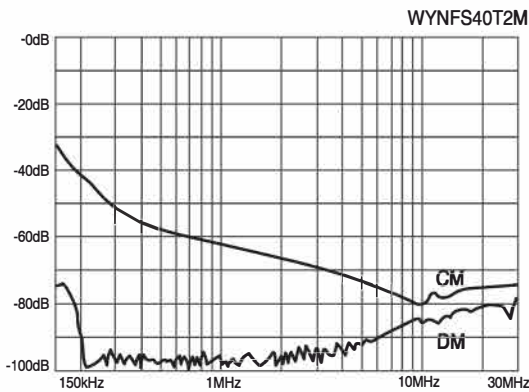
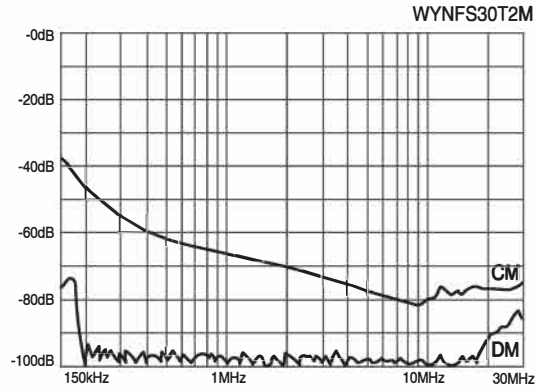
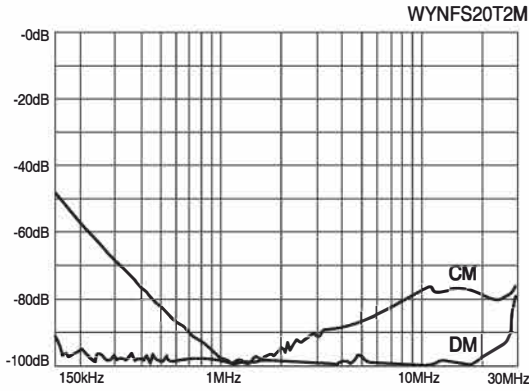
### ● Characteristics



※ CM : Common mode, DM : Differential mode

트랜스포머  
REACTOR  
리액터  
무선충전블레이드  
SSR  
전력조정기  
TPR  
스위칭파워  
SMPSS  
노이즈 필터  
H/F  
하모닉 필터  
SPD  
서지보호기  
RELAY  
보통계전기  
ELD=GF  
누전경보기  
ZCT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FAN  
선풍기

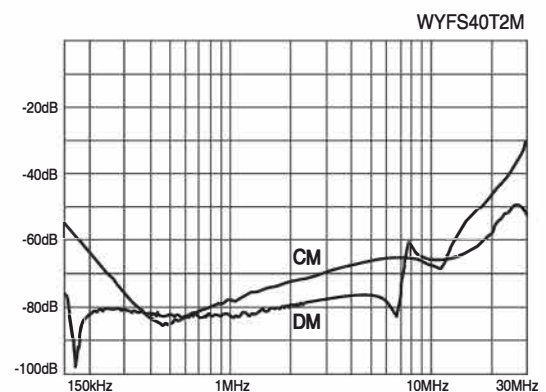
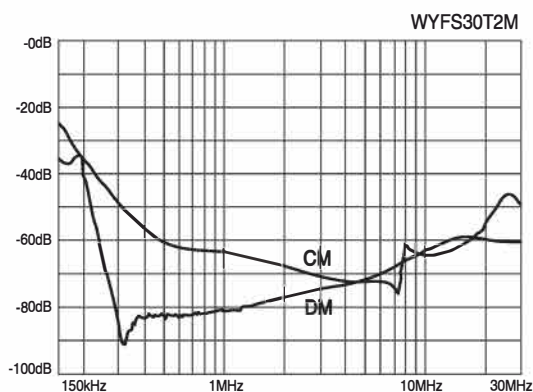
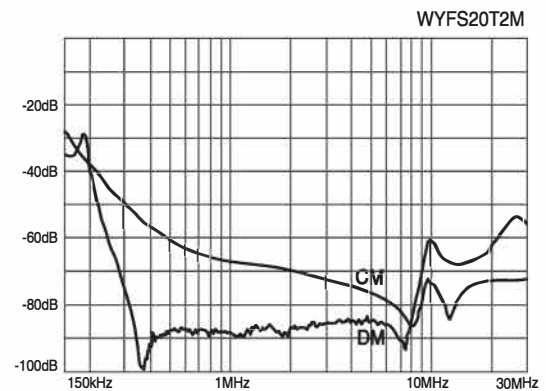
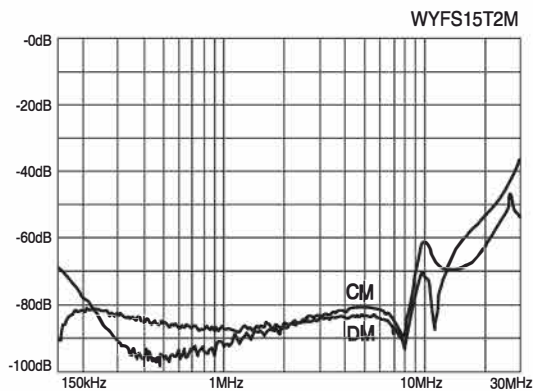
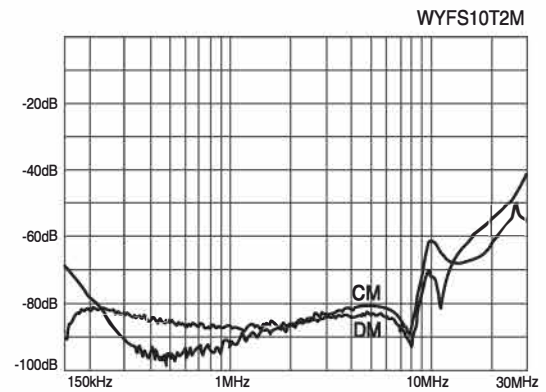
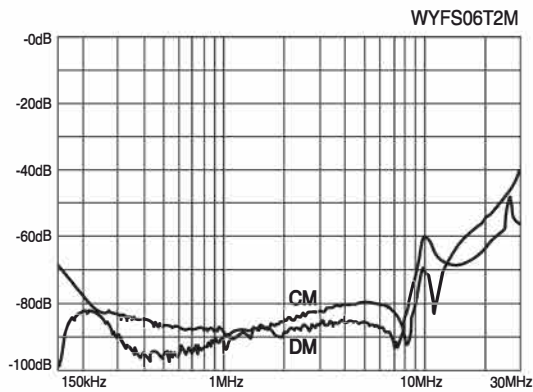
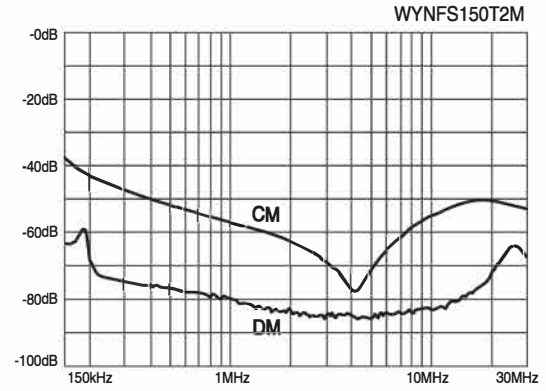
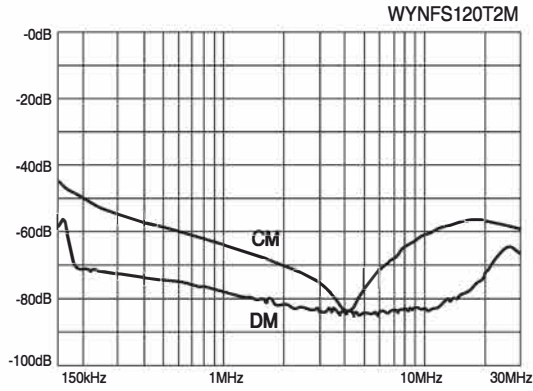
### ● Characteristics



※ CM : Common mode, DM : Differential mode



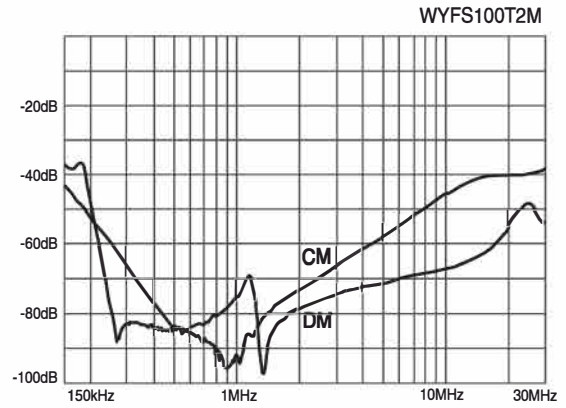
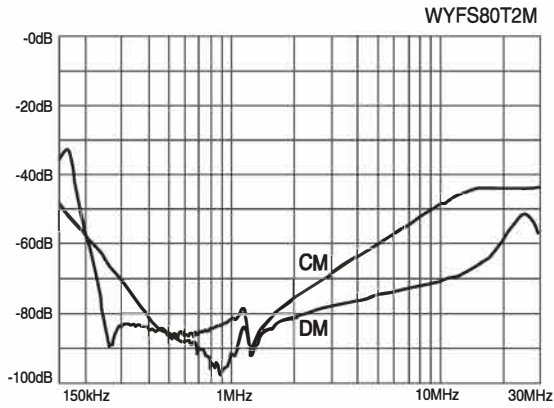
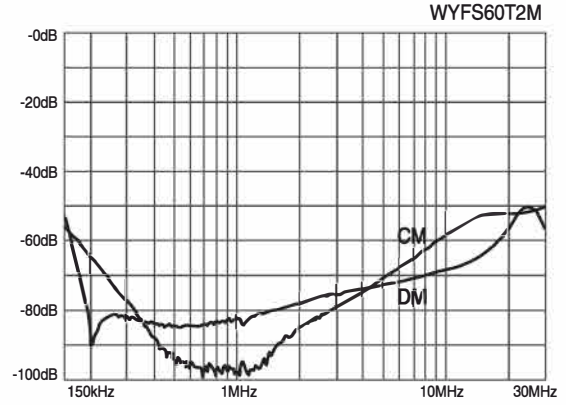
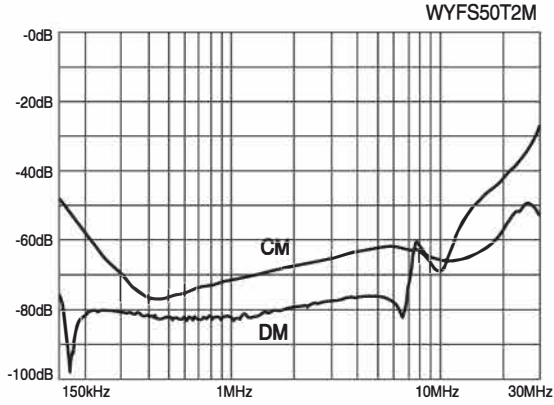
### ● Characteristics



※ CM : Common mode, DM : Differential mode

트랜스포머  
REACTOR  
리액터  
무선전송블레이드  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈필터  
N/F  
하모닉필터  
H/F  
서지보호기  
SPD  
보호계전기  
RELAY  
누전경보기  
ELD=GF  
영상변류기  
ZCT  
판넬메타  
METER  
계기용변성기  
CT=VT  
SHUNT=FAN  
선풍팬

### ● Characteristics

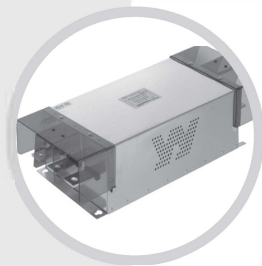
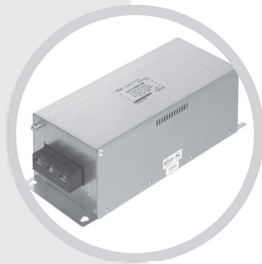


# 노이즈필터

## Noise Filter

### 3Ø 고감쇄형(Multi-Stage Type)

- 3Ø 250V 5~1200A
- 3Ø 500V 5~1200A



# NOISE FILTER

노이즈 필터

## N Series 3Ø 250V 고감쇄형 Multi-Stage Type





### ● Features

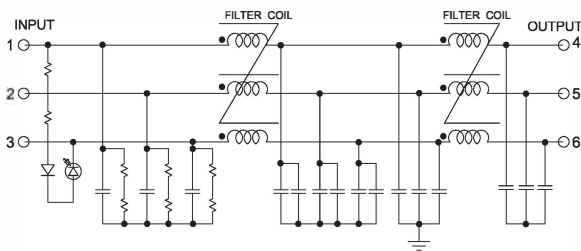
- Wide Band : High Attenuation
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type"C"  
(WYNFT05T2C)

### ● Specifications

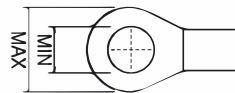
ITEM	MODEL	SYMBOL	WYNFT05T2M	WYNFT10T2M	WYNFT15T2M	WYNFT20T2M	WYNFT30T2M
Rated Voltage	V		250Vac				
Rated Current	A		5A	10A	15A	20A	30A
Frequency	Hz		50/60				
Dielectric Withstand	V		1500Vac for one 1minute				
Insulation Resistance	MΩ		DC 100MΩ at the 500Vdc				
Leakage Current	mA		≤4.5mA at the 250Vac				
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]				
Operating Humidity	RH		35~85%RH				
Weight	kg		1.2		2.2		

※ Derating Curve of page 103

### ● Circuit Diagram

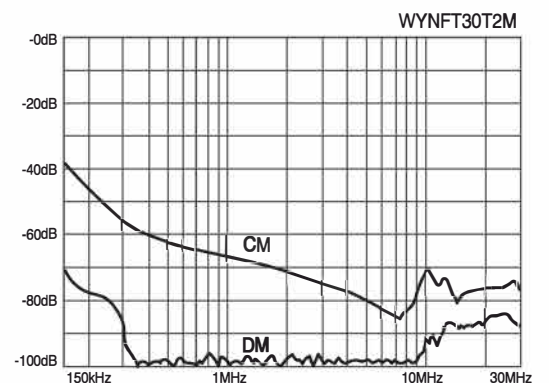
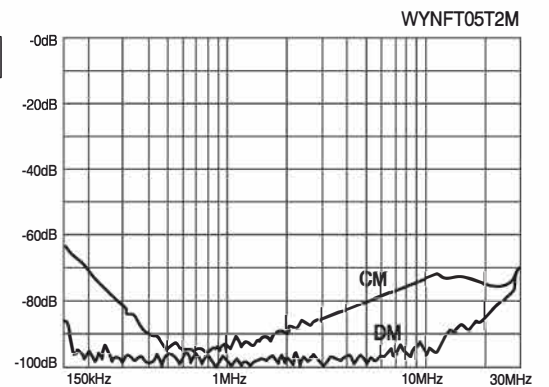


### ● Terminal

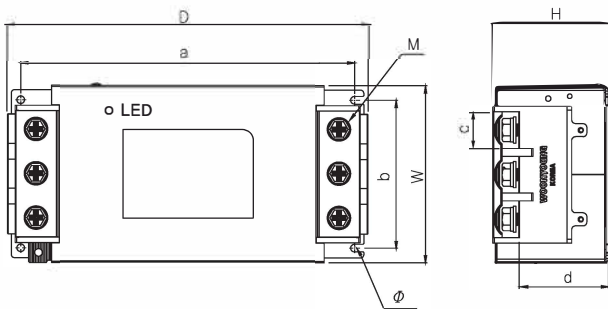


Max 10, Min 4 (5~15A)  
Max 12, Min 5 (20~30A)

### ● Characteristics



### ● Dimension



MODEL	W	H	D	a	b	c	d	M	Ø
WYNFT5~15T2M	70.5	45	202	194	51.5	10.5	33	4	5
WYNFT20~30T2M	79.2	48.3	242	232	60	13	33.5	5	5



● **Features**

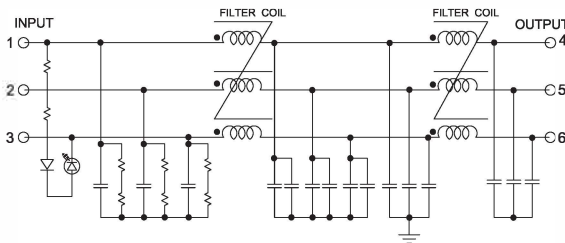
- Wide Band : High Attenuation
- Band Width : 150kHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type"C"  
(WYNFT40T2C)

● **Specifications**

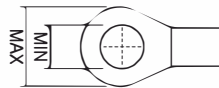
ITEM	MODE	SYMBOL	WYNF T40T2M	WYNF T50T2M	WYNF T60T2M	WYNF T80T2M	WYNF T100T2M	WYNF T120T2M	WYNF T150T2M	WYNF T200T2M	WYNF T250T2M
Rated Voltage	V		250Vac								
Rated Current	A		40A	50A	60A	80A	100A	120A	150A	200A	250A
Frequency	Hz		50/60								
Dielectric Withstand	V		1500Vac for one 1minute								
Insulation Resistance	MΩ		DC 100MΩ at the 500Vdc								
Leakage Current	mA		≤16mA at the 250Vac								
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]								
Operating Humidity	RH		35~85%RH								
Weight	kg		2.2		3.5			4.5			

※ Derating Curve of page 103

● **Circuit Diagram**

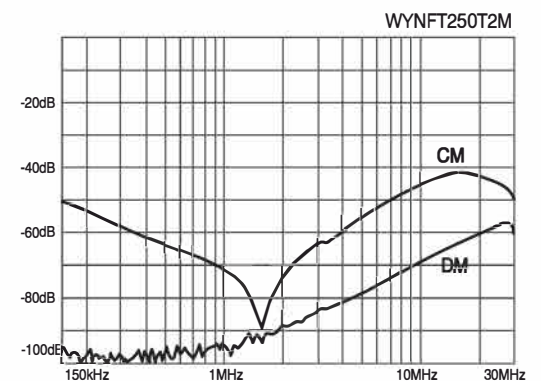
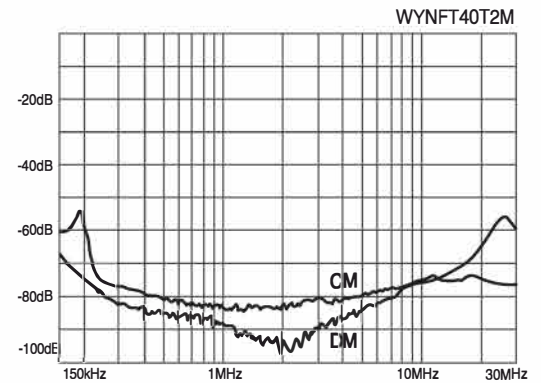


● **Terminal**

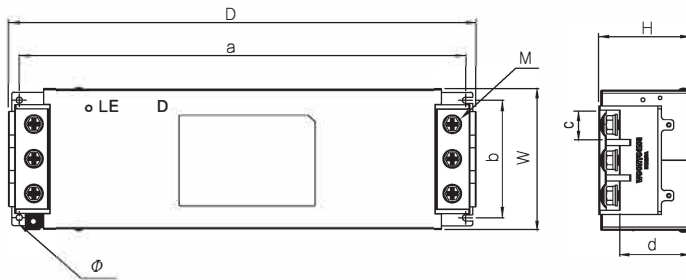


Max 16, Min 6 (40~50A)  
Max 23, Min 8 (60~100A)  
Max 28, Min 8 (120~250A)

● **Characteristics**



● **Dimension**



MODEL	W	H	D	a	b	c	d	M	∅
WYNFT40~50T2M	91	57.2	295	284.5	74	17	42.3	6	5
WYNFT60~100T2M	115	75	385.2	368	96	24	58	8	5
WYNFT120~250T2M	170.8	151.6	446.5	416	140	28.5	120.1	8	6.5

트랜스포머  
REACTOR  
리액터  
무선전송블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈 필터  
H/F  
하모닉 필터  
SPD  
서지보호기  
RELAY  
보호계전기  
ELD=GF  
누전경보기  
ZCT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FA  
선택팬

# NOISE FILTER

노이즈 필터

3Ø 250V 고감쇄형 Multi-Stage Type

 RoHS



### ● Features

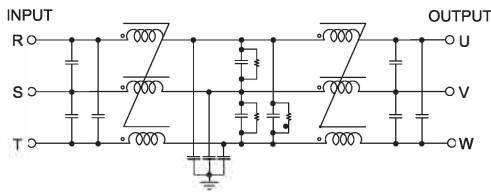
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type<sup>®</sup>C<sup>®</sup> (WYFT05T2C)

### ● Specifications

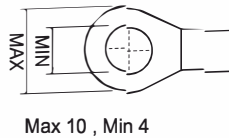
ITEM	MODEL	SYMBOL	WYFT05T2M	WYFT10T2M	WYFT15T2M	WYFT20T2M	WYFT30T2M
Rated Voltage	V		250				
Rated Current	A		5	10	15	20	30
Frequency	Hz		50/60				
Dielectric Withstand	V		1500				
Insulation Resistance	MΩ		500				
Leakage Current	mA		27				
Operating Temperature	°C		-25°C ~ +100°C [Refer to Derating Curve TYPE-2]				
Operating Humidity	RH		35~85%RH				
Weight	kg		1.2		1.7		

※ Derating Curve of page 103

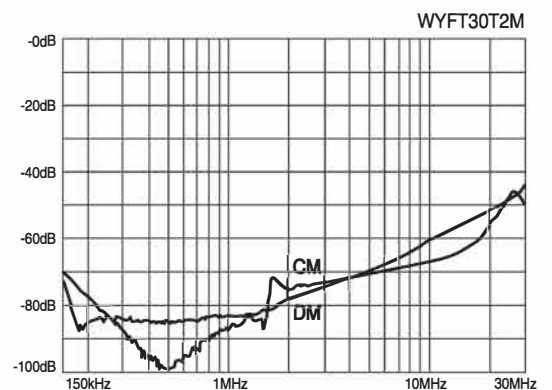
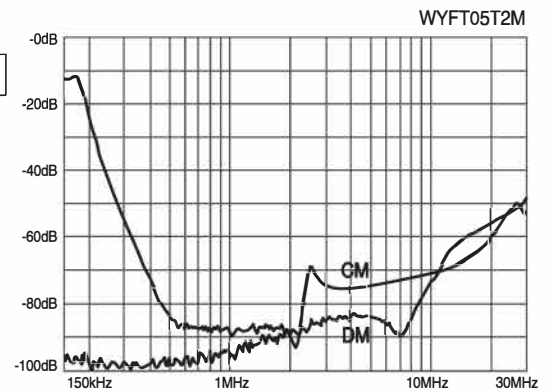
### ● Circuit Diagram



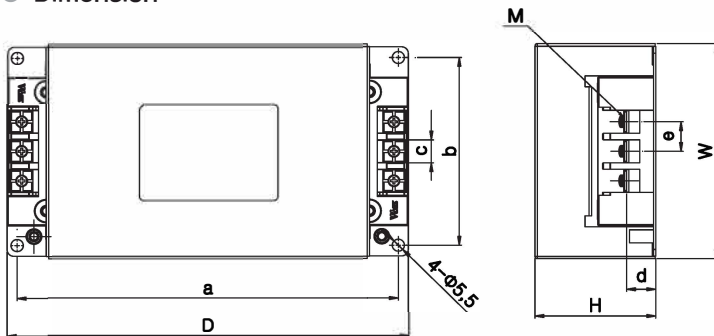
### ● Terminal



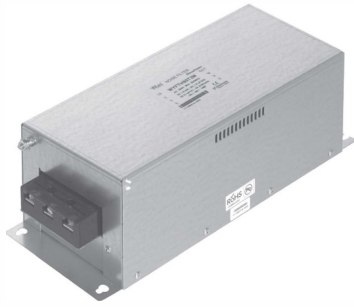
### ● Characteristics



### ● Dimension



MODEL	W	H	D	a	b	c	d	e
WYFT05~15T2M	98	55	184	175	86	10.5	13	13.5
WYFT20~30T2M	116	75	234	219	98	10.5	14	13.5



● Features

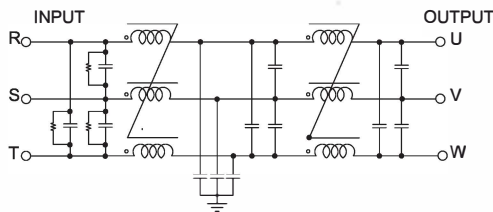
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type"C"  
(WYFT40T2C)

● Specifications

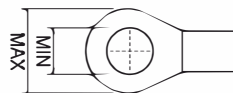
ITEM	MODE M	SYMBOL <sup>L</sup>	MODE									
			WYF T40T2M	WYF T50T2M	WYF T60T2M	WYF T80T2M	WYF T100T2M	WYF T120T2M	WYF T150T2M	WYF T200T2M	WYF T250T2M	
Rated Voltage		V	250									
Rated Current		A	40	50	60	80	100	120	150	200	250	
Frequency		Hz	50/60									
Dielectric Withstand		V	1500									
Insulation Resistance		MΩ	500									
Leakage Current		mA	27									
Operating Temperature		℃	-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]									
Operating Humidity		RH	35~85%RH									
Weight		kg	3.5			7.0			10.5			12.0

※ Derating Curve of page 103

● Circuit Diagram

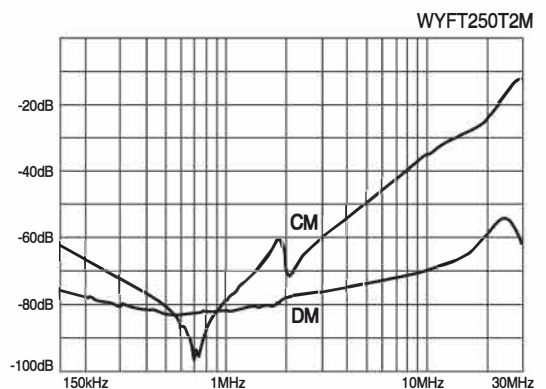
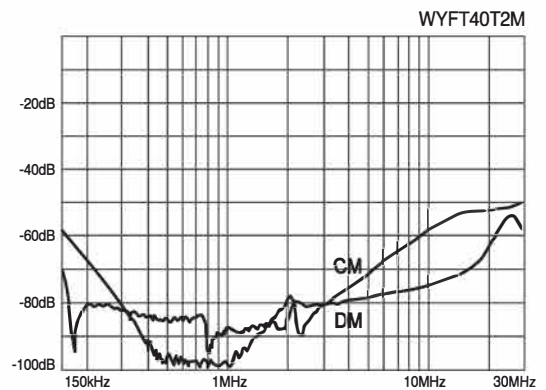


● Terminal

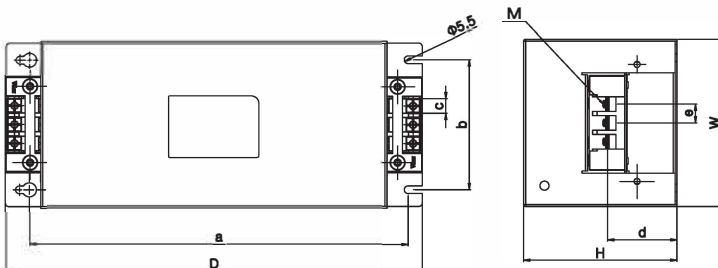


Max 10, Min 4(40~50A)  
Max 14, Min 6(60~100A)  
Max 22, Min 8(120~150A)  
Max 24, Min 8(200~250A)

● Characteristics



● Dimension



MODEL	W	H	D	a	b	c	d	e	M
WYFT40~50T2M	124	110	306	273	93	10.5	50	13.5	M4
WYFT60~100T2M	140	130	410	373	113	15	60	27.5	M6
WYFT120~150T2M	170	163	458	417	143	23	71	35	M8
WYFT200~250T2M	170	163	467	417	143	25	76	38.5	M8

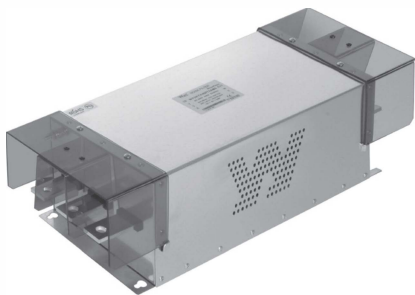
트랜스포머  
REACTOR  
리액터  
무선전송블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMP  
노이즈 필터  
H/F  
하모닉 필터  
SPD  
서지보호기  
RELAY  
보통계전기  
E/LD=GF  
누전경보기  
Z/CT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FA  
선택팬

# NOISE FILTER

노이즈 필터

3Ø 250V 고감쇄형 Multi-Stage Type

 RoHS



● Features

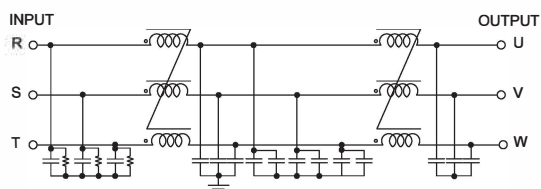
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type"C"  
(WYFT300T2C)

● Specifications

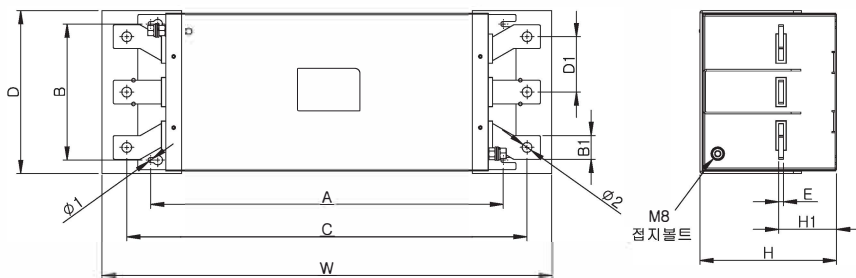
ITEM	MODE	SYMBOL	WYFT300T2M		WYFT400T2M	
Rated Voltage	V		250			
Rated Current	A		300		400	
Frequency	Hz		50/60			
Dielectric Withstand	V		1500			
Insulation Resistance	MΩ		500			
Leakage Current	mA		27			
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]			
Operating Humidity	RH		35~85%RH			
Weight	kg		12,5		15,5	

※ Derating Curve of page 103

● Circuit Diagram

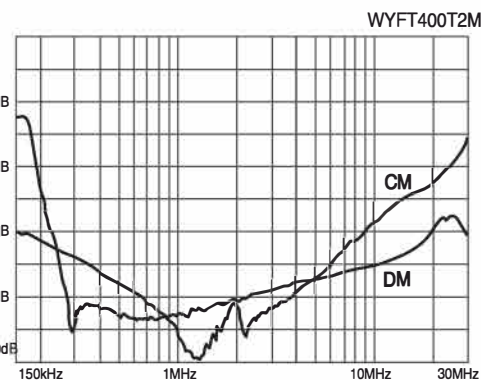
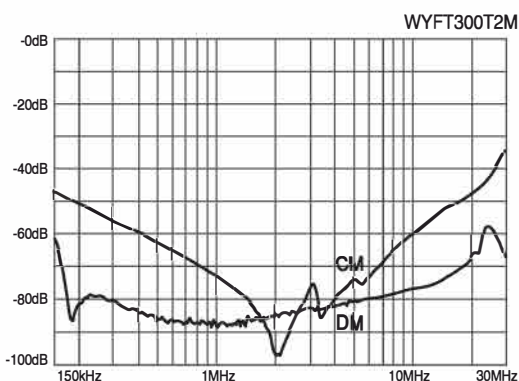


● Dimension



MODEL	W	H	D	A	B	C	B1	D1	H1	E	Ø1	Ø2
300A	528	173	206	448	172	466	30	55	67	6	6.4	12.5
400A	570	173	206	448	172	508	30	55	67	6	6.4	12.5

● Characteristics



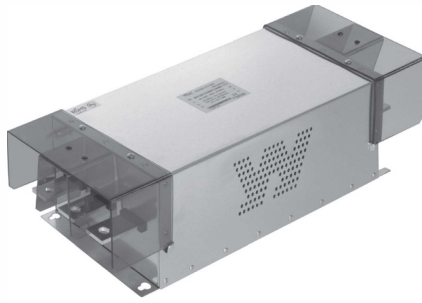


# NOISE FILTER

노이즈 필터

CE RoHS

3Ø 250V 고감쇄형 Multi-Stage Type



### ● Features

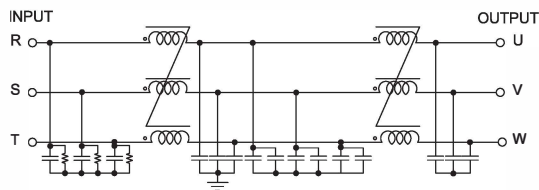
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type" C"  
(WYFT500T2C)

### ● Specifications

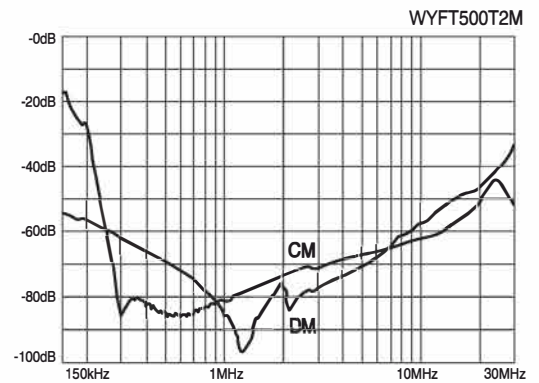
ITEM	MODE	SYMBOL	WYFT500T2M
Rated Voltage	V		250
Rated Current	A		500
Frequency	Hz		50/60
Dielectric Withstand	V		1500
Insulation Resistance	MΩ		300
Leakage Current	mA		27
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]
Operating Humidity	RH		35~85%RH
Weight	kg		16

※ Derating Curve of page 103

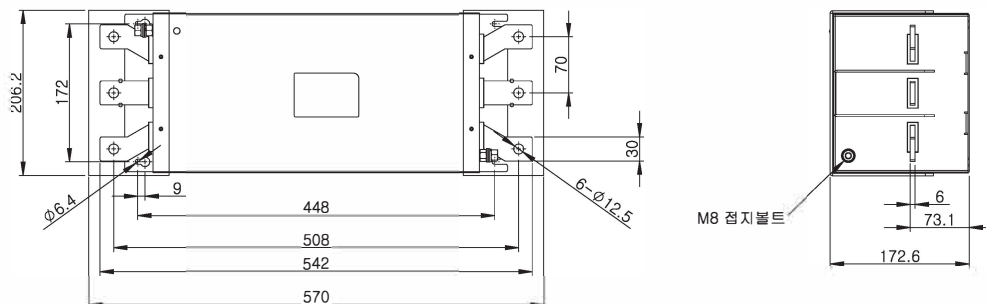
### ● Circuit Diagram



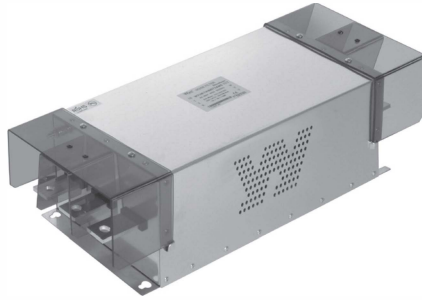
### ● Characteristics



### ● Dimension



트랜스포머  
REACTOR  
리액터  
무전압블레이  
SSR  
전력조정기  
TPR  
스위칭파워  
SMPs  
노이즈필터  
H/F  
하모닉필터  
SPD  
서지보호기  
RELAY  
보호계전기  
ELD=GF  
누전경보기  
ZCT  
영상변류기  
METER  
판넬메타  
CT=VT  
계기용변성기  
SHUNT=FA  
선택팬



● **Features**

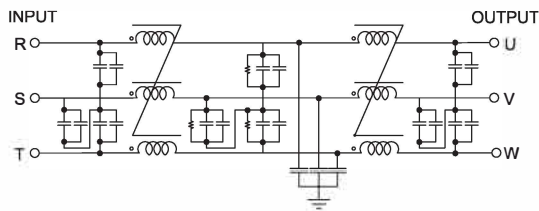
- High Attenuation
- High Voltage Pulse Noise
- 2 Stage Filter
- Band Width : 150KHz~30MHz
- RoHS Compliant
- Inverter Output Type : Model Type"C"  
(WYFT600T2C)

● **Specifications**

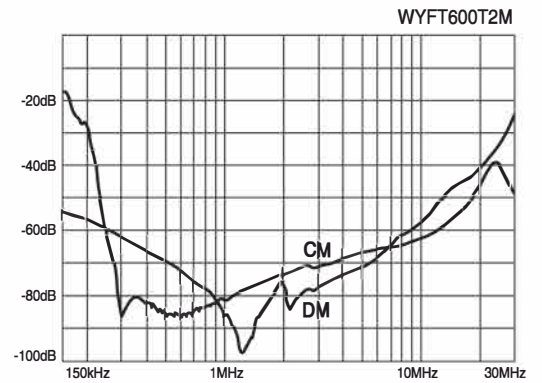
ITEM	MODEL	SYMBOL	WYFT600T2M	WYFT800T2M	WYFT1000T2M	WYFT1200T2M
Rated Voltage	V		250			
Rated Current	A		600	800	1000	1200
Frequency	Hz		50/60			
Dielectric Withstand	V		1500			
Insulation Resistance	MΩ		500			
Leakage Current	mA		27			
Operating Temperature	℃		-25℃ ~ +100℃ [Refer to Derating Curve TYPE-2]			
Operating Humidity	RH		35~85%RH			
Weight	kg		23			

※ Derating Curve of page 103

● **Circuit Diagram**



● **Characteristics**



● **Dimension**

