

User's Manual

CT500SA, CT200SA
AC/DC Split Core Current Sensor

Thank you for purchasing the CT500SA or CT200SA AC/DC Split Core Current Sensor. To ensure correct use, please read this manual thoroughly before beginning operation. Please familiarize yourself with the functions and characteristics of this instrument prior to operation. After reading this manual, keep it in a safe place.



- Notes
- The contents of this manual are subject to change without prior notice as a result of improvements to the product's performance and functionality. Refer to our website to view our latest manuals.
 - Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
 - Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.

Conventions Used in This Manual

Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

AVERTISSEMENT

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

CAUTION

Calls attention to actions or conditions that could cause light injury to the user or damage to the instrument or the user's data, and precautions that can be taken to prevent such occurrences.

ATTENTION

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

Note

Calls attention to information that is important for proper operation of the instrument.

Safety Precautions

This product is designed to be used by a person with specialized knowledge. The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.

This manual is part of the product and contains important information. Store this manual in a safe place close to the instrument so that you can refer to it immediately. Keep this manual until you dispose of the instrument.

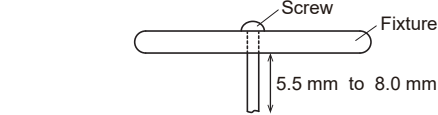
	The following symbols are used on this instrument.	Les symboles suivants ont été placés sur l'instrument
	Handle with care. Refer to the user's manual or service manual. This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use. The same symbol appears in the corresponding place in the manual to identify those instructions.	À manipuler délicatement. Toujours se reporter aux manuels d'utilisation et d'entretien. Ce symbole a été apposé aux endroits dangereux de l'instrument pour lesquels des consignes spéciales d'utilisation ou de manipulation ont été émises. Le même symbole apparaît à l'endroit correspondant du manuel pour identifier les consignes qui s'y rapportent.
	Hot surface	Surface très chaude
	This symbol indicates that it should not be attached around or detached from uninsulated, hazardous live conductors that could arc or cause electric shock or electrical burns.	Ce symbole indique qu'il ne doit pas être attaché ou détaché des conducteurs sous tension non isolés dangereux qui pourraient provoquer un arc électrique, un choc électrique ou des brûlures électriques.

Make sure to observe the following safety precautions to prevent electric shock, personal injury, or damage to the instrument.

WARNING

- This instrument is a voltage-output type current sensor with jaws for clamping around conductors. Use this instrument only for its intended purpose.
- To prevent damage to the product, fire, or accidents, familiarize yourself with the functions and characteristics of this instrument, and only use this instrument in combination with YOKOGAWA measuring instruments.
- Do not use this instrument to measure bare conductors. Such use can cause electric shock or short-circuit accidents.
- Use this instrument only for current measurements on insulated conductors with an appropriate withstand voltage for the maximum voltage of the conductors.
- Use this instrument only around insulated conductors or energy-limited circuit conductors.
- When measuring currents containing high-frequency components, take derating characteristics into account, and do not measure currents exceeding the rated current.
- When measuring currents containing high-frequency components, the temperature of this instrument may rise even if the current is less than the rated current, resulting in burns. Touch the instrument when its temperature has cooled sufficiently.
- Do not place conductors running high-frequency currents near this instrument. The current flowing through nearby conductors may increase the temperature of this instrument, resulting in burns or damage to this instrument.
- Do not use this instrument if its case or cables are damaged. Doing so may cause electric shock.
- Handle the cables of this instrument with care so as not to step on or pinch them. Doing so may cause damage to the cable sheath.
- The current input terminals of YOKOGAWA's WT1800 series, WT500 series, and WT300 series power analyzers and the respective common terminals (+/-) of the external current sensor input terminals are common. In addition, the reference potential of this instrument is the ground potential. When connecting this instrument to the external current sensor input terminal of a power analyzer, do not apply electric potential to the current input terminal of the power analyzer. Doing so will cause short-circuit current to flow, resulting in electric shock or damage to this instrument. (When using this instrument, disconnect all cables connected to the current input terminals of the power analyzer.)

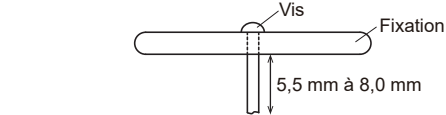
- The measurement category of this instrument is Other (O). Do not use this instrument to make measurements for Measurement Categories II, III, and IV. When this instrument is connected to a measuring instrument, the measurement category of this instrument applies regardless of the measurement category of the measuring instrument.
- When using a measuring instrument without insulation between input terminals, note the following:
The reference potential of this instrument is the ground potential. Do not apply a different electric potential to the ground side other than the input terminal to which this instrument is connected. Doing so will cause short-circuit current to flow, resulting in electric shock or damage to the instrument.
- Do not allow the cable of this instrument to contact the line to be measured. Doing so may cause electric shock, short circuit, or damage to the instrument.
- Make sure that the system in which the current to be measured flows is turned off before connecting or disconnecting this instrument from the conductor under test. Failure to do so may cause electric shock or short-circuit accidents.
- Only qualified YOKOGAWA personnel may disassemble or modify this instrument. Failure to do so may result in damage to the instrument, fire, or electric shock.
- Do not touch this instrument when voltage is applied to the conductor under test. Doing so may result in electric shock.
- If the power LED (green) is off even though power is supplied to this instrument, stop using the instrument, and contact your nearest YOKOGAWA dealer.
- Do not place this instrument near any object that generates heat. Ambient heat may damage this instrument. In addition, the main unit and sub unit generate heat. Install this instrument with the following points in mind.
 - Install the main unit and sub unit at least 10 mm apart.
 - When using multiple sets of this instrument, install the main units at least 10 mm apart from each other, the sub units at least 10 mm apart from each other, and the main unit of one set and the sub unit of another set at least 10 mm apart from each other.
 - Install the sub unit with the demagnetization button face up.
- When fixing the main unit using the mounting screw hole, use an M4 screw that protrudes through the fixture by 5.5 mm to 8.0 mm. If the screw is longer than this range, it may interfere with the inside of the main unit and damage this instrument. If the screw is shorter than this range, the fixing strength will be insufficient and the instrument may fall, resulting in damage.



French

AVERTISSEMENT

- Cet instrument est un capteur de courant de type tension-sortie avec des mâchoires pour la fixation autour des conducteurs. Utilisez cet instrument uniquement pour l'usage prévu.
- Afin d'éviter d'endommager le produit, d'entraîner un incendie ou un accident, familiarisez-vous avec les fonctions et caractéristiques de cet instrument et n'utilisez cet instrument qu'en association avec les instruments de mesure YOKOGAWA.
- N'utilisez pas cet instrument pour mesurer des conducteurs nus. Une telle utilisation peut provoquer un choc électrique ou un court-circuit.
- N'utilisez cet instrument que pour les mesures de courant sur des conducteurs isolés avec une tension de tenue appropriée pour la tension maximale des conducteurs.
- Utilisez cet instrument uniquement autour de conducteurs isolés ou de conducteurs de circuits à énergie limitée.
- Lors de la mesure de courants contenant des composants à haute fréquence, tenez compte des caractéristiques de déclassement et ne mesurez pas les courants dépassant le courant nominal.
- Lors de la mesure de courants contenant des composants à haute fréquence, la température de cet instrument peut augmenter même si le courant est inférieur au courant nominal, entraînant des brûlures. Touchez l'instrument uniquement lorsque sa température a suffisamment refroidi.
- Ne placez pas de conducteurs en courant haute fréquence à proximité de cet instrument. Le courant qui circule dans les conducteurs à proximité peut augmenter la température de cet instrument, ce qui peut entraîner des brûlures ou endommager cet instrument.
- N'utilisez pas cet instrument si son boîtier ou ses câbles sont endommagés. Cela pourrait provoquer un choc électrique.
- Manipulez les câbles de cet instrument avec précautions afin de ne pas marcher dessus ou les pincer. Cela pourrait endommager la gaine du câble.
- Les bornes d'entrée de courant des analyseurs de puissance série WT1800, WT500 et WT300 de YOKOGAWA et les bornes communes (+/-) respectives des bornes d'entrée externes du capteur de courant sont communes. De plus, le potentiel de référence de cet instrument est le potentiel de terre. Lors du raccordement de cet instrument à la borne d'entrée externe du capteur de courant d'un analyseur de puissance, n'appliquez pas de potentiel électrique à la borne d'entrée de courant de l'analyseur de puissance. Cela pourrait provoquer la circulation d'un courant de court-circuit et provoquer un choc électrique ou endommager cet instrument. (Lors de l'utilisation de cet instrument, débranchez tous les câbles connectés aux bornes d'entrée de courant de l'analyseur de puissance.)
- La catégorie de mesure de cet instrument est Autre (O). N'utilisez pas cet instrument pour effectuer des mesures pour les catégories de mesures II, III et IV. Lorsque cet instrument est connecté à un instrument de mesure, la catégorie de mesure de cet instrument s'applique indépendamment de la catégorie de mesure de l'instrument de mesure.
- Lors de l'utilisation d'un instrument de mesure sans isolation entre les bornes d'entrée, notez les points suivants :
Le potentiel de référence de cet instrument est le potentiel de terre. N'appliquez pas un potentiel électrique différent sur le côté de la masse autre que la borne d'entrée à laquelle cet instrument est connecté. Cela provoquera la circulation d'un courant de court-circuit, entraînant un choc électrique ou des dommages à l'instrument.
- Ne laissez pas le câble de cet instrument entrer en contact avec la ligne à mesurer. Vous risqueriez de provoquer un choc électrique, un court-circuit ou d'endommager l'instrument.
- Assurez-vous que le système dans lequel circule le courant à mesurer est désactivé avant de connecter ou de déconnecter cet instrument au conducteur en cours de test. Le non-respect de cette consigne peut provoquer un choc électrique ou un court-circuit.
- Seul le personnel qualifié de YOKOGAWA est habilité à démonter ou modifier cet instrument. Le non-respect de cette consigne peut endommager l'instrument, provoquer un incendie ou un choc électrique.
- Ne touchez pas cet instrument lorsqu'une tension est appliquée au conducteur testé. Cela pourrait entraîner un choc électrique.
- Si la LED d'alimentation (verte) est éteinte, même si l'instrument est sous tension, cessez d'utiliser l'instrument et contactez votre revendeur YOKOGAWA le plus proche.
- Ne placez pas cet instrument à proximité d'un objet générant de la chaleur. La chaleur ambiante peut endommager cet instrument. De plus, l'unité principale et l'unité secondaire génèrent de la chaleur. Installez cet instrument en tenant compte des points suivants.
 - Installez l'unité principale et l'unité secondaire à au moins 10 mm d'écart l'une de l'autre.
 - Lors de l'utilisation de plusieurs groupes d'instruments, installez les unités principales à au moins 10 mm l'une de l'autre, les unités secondaires à au moins 10 mm l'une de l'autre, et l'unité principale d'un groupe et l'unité secondaire d'un autre groupe à au moins 10 mm l'une de l'autre.
 - Installez l'unité secondaire avec le bouton de démagnétisation orienté vers le haut.
- Lors de la fixation de l'unité principale à l'aide du trou de vis de montage, utilisez une vis M4 qui dépasse du support de 5,5 mm à 8,0 mm. Si la vis excède cette plage de longueur, elle peut interférer avec l'intérieur de l'unité principale et endommager cet instrument. Si la vis est plus courte que cette plage de longueur, la force de fixation sera insuffisante et l'instrument risque de tomber, entraînant des dommages.



1. Overview

This instrument is a voltage-output type current sensor with jaws for clamping around conductors. Familiarize yourself with the functions and characteristics of this instrument, and only use this instrument in combination with YOKOGAWA measuring instruments.

2. Checking the Contents of the Package

Unpack the box, and check the following before operating the instrument. If the wrong items have been delivered, if items are missing, or if there is a problem with the appearance of the items, contact your nearest YOKOGAWA dealer.

CT500SA, CT200SA

Check that the product that you received is what you ordered by referring to the model name and suffix code on the instrument.

Models	Suffix code	Description
CT500SA		500 A, 4 mV/A
CT200SA		200 A, 10 mV/A
	-L03	Cable length: 3 m
	-L05	Cable length: 5 m
	-L10	Cable length: 10 m

CT500SA

YOKOGAWA

CT500SA

AC/DC SPLIT CORE CURRENT SENSOR

4mV/A

CT200SA

YOKOGAWA

CT200SA

AC/DC SPLIT CORE CURRENT SENSOR

10mV/A

Model

Standard accessories

Item	Quantity	Notes
Manuals	Full set	
Mark bands	10	2 each of numbered 1 to 4 and unnumbered
Carrying case	1	

Standard accessories are not covered by warranty of this instrument.

Manuals

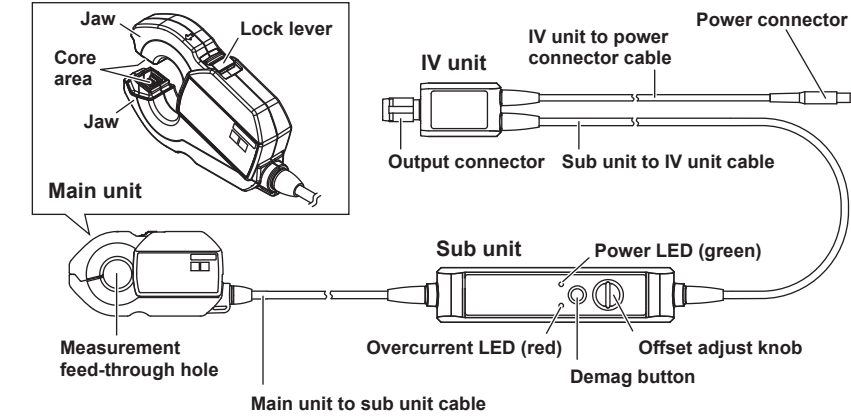
Manual No.	Manual Title	Description
IM CT500SA-01EN	CT500SA, CT200SA AC/DC Split Core Current Sensor User's Manual	This document. This document explains the handling precautions, basic operations, and specifications of the instrument.
IM CROHS11-92Z1	China RoHS Information	Document for China.
IM 00C01C01-01Z1	Safety Instruction Manual	Safety manual (European languages)

The "EN and "Z1" in the manual numbers are the language codes.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

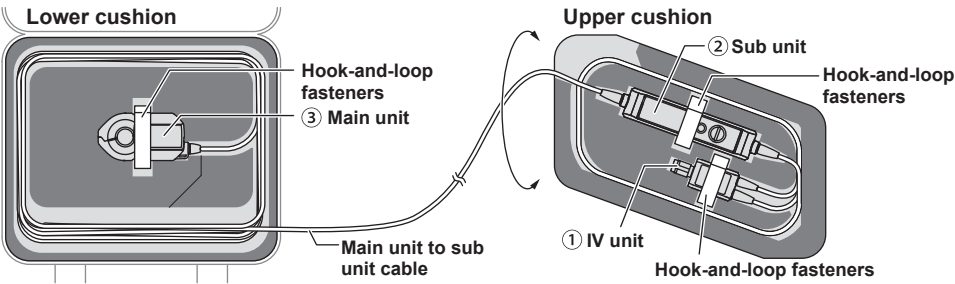
PIM 113-01Z2	Inquiries	List of worldwide contacts
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3. Component Names



4. How to Store in Carrying Case

Store the units and cable in the grooves of the cushions in numerical order, as shown in the figure below. When storing the cable, remove any twists in it and place it counterclockwise along the groove. After securing each unit with the hook-and-loop fasteners, rotate the upper cushion to remove any twist from the cable between the main unit and sub-unit, and then place the upper cushion on top of the lower cushion. Be careful not to trap the cable between the upper cushion and lower cushion.



5. Operating Instructions



CAUTION

- Make sure that the surface temperature of the conductor under test does not exceed the operating ambient temperature range of the instrument. Doing so may damage the instrument.
- Do not use the instrument with current that exceeds the maximum allowable input current. Doing so may cause heat generation and damage to the instrument. When the power supply of the device under measurement is turned on or off, current exceeding the maximum allowable current of this instrument may flow unintentionally due to inrush current.
- Touching this instrument immediately after it has been used in a hot or cold environment may cause burns or frostbite. Bring this instrument to room temperature before touching it.
- When sliding the lock lever or closing the jaws, be careful not to pinch your body or objects. Doing so may cause injury or damage to the device.
- Do not drop this instrument (including cables and connectors), or subject it to vibration or shock. Doing so may cause injury or damage to the device. Installing this instrument in an unstable or tilted location may cause it to fall. Fix this device in place.
- Do not apply current to the conductor under test without supplying power to this instrument. Doing so may damage the instrument.
- Be sure to check that the voltage of the power supply matches the power supply voltage specifications of this instrument before applying power to the instrument.
- If the cables of this instrument are bent or pulled with excessive force, the cable sheath or internal wires may be damaged. The cables are also susceptible to damage in low or high temperature environments. Please be sure to bring the cables back to room temperature before handling them.

- When connecting or disconnecting this instrument from a measuring instrument, connect or disconnect this instrument's output connector straight. Inserting and removing at an angle may damage the insulated BNC connector of the measuring instrument.
- Be careful not to apply impact or excessive force to the IV unit output connector (BNC). Also, when the output connector is connected to a measuring instrument's BNC connector, be careful not to bump the IV unit or snag the cable. Otherwise, this instrument may be damaged or malfunction.
- Do not touch the core with the jaws open. Electrostatic discharge to the core may damage this instrument.
- Do not apply force in the direction that the jaws open when this instrument is locked. Doing so may damage the instrument.
- Do not use cables tightly bundled together. Doing so may result in wire breakage.

French



ATTENTION

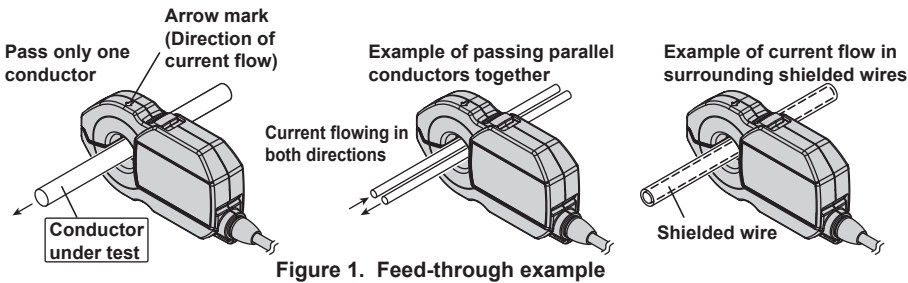
- Assurez-vous que la température de surface du conducteur testé ne dépasse pas la plage de températures ambiantes de fonctionnement de l'instrument. Cela pourrait endommager l'instrument.
- N'utilisez pas l'instrument avec un courant dépassant le courant d'entrée maximal autorisé. Cela pourrait générer de la chaleur et endommager l'instrument. Lorsque l'alimentation électrique de l'appareil en cours de mesure est activée ou désactivée, le courant dépassant le courant maximal admissible de cet instrument peut circuler par inadvertance en raison du courant d'appel.
- Toucher cet instrument immédiatement après qu'il ait été utilisé dans un environnement chaud ou froid peut provoquer des brûlures ou des gelures. Laissez l'instrument atteindre la température ambiante avant de le toucher.
- Lorsque vous basculez le levier de verrouillage ou fermez les mâchoires, veillez à ne pas pincer votre corps ou des objets. Cela pourrait provoquer des blessures ou endommager l'instrument.
- Ne faites pas tomber cet instrument (y compris les câbles et les connecteurs) et ne le soumettez pas à des vibrations ou à des chocs. Cela pourrait provoquer des blessures ou endommager l'instrument. L'installation de cet instrument dans un endroit instable ou incliné peut provoquer sa chute. Fixez cet appareil en place.
- N'appliquez pas de courant au conducteur testé sans alimenter cet instrument. Cela pourrait endommager l'instrument.
- Assurez-vous de bien vérifier que la tension de l'alimentation électrique correspond aux spécifications de tension d'alimentation de cet instrument avant la mise sous tension de l'instrument.
- Si les câbles de cet instrument sont pliés ou tirés avec une force excessive, la gaine du câble ou les fils internes peuvent être endommagés. Les câbles sont également susceptibles d'être endommagés dans les environnements à fortes ou faibles températures. Veillez à laisser les câbles atteindre la température ambiante avant de les manipuler.
- Lorsque vous connectez ou déconnectez cet instrument d'un instrument de mesure, connectez ou déconnectez le connecteur de sortie de cet instrument de façon bien droite. L'insertion et le retrait de travers peut endommager le connecteur BNC isolé de l'instrument de mesure.
- Veillez à ne pas appliquer d'impact ni de force excessive au connecteur de sortie de l'unité IV (BNC). De plus, lorsque le connecteur de sortie est relié au connecteur BNC d'un instrument de mesure, veillez à ne pas heurter l'unité IV ni à accrocher le câble. Sinon, cet instrument pourrait être endommagé ou dysfonctionner.
- Ne pas toucher le noyau lorsque les mâchoires sont ouvertes. Une décharge électrostatique au noyau peut endommager l'instrument.
- N'appliquez pas de force dans la direction d'ouverture des mâchoires lorsque cet instrument est verrouillé. Cela pourrait endommager l'instrument.
- N'utilisez pas de câbles emmêlés. Cela pourrait entraîner une rupture d'un fil.

Current measurement

- Connect the output connector of this instrument to the measuring instrument and the power connector to the power supply.
- Turn on the measuring instrument and this instrument. Verify that the power LED (green) on this instrument is lit.
- Perform demagnetization and offset adjustment as needed. (See "Demagnetization and offset adjustment.")
- Verify that current is not flowing through the conductor under test.
- Release the jaw lock, open the jaw, place the conductor under test inside the jaw, and then close the jaw. Check that the jaw is locked. Make sure that the direction of the current flowing through the conductor under test matches the direction of the arrow mark on the instrument.
- Fix this instrument in place as needed.
- After turning on the power to the system under measurement, allow current to flow through the conductor under test.
- Measure the current.
- After the measurement is complete, turn off the power to the system under measurement.
- Release the jaw lock, open the jaw, and remove this instrument from the conductor under test.
- Turn off the measuring instrument and this instrument.
- Remove the output connector of this instrument from the measuring instrument and the power connector from the power supply.

Good feed-through

Bad feed-through



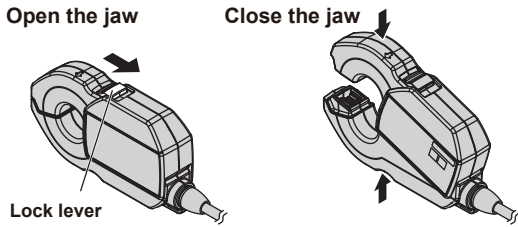
Note

- If the overcurrent detection LED (red) is on, remove the cause of the overcurrent as soon as possible. If the problem is not corrected by removing the cause of the overcurrent, it may be a malfunction. Discontinue use and contact your nearest YOKOGAWA dealer.
- Do not leave the carrying case in a location where it will be exposed to high temperatures. 60°C or lower is recommended.
- Avoid operating the instrument with water droplets on it or with wet hands.
- Sudden temperature changes may cause condensation. In such cases, allow the instrument to acclimate to the ambient temperature for at least one hour before using it under non-condensing conditions.
- Pass only the conductor through which the current to be measured is flowing through the measurement feed-through hole. If a set of parallel conductors with current flowing in both directions is passed through, correct measurement is not possible. (See Figure 1.)
- When measuring a shielded cable, the leakage current flowing through the shield is also measured, so correct measurement may not be possible. (See Figure 1.)
- This instrument is a voltage output type. Connect to a measuring instrument with a voltage input terminal.
- This instrument contains a protective resistor for output, so connect it to a measuring instrument with an input resistance of 1 MΩ or more.
- Store this instrument with the jaws closed and locked. If the jaws are stored with the jaws open, dust and other debris can adhere to the core of the jaws, causing a malfunction.
- When measuring high-frequency large current, measurement errors may increase and waveforms may be distorted due to the effect of conductor position. Place the conductor in the center of the measurement feed-through hole as much as possible.
- The influence of current flowing in the conductors near the instrument (conductors not measured by the instrument) may increase the measurement error and cause waveform distortion. Move the conductors near this instrument as far away from the jaws as possible.

- When the instrument is used in a fixed position, if force (weight) is applied in the direction that opens the jaw, such as by the weight of the conductor under test, accurate measurement may not be possible.

Opening and closing the jaw

Sliding the lock lever in the direction of the arrow in the figure releases the lock and opens the jaw. To close the jaw, press it by hand in the direction of the arrow in the figure until the tip of the jaw is fully closed. When the jaw is fully closed, it locks automatically. For storage, close the jaw so that the core is not exposed.



Demagnetization and offset adjustment

Immediately after power is applied to this instrument or when a current exceeding the rated value is applied, an offset voltage may be output due to the effect of magnetization. Perform demagnetization and offset adjustment since the offset voltage will produce an error in the measurement.

- With the conductor under test unclamped, close the jaw and hold down the demagnetize button for at least 1 second.
- Confirm that the output voltage is stable by viewing the display of the connected measuring instrument.
- While viewing the display of the connected measuring instrument, turn the offset adjustment knob to adjust the offset.

Note

- Make sure to push the demagnetize button fully.
- Offset adjustment is not possible while current is being measured.
- Offset output varies depending on ambient temperature and ambient environment (geomagnetism, magnetic field generating equipment). Perform the offset adjustment while the instrument is actually installed at the location where the current is to be measured.
- Offset voltage may shift due to shocks, such as from dropping the instrument.
- When measuring current by connecting to a measuring instrument with a zero compensation function, offset adjustment of this instrument is not necessary. Set the offset adjustment knob of the instrument to the position shown below, and use the zero correction function of the measuring instrument.



- If the adjustment cannot be completed in one demagnetization, perform the demagnetization several times. If it still cannot be adjusted, there is a possibility of malfunction.

Affixing mark bands

When several units of this instrument are used, the instrument can be easily identified by attaching mark bands to the cables of the instrument.

In case of abnormality

If you notice smoke or unusual odors coming from the instrument, immediately turn off the device supplying the power. If an abnormal condition occurs, discontinue use and contact your nearest YOKOGAWA dealer.

LED status indication

Power LED (green): Indicates the presence of power supply.

Overcurrent LED (red): Indicates overcurrent status.

Name	LED Indication	Status	Notes
Power LED	On (green)	Power is being supply normally.	Normal operation ¹
	Off	Power is not being supplied or malfunction.	Measurement not possible ²
Overcurrent LED	On (red)	Overcurrent detected	Overcurrent detection condition ^{3, 4} - CT500SA Frequency: DC, 45 Hz to 2 kHz AC, Amplitude: 800 ADC (approx.) or more, 566 AAC (approx.) or more - CT200SA Frequency: DC, 45 Hz to 2 kHz AC, Amplitude: 580 ADC (approx.) or more, 410 AAC (approx.) or more
	Off	Overcurrent not detected	

- If the power LED (green) is on but measurements cannot be made, repair is required.
- If the power LED (green) does not turn on even when power is supplied, repair is required.
- If the overcurrent detection LED (red) is on, remove the cause of the overcurrent as soon as possible. After eliminating the cause of the overcurrent, if the red LED does not turn off even after demagnetization is performed, repair is required.
- Regardless of the indication of the overcurrent detection LED (red), use within the frequency derating (see the graph "Input current derating by frequency" in section 6.3, "Accuracy Specifications").

Cleaning

Clean this instrument with a damp cloth. Do not use detergents, chemicals, or chemical agents. If dust or other particles adhere to the core of the jaws, accurate measurement will not be possible. Wipe gently with a dry, soft cloth.

Securing the main unit

The main unit can be secured using the mounting screw hole (1 location). Use an M4 screw that protrudes through the fixture by 5.5 mm to 8.0 mm. The following table shows examples of screw length L and fixture thickness t.

Screw Length L	Fixture Thickness t	Screw Length L – Fixture Thickness t Calculated Value	Criteria*
6 mm	0.5 mm	5.5 mm	5.5 mm to 8.0 mm
8 mm	0.5 mm	7.5 mm	
	1.0 mm	7.0 mm	
	2.0 mm	6.0 mm	
10 mm	2.0 mm	8.0 mm	
	3.0 mm	7.0 mm	
	4.0 mm	6.0 mm	

* Criteria to avoid interference inside the main unit and to ensure fixing strength

6. Specifications

Error indication

% of full scale: Full scale is the rated current of this instrument.

% of reading: Reading is the reading on the measuring instrument that this instrument is connected to.

% of range: Range is the measurement range of the measuring instrument that this instrument is connected to.

6.1 General Specifications

Item	Specifications
Warm-up time	Approx. 30 minutes

Item	Specifications			
Operating environment ¹	Temperature	Main unit	–40°C to 85°C	
		Sub unit	5°C to 40°C	
		IV unit	5°C to 40°C	
	Humidity	20 to 80% RH (no condensation)		
	Operating altitude	2000 m or less		
	Installation location	Indoor use		
Storage environment	Temperature	–40°C to 85°C		
	Humidity	20 to 80% RH (no condensation)		
Supply voltage	Supply voltage	±12 V DC ± 0.5 V DC		
Supply current	Maximum supply current	CT500SA: ±0.8 A		
		CT200SA: ±0.7 A		
Maximum rated power	CT500SA: 7.5 VA (500 A, 60 Hz measurement using ± 12 V power supply)			
	CT200SA: 5 VA (200 A, 60 Hz measurement using ± 12 V power supply)			
Dimensions (excluding cables and protrusions)	Main unit	62 (H) × 110 (W) × 25 (D) mm		
	Sub unit	33 (H) × 177.5 (W) × 41 (D) mm		
	IV unit	24 (H) × 60 (W) × 40 (D) mm		
Measurable conductors	20 mm diameter or less			
Cable length	Main unit to sub unit	-L03	Approx. 3 m	
		-L05	Approx. 5 m	
		-L10	Approx. 10 m	
	Sub unit to IV unit		Approx. 1 m	
	IV unit to power connector		Approx. 1 m	
Weight	-L03		Approx. 0.7 kg	
	-L05		Approx. 0.8 kg	
	-L10		Approx. 1.0 kg	
Mounting screw hole	1 location (M4 screw)			
Connector type	Output		BNC connector	
	Power supply		Probe power supply connector	
Safety standards	Compliant standards: EN 61010-1, EN IEC 61010-2-032 Type D ² Measurement category O ³ , pollution degree 2 ⁴			
EMC standards ⁵	Emissions	Compliant standards: EN 61326-1 ClassA ⁶ Group1 ⁷		
	Immunity	Compliant standards: EN61326-1 Table 2 (for use in industrial locations) Influence in the immunity environment: ≤ ±6 % of full scale ⁸		
Environmental standards	EU RoHS Directive compliant ⁹			
Withstand voltage	4300 VAC, 50 Hz between measurement feed-through hole and output terminal. Conducted as factory withstanding voltage test			
Device to be connected	YOKOGAWA measuring instrument, accessories, or equivalent			

If you obtained this manual separately from the product, the specifications in this manual may differ from those of the product.

- Use this product only within the derating range shown in figure 2.
- This current sensor is designed to be mounted around or removed from insulated conductors or energy-limited circuit conductors.
- This instrument is a measurement category O product. Do not use this instrument to make measurements in Measurement Categories II, III, and IV. Measurement category O applies to measurement of other types of circuits that are not directly connected to a main power source. Measurement Category II applies to electrical equipment that is powered through a fixed installation, such as a wall outlet wired to a distribution board, and to measurement performed on such wiring. Measurement category III applies to measurement of facility circuits, such as distribution boards and circuit breakers. Measurement category IV applies to measurement of power source circuits, such as entrance cables to buildings and cable systems, for low-voltage installations.
- Pollution Degree applies to the degree of adhesion of a solid, liquid, or gas that deteriorates withstand voltage or surface resistivity. Pollution Degree 2 applies to normal indoor atmospheres (with only non-conductive pollution).
- Ensure that the cabling of the conductor under test and this instrument, including its cables, do not interfere with each other. Otherwise, the output value of this instrument may be affected. There is also a possibility of electromagnetic interference to other equipment via the cables of this instrument.
- This product is classified as Class A (for use in industrial environments). Operation of this product in a residential area may cause radio interference, in which case the user will be required to correct the interference.
- Group 1: Equipment that does not intentionally generate or use radio-frequency (RF) energy
- Accurate measurement may not be possible in locations where there are very strong magnetic or electric fields in addition to the magnetic field generated by the current to be measured.
- For conformity to environmental regulations and/or standards other than EU, contact your nearest YOKOGAWA office (PIM 113-01Z2).

6.2 Electrical Specifications

Item	Specification	
	CT500SA	CT200SA
Rated current	500 A AC/DC	200 A AC/DC
Frequency bandwidth	500 kHz –3 dB Typical	1 MHz –3 dB Typical
Delay	130 ns Typical	78 ns Typical
Frequency Derating	See Figure 2.	
Output voltage	4 mV/A	10 mV/A
Output resistance	50 Ω±10 Ω	
Non-linearity error	±20 ppm Typical ^{1, 2}	
Output Noise	1 mVpp typical (1 MHz or less)	
Temperature coefficient	Main unit: Add the following to the ranges outside the 0 to 40 °C accuracy guaranteed temperature range (–40 to 0 °C, 40 to 85 °C) Amplitude accuracy: ±3 ppm of reading/°C Offset voltage: ±5 ppm of full scale/°C	
Influence of the conductor location	≤ ±0.1 % of reading (100 A input, 50 Hz/60 Hz, using a wire material with an outside diameter of 10 mm or more)	
Influence of the external magnetic field	≤ 50 mA (input conversion value, in a magnetic field of 400 A/m, DC, or 60 Hz)	
Influence of magnetization	≤ 30 mA (input conversion value, after rated current input)	
Influence of common-mode voltage	DC to 1 kHz:150 dB or more	DC to 1 kHz:150 dB or more
	1 kHz to 10 kHz: 135 dB or more	1 kHz to 10 kHz: 135 dB or more
	10 kHz to 100 kHz: 120 dB or more	10 kHz to 100 kHz: 115 dB or more
	100 kHz to 300 kHz: 100 dB or more	100 kHz to 500 kHz: 95 dB or more
Guaranteed accuracy period	12 months	
Number of clamping operations	≤ 10000 operations	

Item	Specification	
	CT500SA	CT200SA
Demagnetization function	Available	
Offset adjustment	Approx. ±2 mV	
Overcurrent indicator	Overcurrent LED (red) lit	
Power-on indicator	Power LED (green) lit	

- 1 For CT500SA, measure input current (DC) at 100 A intervals for +500 A → 0 A → −500 A → 0 A → +500 A. For CT200SA, measure input current (DC) at 40 A intervals for +200 A → 0 A → −200 A → 0 A → +200 A. Defined as the difference between the regression line calculated from the measurement results and the point of measurement.
- 2 ppm defined at rated current.

6.3 Accuracy specifications

Conditions
Temperature: Main unit: 0 to 40°C, sub unit: 5 to 40°C, IV unit: 5 to 40°C /
Humidity: 20 to 80% RH / Warm-up time: At least 30 minutes / Input waveform: Sine wave or DC /
Voltage to ground: 0 V / External magnetic fields: None / Conductor position: Center /
Input resistance: Measuring instrument with 1 MΩ ± 10% or more / Demagnetization: After
execution / Offset voltage: After adjusting within ±0.2 mV / Number of clamping operations ≤10000
operations / Power supply: Probe power supply from the measuring instrument that this instrument
is connected to or the 701934 probe power supply /
Amplitude accuracy, phase accuracy: ≤ 150 % input of DC rating. 100 % input of the AC rating
or less for the CT500SA, or 110 % input of the AC rating or less for the CT200SA, and within the
derating range. (However, 0.1 Hz ≤ f ≤ 10 Hz is provided for reference only)

Item	CT500SA		CT200SA	
	CT500SA	CT200SA	CT500SA	CT200SA
DC	±(0.09 % of reading + 0.02 % of full scale) ¹ ±(0.1 % of reading + 0.02 % of full scale)			
0.1 Hz ≤ f ≤ 100 Hz	±(0.09 % of reading + 0.01 % of full scale) ¹ ±(0.1 % of reading + 0.01 % of full scale)			
100 Hz < f ≤ 500 Hz	±(0.2 % of reading + 0.02 % of full scale)			
500 Hz < f ≤ 1 kHz	±(0.5 % of reading + 0.02 % of full scale)			
1 kHz < f ≤ 10 kHz	±(1.0 % of reading + 0.02 % of full scale)			
10 kHz < f ≤ 50 kHz	±(2.0 % of reading + 0.02 % of full scale)		±(1.5 % of reading + 0.02 % of full scale)	
50 kHz < f ≤ 100 kHz	±(3.0 % of reading + 0.02 % of full scale)		±(2.0 % of reading + 0.02 % of full scale)	
100 kHz < f ≤ 200 kHz	±(5.0 % of reading + 0.02 % of full scale)		±(3.0 % of reading + 0.02 % of full scale)	
200 kHz < f ≤ 500 kHz	-		±(5.0 % of reading + 0.02 % of full scale)	

Item	Without phase correction		With phase correction ²	
	CT500SA	CT200SA	CT500SA	CT200SA
0.1 Hz ≤ f ≤ 100 Hz	±0.1°		±0.1°	
100 Hz < f ≤ 500 Hz	±0.1°		±0.1°	
500 Hz < f ≤ 1 kHz	±0.1°		±0.1°	
1 kHz < f ≤ 5 kHz	±0.4°		±0.15°	
5 kHz < f ≤ 10 kHz	±1.0°		±0.2°	±0.3°
10 kHz < f ≤ 20 kHz	±1.7°		±0.3°	±0.35°
20 kHz < f ≤ 50 kHz	±4.3°		±0.5°	±0.4°
50 kHz < f ≤ 70 kHz	±6.0°		±1.0°	±0.5°
70 kHz < f ≤ 100 kHz	±9.0°		±2.0°	±1.0°
100 kHz < f ≤ 200 kHz	±18.0°		±5.0°	±2.0°
200 kHz < f ≤ 500 kHz	-	±45.0°	-	±5.0°

- 1 Under the following temperature conditions
Main unit: 23 °C ± 5 °C, sub-unit: 23 °C ± 5 °C, IV unit: 23 °C ± 5 °C
- 2 When the phase error value at 10 kHz for CT500SA or 100 kHz for CT200SA shown in the test
certificate of this instrument is set using the “sensor correction setting” feature of the WT series

Add the following to the amplitude accuracy and phase accuracy for 10 m cable.

Amplitude accuracy ±(0.1 + 0.005 × f kHz) % of reading

Phase accuracy Without sensor correction: ±(0.035 × f kHz)°
With sensor correction: ±(0.01 × f kHz)°

Except, 1 kHz < f, where the unit of f in the above equations is kHz.

Add the following to the amplitude accuracy when the input current (Ip) is with the following range.

CT500SA	CT200SA
DC 500 A < Ip ≤ 550 A: ±0.02 % of reading	DC 200 A < Ip ≤ 220 A: ±0.02 % of reading
DC 550 A < Ip ≤ 750 A: ±0.05 % of reading	DC 220 A < Ip ≤ 300 A: ±0.05 % of reading
	AC 200 A < Ip ≤ 220 A: ±0.03 % of reading

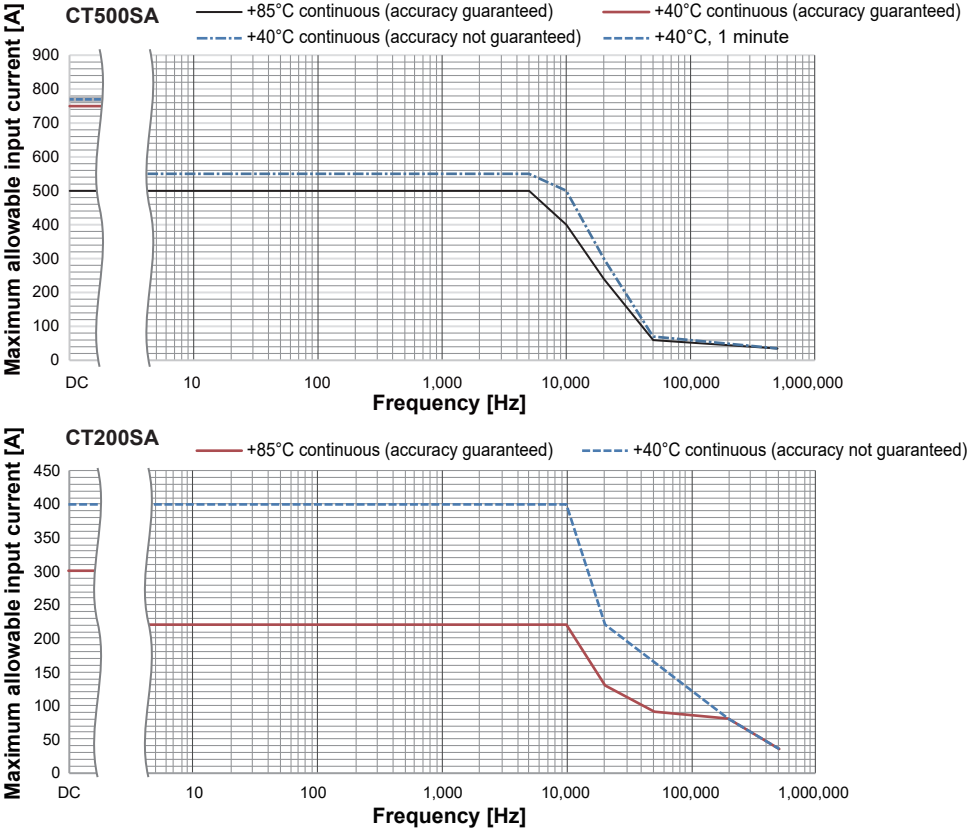
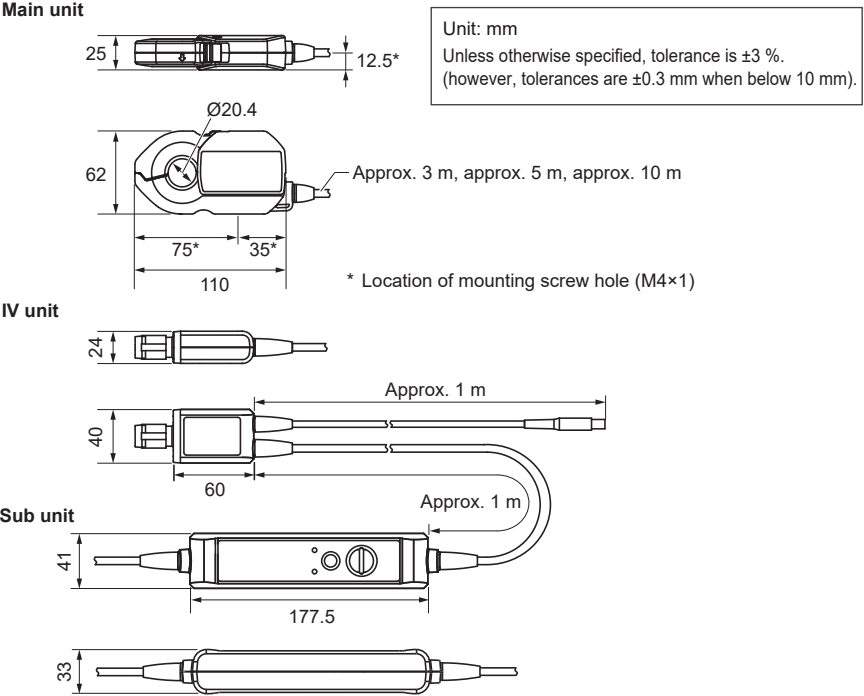


Figure 2. Input current derating by frequency*
* The derating characteristics are specified with no external magnetic field present and with the conductor centered. The temperatures shown in the figure are the maximum operating ambient temperatures. (Make sure that the surface temperature of the conductor under test is within the instrument's operating ambient temperature range.)

6.4 Accuracy in combination with the measuring instrument

WT5000(760901,760902,760903)
Accuracy of the measuring instrument + accuracy of this instrument Add the following when the measuring instrument's external current sensor input or current probe input is in use. 50 mV range ±0.8% of range 100 mV range ±0.4% of range 200 mV range ±0.1% of range
WT1800R
Accuracy of the measuring instrument + accuracy of this instrument Add the following when the measuring instrument's external current sensor inputs /EX1 to /EX6 are in use. 50 mV range ±0.8% of range 100 mV range ±0.4% of range 200 mV range ±0.1% of range
WT500
Accuracy of the measuring instrument + accuracy of this instrument Add the following when the measuring instrument's external current sensor inputs /EX1, /EX2, and /EX3 are in use. 50 mV range ± (0.1% of reading + 0.8% of range) 100 mV range ± (0.1% of reading + 0.4% of range) 200 mV range ± (0.1% of reading + 0.1% of range) Other ranges ±0.1% of reading
WT300E
Accuracy of the measuring instrument + accuracy of this instrument Add the following when the measuring instrument's external current sensor input /EX1 is in use. 2.5 V, 5 V, 10 V ranges ±0.1% of reading Add the following when the measuring instrument's external current sensor input /EX2 is in use. 50 mV range ± (0.5% of reading + 0.8% of range) 100 mV range ± (0.5% of reading + 0.4% of range) 200 mV range ± (0.5% of reading + 0.1% of range) Other ranges ±0.5% of reading
PX8000
Accuracy of the measuring instrument + accuracy of this instrument Add the following when the 760812 current module's external current sensor input is in use. 50 mV range ±0.8% of range 100 mV range ±0.4% of range 200 mV range ±0.1% of range

6.5 External Dimensions



7. Malfunction and After-Sales Service

Malfunction
In case of malfunction due to manufacturing defects or accidents during transportation, contact your nearest YOKOGAWA dealer.

After-sales service
If this product stops operating correctly, and you need to have it repaired, contact your nearest YOKOGAWA dealer.

8. Regulations and Sales in Various Countries and Regions

Waste Electrical and Electronic Equipment (WEEE)

(EU WEEE Directive valid only in the EEA* and UK WEEE Regulation in the UK)
This product complies with the WEEE marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste. When disposing of products in the EEA or UK, contact your local Yokogawa office in the EEA or UK respectively.
* EEA: European Economic Area

Authorized Representative in the EEA
Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B. V., see the separate list of worldwide contacts, PIM 113-0122.

Disposal
When disposing of YOKOGAWA products, follow the laws and ordinances of the country or region where the products will be disposed of.