FINEMET® Cores for High Precision Current Transformers for Electronic Electricity Meters

Electronic electricity meters have been replacing traditional electromechanical electricity meters around the world in households, industry and commerce because of its high accuracy in electricity metering, smaller size and easy data collection system.
Electronic electricity meters require current sensors with high accuracy, high reliability, low loss, small size, simple construction and low cost. From the standpoint of these requirements, current transformers have many advantages compared with other current sensors such as shunt resistors, Rogowski coils and hall effect devices. Hitachi Metals has newly developed 2 series of cores for current transformers for this application.

CT001 Series Cores for Current Transformers for Direct Connection with DC-Tolerance According to IEC 62053-21 and IEC 62053-23

1. Features

Current transformers made of CT001 series cores have the following features.

1. ***Small size due to high saturation induction and low permeability***
2. ***Small amplitude error***
3. ***Extremely linear, easily compensable phase curve because of high linear B-H loop***
4. ***Low temperature dependence***

2. Specification and Core Dimensions of Standard Cores

Part Name	Product Code	AC Current Capability (A_{rms})	DC Bias Curren Capability (A)	Dimensions OD x ID x HT (mm)	Effective Cross Section A_e (mm^2)	Mean Path Length l_e (mm)
CT001 F2016F	F1AH1018	40	40	21.0 x 14.2 x 9.5	10.6	54.8
CT001 F2218Y	F1AH1019	60	60	23.6 x 15.9 x 7.6	10.2	61.7
CT001 F2421Y	F1AH1020	100	100	26.3 x 19.0 x 7.6	7.9	70.7
CT001 F3027Y	F1AH1021	120	120	32.7 x 24.6 x 7.9	7.9	89.5

FT-3S Series Cores for Current Transformers for Direct Connection without DC-Tolerance

1. Features

Current transformers made of FT-3S series cores have the following features.

1. ***Very small amplitude and phase error due to extremely high permeability***
2. ***Low temperature dependence***

2. Specification of Standard Cores

Part Name	Product Code	AC Current Capability (A_{rms})	DC Bias Curren Capability (A)	Dimensions OD x ID x HT (mm)	Effective Cross Section A_e (mm^2)	Mean Path Length l_e (mm)
FT-3S F1813A	F1AH1022	60	–	19.0 x 11.0 x 7.6	10.0	47.1
FT-3S F1813Y	F1AH1023	100	–	19.0 x 11.0 x 7.6	12.4	47.1

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NOTICES

1. When designing a component using this product and applying the designed components in any system, use this product only in the guaranteed range specified by Hitachi Metals, Ltd. Do not use the product beyond guaranteed values specified by Hitachi Metals, Ltd. Hitachi Metals, Ltd. will not be responsible for any damage or accident when this product is used beyond guaranteed values specified by Hitachi Metals, Ltd. Even when the product is used within the specification given by Hitachi Metals, take appropriate measures for system, such as failsafe, to avoid any accident resulting in any bodily injury and/or property damage. It is the responsibility of a user to take such measures.
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