Powertek

Power Instrumentation, Calibrators
Gain Phase Analysis, PAVs
Shunts, Clip-on flex current transformers

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Instructions and installation for the CTA1ph and CTA3ph 5A current probe Ver 1.5

Introduction

The CTA-5A module converts and conditions a CTA flexible current sensor voltage output to a 0-5Arms output. Useful for interfacing Powertek Rogowski coil current sense technology with traditional or 0-5A legacy metering. The CTA3ph will produce a linear 0-5A current output proportional to Flexible sensor output voltage. The actual CTA3ph current range is indicated on the transducer label. The CTA-5A uses a 1/5A current transformer to provide its 5Arms output and for double insulation. It is supplied with twin Din Rail power supplies creating ±15.0Vdc to power the conditioning electronics. Typically the CTA3ph device is used when a voltage output current probe/current sensor requires connection to existing 1A or 5A metering circuits.

Installation and safety

Installation should be carried out by authorised personnel, familiar with potential danger of electric shock hazards. The CTA-5A transducer should only be used in dry indoor environments. To prevent damage, check for correct connection of the CTA-5A psu, inputs and outputs. Allow a minimum warm up period of 5 minutes. Ensure that the CTA casing ventilation slots are not obstructed otherwise the CTA3ph may go in overheat shutdown. If the internal fan cannot be heard running, or if the airflow cannot be felt, do not use the CTA3ph module.

Specification

Maximum input voltage is 18Vpk / Input impedance 100k ohm
Recommended measurement range is 5% to 100% range
Output rating is 5VA, eg the load circuit impedance (burden) should not exceed 0.2 ohms at 5Arms
Minimum dc power supply rail is 13.5Vdc, maximum dc power supply rail is 15.5Vdc
Accuracy class is ±0.5%, ±1% or ±3%, depending on model (temperature range 23°C ± 8°C)
Sensor insulation: 1000V CE Cat III and UL approved
Only install CTA-3ph sensors on dry, insulated cables and busbars

Connections and installation

Screw terminals are provided for the power input and output connections. The terminal block connections are labelled. Typically reference to a user manual is not required. The CTA-5A is DIN rail or wall mountable.

CTA3ph Connections

Lo 3	Hi 3	Lo 2	Hi 2	Lo 1	Hi 1	n/c	n/c	n/c	n/c	n/c	n/c	Lo 3	Hi 3	Lo 2	Hi 2	Lo 1	Hi 1	-15V	Gn	n/c	n/c	n/c	+15V
1A Outputs (connect to o/p CT for 5A)						Not Used						Current sense coil inputs						DC Power					

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Transducer Model: CTA3ph/3000/5/3/160

Input: 0-3000A 45-400Hz **Output: 0-1Arms (5A with ext. transformer) 5VA**

Power Supply: ±13.0Vdc **Serial Number: 13358**

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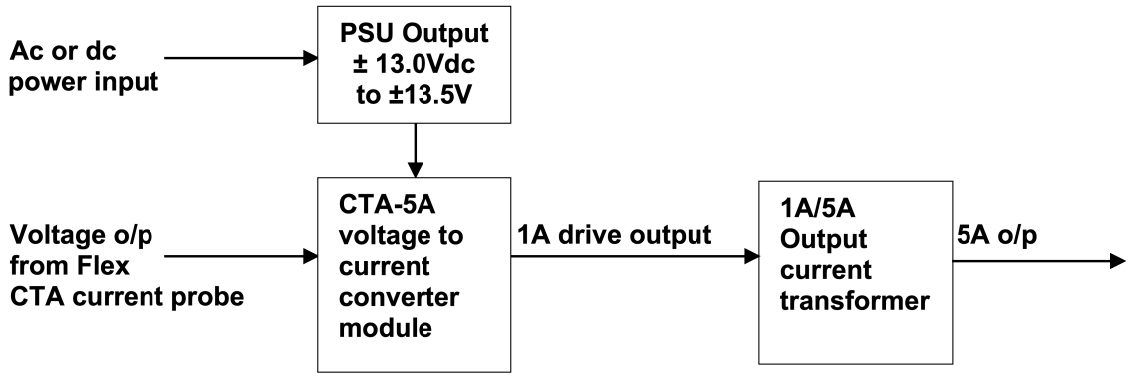
CTA3ph Block diagram of operation – for clarity shown as 1phase



CTA3ph Protection

Max input voltage is 18Vac/dc. Only use with Powertek CTA Sense Rogowski coils. Accidental connection of input/output terminals to either a dc or ac voltage source, >18Vpk, may result in damage. Note:
On the signal conditioner, there is no electrical isolation between any of the terminals, all terminals are referenced to an internal ground. The internal drive amplifier has thermal shutdown protection.

CTA3ph Connections

Lo 3	Hi 3	Lo 2	Hi 2	Lo 1	Hi 1	n/c	n/c	n/c	n/c	n/c	n/c	Lo 3	Hi 3	Lo 2	Hi 2	Lo 1	Hi 1	-15V	Gn	n/c	n/c	n/c	+15V
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Gain and Offset adjust and calibration

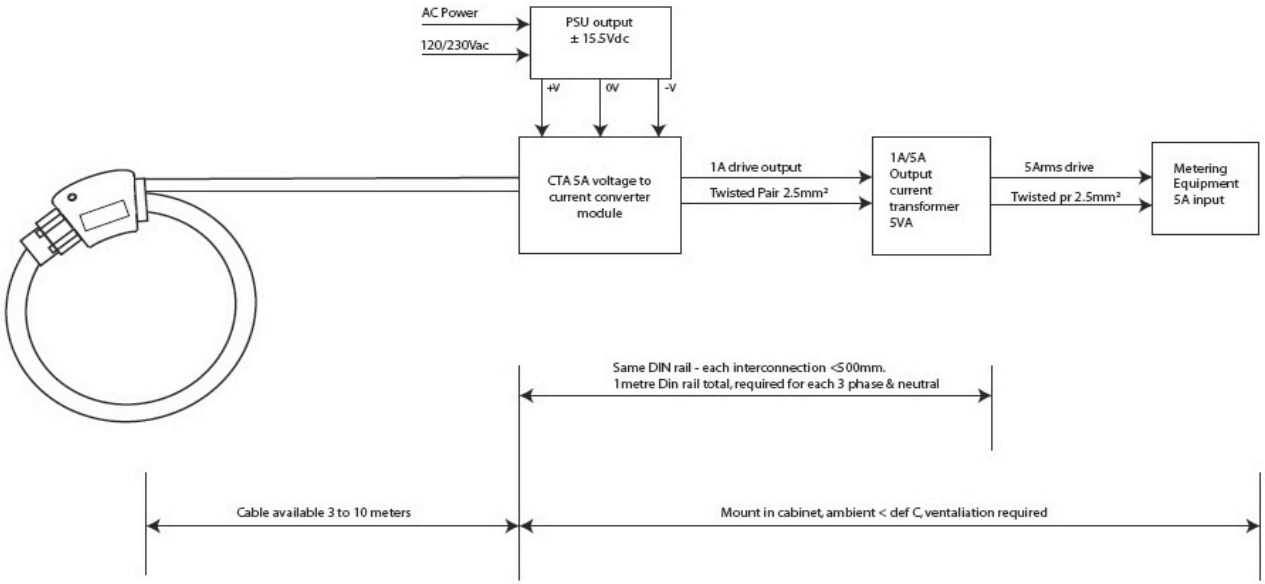
The CTA-5A signal conditioners and associated output transformers are supplied calibrated and certified. Internal adjustment of dc offset and gain is possible. These adjustments should only be carried out by trained personnel using the correct calibration procedure.

Although yearly calibration adjustment is not required, it is recommended that yearly comparisons are made to known calibration standards. Refer to maintenance manual

15 April 2015 V1.0

Installation schematic of CTA Flexible Current Sensor Porbes, producing a 1A or 5Arms current output, ensuring compatibility with 1A/5A metering circuits

Diagram below shows how the CTA flexible current probe is used with a CTA module, to produce a standard 1A or 5Arms output (not to scale)



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Title:

Drawing No.

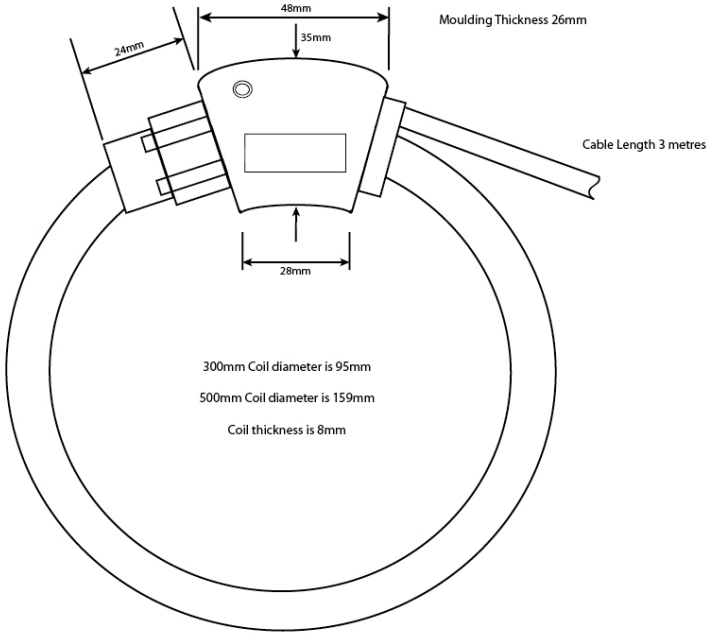
Revision:

Date:

Notes
Rogowski sense coil A marked for each unit
All 3 metre cable length

25 March 2015 V1.0

CTA Coil Drawing



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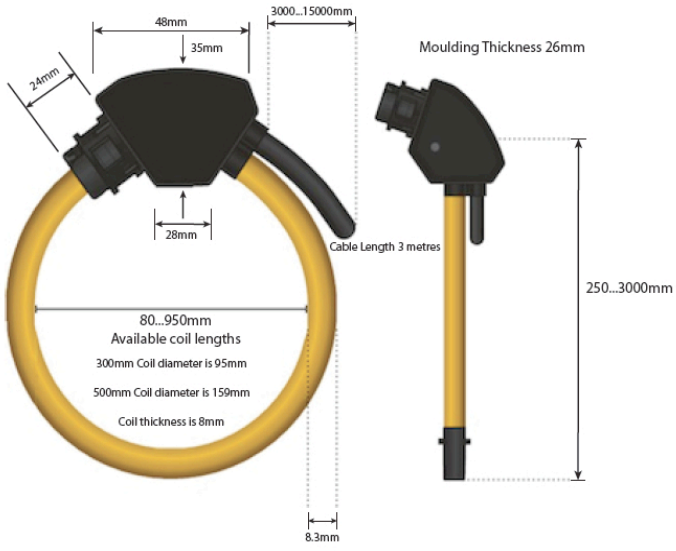
07 April 2015 V1.0

CTA Coil Drawing 2



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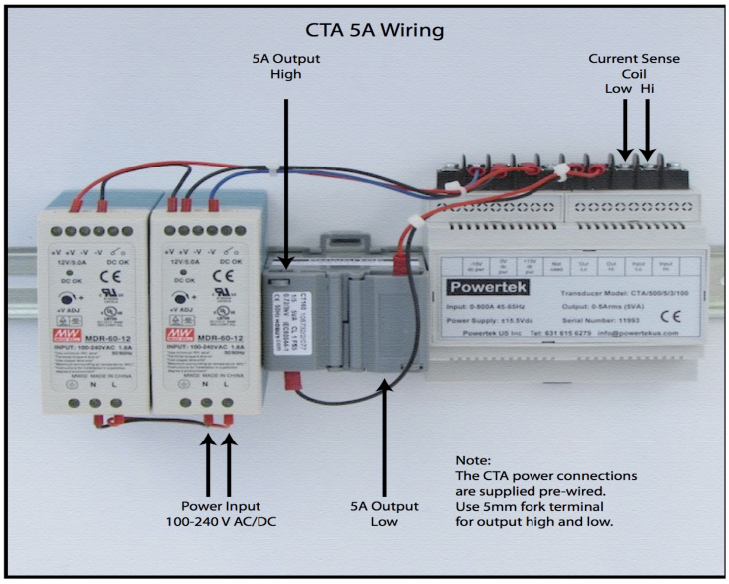

Single phase integrator

CTA3ph three phase Integrator signal conditioner

Warning: For cooling purposes the clip-in terminal access panels should be configured like the above image, where air enters from the top left and lower left clip in panels, then exits from fan. All clip in panels should be fitted in this configuration to ensure correct airflow and optimum cooling.