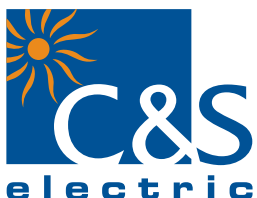


We touch your **electricity** everyday!

## **CSENEX-I 200C1**

**Intelligent Measuring and Protection Device**

**CSENEX**  
Series



**Protection & Control Division**

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## 1) Introduction

CSENEX Series offers a compact Multi-functional Over-current protection solution for Feeder, Generator, Motor & Transformer segment.

CSENEX-I Family of protective relays are numeric relays that provides multi protection and monitoring with reliable and fast protection solution in a single unit.

In this family of CSENEX series, the CSENEX-I 200C1 is a protection solution which has fast, sensitive and secure protection for (Delta-Star) Transformer application. It provides two stage over current protection and earth fault protection on one winding side and provide additional standby earth fault protection on the another winding side.

## 2) Features

- ❖ Two phase, earth with rated 5 Amp and one additional earth with rated 1 Amp.
- ❖ Two phase time over-current protection.
- ❖ Draw out with self CT shorting.
- ❖ Two phase instantaneous protection.
- ❖ Earth time over-current and earth instantaneous over current.
- ❖ Additional standby two stage earth fault protection.
- ❖ Circuit breaker failure detection.
- ❖ Fault recorder.
- ❖ Digital Output programmable matrix.

## 3) Application

The CSENEX-I relays have been designed for controlling, protecting and monitoring industrial, utility distribution networks and substations. They can also be used as part of a protection scheme for feeders, transformers and generators.

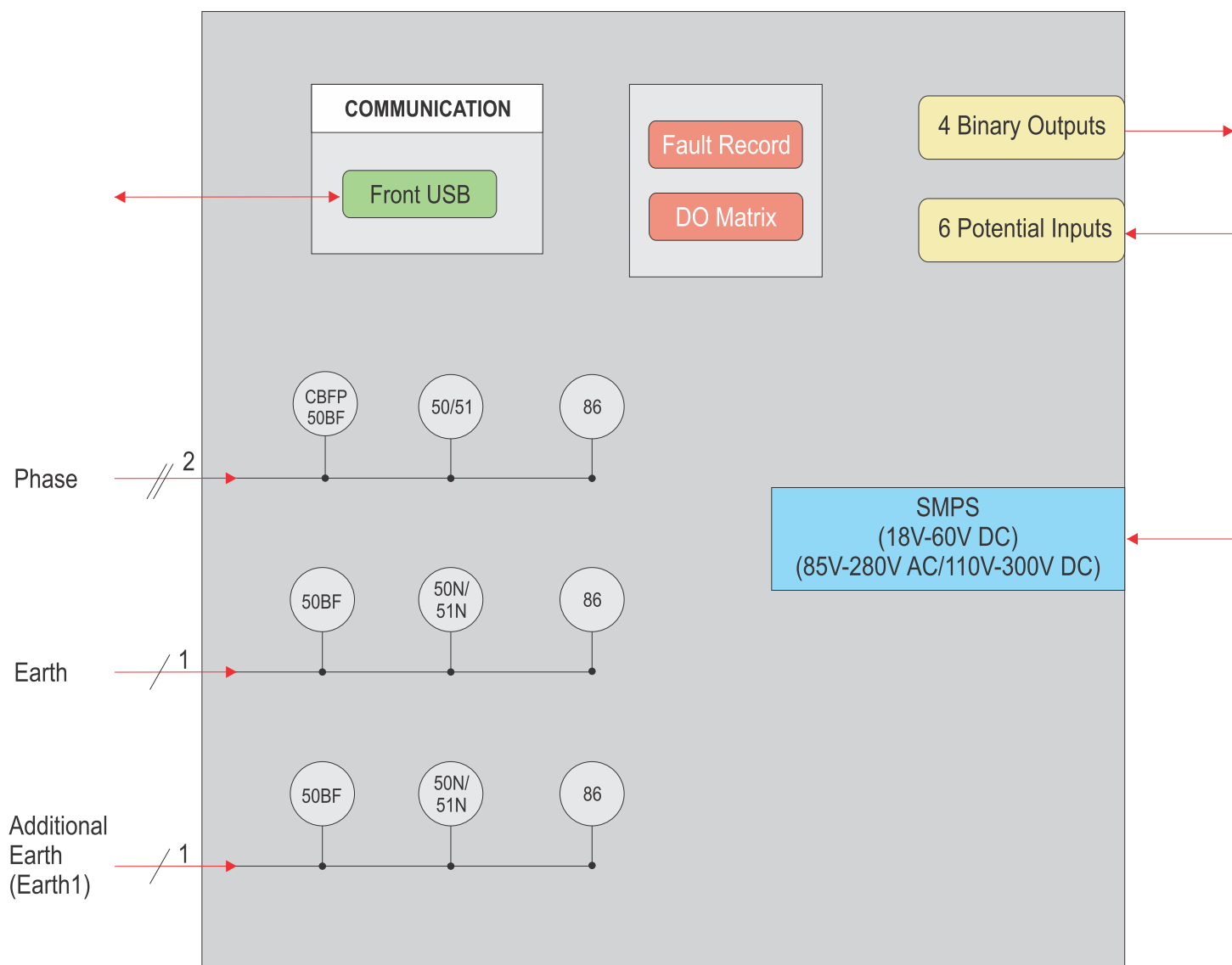
## 4) Hardware

- ❖ Digital Signal Processor based numeric design.
- ❖ Measures true RMS with DFT filter .
- ❖ 4 Current analog inputs for phase & earth fault current.
- ❖ 4 Digital Outputs.
- ❖ 6 Digital Inputs.
- ❖ 16 x 4 Alpha numeric LCD.
- ❖ USB communication.
- ❖ 8 LEDs at pickup and trip on fault + 3 LEDs with special function of 3 control keys.

## 5) Protection Features

- ❖ Two phase time over current protection (51).
- ❖ Two phase instantaneous protection (50).
- ❖ Earth time over-current (51N).
- ❖ Earth instantaneous over-current (50N).
- ❖ Additional standby Earth time over-current (51N).
- ❖ Additional standby Earth instantaneous time over-current (50N).
- ❖ Circuit breaker failure protection (50BF)

## 6) Functional Diagram



(Figure 1)

## Protection Function

### Phase Over-current Protection (50/51)

The independent two stages are available for phase fault protection. For I> the user may independently select definite time delay or inverse time delay with different type of curves. The second Hi-Set stage can be configured with definite time only.

### Earth Fault Protection (50N/51N)

The independent two stages are available for earth fault protection. For first stage (Ie>) the user can select definite time delay or inverse time delay with different type of curves. The second Hi-Set stage (Ie>>) can be configured with definite time only.

One additional earth fault protection with two stages is available. For first stage (Ie1>) the user can select definite time delay or inverse time delay with different type of curves. The second Hi-Set stage (Ie1>>) can be configured with definite time only.

### Relay Latching (86)

Relay can be configured to unlatch/latch depending on configuration.  
(Latching is possible in presence of Auxiliary supply voltage only).

### Harmonic Restrain (51H)

Harmonic setting is by default 20% of injected current. Phase/Earth Harmonics can be Blocked/Unblocked & time setting can also be edited through MMI. If the Pickup current has %harmonics above 20%, the protection will be blocked for the harmonics blocking time. Tripping occurs according to the higher time setting i.e. if the harmonics time setting is greater it will trip according to the harmonics time setting otherwise according to the fault time setting.

For injected current below 0.5A, Harmonics setting is 30%. If fault timer is below 80 mSec, Relay does not sense harmonics and trips according to fault time, even if harmonics time is greater than fault time.

### Circuit Breaker Failure Protection (50 BF)

The CB Failure Protection is based on supervision of phase and earth currents after tripping events. The test criterion is whether all phase currents have dropped to less than 5% of I<sub>n</sub> within tCBFP. If one or more of the phase currents have not dropped to specified current within this time, CB failure is detected and the assigned output relay is activated.

### DI Protection

Apart from above protection functions relay gives protection on following digital inputs. These digital inputs are transformer related faults as mentioned below: -

1. Bucholz DI
2. OTI-DI
3. WTI-DI
4. PRD-DI
5. MOG-DI
6. Transformer Trouble alarm - DI

When any digital input (1 to 6) gets activated for a defined sensing time (configurable from 20mSec to 10 sec), the relay will give the TRIP command & TRIP LED will turn On. Fault will be recorded with the same name as that of digital input. DI Fault will reset when digital input gets inactive. DO is auto/manual reset depending upon selection in Function Reset Menu.

## 7) Fault Recording

CSENEX-I 200C1 records last 10 faults in its non volatile memory with it's time stamp. Each record has the following information:

Fault Format

[F] IL1 : 00.00A  
 [F] IL2 : 00.00A  
 [F] IE1 : 00.00A  
 [F] IE : 00.00A  
 HOUR MIN : HH:MM  
 SEC mSEC : Sec:mSec  
 DATE : DD/MM/YY  
 F-TYPE : FAULT TYPE

Where

[F][ILx] Magnitude of phase currents.

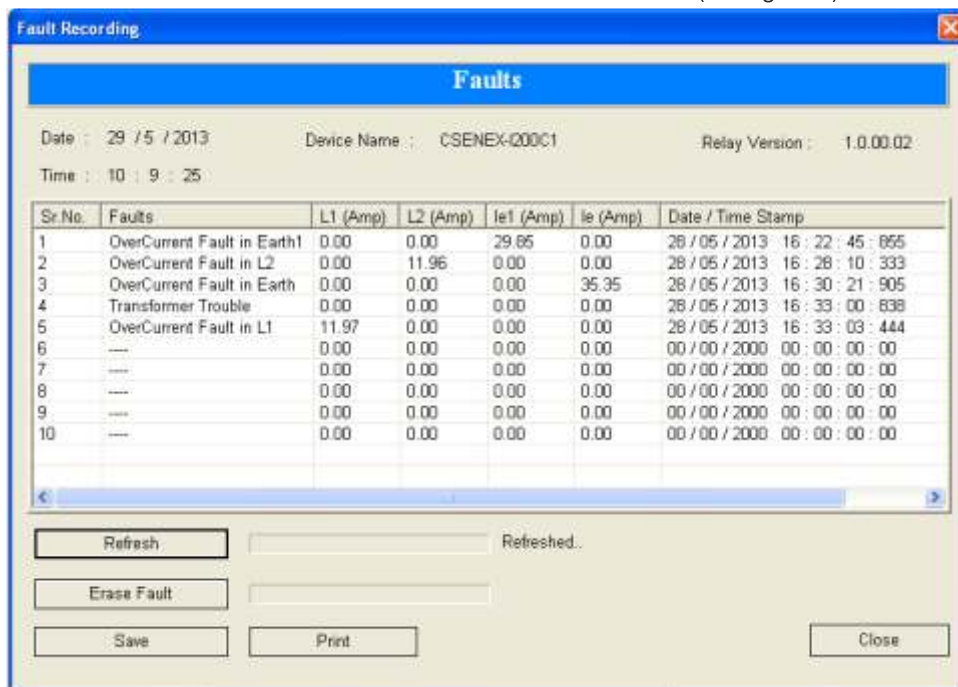
[F]IE1 Magnitude earth1 fault current.

[F]IE Magnitude earth fault current.

F-Type Origin of fault (over current, negative phase sequence, etc.) (See Figure 2)

whenever the available memory space is exhausted the new fault automatically over writes the oldest fault. When the relay trips the description of fault in the feeder will appears on the LCD screen automatically and by pressing "i" key one can easily get all the detailed information of that fault.

The user can view the fault record either via the front USB interface software. (See figure-2)



The screenshot shows a software window titled "Fault Recording" with a sub-header "Faults". It displays the following information:

- Date: 29 / 5 / 2013
- Device Name: CSENEX-I200C1
- Relay Version: 1.0.00.02
- Time: 10 : 9 : 25

Below this information is a table with 7 columns: Sr.No., Faults, L1 (Amp), L2 (Amp), Ie1 (Amp), Ie (Amp), and Date / Time Stamp. The table contains 10 rows of fault data.

| Sr.No. | Faults                      | L1 (Amp) | L2 (Amp) | Ie1 (Amp) | Ie (Amp) | Date / Time Stamp                 |
|--------|-----------------------------|----------|----------|-----------|----------|-----------------------------------|
| 1      | OverCurrent Fault in Earth1 | 0.00     | 0.00     | 29.65     | 0.00     | 28 / 05 / 2013 16 : 22 : 45 : 855 |
| 2      | OverCurrent Fault in L2     | 0.00     | 11.96    | 0.00      | 0.00     | 28 / 05 / 2013 16 : 28 : 10 : 333 |
| 3      | OverCurrent Fault in Earth  | 0.00     | 0.00     | 0.00      | 35.35    | 28 / 05 / 2013 16 : 30 : 21 : 905 |
| 4      | Transformer Trouble         | 0.00     | 0.00     | 0.00      | 0.00     | 28 / 05 / 2013 16 : 33 : 00 : 838 |
| 5      | OverCurrent Fault in L1     | 11.97    | 0.00     | 0.00      | 0.00     | 28 / 05 / 2013 16 : 33 : 03 : 444 |
| 6      | ----                        | 0.00     | 0.00     | 0.00      | 0.00     | 00 / 00 / 2000 00 : 00 : 00 : 00  |
| 7      | ----                        | 0.00     | 0.00     | 0.00      | 0.00     | 00 / 00 / 2000 00 : 00 : 00 : 00  |
| 8      | ----                        | 0.00     | 0.00     | 0.00      | 0.00     | 00 / 00 / 2000 00 : 00 : 00 : 00  |
| 9      | ----                        | 0.00     | 0.00     | 0.00      | 0.00     | 00 / 00 / 2000 00 : 00 : 00 : 00  |
| 10     | ----                        | 0.00     | 0.00     | 0.00      | 0.00     | 00 / 00 / 2000 00 : 00 : 00 : 00  |

At the bottom of the window, there are buttons for "Refresh", "Erase Fault", "Save", "Print", and "Close". A "Refreshed.." status indicator is also present.

(Figure 2) (Fault Data Recording on PC software)

### Output contacts

No. of digital outputs : 4 (DO1, DO2, DO3, DO4)  
 [2 Change over (DO1, DO2), 2 Normal open (DO3, DO4)]  
 Type of outputs : Relay  
 Programmable (DO Assignment) : Yes  
 Relay reset type : Programmable (Auto/Manual)

### Input contacts

No. of digital inputs : 6 (DI1, DI2, DI3, DI4, DI5, DI6)  
 Programmable (DI Assignment) : Yes

## 8) Human Machine Interface

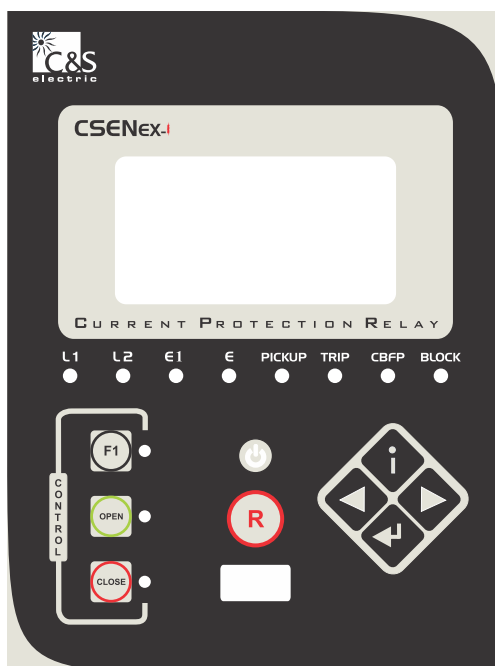
It comprises of bright LCD display

- ❖ Four push switches for setting values of normal tripping characteristics and other operations for local access.
- ❖ One 'RESET' push switch.
- ❖ One push switch for the functions assigned in the 'HMI' to 'F1' key, 2 push switch to open or close circuit breaker
- ❖ Eight LEDs for pickup or tripping on fault and event in any phase.

| Keys                                                                                | Manual Key                                                                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|    | is used as intelligent key to see the details of last fault and Relay status. |
|    | is used as a "ENTER" key.                                                     |
|    | is used to manual reset (after pressing for 2 sec)                            |
|    | is used to scroll in backward direction.                                      |
|    | is used to scroll in forward direction.                                       |
|    | To perform the assigned task either DO trip or Relay reset.                   |
|    | To open the circuit breaker.                                                  |
|  | To close the circuit breaker.                                                 |

Note1: When CBCLOSE Key is pressed DO assigned is operated and CB CLOSE LED turns on .However if any of following condition is present, Relay will not allow CB CLOSE operation.

1. If any Fault Pickup /Trip condition is present.
2. If any Digital Input is present.
3. If fault has not been acknowledged from front Manual Reset Key.



(Figure 3) (HMI)

## 9) Communication

- ❖ 1 Front USB port for direct connection to a PC

The entire setting and Fault is available on 'A to A' type USB (female) interface with saving & printing option. This unit also has Front-end Live Link simulation support for testing of relay even without any phase injection source.

## 10) Setting Ranges

### CSENEX-I 200C1 Setting

#### Over current and Earth Protection

| S. No | Parameter                                   | Display | Setting Range       |                    | Step Size                                     | Default Setting |
|-------|---------------------------------------------|---------|---------------------|--------------------|-----------------------------------------------|-----------------|
|       |                                             |         | Min.                | Max.               |                                               |                 |
| 1     | Phase characteristics                       | P-Char  |                     |                    | DEFT/EINV/VINV /LINV/NINV1.3/ NINV3.0/NINV0.6 | DEFT            |
| 2     | Earth Characteristics                       | E-Char  |                     |                    | DEFT/EINV/VINV /LINV/NINV1.3/ NINV3.0/NINV0.6 | DEFT            |
| 3     | Earth1 Characteristics                      | E1-Char |                     |                    | DEFT/EINV/VINV /LINV/NINV1.3/ NINV3.0/NINV0.6 | DEFT            |
| 4     | Phase over-current low set pickup setting   | I>      | 0.20xI <sub>p</sub> | 4.0xI <sub>p</sub> | 0.01xI <sub>p</sub>                           | EXIT            |
|       | Phase over-current definite timing          | t>      | 0.05 Sec            | 150 Sec            | 0.01Sec                                       | 0.10 Sec        |
|       | Phase over-current inverse timing           | ti>     | 0.01                | 1.50               | 0.005                                         | 0.05            |
| 5     | Phase over-current hi-set pickup setting    | I>>     | 0.5xI <sub>p</sub>  | 30xI <sub>p</sub>  | 0.1xI <sub>p</sub>                            | EXIT            |
|       | Phase over-current hi-set definite timing   | t>>     | 0.02 Sec            | 20 Sec             | 0.01Sec                                       | 0.10 Sec        |
| 6     | Earth over-current low set pickup setting   | Ie>     | 0.05xI <sub>n</sub> | 2.5xI <sub>n</sub> | 0.01xI <sub>e</sub>                           | EXIT            |
|       | Earth over-current low set definite timing  | te>     | 0.03 Sec            | 150 Sec            | 0.01Sec                                       | 0.10 Sec        |
|       | Earth over-current low set inverse timing   | tie>    | 0.01                | 1.50               | 0.005                                         | 0.05            |
| 7     | Earth over-current hi-set pickup setting    | Ie>>    | 0.5xI <sub>n</sub>  | 8xI <sub>n</sub>   | 0.05xI <sub>e</sub>                           | EXIT            |
|       | Earth over-current hi-set definite timing   | te>>    | 0.02 Sec            | 20 Sec             | 0.01 Sec                                      | 0.10 Sec        |
| 8     | Earth1 over-current low set pickup setting  | Ie1>    | 0.05xI <sub>n</sub> | 2.5xI <sub>n</sub> | 0.01xI <sub>n</sub>                           | EXIT            |
|       | Earth1 over-current low set definite timing | te1>    | 0.03 Sec            | 150 Sec            | 0.01Sec                                       | 0.10 Sec        |
|       | Earth1 over-current low set inverse timing  | tie1>   | 0.01                | 1.50               | 0.005                                         | 0.05            |
| 9     | Earth1 over-current hi-set pickup setting   | Ie1>>   | 0.5xI <sub>n</sub>  | 8xI <sub>n</sub>   | 0.05xI <sub>n</sub>                           | EXIT            |
|       | Earth1 over-current hi-set definite timing  | te1>>   | 0.02 Sec            | 20 Sec             | 0.01 Sec                                      | 0.10 Sec        |

$$\begin{aligned}
 \text{Very Inverse} \quad t &= \frac{13.5}{(I/I_s) - 1} t_i [s] \\
 \text{Extremely Inverse} \quad t &= \frac{80}{(I/I_s)^2 - 1} t_i [s] \\
 \text{Long time Inverse} \quad t &= \frac{120}{(I/I_s) - 1} t_i [s] \\
 \text{Normal Inverse } 3.0/1.3/0.6 t &= \frac{0.14/0.061/0.028}{(I/I_s)^{0.02} - 1} t_i [s]
 \end{aligned}$$

Where  $t$  = Tripping time       $t_i$  = Time multiplier  
 $I$  = Fault current       $I_s$  = Setting value of current

Trip timing Accuracy : DEFT/ NINV 0.6 / NINV 3.0 / 1.3 :  $\pm 5\%$  OR  $\pm 30\text{mSec}$  (whichever is higher)  
VINV / LINV :  $\pm 7.5\%$  OR  $\pm 30\text{mSec}$  (whichever is higher)  
EINV :  $\pm 7.5\%$  OR  $\pm 40\text{mSec}$  (whichever is higher)

## Circuit Breaker Failure Protection

| S.No. | Parameter   | Display | Setting Range |       | Step Size | Default Setting |
|-------|-------------|---------|---------------|-------|-----------|-----------------|
|       |             |         | Min.          | Max.  |           |                 |
| 1     | Enable CBFP | Enable  | NO            | YES   | -----     | NO              |
| 2     | CBFP        | t_CBFP  | 0.05 Sec      | 2 Sec | 0.01      | 0.05 Sec        |

## Harmonic Setting

| S.No. | Parameter            | Display  | Setting Range |        | Step Size | Default Setting |
|-------|----------------------|----------|---------------|--------|-----------|-----------------|
|       |                      |          | Min.          | Max.   |           |                 |
| 1     | Enable Phase block   | PH Block | NO            | YES    | -----     | NO              |
| 2     | Phase Blocking time  | tPHASE   | 0.0 Sec       | 20 Sec | 0.1       | 0.0 Sec         |
| 3     | Enable Earth block   | E Block  | NO            | YES    | -----     | NO              |
| 4     | Earth Blocking time  | tEARTH   | 0.0 Sec       | 20 Sec | 0.1       | 0.0 Sec         |
| 5     | Enable Earth1 block  | E1 Block | NO            | YES    | -----     | NO              |
| 6     | Earth1 Blocking time | tEARTH1  | 0.0 Sec       | 20 Sec | 0.1       | 0.0 Sec         |

## DO Assignment

| S.No | Parameter                          | Display  | Step Size       |
|------|------------------------------------|----------|-----------------|
| 1    | Phase over-current low set         | I>       | DO1/DO2/DO3/DO4 |
| 2    | Phase over-current hi-set          | I>>      | DO1/DO2/DO3/DO4 |
| 3    | Earth over-current low set         | Ie>      | DO1/DO2/DO3/DO4 |
| 4    | Earth over-current hi-set          | Ie>>     | DO1/DO2/DO3/DO4 |
| 5    | Earth1 over-current low set        | Ie1>     | DO1/DO2/DO3/DO4 |
| 6    | Earth1 over-current hi-set         | Ie1>>    | DO1/DO2/DO3/DO4 |
| 7    | BUCHOLZ                            | BUCHOLZ  | DO1/DO2/DO3/DO4 |
| 8    | OTI                                | OTI      | DO1/DO2/DO3/DO4 |
| 9    | WTI                                | WTI      | DO1/DO2/DO3/DO4 |
| 10   | PRD                                | PRD      | DO1/DO2/DO3/DO4 |
| 11   | MOG                                | MOG      | DO1/DO2/DO3/DO4 |
| 12   | Transformer trouble                | TTROUBLE | DO1/DO2/DO3/DO4 |
| 13   | Self supervision                   | SELF SUP | DO1/DO2/DO3/DO4 |
| 14   | Circuit breaker failure protection | CBFP     | DO1/DO2/DO3/DO4 |
| 15   | Circuit breaker open               | CB_Open  | DO1/DO2/DO3/DO4 |
| 16   | Circuit breaker close              | CB_Close | DO1/DO2/DO3/DO4 |

## DI Assignment

| S.No. | Parameter       | Display |
|-------|-----------------|---------|
| 1     | Digital Input-1 | DI1     |
| 2     | Digital Input-2 | DI2     |
| 3     | Digital Input-3 | DI3     |
| 4     | Digital Input-4 | DI4     |
| 5     | Digital Input-5 | DI5     |
| 6     | Digital Input-6 | DI6     |

Following functions can be assigned to the 6 DI's

| S.No. | Parameters          |
|-------|---------------------|
| 1     | BUCHOLZ             |
| 2     | OTI                 |
| 3     | WTI                 |
| 4     | PRD                 |
| 5     | MOG                 |
| 6     | Transformer Trouble |

## Communication Setting

|                              |   |                                                         |
|------------------------------|---|---------------------------------------------------------|
| USB Communication            |   |                                                         |
| Protocol                     | : | CSE proprietary protocol: available with front software |
| Baud rate                    | : | 19200 bps                                               |
| Cable required for interface | : | USB cable type (A to A)                                 |

## Function Reset

| S.No. | Parameter                   | Display  | Setting Range |        | Default Setting |
|-------|-----------------------------|----------|---------------|--------|-----------------|
|       |                             |          | Min.          | Max.   |                 |
| 1     | Phase over-current low set  | I>       | Auto          | Manual | Auto            |
| 2     | Phase over-current hi set   | I>>      | Auto          | Manual | Auto            |
| 3     | Earth over-current low set  | Ie>      | Auto          | Manual | Auto            |
| 4     | Earth over-current hi set   | Ie>>     | Auto          | Manual | Auto            |
| 5     | Earth1 over-current low set | Ie1>     | Auto          | Manual | Auto            |
| 6     | Earth1 over-current hi set  | Ie1>>    | Auto          | Manual | Auto            |
| 7     | BUCHOLZ                     | BUCHOLZ  | Auto          | Manual | Auto            |
| 8     | OTI                         | OTI      | Auto          | Manual | Auto            |
| 9     | WTI                         | WTI      | Auto          | Manual | Auto            |
| 10    | PRD                         | PRD      | Auto          | Manual | Auto            |
| 11    | MOG                         | MOG      | Auto          | Manual | Auto            |
| 12    | Transformer Trouble         | TTROUBLE | Auto          | Manual | Auto            |

## Key Assignment

| S.No. | Parameter    | Display | Setting Range |      | Step Size                      | Default Setting |
|-------|--------------|---------|---------------|------|--------------------------------|-----------------|
|       |              |         | Min.          | Max. |                                |                 |
| 1     | Function key | F1      | ----          | ---- | DO1/DO2/DO3<br>DO4/Relay Reset | DO1             |

## Auxiliary Supply

|                                |                   |                                               |
|--------------------------------|-------------------|-----------------------------------------------|
| Auxiliary Voltage Range        | For 'L' Model     | 18V-60V DC                                    |
|                                | For 'H' Model     | 85V-280V AC / 110V-300V DC                    |
| Supply Range for Digital Input | For 'L & H' Model | Above 24V AC/DC                               |
| Power Consumption              |                   | Quiescent approx. 3W<br>Operating approx. <7W |

## General Setting: (These are the settings common for all protections)

| S.No. | Parameter         | Display   | Setting Range |        | Step Size | Default Setting |
|-------|-------------------|-----------|---------------|--------|-----------|-----------------|
|       |                   |           | Min.          | Max.   |           |                 |
| 1     | Phase CT ratio    | PCTRATIO  | 1             | 7000   | 1         | 1               |
| 2     | Earth CT ratio    | ECTRATIO  | 1             | 7000   | 1         | 1               |
| 3     | Earth1 CT ratio   | E1CTRATIO | 1             | 7000   | 1         | 1               |
| 4     | Nominal frequency | RATDFREQ  | 50 Hz         | 60 Hz  | -----     | 50 Hz           |
| 5     | DI sensing time   | DI sense  | 0.02 sec      | 10 sec | 0.001 sec | 1 sec           |

## Measurement Accuracy

| S.No | Quantity | Range                     | Frequency Range | Accuracy |
|------|----------|---------------------------|-----------------|----------|
| 1    | Current  | 1.0 - 30 x I <sub>p</sub> | 50 & 60 Hz      | ±2%      |

## 11) Technical Data

### Measuring Inputs

|                                                 |                                   |
|-------------------------------------------------|-----------------------------------|
| Rated Data                                      |                                   |
| Rated current                                   | Phase : 5A                        |
|                                                 | Earth : 5A                        |
|                                                 | Additional Earth : 1A             |
| Rated Frequency (F <sub>N</sub> )               | 50 Hz/60Hz                        |
| Drop out to Pickup Ratio                        | >96%                              |
| Power consumption in current circuit            | At I <sub>p</sub> =1A 0.2 VA      |
|                                                 | At I <sub>p</sub> =5A 0.4 VA      |
| Thermal withstand capability in current circuit | Dynamic current withstand         |
|                                                 | (half wave): 250 x I <sub>p</sub> |
|                                                 | for 1 Sec : 100 x I <sub>p</sub>  |
|                                                 | for 10 Sec : 30 x I <sub>p</sub>  |
|                                                 | continuously : 4 x I <sub>p</sub> |

### Relay Contact Rating

|                          |                                                       |
|--------------------------|-------------------------------------------------------|
| Contact rating           |                                                       |
| Contact relay            | Dry contact Ag Ni                                     |
| Make current             | Max. 30A & carry for 3S                               |
| Carry capacity           | 8A continuous : Relay 1                               |
|                          | 4A continuous : Relay 2, 3, 4                         |
| Rated voltage            | 250V AC/ 30V DC                                       |
| Breaking characteristics |                                                       |
| Breaking capacity AC     | 1500VA resistive                                      |
|                          | 1500VA inductive (PF=0.5)                             |
| Breaking capacity DC     | 220V AC, 5A(cosφ ≤ 0.6)                               |
|                          | 135V DC, 0.3A (L/R=30ms)                              |
|                          | 250V DC, 50W resistive or<br>25W inductive (L/R=40ms) |
| Operation time           | <10ms                                                 |
| Durability               |                                                       |
| Loaded contact           | 30000 operation minimum                               |
| Unloaded contact         | 10000 operation minimum                               |

Over-voltage category : II  
Insulation voltage : 300V  
Pollution Degree : 2  
IP54 from Front

## 12) Type Test

|                                                                                                                                      |   |                                            |
|--------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------|
| DESIGN STANDARD                                                                                                                      |   |                                            |
| Specified ambient service temp. range                                                                                                | : | VDE 04355 part 303, IEC 255-4, BS 142      |
| For storage                                                                                                                          | : | 40°C to + 85°C                             |
| For operation                                                                                                                        | : | -20°C to 70°C                              |
| Environmental protection class 'F' as per DIN 40040 and per DIN IEC 68, part 2.3                                                     | : | relative humidity 95% at 40°C for 56 days. |
| Isolation test voltage, inputs and outputs between themselves and to the relay frame as per VDE 0435, part 303                       | : | 2.5 kV (eff.0 / 50 Hz, 1 min.              |
| Impulse test voltage, inputs and outputs between themselves and to the relay frame as per VDE IEC 0435, part 303                     | : | 5 kV, 1.2/50 s, 0.5                        |
| High frequency interference test voltage, inputs and outputs between themselves and to the relay frame as per DIN IEC 255, part 22-1 | : | 2.5 kV/1MHz                                |
| Electrical fast transient (burst) test as per DIN VDE 0843 part 4                                                                    | : | 4kV / 2.5 kHz, 15ms                        |
| Radio interference suppression test as per DIN VDE 57 871                                                                            | : | Limit value class 'B'                      |
| Electrostatic discharge (ESD) test as per DIN VDE 0843 part 2                                                                        | : | 8 kV                                       |
| Radiated electromagnetic field test as per VDE 0843 part2                                                                            | : | 10 V/m                                     |

## 13) Technical Test

|                        |   |                                      |
|------------------------|---|--------------------------------------|
| Shock                  | : | As per DIN IEC 41 B (CO) 38: class 1 |
| Vibration              | : | As per DIN IEC 41 B (CO) 35: class 1 |
| Protection-Front Panel | : | IP 54                                |
| Protection-Rear Panel  | : | IP 00                                |
| Weight                 | : | Approx. 1.0 Kg                       |

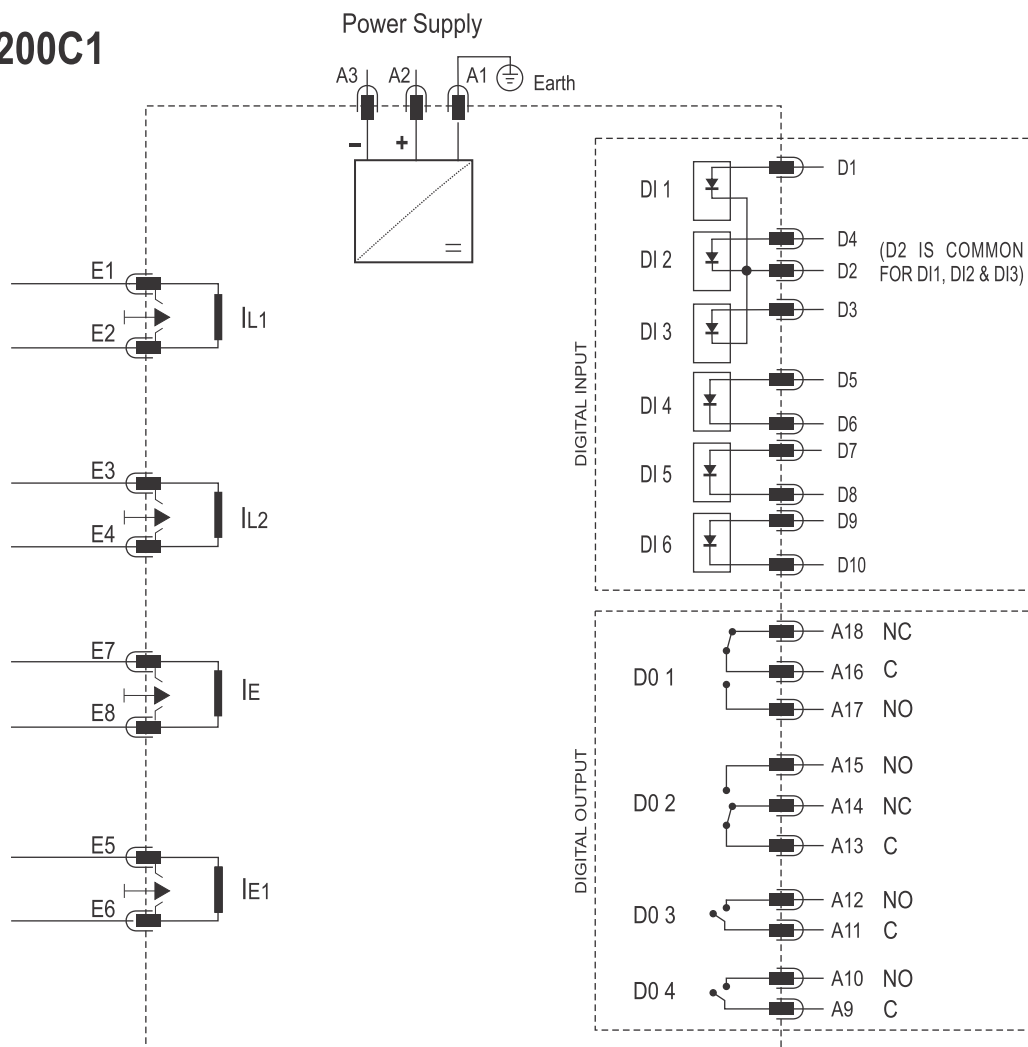
## 14) Model Description Table

| Function               | NEX-I 200C1                         |
|------------------------|-------------------------------------|
| CT Inputs              | 4                                   |
| Over Current (50/51)   | ✓                                   |
| Earth Fault (50N/51N)  | ✓                                   |
| Earth1 Fault (50N/51N) | ✓                                   |
| CBFP (50BF)            | ✓                                   |
| Inrush Blocking (51H)  | ✓                                   |
| Digital Output         | 4                                   |
| Digital Input          | 6                                   |
| Fault Record           | 10                                  |
| Selection of 1/5A      | 5A for Phase/Earth<br>1A for Earth1 |
| Enclosure Type         | Draw out with self CT shorting      |
| Enclosure Size (WxHxD) | (112x145x145) mm                    |
| Front Communication    | ✓                                   |

## 15) Connection Diagram

Terminal Connection Details of 200C1 Model

### CSEnEx-I 200C1



Phase Rated Current ( $I_p$ )=5A

Earth Rated Current ( $I_e$ )=5A

Earth1 Rated Current ( $I_n$ )=1A

(Figure 4)

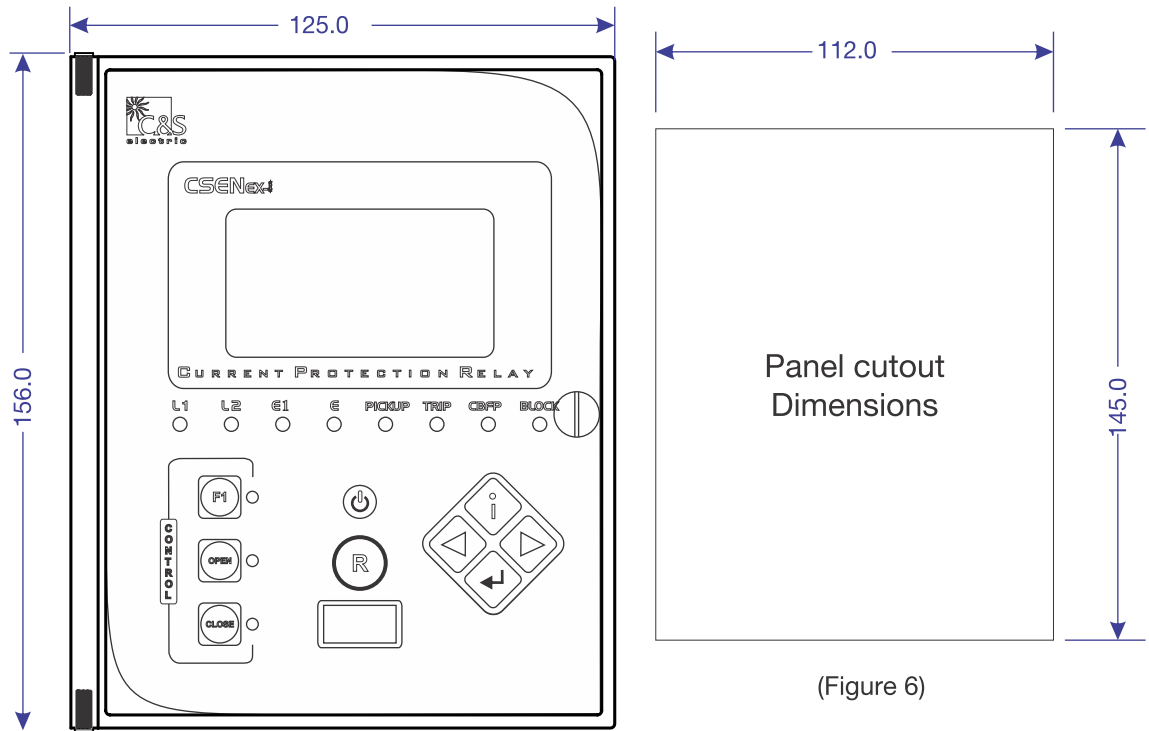
## 16) Terminal Description

| Terminal Name | Terminal Description                                       |
|---------------|------------------------------------------------------------|
| A1            | : Auxiliary Supply Earth                                   |
| A2-A3         | : Auxiliary Supply                                         |
| A9-A10        | : Potential free Digital Output 4                          |
| A11-A12       | : Potential free Digital Output 3                          |
| A13-A14-A15   | : Potential free Digital Output 2                          |
| A16 -A17- A18 | : Potential free Digital Output 1                          |
| E1-E4         | : CT Terminal for Phase current input L1(E1-E2), L2(E3-E4) |
| E7-E8         | : CT Terminal for Earth current input $I_e$ (E7-E8)        |
| E5-E6         | : CT Terminal for Neutral current input $I_{e1}$ (E5-E6)   |
| D1-D2         | : Potential Digital Input 1                                |
| D4-D2         | : Potential Digital Input 2                                |
| D3-D2         | : Potential Digital Input 3                                |
| D5-D6         | : Potential Digital Input 4                                |
| D7-D8         | : Potential Digital Input 5                                |
| D9-D10        | : Potential Digital Input 6                                |

## 17) Dimensional Details

Panel cutout dimensions: WxH = 112.0x145.0mm

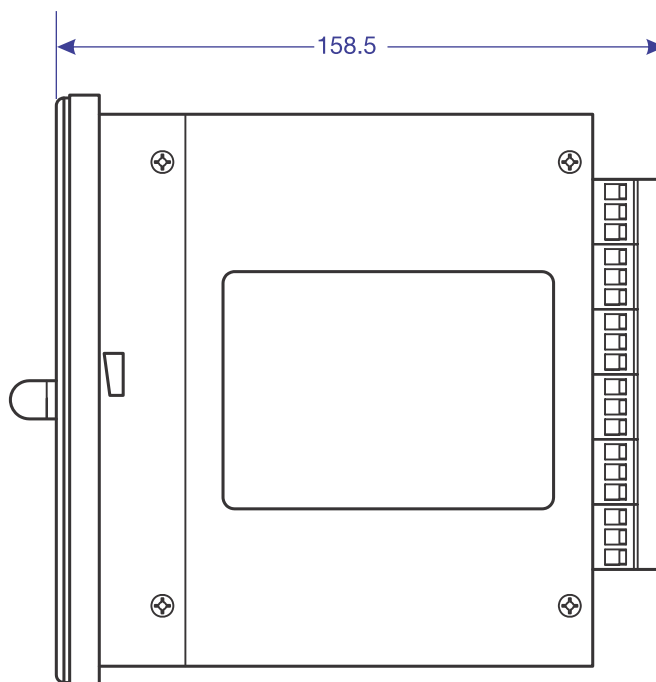
Front View



(Figure 5)

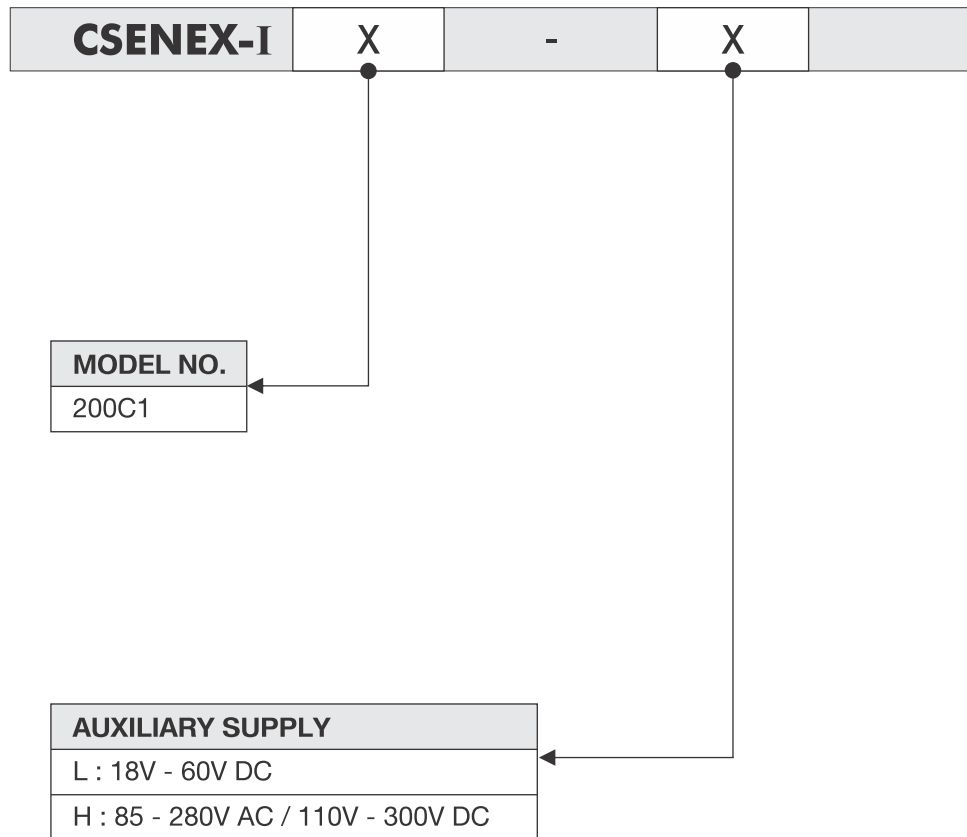
(Figure 6)

Side View



(Figure 7)

## 18) Ordering Information



## Revision History

[illegible]

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Issue Date: 26.04.13  
Rev. No: 02  
Rev. Date: 13.06.13

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