CSC-280 Series
Multifunction Protection IED
Product Guide

Version V3.01
Issued Date 2025.10
Copyright owner: Beijing SIFANG Automation Co., Ltd

Note: the company keeps the right



Overview

CSC-280 series are compact, reliable multifunction protection IED (Intelligent Electronic Device), which are able to be applied for protection, control and measurement for following applications:

- Applicable in subtransmission network and distribution network, with solidly earthed (grounded), low-resistance earthed, isolated or compensated neutral point
- Protection of feeders, capacitors, distribution transformers, bus coupler, motor, etc.
- Used as backup protection IED for lines, transformers, reactors and motor
- Providing control and monitoring functions of the circuit breakers, isolator
- Supporting all functionalities required for automation system

The wide application flexibility and integration of the protection, monitoring and control functions in one device makes the IED an excellent solution for both new installations and retrofitting of the existing stations.

Extensive multifunction IED including protection, control and monitoring functions

Three pole tripping required in sub-transmission and distribution network

A complete protection functions library

Bus VT secondary circuit connection/disconnection

Independent CB open/close circuit

- Opening and closing lockout circuit
- Opening and closing circuit supervision
- CB status indication

CB operating status supervision

Self-supervision

Complete and massive reports

recording, trip reports, alarm reports, startup reports and operation reports. Any kinds of reports can be stored no less than 40 items, and be memorized in case of power disconnection

Up to two electric Ethernet ports can be selected to communicate with substation automation system

Up to two electric RS-485 port is available to communicate with substation automation system by protocol

SupJ ˆ Y J ˆ Æ

Protection functions

Function	ANSI Code	281	CSC-282	

Rear communication port
0-2 isolated electrical RS485 communication ports
1 Ethernet electrical/optical communication ports
1 Time synchronization port
Communication protocols
Ethernet communication: IEC 61850, DNP 3.0; Serial communication: IEC 60870-5-103, MODBUS;

Human-machine Interface (HMI)

The human-machine interface is simple and easy to understand – the whole front plate is divided into zones, each of them with a well-defined functionality:

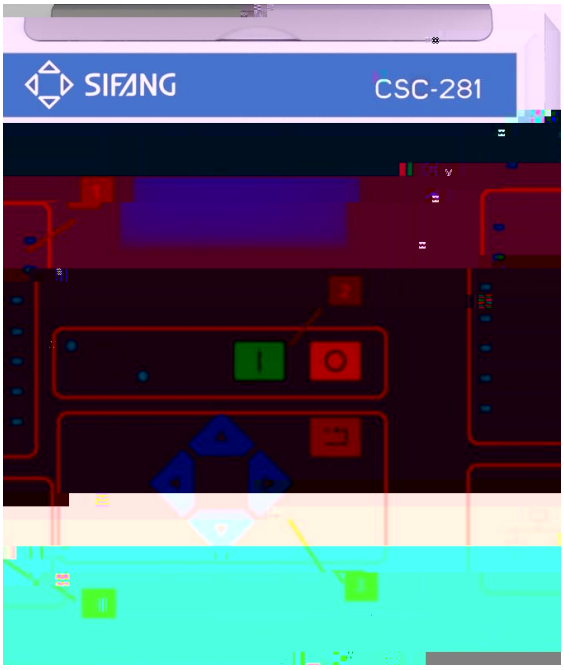


Figure 1 The front plate of IED

1 14 configurable LEDs

2 Function keys

3 Navigation keys

4 Ethernet port

Rear view

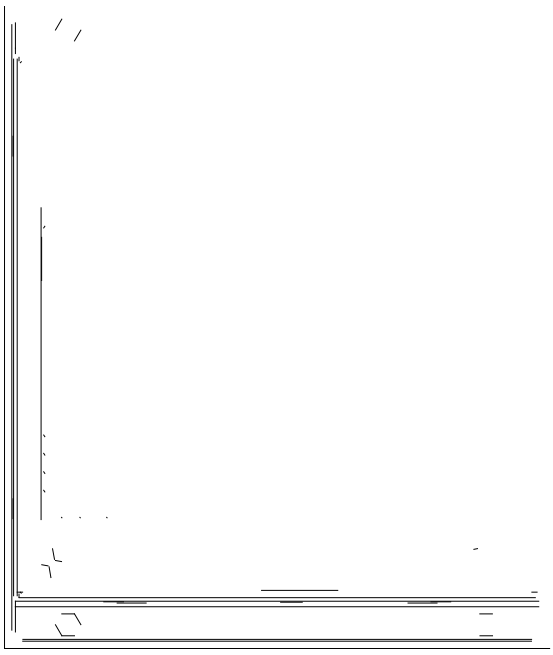


Figure 2 The rear view of IED

Transformer Input Module (TIM)

The analogue input module is used to galvanically separate and transform the secondary currents and voltages generated by the instrument transformers.

Figure 3 Terminal diagram of transformer input module

Communication module (COM)

The module provides synchronization and communication ports as following

Binary input & output module (BIO)

This module provides tripping outputs with tripping circuit supervision and signaling outputs for protection functions and binary inputs as following.

1 heavy duty output relays, with tripping circuit supervision

4 NO general output relays for tripping, control or signaling

1 NO/NC general output relay

8 binary inputs

1 analog input (optional)

2 analog outputs (optional)

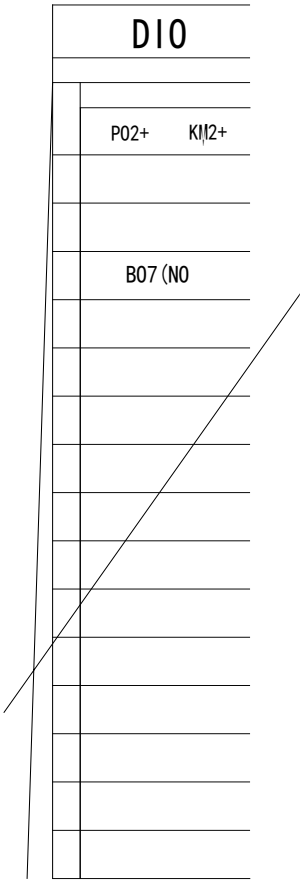


Figure 5 Terminal diagram of binary output & input module

Note: The BI14 will be occupied when TCS function is used.

Power Supply Module (PSM)

The power supply module does not provides auxiliary power only, but also outputs, binary inputs and RS485 series communication port, listed as following.

1 heavy duty output relays, with tripping circuit supervision

4 NO general output relays

1 NC internal failure alarm relay

6 binary inputs

1 RS485 serial communication port

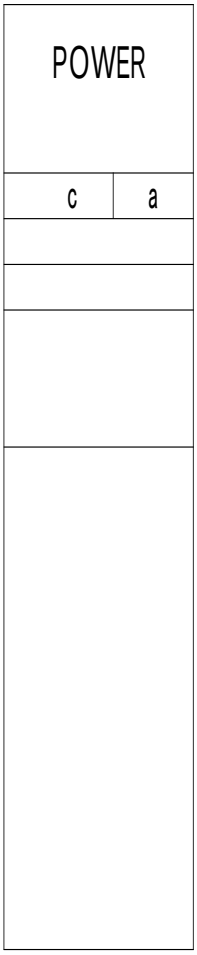


Figure 6 Terminal diagram of power supply module

Note: The BI6 will be occupied when TCS function is used.

Rated current Ir	1A and 5A
Operating range of protection CT	(0 ~ 100) I_r
Measuring range of protection CT	(0.05 ~ 40) I_r
Reading Accuracy for protection CT	±1%I at I> I_r ±0.5%I_r at I≤I_r
Thermal overload capacity of protection CT IEC60255-27	4 I_r Continuously; 30 I_r for 10s 100 I_r for 1s

Breaking capacity IEC60255-1	General relay: 0.2A, at $V_{r.aux}$=220V, L/R≤40ms; 0.4A, at $V_{r.aux}$=110V, L/R≤40ms; 1000VA, at $V_{r.AC}$; Power output relay: 0.25A, at $V_{r.aux}$=220V, L/R≤40ms; 0.45A, at $V_{r.aux}$=110V, L/R≤40ms; 1200VA, at $V_{r.AC}$;
Pick up time IEC60255-1	General relay: ≤5ms Power output relay: ≤5ms
Drop off time IEC60255-1	≤10ms

Optic received sensitivity	-34 dBm
Emitter electric level	>-11 dBm;
Maximum transmission distance of optical fiber	2kM
Transmission rate for IEC61850	100Mbit/s
Transmission rate for DNP 3.0	100Mbit/s

Number	2
Port type	Extract twisted pair
Maximum transmission distance	1.0km
Voltage withstand test	500V earthing AC voltage
Transmission rate for IEC60870-5-103	Default setting 9600 bps; Minimum: 1200bps; maximum: 19200bps

Rated voltage $V_{r.aux}$ IEC60255-1	100V to 250V DC/AC 24/48V DC
Input voltage range IEC60255-1	±%20 $V_{r.aux}$
Static power consumption IEC60255-1	≤ 18W
Maximum load power consumption IEC60255-1	≤ 20W

Synchronization mode	SNTP IRIG-B time sync Minute or second Pulse
IRIG-B signal format	IRIG-B000
IRIG-B Port type	Twisted-pair connection or optical fibers
IRIG-B signal voltage level	Differential signal input

Max. ports number	3
Electrical Ethernet port type	RJ45
Maximum transmission distance of Ethernet cable	100M
Optical Ethernet port type	LC
Fiber optic cable type	Multi-mode
Optic wavelength	1310 nm

Ports number	2
Fiber optic cable type	Single-mode
Optic wavelength	1310 nm, when the transmission distance <60 km 1550 nm, when the transmission distance >60 km
Optic received sensitivity	-34 dBm

Emitter electric level	>-11 dBm, at length <40 kM >-4 dBm, at length 40~60 kM
Fiber optic connector type	LC
Data transmission rate	64 kbit/s, G703 2,048 kbit/s, G703-E1
Max. transmission distance	60 kM

IEC60255-26:2013, IEC61000-4-5	2.0kV, Line-to-line; Tested on: Auxiliary power supply port Enclosure port; Input and output ports; Functional earth port; 4.0kV, Line-to-earth; Tested on: Communication ports
Test for Immunity to conducted disturbances, induced by radio-frequency fields IEC60255-26:2013 IEC61000-4-6	10 V/m(r.m.s.), 80%,AM (1 kHz) Frequency sweep: 150kHz–80MHz Spot frequencies: 27MHz and 68MHz; Tested on: Auxiliary power supply port Input and output ports; Functional earth port; Communication ports
Power frequency	

AC voltage interruptions IEC60255-26 2013 IEC 61000-4-11 IEC 61000-4-29	At 60Hz: 300 cycle at 0% residual voltage; At 50Hz: 250 cycle at 0% residual voltage;
A.C. component in d.c. (ripple) IEC60255-26:2013 IEC 61000-4-17	15%, at 100Hz, twice rated frequency; 15%, at 120Hz, twice rated frequency;
Gradual shutdown/ start-up (for d.c. power supply) IEC60255-26:2013	60 s shut down ramp 5 min power off 60 s start-up ramp
DC voltage reverse polarity	1 min

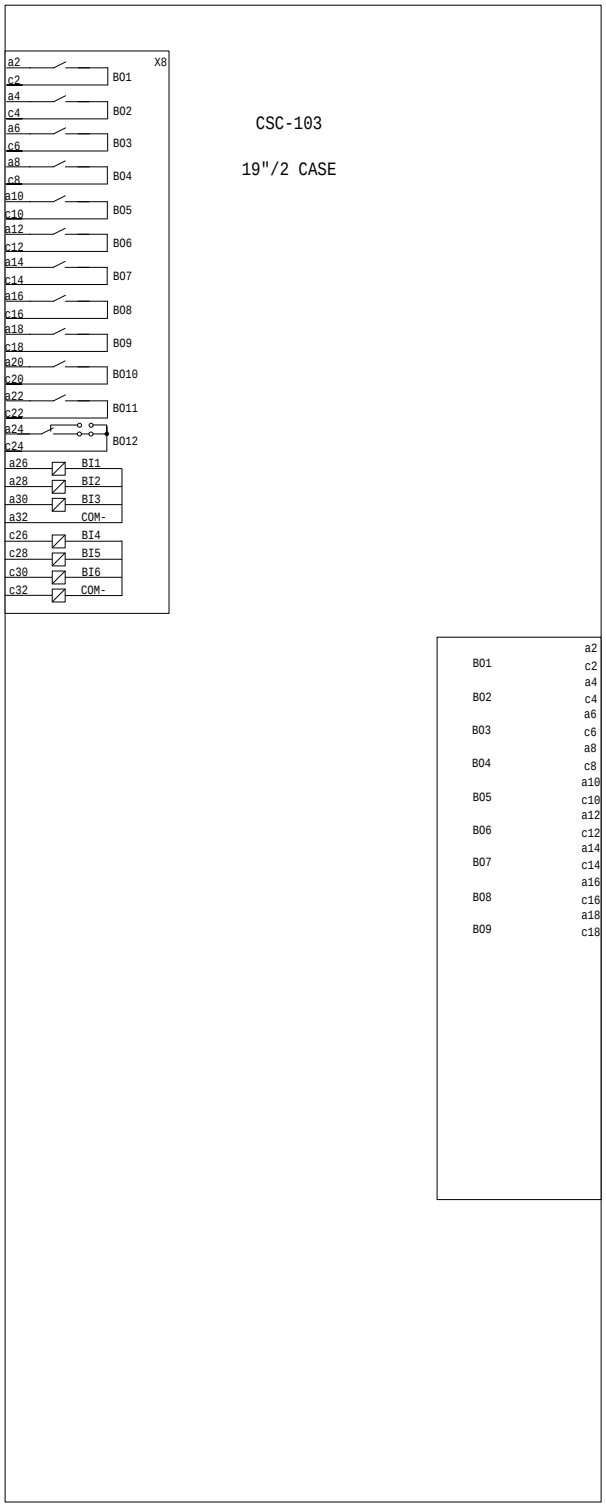
Mechanical endurance, Unloaded IEC60255-1	Unloaded, 10,000 times (switching frequency is 3Hz); Making, ≥1000; Breaking, ≥1000
Current carrying capacity IEC60255-1	5A continuous, 30A, 200ms on,15s off
Making capacity IEC60255-1	1000W(DC) at $V_{r.aux}$, L/R>40ms 1000VA(AC)
Breaking capacity IEC60255-1	30W, at $V_{r.aux}$, L/R≤40ms; 1000VA, at $V_{r.AC}$;
Contact circuit resistance IEC60255-1	30mΩ
Contact insulation test (AC dielectric strength) IEC60255-1	AC1000V,1min
Maximum temperature that operation allows IEC60255-1	70

Mechanical endurance, Unloaded IEC60255-1	Unloaded, 10,000 times (switching frequency is 3Hz); Making, ≥1000; Breaking, ≥1000
Current carrying capacity IEC60255-1	10A continuous, 30A, 200ms on,15s off
Making capacity IEC60255-1	1250W(DC) at $V_{r.aux}$, L/R>40ms 2000VA(AC)
Breaking capacity IEC60255-1	0.25A, at $V_{r.aux}$=220V, L/R≤40ms; 0.45A, at $V_{r.aux}$=110V, L/R≤40ms; 1200VA, at $V_{r.AC}$;
Contact circuit resistance IEC60255-1	30mΩ
Contact insulation test (AC dielectric strength) IEC60255-1	AC1000V,1min
Maximum temperature that operation allows IEC60255-1	70

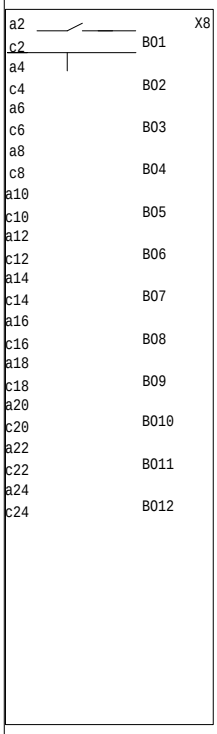
Sinusoidal vibration response test IEC60255-21-1 EN60255-21-1	Class 1 10-60 Hz: ± 0.035 mm amplitude 60-150 Hz: 0,5g acceleration Frequency sweep: 1 octave/min 1 sweep cycle in each axis Relay energized
Sinusoidal vibration endurance test IEC60255-21-1 EN60255-21-1	Class 1 10 Hz to 150 Hz: 1 g 20 sweep cycle in each axis Relay non-energized
Shock response test IEC60255-21-2	Class 1 Acceleration 5g, duration 11

EN 60255-21-2	ms. 3 shocks in each direction (6 shocks in each axis) Relay energized
Shock withstand test IEC60255-21-2 EN 60255-21-2	Class 1 Acceleration 15g, duration 11 ms. 3 shocks in each direction (6 shocks in each axis) Relay non-energized
Bump test IEC60255-21-2 EN 60255-21-2	Class 1 K . l’

-F


X8
a2
c2
BO1
a4
c4
BO2
a6
c6
BO3
a8
c8
BO4
a10
c10
BO5
a12
c12
BO6
a14
c14
BO7
a16
c16
BO8
a18
c18
BO9
a20
c20
BO10
a22
c22
BO11
a24
c24
BO12
a26
BI1
a28
BI2
a30
BI3
a32
COM-
c26
BI4
c28
BI5
c30
BI6
c32
COM-
CSC-103
19"/2 CASE
BO1
a2
c2
BO2
a4
c4
BO3
a6
c6
BO4
a8
c8
BO5
a10
c10
BO6
a12
c12
BO7
a14
c14
BO8
a16
c16
BO9
a18
c18

-F

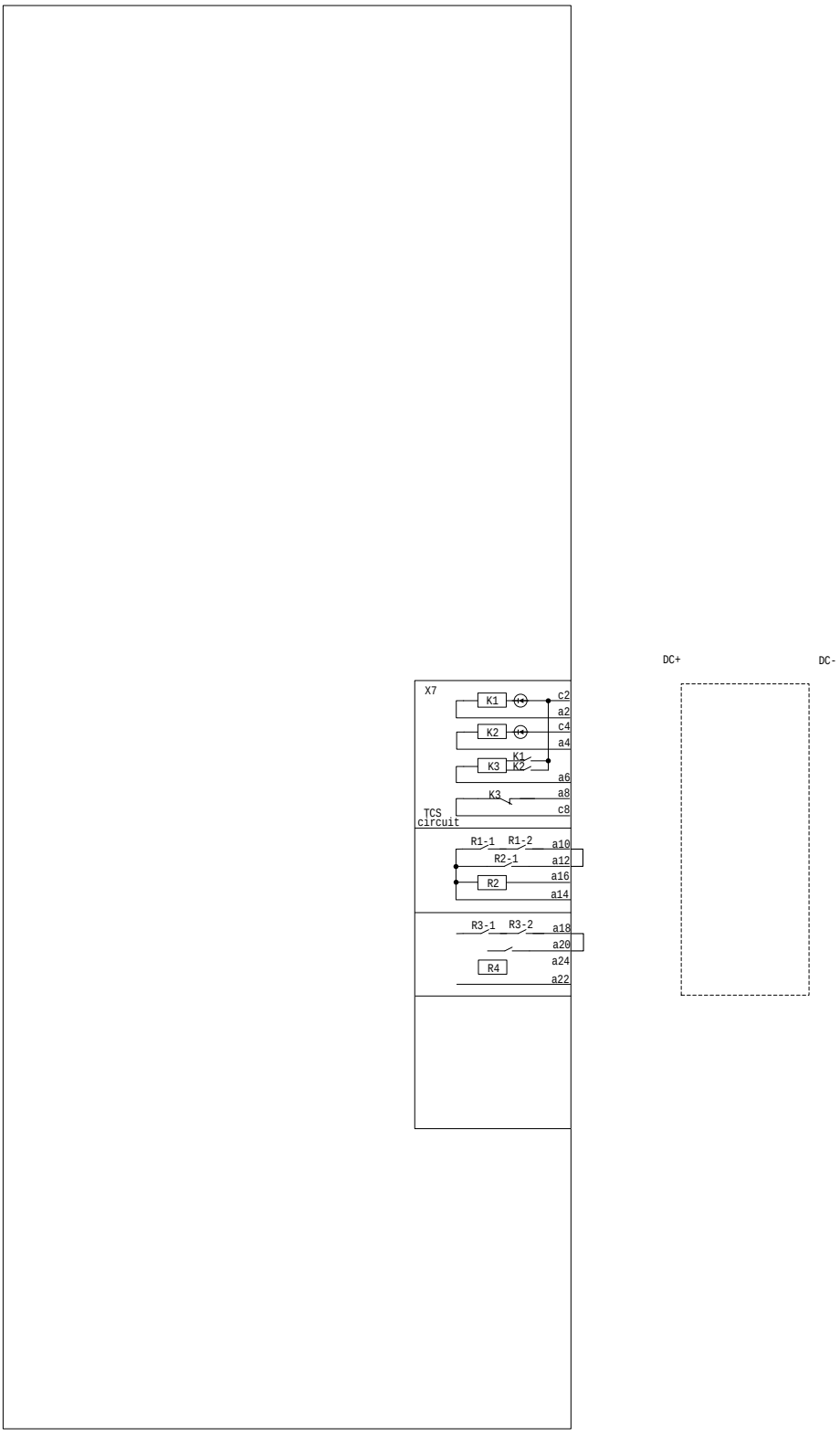


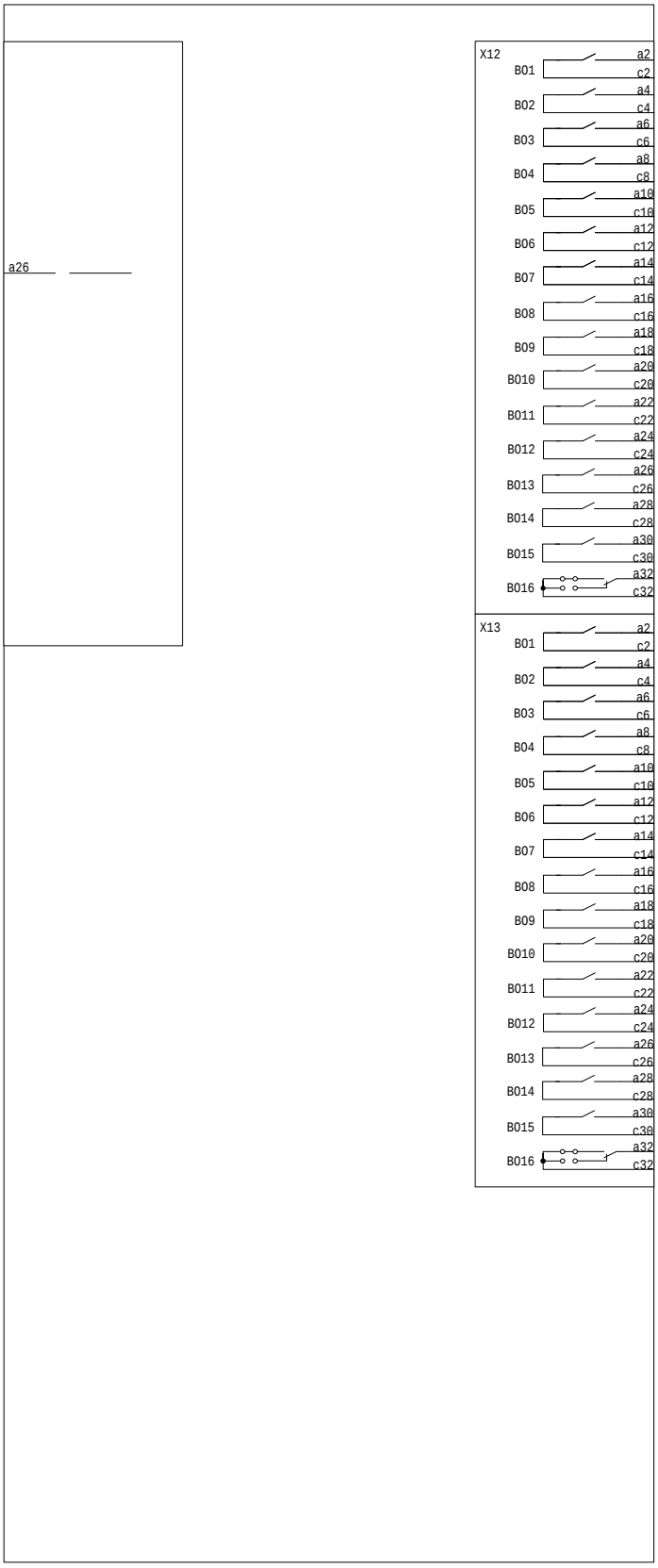
CSC-103

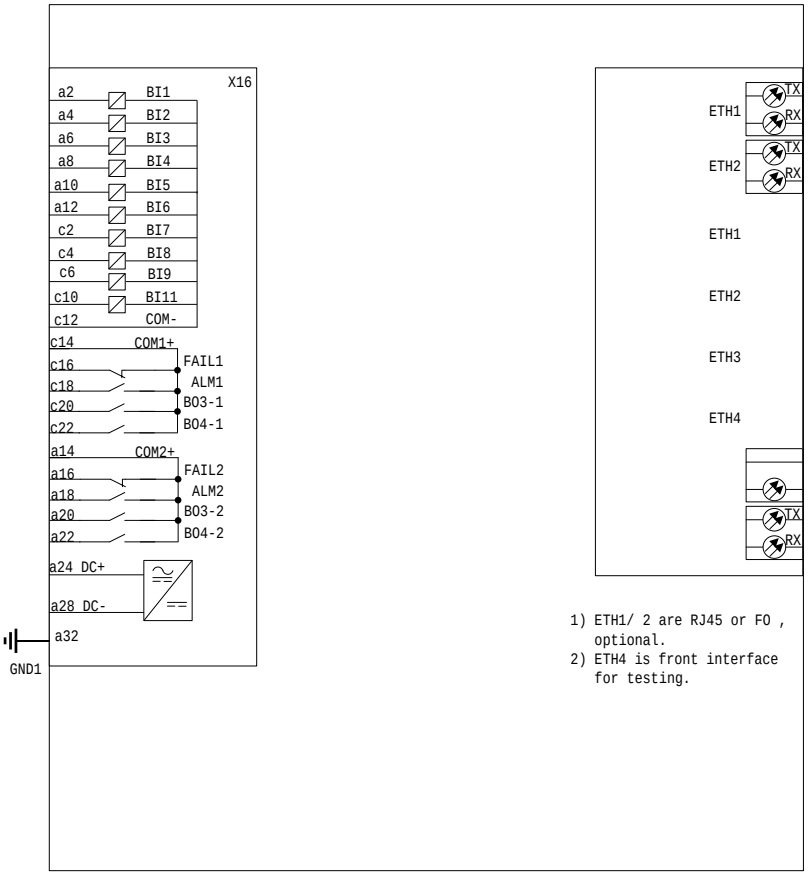
19"/2 CASE

CSC-103

19"/2 CASE


DC+
DC-
X7
K1
K2
K3
K1
K2
K3
c2
a2
c4
a4
a6
a8
c8
TCS
circuit
R1-1
R1-2
R2-1
R2
a10
a12
a16
a14
R3-1
R3-2
R4
a18
a20
a24
a22


a26
X12
B01
a2
c2
B02
a4
c4
B03
a6
c6
B04
a8
c8
B05
a10
c10
B06
a12
c12
B07
a14
c14
B08
a16
c16
B09
a18
c18
B010
a20
c20
B011
a22
c22
B012
a24
c24
B013
a26
c26
B014
a28
c28
B015
a30
c30
B016
a32
c32
X13
B01
a2
c2
B02
a4
c4
B03
a6
c6
B04
a8
c8
B05
a10
c10
B06
a12
c12
B07
a14
c14
B08
a16
c16
B09
a18
c18
B010
a20
c20
B011
a22
c22
B012
a24
c24
B013
a26
c26
B014
a28
c28
B015
a30
c30
B016
a32
c32



1) ETH1/ 2 are RJ45 or FO , optional.
2) ETH4 is front interface for testing.