



**Overhead Line
Protection Device**

BKA101-N1,N2

MULTI-FUNCTION CONTROL BKA101-N1,N2

TOPSanat

BKA101-N1,N2



Description

Multifunction relay with RTU built-in.

Auto Sectionalizer and Tie Point switch control are already built in BKA101 for loop Automation.

BKA101 can achieve Data of Distribution line by interfacing information with Master Station , such as Fault sensing , Equipment monitoring etc.

BKA101 measure , save and manage Current , Voltage , Power , Energy , Demand , Frequency.

BKA101 has 8 programmable INPUTs and OUTPUTs .BKA101 has 10 Analogue Inputs for metering currents and voltages and has 4 Communication ports for DNP3.0 , MODBUS , IEC60870-5-101 , 104 and Interface Software.

BKA101 consists of two processors DSP and CPU . DSP measures Analogues (Current/ Voltage) by fast calculation and CPU controls a lot of EVENTS and Communication information.

Communication

Front Panel PORT1 USB Port :
Interface software

Side panel PORT2 RS232 Serial Port :
DNP 3.0 , MODBUS and IEC60870-5-101 Protocol

Side panel PORT3 RS485 or RS232 Serial Port :
DNP 3.0 , MODBUS and IEC60870-5-101 Protocol

Side panel PORT4 Ethernet Port :
DNP 3.0, MODBUS and IEC60870-5-104 Protocol

User Interface

20 Character x 4 line backlit LCD

Fault Indication Lamp

Menu navigation keys

Open Phase Voltage Indication Lamp

Synchronism Check Lamp

Communication status (RX, TX) Lamp

AC Supply, Charge Lamp

System status(RUN, RESET) Lamp

Manual Battery Load Test

Local /Remote Operation

Monitoring Functions

Fault Indication

Display Fault phase , Fault current , Occurred time , Sensing Permanent Fault , Temporary Fault .

Metering

Current A , B , C , G.

Voltage AN , BN , CN , AB , BC , CA , RN , SN , TN , RS , ST , TR

Frequency

Power

Energy

Demand

Harmonics

Voltage and current unbalance

Events

Fault Event - Last 512 events

System Event - Last 1024 events

Switching Event - Last 128 events

Function Overview

47	Open-Phase Indication
27 /59	Under/Over Voltage 1,2
81	Under/Over Frequency
50	Instantaneous Overcurrent
50G/N	Instantaneous Earth Fault
51	Time Delayed Overcurrent
51G/N	Time Delayed Measured Earth Fault /SEF

Basic Function

FI Pickup Current

Phase / Ground Pickup Level

Phase 0:OFF, 10 to 1600 in steps of 1A

Ground ... 0:OFF, 4 to 1600 in steps of 1A

Dropout Level 96 to 98% of Pickup

Pickup Level Accuracy $\pm 5\%$

FI Setting Time

Permanent 1 to 180 in steps of 1 sec

Temporary 1 to 180 in steps of 1 sec

Timing Accuracy $\pm 5\%$

FI Inrush Time

Phase / Ground 0.1 to 3.0 in steps of 0.1 sec

Timing Accuracy $\pm 5\%$

OPEN Voltage(47)

Voltage1 Pickup Level 0:OFF

Voltage2 Pickup Level 0:OFF

(0.00 to 1.25 in steps of 0.01 x VT)

V1 Time Delay 0.00 to 600.00 in steps of 0.01 sec

V2 Time Delay 0.00 to 600.00 in steps of 0.01 sec

Pickup Level Accuracy $\pm 5\%$

Synchronism Check (25)

Pickup Angle 0:OFF, 1 to 100 in steps of 1 deg

Dead Voltage Maximum & Live Voltage Minimum

.....0.00 to 1.25 in steps of 0.01 x VT

Sync Phase A(R) , B(S) , C(T) , ALL

UNDER VOLTAGE-1/2 Function

Pickup Level 0.00 to 1.25 in steps of 0.01 x VT

Dropout Level 102 to 105% of Pickup

Minimum Voltage 0.00 to 1.25 in steps of 0.01 x VT

Time Delay 0.00 to 600.00 in steps of 0.01 sec

Active Phases Any One/Any Two/All Three

Timing Accuracy $\pm 5\%$

OVER VOLTAGE-1/2 Function

Pickup Level 0.00 to 1.25 in steps of 0.01 x VT

Dropout Level 95 to 98% of Pickup

Active Phases Any One/Any Two/All Three

Time Delay 0.00 to 600.00 in steps of 0.01 sec

Timing Accuracy $\pm 5\%$

V2 Time Delay 0.00 to 600.00 in steps of 0.01 sec

Pickup Level Accuracy $\pm 5\%$

LOOP CONTROL

Auto Sectionalizer Control

Auto Sectionalizer Operate Count
..... 1 to 4 in steps of 1

Auto Sectionalizer Reset Time Delay.....
..... 0.00 to 300.00 in steps of 0.01 sec

Auto Sectionalizer Open Time Delay
..... 0.00 to 300.00 in steps of 0.01 sec

Tie Point Switch Control

Tie VRS SV1, SV1&SV2, SV2

Tie Operate Count 1 to 4 in steps of 1

Tie Reset Time Delay
..... 0.00 to 300.00 in steps of 0.01 sec

Tie Close Time Delay & Tie Open Time Delay
..... 0.00 to 300.00 in steps of 0.01 sec

Technical Data

For full technical data refer to the Performance Specification Chapter of the Technical Manual.

Inputs and Outputs

Current Inputs

Quantity	3 x Phase & 1 x Ground
Rated Current IN	1A Nominal
	5A Continuous
	50A Second
Frequency	50/60 Hz
Burden	0.13VA(1A)

Voltage Inputs

Quantity	6 Channel
Voltage Divider	Max. Input Voltage : 6V
Inputs (VD)	Burden : 2e-6VA
	System Voltage: 15kV, 27kV, 38kV
Voltage	Source Voltage 1 VA,VB,VC
Transformer Inputs (VT)	Source Voltage 2 VR,VS,VT
Voltage Ratings	Phase-Neutral Continuous < 150Vac

Digital Inputs

Quantity	8 Channel
Input Type	Dry Contact
Operating current	<20mA

Digital Outputs

Quantity	6 Channel
Output Type	Relay Outputs
Operate / Release time	< 5ms at +20°C
Maximum operating power	250Vac-8A, 30Vdc-8A

Power Input

AC Voltage Input	24Vac (+10%,-15%)
Normal Power	7W
Max. Power	200W
Battery	24V18AH
Charge Voltage	27.5Vdc ($\pm 0.5V$)
Charge Current	300mA dc ($\pm 50mA$ dc)

Power Output

PW1	
Nominal Voltage	24Vdc (18 ~ 36Vdc)
Normal Power	30W
Max. Power	150W(5sec)
PW2	
Nominal Voltage	24Vdc (18 ~ 25Vdc)
Normal Power	40W
Max. Power	60W(60sec)

Mechanical Tests

Vibration

IEC60255-21-1 Class1

Type	Level
Vibration response	0.5 gn
Vibration endurance	1.0 gn

Shock and Bump

IEC60255-21-2 Class1

Type	Level
Shock response	5 gn , 11ms
Bump Test	10gn ,16ms

Climatic Tests

Type	Basic Standards
Cold test	IEC60068-2-1
Dry heat test	IEC60068-2-2
Wet heat test	IEC60068-2-30

Electrical Tests

Dielectric tests

IEC60255-27, IEC60870-3

Type	Level
Dielectric Test	2KV
Dielectric Resistance	> 500GΩ
Lightning impulse Voltage tests	2KV

Electrostatic Discharge

IEC61000-4-2, IEC60255-22-2 Class 3

Type	Level
Contact Discharge	6KV
Air Discharge	8KV

Conducted Radio Frequency interference

IEC61000-4-6, IEC60255-22-6

Type	Level
0.15 to 80 MHZ	10V

Immunity & Emission (EMC & ESD)

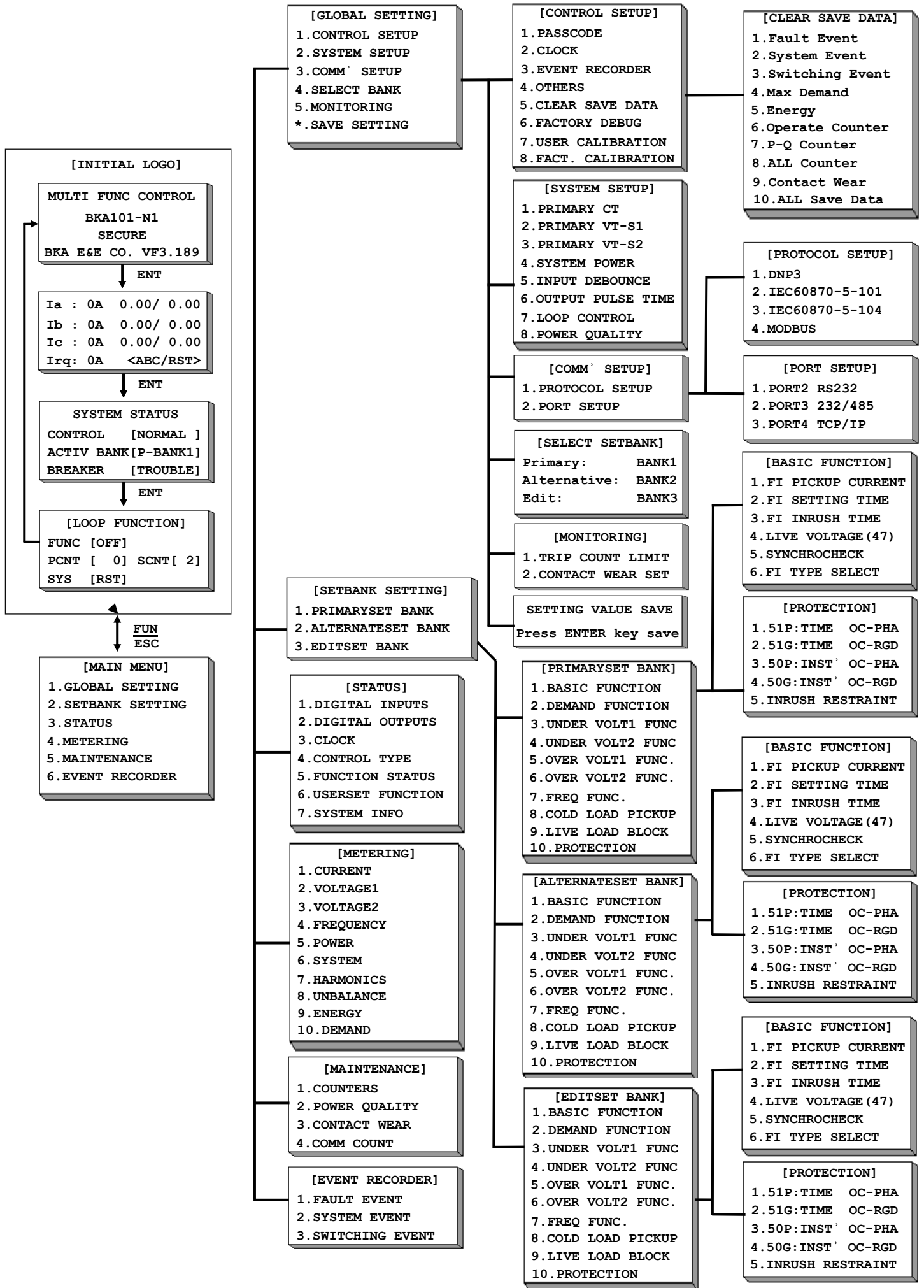
Type	Basic Standards
Electrostatic Discharge	IEC61000-4-2:2008
Radio frequency electromagnetic field	IEC61000-4-3:2010
Electrical Fast Transient Burst	IEC61000-4-4:2012
Surge	IEC61000-4-5:2014
RF Conducted Immunity	IEC61000-4-6:2013
Magnetic Field with Power Frequency	IEC61000-4-8
Voltage dips	IEC61000-4-11
Short interruptions	IEC61000-4-29

Type	Basic Standards
Damped oscillatory waves immunity test	IEC61000-4-18
EMI Conducted Measurement	CISPR 22:2008
EMI Radiated Measurement	CISPR 22:2008
Measuring relays and protection equip-	IEC60255-1:2009
Functional requirements for over/under current protection	IEC60255-151:2009

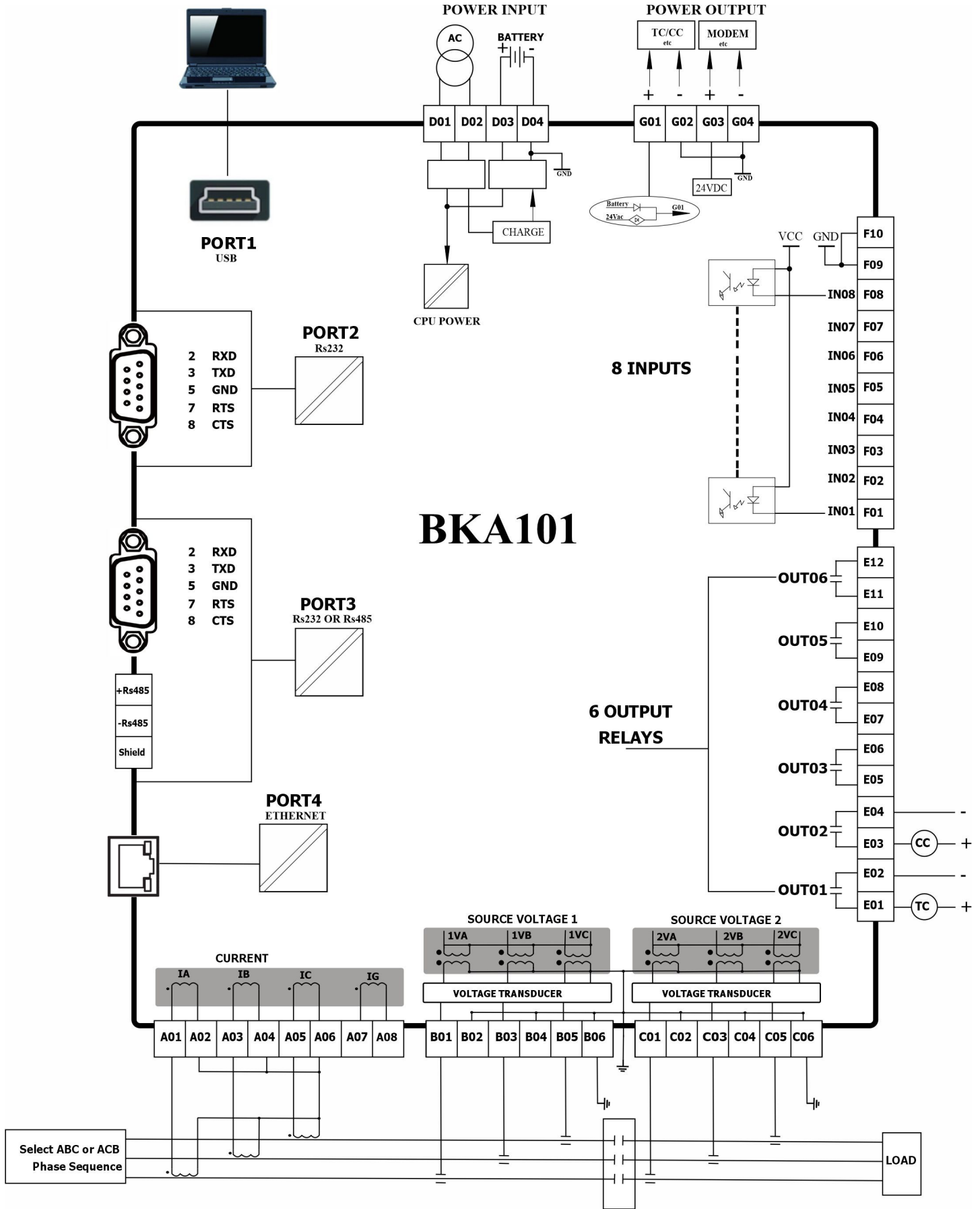
IEEE C37.1 & IEC60870-3

Type	Level
Power Supply	Nominal System Voltage
	Voltage operation range
	Maximum system Voltage
	DC Power supply ripple test
	Reverse polarity protection
	Overload protection
	Short circuit protection
Digital Inputs	Nominal System Voltage
	Maximum amount of contact resistance
	Minimum amount of leakage resistance
	Input current at nominal voltage value
	Proper performance
	Chattering Filter
	Timely accuracy of recording consecutive events with a resolution of one millisecond
	Vibration removal filter
Minimum input Voltage	
Analog Inputs	Nominal range of analog input signal
	Analog input signal range
	The amount of overload on the input
	Measurement of measurement error
	Measure the amount of input signal offset in Common mode or Single-ended
	Common mode operating voltage in operating mode (CMV)
	Common mode rejection ratio (CMRR)
Digital Outputs	Enabling time a digital output
	Monitor output command
	SBO Control Outputs

Menu Structure Tree



Typical Wiring Diagram



تحليل گران آرما پویش صنعت

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