

CONTENTS

1.	INTRODUCTION.....	2
2.	ORDER DESIGNATION.....	2
3.	FUNCTION.....	2
3.1.	Parameters.....	2
3.2.	Possible settings	3
3.3.	Procedure.....	3
3.4.	Function Diagram.....	4
4.	CIRCUIT.....	4
4.1.	Block diagram.....	4
4.2.	Pin assignment.....	5
4.3.	Wiring	5
5.	TECHNICAL DATA	5
5.1.	General Data.....	5
5.1.1.	Mechanical data	5
5.1.2.	Environment conditions	6
5.1.3.	Working life.....	6
5.2.	Electrical data.....	6
5.2.1.	Inputs.....	6
5.2.2.	Measurement criteria.....	6
5.2.3.	Time characteristics	7
5.2.4.	Outputs.....	7
5.3.	Insulation Voltage.....	7
6.	OPERATION	8
7.	STANDARDS, APPROVALS	8
8.	CASE, DIMENSIONS.....	8

Page	1	2	3	4	5	6	7	8	9	
Ed.	2	1	1	1	1	2	2	1	1	

Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 1
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:
Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Drittpersonen zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.							Data sheet SSU36/AC...V / 60Hz 3-Phase monitor
ComatReleco							55014 - 02 - 57 - 402

1. INTRODUCTION

The 3-phase network monitor SSU36/AC...V is an economical and versatile monitoring relay for 3-phase networks. It can monitor reliable both networks with or without a neutral conductor. The unit monitors the conductor voltages, the frequency, the symmetry and the phase sequence (direction of rotation). For example, feedback-proof monitoring in the case of motor loads is also ensured.

The undervoltage and overvoltage thresholds can each be set using a dial. The other monitoring criteria are internally linked and their sensitivity can also be set using a dial.

A further dial is used for setting the alarm delay.

In the case of a 3 phase sequence failure the output will be deactivated without the set time delay.

If the mains voltage is within the tolerances, the green LED lights on and the output relay is activated.

In case of a fault, the red LED lights on, the output relay drops out after the set time delay and the green LED goes out (alarm).

As outputs a power changeover contact and a normally closed contact are available.

The unit is available for 69/120V, 120/208V, 138/240V, . 265/460, 277/480V supply.

The case has pluggable screw terminals. Mounting on support rail 35 or screw fixing is possible, installation width 50 mm.

Availability and specifications subject to change without notice

2. ORDER DESIGNATION

ComatReleco 3-phase monitor SSU36/AC120V/60Hz
 SSU36/AC208V/60Hz
 SSU36/AC240V/60Hz
 SSU36/AC460V/60Hz
 SSU36/AC480V/60Hz

3. FUNCTION

3.1. Parameters

The three phases of the alternating voltage supply are monitored according to the following criteria:

- Phase sequence
- Undervoltage
- Overvoltage
- Phase failure
- Phase angle
- Frequency
- Asymmetric phase position/voltage position

Fo-61.01-D-401

Datei: SSU36 DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 2
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:
Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.							Data sheet
ComatReleco							SSU36/AC...V / 60Hz
							3-Phase monitor
							55014 - 02 - 57 - 402

3.2. Possible settings

- Dial "<":(undervoltage)
The switching threshold for symmetric undervoltage
For setting range, see Section 5.2.2
- Dial ">":(overvoltage)
The switching threshold for symmetric overvoltage
For setting range, see Section 5.2.2.
- Dial "Δ" The following parameters are combined on the delta "Δ" dial:
 - Phase angle
 - Frequency
 - Asymmetry
 - Phase failure

No distinction is made between the individual criteria, which can however be set altogether as sensitivity delta " Δ ". For values, see Section 5.2.2.

The following parameter is recognized in every case:

- Phase sequence: If the direction of rotation is incorrect, no alarm delay runs.
The alarm is triggered immediately
- Dial "alarm delay"
The alarm delay is set with this dial, i.e. the elapsed time from the occurrence of the fault to triggering of the alarm relay.
The reset time t_R cannot be adjusted. For values, see Section 5.2.3.

3.3. Procedure

If a fault is detected, it is immediately indicated visually:

- The red LED "fail" turns on

The alarm delay time (t_{del}) also starts.

If the fault has not been corrected within the set delay time (t_{del}), then the alarm is triggered:

- The relay drops out
- The green LED turns off

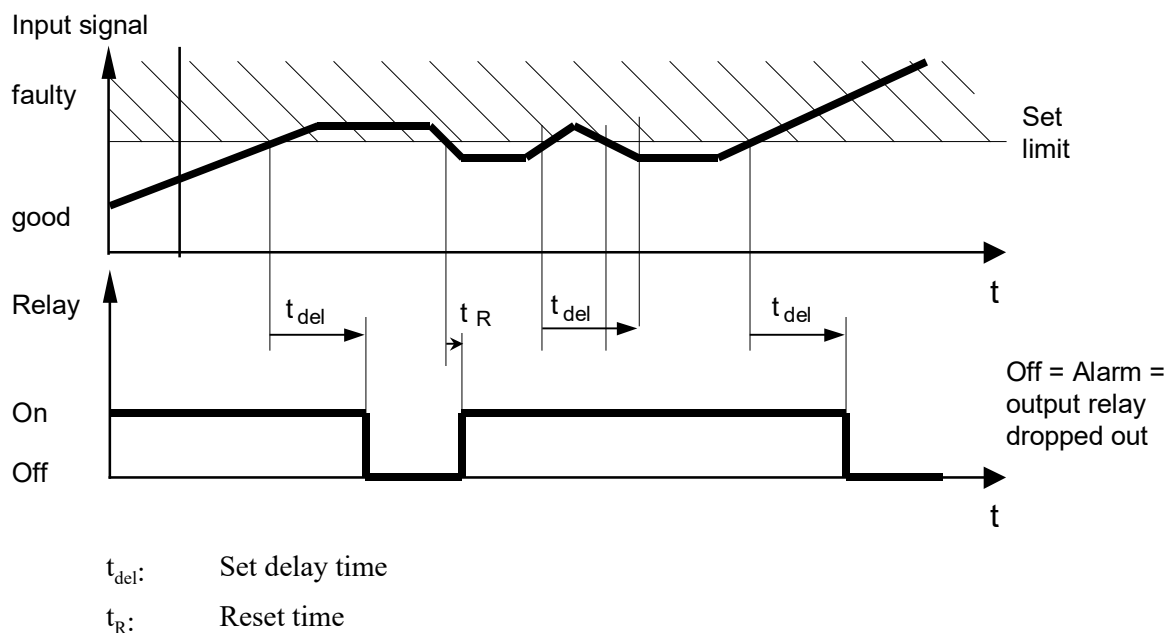
When the measured values reach the appropriate range, the visual fault display disappears:

- The red LED turns off

and after about 250 ms the normal state is restored:

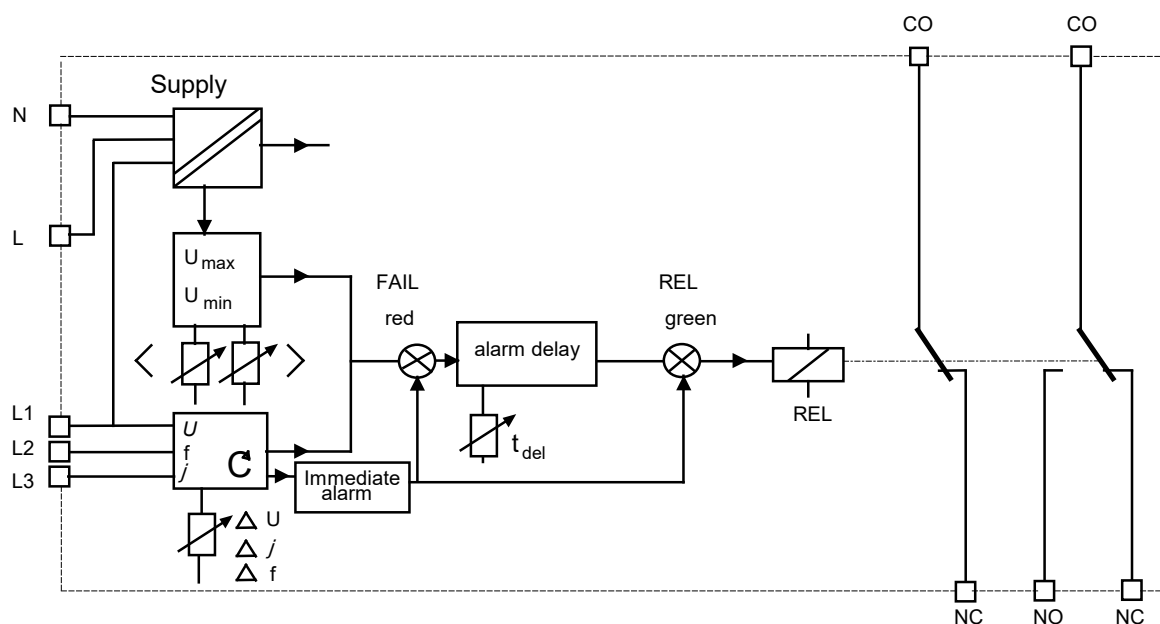
- The relay operates
- The green LED lights on

3.4. Function Diagram



4. CIRCUIT

4.1. Block diagram



Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 4
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:

Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.

ComatReleco

Data sheet

SSU36/AC...V / 60Hz

3-Phase monitor

55014 - 02 - 57 - 402

4.2. Pin assignment

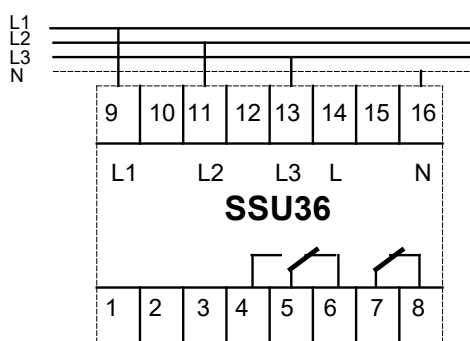
1:	no connection
2:	no connection
3:	no connection
4:	NOC
5:	COC changeover contact
6:	NCC
7:	COC normally closed contact
8:	NCC

9:	L1
10:	no connection
11:	L2
12:	no connection
13:	L3
14:	L
15:	no connection
16:	N

4.3. Wiring

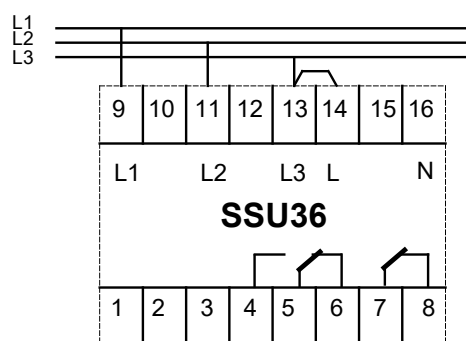
The unit is wired differently for monitoring networks with and without a neutral conductor:

1. Network with neutral conductor



Do not connect L

2. Network without neutral conductor



Do not connect N

Important: The simultaneous connection of L and N or a bridge between L and N may cause damage to the unit!

Not designated terminals should not be connected.

5. TECHNICAL DATA

5.1. General Data

5.1.1. Mechanical data

Case	W50 x H75 x D110 (Mounting pitch according to DIN EN 50022)
Fixing	Mounted on support rail 35 DIN 46 277 or screw fixing
Protection type	Case IP40; connections IP20
Shock resistance	TW80 (20g min)
Vibration resistance	IEC 571
Case material	Noryl SE1 UL94V-1
Weight	about 350g
Connections	Disconnectable screw terminals (unit can be changed without removing wiring; 1 x 2,5mm ² or. 2 x 1,5mm ²)

Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 5
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:
Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.							
ComatReleco							

Data sheet

SSU36/AC...V / 60Hz

3-Phase monitor

55014 - 02 - 57 - 402

5.1.2. Environmental conditions

Stogare temperature range	-40°C ... +85°C
Operating temperature range	-10°C ... +60°C
Relative humidity	10% ... 95%, non condensing
Transient voltage protection	IEC 255-4, Appendix E Class III

5.1.3. Working life

Expected working life >> 75'000h

5.2. **Electrical data**

5.2.1. Inputs

Version		AC120V	AC208V	AC240V	AC460V	AC480V
U _{rated} (L1/N)	⋈	69V	120V	138,5V	265,5V	277V
	△	120V	208V	240V	460V	480V
U _{operation}	⋈	42 ÷ 86V	75 ÷ 150V	84 ÷ 173V	160 ÷ 331V	170 ÷ 346V
	△	72 ÷ 150V	130 ÷ 260V	144 ÷ 300V	277 ÷ 575V	288 ÷ 600V
U _{max}	⋈	86V	150V	173V	331V	346V
	△	150V	260V	300V	575V	600V
Input current at test inputs		1,5mA				
Input current at supply inputs		140mA	70mA	70mA	25mA	25mA
Power consumption		< 5VA	< 5VA	< 5VA	< 5VA	< 5VA

For jumping of supply failure, see 5.2.2

5.2.2. Measurement criteria

- Undervoltage threshold (70% ÷ 95%)	⋈	48 ÷ 66V	85 ÷ 115V	97 ÷ 133V	186 ÷ 260V	194 ÷ 270V
	△	84 ÷ 114V	148 ÷ 200V	168 ÷ 230V	322 ÷ 450V	336 ÷ 470V
		Adjustable on dial "<"				
		Hysteresis 1 ÷ 25V				
- Overvoltage threshold (105% ÷ 120%)	⋈	72 ÷ 83V	125 ÷ 145V	143 ÷ 166V	270 ÷ 318V	284 ÷ 332V
	△	126 ÷ 144V	216 ÷ 250V	250 ÷ 288V	470 ÷ 550V	490 ÷ 575V
		Adjustable on dial ">"				
		Hysteresis 1 ÷ 25V				

- Phase angle, frequency,
asymmetric phase position:

The fault signals are added up.

If the fault sum exceeds a certain value (settable with the sensitivity setting delta D), an alarm is triggered (fault). The specified scale values are applicable for individual faults.

Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 6
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:
Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.							Data sheet
							SSU36/AC...V / 60Hz
							3-Phase monitor
ComatReleco							55014 - 02 - 57 - 402

- Values:

Version	AC120V	AC208V	AC240V	AC460V	AC480V
ΔU : (based on U_{L1-N})	$5 \div 25V$	$10 \div 50V$	$10 \div 50V$	$20 \div 100V$	$20 \div 100V$
(based on U_{L1-L2})	$9 \div 43V$	$17 \div 87V$	$17 \div 87V$	$35 \div 173V$	$35 \div 173V$

$\Delta \varphi$: $5 \div 24^\circ$ $5 \div 24^\circ$ $5 \div 24^\circ$ $4 \div 21^\circ$ $4 \div 21^\circ$

Δf : $3 \div 22Hz$ $3 \div 22Hz$ $3 \div 22Hz$ $3 \div 19Hz$ $3 \div 19Hz$

- Rotation: L1, L2, L3; If two phases are interchanged, an alarm is triggered immediately without any alarm time delay (relay time $\leq 50ms$).

- Phase failure: If one or more phases fails, an alarm is triggered (fault).

(If this is a phase which is also used for the supply, the alarm is triggered immediately $t \approx 200ms$.)

Short circuit of power supply (supply phase)

$t \leq 100 ms/V_{RATED} = 10$ half-waves

5.2.3. Time characteristics

Alarm delay t_{del}	$200ms(+0\%, -25\%) \div 5s (+25\%, -0\%)$ Settable on dial t_{del}	(Rel off)
Alarm reset time t_R	$100ms \div 400ms$	(Rel on)
Minimum alarm signal	$100ms \div 200ms$	(Rel dropped out)
Minimum fault signal	$50ms \div 200ms$	
Phase failure reaction time	$\leq 50ms$	

5.2.4. Outputs

Contacts	1 changeover contact Ag alloy 1 normally closed contact Ag alloy
Switching voltage range	(12) - 250V
Switching current	5A (15A, 20ms)
Switching capacity	1250VA / 150W
Working life	$5 \cdot 10^6$ (mechanical cycles) $\geq 10^5$ at 5A, 250V

5.3. **Insulation Voltage**

Contact contact	2kV
Input contact	2kV

Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 7
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:
Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.							Data sheet
							SSU36/AC...V / 60Hz
							3-Phase monitor
ComatReleco							55014 - 02 - 57 - 402

6. OPERATION

Four dials are available for the operator (< ; > ; Δ; alarm delay).

<	:	Undervoltage threshold
>	:	Overvoltage threshold
Δ	:	Sensitivity (U, f, φ)
alarm delay	:	Alarm delay time

The red LED "fail" indicates a deviation from the set input parameters.

The green LED shows the relay status.

This LED is switched off in the case of an alarm, ie. when the relay drops out.

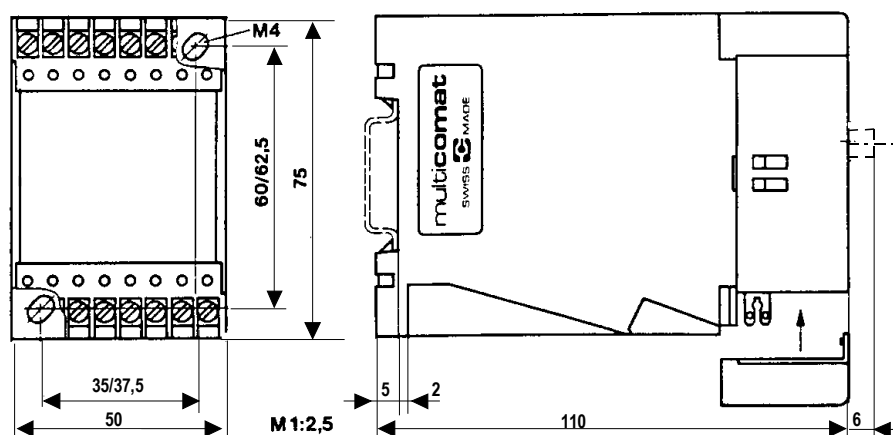
If only the green LED lights, the supply voltage is within the parameters.

7. STANDARDS, APPROVALS

Vibration resistance	IEC 571 ; 68-2-6-FC
Shock resistance	TW80 (20g)
Immunity to interferences	IEC 255-4 Appendix Class III, IEC 801-4
Conformity, Standards	CE, SEV, UL, CSA

8. CASE, DIMENSIONS

Case N



Fo-61.01-D-401

Datei: SSU36_DB_E.DOC

Gez.	Entw.	Gepr.	Reg.	Datum	Ae M	Ausg.	Blatt: 8
				10.1.96		B	von: 8
wie		La	wie	6.12.96		2	M:

Diese Unterlage ist unser geistiges Eigentum. Ohne unsere schriftliche Bewilligung darf diese weder kopiert noch Dritten zugänglich gemacht werden. Für dieses Dokument behalten wir uns alle Rechte vor.

ComatReleco

Data sheet

SSU36/AC...V / 60Hz

3-Phase monitor

55014 - 02 - 57 - 402