

## Multifunction Voltage Monitor MFW100 – E001

Universal monitoring unit for low voltage systems and power generators,  
with voltage, frequency, asymmetry and rotary field control

suitable for all low voltage systems and island networks



- **4 wire Under- Overvoltage monitor**  
Display selectable between 231V (L-N) and 400V (L-L)
- **Under- Overfrequency monitor**
- **Adjustable hysteresis and switching delay**
- **Voltage asymmetry monitor**
- **Rotary field monitor**
- **Error indication**
- **Circulating LED display**  
for Voltage (V), Asymmetry (%), Rotary field
- **2 Potential-free signal contacts 5A 250V**
- **Narrow hat rail cabinet (26mm)**
- **Self supplying**

### Function:

Unit MFW100 is used for current monitoring of voltages, frequency and phasing in 3-phase electric supply networks, in particular at supply points of low voltage networks. Due to small required space and multifunction of unit the MFW100 is a low cost and a space saving voltage monitoring unit. Additionally the unit offers a convenient LED displaying of current values of voltages, asymmetry and errors, which can also be read in dark edges of cabinets.

For the monitored information in exceeding of limits 2 changeover contacts are available. As required the limits can be adjusted to user defined values. The factory settings see in technical data page 2

### Static Relais Functions:

The multifunction voltage monitor MFW100 contains 2 output relays with change-over contacts, where the first one is allocated to the undervoltage and underfrequency limits (contacts in front of unit, **x<**) and the second relay to the overvoltage and overfrequency limits (contacts to the back of unit, **x>**). In case of voltage asymmetry or wrong rotary field both relays are switching to the fault condition, that leads to a safe switching off in any case or it makes a on-switching impossible. In case of net-failures the existing failure will be indicated on display with understandable figures, see failure-code in menuplan on page 3.

Typical Net-failures (example)	Relay <b>x&lt;</b> (off : 1-2 close) (on : 2-3 close)	Relay <b>x&gt;</b> (off : 4-5 close) (on: 5-6 close)
Without Voltage (unit off)	off	off
<b>All values within rated range</b> (unit on)	on	off
<b>Overvoltage failure</b> , symmetry and rotary field o.k.	on	on (after delay)
<b>Undervoltage failure</b> , Symmetry and rotary field o.k.	off (after delay)	off
<b>Overfrequency failure</b> , voltage, Symmetry and rotary field o.k.	on	on (after delay)
<b>Underfrequency failure</b> , voltage, Symmetry and rotary field o.k.	off (after delay)	off
<b>Asymmetry failure</b> , voltage within rated range, rotary field o.k.	off (without delay)	on (without delay)
<b>Rotary field failure</b> , voltage within rated range, symmetry o.k.	off (without delay)	on (without delay)

### Technical Data :

Type	Multifunction Voltage Monitor MFW100-E001
Design	Plastic Housing PA on 35 mm hat rail acc. to DIN EN 50022 / DIN 46277
Material of housing	ABS with fire protection UL 94 V-O
Dimensions, Weight	26x75x110,8mm (WxHxD), 185g
Auxiliary voltage	At L2 – L3 (400V), +15%/-10%, 50Hz, 1,5W
Measuring voltages	0-270V (4-wire L-N)
Measuring frequency	40 – 180Hz
Displaying of voltages	3-digit, RMS-values L-L or L-N
Displaying of frequency	2-digit + decimal place
Displaying of asymmetry	3-digit, 0-100%
Voltage accuracy	< 1%
Frequency accuracy	< 0.05%
Displaying of rotary field	Right- or left rotating light segments (left-rotating = failure), switching of output contacts without delay
Wait-time of restart / failures	After Restart / failure / reset, adjustable between 0 – 600 sec.
2 Output relays, x< und x>	Change-over contacts with potential isolating
Contact load	6A permanent / 250VAC , contacts AgSnO , minimum switching load 500mW, 12V 10mA,
Voltage proof	4000V (coil-contact), 1000V (open contact)
Connecting terminals	Potentialfree, pro terminal up to 2 wires each 2,5 mm <sup>2</sup>
Protection class	Housing IP 40 , terminals IP 20 (resp. VDE 0106T100/VBG4 )
Ambient temperature	-40 °C bis +55°C, 95% Hum
General regulations	EN 50 178 (electronic equipment for use in power installations)
Noise suppression acc. To.	EN 55 022/B
EMC	EN 61000 und EN V 50 140
Installation position	Any
On-duration	100%
Maintenance	Maintenancefree

Settings:	Ranges:	Factory settings:
Hysteresis of voltage	0 – 20% U <sub>rated</sub>	3,0 V
Under voltage <U	0,8 – 1 x U <sub>rated</sub>	208 V
Switching delay <U	0 – 60,0 sec.	5,0 sec.
Under voltage <<U	0,33 – 1 x U <sub>rated</sub>	104 V
Switching delay <<U	0 – 60,0 sec.	0 sec.
Overvoltage >U	1 – 1,2 x U <sub>rated</sub>	254 V
Switching delay >U	0 – 60 sec.	5,0 sec.
Overvoltage >>U	1 - 1,2 x U <sub>rated</sub>	265 V
Switching delay >>U	0 – 60,0 sec.	0 sec.
Under frequency	0.8 – 1 x F <sub>(rated)</sub>	49.5 Hz
Over frequency	1 – 1.2 x F <sub>(rated)</sub>	50.5 Hz
Switching delay	0 – 60 sec.	0 sec.
Asymmetry %	0 – 60%	5 %
Switching delay asymmetry	0 – 60 sec.	5 sec.

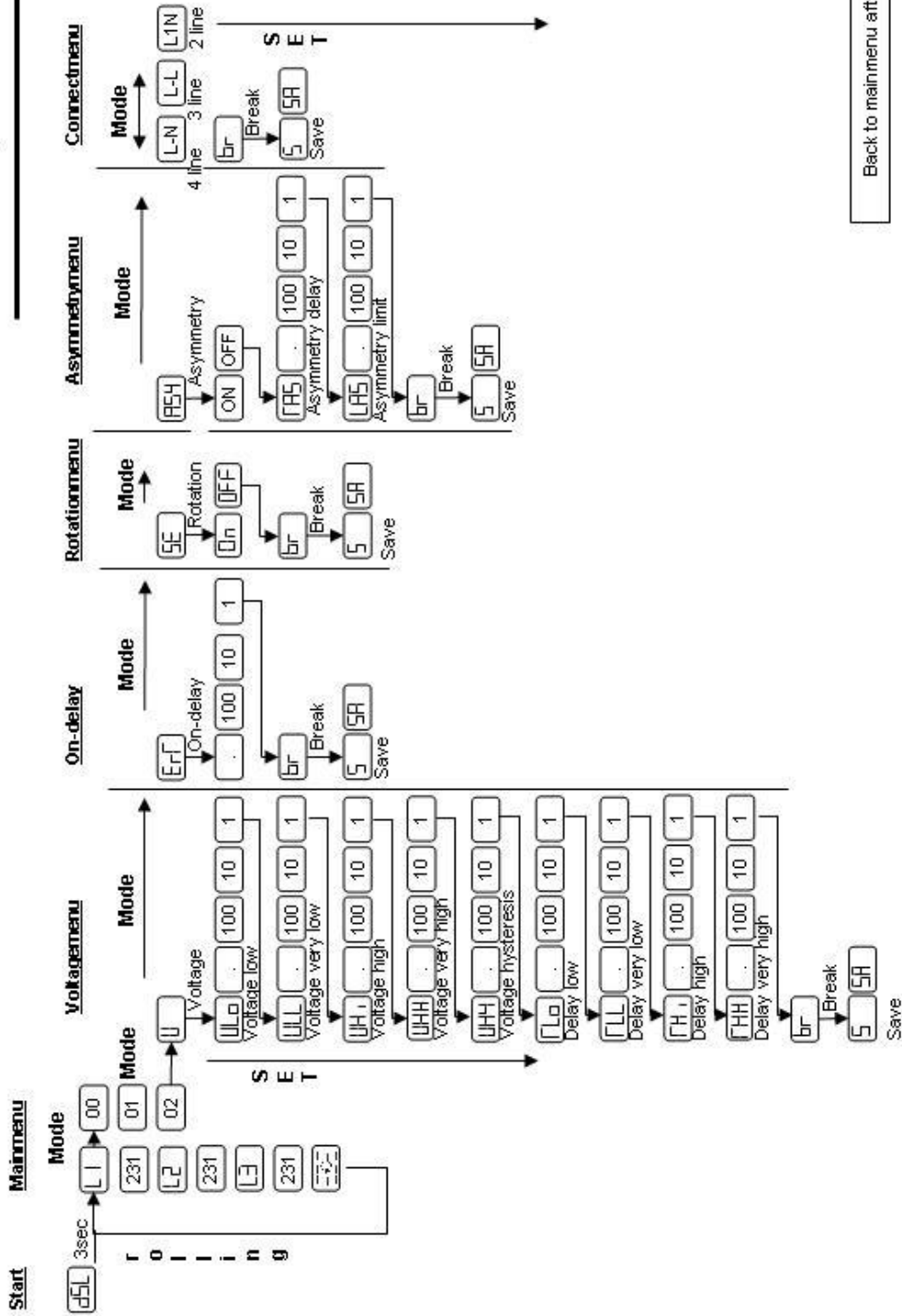
### Settings:

For the adjusting of setting the keys „**Mode**“ und „**Set**“ are used, see the menu plan next page. The factory settings are listed in the technical datas. According to the requirements of customer several values can be changed.

For this first pushing the **Mode** key (key keep pushing for 1 sec. minimum), display now shows 00. With **Set** 2x (1 sec.) pushing until display showing 02. Now so often pushing the **Mode** key, until the desired menu point **U** (voltage), **ErT** (waittime of restart), **SE** (rotary field), **AS4** (asymmetry) or **L-L**, **L-N** (type of connection) appears.

Within a range (i.e. **U** voltage) all parameters could be changed one after another and in the following be stored together. Are within a menu point no key will be pushed during 20 seconds the program switches back into the normal running automatically without storing.

# ASW 600 Menu plan



Back to mainmenu after 20 seconds

The Settings will be accepted if they are within the limits. Please see the documents.

## Errorstate

- Err** Eeprom error
- E1H** Error, U 1 too high
- E1L** Error, U 1 too low
- E2H** Error, U 2 too high
- E2L** Error, U 2 too low
- E3H** Error, U 3 too high
- E3L** Error, U 3 too low
- No rotation
- ELL** Error, LL Mode
- SA** Saving
- SE** Rotation right
- SE** Rotation left
- Lower deviation, right dot flashes
- Higher deviation, left dot flashes

## Connection Diagram :

