

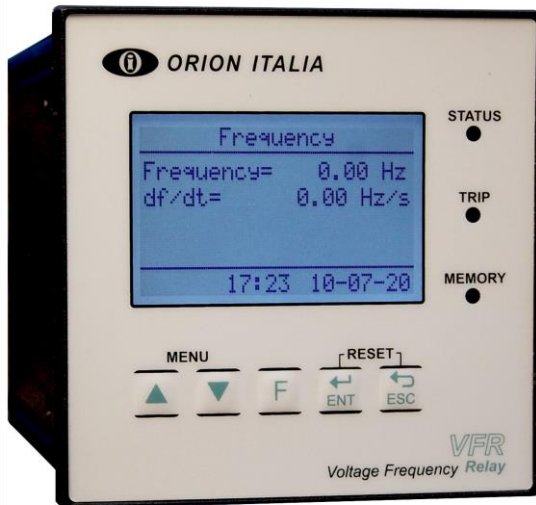


ORION ITALIA

Protection relays & Metering division

VFR

**Voltage Frequency
Protection Relay**



The device has been designed for continuous monitoring of the system's voltage, frequency and related variations. It is able to disconnect one or more loads in case of underfrequency (up to 7 stages) or frequency negative rate of change (up to 2 stages).

The VFR protects industrial and commercial power networks in case of voltage disturbances.

Automatic Load Shedding

APPLICATIONS

- Automatic load shedding
- Commercial, industrial and public utility

DIGITAL MEASUREMENT*

- Phase and Line Voltages
- Phase Sequence
- Voltage Average
- Voltage Unbalance
- Voltage THD
- Voltage Harmonics
- Frequency (Hz)
- Frequency variation (negative rate of change df/dt)

FEATURES

- Digital input functions:
 - Remote TRIP
 - Remote RESET

APPLICABILITY

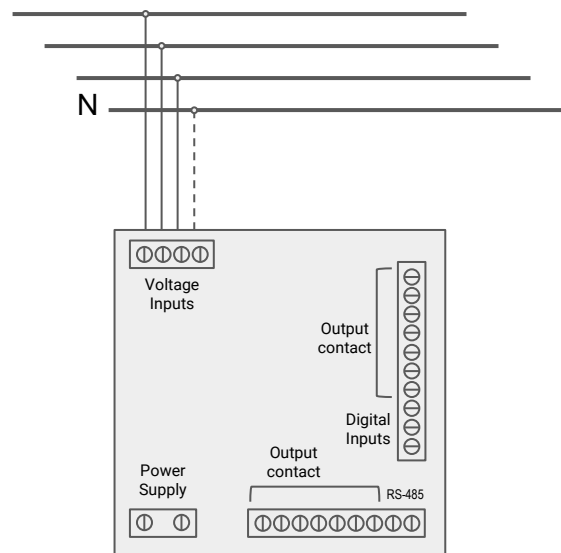
- Systems: Wye or Delta three-phase
- Frequency: 60 Hz
- Voltage: up to 277/480Vac (direct measure) or external VT

SIGNALLING AND PROGRAMMING

- Graphic LCD & LED based HMI
- Indication of fault conditions
- Indication of the system status

PROTECTION AND FUNCTIONALITY*

- Under & Over Voltage
- Frequency
- dF/dT (up to 2 stages)
- Phase Sequence
- Underfrequency (up to 7 stages)
- Overfrequency (up to 3 stages)



SPECIFICATIONS

<p>SUPPLY VOLTAGE Model W: 85V (115V) ÷ 264V (300V) Vac (Vdc) Model B: 24Vdc -15%, +10% Model C: 48Vdc -15%, +10%</p> <p style="text-align: right;">Depending on VFR version</p>	<p>MAX. POWER CONSUMPTION 7 VA (5 W)</p>
<p>TEMPERATURE Operational: -20 °C +55 °C Storage Temperature: -30 to +70 °C</p>	<p>RELATIVE HUMIDITY Max. 90% (non condensing)</p>
<p>DIELECTRIC WITHSTAND VOLTAGE 2 kVac, 60s from all circuits and enclosure 2 kVac, 60s between HLV and LV circuit</p>	<p>BURN IN 48 hours at 50 °C</p>
<p>ELECTRICAL INSULATION CONSTRUCTION Overvoltage Category: III Pollution degree: 2 Altitude: 2000m (AMSL)</p> <p>VOLTAGE INPUTS Rated Input: 240V/120V Vac (ph-ph/ph-N) 50/60 Hz VT burden: 0,5 VA max. Max. Continuous: 300 Vac phase-neutral System: 3 wires, 4 wires External VT: Wye/Wye or Delta</p>	<p>OUTPUT CONTACTS Aux1, Aux2, Aux3, Aux4, Aux5: Rated load: 8A@ 240Vac Resistive 8A@ 24Vdc Resistive (0,2 A @125 Vdc) Max Switching Voltage: 400 Vac / 150 Vdc Max Continuous current: 5 A</p> <p>Aux6, Aux7,Aux8: Rated Load: 3A@240Vac (Resistive) 3A@30Vdc (Resistive) Max Switching Voltage: 277Vac/30Vdc Max Continuous current: 3A</p>
<p>DIGITAL INPUT (2) Dry types. Programmable for remote TRIP or RESET</p>	<p>ACCURACY Voltage: cl. 1% ± 1 digit Frequency: ± 0.01 Hz ± 1 digit df/dt: ± 0.1Hz/s ± 1 digit</p>
<p>MECHANICAL Terminal blocks, section 2,5 mm² or 14 AWG Frame: Noryl auto-extinguish IP40 Front (up to IP54 front, on request) Dimension: 96 x 96 x 146 mm. Front panel cutout: 91^{-0,5}x 91^{-0,5} mm Weight: 700 gr.</p>	<p>COMMUNICATION RS-485 serial port Protocol: Modbus RTU-Slave Insulation: 1.5 kVdc Bluetooth: 4.2 (for manufacturer use only)</p>
<p>FIRMWARE UPGRADE (depending on firmware) via Serial Port</p>	<p>STANDARDS Low Voltage directive: IEC 60255-27, IEC 60255-5 EMC directive: IEC 60255-26</p>

ORDER CODE

VFR-100X Y

Where **X** stands for MODEL:

Model	Metering						Protections (ANSI)							Events	Communication Port	
	RMS Volt	Freq.	Phase Sequence	Voltage Unbalance	Voltage Harmonics	THD (Volt)	df/dt	27	59	47	81u	81o	81df/dt			
VFR-1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Modbus RTU & Bluetooth

Where **Y** stands for POWER SUPPLY:

W: 85V (115V) ÷ 264V (300V) Vac (Vdc)

B: 24Vdc -15%, +10%

C: 48Vdc -15%, +10%