

## FEATURES

- True RMS Measurement up to the 15<sup>th</sup> Harmonic
- Measures Phase Loss, Sequence & Asymmetry, Under and Over-Voltage, Neutral Fault and Over/Under Frequency
- 3-Phase 3-wire & 4-wire, 145-500VAC (see types)
- Selectable Over/Under Voltage, Asymmetry, Phase Loss/Sequence, Over/Under Frequency and Neutral fault alarms.
- LCD backlit Display

## Digital Voltage Monitoring Relays

RS Stock No.: 223-7788, 223-7789, 223-7790



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

### Product Description

*A fully featured 3-phase Digital Voltage Monitoring Relay in a compact format*

- *Popular in Switchgear, Control Gear, Machine Control and Mains Distribution Systems*
- *Monitors 3-phase supply for phase faults*
- *Protect Motors, 3-Phase and 1-Phase systems and devices from phase faults.*

### General Specifications

<b>Type</b>	Digital 3-Phase Voltage Monitoring Relays
<b>Input Voltage</b>	3-phase AC, Ph-Ph & Ph-N. 223-7790 with Auxiliary Supply
<b>AC or DC Output Voltage</b>	AC / DC
<b>Number of Outputs</b>	1 or 2 volt free change-over relays. See types.
<b>Special Features</b>	Backlit LCD Display / 36mm Slim Design / Measures True RMS Voltage to the 15 <sup>th</sup> Harmonic / Wide selection of alarm types / works on 3-wire and 4-wire 3-phase systems / Version with auxiliary supply voltage for full functionality during phase-loss
<b>Mounting Type</b>	DIN Rail Mount
<b>Connection Type</b>	Screw terminal type
<b>Short Circuit Protection</b>	Yes / No
<b>Over Voltage Protection</b>	Yes / No
<b>Indication of Phase fault</b>	Displayed on Backlit LCD Display
<b>Input Fuse</b>	N/A
<b>Internal Surge Voltage Protection</b>	Varistor
<b>For Use With</b>	Incoming 3-Phase Supplies

### Versions

RS Stock#	Input Voltage	Output Relay	Relay Rating AC Resistive	Relay Rating DC
223-7788	145-500VAC	1 C/O	5A @240VAC	5A @30Vdc
223-7789	145-500VAC	1C/O + 1C/O	5A @240VAC	5A @30Vdc
223-7790	50-500VAC 85-300Vac/dc Auxiliary	1C/O + 1C/O	5A @240VAC	5A @30Vdc

Supply Voltage Specifications	
<b>Supply Voltage</b>	
223-7788	145 – 500VAC self-powered from Monitored supply
223-7789	145 – 500VAC self-powered from Monitored supply
223-7790	85-300Vac/dc Auxiliary Supply
<b>Input Electrical Phase</b>	3-Phase
<b>Line Frequency</b>	45 to 65Hz
<b>Power Consumption (max)</b>	5VA
Trip Settings	
<b>Phase Loss</b>	Configurable (Enable/Disable) – Default: Enable
<b>Phase Reversal</b>	Configurable (Enable/Disable) – Default: Enable
<b>Phase Asymmetry</b>	2 to 50%.
<b>Under-Voltage, 4-Wire</b>	223-7788/223-7789:: Ph-N: 90-288VAC   223-7790 50-288VAC
<b>Under-Voltage, 3-Wire</b>	223-7788/223-7789 : Ph-Ph:155-500VAC   223-7790 85-500VAC
<b>Under-Voltage Hysteresis</b>	3 – 20VAC +/- 2V (7V Default)
<b>Over-Voltage, 4-Wire</b>	223-7788/223-7789: Ph-N: 90-288VAC   223-7790 50-288VAC
<b>Over-Voltage, 3-Wire</b>	223-7788/223-7789: Ph-Ph:155-500VAC   223-7790 85-500VAC
<b>Over-Voltage Hysteresis</b>	3 – 20VAC +/- 2V (7V Default)
<b>Under Frequency</b>	45 – 65Hz
<b>Over Frequency</b>	45 – 65Hz
<b>Frequency Hysteresis</b>	0.1 – 5Hz
<b>Asymmetry</b>	Voltage: 5 – 99VAC (Default 60V) Percentage: 2 – 50%
<b>Hysteresis for Asymmetry</b>	Voltage: 3 – 99VAC +/-2V (Default 7V) Percentage: 2 – 15%kV
<b>Electrostatic Discharge</b>	8kV air discharge / 6 kV contact discharge
<b>Start Delay: ON Delay</b>	2sec – 999sec (default 5sec)
<b>Trip Delay: OFF Delay</b>	0.1 – 999sec (Phase Loss & Phase reverse: <100ms) Default: Neutral Loss is <500ms & OV, UV, Asymmetry fault 5sec.
<b>Output Relay</b>	223-7788: 1C/O. 223-7789: 1C/O + 1C/O. 223-7790: 1C/O + 1C/O.
<b>Contact Rating</b>	5A (Resistive) @240VAC/30VDC
<b>Electrical Life</b>	1X10 <sup>5</sup> Operations
<b>Mechanical Life</b>	1X10 <sup>7</sup> Operations
Utilization Category	
<b>AC-15 (V)</b>	120/240V
<b>AC-15 (A)</b>	3/1.5A
<b>DC-13 (V)</b>	24/125/250V
<b>DC-13 (A)</b>	2/0.22/0.1A

## Monitoring Relays

### Mechanical Specifications

<b>Height</b>	90mm
<b>Depth</b>	67mm
<b>Width</b>	36mm
<b>Weight</b>	100g
<b>Case Material</b>	Flame Retardant UL 94-V0

### Operation Environment Specifications

<b>Operating Humidity</b>	95% (Rh) Non-Condensing
<b>Operating Temperature Range</b>	-10 to 60°C
<b>Storage Temperature Range</b>	-20 to 70°C
<b>Cooling</b>	Natural convection
<b>Vibration Resistance</b>	According to IEC 60068-2-6

### Protection Category

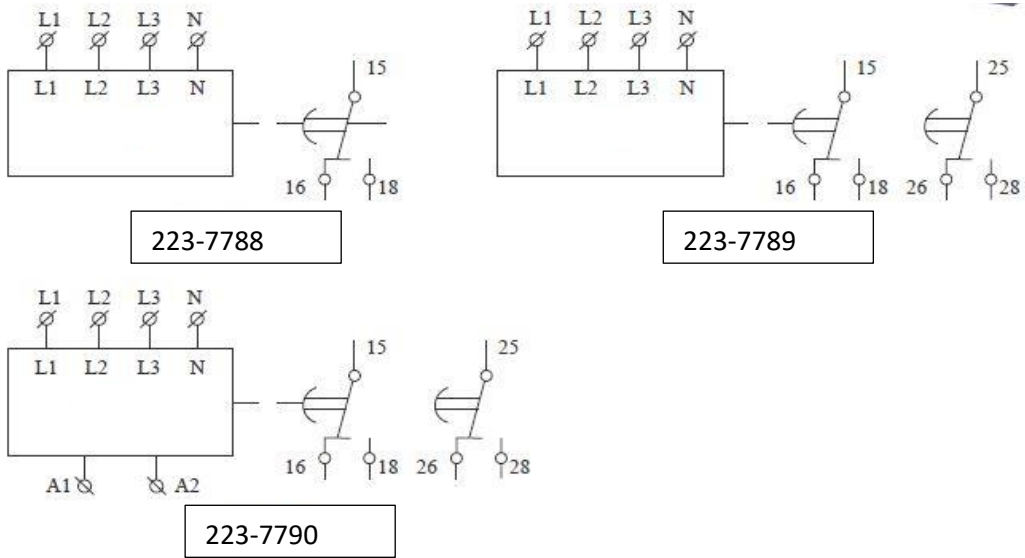
<b>IP Rating</b>	IP20 Enclosure and Terminals, IP40 with front dust cover closed
------------------	---

### Approvals

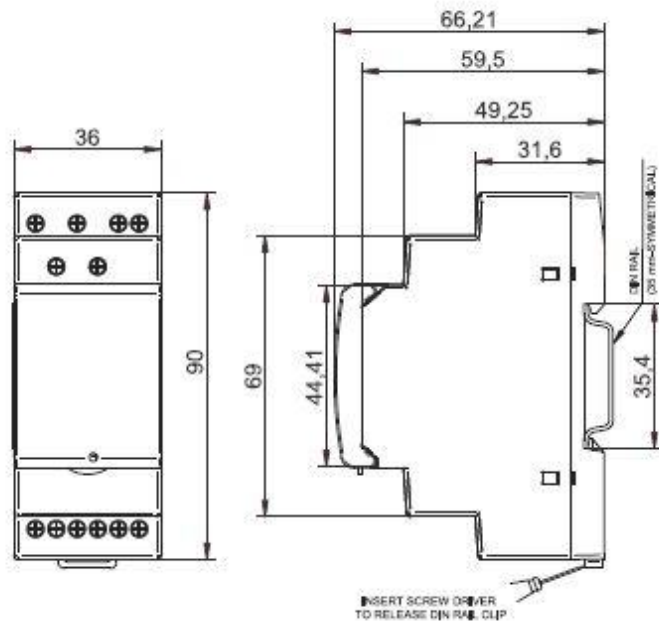
<b>Declarations</b>	CE and UKCA Declaration of Conformity
<b>Standards Met</b>	CE / IEC / CISPR11 / UL 508 (Safety)
<b>Hazardous Area Certification</b>	No

# Monitoring Relays

## Connection Diagrams



## Dimensions



## Terminal Torque & Capacity

 Ø 4.5mm	0.5 N.m (4.4 lb.in)
	1 x 4mm Solid / Standard Wire
AWG	26 to 10