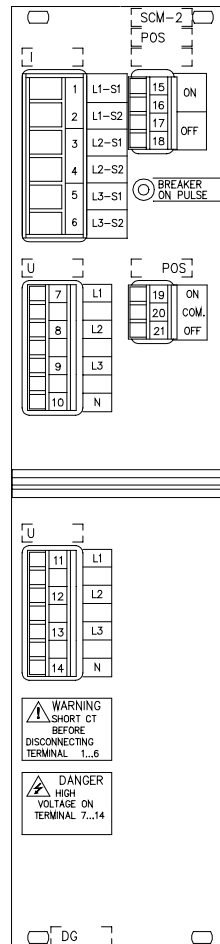


# Delomatic – Multi-function system

## Data SCM-2, Synchronizing/Measuring Module

4921240058D



### SCM-2:

- *Designed with multi-transducer and synchronizer as well as protection functions*

## **Synchronizing/Measuring Module (SCM-2)**

The SynChronizing/Measuring Module (SCM-2) is a multi-functional module which consists of a multi-transducer unit, a synchronizer and a generator breaker control unit.

The SCM-2 is designed for measuring, synchronization and protection of shaft generator breakers, bus-tie breakers or shore connections in applications of island mode type e.g. marine or island power stations.

Furthermore, the SCM-2 is designed for measuring, synchronization and protection of mains breakers, bus-tie breakers and mains protection in applications comprising parallel run with the mains e.g. power stations and (CHP).

### **Specifications for the multi-transducer unit**

The multi-transducer unit has one 3-phase current input and two 3-phase voltage input.

From these inputs  $U_{U1-L2}$ ,  $U_{L1-L3}$ ,  $U_{L2-L3}$ ,  $U_{L1}$ ,  $U_{L2}$ ,  $U_{L3}$ ,  $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ,  $\Delta I$ , S, P, Q and PF are measured or calculated.

The calculated and measured results are transmitted via the Delomatic communication bus to the control module (CM).

Technical specifications for the multi-transducer unit in the SCM-2:

Measurement:	Accuracy:	Class 1 according to IEC 688 (-10.. <u>15</u> .. <u>30</u> ..+55°C)	
	Frequency range:	40...70 Hz	
	Harmonics:	Max. 500 Hz are measured and included in the results and calculations.	
Current:	3-phase current:	-/1 or -/5A. Crest factor: Max. 6. The internal current transformer has a burden of typ. 0.3VA for each phase. Selection of CT ratio (-/1A or -/5A) of the internal current transformer is made in the application program.	
	Overload ratings:	10A continuously, $\leq 75A$ for 10 s, $\leq 300A$ for 1 s.	
Voltage:	Voltage range:	Low:	100...200V AC $\pm 20\%$ (phase-phase)
		Medium:	201...379V AC $\pm 20\%$ (phase-phase)
		High:	380...690V AC $\pm 20\%$ (phase-phase)
		Crest factor:	Max. 1.5 The internal voltage measuring circuit has a burden of max. 0.5VA for each phase. Selection of Low, Medium or High voltage range is made by means of jumpers on the PCB.
	External fuse:	Max. 2A. Slow blow fuse.	
	Overload ratings:	$2 \times U_N$ for 10 s.	

### **Specifications for the synchronizer unit**

The synchronization is carried out as a dynamic synchronization with regards to:

- $\Delta$ frequency the synchronization is always carried out over-synchronous with regard to a programmable nominal frequency.
- $\Delta$ voltage the closing of the breaker will take place only if the difference between the voltages on both sides of the breaker is less than a programmable  $\Delta$ voltage value.
- $\Delta$ angle closing of the breaker will take place only when there is coherent phase angle between the voltages on both sides of the breaker with regard to the breaker closing time (programmable).

The automatic synchronization is carried out according to the measured conditions on both sides of the breaker. These conditions are transmitted from the SCM-2 to the Control Module (CM) which carries out the common speed control of the connected generators through the ARC-network communication and the SCM-1 synchronizer unit located in each DGU.

Technical specifications for the synchronizer unit:

Synchronizer:	Accuracy:	$\pm 5^\circ$ el.
	Frequency range:	45...65 Hz.

### **Specifications for the breaker control unit**

The generator breaker ON/OFF control unit operates in coherence with the synchronizer unit and the application program.

The generator breaker position is supervised by a two-terminal feedback input signal from the generator breaker.

The ON/OFF control is carried out via 2 potential-free relay outputs.

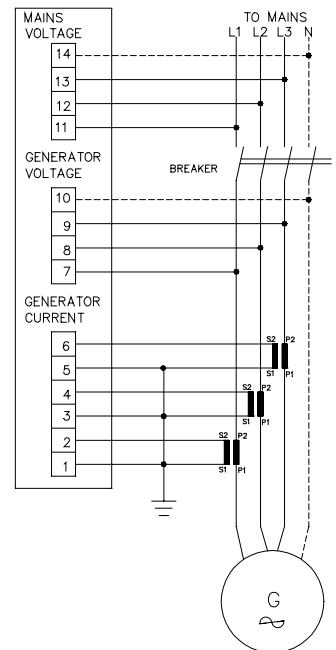
Specifications for the breaker ON/OFF control unit:

ON/OFF signal:	Potential-free contact sets:
	Max. ratings: AC: 250V – 5A – 1000VA DC: 250V – 1A – 50W
Pos. feedback:	Binary inputs: Potential-free contacts.
Dimension:	Width 60.96 mm (12 TE)
Weight:	0.85 kg (1.9 lb)
Supply:	From PSM via the back plane.
Power consumption:	Typ. 2.0W. Max. 3.0W.
LED:	<u>Red</u> LED "BREAKER ON PULSE" when the breaker ON pulse is sent.
Galvanic separation:	Test voltage: 2.5kV/2.0kV – 50 Hz – 1 min. according to GL, LR and DNV.
Screw terminals:	Current input: 4 mm <sup>2</sup> (single/multi-stranded) All others: 2.5 mm <sup>2</sup> (single/multi-stranded)
Flammability:	All plastic parts are self-extinguishing according to UL94-VO.
Environment:	Temperature: Reference: +15...+30°C Nominal: -10...+55°C Operational: -25...+70°C Storage: -40...+70°C Climate: Class HSE, according to DIN 40040.
Protection:	IP20 when mounted in a Delomatic rack.
Approvals:	The Delomatic system is CE marked and type approved by LR, GL, DNV, ABS, BV, RINA and CNK.

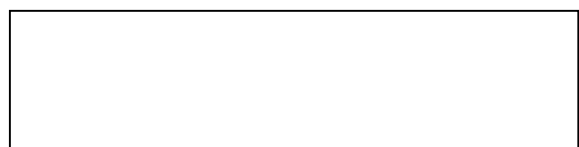
### AC measuring inputs

Please note: Max. input voltage is 690V AC. Higher voltages require voltage measuring transformers.

Wiring shown is 4-wire with neutral. If wiring is 3-wire without neutral, terminals 10 and 14 are left unused.



Errors and changes excepted.



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