

Question:

If there is a load connected to the installation that has a path through that load to neutral and the phase supplying that load is lost the RM17TG20 does not detect a phase loss and continues to operate.

Is the RM17TG20 product malfunction?

Answer:

RM17TG20 product's functions are measure/detect phase sequence fault and phase failure fault.

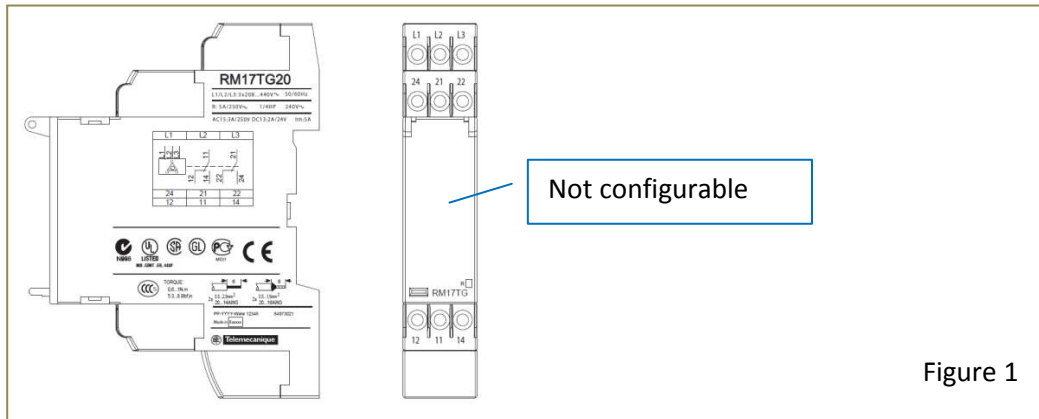
a) Phase sequence

Monitor correct sequencing of the three phases

b) Phase failure

The phase failure fault threshold level is preset internally to 183V. Product detect as normal operation (no fault) when the network voltage level is beyond 183V threshold.

Based on customer's application, in the phase failure fault event, I suspect that the three phases network voltage level is above the 183V threshold level. Therefore the product is not able to detect any fault operation.



Laboratory test (RM17TG20)

A load is connected across L3 and N network. The S3 switch change to open circuit. An electrical link is reminded between the N and L3x line. The voltages across the RM17 product's input are:

$V_{13} = 230V$

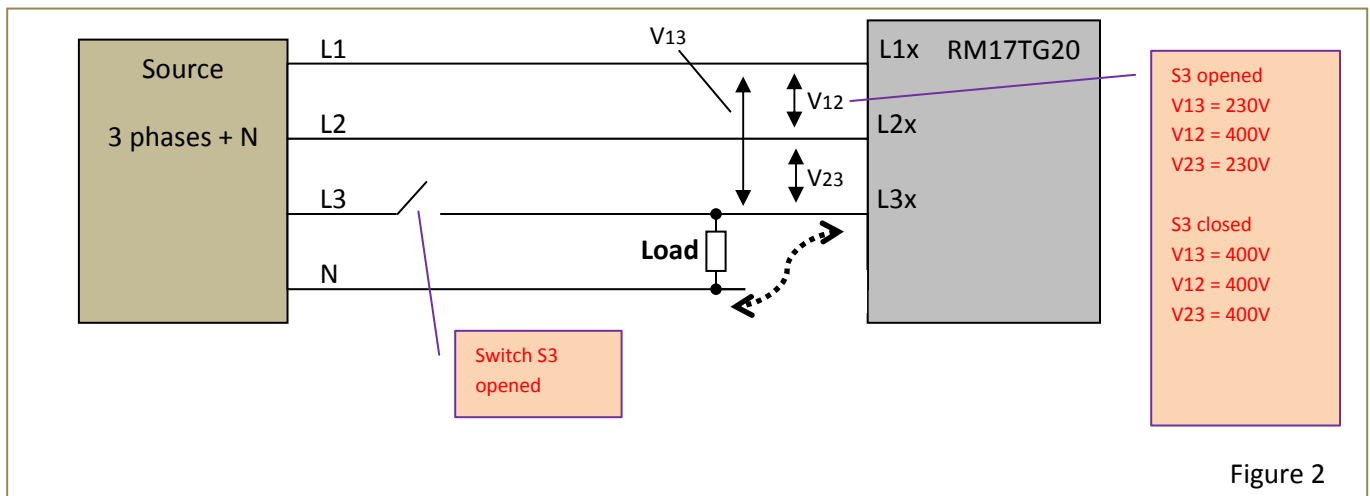
$V_{12} = 400V$

$V_{23} = 230V$

Note: For RM17TG20, the phase failure fault threshold level is preset internally to 183V.

The measured V_{13} and V_{23} signals are 230V and they are above the [183V threshold level](#), therefore in this condition the product is [not able](#) to detect any fault signals.

The illustration diagram depicts the application.



For RM17TU00 product, the phase failure (or undervoltage) fault threshold level is not fixed internally and it can be adjust through product's front panel. Refer to product catalogue, page 14. The overvoltage and undervoltage difference in window mode, adjustable from 2...20 % of Un.

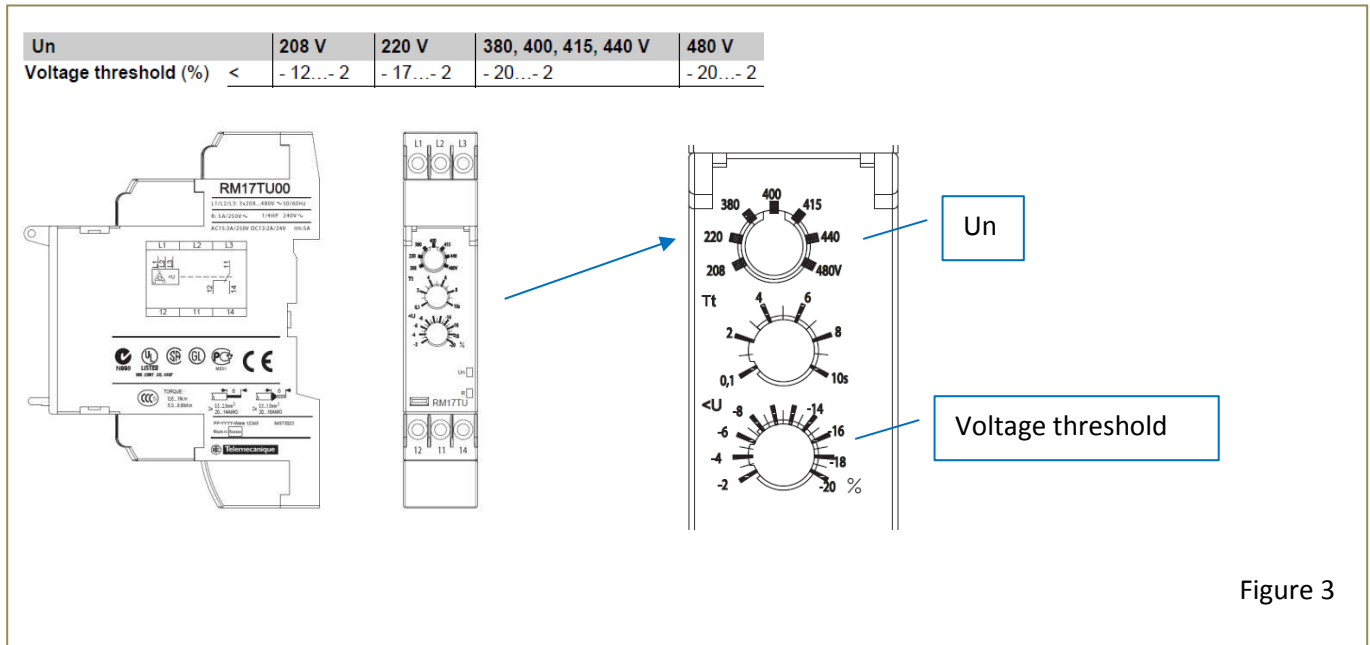


Figure 3

Based on laboratory test, a RM17TU00 product's Un is set to 400V and <U is set to -20%. The product's undervoltage threshold is configured to 320V. (0.8 x 400)

S3 switch is opened and the V13, V12 and V23 voltage level is measured and recorded.

V13 = 230V

V12 = 400V

V23 = 230V

Now, the V13 and V23 voltage level is lower than [320V threshold level](#). Hence the RM17TU00 is [able](#) to detect phase failure fault.

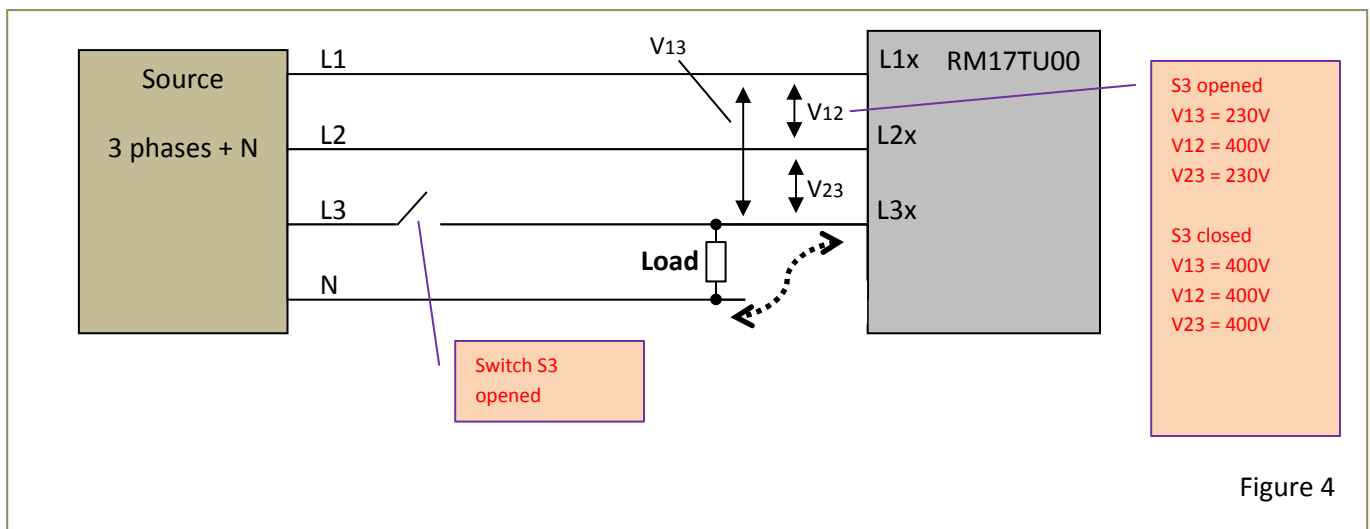


Figure 4

Conclusion:

Based on our investigation, RM17TG20 product itself is not malfunction.

RM17TG20 product's phase failure threshold is fixed at 183V. The system is considered as fault operation when one of the phase voltage drops below this threshold.

RM17TU00 product's phase failure threshold is higher, adjustable from -20 to -2 % of Un. That is why this product is able to detect the phase failure fault on the field.

Recommendation:

For this kind of application, it is recommended to use a product with higher undervoltage threshold detection level to monitor the three phase network system.

The following products are able to address this application issue:

RM17TE00

RM17TU00

RM35UB3N30 and et cetera...