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Main Protection Functions – Limit Overview

SIPROTEC 5 Application

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APN-050, Edition 1

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1 Introduction

SIPROTEC 5 offers with its innovative modular and flexible hardware, software and communication a perfectly tailored and cost optimized solution for cost effective solution for each applications. The high degree of flexibility and scalability, not only from the hardware perspective but also regarding functionality, are one of the key features of the SIPROTEC 5 platform.

SIPROTEC 5 devices can protect multiple feeders, which can be very useful to grant a redundancy with reduced investment, see figure 1:

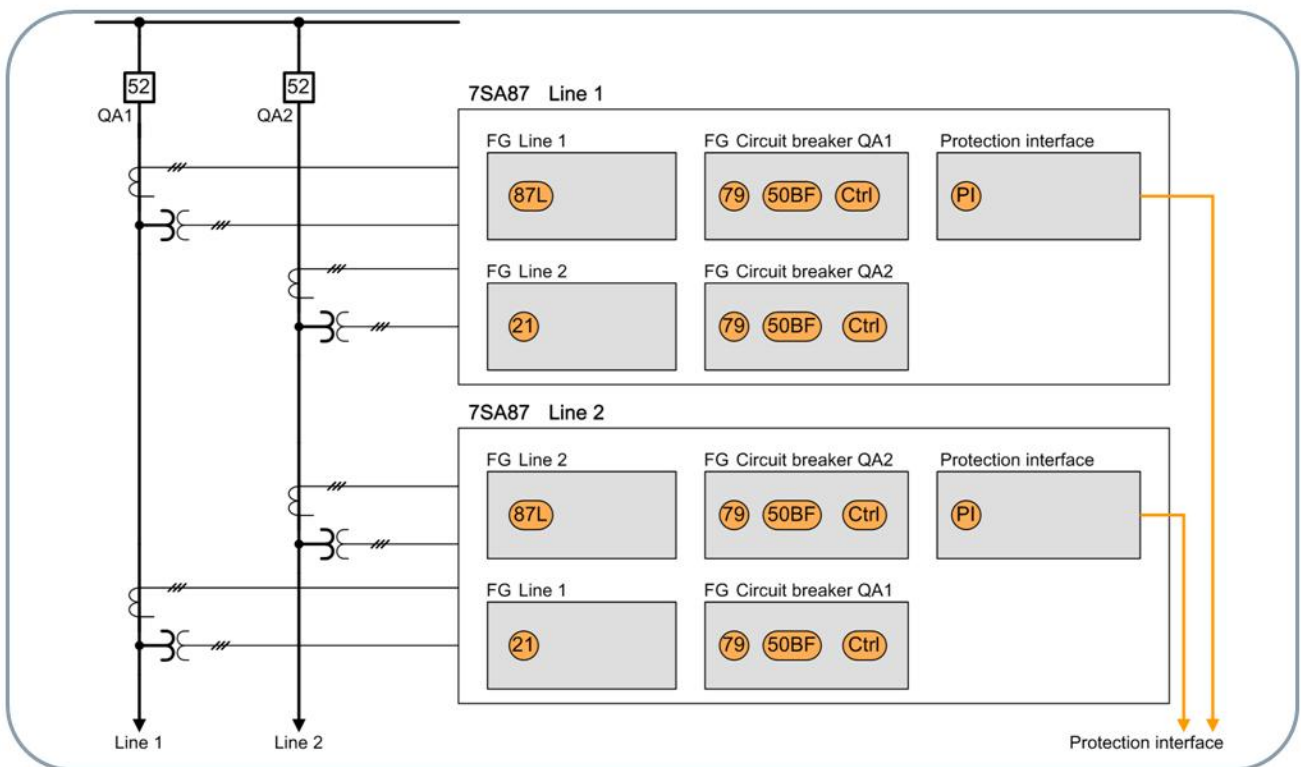


Fig. 1: Protection and control of two feeders with one device

This innovative concept is also a unique selling proposition referring to tests of the IEC 61850 process bus technology. The customer can herewith use a single SIPROTEC 5 device protect conventionally the bay and in parallel a protection scheme based on sampled measured values (SMV) at the same time. Easy, cost effective and ready to compare!

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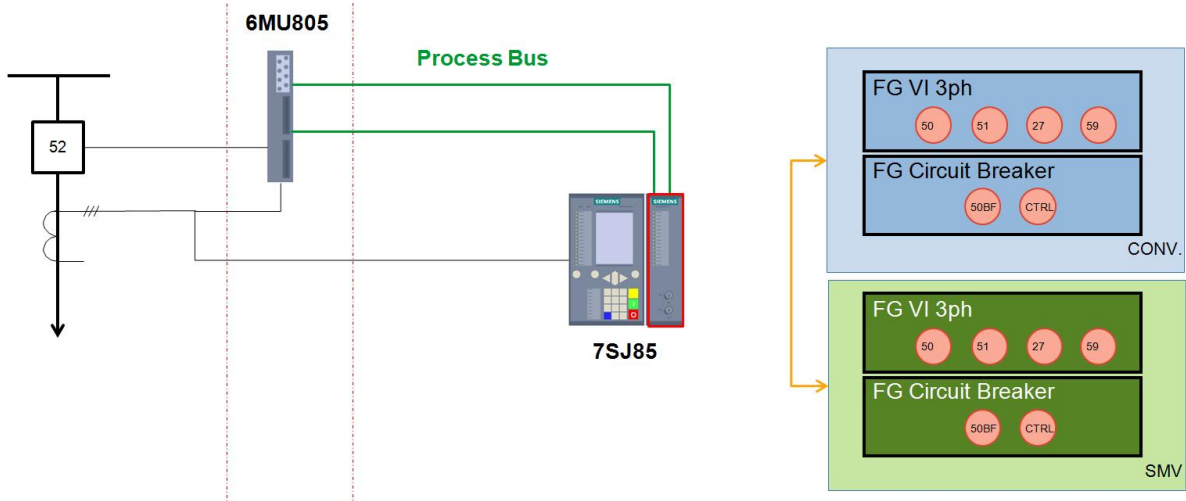


Fig. 2: SIPROTEC 5 with one function group for conventional and one for SMV measurements

However, as throughout the lifecycle of the SIPROTEC 5 devices the processing capability has been improved and in parallel new functionalities has been added, it is not easy to observe the system limits of every SIPROTEC 5 device type all the time. Therefore the goal of this application note is to provide a clear overview of the limits with regards to the main protection functions.

Information summarized in the table are gained from the SIPROTEC 5 Online Configurator which is accessible on the Internet with the following link: <https://w3.siemens.com/smartgrid/global/en/products-systems-solutions/Protection/Pages/protection-relay-configurator.aspx>

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2 Main Protection Functions – Limit Overview Table

Main Functions in Devices
(FW V7.80)

Device	Distance	Line Differential	Stub	Line Diff including Power Tx	Transformer Differential	Transformer Side	Transformer Neutral-Point	Impedance for Tx	AVC for 2-w Tx	AVC for 3-w Tx	AVC for Grid Coupler Tx	Parallel Operation for 2x 2-W Tx	Generator Differential	Synch. Function with Balancing Cmd.
7UT82	-	-	-	-	Max. 1	Max. 2	Max. 2	-	-	-	-	-	-	-
7UT85	Max. 2	Max. 1	Max. 1	-	Max. 1	Max. 3	Max. 2	Max. 3	Max 4.	Max 4.	Max 4.	Max 1.	Max 1.	-
7UT86	Max. 2	Max. 1	Max. 1	-	Max. 2	Max. 4	Max. 3	Max. 3	Max 4.	Max 4.	Max 4.	Max 1.	Max 1.	-
7UT87	Max. 2	Max. 1	Max. 1	-	Max. 3	Max. 5	Max. 5	Max. 3	Max 4.	Max 4.	Max 4.	Max 1.	Max 1.	-
7SA82	Max. 1	-	-	-	-	-	-	Max. 2	Max 4.	-	-	Max 1.	-	-
7SA86	Max. 2	-	Max. 1	-	-	-	-	Max. 2	Max 4.	Max 4.	Max 4.	Max 1.	-	-
7SA87	Max. 2	-	Max. 1	-	-	-	-	Max. 2	Max 4.	Max 4.	Max 4.	Max 1.	-	-
7SL82	Max. 1	Max. 1	-	Max. 1	-	-	-	Max. 2	Max 4.	-	-	-	-	-
7SL86	Max. 2	Max. 1	Max. 1	Max. 1	-	-	-	Max. 2	Max 4.	Max 4.	Max 4.	-	-	-
7SL87	Max. 2	Max. 1	Max. 1	Max. 1	-	-	-	Max. 2	Max 4.	Max 4.	Max 4.	-	-	-
7SD82	-	Max. 1	-	Max. 1	-	-	-	-	Max 4.			Max 1.	-	-
7SD86	-	Max. 1	Max. 1	Max. 1	-	-	-	-	Max 4.	Max 4.	Max 4.	Max 1.	-	-
7SD87	-	Max. 1	Max. 1	Max. 1	-	-	-	-	Max 4.	Max 4.	Max 4.	Max 1.	-	-
7UM85	-	-	-	-	Max. 2	Max. 6	Max.3	Max. 2	-	-	-	-	Max. 2	Max 3.
7VE85	-	-	-	-	-	-	-	-	-	-	-	-	-	Max 8.

3 SIPROTEC 5 and DIGSI 5 tutorials on YouTube

A series of tutorial videos help to enhance communications, share information and educate a large audience. Anytime and anywhere.

In the videos our skilled experts present technical details related to SIPROTEC 5 devices and the engineering software DIGSI 5. Always practice-oriented, clear, and what's more - convincingly. Thus the videos not only attract and train customers in an effective and efficient way but also provide helpful information for all Siemens colleagues.

Watch the latest tutorials on YouTube and learn about SIPROTEC 5 and DIGSI 5.

https://www.youtube.com/results?search_query=SIPROTEC+5

4 Summary

This application should assist to select easily the perfectly tailored SIPROTEC 5 device for your switchgear and applications. A proper selection of the right SIPROTEC 5 device right from the beginning!

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