# DIGITAL RELAYS AND THEIR TECHNOLOGY

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**Introduction:**Nowadays, modern digital relays are widely used in protection systems. The design and modeling of digital relays requires the creation of a generalized digital relay structure composed of more compatible and common internal modules used by conventional digital relays. This chapter discusses the functionality of each of the generalized digital relay internal modules, namely the signal conditioning and scaling module, the analog signal preference filtering module, the analog-to-digital conversion, the phase estimation algorithm, and the relay logic. This monograph lists and reviews the most common techniques and methods used in each of the internal modules.

### Relay performance
Energy in the system of relays good performance for the following features in relays available to be need

### Reliability
Relays reliability straight away reliability and safety concepts suitable will come . Relays protection to do zone belongs to Fault surface when it comes when working is called reliable . Safety relay the work from the zone outside Fault because of to work down if he doesn't go or system in normal condition without malfunctions when is achieved .

### Selectivity ( Selectivity )
Only abnormal condition happen happening the area holding standing breakers to open need has been is an ability . Selectivity waiting the time installation or unity protection through done increase can _ Time installation according to selectivity different different the work zones time according to to be classified and Fault surface when it comes , one series protection equipment breakdown situation even if he notices , only breakdown to the zone belongs to has been switches turn off function do it means _ Unity protection according to selectivity relay only sure defined in the zone happen has been certain Fault conditions work means _

### Speed
Fault surface when it comes , failure energy to the system effect who does time how much a lot if , energy system unstable the work to the point down to stay danger so much big will be Relays waiting time How big if , power system unstable the work to the point down to stay danger is bigger .
    That's why for failure possibility until faster eliminate reach for redundant to work falling relays Demand will be done .

### Sensitivity
If the relay placed to value breakdown happen has been access at the minimum value of signals if it works , the relay is called sensitive .

### Discrimination
This feature relay malfunctions and some temporary events differentiate enable gives , for example : plus plucking or transformers for vine until because of surface coming temporary excess vine _ To this addition respectively , to each other connected in systems of power change not be considered a malfunction need _
    Relay and makes sense functions done increase for the microprocessor relay architecture introduction began in the 80s . Digital relays tools from transformers incoming analog signals choose for

analog -digital own converter (ARK). into takes and relay makes sense values determination for from the microprocessor is used . Digital relays incoming of signals accuracy energy control improves as well as more complex relay algorithms , additional relay functions , additional relay tasks apply opportunity present did _

### Generalized digital relay structure

Straight away open system from transfer received generalized digital relay concept modern digital minimum hardware of relays modules and from functions consists of Generalized digital relay and common there is has been data quantity with modern digital relay of equipment a lot part again Create can _ The following hardware modules and functions generalized digital relay organize does _ Technology growth with digital relay today's in the day small from microprocessors sharp has changed and electricity supply system indispensable part being remains _ Digital relay programming possible and this their important from the features is one

Protection on the device digital protection relay if used , they sure protection , good reliability problems _ easy eliminate contact _ _ and malfunctions about information will give .

### Relay functions

Digital signal processor and computer equipment , including many _ achievements , devices protection in doing digital relay efficiency increase for is responsible .

Today's in the day energy system protection to do devices to users one how many integrated functions offer does _ This protection devices protection do , control make , measure and observation such as in functions one how many tasks perform can _ They are also remote _ to manage and in real time information transmission provide for contact ability have _

### Usage field

Digital relay to the system based on protection devices work release , transfer and distribution to systems service does. This systems not only a lot tasks does , maybe work for big does not occupy places .

Relay another settings with one in line breakdown of the writer flexibility using parameter writing take can _ That 's it means that every one the device protection to do individual relay for enough _

On the device one how many settings range existence because of sure results is taken . Digital relay system the following to areas service does :

Relay hardware and software supply , a lot protection attributes , dynamic protection attributes , data storage and assimilation make , tools feature , itself check ability , communication attributes , flexible and to thrift they have.

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