

• DESCRIPTION

The NTC/2185 is a very powerful and universal switching system. This system can be used to do redundancy switching on a wide variety of equipment ranging from simple 1:1 to complex 1:n redundancy schemes. The system consists of a framework of 1U high 19" rack units, where the individual 'switching' modules are build in.

There are two different types of units in a 2185 Universal Switching System (USS): The main unit (NTC/2185/NF) and, when needed, up to 8 extension units (NTC/2185/NE). A complete system can accommodate up to 36 'switching' modules of the NTC/3410/xx family, depending on the width of the back panels.

Any type of configuration can be proposed by the Newtec sales department upon simple request !

The main unit (NTC/2185/NF)

- 19" rack mountable, 1 U high unit
- front panel with LCD , keypad and LED alarms
- All monitor and control parameters are available locally on the front panel (LCD display & keyboard) and remotely via a RS485/232 interface and the 10 base-T Ethernet interface.
- serial interface to the extension units and redundant equipment
- dual (redundant) power supply with dual power inlets
- Microprocessor controller board to control the switching modules
- The main unit can hold up to 4 'switching' modules (the number of possible modules depends on the width of the back panels, the total available width at the back panel is 280 mm).

The extension unit (NTC/2185/NE)

- 19" rack mountable, 1U high unit
- Serial interface to the main unit and/or to other extension units
- Dual (redundant) power supply with dual power inlets

- Extension microprocessor controller board to control the switching modules.
- The extension unit can hold up to 4 'switching' modules (the number of possible modules depends on the width of the back panels, the total available width at the back panel is 320 mm)

• FEATURES

- stand alone 1:n redundancy
- major improvement of complete system Mean Time Between Failure
- versatile configurations for modulators, demodulators, converters and stations via a modular architecture
- flexible I/O via relays contact closures
- local & remote M&C access to all menus through a
 - * web interface (Http protocol)
 - * RS-485/RS-232 (RMCP v2 protocol)
 - * 10/100 Base-T Ethernet port (RMCP v2 protocol)
- SNMP agent and MIB file optionally available
- dual power supplies
- more than 200 year MTBF
- minimum height for maximum complexity (44 mm + n x 44 mm for n extension units)
- cost effective
- CE conform

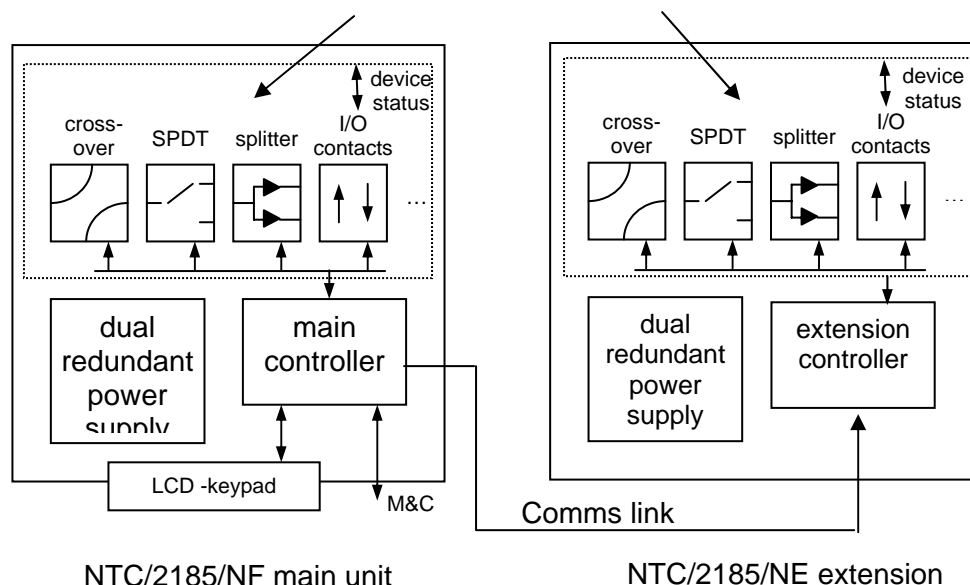
Control

- local/remote
- automatic/manual switching
- switch position(s) for manual switching
- conditions for automatic switching
- switching delay
- input contact closure definition and polarity
- output contact closure polarity

Monitor

- all control parameters
- device alarm status
- power supplies
- switch positions

• **BLOCK DIAGRAM** (REMARK : PRESENT SWITCHING MODULES DEPENDS ON CONFIGURATION)



• **MECHANICAL** (PER UNIT - MAIN OR EXT.)

- power supply 90-130/180-260 V
(dual) 105 VA/unit
47-63Hz
- chassis width 483 mm (19 in)
height 44mm(1.75"1U)
depth 480 mm (19 in)
weight TBD kg
- temperature operational 0/+40°C
storage -40/+70°C

The 'switching' module family NTC/3410/xx

- A rear panel part on which the interface connector is mounted. The size of this panel is a multiple of 20 mm.
- A mechanical and electrical interface to the main/extension unit
- A switch (single / multi-pole / multiple switches), cross over or SPDT, digital inputs or outputs, splitters ..., a combination of all of these, or even customer specific functions. For a detailed specification: see the individual NTC/3410/xx family datasheet section.
- A fingerprint for auto-configuration: The unit microprocessor will automatically recognize all NTC/3410/xx family modules.

Operation

The software in the main unit will auto-detect all the extension units and 'switch' modules in the system. Through a powerful software configuration tool, the 'switch' modules can be combined to create complex (input and/or output) redundancy switching of a wide variety of Newtec and other equipment, while staying operator friendly. See application notes for further details.

The switching can be initiated automatically by detection of contact closures, manually by RMCP (Serial communication) or by user command via the keypad. The automatic switching is typically for 1:1 redundancy switching or 1:n redundancy with limited configuration management. The SEMS NTC/2083/xx management system can be used to control the switching of a 1:n redundancy system with full configuration management

• SWITCHING MODULES

❑ NTC/3410/CG - cross-over - SMA - RF

- type cross-over
- connectors SMA (F) - 50 Ohm
- frequency DC - 18 GHz
- return loss > 18 dB (L band) >13 dB (RF)
- insertion loss < 0.5 dB
- isolation > 75 dB (L band) >60 dB (RF)
- width 80 mm
- typical applic. L band and RF signal at modulator and converter output

❑ NTC/3410/CH - cross-over - BNC-50 Ohm 2.5 GHz

- type cross-over
- connectors BNC (F) - 50 Ohm
- frequency DC - 2.5 GHz
- return loss > 18 dB (L band)
- insertion loss < 0.5 dB
- isolation > 75 dB (L band)
- width 80 mm
- typical applic. L band at modulator and converter output

❑ NTC/3410/CC - cross-over BNC 50 Ohm BB-IF

- type cross-over
- connectors BNC (F) - 50 Ohm
- frequency DC - 270 MHz
- insertion loss < 2 dB
- isolation > 50 dB (300 MHz)
- width 60 mm
- typical applic. IF signals at modulator output or demodulator input

❑ NTC/3410/CD - cross-over BNC 75 Ohm BB-IF

- type cross-over
- connectors BNC (F) - 75 Ohm
- frequency DC - 270 MHz
- insertion loss < 2 dB
- isolation > 50 dB (300 MHz)
- width 60 mm
- typical applic. IF (75 Ohm), video signals , G.703, ASI, SSI and ECL BB-int. (data and clock)

❑ NTC/3410/C3 - triple cross-over - coax BB

- type cross-over
- connectors BNC (F) - 75 Ohm
- frequency DC - 270 MHz
- insertion loss < 2 dB
- isolation > 50 dB (300 MHz)
- width 140 mm
- typical applic. video signals , G.703, ASI, SSI and ECL BB-int. (data and clock)

❑ NTC/3410/D2 - cross-over - 25 p sub-D - BB

- type cross-over
- connectors 25 pin sub-D (F)
- frequency DC - 52 MHz
- isolation > 30 dB(balanced)
- width 120 mm
- typical applic. SPI, RS422 and full HSSI BB interf.

❑ NTC/3410/DA - cross-over - four balanced signals

- type cross-over
- connectors 15 pin sub-D (F)
- frequency DC - 3 MHz
- isolation > 85 dB (20 kHz balanced)
>45dB (3MHz balanced)
- width 100 mm
- typical applic. Analog and digital audio (AES-EBU)

❑ NTC/3410/DH - cross-over - HSSI interface

- type cross-over
- connectors 25 pin sub-D (F)
- frequency DC - 52 MHz
- isolation > 30 dB (balanced)
- width 120 mm
- typical applic. HSSI interface (wires TT,SD, RT,RD, CA ST,LA,LB switched)

❑ NTC/3410/PC -Protocol converter

- type Protocol converter
- connectors 9 pin subD (F)
- feature converts RCMP load config command to other protocol
- width 0 mm
- typical applic. 1:n redundancy for NTC2179

❑ NTC/3410/EB - dual external switch driver / contact inputs

- connector two 9 pin sub-D (F)
- inputs 2 - 3 (common-contact input)
4,5-6(common-contact input)
- contact out. 1 - 7 (Normal open)
- ext. contact drv pin 8 0.9A (open/ sink)
pin 9 + 12 V, 0.9 A
- width 60 mm
- typical applic. external switch control and position feedback , input of device alarm contacts

❑ NTC/3410/FC -Fiber optic cross-over switch (Multimode)

- connector 2 duplex SC receptacles
- Features Full Compliance with ATM Forum UNI SONET OC-3 Multimode Fiber Physical Layer Specification
- width 80 mm
- typical applic. SDH (SONET)

❑ NTC/3410/FS - Fiber optic cross-over switch (Single Mode)

- connector 2 duplex SC receptacles
- Features SONET OC3 SDH STM1 compliant
- width 80 mm
- typical applic. SDH (SONET) redundancy

❑ NTC/3410/SF - active splitter/switch - F - 75 Ohm L-band

- type active splitter / switch
- connectors F (F) - 75 Ohm
- frequency 920 - 2150 GHz
- return loss > 8 dB
- gain ± 3 dB
- width 100 mm
- typ. application L-band switcher / splitter, LNB redundancy and LNB contact

- ☐ **NTC/3410/A7 – 7 channel ASI splitter**
 - type Active ASI splitter with Monitoring and Control
 - connectors BNC (F) - 75 Ohm
 - return loss > 14 dB
 - width 100 mm
 - typ. application ASI distribution
- ☐ **NTC/3410/AS – 6 channel ASI splitter with 2 inputs**
 - type Active ASI splitter /switch with Monitoring and Control
 - connectors BNC (F) - 75 Ohm
 - return loss > 14 dB
 - width 100 mm
 - typ. application ASI distribution
- ☐ **NTC/3410/I7 – 7 channel splitter(0–200 MHz)**
 - type 7 channel active splitter
 - connectors BNC (F) – 50 Ohm
 - gain 0 dB (+/- 1 dB)
 - return loss > 14 dB
 - width 100 mm
 - typ. application signal distribution
- ☐ **NTC/3410/Wx – Dual waveguide switch controller**
 - type waveguide switch controller with power supply option
 - connectors 9 pin subD (F)
 - width 60 mm
 - typ. application SSPA or LNB redundancy
- ☐ **NTC/3410/MP - contact closure input/output**
 - connectors 25 pin sub-D (F)
 - signal ground pin 13
 - control inputs open - common - closed
 - unit A on-line 1 - 2 - 3
 - unit B on-line 3 - 2 - 1
 - automatic select 4 - 5 - 6
 - manual select 6 - 5 - 4
 - onitor outputs open - common - closed
 - unit A on-line 7 - 8 - 9
 - unit B on-line 9 - 8 - 7
 - local control 10 - 11 - 12
 - remote control 12 - 11 - 10
 - automatic select 14 - 15 - 16
 - manual select 16 - 15 - 14
 - USS OK 17 - 18 - 19
 - USS alarm 19 - 18 - 17
 - unit A OK 20 - 21 - 22
 - unit A alarm 22 - 21 - 20
 - unit B OK 23 - 24 - 25
 - unit B alarm 25 - 24 - 23
 - width TBD (80) mm
 - typical applic. M&C of 1:1 redund. via contact closures
- ☐ **NTC/3410/xx - other types (on special request - minimum order quantity)**

Cables

- ☐ **NTC/4222/AA device alarm cable**
 - connectors 2 x 9p sub-D (M)
 - length 1.5 m
 - typical applic Alarm cable between mod/ demod and NTC/3410/EB (input and internal alarm)

- ☐ **NTC/4221/AA Y internal alarm cable for mod**
 - connectors 3 x 9p sub-D (M)
 - length 1.5 m
 - typical applic Alarm cable between mod and NTC/3410/EB (internal alarm only , monitor up to 4 mod / 3410EB module)
- ☐ **NTC/4221/AB Y internal alarm cable for demod**
 - connectors 3 x 9p sub-D (M)
 - length 1.5 m
 - typical applic Alarm cable between mod and NTC/3410/EB (internal alarm only , monitor up to 4 demod / 3410EB module)
- ☐ **NTC/4221/AC device Y alarm cable**
 - connectors 3 x 9p sub-D (M)
 - length 1.5 m
 - typical applic Alarm cable between (de)mod and NTC/3410/EB (internal and input alarm contact in series. Monitor up to 4 (de)mod / 3410EB module)
- ☐ **NTC/4162/xx multiwire interface data cable**
 - connectors 2 x 25p sub-D (M)
 - length NTC/4162/AA : 1.5 m
NTC/4162/AB : 30 cm
NTC/4162/AC : 2 m
 - typical applic connection to mod/demod for HSSI, SPI
- ☐ **NTC/4177/AA Cable for HSSI**
 - connectors 25p sub-D (M) MD50-M
 - length 1.5 m
 - typical applic connection between mod/ demod and standard HSSI DTE
- ☐ **NTC/4207/xx Comm link cable**
 - connectors 9p sub-D(M) – 9p sub-D(F)
 - length NTC/4207/AA : 30 cm
NTC/4207/AB : 2 m
NTC/4207/AC: 5 m
 - typical applic communication link between USS main and extension units
- ☐ **NTC/4208/xx Digital video cable 75 Ohm**
 - connectors 2 x BNC male
 - length NTC/4208/AA : 0.5 m
NTC/4208/AB : 2 m
NTC/4208/AC: 5 m
 - typical applic video signals , G.703, ASI, SSI and ECL BB-int. (data and clock)
- ☐ **NTC/4213/AA AES-EBU Audio cable 110 Ohm**
 - connectors 2x 15p sub-D (M)
 - length 0.5 m
 - typical applic Connection between NTC/3410/DA switches
- ☐ **NTC/4214/AA AES-EBU Audio cable 110 Ohm**
 - connectors 15p sub-D (M) – 4 XLR (M)
 - length 2 m
 - typical applic Connection between NTC/3410/DA and IRD for audio

Options (to be ordered separately)

RLC-RFSW-UKW DC-18 GHz coaxial switch - 12 V fail-safe

• ORDERING - GENERAL BREAKDOWN

There are three ways to order the NTC/2185:

1. System level ordering

The customer provides Newtec all necessary system level specifications:

- The type of equipment to switch (ex : IRD NTC/2179)
- Which input/outputs to switch (ex Audio , Analog/digital video out)
The redundancy scheme (1:n) where n is the number of active equipment

The Newtec sales department will analyze the request and combine the necessary switches together with the main and extension units. Newtec will work out a proposal, including mounting configuration for all equipment in the rack and all necessary cabling. On delivery, the NTC/2185 system will be pre-configured by Newtec. Each different USS system is given a system configuration number NTC/1132/Nxxxx.

2. Module level ordering

The customer may also choose to select the necessary switching modules and to combine them with the main unit (and extension units) and the necessary cabling. But to make the system work, the USS also needs other configuration data which demands in depth knowledge of the USS. Therefore Newtec does not recommend this method.

3. Predefined Switching Architectures

When customers want to repetitively order the same configuration, Newtec can create a special ordering number NTC/2185/Zxx for this. Please contact the Newtec sales department for more information about this. On the other hand, the customer may choose to order a second identical system. For this, it is sufficient to use the NTC/1132/Nxxxx.

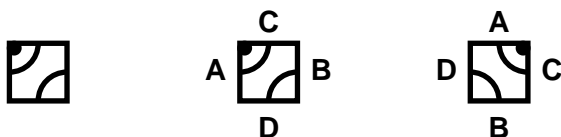
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• APPLICATION INFORMATION

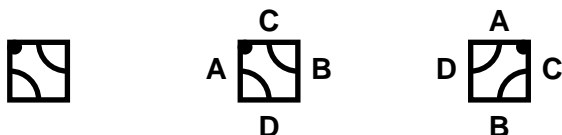
How to work out a M:N redundancy configuration using cross-over switches.

A cross-over switch has 4 terminals (normally named A, B, C, D) and two positions

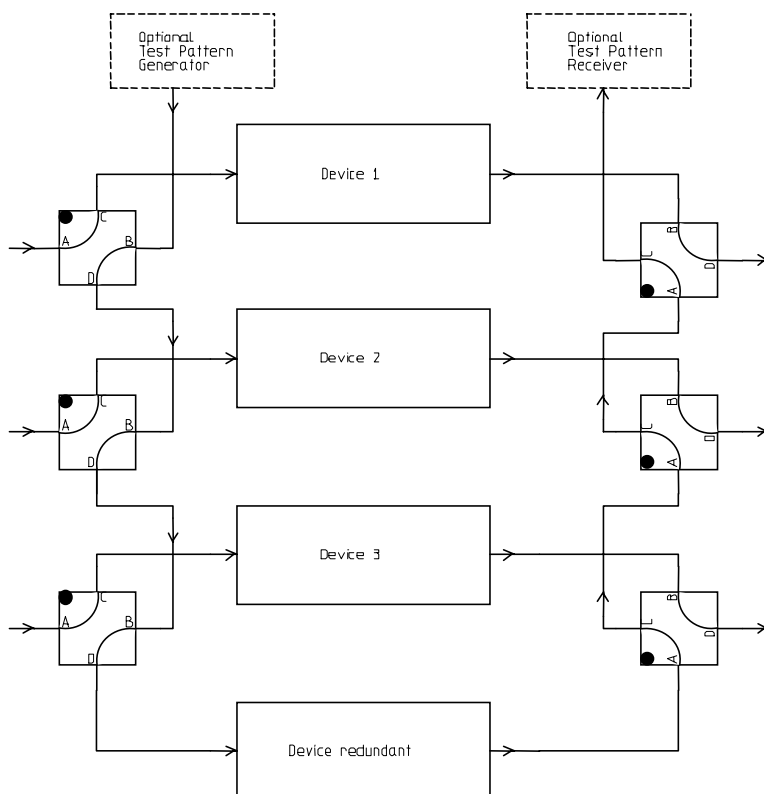
The default (un-powered) position of the switch is with the normal closed (NC) contacts made between A and C and between B and D. (position 0)



In switched, powered position the normal open contacts (NO) between A and D and between B and C are made. (position 1)

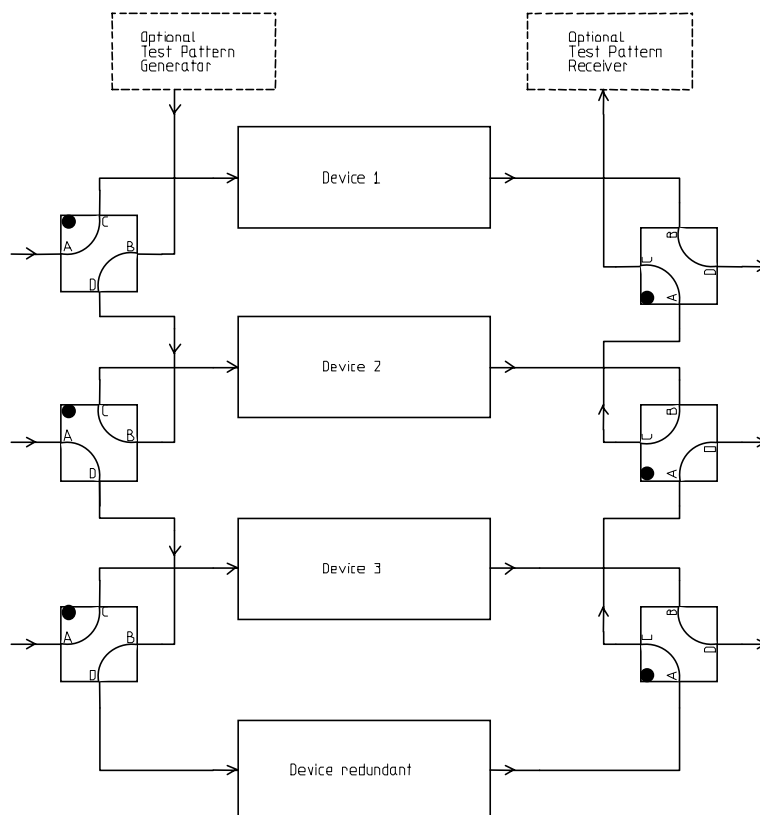


The NTC/3410/xx family offers a wide variety of different types of crossover switches for RF, L band, HSSI, SPI, video , audio ... These switches can be used to cross switch the inputs and/or outputs of the equipment. Below there is an example of a 1:3 redundancy configuration. The switches drawn can represent several different NTC/3410 modules.



With the switches in these positions, the redundant device is not used (connected to the optional test equipment).

When device 2 fails, the NTC/2185 will switch as shown in the next drawing



The redundant device has taken over the input and outputs of device 2. Device 2 is now connected to the optional test equipment.

There are 2 ways to initiate the switching operation:

A station management system like the SEMS (NTC/2083/xx) monitors the status of all equipment (via serial interface). If a device fails, it will copy the configuration of the failing device into the redundant, command the NTC/2185 to switch the inputs/outputs of the failing device to redundant and then enable the outputs of the redundant device.

The NTC/2185 can also detect a failing device by monitoring the alarm contacts. The NTC/2185 cannot copy the configuration from the failing device into the redundant. But all Newtec equipment can have up to 5 preprogrammed configurations in memory (for the AZIMUTH series even up to 50). The NTC/2185 can give a command (via serial communication) to the redundant device to switch over to one of these configurations. Therefore, if all of the configurations of the active devices were preprogrammed in the redundant device, it is possible to make a 1:n redundant system without a management system.

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Please consult our website for the latest technical and commercial updates and modifications.