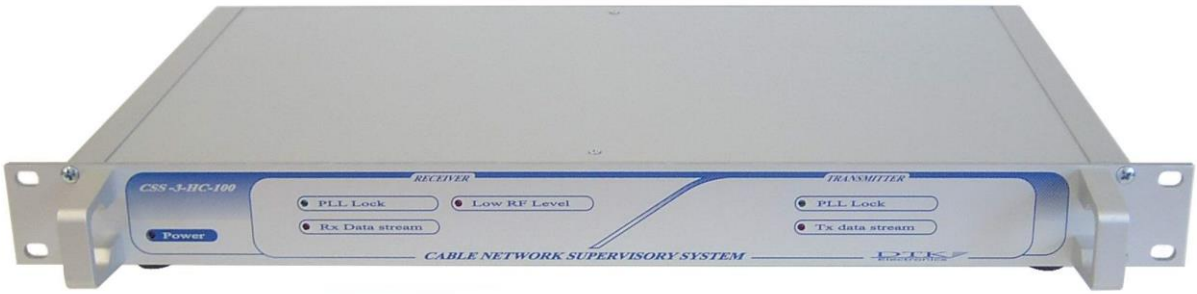
Cable network Supervisory System CSS-3

Security system and remote monitoring of the parameters of a cable network



Cable network Supervisory System CSS-3 is a upgrade monitoring platform that is installed on an already built two-way cable network. Monitoring of parameters is accomplish through software installed on the PC in the main station, from which the operator monitors the network parameters.Failure of any part of the network and change any of the measured parameters beyond the specified limits are automatically report the responsible technician through a short message (SMS) on mobile phone.

Consist the following modules:

1. CSS-3-SM-100 (Software module (Windows XP)). Software, representing operator station, through which the measured parameters are observed, recorded and archived.
2. CSS-3-HC-100 (Headend Controller). Communication controller, representing smart cable modem connected to PC control the transponders and also receive data from them.
3. CSS-3-ST-100 (Supervisory Transponder). Remote-mounted device, sending the digitized measured parameters of the cable network to the main station.
4. CSS-3-MC (Multipoint Combiner). Module that sum the reverse paths of different branches of the cable network and passes them to the input of the digital receiver of CSS-3-HC-100 (Headend Controller).

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Cable network Supervisory System CSS-3 perform the following functions:

1. Security of racks with TV equipment:
   - give a warning for open rack.
2. Monitoring and report for dropout linear power (230VAC) to avoid complete depletion (dilution) of the UPS's batteries.
3. Measuring the following parameters:
   - Line voltage
   - Current in the line
   - TV channels's level
4. Parameters control for reverse path - attenuation of the reverse path 0dB,-6dB and -40dB.

Communication between the CSS-3-HC-100 (Headend Controller), installed at the main station and remote devices (CSS-3-ST-100, Supervisory Transponder), installed along the cable line is carried out respectively over forward and reverse paths. Each transponder has an identification number (ID) and upon request from the controller at the main station responds with a set of data corresponding to the measured parameters by it. On the other hand, the software module is configured by the operator and when a parameter is out of standard value it triggers alarm and notification system. In this way achieves 24h monitoring and reduce time to diagnosis and localization of a occurred technical problem.

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CSS-3-HC-100 Headend Controller

The communication controller is mounted in the main station and provides two-way communication and data exchange between software module and the transponders. The device is implemented in 1U deck for mounting in 19 inch rack.

GENERAL SPECIFICATIONS:

Parameters	Specifications	Notes
Ambient temperature range:		
Operation	0 ÷ +50°C	
Storage	–20 ÷ +70°C	
Power supply	230VAC	@ 47 ÷ 63Hz
Power consumption	< 10 W	
Protection index	IP 54	@ IEC 529 standard
Dimensions (W x H x D)	430 x 43 x 260 mm	
Weight	1.85 kg	
Communication:		
RF Modem – Transmitter		
Transmitter frequency	870 MHz	note 1
Channel bandwidth	500 kHz	@ 50 dBc
Frequency raster	250 kHz	note 1
Frequency inaccuracy	± 5kHz	
Modulation method	FSK	@ Fdev=75 kHz
Tx Data speed	19.2 kbps	
Transmitter output level	100 ÷ 120 dBµV	note 2
Connector type	F-type	
RF Modem – Receiver		
Receiver frequency-Rx	65 MHz	note 1
Channel bandwidth	200 kHz	
Frequency raster	250 kHz	
Rx Data speed	19.2 kbps	
Receiver input level	50 ÷ 95 dBµV	
Receiver input return loss	14 dB	
Connector type	F-type	
Serial port:		
Type	RS-232	
Data transfer rate	19.2 kbps	
Connector	D-9 male	

Note 1: The devices are manufactured standard with the following frequencies Ftx = 870 MHz Frx = 65 MHz, but can also be programmed to another pair of frequencies within a range with the step at the request of the user.
Note 2: Adjust smoothly with attenuator located on the rear panel of the CSS-3-HC-100.

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CSS-3-ST-100 Supervisory Transponder

Transponder module that is installed in the user-selected nodes of the cable TV network. Operator at the main station can monitor remotly measured parameters from CSS-3-ST-100.

- Compact design
- Powered by coaxial line
- Second output for communication with optical nodes with additional input with wider bandwidth up to 150MHz of the reverse path laser transmitter.
- Allows remote control of attenuation of the reverse path, thus locate potential source of interference by switching from 0dB to-6dB, switch off the problem branch (-40dB) until the problem is correct and switch on the branch again (0dB) and thus normal operation is restored. Following this procedure, a much smaller number of subscribers are excluded from the network until the repair is pending.

GENERAL SPECIFICATIONS:

Parameters	Specifications	Notes
Ambient temperature range	–20 ÷ +60°C	
Power supply	35 ÷ 70 VAC	@ 47 ÷ 63 Hz
Pass-through current	12 A AC	maximum
Power consumption	< 7 W	
Connector type	5/8 inch	
Protection index	IP 64	@ IEC 529 standard
Dimensions (W x H x D)	165 x 100 x 145mm	
Weight	1.85kg	
Communication:		
RF Modem – Receiver		
Receiver frequency-Rx	870 MHz	note 1
Channel bandwidth	200 kHz	
Frequency raster	250 kHz	
Rx Data speed	19.2 kbps	
Receiver input level	75 ÷ 115 dBµV	
RF Modem – Transmitter		
Transmitter frequency	65 MHz	note 1
Channel bandwidth	500 kHz	@ 50 dBc
Frequency raster	250 kHz	note 1
Frequency inaccuracy	± 5 kHz	
Modulation method	FSK	@ Fdev=75 kHz
Tx Data speed	19.2 kbps	
Transmitter output level	100 dBµV	manual adjusted

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RF Specifications:

Forward path:		
Frequency bandwidth	47/85 ÷ 870 MHz	note 3
Pass Band attenuation	2.5 dB	@ slope 1 dB
Return loss	–18 dB	
Reverse path:		
Frequency bandwidth	20 ÷ 65 MHz	
Pass Band attenuation	2 ± 1dB [6/40 dB]	note 4
Return loss	–18 dB	

Measurement:

Line voltage	30 ÷ 100 V AC	± 5%, 47 ÷ 63Hz, note 5
Current trunk	0 ÷ 10A AC	± 5%, 47 ÷ 63Hz, note 5
RF trunk level	70 ÷ 115 dBµV	± 2 dB, note 5

Modules and plug-ins

Diplex filters	DF 35/47, DF 65/85, DF 18-65/85
Security module	Security module-100

Digital inputs

Input 1	230 V AC Detection	note 6
Input 2	N.C. Security input	note 6

Note 1: The devices are manufactured standard with the following frequencies Ftx = 870 MHz Frx = 65 MHz, but can also be programmed to another pair of frequencies within a range with the step at the request of the user.
Note 2: Adjust smoothly with attenuator located on the rear panel of the CSS-3-HC-100.
Note 3: Bandwidth is determined by the used diplex filter.
Note 4: The attenuation of the reverse path is controlled by the operator in the main station through software module.
Note 5: Set alarm zones must be greater than the measurement tolerances specified in technical specification.
Note 6: Available with security option, which includes an additional module Security module-100.

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