

DGT-IP R

Railway Telecommunication System

... reliable dispatcher communication for trains traffic management



Certified by **Polish Office of Rail Transport** for use in Polish Railway, Certificate no. U/2012/0609.

Highly scalable, versatile communication solution designed for:

- Train Local Control Centres,
- Trains Stations,
- Train Stops.

Support all kind of railway technological communication:

- between train dispatchers, section dispatchers and linemen from guarded railway crossings,
- analogue and digital - TDM and IP technology,
- based on copper cables or optical fibers,
- including radio communication,
- GSM-R ready.

State of the art, mechanical and touchscreen based train dispatcher consoles.

DGT-IP R, Railway Telecommunication System is a modern, digital communication system designed for voice communication and data transmissions using all the available (wired and wireless) transmission media. It integrates and modernizes technological solutions used in mobile communication networks, operating so far outside the standard telephone network.

DGT-IP R, Railway Telecommunication System provides fast and effective communication between train dispatchers and all the checkpoints located within the railway station, adjacent stations, section dispatchers and distributed railway posts located along the route. Trains dispatcher console can communicate with any system user, regardless of the available communication means (wired or wireless, including radio).

DGT-IP R also enables the data transmissions necessary for proper operation, adequate security and swift administration of the railway traffic.

DGT-IP R functionality provides efficient maintenance of railway infrastructure, increases the safety of railway traffic, enables faster and more effective actions in emergency cases.

DGT-IP R System architecture

DGT-IP R consists of the following main modules:

- DGT Millenium Telecommunication Server,
- Digital Calls Recorder NetCRR2,
- Train dispatcher consoles, available in two versions:
 - DGT 5810-10 - touchscreen based
 - DGT 3490 KX – classic keyboard with set of multifunctional buttons

DGT Millenium Telecommunication Server

DGT Millenium is a universal platform for building the dedicated communication systems with very broad functional abilities. Advanced network technologies used in DGT Millenium enable the construction of large and complex telecommunication networks with a unified numbering plan and equal access for all subscribers to applications, services and network resources.

DGT Millenium server within DGT-IP R system support all kind of railways technological communication links:

- train announcement links for train dispatcher communication between neighbouring stations,
- train guarded links for communication between train dispatchers and linemen from guarder railway crossings,
- local station links for communication between all positions within one station. Train dispatcher (operator) may call any subscriber, given group of subscribers or make a conference call,
- emergency / accident links for train dispatcher communication between neighbouring stations,
- information broadcast links for transmission of voice messages relating to the movement of trains, safety and convenience of passengers within the stations and stops served by this station,
- selective links for communication between train dispatcher and section dispatcher within a given route (integration with IP Selektory TK Telekom system).
- general operation telecommunication links in PKP network,
- TCP/IP data transmission links,
- dedicated DGT Radio Gateways for communication with radio terminal users,

Key features of DGT Millenium server

Amongst others, DGT Millenium server supports the following functions and services:

- Direct Dialing In (DDI), Call Hold (CH), Call Transfer (CT), Call Forward (CF, CFU, CFNR), Call Waiting (CW), Three-Party Service (3PTY), Calling Line Identification Presentation / Restriction CLIP/CLIR, Connected Line Identification Presentation / Restriction (COLP/ COLR),
- conference bridge for up to 250 users within single server module (one can establish 1 conference with 250 users or multiple conferences with lower number of users but the total number shall be less < 250), in case of n server system it's possible to establish respectively more conference calls,
- IVR (Interactive Voice Response),
- ACD (Automatic Call Distribution),
- DISA (Direct Inward System Access) / Auto Attendant,
- closed user groups,
- establishing automatic and half-automatic calls to PSTN network,
- monitoring call states of any subscriber lines or inter system links on dispatcher console,
- concurrent different numbering plans,
- internal short dialing,
- internal broadcast calls to predefined user groups,
- priority calls for privileged operators,
- automatic event registering (for statistics and traffic post analysis),
- creating multiple, independent dispatching subsystems,
- creating distributed system comprising multiple DGT Millenium servers with unified numbering plans, call routing policy and management system,
- proven scalability – deployment of systems ranges from several to several thousands lines.



DGT Millenium Sever

DGT Millenium interfaces:

- FXS / FXO analogue lines (DTMF, CLIP/FSK),
- ISDN S0/E1 (DSS1, QSIG, R2, PCM),
- E&M digital and analogue lines combined with register pulse signalling,
- MB, direct current signalling

DGT Millenium additional features:

- Call / Contact Center applications,
- Voice2mail, Fax2mail,
- LDAP based internal contact book system – possible integration with existing Microsoft AD,
- SMS server,
- integrated IP DECT solution,
- CTI / API interfaces.

Dispatcher consoles

Dispatcher consoles are dedicated terminals connected to DGT Millenium servers, providing all the necessary dispatching services of DGT-IP R system. There are two types of terminals that can be chosen:

- traditional DGT 3490 KX console,
- touchscreen based DGT 5810-10 console.

DGT 3490 KX train dispatcher console

DGT 3490 KX can be offered as standalone terminal or built into a dispatcher table or a wall. It is connected with DGT Millenium server based on Upn (2B+D) digital interface. It has the following features:

- set of main function buttons including: call hold, redial, end call, predefined / most used codes buttons, microphone activate button, ringing generate on MB link buttons,
- set of auxiliary buttons including: day / night mode, handset / speakerphone, volume controls, call history,
- 36 user defined buttons that can be programed as hot lines, speed dials or additional functions buttons.

DGT 3490 KX is used as dispatcher console designed for fast and reliable communication of Train Dispatcher of a given station with:

- Train Dispatchers from neighbouring stations,
- Train Dispatcher from other stations,
- Linemen from rail crossings,
- other subscribers from the same station.

DGT 3490 KX also supports broadcast and conference calls.

DGT 5810-10 computer train dispatcher console

DGT 5810-10 dispatch console is a modern, touch screen terminal with large 19" LCD panel and integrated fanless computer. It has 6 speakers and gooseneck microphone. Handset and optionally headset, mouse and key board are connected separately.

The most important component of DGT 5810-10 console is a modern application handled easily through a touch screen. Its configuration flexibility combined with a complete visualization of the handled operation status, easy access to hot line keys, call queues, conference lists and telephone book resources enable perfect work organization of the train dispatch workstation.

DGT 5810-10 can also support radio communication if only DGT RGW (Radio Gateways) are connected to the DGT IP-R system.

DGT 5810-10 is designed especially for dispatchers working in Local Train Control Centres.



DGT 3490KX train dispatcher console



DGT 5810-10 computer train dispatcher console

Digital calls recorder, NetCRR2

The system DGT IP-R allows to record the calls on all the lines connected to the system.

This function is performed by the digital calls recorders NetCRR2. Calls are recorded on the built-in hard drives, the source may be an acoustic signal from VoIP, TDM, or audio signal from the radio track. The device has a built-in digital ports (Eth, E1, Sup0, S0) and analog ports, e.g.: MB, CB through which the telephone calls are recorded.

CTI interface in NETCRR2 recorder allows to receive the signaling information directly from the DGT Millenium server. Data from the server make possible the determination of the numbers of parties involved in the connection (subscribers' numbers), precise determination of the connection start and end, and in consequence, when to start the recording.

NetCRR2 is an independent device and does not require any additional equipment (can operate independently of the KST DGT-IP R). NetCRR2s can be networked. They are managed from the Management Console (with dedicated software), the communication goes on via LAN



**NetCRR2 Digital
calls recorder**

DGT IP-R system scalability and expandability

Based on IP communication DGT-IP R servers can form one network with common management system. There are no limitations regarding number of servers or geographic size of the area covered with the system.

Depending on particular customer needs, DGT-IP R can be easily expandable with:

- radio communication – based on DGT Radio Gateways and dedicated radio stations dispatchers can communicate with radio users (UHF/VHF, DMR, TETRA),
- train / public announcement system based on ELEKTRONIKA W-125 amplifiers connected to DGT Millenium server interfaces,
- train announcement server comprising all amplifiers of train announcement system deployed in the area of a given Local Train Control Centre or station,
- DGT Fixed Dispatcher System for GSM-R network

