MEMBER OF CEZ ESCO
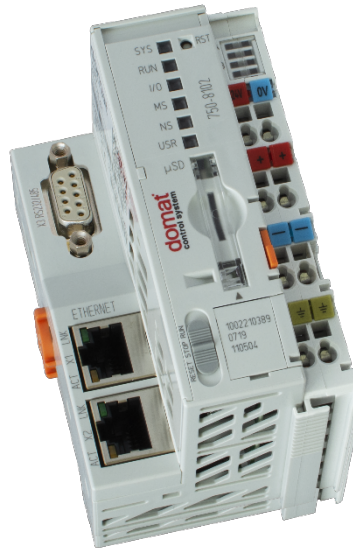
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w750-8102 DDC controller

Summary   **DDC (Direct digital control) controller w750-8102 is a freely programmable PLC with Domat RT. It provides two ethernet ports. Besides network and fieldbus interfaces, the controller supports all analog, digital and special I/O module within the 750/753 series.**

Application

- **Free programmable control units for HVAC systems and other applications with web access.**
- **Data acquisition, processing, and presentation systems with advanced networking features.**
- **Protocol converters with web data presentation (must be programmed by user).**

Function   The w750-8102 has a twin-port Ethernet interface and thanks to its integrated switch it is able to connect more PLCs in a line topology.

The PLC shall be completed by I/O module cards, which are supplied separately. Recommended datapoint load is about 300 I/Os per PLC. The I/O modules communicate with the main unit over an internal bus, K-bus.

Typical use of the PLC is in building control systems, industry and energy management systems.

- Programmable via Domat IDE
- Direct connection of I/O modules
- 2× Ethernet (configurable)
- 1× RS-232
- Operating system Linux
- Maintenance free

The application is created and uploaded in the Domat IDE development environment. The maximum application program size depends on number of

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physical and software data points, amount of function blocks which require more memory (e.g. time schedulers), degree of code optimisation, and number of connections the PLC has to handle.

The process station contains a web server for remote connection and user intervention. The web pages are created in Domat HMI editor, which is included in the package of development programs. The exported web definition is uploaded to the process station through Domat IDE.

State of inputs and outputs of each module, status of system, runtime and power supply is indicated by LEDs.

Controller is to be mounted on standard DIN rail.

Controller w750-8102 is made from processor module PFC100 (750-8102).

See *domat – Technical application notes* for connection examples.

Technical data		
	Power	24 V DC (–25…+30 %), 1.8 W, cage clamp type terminals
	Operating temperature	0…55 °C
	Max. admissible humidity	95 %
	PLC:	
	CPU	Cortex A8, 600 MHz
	Memory	256 MB RAM, 64 kB NVRAM
	Memory card	unsupported, not intended to be used by user
	Addressing	SW
	Communication:	
	Ethernet	2 × Ethernet 10/100, RJ45
		2 × signalling LEDs (Link, Data) in the Ethernet connector
	RS-232	1 x RS-232
	Programming enviroment	Domat IDE ver. 2:4:0:x or later (ST, FBD)
	Terminals	cage clamp terminals - wire 0.08…2.5 mm²
	Dimensions	71.9 (h) × 61.5 (w) × 100 (d) mm
	Weight	approx. 380 g
	Protection degree	IP20
	Material	polycarbonate, polyamide 6.6
	Standards conformity	electromagnetic compatibility (EMC) EN 61000-6-2, 61000-6-3
		environmental testing EN 60068-2-42, 60068-2-43

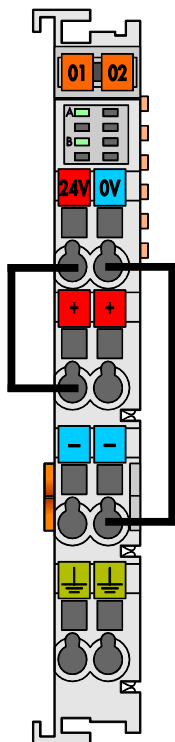**Dimensions and connection**
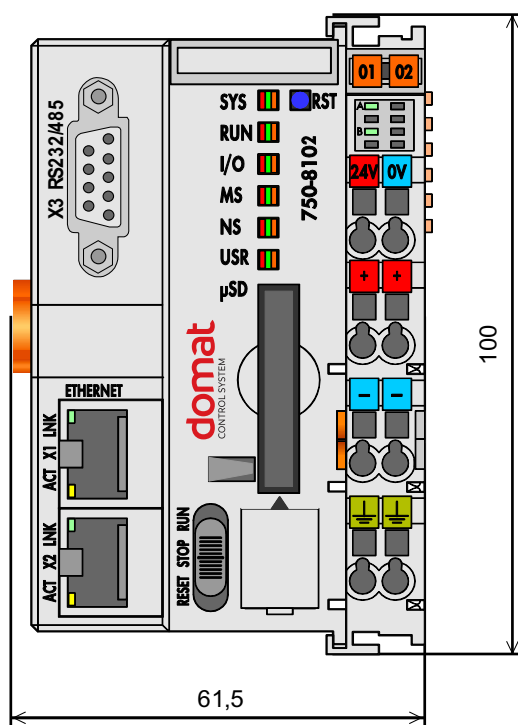
Dimensions are in *mm*.

For proper function of the controller assembly a **terminating module** 750-600 must be snapped at the end of assembly. All modules must be aligned.

To ensure power supply for the connected I/O modules, it is required to connect the **24V** and **+**, **0V** and **−** terminals on the power module (see image below).
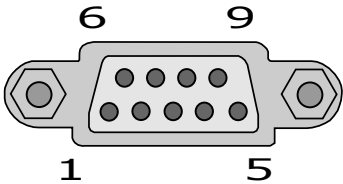
During the installation, ensure sufficient distance of controller assembly from the surrounding components:
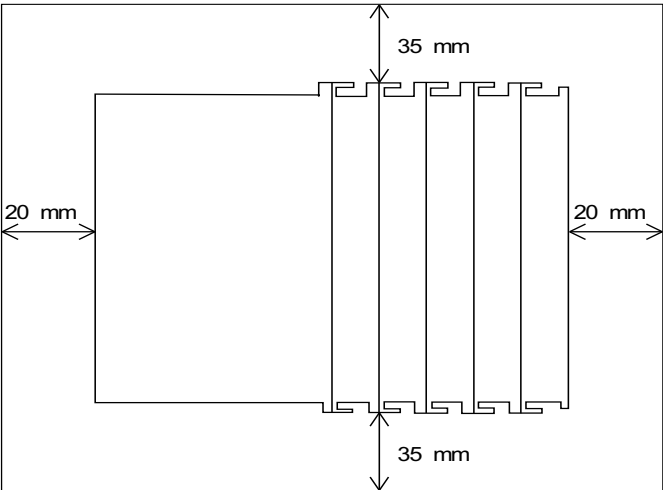

Serial port

W750-8102 controller has serial interface with Cannon 9F connector, which can be used as RS-232 or as RS-485.

Voltage levels for RS-232 and RS-485 are different! Ensure correct setting and connection.
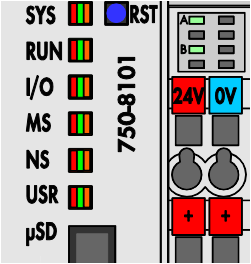
Pin	RS-232		RS-485	
1	NC	Not assigned	NC	Not assigned
2	RxD (out)	Receive data	NC	Not assigned
3	TxD (in)	Transmit data	A (Tx/Rx+)	Transmit/receive data +
4	NC	Not assigned	NC	Not assigned
5	FB_GND	Ground	FB_GND	Ground
6	NC	Not assigned	FB_5V	Power supply
7	RTS (in)	Request to send	NC	Not assigned
8	CTS (out)	Clear to send	B (Tx/Rx-)	Transmit/receive data -
9	NC	Not assigned	NC	Not assigned
Enclosure	Shield	Shielding	Shield	Shielding

For connection of GSM modem to build-in RS232 port the null-modem M-M cable (2-3, 3-2, 5-5) should be used.
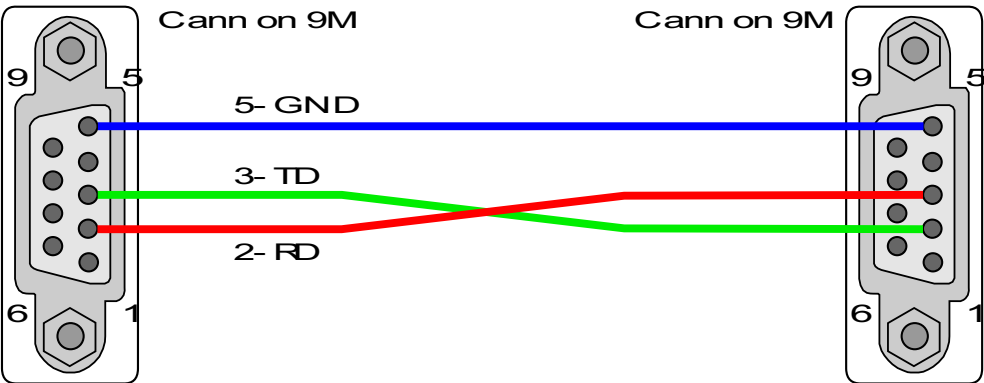
LED indication		Red/ green/ orange LED (blink):
	SYS ▮▮ 🔵RST	SYS – system status
	RUN ▮▮	RUN – runtime is running
	I/O ▮▮ 750-8101	I/O – bus status (not used)
	MS ▮▮	MS – module status (not used)
	NS ▮▮	NS – not used
	USR ▮▮	USR – user programmable
	µSD	green LED:

Red/ green/ orange LED (blink):
SYS – system status
RUN – runtime is running
I/O – bus status (not used)
MS – module status (not used)
NS – not used
USR – user programmable
green LED:
uSD – SD card status (blinks during writing on card)
A – state of supply voltage (still)
B – state of I/O modules supply voltage (still)

Switches	**RST**	Reset button - unused
	RESET STOP RUN	Switch in RUN position starts the runtime. Turning the switch in STOP position stops the runtime. In this position it is not possible to deploy and run solution.
		Holding switch in the RESET position for 2-7 seconds causes warm restart. Holding RESET for longer than 7 seconds invokes cold restart.
	Address	By SW

Others   **Internal K-bus addressing**

For each module a position corresponding to the physical position in assembly is given to the module. The first module next to the controller gets adress 1, etc.

Slot for SD card is for production purposes only, not intended to be used by user.

Programming   The main programming tool is the Domat package which contains I/O editor, graphical editor of the function plan (FBD), structure text editor and compiler (Domat IDE). The Domat package contains also LCD menu editor as well as web editor (Domat HMI).

The application program consists of function blocks which are stored in libraries. Those contain analogue and digital functions, mathematical blocks including goniometric functions, time schedulers, alarm blocks, and HVAC specific blocks (heat recovery, dewpoint calculation, enthalpy, pump switch etc.). The program can be set up also as structure text (ST) or with combination of both types of programming languages.

In case of implementation of your own ST driver, there is limitation of max. 10 clients connected simultaneously.

Number of connections from SSCP clients is max. 20. This includes connections from Domat IDE, Domat SCADA, HT104/200, mobile application Domat Visual, connection from other PLCs over SSCP etc.

Uploading a project from the Domat IDE reserves two SSCP TCP connections.

Accessories   **Mini-WSB marking card (247-513)**
- snap-on type
- horizontal markings of each module
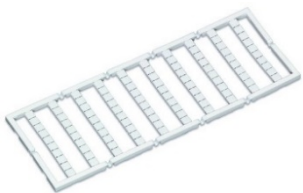
Fieldbus connector PROFIBUS (750-960)

Safety note

The device is designed for monitoring and control of heating, ventilation, and air conditioning systems. It must not be used for protection of persons against health risks or death, as a safety element, or in applications where its failure could lead to physical or property damage or environmental damage. All risks related to device operation must be considered together with design, installation, and operation of the entire control system which the device is part of.

Cyber security note

The product may influence the information and cyber security (ICS) of the control system. It is supplied in default settings. Implementation and continuous compliance with the ICS rules (e.g. creating and upload of certificates and keys, their updates and management, protection against misuse, etc.) are fully the responsibility of the control system operator. The manufacturer is not responsible for damages which originated or may originate due of wrong or insufficient implementation of ICS rules when using the device. In case of questions, please contact Domat Control System technical support.

Changes in versions

01/2020 – First datasheet version.
02/2022 – Wattage and GSM modem connection to RS232 info added, change of logo.
03/2022 – Modified number of simultaneously connected clients using the SSCP protocol.
05/2022 – Memory size update.
08/2022 – Stylistic modifications.
04/2023 – SD card slot function specified.
08/2023 – Change of names from Merbon to Domat