



digsy[®] CMV
Cockpit Multi Vision

Graphically Visualisation with CAN-BUS
and control system according IEC61131-3

Information Centre

As a centralised information system, the CMV puts the machine operator in a position to obtain at a glance all the relevant data in a function-related way. The data display is effected in a graphical form with bar-graphs, pointer instruments, and icons, i.e. it is language-independent. By manual or automatic function-dependent page changing the machine operator is quickly informed and updated. Instead of monitoring potentiometers, switches, signal lamps, and various indicating instruments the machine operator can focus his attention on a single info-centre. He is now able to obtain only the information necessary for the specific situation – no more and no less. The machine operator can check the situation at a single glance and thus concentrate on his work. All the significant data are monitored in the background and

in cases of faults or limit violations they are faded-in via windows onto the display where the corresponding situation is shown graphically (language independent) or in plain text. Therefore, permanent visual monitoring of fault indicators or error codes is "ancient history".

The following data are displayed, e.g.:

- functions
- notes
- limit values
- operating data
- engine data*)
- diagnostic data
- service data
- SMS messages**)

*) Option: diesel engine CAN-connection
**) Option: remote data transmission

The CMV serves the machine operator as an input device, too.

The following data can be entered, e.g.:

- setting parameters
- limit values
- setpoint values
- teach-in mode
- user identification



All in one – Operating guide – Diagnostic – Service Tool

The CMV is also an efficient tool for service technicians. It may be used as an "on-board diagnosis tool". On an access level reserved for the servicing personnel it is possible to visualize logic states, e.g.:

- limit switch statuses
- analogue values
- internal arith. values
- operating hours
- limit violations
- memorising of maintenance changes
- events with date and time
- version number

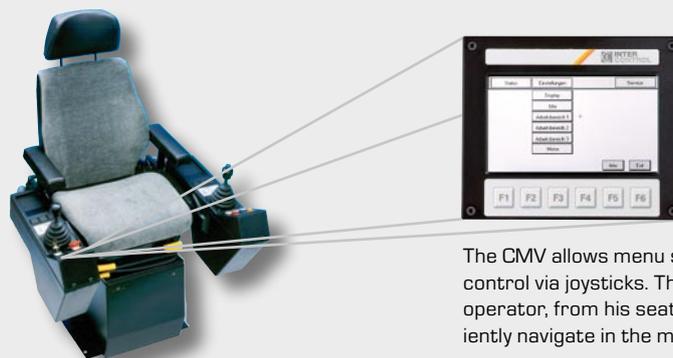
The service technician can actively intervene via the CGM:

- adjustments
- parameterization, e.g. of hydraulic valves
- activation of programme parts
- resetting of operating data

Optimized Operator Guidance

The often cramped conditions within cockpits require an operator guidance of the display that is both convenient and suitable for mobile use. The CMV provides the following:

- automatic mask changes
- function changes (programmable)
- operator guidance via softkeys
- cursor guidance via joystick



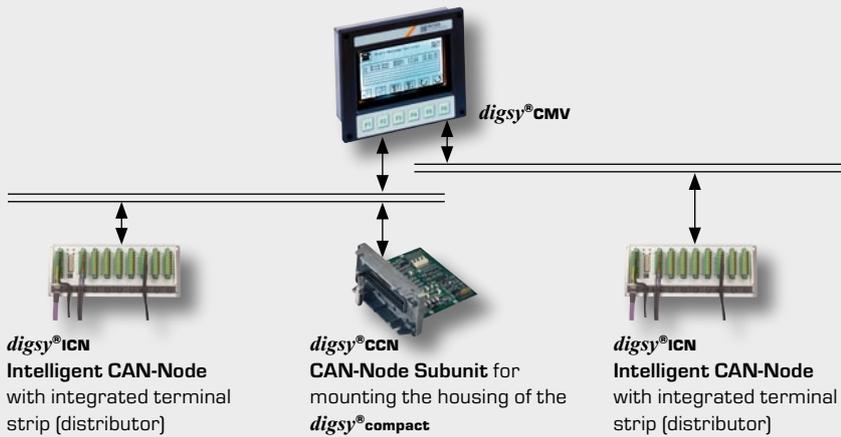
The CMV allows menu selection by cursor control via joysticks. Thus, the machine operator, from his seat, is able to conveniently navigate in the menu of the CMV.

Brilliant High-Resolution Display

Considering its size the display has a very high resolution. Because of its extraordinary good back-lighting the high-contrast display is well

readable even in direct sunlight; it features 255 colors and a large reading angle.

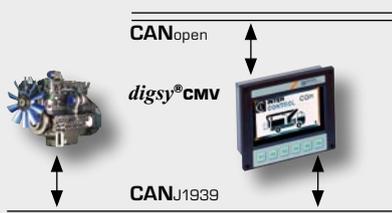
Decentralised Networking



As a standard, the CMV features two CAN-BUS interfaces for setting up a decentralised automation system for mobile units. The device works with the standardised CAN-protocol **CAN_{open}** (DS 301, V4.01). As system components INTER CONTROL offers the following components which are suitable for **CAN**-networking:

digsy®compact
Automation System
digsy®CCN
Input/Output-CAN-node digital and analogue

Twin CAN



The CMV features 2 separate CAN-interfaces. Thus, the CMV is able to serve as a gateway between **CAN_{J1939}** and **CAN_{open}**, and to connect the engine (diesel) with the functions of the vehicle superstructure. With the CLLI (**CAN** Low Layer Interface) developed

by INTER CONTROL it is possible to integrate further **CAN**-components without specified **CAN**-protocol into the network.

Programming

The visualization system CMV is user-programmable. The logic link of the operands (variables) to the mask elements is effected with the program PROSYD1131 (acc. to

standard IEC 61131-3). It enables a program creation in ladder diagram (LAD), sequential function chart (SFC), sequencer language (SL), instruction list (IL), and structured text (ST).

The same program is used for the programming of **digsy®compact**.

CMV as BUS-Manager



The CAN-protocol **CAN_{open}** is integrated in the CMV. The CMV is able to function both as a **CAN_{open}**-manager and as a **CAN_{open}**-slave. As a BUS-Manager it is able to manage up to 32 Nodes. Consequently, the CMV is in a position to communicate with passive CAN-nodes; in this connection, the CMV takes on the control

functions. Components without or other protocols (J1939) are connected directly by the program with CLLI.

Thus, the user is in a position to implement simple but convenient solutions at low cost.

Variety of Applications



Warning and malfunction display faded in as a "Window"

The CMV is a multifunctional device capable of the following functions:

- **CAN**-BUS control unit in combination with **CAN**-nodes
- driver information system
- display unit for engine data via **CAN**-BUS
- memorizing of operating and job data
- warning and malfunction display
- service and diagnostic tool

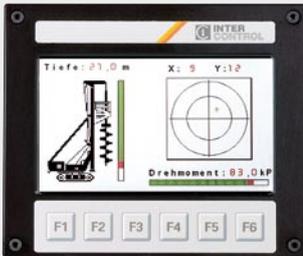
- SMS-display (in combination with **digsy®ServiceLink**)
- gateway with 2 independent **CAN**-interfaces, connection: vehicle superstructure (**CAN_{open}**) + engine (**CAN_{J1939}**)

Product Family

Front panel and mounting cutout of the **digsy®CMV** are the same size as INTERCONTROL's b/w version **digsy®CGM**.

Thus, customers benefit from the fact that the cutout for the b/w version can be used for mounting the color version.

All at a Glance – Practical Examples



Automatic leveling



Service and operating data menu (various type sizes and fonts – Softkeys)



Pointer instrument – Display with engine data



Driving and operating assistance with driver's job data



Interactive "set-up" of crane configuration



Clear layout with high resolution

Type Variants

The CMV is available in various type models:



Type No. 4880.91.001
Version: Standard



Type No. 4880.28.xx
Version: Special



Type No. 4880.90.001
Version: Basic



Type No. 4558.31.001
Version: Dashboard
(integrated in cockpit)

Note: Without camera connection: number 001, with 010

Infos live on Screen



Full Screen

direct camera connection

"picture in picture"

Up to 4 CCD-cameras black and white or colour can be connected to the **digsy®CMV**. The displaying of the pictures is realised as "picture in picture" or switchable to full screen mode. This system is usable as "backwards drive monitor" so that the separate standard video monitor is not needed anymore.

Applications

Due to the opportunity of a direct camera connection the possible applications increase significantly. The **digsy®CMV** "metamorphoses" to a vehicle information centre.

- Backwards drive monitor
- Monitor for badly visible or dangerous working areas.

Application examples with view on:

Garbage Trucks

- empty out process of the loading area
- Backwards driving (blind spot)
- Waste-pin grabber arm
- Traffic

Crane Trucks

- Load hook
- Backwards driving (blind spot)
- Rope drum

Fire Fighting Trucks

- View out of the basket
- Backwards driving (blind spot)

Fork Lifts

- View in front of large loads
- Backwards driving (blind spot)
- View in Shelf gaps

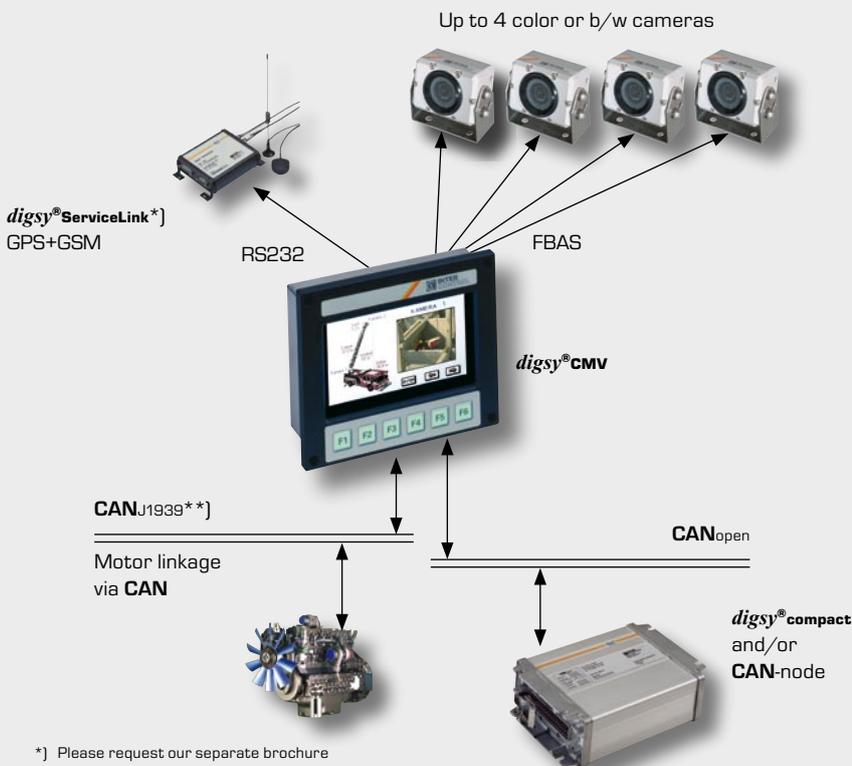
Moving Paving Plants

- characteristics of street surface
- empty out process
- cutting tools

Harvesters

- harvesting container
- cutting tools

System Configuration



digsy®CMV is "the" central electronics for mobile units. **digsy®CMV** is capable of the following tasks and functions:

- programmable decentralized control unit
- CAN-manager function
- color visualization-camera monitor
- visualization and evaluation of motor data
- evaluation and non-volatile storage of data- registration of events with time
- stamp

As an option, when connecting

digsy®ServiceLink*

- transmission of current geographical position
- data transmission (engine diagnosis/ operating data)
- visualization of transmitted data (jobs/instructions)
- remote diagnosis-emergency calls
- anti-theft protection

*) Please request our separate brochure

**) Direct data access via CLI

Cameras – for Outdoor Use

As accessory INTER CONTROL offers a mobile suitable camera in a protected housing. The housing has fittings for mounting.

Below you find the technical data:

- Closed aluminium housing
- Protection class: IP69k (Jet-stream-protected)
- Shock resistant: 10 g
- regulated glass shield heating
- Working temp. area: -30 °C to +60 °C
- Video system: 1/3" CCD – 290.000 Pixel
- light sensitivity min.: <1 Lux (evening light)



Variations:

- Black and white – camera selectable as 20°/70°/100° horizontal viewing angle

- Colour camera selectable as 20°/70°/100° horizontal viewing angle
- Wireless transmission by video transmitting system (optional)

Type		
4305.31.001	Black and white- camera 20° viewing angle	for CMV
4305.31.002	Black and white – camera 70° viewing angle	for CMV
4305.31.003	Black and white – camera 100° viewing angle	for CMV
4305.31.011	Colour camera 20° viewing angle	for CMV
4305.31.012	Colour camera 70° viewing angle	for CMV
4305.31.013	Colour camera 100° viewing angle	for CMV

Technical Data

Visualization

- TFT active Color-LC graphic display
- 255 colors
- 400 x 234 [396 x 232] pixel
- contrast rate: 150
- CCFL back-lighting: 400 cd/m²
- CCFL lifetime: 100.000 h (suitable for mobile use)
- display area: 124 x 71 mm
- high-contrast even in direct sunlight

Cameras

- video interfaces FBAS signal: PAL 50 Hz or NTSC 60 Hz
- 64k colors for camera pictures

Interfaces

- 1x RS 232
- 2x CAN

System

- Process controller:
 - µController 80C167
 - 1 MB RAM
 - 2 MB Flash-EPROM
 - CAN_{open} protocol or
 - CLLI (CAN Low Layer Interface) for easy linkage with CAN-products, inter alia, J1939-protocol, too
 - real-time clock
 - tone generator (buzzer)

Graphics controller:

- Soft-Core-µC as graphics controller-unit for fast object calculation
- 8 MB SDRAM
- 512 kB RAM
- 512 kB Flash-EPROM
- 512 kB Flash-EPROM (ICONS, fonts)
- backlight-adjustment
- temperature sensor for display temperature measurement
- temperature-dependent contrast adjustment
- video unit for fading in up to 4 camera pictures simultaneously

General:

- power supply: 12/24 V (8 V to 32 VDC)
- load-dump-protection
- membrane keypad with back-lighting (night-design)
- 1 x LED for logic voltage green
- 1 x LED for operating voltage yellow
- 1 x LED for diagnostics (3-color)
- 1 x LED for CAN-BUS (3-color)
- extended operating temperature range: electronics: -40 to +85 °C; display: -20 to +70 °C
- degree of protection: front panel IP 67

Dimensions – Ordering data

- outside contour of mounting frame: frame thickness: 8 mm
- panel cutout: W: 152.5 mm, H: 113.5 mm
- mounting depth: without camera plug connector: 50.0 mm; with camera plug connector: 75.0 mm



Type	W x H in mm	Ordering No.	
		without camera interface	with camera interface
Basic	162 x 136.5	4885.90.001	4885.90.010
Dashboard	162 x 136.5	4558.31.001	4558.31.010
Standard	175 x 170	4885.91.001	4885.91.010
Spezial	197 x 146	on request	

Technical tests

EMC and environmental tests according to the following standards for PLC, motor vehicles, railways and IT:

- DIN 40839T17T3	ENV 50204	Environm. test (mech.):	Environm. test (climatic):
- EG-RL95-54/EG	EN 61131-2	- DIN EN 61131-2	- IEC 68T2-1/2/14
- DIN 57879	EN 50081-1	- DIN EN 60068-2-6/27/29	- EN 61131-2
- EN 55022 Kl. B	EN 50081-2		- EN 50155
- EN 61000-3-4/5/6/8/11	EN 550241		

Accessories



Picture: **digsy[®]CMV**
in a protected housing
(optional)



Picture: **digsy[®]CMV**
with optional sunscreen
Type: 4305.80.001

Graphic Setup and Programming

Masks and Windows are generated by the INTER CONTROL software CG-Designer. This software is running under Windows*) and provides the programmer with all the comfort of using "Drag and Drop".

- Original Fonts of MS Windows*) can be imported
- Colour picture files in WMF- and BMP format can be imported from Windows*)
- ICONs can be modified pixel-wise
- Characters and fonts can be modified individually (cyrillic)
- Prepared functions: Bargraphs, Pointer, Strings, Targets, Inclinator, Lines and rectangle-objects
- Different fonts in one mask

The control-program especially the links between the visualisation elements and the process data and values are realised by the programming software PROSYD1131 which is according IEC61131-3 standard. This software is also used for programming the INTER CONTROL products **digsy[®]compact** as well as the **digsy[®]CGM**.

Prepared functions e.g. Bargraph

Global ICON-Library Here: WMF-Files out of Windows

modification of ICONs pixel-wise

Project related ICON-Library

Font-selection out of Windows

colour selection 255 colours

*) trademark of Microsoft

Inter Control

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This brochure may also be downloaded (PDF-file) from the internet at the address: www.outdoor-controls.de