# *CanCom*® M12 Module

A heavy-duty CAN module for rough environments, IP-class IP67.
The module is programmed with CanPro version 4.35 or later.

- CAN bus connection for programming and connection of *CanCom*® products.

- 8 M12 contacts with inputs/outputs.
  Possibility for analog or digital inputs. Outputs can be configured as digital or PWM. Also possible to control a function with two movements from only one M12 connector. E.g. function in/out.

- Built in current measurement. Monitor over-current, but also used to compensate for PWM signals when the spool resistance changes due to heat.

- 4 analog or digital inputs.

- All digital inputs can be configured as a frequency inputs.

- All analog inputs can be configured for signals 0-5V, 0-10V.
  8 of the 12 inputs can also be configured to sense 4-20mA signals.

- +5V reference voltage in each connector, that can be used as a reference for e.g. potentiometers. Reference voltage can also be configured as system voltage from CanPro.

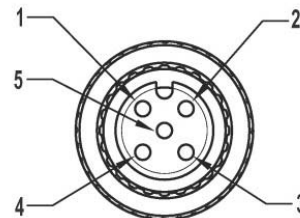- The default assigned CAN-ID can be changed from CanPro.

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Pin configuration

Kontakt P1 & P2
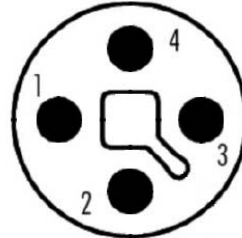
Kontakt K1 - K8

Module ID 22 Digital IN/OUT		Analog IN		PWM			
Port	Pin	Port	Pin	Port	Pin (+)	Pin return (-)	
1	K1-4	1	K1-4	1	K1-4	K1-3, K2-3	Sektion 1A
2	K2-4, K1-2	2	K2-4, K1-2	1	K2-4, K1-2	K1-3, K2-3	Sektion 1B
3	K3-4	3	K3-4	2	K3-4	K3-3, K4-3	Sektion 2A
4	K4-4, K3-2	4	K4-4, K3-2	2	K4-4, K3-2	K3-3, K4-3	Sektion 2B
5	K5-4	5	K5-4	3	K5-4	K5-3, K6-3	Sektion 3A
6	K6-4, K5-2	6	K6-4, K5-2	3	K6-4, K5-2	K5-3, K6-3	Sektion 3B
7	K7-4	7	K7-4	4	K7-4	K7-3, K8-3	Sektion 4A
8	K8-4, K7-2	8	K8-4, K7-2	4	K8-4, K7-2	K7-3, K8-3	Sektion 4B

Module ID 23 – Digital IN		Module ID 23 – Analog IN	
Port	Pin	Port	Pin
2	K2-2	2	K2-2
4	K4-2	4	K4-2
6	K6-2	6	K6-2
8	K8-2	8	K8-2

Misc pin Function	Pin	Comment
Supply voltage +	P1-3, P2-3	10-30V, max 12A total current
GND -	P1-4, P2-4	
CAN High	P1-1, P2-1	
CAN low	P1-2, P2-2	
Sensor supply +	KX-1	Default when ID22 is programmed as PWM or Digital module
Vref +5V	KX-1	Default when ID22 is programmed as Analog module
GND	KX-3	
Chassie GND	KX-5	

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Configurations

Configuration with flag comments		
Flagg	**Commentar**	**Function**
ID 22:20	¤LED	LED MISC is on when the flag/subroutine is activated
ID 22:21	¤SYSREF	Activates system voltage on pin KX-1 *
ID 22:21	¤5VREF	Activates +5V voltage on pin KX-1 **
ID 22:22	¤10VSENSE	Analog inputs are references against an internal 10V level.
ID 22:22	¤5VSENSE	Analog signals are referenced against an internal 5V level.
ID 22:22	¤SENSEON	Analog signals are referenced against the external Vref-pin(~4,9 – 5,1V) **
ID 22:61	¤CURRENT	The flag shows the summarized current consumption of output 1 and 2. Can Only be used on digital modules.*** 10mA/bit
ID 22:62	¤CURRENT	The flag shows the summarized current consumption of output 3 and 4. Can Only be used on digital modules.*** 10mA/bit
ID 22:63	¤CURRENT	The flag shows the summarized current consumption of output 5 and 6. Can Only be used on digital modules.*** 10mA/bit
ID 22:64	¤CURRENT	The flag shows the summarized current consumption of output 7 and 8. Can Only be used on digital modules.*** 10mA/bit

*Default when ID22 is programmed as PWM- or Digital module
**Default when ID22 is programmed as analog module.
***This function is already present in PWM modules.

CanPro port configuration		
Module type	**Port function**	**Comment**
Analog module	Analog in	Measure the voltage 0-5V and gives a bit value 0-255.
Analog module	Analog in	Measure the voltage 0-10V and gives a bit value 0-255. Use the flag comment ¤10VSENSE on ID22:22.
Analog module	Analog out	N/A – Function does not exist on this module.
Analog module	Analog in 4-20mA	Measure the current 0-25,5mA and gives a bit value 0-255. 0.1mA/bit. (4-20mA → bit value 40-200)
Digital 64	Digital in	Input is active when voltage is 6-30V. Input is inactive when voltage is 0-3V. (3-6V is undefined)
Digital 64	Digital out	Max 4A / output pair. (1&2, 3&4, 5&6, 7&8) when the minus is connected to the GND return pin KX-3. When connecting the load to an external ground, the outputs can be loaded with 4A/outputs
Digital 64	Frequency	Measure frequency 0-255Hz, (50% duty), 15-30V.
PWM 64	PWM out	Max 4A / PWM-section when using the GND return pin KX-3. When using an external ground for the load, max 4A/ output.

Misc

- 5 -

LED		
LED	**Mode**	**Comment**
PWR (green)	OFF	No power supply to the module.
PWR (green)	ON	The module has supply power, but the micro controller has not stated up yet.
PWR (green)	Flashing	The module has supply voltage, and the microcontroller is running.
CAN (yellow)	OFF	No CAN communication.
CAN (yellow)	Flashing	The module communicates on the CAN buss.
MISC (yellow)		Can Be customizes by the user. The LED follows the status of flag 22 on ID22. (ID22:22), if the flag comment is ¤LED.
ERR (red)	Flashing	The module has detected an error, and the software has entered an error state. The module must be restarted by turning of the supply voltage.
PortLED 1-8		LED is activated when the input/output is activated. Does not have any function when using analog signals.

Error codes – ERR LED		
No of Flashes	**Error**	**Possible cause**
1	The external 5V reference is out of its tolerance.	The +5V reference could be overloaded or shortcut. It could also be connector to a higher voltage. E.g. 12V or 24V.
2	Over current Total over 12A	The sum of all loads with GND return to the module has a measuered load greater than 12A.
3	Over current Total over 4A on output	A pair of outputs has a measurement of more than 4A.
4	4-20mA input sense 30mA or more.	The sensor is not connected in the right way.

The period of the flashes is 3 second.
If two or more errors are active at the same time, the error with the least flashes gets priority.

General information

- Always use a fuse (12A) on the + supply to the module.
- The modules power connector can handle maximum of 12A.
- The 5V analog reference is monitored for faults.
- The module measures a current and if an over current is detected the module enters a error state
- Inputs on ID22 can be used as 4-20mA inputs. Inputs on ID23 can not.
- ID with outputs has 64 flags/subroutines.
- The module should not be mounted in close proximity to heat sources.
- If the module is used a s a PWM64 module, the first 4 ports in the CanPro analyze-window shows the output on the section. Port 5-8 shows the current consumption on each section, 10mA/bit.

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Declaration of Conformity according to the EMC directive:
Försäkran om överensstämmelse enligt EMC direktivet:

Type approval test according to council directive 72/245/EEC last amended by 2009/19/EC (includes 2004/104/EC, 2005/83/EC, 2006/96/EC and amendment 2:2013) and type approval test according to UN ECE Regulation No. 10.04

By signing this document the undersigned declares as manufacture that the equipment in question complies with the EMC protection requirements.

Genom att underteckna detta dokument försäkrar undertecknad såsom tillverkare att angiven utrustning uppfyller skyddskraven i EMC direktiv.

CanCom **M12 Modul**		

CISPR 25	**Radiated emission**	**30-1000 MHz**
CISPR 25	**Conducted emission powerline**	**0.15-108 MHz class 3**
ISO 11452-4	**Conducted immunity**	**20-400 MHz 100mA 80%AM**
ISO 11452-5	**Radiated immunity SLA**	**20-400 MHz 100V/m 80%AM**
ISO 11452-2	**Radiated immunity**	**400-1000 MHz 50V/m 80%AM**
ISO 10605:2001	**ESD Air**	**+/- 8KV, +/- 16KV, +/- 25KV**
	ESD Contact	**+/- 8KV, +/- 16KV**
ISO 7637-2:2004	**Transient immunity**	**Pulse 4, 5b@65V**
ISO 7637-3:2004	**Transient immunity**	**Pulse 3a, 3b**
SS-EN 6100-4-4	**Transient immunity**	**+/- 2kV**

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