

General Description

The EASY2606 is a comprehensive, compact and very flexible control module for industrial applications.

The module is equipped with the CoDeSys PLC operating system and supports up to 5 programming languages according to IEC 61131-3.

In addition to pure PLC functionality, the system supports the visualization on external display units that can be connected via SGI serial interface. In this case, all units of the series VISU-Pxxx can be used as display and control unit, so the user has a combination of a powerful PLC controller with a PC-like user interface. By the serial connection between these devices its possible to mount them separately.

The controller has both digital and analog inputs / outputs and can easily be extended via the CAN bus. For this purpose, a CANopen master and slave functionality is implemented.

For communication with other devices or components, there are, depending on the variant, multiple serial interfaces.

Extensive software libraries are already included in the firmware of the controller.

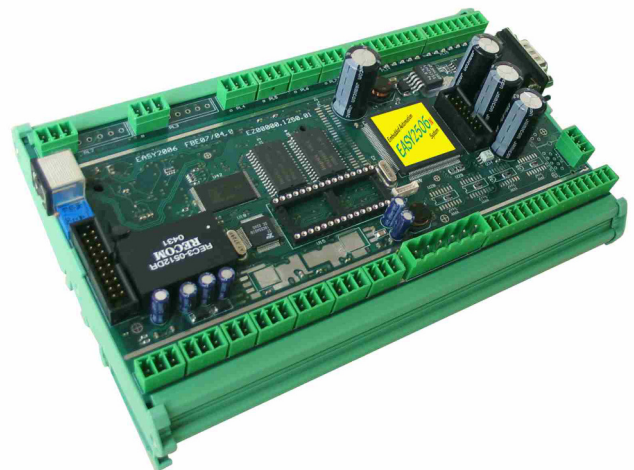
The CoDeSys programing system is Windows compatible and available free of charge.

- CANopen master according to CiA-standards DS301 V4, DSP302 V3.0, DSP405 V2.0
Up to 32 CANopen slaves
Up to 250/250 receive/transmit PDOs
- CANopen Slave according to CiA-standard DS401 V2.1
up to 16/16 Receive/Transmit PDOs
- dynamic PDO mapping
- variable PDO Identifier
- node guarding, life guarding, heartbeat
- Sync
- 4 galvanical separated areas
(digital I/O / analog I/O / CAN-bus / CPU)
- temperature range 0°-70°C



Features

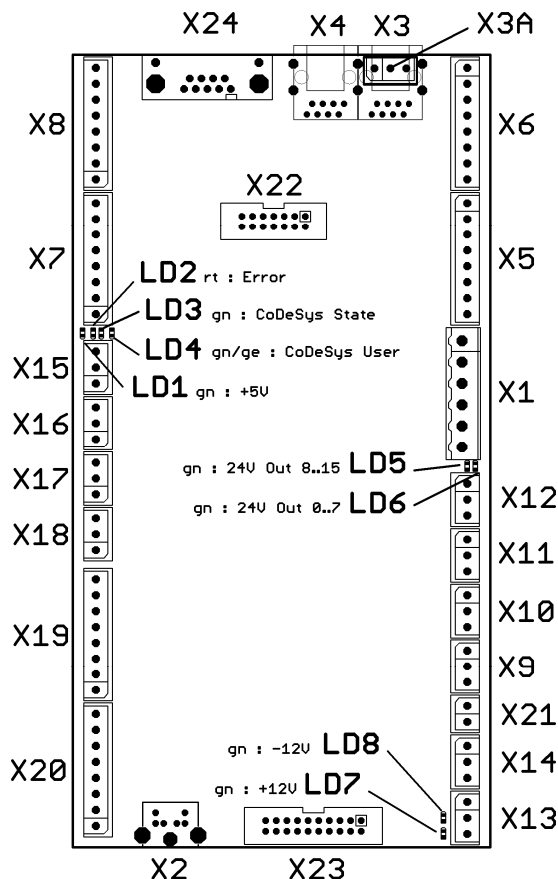
- fast 16 bit CPU-core (ST10F273)
- IEC 61131-3 programmable (CoDeSys)
- 2 MByte program memory
- 512 kByte data memory
- 128 kByte time-keeper / NV-RAM optional
- 16 digital inputs 24V
- 16 digital outputs 24V
- 8 analog inputs configurable (-10..10V / 0..10V / 0[4]..20mA) (12 bit ADU)
- 4 analog outputs configurable (-10..10V / 0..10V / 0[4]..20mA) (12 bit DAU)
- CAN-Bus according to ISO11898 (up to 1 MBaud)
- Up to 4 serial interfaces (RS232/RS485)
- Visualization via a serial interface on the control panels of the VISU-Pxxx series or OEM systems based on CB10



ordering information

device	description
EASY2606CA-P	green plastic housing for DIN-rail mounting, galvanical separation
EASY2606CA	black aluminium housing (RAL5021) for DIN-rail mounting, galvanische Trennung

connectors



Pin 1 on each connector has a frame and/or is marked by an oblique slot.

pin assignment X1

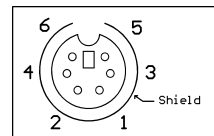
power supply connector

pin No.	name	function
1	PE	protective earth
2	P2b	24V-connector (+) for power supply of digital outputs group B
3	P2a	24V-connector (+) for power supply of digital outputs group A
4	G2	ground (-) for power supply of digital outputs
5	P1	24V-connector (+) for CPU power supply
6	G1	ground (-) ground for CPU power supply

pin assignment X2

Socket for the programming system or firmware update. (RS232-interface)

front view of socket →



pin no.	name	function
1	RXD0	serial receive line (RS232-level)
2	N.C.	not connected
3	TXD0	serial transmit line (RS232-level)
4	G1	ground (CPU-ground)
5	N.C.	not connected
6	FWU#	reserved (firmware-update)

pin assignment X5

connectors for digital outputs (byte 0)

pin no.	name	function
1	OUT0.7	digital output DC 24V
2	OUT0.6	digital output DC 24V
3	OUT0.5	digital output DC 24V
4	OUT0.4	digital output DC 24V
5	OUT0.3	digital output DC 24V
6	OUT0.2	digital output DC 24V
7	OUT0.1	digital output DC 24V
8	OUT0.0	digital output DC 24V

pin assignment X8

connectors for digital inputs (byte 1)

pin no.	name	function
1	IN1.0	digital input DC 24V
2	IN1.1	digital input DC 24V
3	IN1.2	digital input DC 24V
4	IN1.3	digital input DC 24V
5	IN1.4	digital input DC 24V
6	IN1.5	digital input DC 24V
7	IN1.6	digital input DC 24V
8	IN1.7	digital input DC 24V

pin assignment X6

connectors for digital outputs (byte 1)

pin no.	name	function
1	OUT1.7	digital output DC 24V
2	OUT1.6	digital output DC 24V
3	OUT1.5	digital output DC 24V
4	OUT1.4	digital output DC 24V
5	OUT1.3	digital output DC 24V
6	OUT1.2	digital output DC 24V
7	OUT1.1	digital output DC 24V
8	OUT1.0	digital output DC 24V

pin assignment X9 – X12

connectors for analog outputs.
(-10V..+10V) or (0..20mA)

pin no.	name	function
1	G3	ground (-)-connectors for analog inputs/outputs
2	I	current output
3	U	voltage output

connector	name	analog channel
X9	AOUT0	analog output 0
X10	AOUT1	analog output 1
X11	AOUT2	analog output 2
X12	AOUT3	analog output 3

pin assignment X7

connectors for digital inputs (byte 0)

pin no.	name	function
1	IN0.0	digital input DC 24V
2	IN0.1	digital input DC 24V
3	IN0.2	digital input DC 24V
4	IN0.3	digital input DC 24V
5	IN0.4	digital input DC 24V
6	IN0.5	digital input DC 24V
7	IN0.6	digital input DC 24V
8	IN0.7	digital input DC 24V

pin assignment X13 – X18

connectors for analog inputs.
(-10V..+10V) or (0..20mA)

pin no.	name	function
1	G3	ground (-)connectors for analog inputs/outputs
2	U	input for voltage measuring
3	I	input for current measuring

note: each input / connector must be connected only either to the current or voltage input, since this may result in errors.

connector	name	analog channel
X13	AIN0	analog input 0
X14	AIN1	analog input 1
X15	AIN2	analog input 2
X16	AIN3	analog input 3
X17	AIN4	analog input 4
X18	AIN5	analog input 5

pin assignment X19, X20

connectors for analog inputs.
(-10V..+10V) or (0..20mA) or special function

pin no.	name	function
1	G3	ground (-)connectors for analog inputs/outputs
2	U	input for voltage measuring
3	I	input for current measuring
4 .. 8	-	reserved for future use

note: each input / connector must be connected either to the current or voltage input only, since this may result in errors.

connector	name	analog channel
X19	AI6	analog input 0
X20	AI7	analog input 1

pin assignment X3A

CAN bus connector (alternative for X3,X4)

pin no.	name	function
1	CANH	CAN-High-Signal
2	CANL	CAN-Low-Signal
3	G4	CAN-Ground

pin assignment X3, X4

CAN bus connector. The same signals of the two RJ-45 connectors are connected. (pass through / T-gate)

pin no.	name	function
1	CANH	CAN-High-Signal
2	CANL	CAN-Low-Signal
3	G4	CAN-Ground
4	(CANL)	CAN-High-Signal if jumper J5 is closed. Otherwise signal is passed through.
5	(CANH)	CAN-High-Signal if jumper J6 is closed. Otherwise signal is passed through.
6	(PE)	potential earth if Jumper Jx is closed. Otherwise signal is passed through.
7	G4	CAN-Ground
8	-	pass through

For J5, J6, Jx please see jumper settings, too.

pin assignment X21

connectors for 10 V reference voltage output.

pin no.	name	function
1	-10 V	minus 10V reference (referred to G3) I _{max} = 5 mA
2	+10 V	PLus 10V Referenz (referred to G3) I _{max} = 5 mA

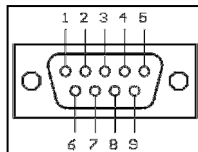
pin assignment X22, X23

reserved for internal extensions!!!

pin assignment X24

connector for the serial RS232 interface (COM1)

front view of socket →

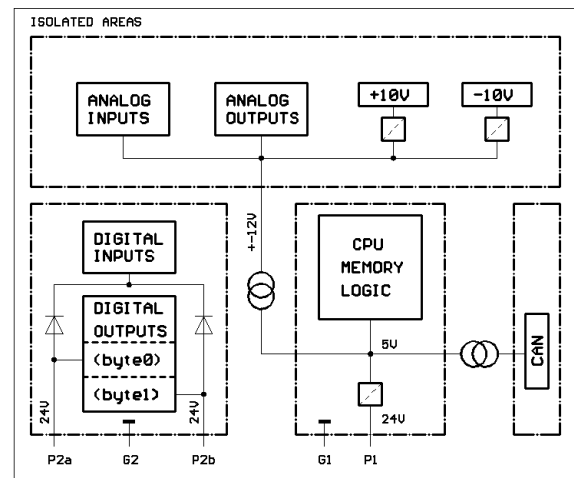


pin no.	name	function
2	RXD1	serial receive line (RS232-level)
3	TXD1	serial transmit line (RS232-level)
5	G1	ground (CPU-Ground)
1, 4, 6..9	N.C.	not connected
shield	PE	connected to PE

pin description

power supply

The module has several pins for 24VDC (18V-34V) power supply. The supply of the external I / O and the CPU is implemented on separate terminals. The power of the CPU must be done via the pins P1 and G1 on connector X1. The I / O is powered by P2a, P2b and G2.



For a galvanic separation between the CPU and I / O, the supply (P1, G1 / / P2, G2) must also be isolated. For EASY versions without galvanic separation, the power can be connected to the same supply.

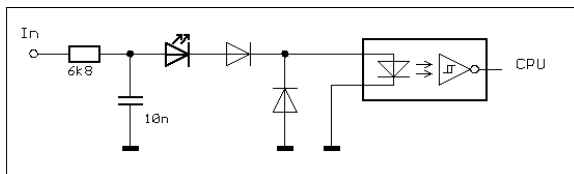
The power of the digital outputs is divided into two groups (Byte0 [P2a] and Byte1 [P2b]). Thus, a defined part of the outputs can be included in a Emergency off.

The power supply of the analog inputs and outputs is connected to the CPU's power supply P1 and G1.

The shield contacts of all connectors are connected to PE.

digital inputs

The module has 16 digital inputs. These are designed for 24V input power level and have an RC filter.

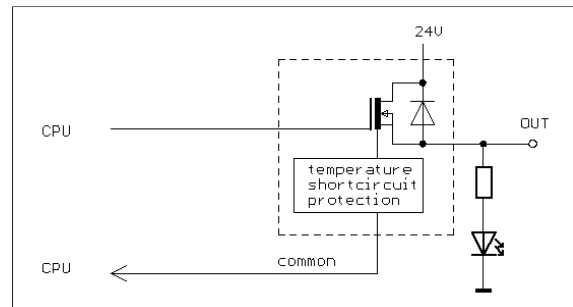


The thresholds are at:

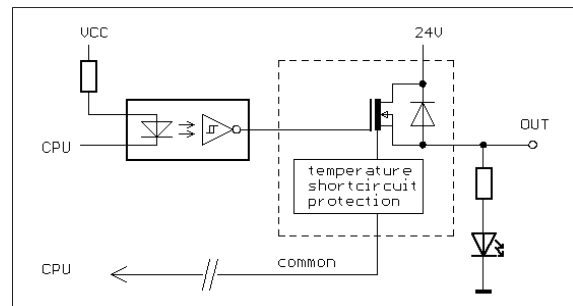
input voltage / V	level
< 4	LOW
> 10	HIGH
4..10	UNDEFINED

digital outputs

The module has 16 digital outputs. These are voltage-switching (high-side switch) and drive 24V when active. The output drivers are short circuit protected and have an over-temperature shutdown. Errors of this type are detected and reported to the CPU.



without galvanic separation



with galvanic separation

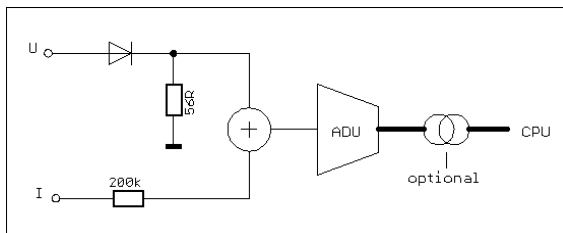
output voltage ($R_L = \infty$)	P2a/b
RDS-On	0,1 Ohm
max. nominal current	1 A
peak power limitation	8 A

WARNING!

The maximum total current for P2a or P2b must not exceed 12A.

analog inputs

The module has 8 analog inputs. Each one can be either as 0..10 V, -10 .. +10 V voltage input or as 0..20 mA or 4-20mA current input. The connections on the respective input connectors are separated into current and voltage input. The unused input pin must not be connected, otherwise the measurement will be distorted.



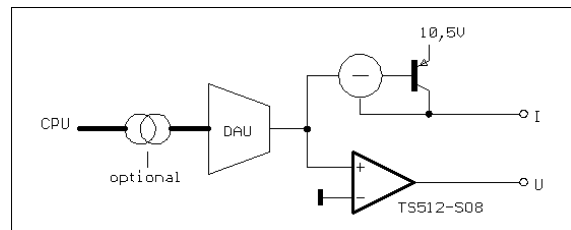
current input	
maximum current	+50 mA
measurement range	0 mA ... +20 mA
impedance	56 Ohm

Attention! Exceeding of the maximum current may cause permanent damage!

voltage input	
max. input voltage	-30 V ... +30 V
measurement range	-10 V ... +10 V
impedance	200 kOhm

analog outputs

The module has 4 analog outputs. Each of them can be used either as voltage and/or current output. Both versions are short circuit protected.



current output	
max. current	+25 mA
max. voltage	+10,5 V
output range	0 mA ... +20 mA

voltage output	
max. voltage	-12 V ... +12 V
max. current	-5 mA ... +5 mA
output range	-10 V ... +10 V

CoDeSys adjustments

For programming with CoDeSys the EASY2606 must be connected to the COM port of the PC. A corresponding programming cable is available for this purpose. The 6-pin mini-DIN connector of the programming cable is connected to the X2 connector of the EASY2506. The 9-pin D-SUB must be connected to the COM port of the PC.

CoDeSys installation

- insert CoDeSys-CD
- choose CoDeSys-Version according to your OS:
CoDeSys V23xx for Windows2000/XP
- execute the corresponding setup exe file and follow the instructions on screen

target installation

To use an EASY2606 under CoDeSys, the corresponding targets and libraries need to be installed. Therefore a programm called "installtarget" in the CoDeSys folder must be used. After starting "installtarget" open the FBE.tnf file from your CoDeSys CD. Now the available targets are shown on the left screen. Choose the path for the installation, which should be the main folder of your CoDeSys installation. C:\Programme\3S Software. Make sure your targets are installed into the sub folder: \Targets\FBE which should be the default setting of the „installtarget“ program. Now the targets should be intalled to:

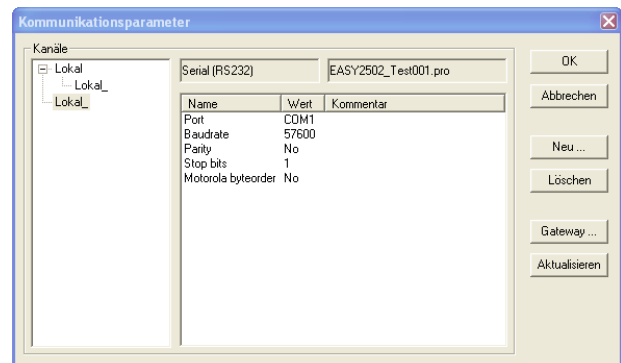
C:\ Programme\3S Software\Targets\FBE .

At last choose the desired targets from the left screen an click on the install button. Installed targets are displayed in the right window.

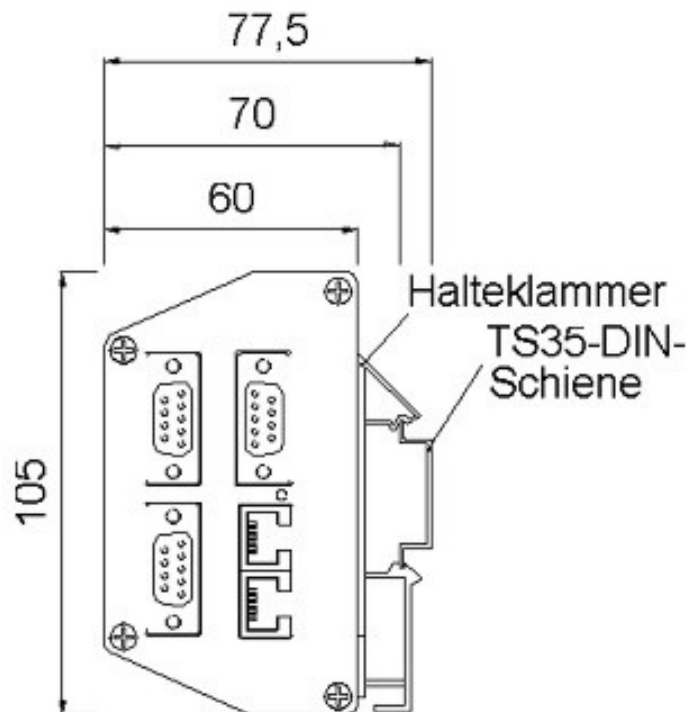
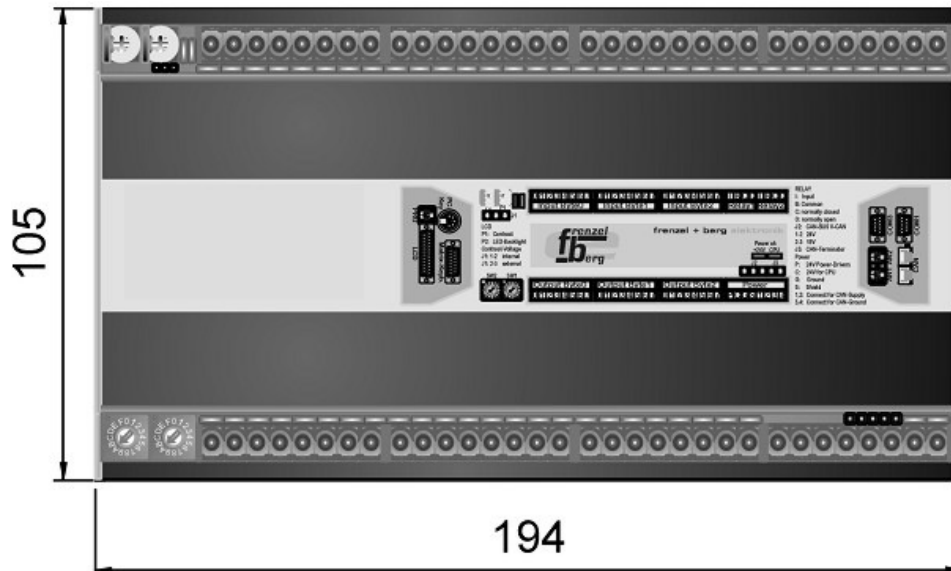
baudrate and transmission mode adjustments

For running an EASY with CoDeSys the baudrate and transmission mode parameters of the COM interface need to be adjusted in CoDeSys. Therefore choose in the CoDeSys main menu the button "online->communication parameter". For your local COM serial (RS232) interface the following parameters have to be set:

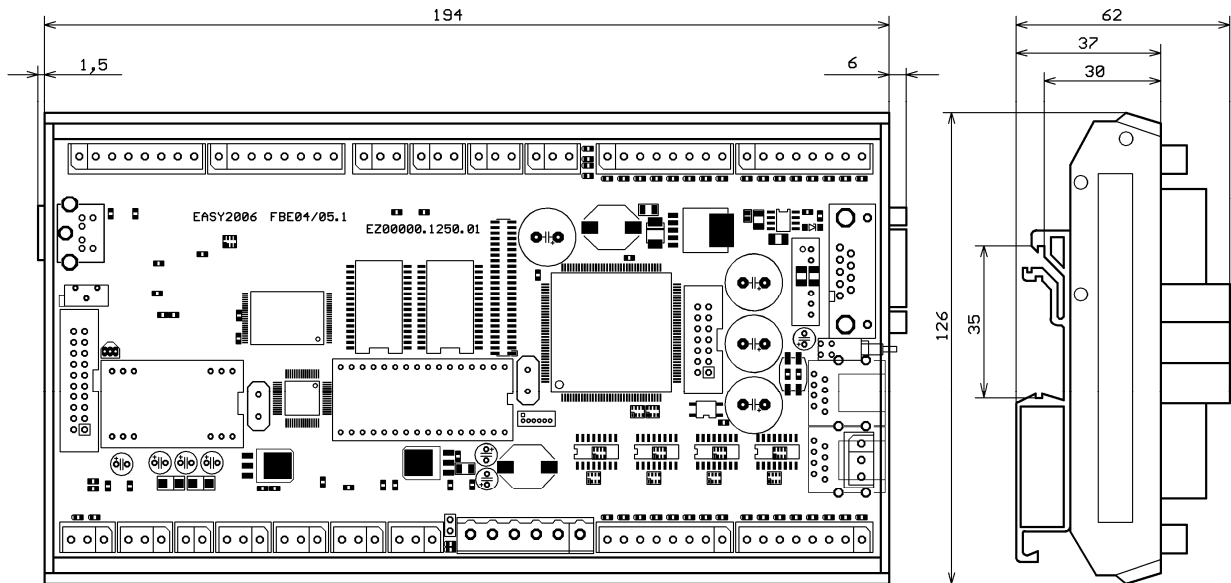
Port COMx
Baudrate 57600
Parity No
Stop Bits 1
Motorola Byteorder No



Measurements of the EASY2606



EASY2606 in aluminium housing – front and side view



EASY2606 in plastic housing

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