

Vacuum-Automation

# Function Block-Documentation

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figure 1: example SCTMi Ethernet

### 1 SCTMi Ethernet

The two function blocks FB\_SCTMi\_ETH and FB\_SCTMi\_ETH\_Ejector are used to control and process the SCTMi Ethernet.

For the central monitoring of the SCTMi Ethernet, the function block FB\_SCTMi\_ETH must be used once per terminal.

Depending on the configuration, the number of ejectors can vary. For this reason, the function block FB\_SCTMi\_ETH\_Ejector must be integrated per ejector.

## 2 Function block “FB\_SCTMi\_ETH“

### 2.1 Image of function block

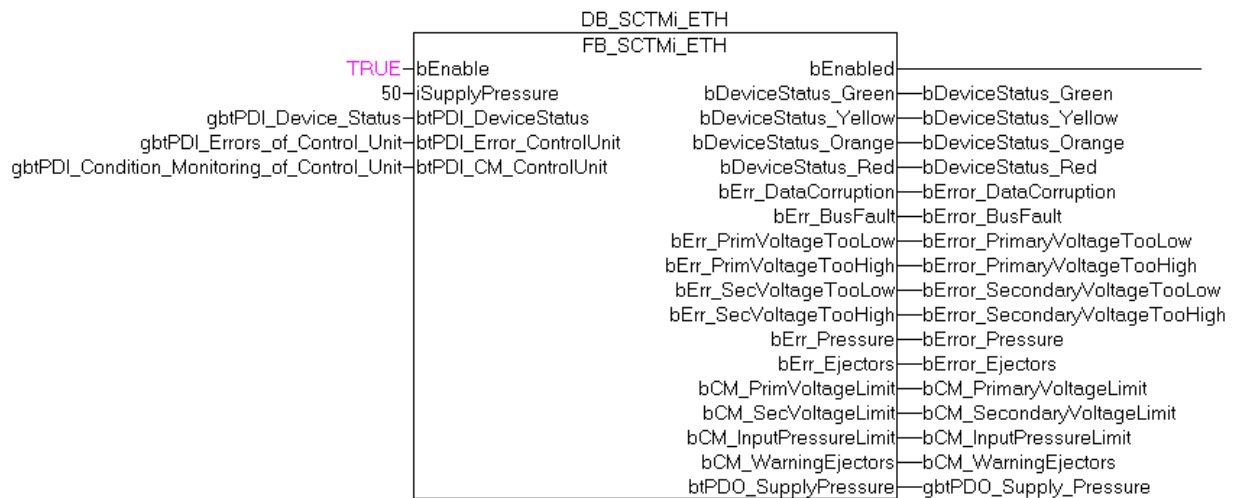


figure 2: example of function block

### 2.2 Brief description

The following tasks are performed by the module:

- Assigning the inputs / outputs to the corresponding bits of the process data to the device and to the control
- Output of the device status, errors and condition monitoring of the control unit

### 3 Parameters

#### 3.1 Input

TC2, TC3, S7, TIA

name	data type	description
bEnable	BOOL	Activates the function block
iSupplyPressure	INT	Enter current supply pressure in Bar
btPDI_DeviceStatus	BYTE	Input byte for device status is read
btPDI_Error_ControlUnit	BYTE	Input byte for error of the control unit is read
btPDI_CM_ControlUnit	BYTE	Input byte for condition monitoring of the control unit is read

AB

name	data type	description
EnableIn	BOOL	Activates the function block
iSupplyPressure	INT	Enter current supply pressure in Bar
siPDI_DeviceStatus	SINT	Input byte for device status is read
siPDI_Error_ControlUnit	SINT	Input byte for error of the control unit is read
siPDI_CM_ControlUnit	SINT	Input byte for condition monitoring of the control unit is read

### 3.2 Output

TC2, TC3, S7, TIA

name	data type	description
bEnabled	BOOL	Feedback about status of Enable
bDeviceStatus_Green	BOOL	Device status is green
bDeviceStatus_Yellow	BOOL	Device status is yellow
bDeviceStatus_Orange	BOOL	Device status is orange
bDeviceStatus_Red	BOOL	Device status is red
bErr_DataCorruption	BOOL	Error control unit: Data Corruption
bErr_BusFault	BOOL	Error control unit: Bus fault
bErr_PrimVoltageTooLow	BOOL	Error control unit: Primary voltage too low
bErr_PrimVoltageTooHigh	BOOL	Error control unit: Primary voltage too high
bErr_SecVoltageTooLow	BOOL	Error control unit: Secondary voltage too low
bErr_SecVoltageTooHigh	BOOL	Error control unit: Secondary voltage too high
bErr_Pressure	BOOL	Error control unit: Supply pressure too low or too high
bErr_Ejectors	BOOL	Error control unit: Error in one or more ejectors
bCM_PrimVoltageLimit	BOOL	Condition monitoring of control unit: Primary voltage limit
bCM_SecVoltageLimit	BOOL	Condition monitoring of control unit: Secondary voltage limit
bCM_InputPressureLimit	BOOL	Condition monitoring of control unit: Input pressure limit (3,5... 5bar)
bCM_WarningEjectors	BOOL	Condition monitoring of control unit: Warning in one or more ejectors
btPDO_SupplyPressure	BYTE	Output byte on the process data for transmission of the supply pressure entered on the block

### AB

name	data type	description
EnableOut	BOOL	Feedback about status of Enable
bDeviceStatus_Green	BOOL	Device status is green
bDeviceStatus_Yellow	BOOL	Device status is yellow
bDeviceStatus_Orange	BOOL	Device status is orange
bDeviceStatus_Red	BOOL	Device status is red
bErr_DataCorruption	BOOL	Error control unit: Data Corruption
bErr_BusFault	BOOL	Error control unit: Bus fault
bErr_PrimVoltageTooLow	BOOL	Error control unit: Primary voltage too low
bErr_PrimVoltageTooHigh	BOOL	Error control unit: Primary voltage too high
bErr_SecVoltageTooLow	BOOL	Error control unit: Secondary voltage too low
bErr_SecVoltageTooHigh	BOOL	Error control unit: Secondary voltage too high
bErr_Pressure	BOOL	Error control unit: Supply pressure too low or too high
bErr_Ejectors	BOOL	Error control unit: Error in one or more ejectors
bCM_PrimVoltageLimit	BOOL	Condition monitoring of control unit: Primary voltage limit
bCM_SecVoltageLimit	BOOL	Condition monitoring of control unit: Secondary voltage limit
bCM_InputPressureLimit	BOOL	Condition monitoring of control unit: Input pressure limit (3,5... 5bar)
bCM_WarningEjectors	BOOL	Condition monitoring of control unit: Warning in one or more ejectors
siPDO_SupplyPressure	SINT	Output byte on the process data for transmission of the supply pressure entered on the block

## 4 Function block “FB\_SCTMi\_ETH\_Ejector”

### 4.1 Image of function block

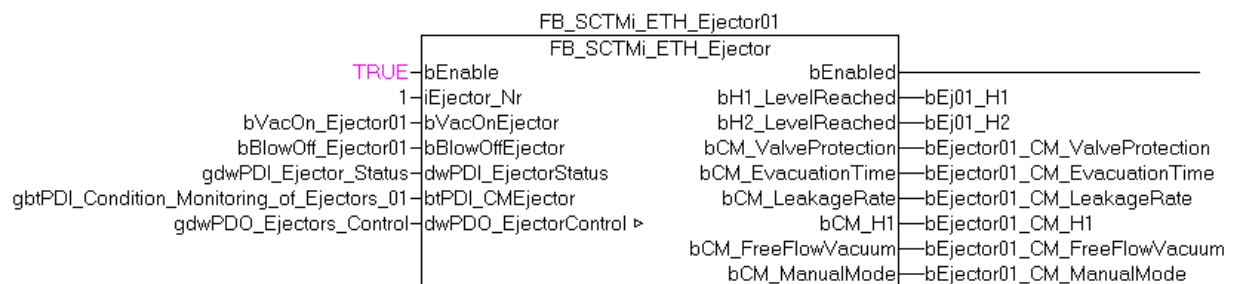


figure 3: example of function block

### 4.2 Brief description

The following tasks are performed by the module:

- Assigning the inputs / outputs to the corresponding bits of the process data to the respective ejector
- Control of the respective ejector
- Output of values and condition monitoring of the ejector



### 5 Parameters

#### 5.1 Input

TC2, TC3, S7, TIA

name	data type	description
bEnable	BOOL	Activates the function block
iEjector_Nr	INT	Specification of the ejector number (1-16)
bVacOnEjector	BOOL	Request for suction
bBlowOffEjector	BOOL	Request for blow-off
dwPDI_EjectorStatus	DWORD	Input double word for the status of the ejectors is read
btPDI_CMEjector	BYTE	Input byte for condition monitoring of the ejector is read
dwPDO_EjectorControl	DWORD	This IN / OUT is used to read and write the output double word for controlling the ejectors

AB

name	data type	description
EnableIn	BOOL	Activates the function block
iEjector_Nr	INT	Specification of the ejector number (1-16)
bVacOnEjector	BOOL	Request for suction
bBlowOffEjector	BOOL	Request for blow-off
siPDI_EjectorStatus1	SINT	Input double word 1 for the status of the ejectors is read
siPDI_EjectorStatus2	SINT	Input double word 2 for the status of the ejectors is read
siPDI_EjectorStatus3	SINT	Input double word 3 for the status of the ejectors is read
siPDI_EjectorStatus4	SINT	Input double word 4 for the status of the ejectors is read
siPDI_CMEjector	SINT	Input byte for condition monitoring of the ejector is read
siPDO_EjectorControl1	SINT	This IN / OUT is used to read and write the output double word 1 for controlling the ejectors
siPDO_EjectorControl2	SINT	This IN / OUT is used to read and write the output double word 2 for controlling the ejectors
siPDO_EjectorControl3	SINT	This IN / OUT is used to read and write the output double word 3 for controlling the ejectors
siPDO_EjectorControl4	SINT	This IN / OUT is used to read and write the output double word 4 for controlling the ejectors

### 5.2 Output

TC2, TC3, S7, TIA, AB

name	data type	description
bEnabled	BOOL	Feedback about status of Enable
bH1_LevelReached	BOOL	Feedback about Ejectors: H1- Level reached (air-saving function)
bH2_LevelReached	BOOL	Feedback about Ejectors: H2-Level reached (part present)
bCM_ValveProtection	BOOL	Feedback about Ejectors: Valve protection active
bCM_EvacuationTime	BOOL	Feedback about Ejectors: Evacuation time greater than limit
bCM_LeakageRate	BOOL	Feedback about Ejectors: Leakage rate greater than limit
bCM_H1	BOOL	Feedback about Ejectors: H1 not reached in suction cycle
bCM_FreeFlowVacuum	BOOL	Feedback about Ejectors: Free flow vacuum too high
bCM_ManualMode	BOOL	Feedback about Ejectors: Manual mode active

## 6 Appendix

### 6.1 List of abbreviations

abbreviation	description
TC2	Beckhoff TwinCAT 2
TC3	Beckhoff TwinCAT 3
S7	Siemens Step 7
TIA	Siemens Step 7 TIA
AB	Allen Bradley
FB	Function module
EPC	Energy- and Processcontrol
CM	Condition Monitoring
EM	Energy Monitoring
PM	Predictive Maintenance

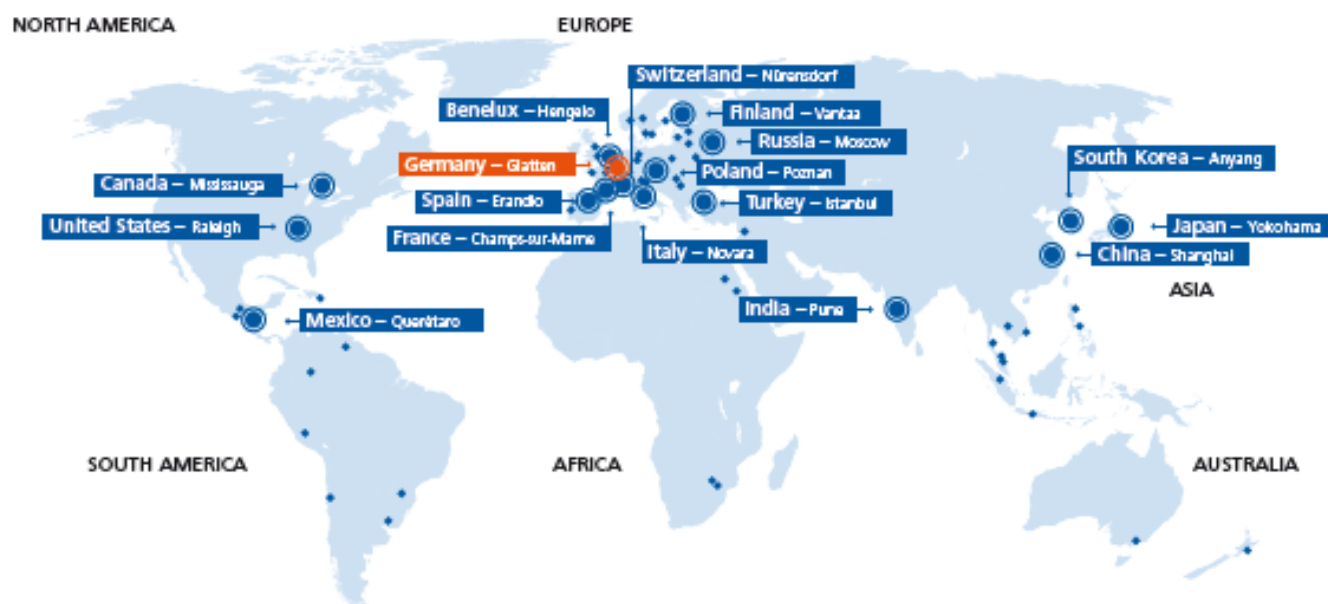
### 6.2 List of figures

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### 6.3 Note

The byte order of the product is represented as big endian.

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