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TRS system

STAR-CAT

Documentation

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TABLE OF CONTENT

REVISIONS

Number Revision	Date	Protocol	List of the changes and/or of the paragraphs
Rev 0	13/05/2013		First release

1 CONTENTS

This documents describes requirements and production specification of STAR-CAT remote module.

2 REFERENCE DOCUMENTS

- EtherCAT Specification - ETG 1000
- EtherCAT Protocol Enhancements – ETG 1020
- EtherCAT Indicator Labeling Specifications – ETG 1300
- EtherCAT Slave Informations Specifications – ETG 2000

3 DESCRIPTION

- Connection on bus EtherCAT®[1] bus to RJ45 connectors
- It transforms a linear EtherCAT® network topology into a star topology by means of an input channel – max. 3 different output channels.
- Mounting on EN50022 and EN50035 DIN railways
- Dimensions: 138x70x23.5 mm

[1] EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

4 TECHNICAL DATA

- Logic 24 Volt DC power supply (Vdd terminals).
- Protection against inversion of logical power supply
- Led signal of the module activity state and on the communication on EtherCAT® bus according to the ETG technical data.

5 ELECTRICAL FEATURES

5.1 Max. values allowed

Parameter	Conditions	Min	Type	Max	Units
Vdd, Power Supply	24 Volt DC	18		30	V
Temperature		0		65	°C

5.2 Operating parameters

Parameter	Conditions	Min	Type	Max	Units
Vdd, Power Supply			24		V
Iq, Quiescent Current	Link off, Vdd=24V,		40		mA
Ip, Operating Current	Link On. State = OP, all port used, Vdd=24V		75		mA
Operative Temperature		5		60	°C

6 INSTRUCTIONS

Generally, the values of power supply, temperature and humidity must not exceed the values as indicated in the chapter 5.

You must interface STAR-CAT using cables/terminals and everything else (see the following chapters).

Terminal blocks must be inserted, even if they are not cabled.

STAR-CAT must be fixed on EN50022 or EN50035 DIN rails by means of the rear spring connection. For coupling and removal, use a flat-blade screwdriver to work on on the connecting tongue in a way that you can move it back and allow the coupling or the release from the guide.

Warning! The metal coupling for the DIN rail is electrically connected to the circuit ground of STAR-CAT: the connection to ground MUST be provided through this connection (that is the DIN rail must be earthed).

Warning! For the connection to EtherCAT®, to prevent from the effect of possible electromagnetic interferences, we suggest the use of Cat.6 S/STP cables.

STAR-CAT is an general purpose electronic device within the environment of the light industry.

It is a class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take the due precautions .

7 SIGNAL LED

7.1 Led RUN, LINK-ACT

Color, typology, positioning, label and operation of the signal leds (LINK-ACT led and RUN led) for the communication on EtherCAT® bus are specified in the ETG[2] documents.[2]

7.2 Green Led POWER

- Green led on means valid STAR-CAT power supply.
- Green led off means unavailable and invalid STAR-CAT power supply.

[2] ETG: EtherCAT Technology Group, please, read the chapter "Reference documents".

8 INTERFACE ON ETHERCAT BUS

For a summary of the STAR-CAT features of the node implementation see below.

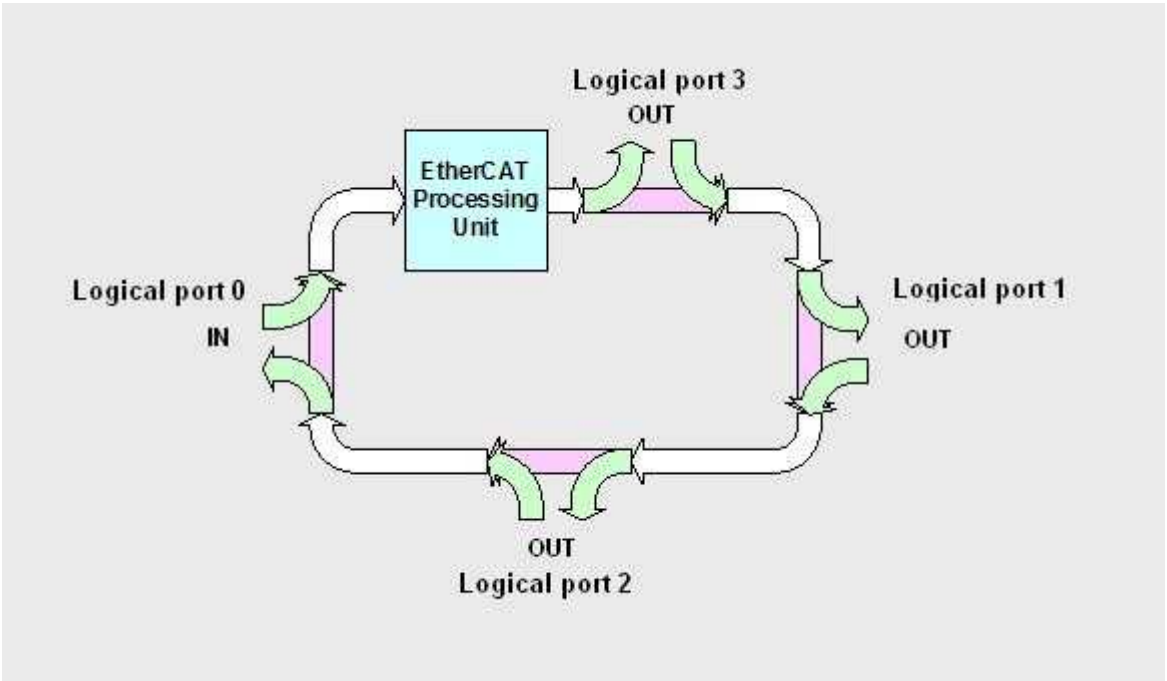
- STAR-CAT does not use Sync Manager
- STAR-CAT does not use FMMU

As for the "junction" functionality there are no data or services of the slave device whose sole purpose is to let messages pass through to the various ports that make it up in the shortest possible time.

The interface occurs by simply connecting the IN input to any point of the EtherCAT® network, taking care that the communication flow provides a previous master.

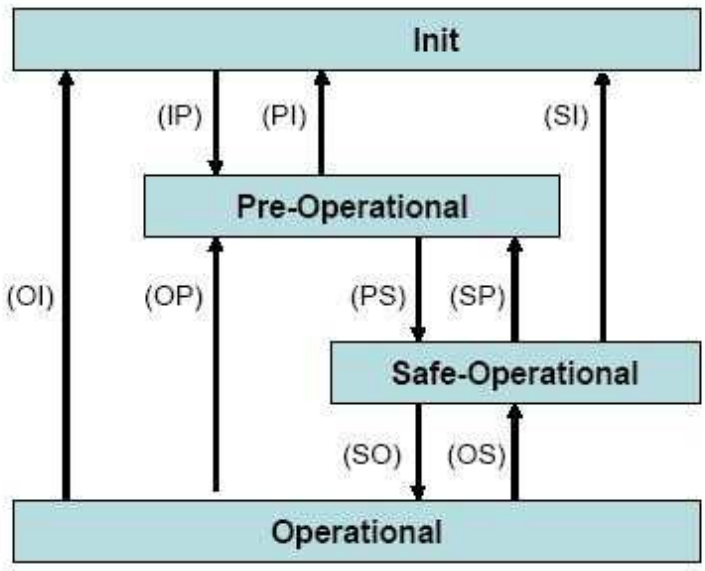
In the 3 OUT bushes any further EtherCAT slave line or ad additional STAR-CAT module can be connected, if the network needs to be further "branched".

Remember that the "branching" is only a physical aspect of the network topology that for the transition of the datagrams always remains a linear network: (see figure below)



8.1 EtherCAT state machine

The state machine is responsible for the coordination between master application and STRA-CAT application. Being STAR-CAT a "simple-device" machine, the status EtherCAT the machine is fully emulated.

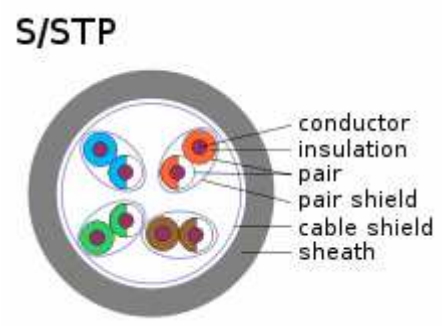


9 CABLING MAPS

1	+Vdd		
2	-Vdd		

9.1 EtherCAT cabling bus

EtherCAT channel needs a device-to-device cabling system made with Ethernet cable segments terminated with RJ45 connector. To prevent from the effect of possible electromagnetic interferences, we suggest the use of Cat.6 S/STP cables. All the wires of S/STP cables are double twisted, individually shielded and have an overall screen.



Warning! Do not use Ethernet cross-cables (also called "patch cables")

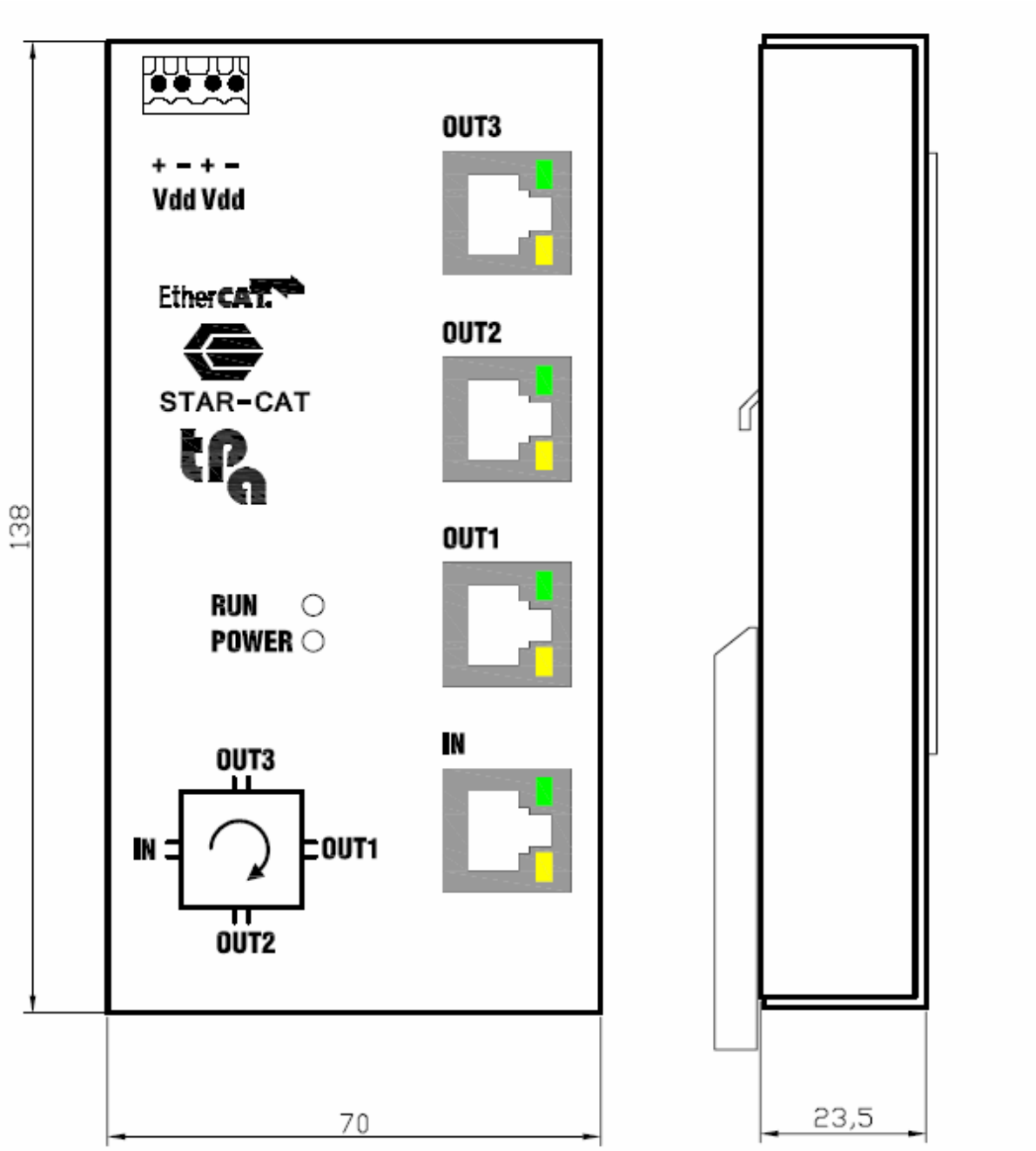
9.2 Vdd logic power supply

This is the power supply (24Volt DC) that is used for the STAR-CAT operation and logic of possible expansions connected to STAR-CAT.

We have 2 terminal blocs with 2 poles placed side by side: the first one is used for the power supply of the module, while the second one can be used as a cross-reference to power another module. In any case both the terminal blocks must be inserted.

Warning! The logic power supply (+24V and its GND) is to be removed from that of possible field power supply, in order to prevent field electromagnetic interferences influencing the TRS-CAT operation.

10 DIMENSIONS



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