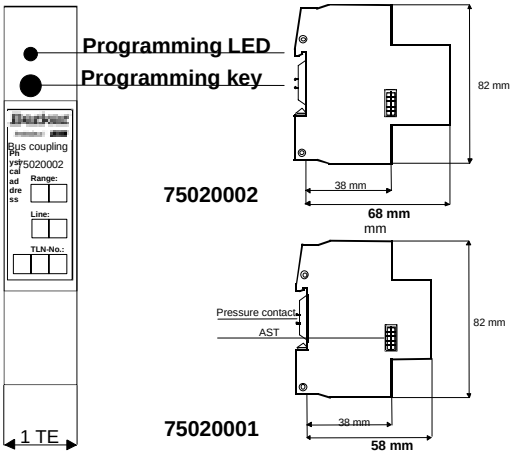
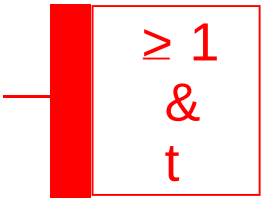
Logic controller RMD 75020001

Technical Documentation



Logic controllers for series installation on DIN rails.
Depending on the selected application, bus telegrams are received, evaluated and transmitted as one or more telegrams in accordance with the parameter settings.



Logic controller

Order nr.: 75020001

Product family: **Controller**
Product type: **Logic controller**

Database search

Connection:	integrated pressure contacts for EIB system
Protection type	IP 20 according to DIN 40050
Operating temperature	-5°C to +45°C
Supply:	24 V DC (+6V/-4V) Approx. 4.5 mA

General technical information

The logic controller is a **bus subscriber without a user data sub-module**.
This device group intervenes in the telegram traffic between the sensors and the actuators. The applications can also be used in flush-mounted bus couplers.

Technical Notes

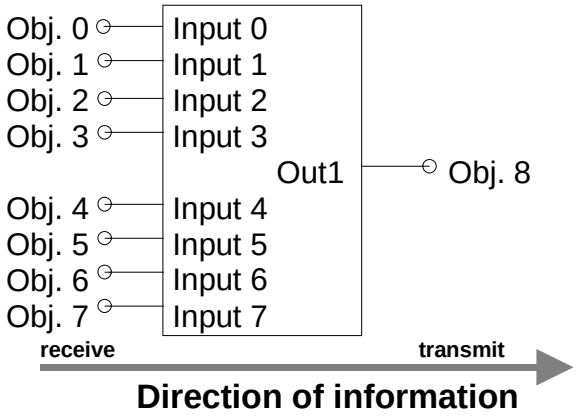
Overview of applications:

1 x 8 inputs 600602	**Version 2**
2 x 2 inputs 600402	**Version 2**
2 x 4 inputs 600502	**Version 2**
4 x 2 inputs	**Version 1.2**
Filter / time 600701	**Version 2**
Transfer 1 bit 6008	**Version 2**
Transfer 4 bit 6009	**Version 2**

The updated versions for individual applications can be found in Database 1.3 in addition to the newly created applications.
We recommend that the latest version always be used.

© Gebr.Berker 2001
(Subject to prior change)

Description of application



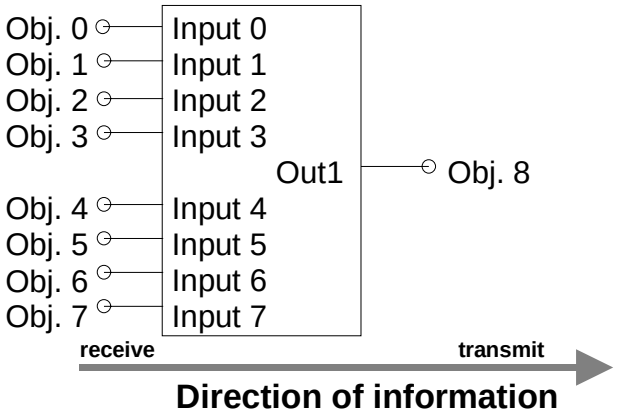
The application with 1x8 inputs (600601) allows the linking of up to 8 input port variables (incoming group addresses) with one output port variable (transmiting group address). You can set the separate response of the input ports as well as the transmiting response of the output port. The transmitting point and cycle time can be adapted in accordance with the practical requirements.

Number of allocations: max. 12
Number of group addresses: max. 10
Number of objects: 8 input ports (receive 1-bit)
1 output port (transmit 1 bit)

General	
Telegram rate	30,60,100 or **127 telegrams every 17 seconds**
Logic operation of the common output gate	**AND** OR NOR NAND
Inputs of the gate	
Behaviour of input n	**Input = object value** Input = inverted object value Input = OFF (logical 0) Input = ON (logical -1)
Behaviour of the outputs	
Transmission criteria	**Change of output** Reception of a telegram
Cyclic transmission ?	**NO** YES
Cyclic transmission, base	**130 ms** .... 1.2 h
Cyclic transmission, factor (3-127)	**40**
Transmission criteria at cyclic transmission	**after cycle** after cycle and change of output

© Gebr.Berker 2001
(Subject to prior change)

Description of parameters:



Logic controller RMD

1x8 inputs 600601

Telegram rate

The number of telegrams that can be transmitted within a time frame of 17 seconds is limited. The cycle time and the settings of the telegram rate must be adapted to your practical requirements.

Logic operation for the common output gate

See truth tables for digital technology!

Behaviour of input n

In practice, not all the available input ports are used.
These must be assigned a value according to the type of link in order that the unused input ports will not have an effect on the results of the links. Accordingly, all the free input ports must be prepared with a 0 for an OR / NOR link while an AND / NAND link must be prepared with a 1.

Cyclic transmission

The cycle time set using ***base*** and ***factor*** results in the regular transmitting of the link results in connection with the parameter setting ***Cyclic transmission of the initial status***. As a result of the resulting bus load, the cycle period must be set to suit your requirements.
Once the bus voltage is restored, the first telegram will be transmitted after a delay of approx. 17 s, irrespective of the preset cycle time.

17 second pause following initialisation!

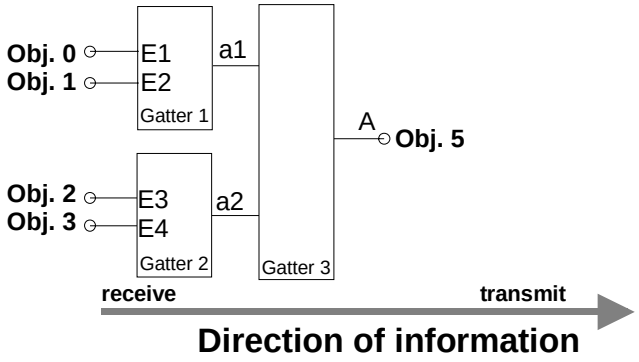
Time between cyclic transm.

The setting ***After cycle and output change*** enables the immediate transmitting of a telegram in the event of a status change at the output port. The currently used cycle time is reset to the initial status.

All the memory areas for objects containing group addresses are located in the RAM area of the bus coupler and are therefore reset to 0 after an initialisation step.
To protect the function of the controllers, all the input addresses must be received once after an initialisation step. This could, for example, occur as a result of the ETS' transmit telegram function.

Transmit incoming addresses after initialisation!

Description of application



Logic controller RMD

2x2 inputs 600401

The 2x2 inputs application (600401) enables links with up to 4 input port variables (incoming group addresses) to one output port variable (transmitting group address). The 4 input port variables are combined in 2 gates with 2 input ports each with one output port gate.
The responses from output ports IN1..IN4 are set separately. The initial status can be transmitted cyclically.

Number of allocations:	max. 8
Number of group addresses:	max. 6
Number of objects:	4 input ports (receive 1 bit) 1 output port (transmit 1 bit)

Allocations, group addresses and objects Parameter window

General	
Telegram rate	30,60,100 or **127 telegrams every 17 seconds**
Logic operation: Gate n	**AND** OR XOR NOT AND (NAND) NOT OR (NOR) Exclusive NOT OR
Logic operation of the output gate	**AND** OR XOR NOT AND (NAND) NOT OR (NOR) Exclusive NOT OR
Inputs of gate n	
Behaviour of input n	**Input = object value** Input = inverted object value Input = OFF (logical 0) Input = ON (logical -1)
Function of the output gate	
Transmission criteria	**Change of output** Receiption of a telegram
Cyclic transmission ?	**NO,** YES
Cyclic transmission, basis	**130 ms** .... 1.2 h
Cyclic transmission, factor (3…127)	3..**40**..127
Transmission criteria at cyclic transmission	**After cycle** After cycle and change of output

Description of parameters

The number of telegrams that can be transmitted within a time frame of 17 seconds is limited. The cycle time and the settings of the telegram rate must be adapted to your practical requirements.

See truth tables for digital technology!

In practice, not all the available input ports are used.
These must be assigned a value according to the type of link in order that the unused input ports will not have an effect on the results of the links. Accordingly, all the free input ports must be prepared with a 0 for an OR / NOR link while an AND / NAND link must be prepared with a 1.
Preparations for non-equivalent or equivalent depend on the application (results of link).

The cycle time set using ***base*** and ***factor*** results in the regular transmitting of the link results in connection with the parameter setting ***Cyclic transmitting of the initial status***. As a result of the resulting bus load, the cycle period must be set to suit your requirements.
Once the bus voltage is restored, the first telegram will be transmitted after a delay of approx. 17 sec, irrespective of the preset cycle time.

The setting ***After cycle and change of output*** enables the immediate transmitting of a telegram in the event of a status change at the output port. The currently used cycle time is reset to the initial status.

All the memory areas for objects containing group addresses are located in the RAM area of the bus coupler and are therefore reset to 0 after an initialisation step.
To protect the function of the controllers, all the input port addresses must be received once after an initialisation step. This could, for example, occur as a result of the ETS' transmit telegram function.

Logic controller RMD

2x2 inputs 600401

Telegram rate

Logic operation: Gate n

Behaviour of the inputs

Cyclic sending

17 second pause after transmitting !

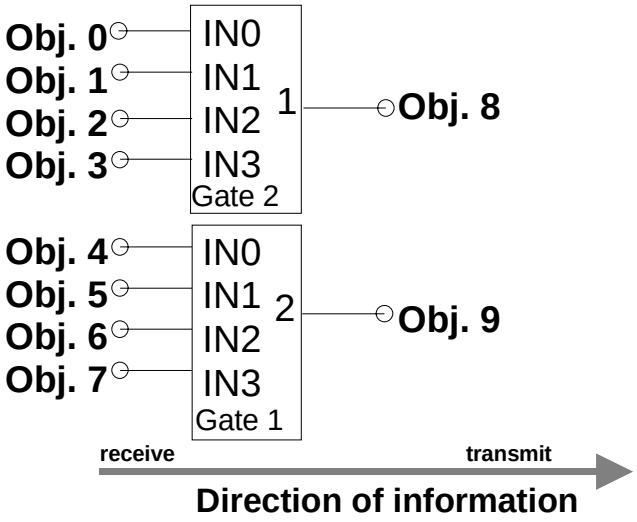
Time of cyclic transmission

Transmit incoming addresses after initialisation!

Logic controller RMD

2 x 4 inputs 600501

Description of application



The 2x4 input application (600501) allows the links of up to 4 input port variables (incoming group addresses) to one output port variable (transmitting group address). There are 2 gates. The types of link can be set independently of one another. The responses of input ports IN0..IN3 and the output ports can be set separately for each gate.

Allocations, group addresses and objects

Number of allocations:	max. 10
Number of group addresses:	max. 12
Number of objects:	8 input ports (receive 1 bit) 2 output ports (transmit 1 bit.)

Parameter window

General	
Telegram rate	30,60,100 or **127 telegrams within 17 seconds**
Logic operation of the gate n	**AND** OR XOR NOT AND (NAND) NOT OR (NOR) Exclusive NOT OR
Inputs of gate n	
Behaviour of input n	**Input = Object value** Input = inverted object value Input = OFF (logical 0) Input = ON (logical 1)
Behaviour of output n	
Transmission criteria	**AND** OR XOR NOT AND (NAND) NOT OR (NOR) Exclusive NOT OR
Cyclic transmission?	**NO,** YES
Cyclic transmission, base	**130 msec** .... 1.2 h
Cyclic transmission, factor (3…127)	3..**40**..127
Transmission criteria at cyclic transmission	**after cycle** after cycle and change of output

© Gebr.Berker 2001
(Subject to prior change)

Description of parameters:

Logic controller RMD

2x4 inputs 600501

Telegram rate

The number of telegrams that can be transmitted within a time frame of 17 seconds is limited. The cycle time and the settings of the telegram rate must be adapted to your practical requirements.

Logic operation of the gate

See truth tables for digital technology!

Input responses

In practice, not all the available input ports are used.
These must be assigned a value according to the type of link in order that the unused input ports will not have an effect on the results of the links. Accordingly, all the free input ports must be prepared with a 0 for an OR / NOR link while an AND / NAND link must be prepared with a 1.

Cyclic transmission

The cycle time set using ***base*** and ***factor*** results in the regular transmitting of the link results in connection with the parameter setting ***Cyclic transmitting of the initial status***. As a result of the resulting bus load, the cycle period must be set to suit your requirements. **Once the bus voltage is restored, the first telegram will be transmitted after a delay of approx. 17 s, irrespective of the preset cycle time.**

17 second pause following initialisation!

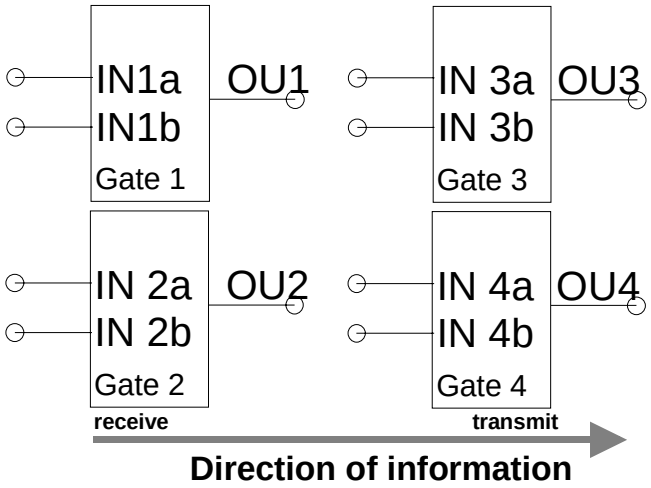
Time of cyclic transm.

The setting ***After cycle and change of output*** enables the immediate transmitting of a telegram in the event of a status change at the output port. The currently used cycle time is reset to the initial status.

All the memory areas for objects containing group addresses are located in the RAM area of the bus coupler and are therefore reset to 0 after an initialisation step.
To protect the function of the controllers, all the input port addresses must be received once after an initialisation step. This could, for example, occur as a result of the ETS' transmit telegram function.

Transmit incoming addresses after initialisation!

Description of application



The 4x2 inputs application (600312) enables 4 gates to link 2 respective input port variables (incoming group addresses) into one output port variable (outgoing group address). The type of interlinking can be individually set for each gate.

Number of allocations: max. 25
Number of group addresses: max. 24
Number of objects: 8 input ports (receive 1 bit)
4 output ports (transmit 1 bit.)

General	
Function: Logic operation n	**AND** NOT AND (NAND) OR NOT OR (NOR) EXCLUSIVE OR (XOR) EQUIVALENT

See truth tables for digital technology!

Feedback from the output ports to one input port can lead to functional irregularities. The linking result is transmitted upon receipt of a telegram to the *instabus*.

Logic controller RMD

4x2 inputs 600312

Allocations, group addresses and objects

Parameter window

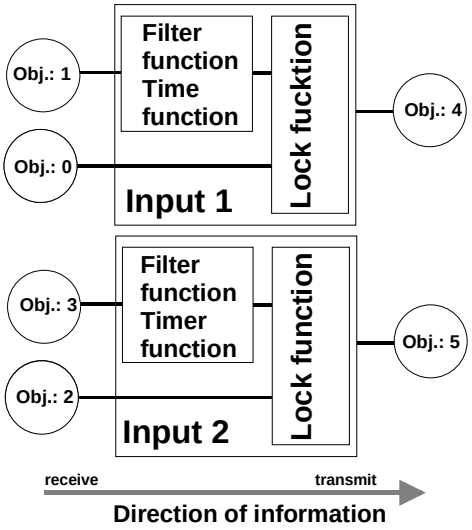
Description of parameters

Logic operation for the gates

Note on application

Do not switch output ports to input ports!

Description of application



The filter / time application forms two separate function gate that receive telegrams and uses a separate group address for sending. Transmitting can occur depending on the edge or with a time delay. The blocking function makes controlled transmitting functions possible.

Number of allocations: max. 14
Number of group addresses: max. 10
Number of objects: 4 input ports (receive 1 bit)
2 output ports (transmit 1 bit.)

Logic controller RMD

Filter / Time 600701

Allocations, group addresses and objects

Parameter window

General	
Telegram rate	30,60,100 or **127 telegrams every 17 seconds**
Filter / Timer n (1 / 2)	
Set the parameter of the release !	**1 = enabled, 0 = blocked** 1 = blocked, 0 = enabled
Timer function at output	**No delay** ON delayed time OFF delayed time ON and OFF delayed time
ON delay time, base	**130 msec** ..... 1.2 h
ON delay time, factor	3...**40**...127
OFF delay time, base	**130 msec** ..... 1.2 h
OFF delay time, factor	3...**40**...127
Input telegram → Output telegram	ON→ --- / OFF→ --- ON→ ON/ OFF→ --- ON→ --- / OFF→ OFF **ON→ ON / OFF→ OFF** ON→ OFF/ OFF→ --- ON→ --- / OFF→ ON ON→ OFF/ OFF→ ON ON→ TOG/ OFF→ --- ON→ --- / OFF→ TOG ON→ TOG/ OFF→ TOG

Description of parameters

Logic controller RMD

Filter / Time 600701 Telegram rate

The number of transmitted telegrams within the time span of 17 seconds can be restricted with the help of the telegram rate restriction. The cycle time and telegram rate setting must be modified in accordance with practical requirements.

Function of the blocked object

Every function channel can have its responses neutralised individually. The blocking object receives one or more group addresses and switches the function gate in accordance with the content of the telegram and the parameter settings.
Receiving the block command while a delay period is underway resets the time function.

Timer function at output

A telegram at the gate input port generates a telegram with another group address if the block function is deactivated. The time delay between receiving and transmitting can be set. If the time function is activated, then this cannot be reset as a result of receiving another telegram!

Converting input telegrams into output telegrams

These parameters enable the telegram filtering function.
Depending on the chosen useful information, sends can be suppressed, inverted, intentionally switched ON/OFF and the normal information content of the original telegram can be passed on.
The target group should be clearly assigned by the TOG function, i.e. only be occupied by the outgoing address of the function module. Overlapping functions (several group addresses per switching object) can lead to malfunctions.

TOGGLE function

Once the bus voltage has been restored, the first telegram is transmitted following a delay period of approximately 17s.

17 second pause!

The following rules must be taken into consideration during object assignment:

Assignment of objects

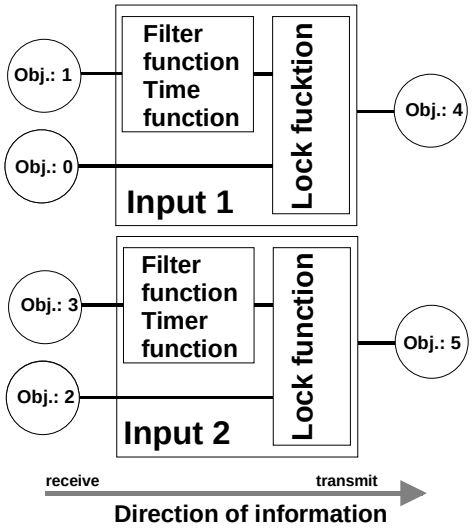
- Only one group address can be processed per **output port**.
- Output ports can be used as input ports or as blocking objects for another function module.
- The assignment of the **same** group address **to two** output ports is only possible if the input addresses are different.
- **Input ports** can be occupied by more than one group address.
- The assignment of one group to several input ports is possible.
- **Blocked objects** can be linked to several group addresses.
- The assignment of the same group address to both blocked objects is possible.

All unoccupied objects must be occupied by so-called dummy addresses. Within the system, this is only connected with a subscriber's object. Assigning dummy addresses belonging to the main group 0/XXXX has proven to be a good idea.

Dummy

© Gebr.Berker 2001
(Subject to prior change)

Notes on the application



Application examples:

Incoming telegram generates a delayed outgoing telegram: **Shutter actuators control the shutters in a delayed running sequence.**

Timer function

Sensor information of blocking objects (time, brightness, presence, etc):
Lights will be excluded from the normal controls once a certain level of brightness has been achieved.

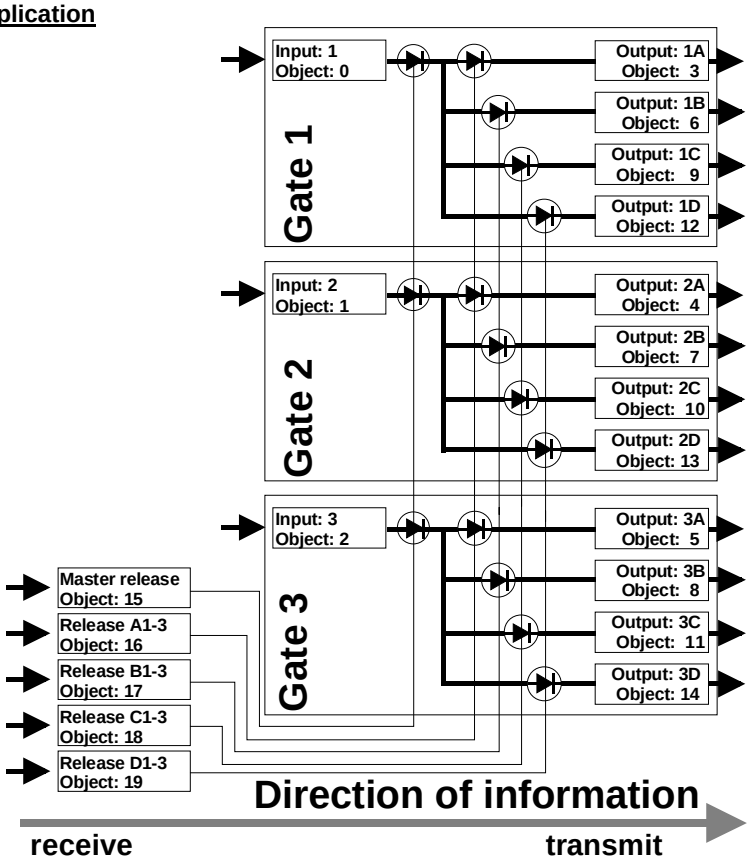
Filtering function without edge evaluation

Sensor information of the blocking objects (time, brightness, presence, etc) interferes with the user information of the telegrams: **after a certain time, it will only be possible to switch off the lighting.**

Filtering function with edge evaluation

© Gebr.Berker 2001
(Subject to prior change)

Description of application



The Transfer 1 bit application creates 3 function gates (Channels 1 - 3).
The receipt of a telegram (EIS 1, 1bit) at the input port can lead to the transmitting of up to 5 (1 bit) switching telegrams without a delay with separate target addresses for each channel. Blocking objects control the send responses.

Number of allocations: max. 25
Number of group addresses: max. 22
Number of objects: 8 input ports (receive 1 bit)
12 output ports (transmit 1 bit.)

Release	
Single release of the outputs A	**1 = released, 0 = locked** Always released
Single release of the outputs B	**1 = released, 0 = locked** Always released
Single release of the outputs C	**1 = released, 0 = locked** Always released
Single release of the outputs D	**1 = released, 0 = locked** Always released
Master release for all single releases of outputs A to D	**locked** released
Telegram rate	30, 60, 100, **127 telegrams every 17 seconds**

Logic controller RMD

ANWENDUNG

Transfer 1 Bit 600801

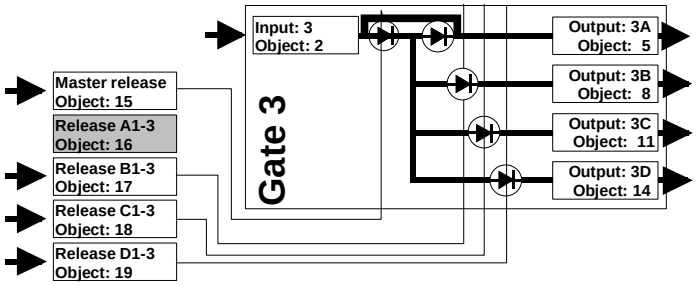
Allocations, group addresses and objects Parameter window

Description of parameters

Enable all output ports

Up to 4 output ports can be used for telegram sources per channel. Each of this is identified as A-D. The enabling objects apply to all 3 channels with output ports that have the same identification (e.g. all A = channel 1/A and 2/A and 3/A).
In the basic setting "*1 = released, 0 = locked* " the corresponding enabling object must be described with a 1 so that an outgoing telegram can be transmitted.
After an initialisation, the enabling objects are all set to 0!
By choosing the setting "*always released*" both the blocking object as well as the main enabling object become inactive for output blocks X.

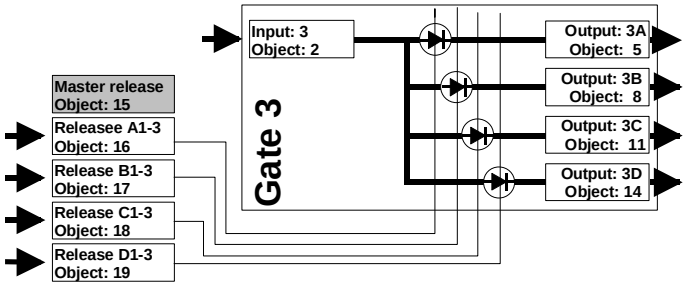
All outputs A always released



Main enabling

The main enabling object allows the entire function to be controlled.
If the enabling of the outputs in the basic setting and the main enabling function in the parameter setting is set to ***"released", then*** all the output ports will be **locked** after receiving a telegram with a value of 0.
Following the initialisation process, the object value of the main enabling object will be reset to 0.

Master release is locked = no function



Notes on application

© Gebr.Berker 2001
(Subject to prior change)

Transfer 1 Bit 600801

The following rules should be observed in the assignment of objects:

- Only one group address can be processed per **output port**.
- Output ports can use the functional modules of another output port as an input or blocking object.

Assignment of objects

- **Input ports** can have several group addresses assigned to them.
- Input ports and enable objects can be connected to the same group address.
- The assignment of one group address to several input ports is possible.

- **Enable objects** can be connected to several group addresses.
- The assignment of the same group addresses to several enable objects is possible.

All unoccupied objects must be have so-called dummy addressed assigned to them. Inside the system, this is only connected with one subscriber's object.

Dummy addresses

Telegram rate limitation

The transfer controller can be used as a telegram multiplier. As a result, up to 12 Response telegrams (plus system telegrams) can be created from one incoming telegram. In uses with high switching rates (from 2 incoming telegrams per second with 12 response telegrams each), the telegram rate restriction can be activated.

The transfer controller acts directly on the telegram level as a bus subscriber without a user module and can therefore be used as a problem solver or for special, object-specific applications.

Telegram multiplier

Incoming telegrams generate up to 4 outgoing telegrams per channel.
As the three input ports can be connected to the same group address, up to 12 response telegrams are possible.
A higher-ranking group address (e.g. main switch) can cause the transmitting of telegrams by lower ranking groups. As a result, following a Main Off command, the lower-ranking function lamp 1 can be set to OFF irrespective of the current value of the corresponding group address.
This makes it easier to solve visualisation problems (Status-LED, display, EIB-Tab).

Sequential circuits

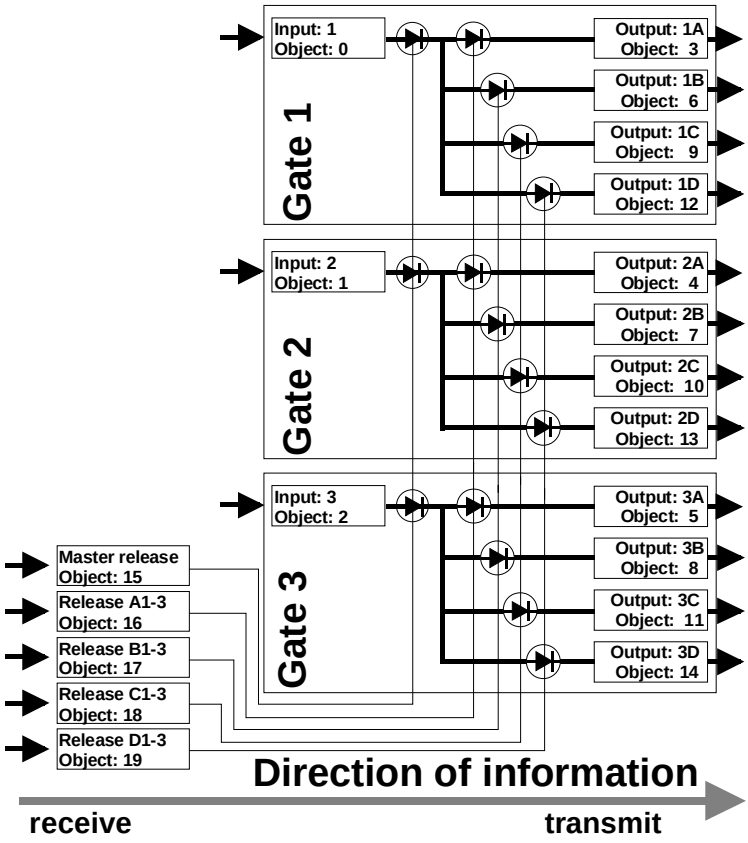
The issuing of an output or input address for a subsequent enabling object makes sequence circuits possible. As a result, it is only possible to activate perimeter lighting 2 if perimeter lighting 1 has been activated.

Default circuits (filtering function)

Enabling objects can be controlled in such a way that the number of the manually switched lamps can be indicated.
The entire lighting will switch on or off depending on the telegram *Open dividing wall,* and the operation of a tactile sensor. If the dividing wall is closed, it will only be possible to control partial areas.

Description of application

Logic controller RMD



Transfer 4 Bit 600901

The transfer 4-bit application creates 3 function gates (channels 1 - 3). Receiving a dimmer telegram (4 bit EIS 2 control) at the input port can result in the transmitting of up to 4 response telegrams (4 Bit EIS 2 Control) with separate target addresses per channel. Blocked objects control the transmitting responses.

Allocations, group addresses and objects

Number of allocations:	max. 25
Number of group addresses:	max. 22
Number of objects:	4 input ports (receive 4 bit) 5 output ports (receive 1 bit) 12 output ports (transmit 4 bit.)

Parameter window

Release	
Single release of the outputs A	**1 = released, 0 = locked** Always released
Single release of the outputs B	**1 = released, 0 = locked** Always released
Single release of the outputs C	**1 = released, 0 = locked** Always released
Single release of the outputs D	**1 = released, 0 = locked** Always released
Master release for all single releases of outputs A to D	**locked** released
Telegram rate	30, 60, 100, **127 telegrams every 17 seconds**

© Gebr.Berker 2001
(Subject to prior change)

Description of application

Logic controller RMD

Transfer 4 Bit 600901

User notes

The application allows 4 bit control values from the input ports to be passed on to up to 4 other target addresses. The enabling modules are designed as 1 bit objects and can control the transmitting of outgoing telegrams.
The general function of this application corresponds with the Transfer 1 Bit 6008 application.
The transfer controller acts as a bus subscriber without a user module directly on the telegram level and can be used for special, object-specific uses.

Telegram multiplier Dimming

Incoming telegrams generate up to 4 outgoing telegrams per channel.
Since the three input ports can be connected to the same group address, up to 12 response telegrams are possible.
The capacity of the group addresses / allocations of the dimmer actuators or control units can be indirectly increased.

Sequential circuits Dimming

Sequence circuits are created by issuing an incoming or outgoing address to a subsequent enabling object. For example, activating dimmer group 2 is only possible after dimmer group 1 is activated.

Default circuits (filtering function)

Enabling objects can be controlled in such a way that the number of lamps (dim actuators) that can be dimmed manually by other sensor information (e.g. open/close dividing wall) can be shown in advance.

Dimming status

Dim actuators and control units transmit their switching status once they are activated/deactivated or dimmed. The blocking objects can process this and enables only those lamps in a lighting system to dim as part of an entire function that is currently activated.

© Gebr.Berker 2001
(Subject to prior change)