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TROX® TECHNIK

Product Information TROXNETCOM-AS-Interface Planning

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Planning guidelines

The following questions should be answered at the beginning of the configuring process:

1. How many inputs/outputs and which modules are needed?
2. How many controllers are needed?
3. How much current is needed for the periphery? Which power supplies will be used?
4. What type of connecting cables (round or flat) will be used?
5. Which cable lengths are needed? Are repeaters needed?
6. Has a tie-in to a central control system been provided for? Which communication ports are available?
7. Should other operating and/or display panels be provided for?

The following examples serve to illustrate the points listed above.

Example 1:

80 fire dampers are planned for a building. Each of these dampers has a conventional limit switch for detection of the “OPEN” position.
The blades are to be networked with a bus system, and a display panel is to be integrated into a centralized location.
The building is 100 x 50 meters and has 5 floors.
The fire dampers are disposed in a similar fashion on every floor.
No tie-in to a higher-level process control system is planned. A collective fault indicator is sufficient in the event of an error.
Extension of the installation should be realizable.
(see schematic on p. 3)

Question 1: How many inputs/outputs and which modules are needed?

80 limit switches must be polled and AS-EP modules will be used for them. Each module has four inputs, and one input is needed for each blade, which works out to a total of 20 AS-E modules – providing that all four inputs can be allocated at all times (local allocation of the blades).

Answer: 20 AS-EP modules

Question 2: How many controllers are needed?

One controller can administer 31 AS-i modules.
Since 20 AS-EP modules are needed, one controller is sufficient.

Answer: 1 Controller. The interface and the type of the controller is started for the end.

Question 3: How much current is needed for the periphery? Which power supplies will be used?

The maximum power consumption of an AS-EP module is 80 mA, which works out to maximum power consumption of 1.6 A.
One AS-i power supply is needed with maximum 2.8 A capacity.
The AS-i controller needs a 24 V DC supply voltage.
This can be installed by the electrical contractor or it can be obtained with a type TNC-D1020 power supply.

Answer: 1 AS-i power supply type TNC-A1216 (max. 2.8 A). 1 power supply type TNC-D1020.

Question 4: Which connecting cables (round or flat) will be used?

In this case, no cable requirement is formulated.
Flat cable can be used because it has the advantage of being simple to install.

Answer: flat yellow cable type TNC-A4000

Question 5: Which cable lengths are needed?
Are repeaters needed?

The controller or controllers are arranged in a decentralized fashion in the installation e.g., in a subsystem.
The permissible length for AS-i lines is 100 m, extendable to a maximum of 300 m with two repeaters. In such cases, a cable length of 200 m is needed. Since the standard length of an AS-i line is 100 m, one repeater is needed for an additional 100 m of length. Each repeater needs its own AS-i power supply, since the repeater produces a galvanic separation of the AS-i feeder line.

Answer: Cable length 200 m, 1 repeater TNC-A2215 and 1 AS-i power supply TNC-A1216.

Question 6: Has a tie-in to the central control system been provided for? Which communication ports are available?

No tie-in to a central control system is planned.

Answer: No tie-in is planned.

Question 7: Are other operating levels and display panels needed?

A display panel is to be installed at the gate. Only one AS-I controller is needed. Therefore the AS-I controller type TNC-A1303 with integrated display is sufficient.

Answer: 1 AS-i controller type TNC-A1303 with integrated display.

Summary:

The following components are needed:

– 20 AS-EP modules

– 1 AS-i controller type TNC-A1303

– 2 AS-i power supply type TNC-A1216 (Controller and repeater)

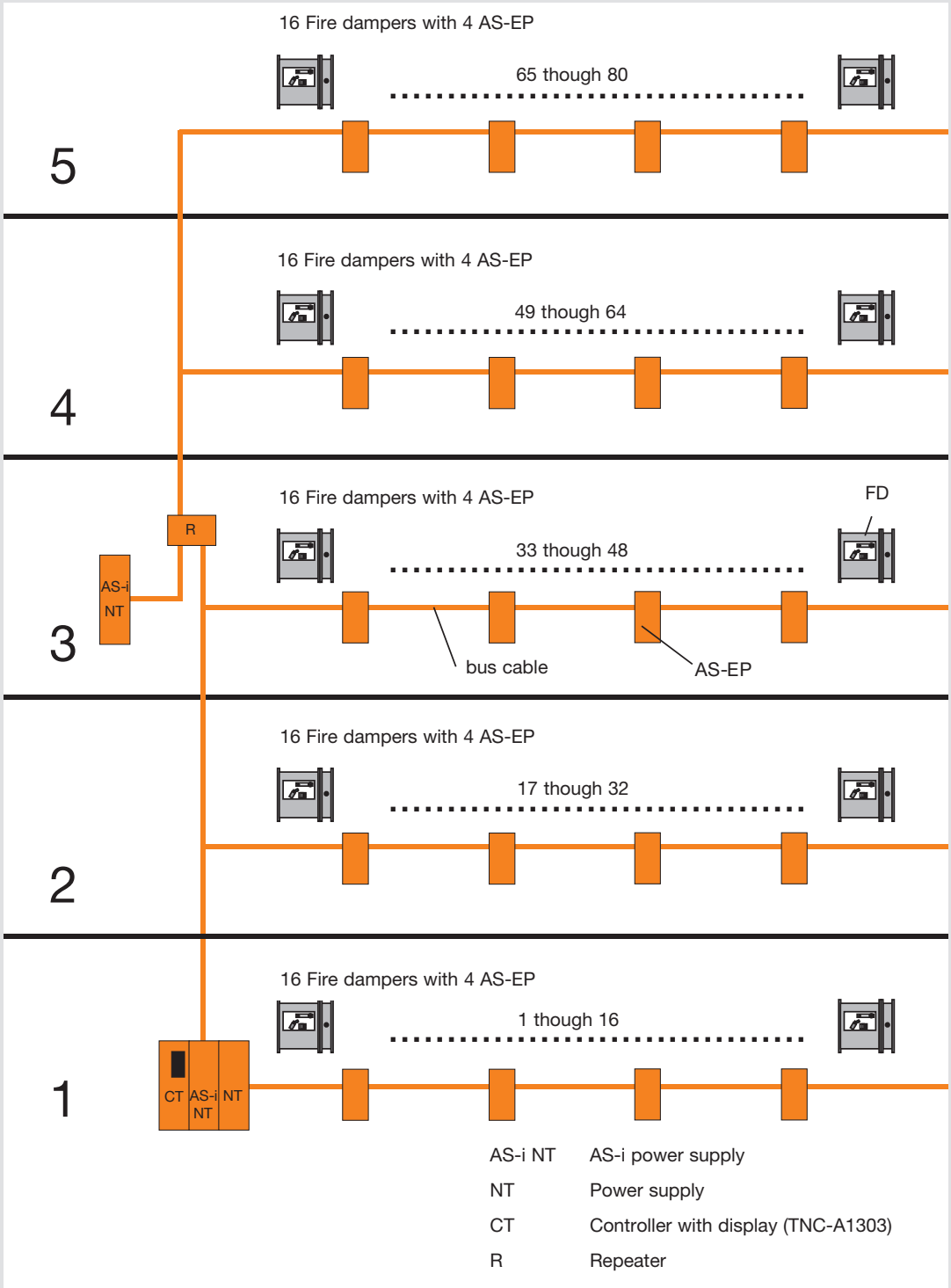
– 1 power supply type TNC-D1020 (Controller)

– 200 m flat yellow cable type TNC-A4000

– 1 repeater type TNC-A2215

Draw up a plan with the appropriate address allocation 1...20 and assignment of the modules to their respective controllers.
Enter the modules in the layout plan.

Example 1


16 Fire dampers with 4 AS-EP
65 though 80
5
16 Fire dampers with 4 AS-EP
49 though 64
4
16 Fire dampers with 4 AS-EP
FD
R
33 though 48
AS-i
NT
3
bus cable
AS-EP
16 Fire dampers with 4 AS-EP
17 though 32
2
16 Fire dampers with 4 AS-EP
1 though 16
CT
AS-i
NT
NT
1
AS-i NT AS-i power supply
NT Power supply
CT Controller with display (TNC-A1303)
R Repeater

Example 2:

50 fire dampers are planned for a building. Each of these blades is outfitted with an inductive sensor for detection of the OPEN, CLOSED and intermediate positions.
The blades are to be networked with a bus system, and a display panel is to be integrated into a centralized location.
The building is 50 x 50 meters and has 2 floors.
The fire dampers are disposed in a similar fashion on every floor.
A tie-in to a higher-level process control system is planned. An additional operating level is provided for in the plan.
(see schematic on p. 5)

Question 1: How many inputs/outputs and which modules are needed?

50 AS-i-capable sensors are needed to detect the OPEN, CLOSED and intermediate positions. AS-E modules that are pre-mounted to the blades are also to be used.

Answer: 50 AS-E modules

Question 2: How many controllers are needed?

One controller can administer 32 AS-i modules, and a dual controller can administer 62 such modules. Since 50 AS-E modules are needed, one dual controller is sufficient.

Answer: 1 dual controller The interface and controller type are determined below (see Question 6).

Question 3: How much current is needed for the periphery? Which power supplies will be used?

The maximum power consumption of an AS-E module is 80 mA, which works out to a maximum power consumption of 4.0 A, is divided between two AS-i lines. Two AS-i power supplies are needed with a maximum capacity of 2.8 A.
The AS-i controller needs a 24 V DC power supply. This can be installed by the electrical contractor or can be obtained with a type TNC-D1020 power supply.

Answer: 2 AS-i power supplies type TNC-A1216 (max. 2.8 A). 1 power supply type TNC-D1020.

Question 4: What kind of connecting cables (round or flat) will be used?

In this case, no cable requirement is formulated. Flat cable can be used because it has the advantage of being simple to install.

Answer: flat yellow cable type TNC-A4000

Question 5: What cable lengths are needed? Are repeaters needed?

The controller or controllers are arranged in a decentralized fashion in the installation e.g., in a subsystem.
The allowable length for AS-i lines is 100 m. This can be extended to a maximum of 300 m with two repeaters.
In the present example, two separated AS-i line segments are needed, each requiring one (maximum) 100 m length of cable. Since the standard length of an AS-i line is 100 m, no repeater is needed to extend the network an additional 100 m.

Answer: Cable length: 100 m per AS-i line segment, which works out to 200 m.

Question 6: Has a tie-in to a central control system been provided for? Which communication ports are available?

A tie-in to the process control system is planned.
The communication port at the central controller is a Profibus type DP (Master).

Answer: A tie-in is planned; the interface is Profibus DP. Thus the interface and dual controller are defined (Profibus DP and dual controller type TNC-A1306).

Question 7: Are other operating levels and display panels needed?

A display panel is to be installed at the gate. Only one AS-I controller is needed. Therefore the AS-i controller type TNC-A1306 with integrated display.

Answer: AS-i controller type TNC-A1306 with integrated display.

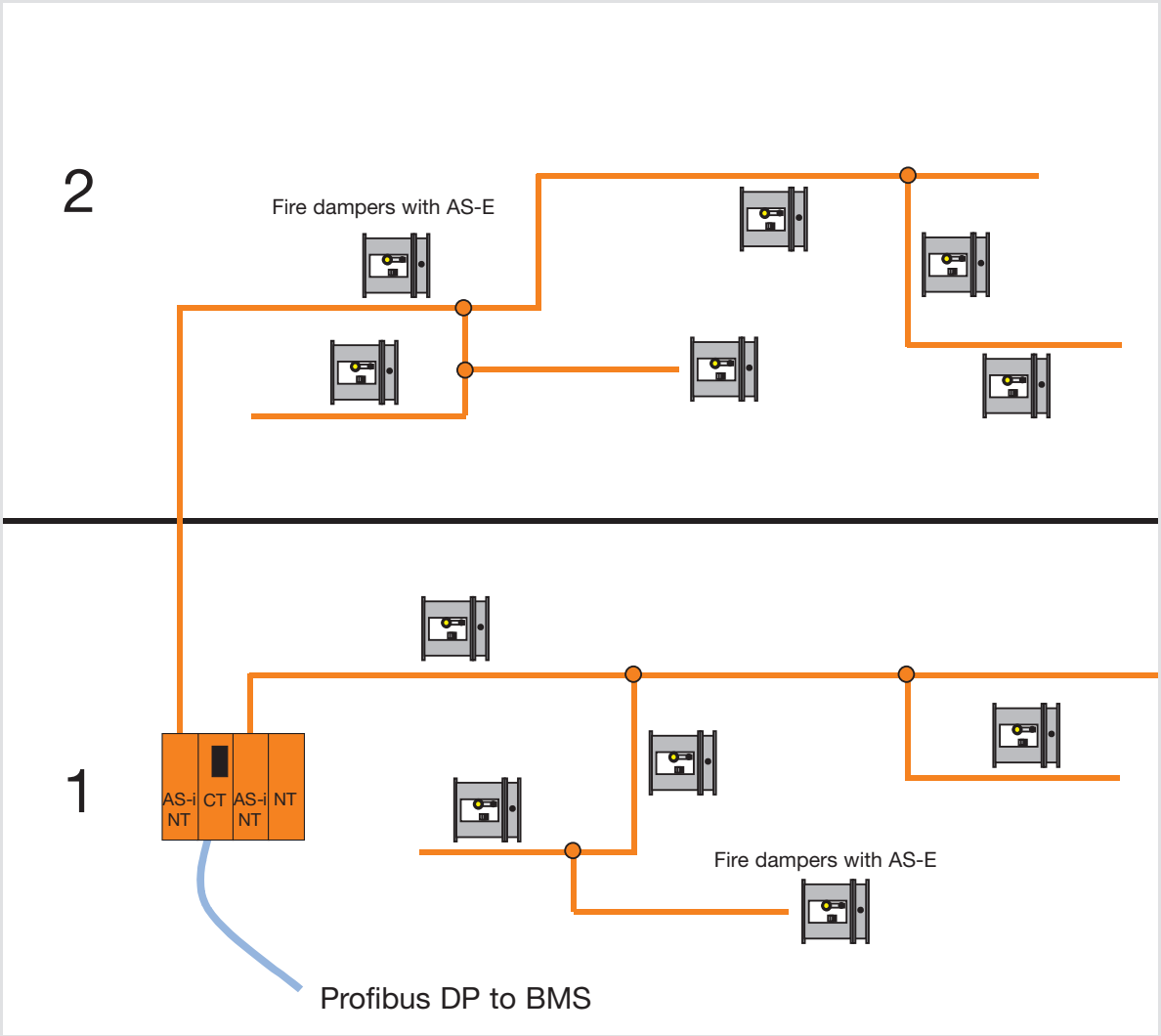
Summary:

The following components are needed:

- 50 AS-E modules
- 1 AS-i dual controller type TNC-A1306 (Profibus DP and slave)
- 2 AS-i power supplies type TNC-A1216
- 1 power supply type TNC-D1020
- 200 m flat yellow cable type TNC-A4000

Draw up plan with appropriate address allocation e.g., AS-i line segment 1 addresses 1...20, AS-i line segment 2 addresses 1...30 and allocation of the modules to their respective controllers.
Enter the modules in the layout plan.

Example 2



AS-i NT	AS-i power supply
NT	Power supply
CT	Controller with display (TNC-A1306)

Example 3:

100 mechanically adjustable fire dampers, each outfitted with a 24 V DC/AC motor, are to be installed in a building containing 12 smoke extractors.
The blades and smoke extractors are to be networked with a bus system, and a control panel is to be integrated into a centralized location.
The building measures 100 x 100 m and has 4 floors. Each floor contains 25 blades and 3 smoke extractors. No tie-in to a higher-level process control system is planned.
(see schematic on p. 8)

Question 1: How many inputs/outputs and which modules are needed?

100 motorized blades must be controlled and their current positions detected. AS-EM/B modules are used, pre-mounted on the blades and wired to the actuator. The 12 smoke extractors must also be connected to the bus system. This is realized via the AS-RM/BD modules, which have pre-installed sockets and are connected to the extractors.

Answer: 100 AS-EM/B modules and 12 AS-RM/BD modules

Question 2: How many controllers are needed?

One controller can administer 31 AS-i modules, and a dual controller can administer 62 AS-i modules. 100 AS-EM/B modules and 12 AS-RM/BD modules are needed in addition to 2 dual controllers or 4 single controllers. Since 25 AS-EM/B and 3 AS-RM/BD modules are distributed on 4 floors, it is decided to install one controller on each floor in order to achieve a clear allocation.

Answer: 4 controllers with Profibus DP interface.

Question 3: How much current is needed for the periphery? Which power supplies will be used?

The maximum power consumption of an AS-EM/B, including its motor, is 300 mA. The current consumption of the AS-RM/BD modules including their smoke extractors is 250 mA. Thus, the maximum current consumption per floor is 8.25 A. Four AS-i power supplies will be used with a maximum capacity of 8 A.

Note:

The AS-i power supplies also deliver a higher level of current, as specified. An 8 A power supply can feed an entire AS-i segment line containing 31 AS-EM/B modules, although according to the computation, only 9.3 A are needed.

The AS-i controllers need a 24 V DC power supply unit. This can be installed by the electrical contractor or can be obtained with a type TNC-D1020 power supply.

Answer: 4 AS-i power supplies type TNC-A1218 (max. 8 A). 4 power supplies type TNC-D1020.

Question 4: What kind of connecting cables (round or flat) will be used?

In this case, no cable requirement is formulated. Flat cable can be used because it has the advantage of being simple to install.

Answer: flat yellow cable type TNC-A4000

Question 5: What cable lengths are needed? Are repeaters needed?

The controller or controllers are arranged in a decentralized fashion in the installation e.g., in a sub-system. The allowable length for AS-i lines is 100 m. This can be extended to a maximum of 300 m with two repeaters. In such cases, a cable length of (maximum) 100 m per AS-i line segment is needed. Since the standard length of an AS-i line is 100 m, no repeater is needed for an additional 100 m of length.

Answer: Cable length 100 m per AS-i line segment, equals 400 m.

Question 6: Has a tie-in to a central control system been provided for? Which communication ports are available?

No tie-in to a central control system is planned.

Answer: No tie-in is planned.

Question 7: Are other operating levels and display panels needed?

A display panel is to be installed in the distributing center. In addition, a type TP057M visualization device will be used as a display, with a Profibus DP Master interface. The display needs a 24 VDC power supply unit type TNC-D1020.

Answer: 1 Display TP057M and 1 power supply TNC-D1020.

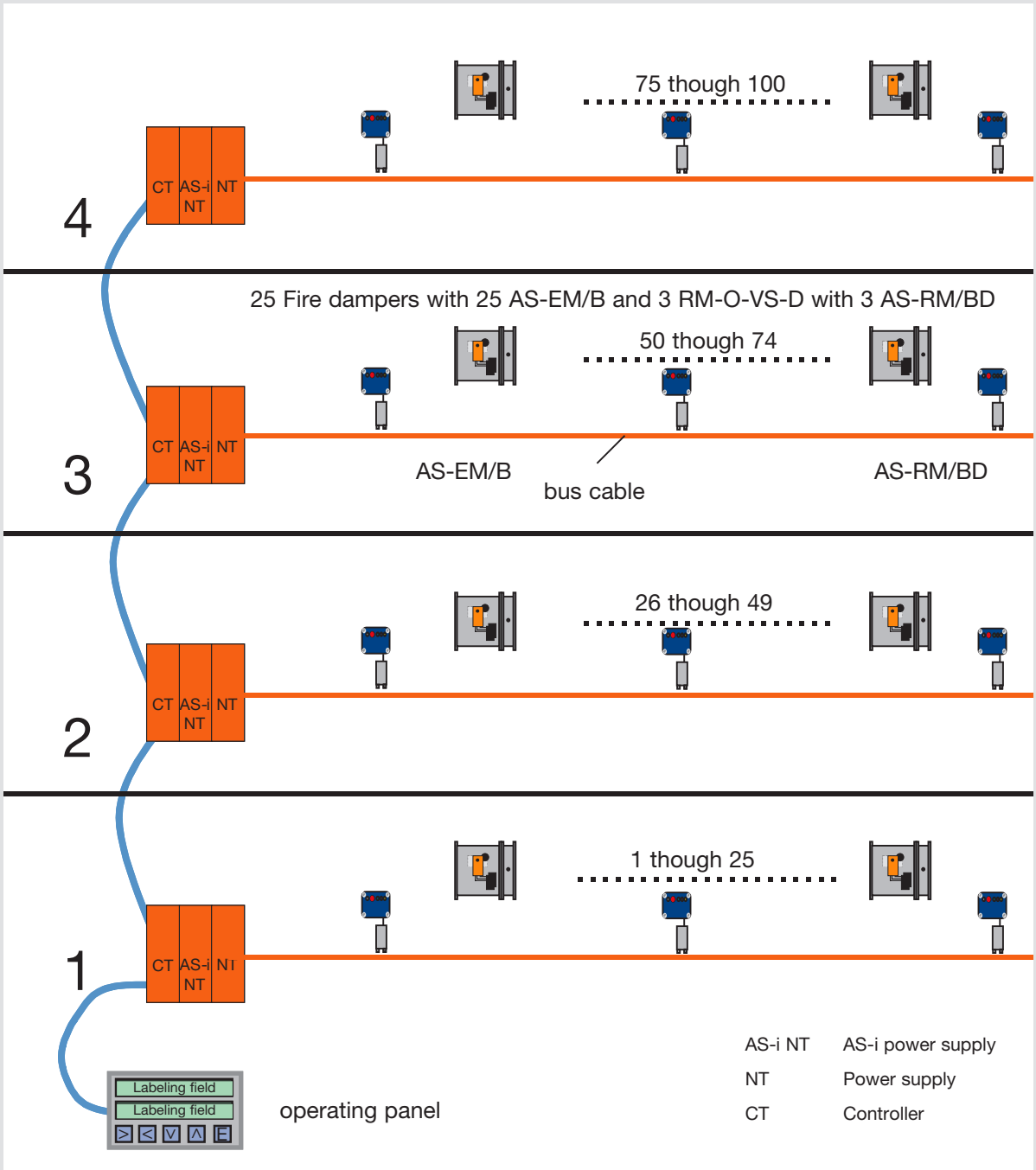
The 4 controllers type TNC-A1305 and the display TP057M are to be networked together via an Profibus DP interface.

Summary:

The following components are needed:
- 100 AS-EM/B modules
- 12 AS-RM/BD modules
- 4 AS-i controllers type TNC-A1305 Profibus DP Slave
- 4 AS-i power supplies type TNC-A1218
- 5 power supplies type TNC-D1020 (Controller and display)
- 400 m flat yellow cable type TNC-A4000
- 1 display TP057M (Profibus, DP Master) ext. gateways: Modbus RTU, Modbus IP

Draw up plan with appropriate address allocation e.g., AS-i line 1 addresses 1...28, AS-i line 2 addresses 1...28, AS-i line 3 addresses 1...28, AS-i line 4 addresses 1...28 and allocate the modules to their respective controllers. Enter the modules in the layout plan.

Example 3


75 though 100
CT AS-i NT NT
4
25 Fire dampers with 25 AS-EM/B and 3 RM-O-VS-D with 3 AS-RM/BD
50 though 74
3
AS-EM/B
bus cable
AS-RM/BD
26 though 49
2
1 though 25
1
Labeling field
Labeling field
operating panel
AS-i NT AS-i power supply
NT Power supply
CT Controller