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excom I/O System Integration in Honeywell Experion via EtherNet/IP

Integration Manual

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Contents

1	About this	s manual	5
	1.1	Explanation of symbols used	5
	1.2	Other documents	5
	1.3	Feedback about these instructions	5
2	Notes on t	the system	6
	2.1	System identification	6
	2.2	Turck service	6
3	For your s	afety	7
	3.1	Intended use	7
	3.2	General safety instructions	7
	3.3	Notes on Ex protection	7
4	Commissi	oning	8
	4.1	Setting the IP address	8
	4.2	Web server — list inserted modules	9
5	Integratin	g the excom system in Honeywell	11
	5.1	Requirements	11
	5.1.1	Requirements — hardware	11
	5.1.2	Requirements — software	11
	5.2	Installing an EDS configuration file	12
	5.3	Creating a Honeywell Unit Operation Controller	16
	5.4	Configuring a Honeywell Unit Operation Controller	17
	5.5	Creating an excom station	18
	5.5.1	Creating an Ethernet/IP adapter	18
	5.5.2	Configuring an Ethernet/IP adapter	19
	5.5.3	Creating slaves	20
	5.5.4	Configuring the signal types	21 22
	5.5.5		22
	5.6 .1	Loading a signal	2 5 27
	5.7	Switching to monitoring	28
	5.8	Activating an excom station	29
	5.9	HART information	32
	5.10	Reading diagnostic information	34
6	Redundar	ncy strategies	38
	6.1	Topology	38
	6.2	Redundancy setup	38
	6.3	System redundancy	39
7	Turck sub	sidiaries — contact information	41



1 About this manual

This manual describes the integration of the excom system in the Honeywell control system via EtherNet/IP.

Read this manual and the applicable documents carefully before the integration. This will prevent the risk of personal injury and damage to property. Keep this manual safe during the service life of the product. If the product is passed on, hand over this manual as well.

The possibilities for the EDS-based integration will be outlined, from the installation of the EDS through to the handling of the I/O data and the associated diagnostics. Other applications of the excom system are described in addition to the general integration:

- Setting up redundancy
- Changing parameters during operation
- Changing configurations during operation

Keep these instructions safe during the service life of the product. If the product is passed on, pass on these instructions as well.

1.1 Explanation of symbols used

The following symbols are used in these instructions:

	DANGER DANGER indicates a dangerous situation with high risk of death or severe injury if not avoided.
	WARNING WARNING indicates a dangerous situation with medium risk of death or severe in- jury if not avoided.
	CAUTION CAUTION indicates a dangerous situation of medium risk which may result in minor or moderate injury if not avoided.
!	NOTICE NOTICE indicates a situation which may lead to property damage if not avoided.
i	NOTE NOTE indicates tips, recommendations and useful information on specific actions and facts. The notes simplify your work and help you to avoid additional work.
	CALL TO ACTION This symbol denotes actions that the user must carry out.
₽	RESULTS OF ACTION This symbol denotes relevant results of actions.

1.2 Other documents

Besides this document the following material can be found on the Internet at www.turck.com:

- Data sheet
- Quick Start Guides
- excom manuals
- Approvals

1.3 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to **techdoc@turck.com**.

2 Notes on the system

2.1 System identification

This manual applies to the Turck excom system.

2.2 Turck service

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database under www.turck.com contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats.

The contact details of Turck subsidiaries worldwide can be found on p. [41].



3 For your safety

The product is designed according to state-of-the-art technology. However, residual risks still exist. Observe the following warnings and safety notices to prevent damage to persons and property. Turck accepts no liability for damage caused by failure to observe these warning and safety notices.

3.1 Intended use

The excom I/O system is integrated into the Honeywell control system via EDS-based Ethernet/IP.

The devices may only be used as described in these instructions. Any other use is not in accordance with the intended use. Turck accepts no liability for any resulting damage.

3.2 General safety instructions

- The device may only be assembled, installed, operated, parameterized and maintained by professionally-trained personnel.
- The device may only be used in accordance with applicable national and international regulations, standards and laws.
- The device meets the EMC requirements for industrial areas. When used in residential areas, take measures to avoid radio interference.
- Only combine devices for which the technical data is suitable for joint use.
- Faulty repairs can lead to the device failing and to accidents leading to property damage and personal injury. Do not interfere with or modify the system components. These devices are not intended for repair. Take defective devices out of operation and send them to Turck for fault analysis. Observe our return acceptance conditions when returning the device to Turck.

3.3 Notes on Ex protection

- Only use the device in Ex areas when installed in the appropriate protective housing.
- Observe national and international regulations for explosion protection.
- When operating the device in a hazardous area, the user must have a working knowledge of explosion protection (IEC/EN 60079-14, etc.).
- Use the device only within the permissible operating and ambient conditions (see approval data and Ex approval specifications).
- Fit blank modules (BM1) on unused slots on the module rack.
- Cables and terminals with intrinsically safe circuits must be indicated use light blue for color-coding. Separate cables and terminals from non-intrinsically safe circuits or isolate accordingly (IEC/EN 60079-14).
- Perform "Proof of intrinsic safety".
- Never connect equipment to intrinsically safe circuits if this equipment was previously used once in non-intrinsically safe circuits.
- Cables and terminals with intrinsically safe circuits must be indicated use light blue for color-coding. Separate cables and terminals from non-intrinsically safe circuits or isolate accordingly (IEC/EN 60079-14).
- Please follow the instructions for use for the built-in equipment.

Commissioning 4

Requirements

- An Ethernet gateway and all required I/O modules are inserted into the module rack.
- When power is supplied by the PSM24-...: The knurled screw under the supply module is fully tightened.
- When power is supplied by the PSM24-...1: The locking cap is inserted over the module cap and fully engaged.
- The gateway must be connected to a PC.
- The Turck Service Tool must have been installed on the PC.

The device is operational automatically once the power supply is switched on. The status LED on the module flashes green and the gateway status LED flashes red.

Setting the IP address 4.1

The device is factory set to IP address 192.168.1.254. The IP address can be set via the Turck Service Tool, the DTM or the web server. The following example shows the setting of the IP address via the Turck Service Tool. The Turck Service Tool can be downloaded free of charge at www.turck.com.



NOTE

The PC and the gateway must be located in the same IP network.

- Connect the device to a PC via the Ethernet interface.
- Launch the Turck Service Tool.
- Click Search or press [F5].
- ⇔ The Turck Service Tool displays the connected devices.

🔫 Turcl	k Service Tool, Vers. 3	.2.2														- 🗆 ×
Yo	our Global Aut	tomation	Partner												JR	СК
Search ((F5) Change (F2)	Wink (F3) Ad	ctions (F4) CI	ipboard Langu	N - Exper	t view ON St	art DHCP (F6) Configura	P tion (F7)	ARGEE (F8) B	EEP (F9)	X Close				្រុំ្រុ Columns
No	MAC address	Name	IP address	Netmask	Gateway	Mode	Device	Version	Adapter	A	Pr	Ke	BE	Turck,		
= 1	00:07:46:84:08:4F		10.17.110.138	255.255.255.0	10.17.110.1	PGM_DHCP	TN-UHF-Q300-EU-CDS	1.1.1.9	10.17.110.25	-			-	Turck		
- 2	00:07:46:84:19:07		<u>192.168.1.254</u>	255.255.255.0	0.0.0.0	PGM_DHCP	GEN-N	1.2.6.0	192.168.1.95	-			-	Turck		
Found 2 D	Devices.															

Fig. 1: Turck Service Tool



- Click the gateway (example: **GEN-N**).
- Click Change or press [F2].
- Set the IP address and if necessary the network mask and gateway.
- Accept the changes by clicking **Set in device**.

Change device con	figuration X
Device name:	
IP configuration	
MAC address	IP address
00:07:46:84:19:07	192.168.1.25
Netmask	Gateway
255.255.255.0	0.0.0.0
Set IP configuration	n temporarily
Status messages:	
clarab moodagee.	
Set in device	Cancel
00111001100	

Fig. 2: Setting the IP address

4.2 Web server — list inserted modules

The device is factory set to IP address 192.168.1.254. To open the web server via a web browser, enter http://192.168.1.254 in the address bar of the web browser. If the IP address has been changed, enter the new IP address in the address bar of the web browser.

Alternatively, double-click the IP address in the Turck Service Tool.

A login is required in order to edit settings via the web server. The default password is "password".



NOTE

To ensure greater security, Turck recommends changing the password after the first login.

- Enter the password in the Login field on the start page of the web server.
- Click Login.

- In the navigation bar on the left, select Gateway \rightarrow Gateway Configuration.
- Click Update Module List Configuration.
- All modules are listed in the navigation bar on the left-hand side. The Status LED on the module is green. The input and the output LEDs light up in red or yellow depending on the type of module and the configuration. Further information can be found in the manuals.

GATEWAY Gateway Information Gateway Diagnostics Event Log Ethernet Statistics EtherNet/IP[™] Memory Map Modbus TCP Memory Map Gateway Configuration Network Configuration

HART Information Page Change Admin Password

SLOT 0 - STATION	
SLOT 1 - DM80	
SLOT 2 - DO40.	
SLOT 3 - AIH40. 4H	
SLOT 4 - AOH40. 4H	

Gateway Configuration

Protocols

Deactivate EtherNet/IP™	
Deactivate Modbus TCP	
Deactivate PROFINET	
Deactivate Web Server	

EtherNet/IP™ Configuration

Activate GW Control Word	✓
Activate GW Status Word	\checkmark
Activate Scheduled Diagnostics	
Activate Summarized Diagnostics	

PROFINET Configuration

 PROFINET Station Name
 turck-excom

 Modbus Configuration
 Modbus Configuration

 NOTE: To disable the watchdog timer, enter 0. Also, the value is in milisecond (ms).
 Watchdog Timer

 Watchdog Timer
 500

 NOTE: To disable connection timeout, enter 0. Also, the value is in second.

 Connection Timeout
 300

 Submit
 Reset

 Reboot
 Reset to Factory Defaults

 Update Module List Configuration
 100

Fig. 3: Gateway Configuration — Update Module List Configuration



5 Integrating the excom system in Honeywell

- 5.1 Requirements
- 5.1.1 Requirements hardware

This example uses the following hardware:

Honeywell hardware

Honeywell Unit Operations Controller: ControlEdge 900 platform

Turck hardware

- MT08-N module rack
- GEN-N gateway
- DM80-N digital I/O module
- DO40-N digital output module
- AIH40-N analog input module
- AOH40-N analog output module
- Ethernet cable



Fig. 4: Example setup of the excom station

5.1.2 Requirements — software

This example uses the following software:

Honeywell software

- Honeywell Experion R511
- EDS configuration file

Turck software

Gateway firmware V1.2.25.5

5.2 Installing an EDS configuration file



Honeywell provides the EDS configuration file for the excom system as a zip file.

The configuration files describe the scope of configuration and the communication properties of an EtherNet/IP participant. To configure the excom station, the EDS configuration file must be integrated into the hardware configurator of the host system. This provides the EtherNet/IP master with the valid information and data records for the excom station during system configuration.

- Open Configuration Studio 4.0.
- Establish a connection to the Experion server.
- Select **Control Strategy** from the navigation bar on the left-hand side.
- Click Configure process control strategies.

File View Tools Windows Help 뤞 1	
Configuration Explorer EPKSSVR511 > Control Strategy	
EPKSSVR511 EPKSSVR511 Finters Control Strategy Batch	Equipment R Build equipment Build Equipment Template
Trends and Groups Topology System Access Alarm and Event Management History	Process Control Strategies 별 편 Configure process control strategies 편립 Administer the control strategy database
Reports Schedules System Interfaces Advanced Options Superion PKS Cluster Upgrade QVCS	SCADA Control I다 Build channels 대및 Build controllers 왕, Build points

Fig. 5: Opening the Control Builder

⇒ The Control Builder opens.



Importing an EtherNet/IP library

- Unzip the zip file to a local folder.
- Select File \rightarrow Import... in the Control Builder.



Fig. 6: Select Control Builder — Import...

- Click **Browse...** and select the appropriate file.
- Click OK.
- Click Select All to load the Product Library.
- Click Import.



NOTE The **Selected Objects For Import** are displayed in red if the Product Library has already been loaded.

Import			×
Path Selection Directory: C:\temp\EXCOMROLLOUT20190729\EXCOMROLLOUT2C Use Selection List:	Import Options Show Des Browse Drable Ob Overwrite Import CEE	cription ject Rename Existing Objects 5 Assignments	
Objects Selection			
Available Objects For Import		Selected Objects For Import	
NameDescriptionEXCOM:AI40_0_20MAEXCOM:AI40_4_20MAEXCOM:AI41_0_10VEXCOM:AI41_0_20MAEXCOM:AI41_2_10VEXCOM:AI41_4_20MAEXCOM:AI41_4_20MAEXCOM:AI41_4_20MAEXCOM:AI443EXCOM:AIH40_4_20MAEXCOM:AIH40_4_20MAEXCOM:AIH40_4_20MA_1HEXCOM:AIH40_4_20MA_8HEXCOM:AIH41_0_20MAEXCOM:AIH41_4_20MA	Select > Select All >> < Remove <<< Remove All	Name EXCOM:AI40_0_20MA EXCOM:AI40_4_20MA EXCOM:AI41_0_10V EXCOM:AI41_0_20MA EXCOM:AI41_2_10V EXCOM:AI41_2_10V EXCOM:AI41_4_0MA EXCOM:AI41_4_20MA EXCOM:AI41_4_20MA EXCOM:AI440_4_20MA EXCOM:AIH40_4_20MA EXCOM:AIH40_4_20MA_1H EXCOM:AIH40_4_20MA_8H EXCOM:AIH41_0_20MA EXCOM:AIH41_4_20MA_1H EXCOM:AIH41_4_20MA EXCOM:AIH41_4_20MA EXCOM:AIH41_4_20MA	~
		View Connection Details Import Cance	

Fig. 7: Importing a Product Library



⇒ The Product Library with the excom modules appears in the Library – Containment window.

Library - Containment	٥x
EXCOM	^
AI40_0_20MA	
🖶 🗍 AI40_4_20MA	
🗎 🕀 📕 Al41_0_10V	
🖶 📋 Al41_0_20MA	
🖶 📋 Al41_2_10V	
🖶 📋 Al41_4_20MA	
📄 🖻 Al43	
🖶 📋 AIH40_0_20MA	
	×
Library	

Fig. 8: Modules in the Library – Containment window

5.3 Creating a Honeywell Unit Operation Controller

The Honeywell Unit Operation Controller (UOC) must be created.

View Tools Chart Templates Field Devices Controller Add-Ins Window Help File Edit 🕽 🕈 🕅 📜 🖮 😑 🕂 🗸 👚 🚳 🖓 👄 諾 < 🔄 🔒 100% Open New > Cabinets > Controllers > Close ACE - Application Control Environment Redundancy Module C200E - Control Processor Module (16M) Ctrl+S Save I/O Modules > C300 - Controller (2 I/O Links) Page Setup... Interface Modules > CPM200 - Control Processor Module (4M) Print Preview ELCN EHPM - EUCN Controller 5 Print > UOC - Control Edge Unit Operations Controller Devices > Export... External Servers > Export With Contents... Gateways > Import... Ethernet IP Devices > IEC61850 Devices > Create Proxy Node... Cluster Create Proxy FTEB... Control Logix Block Create Proxy SCM... Create Proxy RCM... Control Module Create Proxy CBR ... Equipment Module > Unit Exit Unit Class < Procedural Operations > 🗄 Project 🗮 Monitoring Batch Operations > Template... Library - Containment Туре > EXCHANGE EXCOM Wizard...

► Select File \rightarrow New \rightarrow Controllers \rightarrow UOC – Control Edge Unit Operations Controller.

Fig. 9: Creating the UOC

⇒ The UOC has been created.



5.4 Configuring a Honeywell Unit Operation Controller

The Honeywell Unit Operation Controller must be configured.



The last three digits of the IP address must be between 101 and 253.

- Double-click **UOC**...
- Under Main \rightarrow Device Index, set the last three digits of the IP address (here: 103).
- Under Downlink Address Configuration, set the IP address range of the excom gateway (here: 10.110.101.1).
- Under Connection Type select Star-PRP (star topology).
- Confirm with OK.

Security	PROFINET C	Configuration	Server History	Server Displays	Control	Confirmation	QVCS	Identificat	tion
lain	System Time	Statistics	Hardware Information	FTE	Downlink	UDP/TCP	IP/ICMP	Soft Fail	ures
ag Name em Name	#	UOC_103							
pplication ssociated TE Addre levice Inc themet If	n Image Version I Asset # ess Configuration — lex 2 Address	103	7.103	Redundancy Module is Secondary Ta	Configuration redundant ng Name				
)ownlink ∑ Enable	Address Configuratio Downlink Network	Interface	110 101 1	Downlink Net Connection Ty	work Configur _/ pe	ation Star-PRP		~	
PAddress Subnet Ma □Enable	ask DHCP Server	255 .	255 . 255 . 0	VLAN ID Choose "Non- using the ETH	redundant" to 13 port. Set al	connect to a sta EPM x100 switc	ndard or DLR su hes to 4.	witch	
tart of DH ind of DH	ICP IP Lease Block CP IP Lease Block PROFINET	0.	0.0.0	Choose "Ring ETH 4 ports. S Choose "Star- and ETH 4 po	-HSR" to join Set all EPM x1 PRP" to conr ints. Set all EP	an HSR network 100 switches to 3. nect to a PRP net M x100 switches	using the ETH : work using the E to 4.	3 and ETH 3	
				Choose "Ring 4 ports. Confi <u>c</u> DLR, controlle	-DLR'' to join gure DLR on [ers must be rea	a DLR network u Downlink Tab. Wr started. Set all Ef	sing the ETH 3 hen changing to PM x100 switche	and ETH /from es to 5.	
Command Iodule Co	/ State mmand	NONE	~	Advanced Co	nfiguration nabled				

Fig. 10: Configuring the UOC

⇒ The UOC has been configured.

5.5 Creating an excom station

5.5.1 Creating an Ethernet/IP adapter

The excom system Ethernet/IP adapter must be created as a slave of the UOC.

► Drag the EtherNet/IP adapter (here: GENADAPTER) from the Library – Containment window to the Project – Assignment → CEEUOC... window.

Project - Assignment	x
Enter Name to Search \checkmark \rightarrow 🄢	X
Root Unassigned UOC_103 CEEUOC_103 	
불불 Project 道 Monitoring	1
Library - Containment	×

- Fig. 11: Creating an EtherNet/IP adapter using drag-and-drop
- ⇒ The EtherNet/IP adapter has been created.



5.5.2 Configuring an Ethernet/IP adapter

For the Honeywell controller to communicate with the excom station, the excom gateway must be configured.

- Under Project Assignment \rightarrow expand the UOC... section.
- Double-click **GENADAPTER**.
- ⇒ The configuration window opens.
- Select Main.
- ▶ Under Tag Name, assign a name to the EtherNet/IP adapter (here: excom-demo).
- Under IP address of the device, set the IP address of the gateway.
- Under Chassis Size, enter the number of slots in the excom station plus one (+1) (e.g. for MT08-N: 9 slots).
- Confirm with OK.

📲 Control Builder - Project - Assignment							
File Edit View Tools Chart Templates	Field Devices Controller Add-In	s Window Help					
≓≓≝←→₽ ×≞ª A	🕈 🕅 🎾 🚍 🔶 🤳	1 @ 🔂 🗢 😫 🄇	ه 🛛 🛇 🔦	100%	\sim		
Designt Assignment	ETHERNET_IP:GENADAPTER Block,	GENADAPTER_209 - Paramete	ers [Project]				×
	Server Displays	Control Confirmatio	n	QVCS		Identification	
Enter Name to Search	Main Advanced Config	guration / Statistics Ass	embly Configurations	Slot State	us Configuration	Server History	/
⊡							^
🗄 🗾 Unassigned	Tag Name	xcom-demo					
	Item Name #		-				
	Description #		1				
	Module Information						
	Module Description	IP Generic Adapter]				
	Network Configuration		Adapter Config	uration			
	Consolidate Connections		Execution State	e	INACTIVE	~	
	IP address of the device	<u>10 . 110 . 101 . 0</u>	Configuration In	nformation ()k		
	Chassis Size		IO Connection	Status 1	NotConnected		
	Enable Extended Path support		IO Connection	Extended Status	Standby		
	Extended Path to Gateway		General Error S	itatus (0x0		
L ジ Project 知 Monitoring	Target -> Originator RPI (ms)		Extended Error	Status (b x0		
	Originator -> Target RPI (ms)						
Library - Containment	EIM Name		Ī.				
AB_DRIVE_IF	IP address of EIM						
in a AGA							
AGA10	Connect UnDemand						
a aPI	On-Demand Connect Command	IONE ~					
	On-Demand Connect State						¥
	Show Parameter Names				ОК	ancel Held	
E FI BL20 FDS V2						104	

Fig. 12: Configuring an Ethernet/IP adapter

⇒ The EtherNet/IP adapter has been configured.

5.5.3 Creating slaves

The excom station modules must be created as slaves.

► Drag and drop the configuration for the respective module from the Library – Containment window to the Project – Assignment → excom station window (here: excom demo).



- Fig. 13: Creating modules as slaves
- ⇒ The slave has been created.



5.5.4 Configuring the slave

- ▶ In the **Project Assignment** window, double-click the module (example: **DM80-N**).
- ⇒ The configuration window opens.
- Select Main.
- Under **Tag Name**, assign a name to the module.
- Under Extended Path to Device, enter the number of the slot in which the module is inserted in the excom station.
- Optional: Change the parameters under **Channel Configuration**.
- Confirm with **OK**.

Server Display	s	Control Confirmation		QVCS		Identification	
Main Chan	nel Configuration	Data/Status	Alarms	Advanced Confi	guration / Statistics	Server Histo	ory
ag Name	DM80_S_2	15					
em Name #							
escription #							
Iodule Information							
IP Device Description	DM80 S						
umber of Channels	8						
dapter Name	excom-demo	1					
letwork Configuration			Module C	onfiguration			
address of the device	, 10 .	110 . 101 . 20	Execution	State	INACTIVE	\sim	
Enable Extended Pa	th support		🗹 Alarmir	ig Enabled			
xtended Path to Devic	e 1		IO Connec	ction Status	NotConnected		
odule slot number in c	hassis 0		IO Connec	ction Extended Status	Standby		
arget -> Originator RPI	(ms) 100		General E	rror Status	0×0		
riginator -> Target RPI	(ms) 100		Extended	Error Status	0×0		
IM Name							
address of EIM							
onnect OnDemand							
Connect On-Deman	ł						
n-Demand Connect Co	mmand NONE		1				

Fig. 14: Configuring the slave — entering the slot

 \Rightarrow The slave has been configured.

5.5.5 Configuring the signal types

The signal types must be configured to allow communication with the excom system and the Honeywell controller.

- ▶ In the Project Assignment window, expand the module (here: AIH40_20MA_8H_229).
- ▶ Right-click the desired channel (here: **SPARE_01**).
- Select the signal type by double-clicking on it under **Channel Type Setting**.



Fig. 15: Creating a signal

⇒ The configuration window opens.



- Select Main.
- Activate HART: Check the **Enable HART** option.
- Optional: Under Tag Name, assign a name to the signal.
- Confirm with **OK**.

IOPOINTS:	Al Bloc	k, Al_01 - Parar	neters [[Project]						? ×
Server Dis	plays	Control Confim	nation	Identification	Block Pins	Configurati	on Parameters	Monitoring Parameter	s Block F	references
Main	HAR	T Configuration	HA	RT Device Status	HART Id	entification	HART Variable	es HART Notificat	ions Ser	ver History
Tag Nan Item Nan Descripti Associat Assignm Associat Channel Reference	ne # ion # ed Asse ent ed IOM Number ced By C	t # or Parameter CM	AI_01)_4_20MA_8H_22	9	IOPOINT / IO Family IO Module	Attributes Type	EtherNet/IP EXCOM:AIH40	_4_20MA_8F	~
Informati Device I Drawing	ion Location Informat	# ion #				HART	HART			
Show Pa	arameter	Names					[ОКС	ancel	Help

Fig. 16: Activating HART

Loading a configuration

- ▶ Right-click UOC...
- Click Load With Contents...



Fig. 17: Loading a configuration

- ⇒ The Load Operation window opens.
- Click Load.



5.6 Loading an excom module

- ▶ In the **Project Assignment** window, right-click the excom station (here: **CEEUOC_103**).
- Click Load With Contents...



Fig. 18: Right-clicking excom modules

⇒ The Load Operation window opens.

- CIICK LOUG.		Click	Load.
---------------	--	-------	-------

Load Operation

Load	Item Names	Current State	Required State	Post-Load Sta
\langle	CEEUOC_103	IDLE	N/A	N/A
\checkmark	excom-demo	Not Loaded	Inactive	ACTIVE
\sim	AIH40_4_20MA_8H_229	Not Loaded	INACTIVE	ACTIVE
~	AOH40_4_20MA_8H_234	Not Loaded	INACTIVE	ACTIVE
~	DM80_S_215	Not Loaded	INACTIVE	ACTIVE
\sim	DO40_224	Not Loaded	INACTIVE	ACTIVE
	GEN2_310	Not Loaded	INACTIVE	ACTIVE
s in Bo	old represent user-selected items. Items with a * belond	a to multiple aroups.		
s in Bo	old represent user-selected items. Items with a * belong d Item Details	g to multiple groups.		
in Bo ected	old represent user-selected items. Items with a * belong d Item Details	g to multiple groups.		
in Bo ected	old represent user-selected items. Items with a * belong d Item Details Change state to Required State before load	g to multiple groups.		

Fig. 19: Loading an excom module

⇒ The excom station is loaded with the full tree structure.



5.6.1 Loading a signal

Each module signal must be created individually.

- ▶ Right-click the desired signal in the **Project Assignment** window.
- Click Load...

Project - Assignment		0	
	mo D_4_2	20MA_8H_229	
		New Print Export	>
 aOH ⊕ □ ⊕ □		Copy MultiVersion Delete Rename Block Properties DATA Block	Ctrl+C > Del
Library - Containment	~	Containment View Find Options	
EXCOM Al40_0_20MA Al40_4_20MA		ListView Refresh QVCS Manager	>
AI41_0_10V AI41_0_20MA AI41_2_10V AI41_2_10V AI41_4_20MA		Symbol Library Project Engineering Auto-configure Slaves	
 AI43 AIH40_0_20MA AIH40_4_20MA 		Honeywell Smart Channels Load	>

Fig. 20: Loading a signal

- \Rightarrow The signal is loaded.
- Load additional signals according to the individual configuration.
- ➡ The planning for the excom station and the modules is complete. The corresponding data has been uploaded to the Honeywell controller.

5.7 Switching to monitoring

Monitoring is a live view of the Honeywell controller. The excom station and modules must first be activated in order to start the controller.

Click Monitoring.

Monitoring - Assignment
✓ → Ⅲ >
■ Root ■ UOC_103 ■ CEEUOC_103 ■ I/O ■ I/O ■ AIH40_4_20MA_8H_229 ■ 01: AI_01 ■ 01: AI_01 ■ DM80_S_215 DO40_224 D040_224 ■ GEN2_310
TE Project TE Monitoring

Fig. 21: Switching to Monitoring



5.8 Activating an excom station

The excom station must be activated.

- In the Monitoring Assignment window, right-click the excom station (here: excomdemo).
- Click Load With Contents...



Fig. 22: Activating an excom station

⇒ The Load Operation window opens.

Click Load.

Load Operation X										
-	Groups of Items to be loaded									
Groups	of Items to be loaded									
Load	Item Names	Current State	Required State	Post-Load State						
	excom-demo	INACTIVE	Inactive	ACTIVE						
	AIH40_4_20MA_8H_229	INACTIVE	INACTIVE	ACTIVE						
	AI_01	Inactive	N/A	N/A						
	AOH40_4_20MA_8H_234	INACTIVE	INACTIVE	ACTIVE						
	DM80_S_215	INACTIVE	INACTIVE	ACTIVE						
	DO40_224	INACTIVE	INACTIVE	ACTIVE						
	GEN2_310	INACTIVE	INACTIVE	ACTIVE						
Items in Bold represent user-selected items. Items with a * belong to multiple groups. Selected Item Details										
Options	hange state to Required State before load									
The Chee	Load operation should not be initiated if a skpoint Restore operation is already in progress.		Load C	lose Help						

Fig. 23: Load Operation window



Starting the Honeywell controller

The Honeywell controller must be started after activating the excom station.

- Double-click in the **Monitoring Assignment** \rightarrow **CEEUOC**... window.
- Under Main \rightarrow CEE State \rightarrow select COLDSTART or WARMSTART.
- ⇒ A query window opens.
- Click **Yes** in the query window.
- Confirm with **OK**.
- ⇒ The excom station is online. The excom station and modules are marked in green.



Fig. 24: Online excom station

5.9 HART information

The HART information can be read.

In the **Monitoring – Assignment** window, double-click the channel (here: **01: AI_01**).





⇒ The configuration window opens.



HART information and errors can be viewed in the upper menu bar under HART Configuration, HART Device Status, HART Identification and HART Variables.

IOPOINTS:AI BI	ock, Al_01 - Paran	neters [N	fonitoring]						?	×
Serve Main	er History HART Configurat	ion	Server Displays HART Device Status	Н	Control Confirm IART Identification	ation HAF	RT Variables	Identifica HART N	tion otificatio	ns
Configured D Manufacturer Type Type (Name) Revision Id (Serial Num	evice hber)	Generic 251 Any Dev 0 250126	HART Device	I N T F F S S S F F F	Installed Device Manufacturer Type Type (Name) Revision d (Serial Number) Device Type Mismatch Device Revision Mism Device ID Mismatch Accept Device ID Supported HART Version Coftware Revision Hardware Revision Private Label Distributor Final Assembly Number	ch match n	VEGA 190 2 2501265 HART7 1 1 VEGA 0			
Show Parame	eter Names						ОК	Cancel	He	Act Go t

Fig. 26: Example — HART Identification window

5.10 Reading diagnostic information

The diagnostic information can be viewed in two ways:

- Alarms
- Data/Status

Diagnostic information — alarms

For Alarms, the diagnostic information is also displayed on the Honeywell Experion Station.

In the Monitoring – Assignment window, double-click the module (here: DM80_S_8I_215).



Fig. 27: Example — double-click the DM80-S module



\Rightarrow The configuration window opens.

Select Alarms.

Alarm Alarm RAM ALID ALID ALID	Configuration Price LOW LOW	Data/Status prity 0	Alarms Severity	Advanced Configuration	/ Statistics Alarm Active	Server History
Alarm RAM ALID ALID ALID	LOW LOW	ority 0	Severity	Description	Alarm Active	
Alam RAM ALID ALID ALID	LOW LOW	ority 0	Severity	Description	Alarm Active	
Alam RAM ALID ALID ALID	LOW LOW	ority 0	Severity	Description	Alarm Active	
RAM /ALID /ALID /ALID	LOW	0				
ALID ALID ALID	LOW			Parameter not plausible		_
ALID ALID		0		Input bit invalid (Channel 1	Γ	
ALID	LOW	0		Input bit invalid (Channel 2	Γ	
	LOW	0		Input bit invalid (Channel 3		
ALID	LOW	0		Input bit invalid (Channel 4		
ALID	LOW	0		Input bit invalid (Channel 5		
ALID	LOW	0		Input bit invalid (Channel 6		
ALID	LOW	0		Input bit invalid (Channel 7		
ALID	LOW	0		Input bit invalid (Channel 8		
REBREAK	LOW	0		Wire break (Channel 1)	Г	
REBREAK	LOW	0		Wire break (Channel 2)	Γ	
REBREAK	LOW	0		Wire break (Channel 3)		
REBREAK	LOW	0		Wire break (Channel 4)		
REBREAK	LOW	0		Wire break (Channel 5)		
REBREAK	LOW	0		Wire break (Channel 6)		
REBREAK	LOW	0		Wire break (Channel 7)		
REBREAK	LOW	0		Wire break (Channel 8)		
RCURR	LOW	0		Overcurrent (Channel 1)		
RCURR	LOW	0		Overcurrent (Channel 2)	Γ	
RCURR	LOW	0		Overcurrent (Channel 3)		
RCURR	LOW	0		Overcurrent (Channel 4)		
RCURR	LOW	0		Overcurrent (Channel 5)		
RCURR	LOW	0		Overcurrent (Channel 6)		
RCURR	LOW	0		Overcurrent (Channel 7)		
RCURR	LOW	0		Overcurrent (Channel 8)	Γ	
	ALID ALID ALID REBREAK	ALID LOW ALID LOW ALID LOW REBREAK LOW REBREAK LOW REBREAK LOW REBREAK LOW REBREAK LOW REBREAK LOW REBREAK LOW REBREAK LOW RCURR LOW RCURR LOW RCURR LOW RCURR LOW RCURR LOW RCURR LOW RCURR LOW RCURR LOW	ALID LOW 0 REBREAK LOW 0 RCURR LOW <td< td=""><td>ALID LOW 0 ALID LOW 0 ALID LOW 0 ALID LOW 0 REBREAK LOW 0 RCURR LOW 0</td><td>ALID LOW 0 Input bit invalid (Channel 6 ALID LOW 0 Input bit invalid (Channel 7 ALID LOW 0 Input bit invalid (Channel 7 ALID LOW 0 Input bit invalid (Channel 8 REBREAK LOW 0 Wire break (Channel 1) REBREAK LOW 0 Wire break (Channel 2) REBREAK LOW 0 Wire break (Channel 3) REBREAK LOW 0 Wire break (Channel 4) REBREAK LOW 0 Wire break (Channel 5) REBREAK LOW 0 Wire break (Channel 6) REBREAK LOW 0 Wire break (Channel 7) REBREAK LOW 0 Wire break (Channel 7) REBREAK LOW 0 Wire break (Channel 8) RCURR LOW 0 Overcurrent (Channel 7) RCURR LOW 0 Overcurrent (Channel 3) RCURR LOW 0 Overcurrent (Channel 5) RCURR LOW 0 Overcurrent (Channel 5) RCURR LOW</td><td>ALID LOW 0 Input bit invalid (Channel 6 ✓ ALID LOW 0 Input bit invalid (Channel 7 ✓ ALID LOW 0 Input bit invalid (Channel 8 ✓ ALID LOW 0 Input bit invalid (Channel 8 ✓ ALID LOW 0 Wire break (Channel 1) ✓ REBREAK LOW 0 Wire break (Channel 2) ✓ REBREAK LOW 0 Wire break (Channel 3) ✓ REBREAK LOW 0 Wire break (Channel 3) ✓ REBREAK LOW 0 Wire break (Channel 5) ✓ REBREAK LOW 0 Wire break (Channel 6) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Overcurrent (Channel 7) ✓ RCURR LOW 0 Overcurrent (Channel 3) ✓ RCURR</td></td<>	ALID LOW 0 ALID LOW 0 ALID LOW 0 ALID LOW 0 REBREAK LOW 0 RCURR LOW 0	ALID LOW 0 Input bit invalid (Channel 6 ALID LOW 0 Input bit invalid (Channel 7 ALID LOW 0 Input bit invalid (Channel 7 ALID LOW 0 Input bit invalid (Channel 8 REBREAK LOW 0 Wire break (Channel 1) REBREAK LOW 0 Wire break (Channel 2) REBREAK LOW 0 Wire break (Channel 3) REBREAK LOW 0 Wire break (Channel 4) REBREAK LOW 0 Wire break (Channel 5) REBREAK LOW 0 Wire break (Channel 6) REBREAK LOW 0 Wire break (Channel 7) REBREAK LOW 0 Wire break (Channel 7) REBREAK LOW 0 Wire break (Channel 8) RCURR LOW 0 Overcurrent (Channel 7) RCURR LOW 0 Overcurrent (Channel 3) RCURR LOW 0 Overcurrent (Channel 5) RCURR LOW 0 Overcurrent (Channel 5) RCURR LOW	ALID LOW 0 Input bit invalid (Channel 6 ✓ ALID LOW 0 Input bit invalid (Channel 7 ✓ ALID LOW 0 Input bit invalid (Channel 8 ✓ ALID LOW 0 Input bit invalid (Channel 8 ✓ ALID LOW 0 Wire break (Channel 1) ✓ REBREAK LOW 0 Wire break (Channel 2) ✓ REBREAK LOW 0 Wire break (Channel 3) ✓ REBREAK LOW 0 Wire break (Channel 3) ✓ REBREAK LOW 0 Wire break (Channel 5) ✓ REBREAK LOW 0 Wire break (Channel 6) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Wire break (Channel 7) ✓ REBREAK LOW 0 Overcurrent (Channel 7) ✓ RCURR LOW 0 Overcurrent (Channel 3) ✓ RCURR

Fig. 28: Diagnostic information — clicking Alarms

Active diagnostics are marked with a check mark. In the example above, there is no input signal on channels 3...8 or the wire-break monitoring diagnostics is active.

Diagnostic information — Data/Status

In the Monitoring – Assignment window, double-click the module (here: DM80_S_8I_215).



Fig. 29: Example — double-click the DM80-S module

⇒ The configuration window opens.



Select Data/Status.

EXCOM:DM80_S	_8I Block, DM80_S_8I_215	- Parameters [Monitor	ing]			? ×
Serv	er Displavs	Control Confirmat	ion	QVCS	ld	entification
Main	Main Channel Configuration		Data/Status Alarms		n / Statistics	Server History
Main Data/Status Pr 0 Pr 0 Pr 0 F 1 F 5 F 6 F 7 F	Channel Configuration	d PV Flag	Alarms Status	Advanced Configuratio Wire break Image: Configuration Image: Configuration <	n / Statistics	
Show Paramet	ter Names			C	0K Can	cel Help

Fig. 30: Diagnostic information — clicking Data/Status

Active diagnostics are marked with a check mark. The module-related diagnostics are displayed for each channel. The left-hand column shows the available channels. The other columns indicate which diagnostics are active on each of the channels.

6 Redundancy strategies

6.1 Topology

The general topology of the Turck-specific system redundancy with the Ethernet protocols EtherNet/IP, Modbus TCP and PROFINET has the following structure:





Fig. 31: System redundancy with one master and two gateways

Fig. 32: System redundancy with two masters and two gateways

The system redundancy with one master and two gateways is a Turck-specific, parameterizable redundancy function of the excom system. The two gateways are provided here with separate IP addresses. The separate IP addresses are used to set up independent communication. The gateways transmit the input data and receive the output data via the IP addresses. One gateway is the primary gateway while the second gateway acts as a backup. If the primary gateway fails, a bumpless switchover to the backup gateway is carried out automatically. The redundancy function makes it possible to implement interruption-free communication. The output word of the gateway enables the forcing of a redundancy switchover.

When system redundancy is implemented with two masters and two gateways, two independent Ethernet masters communicate with the associated gateway. Both masters can be controlled via one or two process control system controllers. The process data is processed via two separate and independent Ethernet connections to the excom system.

6.2 Redundancy setup



Both gateways must have the same configuration, parameterization and firmware.

The Redundancy mode gateway parameter must be set for system redundancy.



6.3 System redundancy



NOTE

Both gateways must have the same configuration, parameterization and firmware.

If the **Redundancy mode** parameter is set to **System redundancy** in the DTM, web server or control system, the excom station operates in system redundancy mode. Both gateways communicate with their respective master. The PRIO LED is lit on the active gateway. The active gateway takes over the output data transferred by the master and sends this to the output modules.

The gateway communicating with the secondary master ignores the received output data as the secondary module does not have write access to the output modules.

The gateway is provided with one input word and one output word for monitoring redundancy. The input word describes the current state of the gateway.

The output word is used for the manual redundancy switchover in the master. It is possible to switch in the process control system from the primary gateway to the secondary gateway. A switchover is carried out in response to the following events:

- The primary gateway was removed.
- Communication to the primary gateway was interrupted. The outputs are set to 0 until the switchover to the other gateway is completed. After the timer for interrupted connections has elapsed, the switchover to the other gateway is carried out.

After a switchover, an automatic switchover to the former primary gateway is no longer carried out.

When the excom system is started, the gateway on the left starts to operate as the primary gateway. If communication with the left gateway fails, the gateway on the right tries to establish primary communication.

Assignment of the gateway process data bits

The input word of the gateway process data is used to view the gateway and system redundancy of the excom station:

	Bit							
Status bit	7	6	5	4	3	2	1	0
0	Not used		- -	Left power sup- ply module	Right power sup- ply module	Gateway redund- ancy	Gateway slot	Redund- ancy status
1	Not used							

Meaning of the gateway process data bits

Designation	Meaning		
Left power supply unit	0: Left power supply unit not present		
	1: Left power supply unit fitted		
Right power supply unit	0: Right power supply unit not present		
	1: Right power supply unit fitted		
Gateway redundancy	0: Redundant gateway or redundant communication not available		
	1: Redundancy available		
Slot	0: Gateway is located on the right slot (GW2)		
	1: Gateway is located on the left slot (GW1)		
Active/ passive	0: Gateway is passive		
	1: Gateway is active		

Assignment of the command bits

The output word of the gateway makes it possible to force a redundancy switchover in the "Red switching" web server:

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Not used					Control bit	Redund- ancy switchover is initiated	Activation of the right or left gateway
						Control bits change	for edge	
1	Not used							

Meaning of the command bits

Designation	Meaning	
Bit 2 = 0 Redundancy switchover is initiated	11 \rightarrow 01: Receiver is the passive gateway. The passive gateway requests control from the active gateway and becomes active.	
	11 \rightarrow 10: Receiver is the active gateway. The active gateway gives control to the passive gateway and becomes passive.	
Bit 2 = 1 Activation of the right or left gateway	11 \rightarrow 01: Receiver is the left gateway. The left gateway requests control from the right gateway and becomes active.	
	11 \rightarrow 10: Receiver is the right gateway. The right gateway requests control from the left gateway and becomes active.	

From gateway firmware version 1.4, the gateways support PROFINET S2 redundancy.



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205



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