

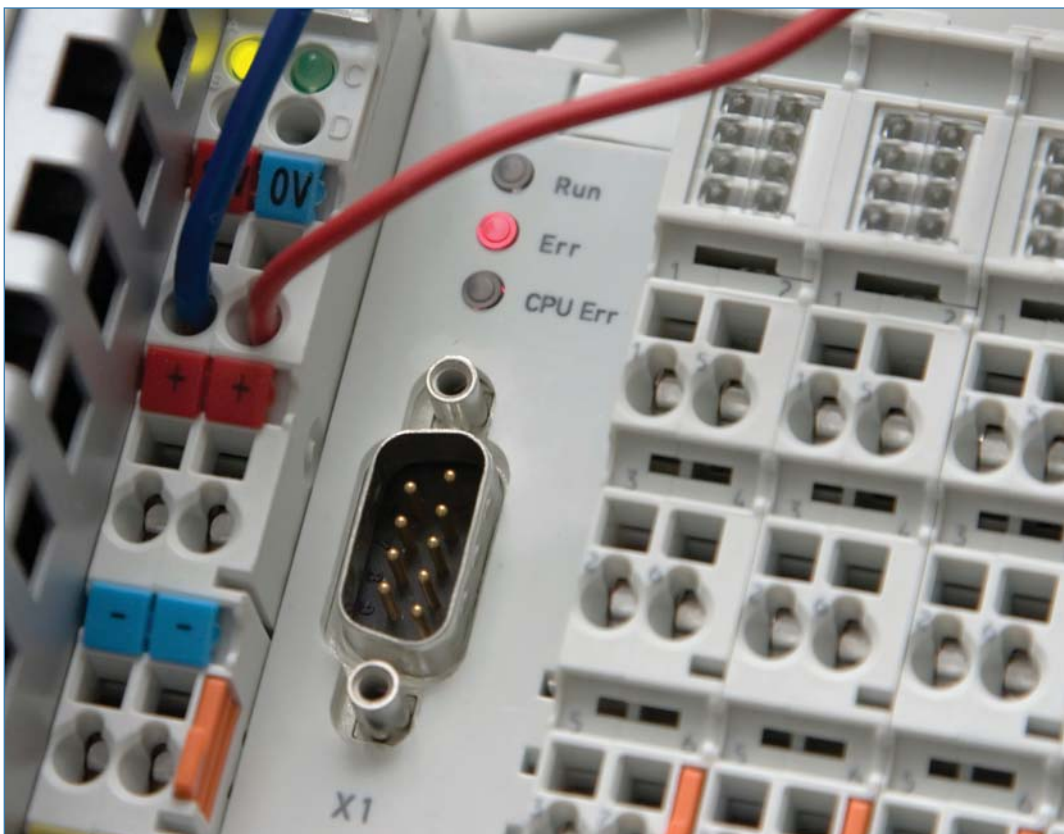
# AVEVA Instrumentation

Instrument and Systems engineering, design, documentation and management for the entire plant lifecycle

**AVEVA Instrumentation is a proven, feature-rich software suite for Instrumentation and Control engineering. Its advanced graphical user interfaces, extensive use of design rules and catalogues for data creation, and maximum workflow flexibility make AVEVA Instrumentation the preferred choice for projects of all sizes.**

Stand-alone or fully integrated, AVEVA Instrumentation is functionally rich, both for the EPC in design and for the Owner Operator in everyday plant operations.

When used as part of an integrated AVEVA software deployment, it adds instrumentation data into the complete project information model, exposing it to the full range of AVEVA's design, engineering, collaboration and lifecycle management technologies.



AVEVA Instrumentation is a proven, feature-rich software suite for Instrumentation and Control engineering

## Business Benefits

- **Increased productivity**  
Catalogue and rules-based automation makes system design efficient and effective. Productive on both large and small projects.
- **Automatically generated deliverables**  
An extensive range of customisable deliverables may be created, including:
  - Cable Block Diagrams
  - Loop Diagrams
  - Instrument Index
  - Datasheets
  - Hookup Diagrams
  - Termination Diagrams
  - Cable Schedules
  - Bill of Materials
- **Increased design quality**  
Use of catalogues and rules enables 'right first time' design. Accurate design information reduces errors and rework in construction. High-quality documentation maximises productivity in operations.
- **Rapid payback**  
Easily and rapidly deployed on new or existing projects. Intuitive use minimises training needs and makes users immediately productive.

PLANT

# Key Features

AVEVA Instrumentation comprises three integrated modules which share a common, multi-user database for design and as-built data. It may be used with either MS SQL Server (recommended) or, for smaller projects, MS Access databases.

AVEVA Instrumentation supports multiple languages throughout for ease of deployment and use worldwide. Data integrity is ensured by extensive validation processes, automatic cross-referencing and rigorous change control. Straightforward customisation enables configuration by users without the need for programming skills.

## Instrument Engineer module

This module enables instrument index data entry, change tracking, generation of data sheets and the creation and management of reports and documentation. Its intuitive spreadsheet-style interface provides ease and flexibility of use. Features include:

- Datasheets**
  - Multiple instruments assignable by tag reference to a classification datasheet
  - Easy management of process data across multiple datasheets
  - Document management functions, including searching and change highlighting
  - Familiar spreadsheet functions such as import/export, format copying, datasheet reuse, configurable printing, PDF creation
  - Audit logging, revision control and change reporting
- Instrument List**
  - Data import from Excel and P&IDs
  - Add, edit and maintain list data, including DCS/PLC I/O information
  - User-definable tag formats and list layout
  - Change reporting and management
  - Data association with Datasheets
  - Data association with the Instrument Designer module, enabling loop drawing and hook-up document numbers to be automatically updated
- Loop List**
  - Advanced user interface for easy creation, editing and copying of loops
  - Assign 'wiring rules' and generate Wiring Manager module data automatically
  - Generate Loop Wiring Check reports in pdf format
  - Data association with the Instrument Designer and Wiring Manager modules
- Reports**
  - Extensive, user-definable report generation, including:
    - Instrument and Loop Lists, I/O allocations
    - Datasheet List, Process data List
    - Report by datasheet type, by tag, by assignment status etc
    - Database changes between revisions, Audit log

Flexible print layout and export options are provided.

Instrument Datasheet									
CONTROL VALVE									
1	Tag No.	80-PV-1305			PSID No.	AI-70389			
2	Service	FUEL GAS TO REBOILER 804190			Line Number	150-HC-1185ACT			
3	PROCESS CONDITIONS								
4	Fluid Name	FUEL GAS			Design Conditions				
5	Fluid Name	Fluid State	Min Flow	Norm Flow	Max Flow	Design Temp.	Min	Max	0 °C
6	Operating Conditions	Min Flow	Norm Flow	Max Flow	Design Press.	Min	Max	0 MPa	3700 MPa
7	Liquid Flow Rate				Critical Temp.	Critical Press.			
8	Vapour Flow Rate				Vapour S.G. @ 15 °C				
9	Inlet Pressure				Flushing/Condition/Chilled				
10	Pressure Drop				Settle P. @ Shut Off	2500 MPa			
11	Inlet Temperature				Hazardous Area Classification	Zone 1, G, H, C, T3			
12	Liquid Vapour Pressure				Allowable Noise SPL	85dBA			
13	Liquid Density				Ingress Protection Rating	IP 65 for all Electronic Enclosures			
14	Liquid Viscosity				Test & Certification	Hydrotest			
15	Vapour Molecular Weight				Sizing Considerations				
16	Vapour Compress. Factor, Z				Material Selection	Materials to be suitable for Hydrogen			
17	Vapour Ratio of Specific Heats				NIICE Certification	Not Required			
18	Cv Calculated				Serial Number				
19	Valve Opening								
20	Noise Calculated SPL								
21	VALVE BODY								
22	Line Size & Sub	Inlet	Outlet	DN 150 Sub 40	DN 150 Sub 40	Flange Type	Plan		
23	Insulation/Jacket	None			Body Material	CS to ASTM A216 Gr WCC			
24	Valve Type	Globe			Stem Material	Same as Body			
25	Seat	Body Size	Flared Cv	DN 80	148	Winding Type & Material	EN1090 P/F/CC		
26	End Connections Type & Rating	ASME C 300 RF			Body Bolting	Bolts	Nuts	ASTM A193 Gr B7	ASTM A194-214(Black)
27	Flange Finish	3.2 to 6.3 µm Ra			Sub & Inlet Valve / Lubr	Not Required			
28					Flow Direction	Flow Down			
29	TRIM								
30	Type	Size	Material	3-7/16 inch	Plug/Ball/Disk Material	416SS HD			
31	Characteristics	Rated Inlet	Linear	1-1/2 inch	Seat Material	416SS Metal			
32	Style (Ballcock / Underseat)	Balanced			Material Certification	EN1090 P/F/CC			
33	PL	0.819	0.649		Material: Shaft/Steam	316 SS			
34	No. of Seats				Leakage Class	ANSI Class IV			
35	ACTUATOR								
36	Type	Spring Diaphragm			Actuator Orientation	Standard			
37	Actuator Size	Area	45		Volume Tank	Not Required			
38	Value Action on Air Supply Failure	Value Closes on Air Failure			Volume Tank	Not Required			
39	Branch Range	14-38 psig			Other				
40	ACCESSORIES								
41	Positioner Type	Smart Digital 4-20mA with HART			Air Set.	Model	Set Pt	Fisher P507CPR-362	250 MPa
42	Positioner Action	Charac.	Direct		Lock Up/Quick Exhaust	Not Required			
43	Positioner Output	Supply	Output	Not Required	Isolated Valve	Type	Voltage	Not Required	N/A
44	Positioner Output	Supply	Output	Not Required	Isolated Valve	Type	Voltage	Not Required	N/A
45	Signal Input	Range	Conn	250 to 275 MPa	14/16/17	Split Range Operation	Open	Close	N/A
46	Signal Input	Range	Conn	250 to 275 MPa	14/16/17	Split Range Operation	Open	Close	N/A
47	Signal Input	Range	Conn	250 to 275 MPa	14/16/17	Split Range Operation	Open	Close	N/A
48	MANUFACTURER & MODEL								
49	Item	Tag	Manufacturer	Model	Ex Cert.	Ex Authority	Certificate No.	Cert Expiry	Local Approval
50	Valve	82P/344A	Fisher	3" ET					
51	Actuator		Fisher	667					
52	Positioner		Fisher	DU/0510 ACT	Ex. Cert. T4	S&A	Auth. Ex. 3725X	06/09/2011	Not Required

Datasheets and Instrument Indexes can be efficiently created with the Instrument Engineer module

Instrument Index					
Tag No	Description	PRID	Plant Connection	Manufacturer	ModelNo
<b>Loop No: L-1023 Service: T-1020 SLUG CATCHER</b>					
LIC-1023A	PCS CONTROLLER	DWG-01-BP-1003	*	*	*
LIC-1023B	PCS CONTROLLER	DWG-01-BP-1003	*	*	*
LT-1023	DP FB LVL TRANS. HP&LP SEALS	DWG-01-BP-1003	T-1020	YOKOGAWA	EJA110A-FM55B
LV-1023A	CONTROL VALVE	DWG-01-BP-1003	150-PL-1020-EA3N	FLOWSERVE-VALTEK	Mark One
LV-1023B	CONTROL VALVE	DWG-01-BP-1002	100-PF-1014-EA3X	FLOWSERVE-VALTEK	Mark One
LY-1023A	I/P CONVERTER	DWG-01-BP-1003	150-PL-1020-EA3N	*	*
LY-1023B	I/P CONVERTER	DWG-01-BP-1002	100-PF-1014-EA3X	*	*
<b>Loop No: L-1024 Service: T-1020 SLUG CATCHER</b>					
LH8-1024	SIS ALARM	DWG-01-BP-1003	*	*	*
LALL-1024	SIS ALARM	DWG-01-BP-1003	*	*	*
LG-1024	MAG FOLLOWER LEVEL GAUGE	DWG-01-BP-1003	T-1020	VTA	VTA
LZT-1024	MAG ANA LVL TRANS.	DWG-01-BP-1003	T-1020	K-TEK	KM265/SS6/W9F 5200 mm
<b>Loop No: L-1045 Service: C-1030 INLET SEPARATOR</b>					
LH8-1045	SIS ALARM	DWG-01-BP-1004	*	*	*
LALL-1045	SIS ALARM	DWG-01-BP-1004	*	*	*
LG-1045	MAG FOLLOWER LEVEL GAUGE	DWG-01-BP-1004	C-1030	VTA	VTA
LZT-1045	MAG ANA LVL TRANS.	DWG-01-BP-1004	C-1030	K-TEK	KM265/SS6/W9F 5200 mm
<b>Loop No: L-1046 Service: C-1030 INLET SEPARATOR</b>					
LIC-1046	PCS CONTROLLER	DWG-01-BP-1004	*	*	*
LT-1046	DP FB LVL TRANS. HP&LP SEALS	DWG-01-BP-1004	C-1030	YOKOGAWA	EJA110A-FM55B
LV-1046	CONTROL VALVE	DWG-01-BP-1004	150-PL-1029-DA3N	FLOWSERVE-VALTEK	MaxFlo
LY-1046	I/P CONVERTER	DWG-01-BP-1004	150-PL-1029-DA3N	*	*
<b>Loop No: L-1061 Service: C-1040 STABILISER FEED SURGE DRUM DRAIN</b>					
LG-1061	MAG FOLLOWER LEVEL GAUGE	DWG-01-BP-1005	C-1040	VTA	VTA
LIC-1061	PCS CONTROLLER	DWG-01-BP-1005	*	*	*

User defined reports may be easily created, including export to Excel and PDF

## Instrument Designer module

This module enables automatic generation and revision of CAD drawings from the project/plant database, with or without the use of templates. It handles the parametric creation of termination drawings and may be used on existing AutoCAD drawings. Features include:

### • Drawing List Management

- Manually add, edit, update, delete or open drawings from the Drawing List
- Add Loop Drawings automatically from Instrument Engineer's Loop List
- Add Termination Drawings automatically from Wiring Manager's Equipment List
- Create and manage drawing revisions
- Link drawing text fields to any database fields
- Batch mode operation for efficient drawing creation, updating and printing

### • Loop Diagram Generation

- Fully user-definable drawing templates
- Edit and update existing drawings
- Data association with Wiring Manager and Instrument Engineer for automatic updating
- Full revision history

### • Termination Diagram Generation

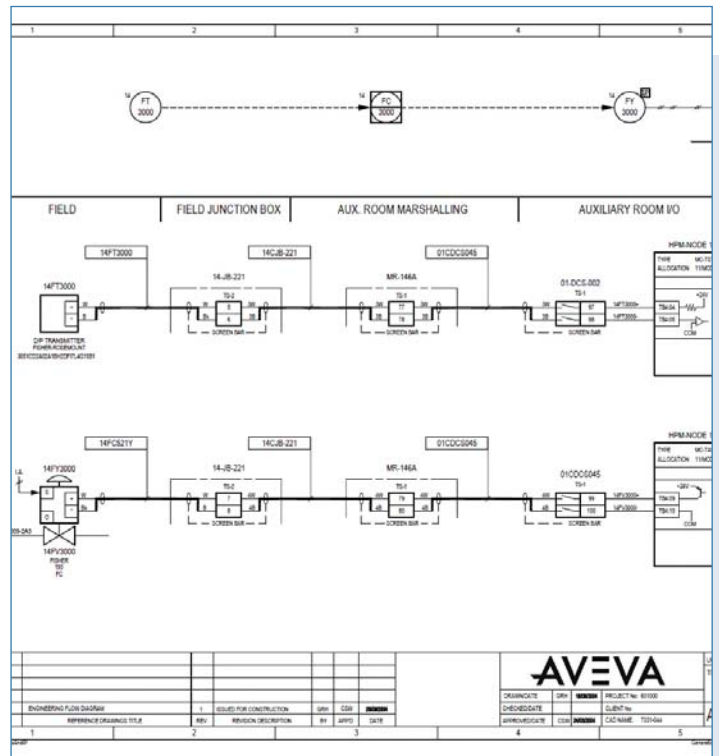
- Fully automated creation of template-based and parametric drawings
- Cable and termination data automatically updated from Wiring Manager
- Automatic continuation over multiple drawings
- Automatic reference drawing numbering

### • Hookup / Installation Drawing Generation

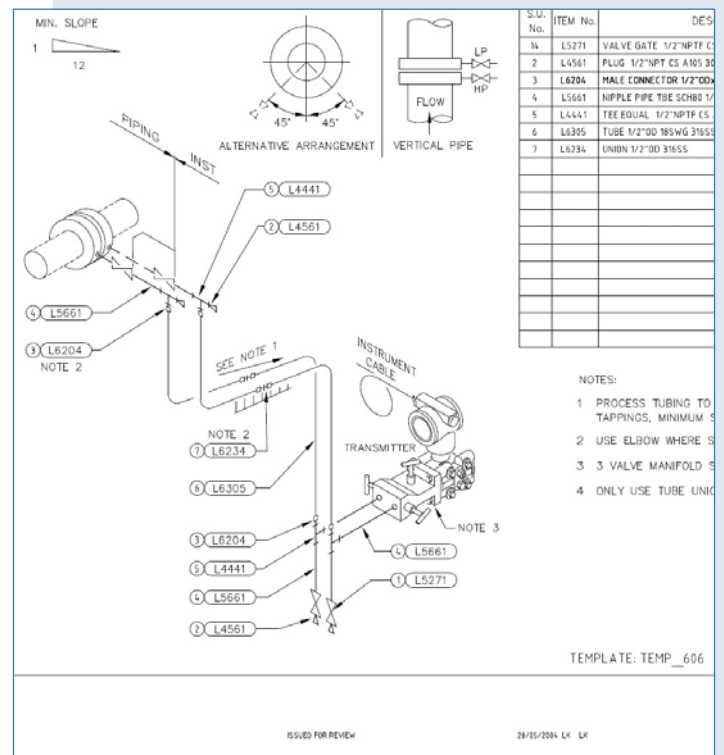
- User-definable AutoCAD drawings
- Assign tags to hookup type, and hookup items from a user-definable catalogue. (Catalogue supplied with over 3000 items.)
- Automatically create drawings with BoM and Tag List
- Create BoM reports by plant area or for the total project

### • Change Management

- Report all drawing changes, additions, deletions, renaming etc
- Report changes by field
- Log changes for reporting



AutoCAD Loop Diagram, generated using the Instrument Designer module



AutoCAD Hookup Drawing, generated using the Instrument Designer module

## Key Features (continued)

### Wiring Manager module

This powerful module handles all detailed cable, wiring, and termination design, creating data which is used by the Instrument Designer module for drawing generation. It features an advanced user interface and three integrated functions for handling equipment, cable, and interconnection data.

#### • Advanced User Interface

- Intuitive and easy to learn for immediate productivity
- 'Drag & Drop' wire termination and diagram layout functions
- Catalogue-driven component selection

#### • Equipment functions

- Graphical definition and easy reuse of equipment terminal arrangements and terminal strips/rails
- Graphical representation of equipment hierarchy
- Supports DIN rails with multiple devices
- Assign tags to junction boxes
- Rule-based creation of terminations

#### • Cable functions

- Cable creation by catalogue or by copying existing cables
- Cable merge and split functions
- Catalogue-driven gland and gland adapter assignment
- Automatic core marking updates from Catalogue Number changes
- Automatic cable schedules and gland BoM reports
- Automatic cable drumming for minimum wastage

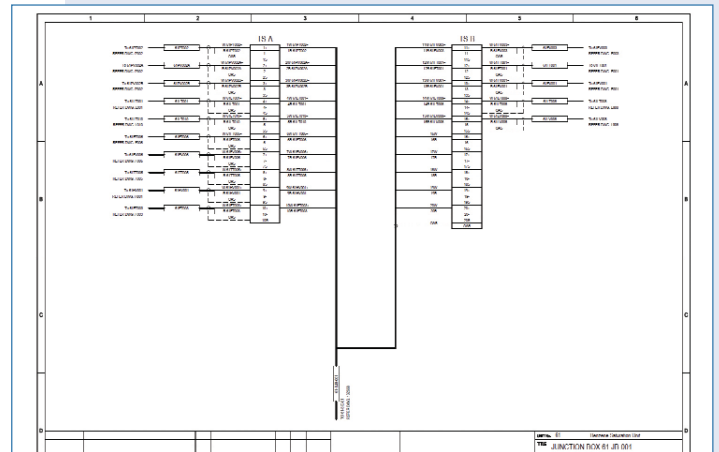
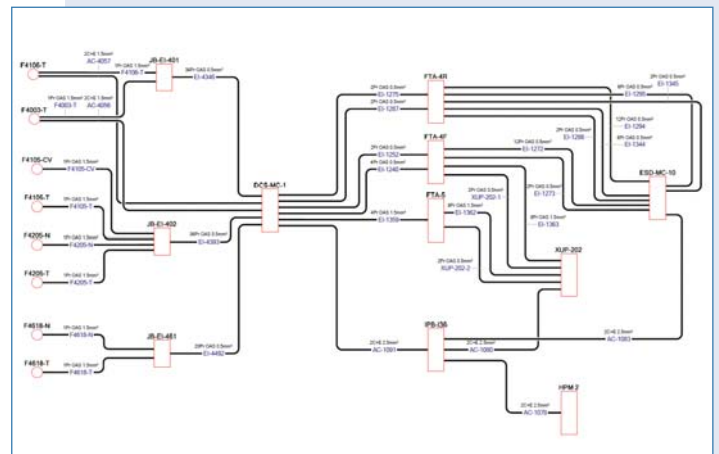
#### • Cable / Wire Terminations

- 'Drag & Drop' wire termination and I/O allocation
- Automatic creation of editable Block Diagrams
- Automatic rule-based numbering
- Automatic cross-patch wiring within equipment and within rooms
- Graphical termination reports in pdf format

#### • Reporting

- Cable Schedules
- Cable BoM, Cable Gland BoM
- Cable Drum Schedule
- Wire/Ferrule Number Schedules
- I/O Allocations

AVEVA Instrumentation's rich functionality not only enables efficient, accurate and productive system design and assembly, it provides rapid access to up-to-date information during operation. It is a complete lifecycle solution.



Cable No	From	To	Length	Cores	Size	OAS	GS	Description	Status
56-GB-104	56-GB-104	56-GB-47	110	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-GB-1021	56-GB-102	56-GB-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1027	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-GB-1023	56-GB-102	56-GB-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-GB-103	56-GB-102	56-GB-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-ICP-6680X1	56-ICP-6680X	56-SBC-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-LCP-6680X2	56-LCP-6680X	56-GB-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-LCP-6680X1	56-LCP-6680X	56-GB-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-ICP-6680X2	56-ICP-6680X	56-SBC-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-LCP-6680X2	56-LCP-6680X	56-GB-157	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1029	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-SBB-1031	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-GB-1044	56-GB-104	56-GB-155	100	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	Existing
56-SBB-1025	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-SBB-1026	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-GB-1017	56-GB-102	56-GB-155	130	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	Existing
56-SBB-1018	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-SBB-1021	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	1 verified
56-GB-1023	56-GB-102	56-GB-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1024	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1025	56-SBB-102	56-SBC-156	150	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-GB-1026	56-GB-102	56-GB-156	170	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1031	56-SBB-102	56-SBC-156	110	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New
56-SBB-1022	56-SBB-102	56-SBC-157	100	20P	0.5mm <sup>2</sup>	✓		RE/OASON/LAG/SW/PVC-Blue	New

The Wiring Manager module generates high-quality Cable Block Diagrams, Termination Diagrams and Cable Schedules

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